IMPROVING CLIENT-CONTRACTOR COLLABORATION DURING THE TRANSITION FROM THE BOUWTEAM PHASE INTO THE EXECUTION PHASE

TU DELFT - MASTER THESIS

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TITLE PAGE

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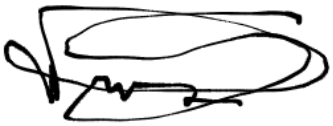
PREFACE

This Master Thesis is the graduation research project for the Master program 'Construction Management and Engineering' (CME) at the Delft University of Technology (TU Delft). This research focuses on collaboration in a Bouwteam project during the transition from the Bouwteam phase into the execution phase. A Bouwteam is a way to improve collaboration by involving the contractor earlier, than is traditionally the case, which can create a more efficient construction process. This research is carried out at Sweco Nederland.

After my bachelor 'Technische Bestuurskunde' (TB), I chose to specialize by following the master CME. A combination of my interest about the construction world and my TB background forms a good basis to eventually be able to make a difference in the building industry. During this master's degree in CME, something really struck me. I cannot name any lecture where this topic was not discussed. In every course, but in another context, it came up again: collaboration in construction projects. A model that focuses on collaboration between parties in a construction project is a Bouwteam.

Nowadays, the use of Bouwteams in construction processes is growing. It works efficiently and therefore organizations are interested in working with Bouwteams. However, in practice there are still collaboration problems, therefore there is still a lot of research to be done in this area. The focus on the transition from the Bouwteam phase into the execution phase is a very important and useful one: how can this collaborative relationship be improved during this transition in a Bouwteam project? This research tries to answer this question.

During the writing process of my Master Thesis, I have received help from my graduation committee. I am very grateful for this. Therefore, I want to thank Evelien Bruggeman, Leon Hombergen and Marian Bosch-Rekveldt for their feedback. I was lucky with this committee. I want to thank my supervisor from Sweco, Stephan Laaper for sharing his knowledge and experiences. His flexibility was much appreciated and definitely helped me through this process. I also want to thank team manager Pieter van der Knaap from Sweco for his support and good care. I want to thank my partner, family and friends for their mental support during this period. Without your positive input and uplifting energies it would have been much more difficult. The research process could be hard at times but you pulled me through it when needed. Last but not least, I want to thank all participants of this research. Without your input, this graduation would not have been possible.



Shazia Dhonré
Den Haag, August 2021

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EXECUTIVE SUMMARY

In recent years, more and more has been built in the construction industry. Yet profit margins remain low, with failure costs playing an important role. It is claimed that collaboration is the key to success, because it can lead to a more efficient construction process and a high reduction of failure costs. However, it turns out that collaboration is easier said than done. A model that can help with this, is a Bouwteam. In this model, the contractor is already involved in the design process instead of later during the execution. The contractor shares his knowledge about the realization costs of the design and its execution. This makes it possible to design more consciously and to reduce the chance of adjustments during execution. Although a Bouwteam offers many advantages, practice shows that collaboration with this model can still be improved. Several researches have been conducted about the collaboration in the Bouwteam phase, where client and contractor work together. However, no research has been done about the transition from the Bouwteam phase into the execution phase. Therefore, the following research question has been formulated:

'In what way can client-contractor collaboration be improved in a Bouwteam project during the transition from the Bouwteam phase into the execution phase?'

The objective of this research is to gain insight into how client-contractor collaboration can be improved during the transition in a Bouwteam project. This is done by the identification of the perspectives which are present among clients, contractors and consultants. Consultants are also included, because they can have an important design and advising role, on both the side of the client and contractor. Strategies have been drawn based upon these perspectives, so that the perspectives are interpreted in the right way and the corresponding strategies make sure the implementation is done accordingly. This eventually results in improvement of the collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project.

The Q-method was used to obtain perspectives of clients, contractors and consultants during the transition from the Bouwteam phase into the execution phase. This method creates tangibility in the subjectivity of collaboration. The Q-method assumes that not everyone experiences collaboration in the same way, but that certain groups of people might have the same preferences. Based on literature research and exploratory interviews, a broad collection of relevant statements (collaboration factors) about collaboration in Bouwteam projects have been gathered. All factors are categorized by making use of the following client-contractor collaboration aspects: capability, contract, joint working, relational attitude, team integration and team working. In the end, a set is created that represents the complete subject of interest, consisting of 53 factors for collaboration. This set of collaboration factors was presented to 28 respondents, who ranked them according to their degree of importance regarding collaboration during transition. The respondents are chosen based on their function, the company they are working at, the number of years of relevant work experience and the number of completed Bouwteam projects. Analyzing the quantitative data and combining it with explanations provided by the respondents, five perspectives (P) were defined, as presented below. Two factors are important for the majority of the perspectives, the core values: transparency and mutual trust.

- P1 – Clear, high level scope definition and clear Bouwteam roles: This perspective focuses on the contract in which these aspects are clearly defined.
- P2 – Focus on a good professional relationship with less informal events: There is a focus on a work-related relationship in which information exchange and knowledge sharing is stimulated without a strong need for informal events.
- P3 – Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring: This perspective focuses on aligning different attitudes and mindsets and co-

developing norms specific to the relationship. In addition, to avoid a lot of dynamics during the project, innovation is not very desirable.

- P4 – Focus on leadership ability and minimize monodisciplinary meetings: There is a dependence on the project team leader and a preference for efficient meeting structures to minimize monodisciplinary meetings.
- P5 – Focus on early agreements on price-related aspects and specific competences of people.

For each of the perspectives and the two core values, strategies are developed to improve client-contractor collaboration during the transition in a Bouwteam project. This is done based on input from five experts and literature, then evaluated in an expert evaluation. The implementation of these strategies is not only applicable to Sweco, but can be generalized for any Bouwteam project, because the participants of these research have different organizational backgrounds. The people who set up the Bouwteam project, and team are the ones who should implement the strategies based on the presence of the perspectives among the (aimed) team members. The strategies (S) are listed in Table 1.

Table 1: Overview of the collaboration strategies

Core value	Strategy
Transparency	S1: Create an environment in which information, that meets quality requirements, is openly available for all Bouwteam members.
Mutual trust	S2: Invest in collaboration from the start by social interaction between team members and maintain the collaboration during the project.
Perspective	**Strategy**
P1	S3: Organize a kick-off at the beginning of a Bouwteam project with all team members in which the scope and Bouwteam roles are clearly presented, with the option for further clarification at a later moment. S4: Use DiSC management profiles and communicate these to establish roles by analyzing team members at the start of the Bouwteam project, so that it becomes clear which people are in the Bouwteam and how to cope with those different characters.
P2	S5: Organize joint sessions related to the content (e.g. about the design or approach during execution) to share knowledge, and verify and validate the work to deliver quality. S6: Document agreements together in a collaboration plan on how to collaborate, and especially expectations within the team and as individuals.
P3	S7: Speak out about each other's interests and objectives to jointly come to a clear and similar project vision. S8: Create a long-lasting learning culture by organizing possibilities to actively share knowledge between team members.
P4	S9: Organize an efficient meeting structure dependent on the nature of the project (e.g. complexity, size), commonalities and subject of the meeting. S10: Appoint project leaders who are capable to lead the project, both the overall project as the separate disciplines, based on their personal capabilities and project experience.
P5	S11: Involve (independent) financial people to help the client examine the price-related aspects of the design. S12: Make effort to win the right people for the project by using an intern application procedure.

As the implementation is based upon the presence of the perspectives in the project team, it does not mean that all strategies should be applied in a project. The perspectives present will indicate which ones to implement in order to improve the client-contractor collaboration during the transition of a Bouwteam project.

This research recommends organizations to include the core values: transparency and mutual trust in their personnel policy as those values are almost always present for the perspectives. Organizations might consider to create possibilities to develop these core values within the organization as all employees must think and act according to those core values.

MANAGEMENTSAMENVATTING

De laatste jaren wordt er meer en meer gebouwd in de bouwwereld. Toch blijven de winstmarges laag waarbij faalkosten een belangrijke rol spelen. Er wordt beweerd dat samenwerking de sleutel tot succes is, omdat het kan leiden tot een efficiënter constructieproces en een hoge reductie van faalkosten. Echter, blijkt samenwerken makkelijker gezegd dan gedaan. Een model dat hierbij kan helpen, is een Bouwteam. Hierbij wordt de opdrachtnemer al eerder betrokken bij het ontwerpproces in plaats van later bij de uitvoering. De opdrachtnemer deelt hierbij zijn kennis over de realisatiekosten van het ontwerp en de uitvoering daarvan. Dit maakt het mogelijk om bewuster te ontwerpen en de kans op aanpassingen tijdens de uitvoering te verkleinen. Hoewel een Bouwteam veel voordelen biedt, laat de praktijk zien dat samenwerking bij dit model nog verbetering behoeft. Er zijn meerdere onderzoeken gedaan naar de voorkant van een Bouwteam project, de Bouwteam fase waarin opdrachtgever en opdrachtnemer samenwerken. Echter, is er nog geen onderzoek gedaan naar de achterkant van een Bouwteam project, de transitie van de Bouwteam fase naar de uitvoeringsfase. Daarom is de volgende onderzoeksvraag geformuleerd:

'Hoe kan opdrachtgever-opdrachtnemer samenwerking tijdens de transitie van de Bouwteam fase naar de uitvoeringsfase in een Bouwteam project worden verbeterd?'

Het doel van dit onderzoek is om inzicht te krijgen in hoe de samenwerking tussen opdrachtgever en opdrachtnemer tijdens de transitie in een Bouwteam project kan worden verbeterd. Dit wordt gedaan door de perspectieven die aanwezig zijn onder opdrachtgevers, opdrachtnemers en consultants in kaart te brengen. Consultants worden meegenomen, omdat zij aan zowel de zijde van de opdrachtgever als opdrachtnemer een belangrijke rol kunnen spelen als het gaat om advies- en ontwerp activiteiten. Op basis van deze perspectieven zijn strategieën ontwikkeld, zodat de perspectieven op de juiste manier benaderd kunnen worden door de toepassing van bijbehorende strategieën. Dit resulteert uiteindelijk in een verbetering van de samenwerking tijdens de transitie van de Bouwteam fase naar de uitvoeringsfase in een Bouwteam project.

De Q-methode is gebruikt om de samenwerkingsperspectieven van opdrachtgever en opdrachtnemer perspectieven tijdens de transitie van de Bouwteam fase naar de uitvoeringsfase te verkrijgen. Deze methode zorgt ervoor dat er tastbaarheid gecreëerd wordt in de subjectiviteit van samenwerking. De Q-methode gaat er vanuit dat niet iedereen de samenwerking hetzelfde ziet, maar dat bepaalde groepen mensen misschien wel dezelfde voorkeuren hebben. Op basis van literatuuronderzoek en explorerende interviews is een brede verzameling van relevante statements (samenwerkingsfactoren) over de samenwerking bij Bouwteam projecten gemaakt. Alle samenwerkingsfactoren zijn gecategoriseerd onder de volgende opdrachtgever-opdrachtnemer samenwerkingsaspecten: bekwaamheid, contract, gezamenlijk werken, relationele houding, team integratie en samenwerken. Uiteindelijk is er een set ontstaan met 53 samenwerkingsfactoren die de fasen voor de transitie coveren. Deze set is in een online survey voorgelegd aan 28 respondenten en gerankt op basis van belangrijkheid met betrekking tot de samenwerking tijdens de transitie. De respondenten zijn gekozen op basis van hun functie, de organisatie waarin ze werkzaam zijn, het aantal jaren relevante werkervaring en het aantal afgeronde Bouwteam projecten. Door de kwantitatieve data te analyseren en te combineren met toelichtingen die zijn gegeven door de respondenten, zijn er vijf perspectieven (P) ontstaan, zoals hieronder toegelicht. Twee factoren zijn belangrijk voor de meerderheid van de perspectieven, de kernwaarden: transparantie en wederzijds vertrouwen.

- P1 – Duidelijke en gedetailleerde scopedefinitie en duidelijke Bouwteamrollen: Dit perspectief focust op het contract waarin deze aspecten duidelijk worden gedefinieerd.

- P2 – Focus op een goede professionele relatie met minder informele events: Er is een focus op een werk-gerelateerde relatie waarin informatie uitwisseling en kennisdeling wordt gestimuleerd zonder een sterke behoefte aan teamuitjes en informele events.
- P3 – Focus op een lange termijn samenwerking met een win-win houding zonder potentiële risico's van innovatie: Dit perspectief richt zich op het afstemmen van verschillende houdingen en mind-sets en co-ontwikkeling van normen specifiek voor de relatie. Om onrustigheid tijdens het project te voorkomen, is innovatie niet erg gewenst
- P4 – Focus op leiderschapsbekwaamheid en minimaliseer monodisciplinaire meetings. Er heerst een leiderschapsafhankelijkheid en een voorkeur voor efficiënte vergaderstructuren die monodisciplinaire vergaderingen minimaliseren.
- P5 – Focus op vroegtijdige afspraken over prijsaspecten en specifieke competenties van mensen.

Voor elk perspectief en de twee kernwaarden zijn strategieën ontwikkeld om te opdrachtgever-opdrachtnemer samenwerking tijdens de transitie in een Bouwteam project te verbeteren. Deze strategieën zijn ontwikkeld op basis van input van vijf experts, literatuur en vervolgens een expert evaluatie. De implementatie van de strategieën is niet alleen van toepassing op Sweco, maar kan worden gegeneraliseerd naar elk Bouwteam project, omdat de deelnemers aan dit onderzoek verschillende organisatorische achtergronden hebben. De mensen die het Bouwteam project en team inrichten zijn de aangewezen personen om de strategieën (S) te implementeren op basis van perspectieven die bij (potentiële) teamleden aanwezig zijn. De strategieën zijn gepresenteerd in Table 2.

Table 2: Overzicht van samenwerkingsstrategieën

Kernwaarde	Strategie
Transparantie	S1: Creëer een omgeving waarin informatie dat voldoet aan kwaliteitscriteria voor alle Bouwteamleden toegankelijk is.
Wederzijds vertrouwen	S2: Investeer in samenwerking vanaf het begin door sociale interactie tussen Bouwteamleden en onderhoud de samenwerking gedurende het project.
Perspectief	**Strategie**
P1	S3: Organiseer een kick-off aan het begin van een Bouwteam project met alle Bouwteamleden waarin de scope en Bouwteamrollen duidelijk worden gepresenteerd, met de optie voor verdere verduidelijking op een later moment. S4: Gebruik DiSC management profielen en communiceer deze om rollen vast te leggen door aan het begin van het Bouwteam project de teamleden te analyseren, zodat het duidelijk wordt welke karakters in het team zitten en hoe daarmee moet worden omgegaan.
P2	S5: Organiseer gezamenlijke inhoudelijke sessies (bijv. over ontwerp en aanpak tijdens de uitvoering) om kennis te delen, en werk te valideren en verifiëren om kwaliteit te leveren. S6: Documenteer samen afspraken in een samenwerkingsplan over hoe er moet worden samengewerkt, en vooral verwachtingen binnen het team en als individu.
P3	S7: Spreek belangen en doelen uit van alle partijen om gezamenlijk tot een duidelijke en gelijke projectvisie te komen. S8: Creëer een langdurige leercultuur door mogelijkheden te organiseren waarin actief kennis wordt gedeeld tussen teamleden.
P4	S9: Organiseer een efficiënte vergaderstructuur afhankelijk van de aard van het project (bijv. complexiteit, omvang), raakvlakken en onderwerp van de vergadering. S10: Wijs projectleiders aan die capabel zijn om het project te leiden, zowel het gehele project als de aparte disciplines, gebaseerd op hun persoonlijke capaciteiten en projectervaring.
P5	S11: Betrek financiële (onafhankelijke) experts om de opdrachtgever te helpen bij het toetsen van prijs-gerelateerde aspecten van het design.

	S12: Doe moeite om de juiste mensen voor het project te winnen door middel van een interne sollicitatieprocedure.

Aangezien de implementatie van strategieën is gebaseerd op de aanwezigheid van de perspectieven binnen een projectteam, betekent dat niet dat alle strategieën in een project moeten worden toegepast. De aanwezige perspectieven geven aan welke strategieën toegepast kunnen worden om de samenwerking tussen opdrachtgever en opdrachtnemer tijdens de transitie in een Bouwteam project te verbeteren.

Dit onderzoek adviseert organisaties om de kernwaarden: transparantie en wederzijds vertrouwen op te nemen in hun personeelsbeleid. De meerderheid van de perspectieven erkent het belang van deze twee kernwaarden. Organisaties kunnen overwegen om mogelijkheden te creëren waarin deze kernwaarden kunnen worden ontwikkeld, zodat alle werknemers denken en handelen naar deze waarden.

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1 INTRODUCTION

Chapter 1 gives an introduction to the research. Section 1.1 discusses the problem context. Section 1.2 explains the problem statement. Section 1.3 presents the research objective and research questions. Section 1.4 describes the scientific relevance. Section 1.5 describes the research design. The Chapter ends with the structure of the report in Section 1.6.

1.1 Problem context

More was built in recent years and order books are reaching record heights (De Hoog, 2020). However, the profit margins remain low in which failure costs play an important role (Buijs, 2019). When asked about the reason for the failure costs, reference is made in particular to the coordination of processes in the construction industry, often paying too little attention to the feasibility of designs (BouwKennis, 2012). To avoid failure costs, more attention to feasibility in the design phase is needed (BouwKennis, 2012). It is claimed that collaboration is the key to success and can lead to better quality, a more efficient construction process and a high reduction of failure costs and delays (Boudewijn & Broekhuizen, 2007). However, collaboration turns out to be more difficult than it seems (Academy, 2018).

A cause for problems with collaboration is human factors (Remmers et al., 2018). A good way of dealing with human factors ensures increasing collaboration in the construction sector (Orando, 2013). There are all kinds of conditions such as contract types, schedules and systems that affect collaboration, but in the end, those conditions are just 'things' and people are the ones that make the difference (Broekhuizen & Boudewijn, 2006). Profits can be achieved from maintaining good collaboration (Chao-Duivis, 2012). Therefore, it is important to dive into how to organize collaboration well and how to cope with human factors (Boijens, 2008).

One way that attempts to improve collaboration within construction projects is the use of a Bouwteam (Groot, 2020). In a Bouwteam, the design is done by the work of consultants (Chao-Duivis, Koning, Ubink & Bruggeman, 2018). In addition, the contractor also takes part in the design process, because of his knowledge of the costs of realizing a design and his knowledge of the execution of the design (Chao-Duivis, et al., 2018). This makes it possible to design more cost-consciously and to reduce the probability of changes during the execution (Lagemaat, 2015).

From a legal point of view, the Bouwteam is dismantled after the design phase and thus does not extend over the execution phase (Chao-Duivis, et al., 2018). After the completion of the design, the client enters into a separate contract with the contractor that was already involved or with another contractor for the execution of the design (Chao-Duivis et al., 2018). So, what about collaboration then, during this transition into the execution phase?

1.2 Problem statement

Complexities arising from bad collaboration are the causes of a variety of the construction industry's biggest issues (Bouchlaghem, 2011). Better collaboration can lead to a more effective construction process, better quality, less frustration, less legal tug of war and satisfied team members (Boudewijn & Broekhuizen, 2007). Therefore, it might be useful to pay more attention to better collaboration (Elston et al., 2018). A Bouwteam involves the contractor earlier than in the traditional model which has a meaningful impact on collaboration (Abramowicz et al., 2020). However, the way of collaboration in a Bouwteam project can still lead to stagnation which results in risks such as damage to the project or failure costs (Boijens, 2008). In practice, sometimes, Bouwteams led to struggles and demotivation among Bouwteam members (Van Riggelen, 2019). This is also because a Bouwteam is not always used in the right way (Massar, 2020). Bouwteams are not intended for every project, nor is it a guaranteed success (Koning, 2020). The transition into the execution phase is a very interesting phase. How does working together in a Bouwteam influence collaboration during the transition into the execution phase? The work of the Bouwteam continues in the execution phase which refers to chain integration (Chao-Duivis, 2012). It could be assumed that the close collaboration in the Bouwteam phase will also bear fruit in the execution phase, provided that the Bouwteam phase has gone well (Chao-Duivis, 2012). Collaboration is subjective and can differ from person to person (Weber, 2018). It might be

valuable to know more about how collaboration should be organized (Chao-Duivis, 2012) as client and contractor could benefit from a successful collaborative partnership (Ten Hoeve, 2018) during the transition into the execution phase. It is important for client and contractor to know what the thoughts are on collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project, so that the policy can be adjusted accordingly. Strategies can form a basis to adjust policy, which should be implemented by the people who set up and manage the Bouwteam project and team, as they can positively influence (read: improve) the collaboration between client and contractor during the transition from the Bouwteam phase into the execution phase.

1.3 RESEARCH OBJECTIVE & QUESTIONS

1.3.1 Research objective

The objective of the research is to provide insight into ways to improve client-contractor collaboration in a Bouwteam project during the transition from the Bouwteam phase into the execution phase.

1.3.2 Research question

The research question has been formulated according to the objective, namely:

'In what way can client-contractor collaboration be improved in a Bouwteam project during the transition from the Bouwteam phase into the execution phase?'

1.3.3 Sub-questions

To be able to answer the main research question, sub-questions will be answered.

1. *'What is needed in the previous phases to make the execution a success, in terms of collaboration, in a Bouwteam project?'*
2. *'What are the experiences during the transition into the execution phase in a Bouwteam project?'*
3. *'What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?'*
4. *'How can client and contractor use the perspectives in practice to influence collaboration during the transition in a Bouwteam project?'*

1.4 SCIENTIFIC RELEVANCE

The lack of collaboration in a Bouwteam is felt as a major problem (Laaper, 2020). Taking the problems with collaboration (mentioned in Section 1.2) into consideration, according to Van de Hoef (2020), it would be valuable to do more research about collaboration in a Bouwteam project. The lack of collaboration between the client and contractor can limit the potential capital gain of a Bouwteam (Lagemaat, 2015). Client and contractor should collaborate for different reasons: collaboration encourages teamwork, stimulates information sharing, ensures a completed project within the time, improves quality of service and facilitates better communication among project members (Rahman et al., 2014).

Organizations change over the years which indicates that how to arrange collaboration changes as well (Franç et al., 2012). The continuous research on the improvement of collaboration within Bouwteams over the years shows the importance of this subject (Boijens, 2008; De Hoog, 2020; Sewalt, 2019; Van den Hoef, 2020; Van der Pas, 2021; Van Loenhout, 2013; Van Riggelen, 2019). The goal in a Bouwteam project is collaboration (Chao-Duivis, 2012). If the Bouwteam's collaboration is properly arranged, added value might be proved (Tauw, n.d.). All parties have to take their responsibility and create an

open and honest environment together (De Hoog, 2020). This builds up trust (Van Riggelen, 2019). Sometimes, the creation of such an open environment was a problem for clients and contractors (Tauw, n.d.) Although, it is important to come to a good collaborative relationship (Van Riggelen, 2019). Therefore, further research is needed about the way different parties within a Bouwteam could collaborate (Lagemaat, 2015). Hence, this research focuses on collaboration between client and contractor. More effort and focus is needed in client-contractor collaboration to improve the overall project (Suprapto, 2016; Van Riggelen, 2019).

Previous researches show the contractor's perspective, the client-contractor collaboration (De Hoog, 2020) or the consultant's perspective (Sewalt, 2019). Van Riggelen (2019) analyzed client-contractor-consultant collaboration from the tender phase till the execution phase. However, the main focus in these researches was the front of a Bouwteam project, the Bouwteam phase. According to Van de Hoef (2020), it would be valuable to do more research on the attitudes towards collaboration during other phases. It lacks in-depth knowledge about the client-contractor collaboration during the transition into the execution phase. Therefore the focus on collaboration during the transition is an interesting one. This research tries to gain insight into how client-contractor collaboration can be improved during the transition into the execution phase, when the Bouwteam roles are not present anymore. The outcome of this research can be of good value to Sweco, because they can advise client or contractor on how to improve the process of collaboration after the Bouwteam phase.

1.5 RESEARCH DESIGN

To answer the first sub-question: '*What is needed in the previous phases to make the execution a success, in terms of collaboration, in a Bouwteam project?*' the influencing collaboration factors of phases prior to the transition are identified. This is done because these phases might influence collaboration till the execution phase (Van Riggelen, 2019; Boijens, 2008). In previous phases, seeds can be sown for conflicts, so what are the influencing factors for client and contractor to improve collaboration during the transition into the execution phase? This question can be answered through desk research. Desk research uses material that has been produced entirely by others (Verschuren & Doorewaard, 2010). Three categories of existing material can be used for carrying out desk research: literature, secondary data and official statistical material (Verschuren & Doorewaard, 2010). To answer this question, earlier researches are used to know what the influencing factors for client-contractor collaboration are in the tender phase, Bouwteam phase and price-negotiations phase. De Hoog (2020) developed a set of success factors for collaboration during the Bouwteam phase based on 12 articles. This Q-set is used as basis for this research. In 2012 Chao-Duivis did a study about Bouwteams, which was not taken into consideration in the set of De Hoog (2020), but might contain relevant information about collaboration within Bouwteams and is therefore also used to extract additional collaboration factors. In addition, Van der Pas (2021) did a study on the collaboration during the price-negotiations phase in a Bouwteam project. As this research was after the study of De Hoog (2020), there has been chosen to take important factors from Van der Pas (2021) into account for this research as the price-negotiations might be of influence on the transition. The transition only occurs when there is price-agreement. A combination of these three researches is used to collect collaboration factors for this research. Although, all these factors apply to the phases prior to transition. The question is whether these factors are also applicable to the transition and/or whether factors are missing. Therefore, the second sub-question is formulated.

To answer the second sub-question: '*What are the experiences during the transition into the execution phase in a Bouwteam project?*' semi-structured interviews (SSIs) are held with consultants from Sweco who experienced the transition into the execution phase in a Bouwteam project. This is a qualitative research method which enables to get to know the underlying beliefs and opinions about a subject (Adams, 2015). The outcome of this question results in specific collaboration factors that have been

very useful or that have been lacking during the transition. SSIs are a mix of closed- and open-ended questions, often accompanied by follow-up why or how questions (Adams, 2015). This results in a lot of information from the interviewee which is needed to answer the second sub-question, as there is no information in literature available about these experiences in a Bouwteam project during the transition into the execution phase. SSIs are time-consuming and labor intensive (Adams, 2015). To know the independent thoughts of each person, SSIs is a suitable research method (Adams, 2015). The additional factors for the transition are added to the list of factors found in the first sub-question. The result is a complete list of factors for the phases prior to transition in a Bouwteam project. This list is validated in three validation interviews which leads to the final Q-set that is presented in an online survey to the respondents for this research. Analysis of the answers of the online survey answers the next sub-question.

The third sub-question: '*What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?'* answers what the point of views are around client-contractor collaboration during the transition in a Bouwteam project. Collaboration is very subjective. Combining this qualitative, subjective data with quantitative, objective data investigates the subjective views of those directly involved in this particular topic (Coogan & Herrington, 2011). Therefore, the Q-method is an appropriate method (Coogan & Herrington, 2011). It brings a scientific framework to bear on the elusiveness of subjectivity (Coogan & Herrington, 2011). The Q-methodology does justice to all points of views (Kroesen, 2018). Respondents are asked to decide what is meaningful and significant from their perspective (Coogan & Herrington, 2011). This is done in an online survey with clients, contractors and consultants (consultants can have a role on both sides) who experienced the transition. The final Q-set, from the previous sub-question, is presented to respondents who are asked to rank those statements in a forced ranking scheme. The result of the Q-method is the perspectives for client and contractor in terms of collaboration during the transition into the execution phase. Eventually, the perspectives help to develop strategies to improve the collaboration between client and contractor during the transition in a Bouwteam project.

The fourth sub-question: '*How can client and contractor use the perspectives in practice to influence collaboration during the transition in a Bouwteam project?'* generates strategies for the different perspectives that are identified in the previous sub-question. Based on input from five experts regarding positive distinguishing statements for each perspective, substantiation from literature, and an expert evaluation interview, strategies are developed. These strategies make clear how to improve client-contractor collaboration during the transition.

1.6 STRUCTURE

This report consists of seven Chapters. Figure 1 shows an overviews of the structure of this research. Chapter 2 introduces Bouwteams, describes collaboration in different Bouwteam phases prior to transition, and answers the first sub-question: *'What is needed in the previous phases to make the execution a success, in terms of collaboration, in a Bouwteam project?'.* Chapter 3 includes interviews to find collaboration factors specific for the transition and answers the second sub-question: *'What are the experiences during the transition into the execution phase in a Bouwteam project?'.* Chapter 3 also explains the Q-methodology and the factor analysis. Chapter 4 answers the third sub-question*: 'What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?'.* Chapter 5 answers the question: *'How can client and contractor use the perspectives in practice to influence collaboration during the transition in a Bouwteam project?.* 'Chapter 6 explains the discussion and limitations. Chapter 7 includes the conclusion and recommendations.

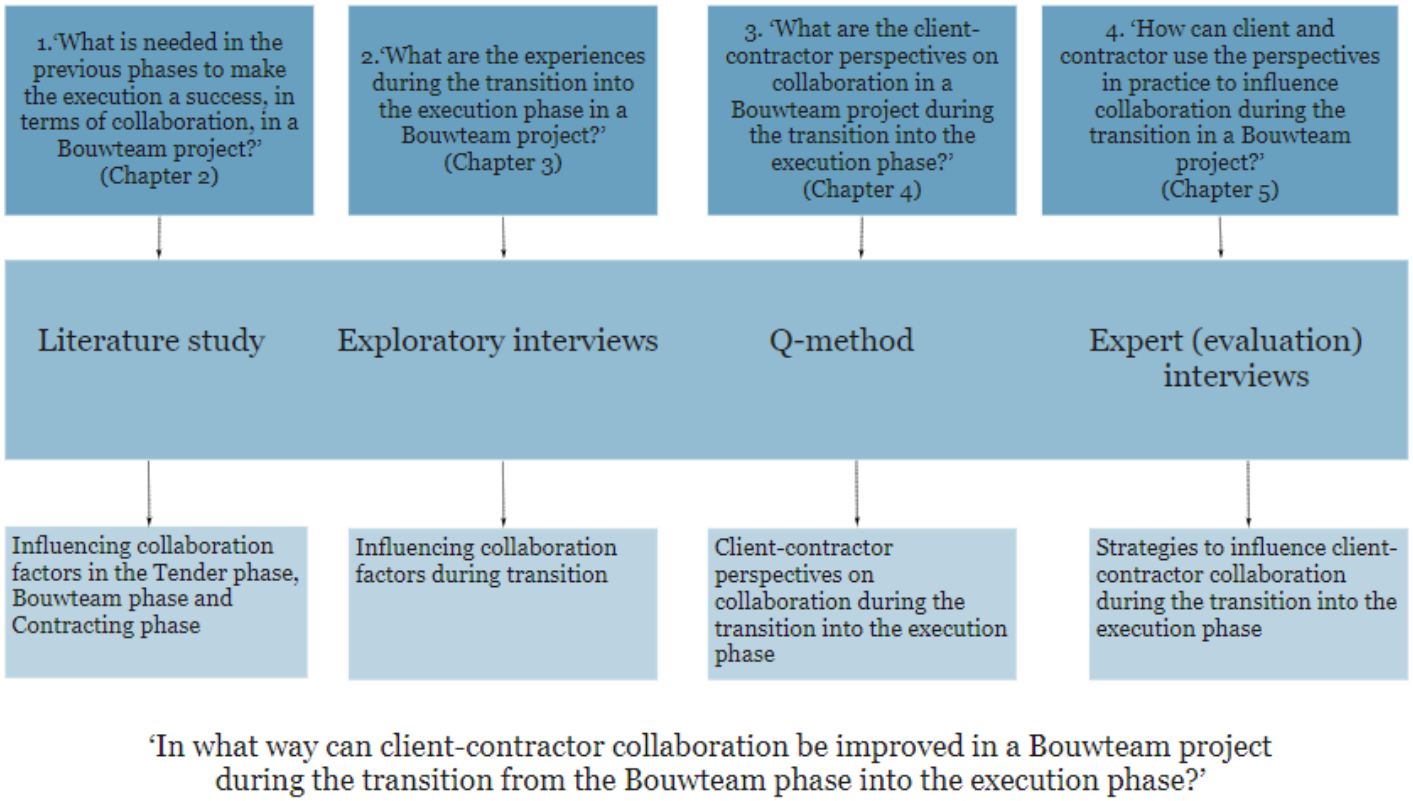

Figure 1: Research design

2 COLLABORATION IN BOUWTEAMS

Chapter 2 answers the first sub-question: '*What is needed in the previous phases to make the execution a success, in terms of collaboration, in a Bouwteam project?'.* Before this question is answered, the idea of a Bouwteam is explained. The Bouwteam members organize various activities, and how a Bouwteam chooses to collaborate might be influential on the collaboration during the transition. Section 2.1 presents the Bouwteam definition, phases in a Bouwteam project, characteristics of complex projects, Bouwteam forms and (dis)advantages of a Bouwteam. Section 2.2 describes collaboration in general, in Bouwteam projects and Bouwteam model agreements. Section 2.2 comes up with important collaboration factors in a Bouwteam project. The Chapter ends with a conclusion in Section 2.3.

2.1 BOUWTEAM

A Bouwteam is a collaborative model in which the contractors participate in the design work as consultants, contributing their knowledge of costs and implementation, and is promised to be the first and only one to make an offer for the execution (Chao-Duivis, 2012; Laan 2020). Bouwteam is a Dutch principle, literally translated by 'Building team', and since this collaborative model is widely known as Bouwteam (e.g. Sewalt, 2019; Van Riggelen, 2019; De Hoog, 2020; Van der Pas, 2021), this term is used throughout this research. Different parties can be involved in a Bouwteam, see Figure 2. The parties that are involved depend on the goal of the project. This research focuses on the relationship between client and contractor. The consultant can be hired by the client or contractor. Therefore his role is also taken into consideration in this research. The consultant can share his knowledge about design and always has added value to some extent (Sewalt, 2019). Besides, the consultant can provide strategy on matters such as costs, planning and technical preconditions and can take the role of a mediator (Stichtinghope, 2016). Thereby, the consultant generally has more experience with the design process than contractors (Stichtinghope, 2016).

Figure 2: Parties in a Bouwteam

2.1.1 Phases in a Bouwteam project

A Bouwteam project can be a form of two-phases contract in which the client and contractor collaborate early on in the project (Aanbestedingsnieuws, 2020). The Bouwteam is the first phase of the two-phases contract (Heikens, 2020). The execution is the second phase of the two-phases contract (McKinsey & Company, 2019). A Bouwteam project consists of different phases, illustrated in Figure 3. This research focuses on the transition from the Bouwteam phase into the execution phase, respectively phase 1 and phase 2. The Bouwteam phase is the phase in which both client and contractor are involved in a Bouwteam (Van Riggelen, 2019). In the execution phase, execution of the project takes place based on the Uniform Administrative Conditions (UAC) or Uniform Administrative Conditions – Integrated Contracts (UAC-IC). However, the phases prior to the transition might have an influence on the collaboration during the transition. Therefore, the tender and the Bouwteam phase are taken into consideration in this research. These phases are discussed below.

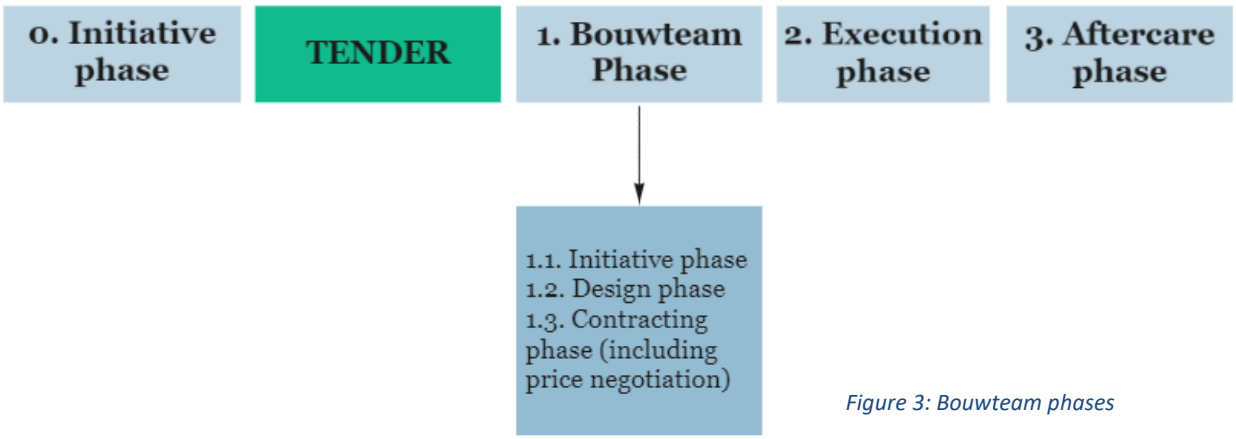

Figure 3: Bouwteam phases

Tender

The tender includes the participation in a Bouwteam and the execution of the design developed in the Bouwteam (Chao-Duivis, 2012). The contractor that suits the Bouwteam and project the best, is sought. The activities must be able to be carried out by any contractor who knows the type of projects. The intention is to execute the project with the 'Bouwteam-contractor' when client and contractor reach agreement on the price-quality ratio (Van Riggelen, 2019). A commonly used tender procedure used for Bouwteams is the Restricted Procedure in which the client can optionally select contractors to apply for the job (Stichtinghope, 2016). At least three parties are invited to submit their ideas for the project (Van Riggelen, 2019). Based on the selection criteria defined by the client, the potential contractor will deliver a number of documents (Van Riggelen, 2019). Potential contractors are usually asked to specify the risks of the project, the opportunities, the action plan and their own role in the Bouwteam, including their vision on collaboration (Stichtinghope, 2016). Binding prices are usually given for the costs involved in the execution and furthermore surcharges for general costs, profits and risks are often provided (Chao-Duivis, 2012). Selection procedure takes place based on Most Economically Advantageous Tender (MEAT) on criteria such as experience, collaboration, knowledge and quality (Mndot, 2012). The winner enters a Bouwteam project if price-agreement is reached (Chao-Duivis, 2012; Gulijk & Van den Berg, 2017). When there is no price-agreement, the parties split and the tender takes place again, after the Bouwteam phase. This other moment of tender, i.e. when there is no price-agreement, is disregarded within this study.

Bouwteam phase

For the Bouwteam phase, Bouwteam model agreements are developed. These Bouwteam models only relate to the Bouwteam work and the way to get to towards the execution phase, in which another contract is entered (Chao-Duivis, 2012). The realization agreement (UAC or UAC-IC) is not part of the Bouwteam model agreement. There are two Bouwteam model agreements: VG 1992 and DG 2020. These models accurately record what the client's and contractor's rights and obligations are in the Bouwteam (Smith, 2011). A brief description of these Bouwteam models is given in Appendix A. The Bouwteam model agreement ends when the price-negotiations with the contractor are unsuccessful and no execution contract is concluded (Laan, 2020). The Bouwteam phase consists of the initiative phase, design phase and the contracting phase. The contracting phase also includes the price-negotiations. These are discussed below.

<u>Bouwteam phase 1.1 – Initiative phase</u>

After the tender phase, the Bouwteam participants are selected. At the beginning of a Bouwteam, there is room for Bouwteam members to talk about how to collaborate with each other, what the expectations are, the common-set objectives, how to communicate and what the success and failure factors are (Van Riggelen, 2019). Legal aspects can be indicated here, such as permits, responsibilities and conditions (Boijens, 2008). Collaboration starts in this phase, but has to be maintained during the whole Bouwteam process and thereafter (De Hoog, 2020). The initiative phase should not be underestimated or rushed (Van Riggelen, 2019), as it might create a good foundation for collaboration.

<u>Bouwteam phase 1.2 – Design phase</u>

Now that the Bouwteam is complete, it is time to start with the design phase with the design team. According to Van den Berg a design team is defined as a: "temporary partnership on an equal footing between representatives of the roles in the building process of initiation, design and execution, where the participants in a coordinated manner perform the tasks arising from their particular roles and on top of this, where possible, assist their fellow participants to perform their tasks by giving strategy. "(Gulijk & Berg, 2017). The purpose is to explore different options, and to design a project that is in line with the client's requirements. Both client and contractor are largely entitled to select their own consultants and bring them to the Bouwteam. These consultants share their specific knowledge and propose improvements to the design. All involved parties together will contribute to optimize the design (Van Riggelen, 2019). Communication is very important within the Bouwteam (Jansen &

Metsemakers, 1999). Members meet regularly to discuss the progress of the project, inform each other on specific topics, make decisions and agree on the next steps (Van Riggelen, 2019).

Bouwteam phase 1.3 – Contracting phase

For the price-negotiations, the Bouwteam model agreement includes an arrangement for the procedure to be followed (Gulijk & Van den Berg, 2017). The contractor determines its price based on the design and gives an open cost estimate to the client (Van Riggelen, 2019). Price-negotiations can then take place and changes can be made until client and contractor reach agreement on the price-quality ratio (Van Riggelen, 2019). These negotiations take place between the Bouwteam phase and the execution phase (Chao-Duivis, 2012). Also, the conditions for this price are determined. If the contractor comes up with risks afterwards that should have been identified in this phase, it is the contractor's problem and he will not be paid (Stichtinghope, 2016). If the client and contractor are unable to reach an agreement on the price-quality ratio, the offer will be evaluated by a third party. When the bid is assessed unreasonable, the client can terminate the Bouwteam contract and is allowed to find another contractor for the execution (Van Riggelen, 2019). Chances are that the contractor loses its money (Stichtinghope, 2016). However, it might be desirable for the client and contractor to reach an agreement. Otherwise, the client loses the contractor who had all the information to complete the project and has to start a new tender which costs time and money (Lagemaat, 2015). In addition, the contractor already invested a lot of time, money and effort in the project, and he could probably build the project with little risk and preparation (Van Riggelen, 2019). If the contractor meets the conditions of the Bouwteam, then he is appointed for the execution.

Execution phase

The collaboration in a Bouwteam is a collaboration of a temporary nature, which ends when the execution phase is reached (Chao-Duivis, 2012). Then the ways of the participants in the Bouwteam separate, because if the execution work is assigned to the contractor, the contractor does not have the role as a consultant anymore, but as the executed contractor (Chao-Duivis, 2012). Execution of the project takes place based on the UAC or UAC-IC (CROW, 2020). The intention of Bouwteams is to continue with the same parties in the execution phase (Smit, 2011). This results in optimal transfer of knowledge by obliging the executed contractor in the execution to deploy the same managerial team as in the Bouwteam phase (Chao-Duivis, 2012). When the parties remain operational during the execution phase, it results in a better progress of the construction process and retaining acquired insight into the execution phase (Smit, 2011), resulting in most Bouwteam projects having a well-running execution phase (Van Riggelen, 2019). After all, the continuing members can make more informed decisions in all phases of the construction process and activities can be better coordinated (Smith, 2011). This phase happens after the transition, which is why no focus on this phase, and no factors that focus on this phase, are elaborated on in this research.

2.1.2 Characteristics of complex projects

Construction industry projects are different in the degree of complexity, but there always is a certain complexity within the project. Having different degrees of complexity means that different (specialized) companies and (expertized) people are involved. These different companies and people might be linked to different characteristics of complex projects. As Bouwteam projects are construction projects, it means that certain perspectives might be linked to one or several project characteristics for complexity (Hertogh, 1997) which therefore are described below (Hertogh, 1997).

- Major influence on surroundings: The project has a major influence on the surrounding, especially large projects. These projects change the existing space and social relations.
- Static provision and dynamic surrounding: The project is a static character, because it has a long lifespan, and is placed in dynamic surroundings, such as rapid-changing due to new

technologies. These projects do not change much after they are built, but the surroundings do change.

- Non stand-alone project: The project has influence or is influenced by other (related) projects. These projects should be in coherence with other projects, as the influence on each other needs to be taken into account.
- Multiple goals: The project has more goals than just being realized, which can be project related or external goals. These projects can have goals such as being part of a total system (e.g. drink water treatment system) or a more abstract goal (e.g. reducing the number of vehicles on the road).
- Complementary perceptions: The project has to be viewed from different perceptions, because people will look to the project in different ways. These projects need to take different perceptions into account, such as society, transport, exploitation, realization, and engineering.
- Multiple actors involved: The project has to deal with multiple actors who are involved in the project, having different interests in the project and outcome. These projects need to be aware that multiple actors want to be involved, and their interests taken into account and taken care off.
- Unequal division of benefits and burdens: The project does not have an equal division of benefits and burdens for stakeholders, because the benefits and/or burdens cannot be quantified equally. These projects most often have short-term single issues (e.g. farmer has to leave his land), but long-term benefits (e.g. boosting the economy).
- No straight-line process or unreversible process: The project does not follow a straight-line process, because it exists of an iterative process, and/or is not an unreversible process, because feedback and feedforward can lead to additional iterations. These projects are very common, and many different ways can lead to a good end result.
- Long-lasting project: The project requires a lot of time and has a long running time. These projects most likely have a long preparation time and a long execution time.
- Political sensible project: The project has political sensibility due to required (financial) support. These projects need to be set up very well considered, for example by having compensation measures for noise or disturbance.

2.1.3 Two Bouwteam forms: Bouwteam UAC & Bouwteam UAC-IC

A distinction is made between Bouwteam UAC and Bouwteam UAC-IC (DuurzaamGebouwd, 2020), depending on the degree to which the design must be designed in the Bouwteam phase. There are four degrees of design in a design process: sketch design (SO), preliminary design (VO), final design (DO) and executive design (UO). These abbreviations are derived from the Dutch notions. Despite these standard contract forms, there is room for every client to give its own interpretation.

(Chapter continues on the next page)

Bouwteam UAC

Within the Bouwteam UAC, see Figure 4, the Bouwteam is working towards a complete UO that will be priced and execution takes place based on the UAC (Merema et al., 2019). At UAC, the client keeps control from start to finish (Heikens, 2020).

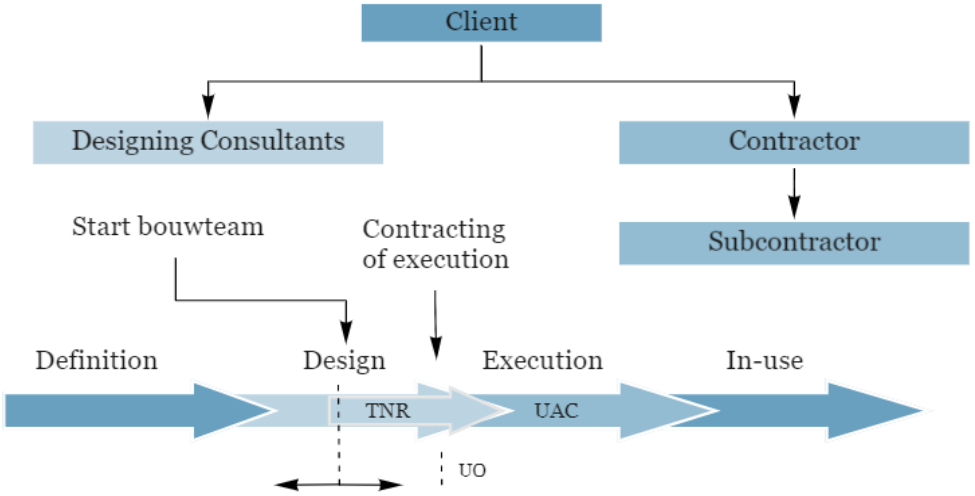

Figure 4: Bouwteam UAC (DuurzaamGebouwd, 2020)

Bouwteam UAC-IC

With the Bouwteam UAC-IC, see Figure 5, the contractor is given more tasks, more responsibility and more risk. The final design (UO) is made in the Bouwteam phase and in the execution phase based on UAC-IC. (Merema et al., 2019). However, there are different ways to arrange under an UAC-IC. The contractor can provide the entire design, but less far-reaching assignments are also possible (Chao-Duivis, 2012). It ranges from a list of requirements to a fully elaborated design.

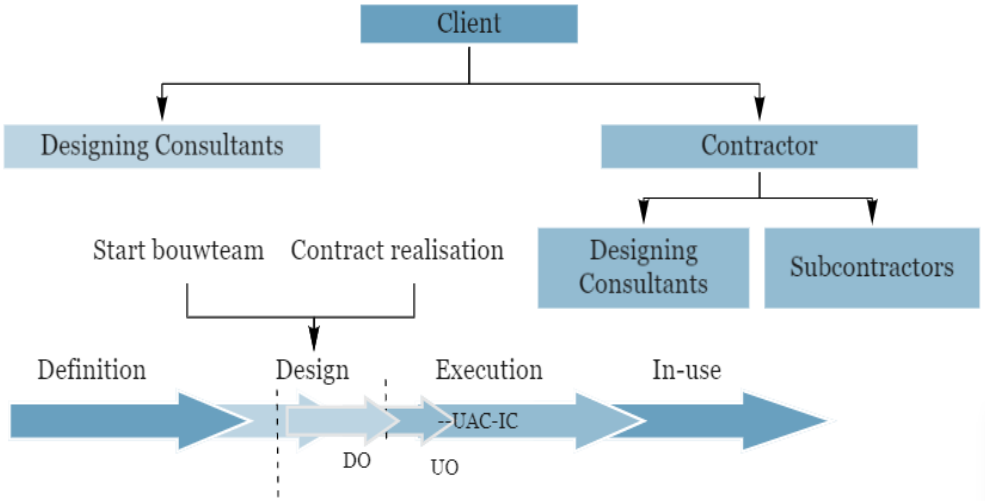

Figure 5: Bouwteam UAC-IC (DuurzaamGebouwd,, 2020)

2.1.4 Advantages & disadvantages of a Bouwteam

The advantages and disadvantages of a Bouwteam are discussed below in order to get insight in specific aspects of a Bouwteam, which can be used to determine whether or not to use a Bouwteam.

Advantages

- Co-creation where the optimal design can be made with all parties (Duurzaamgebouwd, 2020. The intensive collaboration of parties can result in a longer design phase, but because of the better design of the project, more expensive adjustments in later phases can be prevented which reduces costs (DuurzaamGebouwd, 2020; PAOTM, 2019).
- Regular progress of the design work and the fact that timely obtaining of decisions and approvals is promoted (Dahoux, 1970). Earlier involvement of all parties creates an overview of the (im)possibilities of the design at an early stage, as well as discuss alternatives, product and material choice, costs and time consequences, which reduces failure costs and ensures a better quality (Smith, 2011). This causes fewer interruptions due to a smoother preparation process which results in time saving (Chao-Duivis, 2012; PAOTM, 2019).
- Influence on the result as a client (Schijndel, 2017). The client has a leading role in the Bouwteam and is more up-to-date with the plan to be made for him. The client gains insight into the financial and time consequences of the changes, not only at the design stage, but also if he would like to make them later (Dahoux, 1970).
- Different parts of the project are started up and executed at the same time. Preparation and construction time can therefore be shortened considerably in this way (Schijndel, 2017; PAOTM, 2019).
- A Bouwteam can be used when there is a technical challenge. Bouwteam members look for the technical boundaries and if they can push the boundaries a bit, but of course remain realistic (Herzog, 2019). A Bouwteam makes it possible to build specific and accurate designs and is therefore suitable for difficult projects (Van Riggelen, 2019; Herzog, 2019). Working in a Bouwteam can lead to reduction of the risk margin and to make more possible in terms of design (Herzog, 2019). A Bouwteam is suitable for complex projects with time and money pressure, large risks, uncertainties and unclear scope (Van Riggelen, 2019). A Bouwteam is used in specific circumstances to overcome a certain difficulty in a project. Bouwteams might be less suitable for a simple project without real complexity (Van Riggelen, 2019).

Disadvantages

- The contractor bases his price on an unfinished product. It is hard to say what the precise costs are (Schijndel, 2017).
- Additional costs due to the more extensive tender procedure (Hoedemaker, n.d.).
- From the moment the contractor enters, there are less market forces (Buitenruimte, n.d.). This is because the contractor who participated in the Bouwteam is promised to be the first and only one to make an offer for the execution (Chao-Duivis, 2012). However, the contractor knows that if his offer is not attractive to the client, the client can, possibly after the intermediate step of an advisory cost expert, put an end to the price-negotiations and switch to another contractor.
- It is not clear in every case what the client receives. Partly, this can be stimulated through extensive descriptions of the desired quality.
- The client has a very active role in the Bouwteam phase compared to the traditional setting (Tauw, n.d.). Therefore, the Bouwteam requires a bigger capacity for the client to participate. The client needs to be involved and think along.
- A Bouwteam has its own dynamics. There is joint steering now and parent organizations do not have direct influence on the Bouwteam anymore.
- A Bouwteam is an organizational challenge. There are a lot of parties involved in a Bouwteam. It is a challenge to cope with all different parties and keep everyone satisfied.

2.2 COLLABORATION

Camarihna-Matos & Afsarmanesh (2014) define collaboration as: "a process in which entities share information, resources, responsibilities to jointly plan, implement and evaluate a program of activities to achieve a common objective" (p. 311). Collaboration is the process of making something together. Bouchlaghem (2011) defines collaboration as: ''an activity in which a shared task is achievable only when the collective resources of a team are assembled. Contributions to the work are coordinated through communications and the sharing of information and knowledge" (p.6). Collaboration is about a more durable and pervasive relationship. It is about full commitment to a common objective, strong involvement of all participants in a project, professionalism, clear communication, effective monitoring of what is going on and feedback (Kamminga, 2009). Thereby, collaboration includes collective sharing of risks and thus entails a higher level of trust between parties (Mattessich & Monsey, 1992). Collaboration is about interaction between team members, performing and assigning tasks and working together in a team (Franç et al., 2012). In short: the process of parties working together with a common objective is called collaboration (De Hoog, 2020).

Within a Bouwteam, collaboration takes place in a project team. According to Franç et al. (2012) a project team is defined as: "complex human organizations constrained by a context requiring project work" (p. 5). The reason project teams are complex is because team members are required to be capable of changing contingencies and continually improve during the process (Franç et al., 2012).

2.2.1 Aspects of client-contractor collaboration

Client-contractor collaboration can be defined as: "the behavioral interaction between client and contractor working together for the purpose of achieving specific project and business objectives by effective utilization of each party's specific resources and capabilities based on shared values and norms" (Suprapto, 2015). According to Suprapto et al. (2014) there are six categories that represent the most important aspects of collaborative relationships between client and contractor: capability, contract, joint working, relational attitude, team integration and team working. They are considered as high order factors of the elements for collaborative relationship (Suprapto, 2015). These aspects are explained in Table 3.

Table 3: Aspect of client-contractor collaboration (Suprapto, 2015)

Aspect	Definition (Suprapto, 2015)
Capability	"This refers to client's and contractor's project management capability, technical capability in a specific area, financial strength and perceived organizational reputation."
Contract	"A contract specifies roles, responsibilities, remuneration scheme, payment terms and phases, incentive scheme, distribution of risk and dispute resolution and conflict settlement."
Joint working	"A collaborative relationship enables parties to make joint efforts for managing project tasks. This can be seen through: joint decision-making, joint problem solving and dispute handling."
Relational attitude	"In each party there are different attitudes and mindsets that are brought into the relationship when working together in a team. Since both parties interact, a set of relational norms, factors or routines are co-developed specific to their relationship. This could be: inter-organizational trust alongside organizational cultural fit, open communication, long-term orientation and top management commitment."
Team integration	"A collection of practices, methods and behaviors that promote a favorable environment where information and knowledge are exchanged freely among the parties. Aspects of team integration are: creation of a single integrated project team, seamless operation without organizational boundary, unrestricted cross-sharing of information, equitable relation and respect for all and collective responsibility for all project outcomes."

Team working	"Teamworking can be defined as the extent to which members in a team work together on the basis of synergies in their relationships. Common aspects for teamworking are: team identity or cohesion, shared vision, information/knowledge sharing, team member's affective trust, attitude towards diversity in problem solving and reflection and self-assessment."

2.2.2 Collaboration in Bouwteam projects

The phases prior to transition might influence collaboration during the transition. The influence can either be positive or negative, for example price-negotiations can cause conflicts and have a negative impact on the collaboration (Van der Pas, 2021). Therefore, it is investigated to what extent these factors are applicable to the transition: are these conditions the same for the transition, or is more needed?

Last year, De Hoog (2020) developed a Q-set, see Table 4. This set focuses on 38 success factors for client-contractor collaboration during the Bouwteam phase in a Bouwteam project. According to De Hoog (2020): "Success factors are activities, facts, conditions or influences that can contribute to the results of a project and can be influenced positively or negatively. Therefore, success factors are not involved in final assessments, meaning that success factors are not used to measure project success". All success factors are categorized under the aspects of client-contractor collaboration by Suprapto et al. (2015), see Section 2.2.1. De Hoog (2020) collected success factors for collaboration derived from literature and interviews. For the in-depth statements from literature, De Hoog (2020) conducted an extensive literature study with a primary focus on 12 papers and researches which resulted in 147 statements. Thereby, De Hoog (2020) added 67 success factors from interviews and made a selection of statements to define the Q-set. The criteria for a statement to get included in the Q-set is that each individual statement should have a contribution to the subject of interest (De Hoog, 2020).

Table 4: Success factors of collaboration in Bouwteams

Success factors of collaboration in Bouwteams (De Hoog, 2020)
Capability
1. Sufficient resources for collaboration 2. Early involvement of stakeholders 3. Contractor's track-record in terms of innovation 4. A continued involved project team leader 5. Early involvement of contractor 6. Team leader's leadership ability
Contract
7. Contractual financial incentives (positive and negative) 8. Clear definition of roles before the Bouwteam starts working 9. Fair risk allocation 10. Specified payment arrangements 11. Financial range is agreed upfront by client and contractor 12. Defined scope of the Bouwteam
Joint working
13. Shared risks 14. Agreed process for dispute resolution 15. Performance management 16. Joint planning with all participants 17. Joint problem solving 18. Propose solutions when raising problems
Relational attitude
19. Support of senior management from both sides

20. Long-term orientation
21. Understanding each other's objectives
22. Project team leader's adaptability to changes in the project
23. Transparency
24. Win-win attitude
25. Strive for equality in behavior and duties for client and contractor
Team integration
26. Development of common processes
27. Integrated project team
28. Separate conversations in small groups per discipline
29. Unrestricted cross-sharing of information in the project
30. Equitable relation and respect for all
31. Involving the right people at the right moment
Team working
32. Regular meetings
33. Mutual trust
34. High level of commitment
35. Good communication
36. Alignment of objectives
37. Have an elaborated project-start up
38. Evaluate the Bouwteam during the project

The Q-set published by De Hoog (2020) is taken as a basis for the Q-set used in this research, as the Bouwteam phase is the basis for the transition. Two relevant sources are analyzed to come up with additional collaboration factors, which results in a more complete Q-set regarding the transition, and not only a Q-set focused on the Bouwteam phase. The additional factors are shown in Table 5 and the relevant sources are described below.

The first relevant source regarding Bouwteams is the study of Chao-Duivis (2012). Chao-Duivis is an experienced researcher on among others Bouwteams and also published multiple scientific sources on this subject. During her research to provide regulations to the market on how to work in a Bouwteam, Chao-Duivis (2012) came up with different important factors for collaboration within Bouwteams. This research was not taken into account in the Q-set by De Hoog (2020), therefore additional collaboration factors are extracted the research of Chao-Duivis (2012). The second relevant source regarding the price-negotiations which happens at the end of the Bouwteam phase, is the study of Van der Pas (2021). The price-negotiations determine whether or not the transition to the execution phase continues with the same parties involved. In practice this means that parties that do not come to a price-agreement do not continue with each other and there will not be a transition. This means that the price-negotiations and the corresponding factors for successful price are important as well and therefore additional factors are extracted from the research of Van der Pas (2021). These are also listed in Table 5.

(Chapter continues on the next page)

Table 5: Additional collaboration factors additional from literature

Additional factors categorized under capability from literature		
Enough guidance for collaboration (e.g. collaboration guideline)	The secondary contract is signed by all Bouwteam participants which states that all participants are willing to collaborate and consult.	(Chao-Duivis, 2012)
Experience of Bouwteam participants with Bouwteam projects	Open-book budget is characteristic for Bouwteams. A lack of experience might be the reason for negative views on a cost benchmark.	(Van der Pas, 2021)
Independent cost expert	Independent cost expert can be appointed for the verification of the contractor's cost estimation.	(Van der Pas, 2021)
	Cost expert can make an end to price-negotiations if he judges the price of the contractor to be unreasonable.	(Chao-Duivis, 2012)
Sufficient expertise of the client regarding costs	Sufficient expertise of the client regarding costs which allows the client to have a well-substantiated discussion about costs with the contractor.	(Van der Pas, 2021)
Additional factors categorized under contract from literature		
Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Early financial agreements by client and contractor. Early agreements about the price composition, tariffs and the price determination plan with moments of sharing the cost estimation.	(Van der Pas, 2021)
Risk management: identify, quantify and control risks	Risk identification; Start with risk identification; Risk management integration.	(Van der Pas, 2021)
Additional factors categorized under relational attitude from literature		
Innovation and technological developments: give the contractor freedom to optimize during the process	Innovation stimulates effectivity and efficiency.	(Chao-Duivis, 2012)
	Bouwteam provides opportunities for innovation.	(Van der Pas, 2021)
	Innovation stimulates effectivity and efficiency.	(Chao-Duivis, 2012)
Collaboration experience within a Bouwteam prior to the transition	There is a 'moral relationship' or a feeling that people are condemned to each other because it would take too much effort to approach the market again to find a new contractor for the execution process The amount of time and money that is already invested in collaboration results in continuation of collaboration instead of really wanting to collaborate.	(Chao-Duivis, 2012)
Additional factors categorized under team integration from literature		
Integration of cost aspects: estimate price parallel to the development of the design	Integration of cost aspects (in the design process): estimate price parallel to the development of the design; Alignment of the cost estimate and scope during the design process; Risk management integration.	(Van der Pas, 2021)
Additional factors categorized under team working from literature		
Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?	Verification of the contractor's cost estimate of the price determination process.	(Van der Pas, 2021)
A good working relationship	A good working relationship.	(Chao-Duivis, 2012)

2.2.3 Collaboration in Bouwteam model agreements

Even though human factors might have a huge influence on collaboration, there are also all kinds of conditions such as contract types, schedules and systems that affect collaboration (Broekhuizen & Boudewijn, 2006). There are two Bouwteam model agreements developed that relate to the Bouwteam phase. These Bouwteam model agreements stimulate collaboration in different ways which could affect collaboration during transition from the Bouwteam phase into the execution phase.

According to the VG 1992 model, a Bouwteam is a partnership in which the participants, while retaining everyone's independence and responsibility, work together on the preparation of the project. For that purpose each of the participants is obliged to make the best possible use of his specific experience and expertise. The VG 1992 model does not contain any provisions aimed at promoting 'teamwork', while the objective is collaboration (Chao-Duivis, 2012). On the contrary, the provisions mainly concern liability and the possibility of submitting an offer to the execution of the work. DG 2020 tries to include collaboration more by requiring participants to make clear what is expected of each other and what attitude and behavior should be present in the Bouwteam (Duurzaamgebouwd, 2020).

Van den Berg notes that in practice the Bouwteam model only occurs in the form of coordinated collaboration and that the VG 1992 model relates to that figure (Gulijk & Van den Berg, 2017). After all, the Bouwteam uses the cost expertise and the execution expertise of the contractors as the executed party participates in the design process. According to Chao-Duivis (2012) practical research confirms this finding. Besides, the new DG 2020 model also applies coordinated collaboration. The definition of a coordinated collaboration model is the following: *'The figure that individually accepted tasks are performed in regular mutual consultation, in order to ensure that the activities to be performed separately will harmonize with each other. Individual task performance is paramount in this collaboration model. The collaboration is only relatively marginal. Its purpose is to create a framework within which the various activities can be aligned as well as possible. It is appropriate to hold each participant primarily responsible for the proper fulfilment of the individually accepted task. However, this does not exclude the possibility that by contributing to the team meeting and by the involvement in each other's work that grows through the team meeting, a certain mixing of responsibilities might arise that can give rise to liability for defects in the work realized in a Bouwteam context (Gulijk & Van den Berg, 2017).'*

In addition to the Bouwteam model, in practice, a second agreement is concluded between client and all Bouwteam members which is called the coordination agreement or secondary agreement (Chao-Duivis, 2012). The agreement states that participants are willing to collaborate and communicate and how this will be done. In practice, it means that various agreements are made around the phenomenon of involving the contractor earlier than the traditional model. However, these agreements have not been negotiated in a coordinated manner. That is why a new set of general terms and conditions might be needed in which the various agreements that are concluded in practice are standardized (Chao-Duivis, 2012).

2.3 CONCLUSION

A Bouwteam is a collaborative model in which contractors participate during the design process and contribute their knowledge as consultants. Reasons for setting up a Bouwteam include the complexity of projects, high risks, uncertainties and unclear scope. Phases prior to transition can be of influence on the transition from the Bouwteam phase to execution phase. Therefore, it is looked at the phases prior to this transition: the tender and Bouwteam phase. After the Bouwteam phase, the Bouwteam is dismantled. If the execution work is assigned to the contractor, the contractor does not have a role as a consultant anymore, but as the executed contractor.

This Chapter answered the first sub-question: *'What is needed in the previous phases to make the execution a success, in terms of collaboration, in a Bouwteam project?*' Collaboration is the process of parties working together with a common objective. Better collaboration might lead to a more effective construction process, better quality of construction, less frustration, less legal tug of war and satisfied team members. There are six categories that represent the most important aspects of collaborative relationships between client and contractor are:

1. Team working: the extent to which members in a team work together on the basis of synergies in their relationship.
2. Relational attitudes: the development of a set of relational norms, factors or routines between two parties.
3. Capability: the project management capability of both client and contractor, technologic capability, financial strength, and perceived organizational reputation.
4. Team integration: collection of practices, methods and behaviors which promotes an environment where information and knowledge is shared freely.
5. Joint working: collaborative relationship which enables parties to make joint efforts for managing project tasks.
6. Contract: specifies different aspects, like roles, responsibilities, and conflict settlement.

The Q-set of De Hoog (2020) is used as basis for this research and extended with additional factors from Chao-Duivis (2012) and Van der Pas (2021). The conditions are shown in Table 6, in which the factors that form a basis are numbered and the additional factors are not. All factors are categorized under the six aspects of client-contractor collaboration.

Table 6: Success factors of collaboration in Bouwteams

Success factors of collaboration in Bouwteams
Capability
1. Sufficient resources for collaboration 2. Early involvement of stakeholders 3. Contractor's track-record in terms of innovation 4. A continued involved project team leader 5. Early involvement of contractor 6. Team leader's leadership ability
Additional factors categorized under capability from literature
Enough guidance for collaboration (e.g. collaboration guideline) Experience of Bouwteam participants with Bouwteam projects Independent cost expert Sufficient expertise of the client regarding costs
Contract
7. Contractual financial incentives (positive and negative) 8. Clear definition of roles before the Bouwteam starts working 9. Fair risk allocation

10. Specified payment arrangements 11. Financial range is agreed upfront by client and contractor 12. Defined scope of the Bouwteam
Additional factors categorized under contract from literature
Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation Risk management: identify, quantify and control risks
Joint working
13. Shared risks 14. Agreed process for dispute resolution 15. Performance management 16. Joint planning with all participants 17. Joint problem solving 18. Propose solutions when raising problems
Relational attitude
19. Support of senior management from both sides 20. Long-term orientation 21. Understanding each other's objectives 22. Project team leader's adaptability to changes in the project 23. Transparency 24. Win-win attitude 25. Strive for equality in behavior and duties for client and contractor
Additional factors categorized under relational attitude from literature
Innovation and technological developments: give the contractor freedom to optimize during the process Collaboration experience within a Bouwteam prior to the transition
Team integration
26. Development of common processes 27. Integrated project team 28. Separate conversations in small groups per discipline 29. Unrestricted cross-sharing of information in the project 30. Equitable relation and respect for all 31. Involving the right people at the right moment
Additional factors categorized under team integration from literature
Integration of cost aspects: estimate price parallel to the development of the design
Team working
32. Regular meetings 33. Mutual trust 34. High level of commitment 35. Good communication 36. Alignment of objectives 37. Have an elaborated project-start up 38. Evaluate the Bouwteam during the project
Additional factors categorized under team working from literature
Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes? A good working relationship

3 Q-METHODOLOGY

Chapter 3 consists of the Q-methodology (Q-method) and identification of specific collaboration factors for the transition. The Q-method has six steps and is explained in Section 3.1. Sections 3.2-3.6 show the first five steps. The first step in Section 3.2 answers the second sub-question: '*What are the experiences during the transition into the execution phase in a Bouwteam project?*'. The last step, the identification of the perspectives, is done in Chapter 4: Perspectives. This Chapters ends with a conclusion in Section 3.7.

3.1 Q-METHOD

The Q-method was developed to clarify people's perspectives in relation to a subject (Kroesen & Cuppen, n.d.). Perspectives are different thought patterns about a particular topic (Jedeloo & Van Staa, 2009). The Q-method combines qualitative, subjective data with quantitative, objective data to investigate the subjective views of those directly involved in this particular topic (Coogan & Herrington, 2011). The wishes for collaboration during the transition in a Bouwteam project might differ from person to person and relates to one's own preferences. In other words: it is subjective. Therefore, the Q-method is an appropriate method, because it brings a scientific framework to bear on the elusiveness of subjectivity (Coogan & Herrington, 2011). Collecting data for the Q-method is done in an online survey with clients, contractors and consultants whom experienced the transition in a Bouwteam project. These respondents are asked to decide what is meaningful and significant from their perspective (Coogan & Herrington, 2011). This data is analyzed in PQMethod and results in client-contractor perspectives for collaboration during the transition from the Bouwteam phase into the execution phase. The outcome of this analysis, the different perspectives, makes it possible to develop suitable strategies (Kroesen, 2018).

The six steps for the Q-method are (Kroesen, 2018):

- Step 1 - Identify concourse: a collection of statements.
- Step 2 – Select Q-sample: a representative selection from the concourse.
- Step 3 – Select P-sample: a selection of participants for the research.
- Step 4 – Collect Q-sorts: the Q-sample is ordered by the P-sample within a predetermined forced (quasi-normal) distribution.
- Step 5 – Analysis in PQMethod: the extraction of shared perspectives on collaboration takes place by correlation and factor analysis.
- Step 6 – Identify perspectives: the extracted factors are interpreted which leads to perspectives on collaboration during the transition into the execution phase in a Bouwteam project. As mentioned earlier, this is done in Chapter 4: Results.

The disadvantage of the Q-method is that because of the non-random selection and the limited number of participants, the results found are not transferable to groups with different experiences (Jedeloo & Van Staa, 2009). In addition, the research takes a lot of time, because each respondent has to fill in the framework (Kraaij, 2010). An important advantage is that the Q-methodology does justice to all points of view (Kroesen, 2018). Thereby, with placing comments at the extreme positions, it is possible to get explanations of respondents and draw statistical conclusions about the small group of respondents.

3.2 STEP 1: IDENTIFY CONCOURSE

The concourse contains everyday communication about any topic (Brown, 1993). It is the collection of statements that exists in practice around a certain topic and it is finite (Kroesen & Cuppen, n.d.). This concourse can be reconstructed theoretically (deductively) or empirically (inductively) by the researcher (Minkman & Molenveld, 2020). The concourse analysis is then converted into a broad set of statements about the topic where the participants of the research have to give their opinion about (Minkman & Molenveld, 2020). For the most complete preliminary study, a combination of inductive and deductive methods is used to collect statements for the concourse (Minkman & Molenveld, 2020). This combination is also used for this research. This means the following:

- To determine the concourse deductively literature is used (Kroesen & Cuppen, n.d.).
- To determine the concourse inductively interviews with people in the field are used to find relevant statements (Kroesen & Cuppen, n.d.).

Literature

The Q-set by De Hoog (2020), extended by Chao-Duivis (2012) and Van der Pas (2021), is used as the scientific basis for the Q-set of this research, as shown in conclusion Section 2.3 in Table 6. To maintain consistency, it is decided to categorize all conditions that are found during this research under the aspects by Suprapto et al. (2015).

Exploratory interviews

The conditions from the concourse till now relate to the front of a Bouwteam project, namely the tender and Bouwteam phase, whereas this research focuses on the transition into the execution phase: the phase after the Bouwteam phase. It is investigated whether those factors also relate to the transition and what specific conditions are missing. This is done by conducting exploratory interviews according to the interview process as described in the research design in Section 1.5: Semi-structured interviews, audio recorded and transcripted. The questions asked during the interview and the transcripts of the interviews are respectively shown in Appendix B and C.

Interviews are conducted with three Sweco employees coming from project management (interviewee A), consultancy (interviewee B) and procurement/contract management (interviewee C). These interviewees are chosen, because of their affinity with Bouwteam projects, diversity of function within Sweco and most importantly having experienced at least one transition within a Bouwteam project. Otherwise they are not able to tell something about their experience(s) and what could be done better regarding collaboration during the transition. One of the interviewees has passed three transitions within Bouwteam projects, the other two passed one transition. The exploratory interviews lead to new statements which were added to the list of conditions. The process of getting to, as well as the substantiation of the collaboration factors used in this research, are shown in Appendix D. An overview of the end result in shown in Table 7.

Table 7: Concourse of the Q-method

Nr.	Statement	Chao-Duivis (2012)	De Hoog (2020)	Van der Pas (2021)	Interviewee A	Interviewee B	Interviewee C
Capability							
1.	Sufficient resources (time and money) to make collaboration happen	x	x		x	x	x
2.	Early involvement of stakeholders		x		x	x	
3.	Contractor's track-record in terms of innovation	x	x				
4.	A continued involved project team leader		x				
5.	Early involvement of contractor(s)		x		x		
6.	Team leader's leadership ability		x		x		

Additional factors categorized under capability from literature and exploratory interviews						
7. Enough guidance for collaboration (e.g. collaboration document)	x			x		
8. Exemplary behavior of the team leader: apply leading by example				x		
9. Experience of Bouwteam participants with Bouwteam projects			x		x	
10. Independent cost expert	x		x			
11. Sufficient expertise of the client regarding costs			x			
12. Early involvement of decision-makers (intern client) at the contracting phase				x		
13. Active client				x		x
Contract						
14. Contractual financial incentives (positive and negative)	x	x	x	x	x	x
15. Clear definition of roles before the Bouwteam starts working	x	x	x	x		
16. Fair risk allocation	x	x	x	x	x	
17. Specified payment arrangements		x		x		
18. Financial range is agreed upfront by client and contractor		x		x		
19. Clear defined scope of the Bouwteam	x	x	x	x		
Additional factors categorized under contract from literature and exploratory interviews						
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation			x			
21. Involvement of the contractor when writing the contract				x		
22. High degree of the level of detail of the design				x	x	
23. Risk management: identify, quantify and control risks			x	x	x	
Joint working						
24. Shared risks	x	x	x	x	x	
25. Agreed process for dispute resolution	x	x				
26. Performance management	x	x	x		x	x
27. Joint planning with all participants		x	x	x		
28. Joint problem solving		x	x			x
29. Propose solutions when raising problems		x				
Additional factors categorized under joint working from literature and exploratory interviews						
30. Jointly establish early agreements on how to execute the realization contract					x	x
Relational attitude						
31. Support of senior management from client and contractor		x		x		
32. Long-term orientation	x	x		x		
33. Understanding each other's objectives	x	x		x	x	x
34. Project team leader's adaptability to changes in the project		x		x	x	x
35. Transparency		x	x	x	x	x
36. Win-win attitude	x	x		x	x	
37. Strive for equality in behavior and duties for client and contractor	x	x			x	
Additional factors categorized under relational attitude from literature and exploratory interviews						
38. Innovation and technological developments: give the contractor freedom to optimize during the process	x		x		x	x
39. Collaboration experience within a Bouwteam prior to the transition	x					

Team integration						
40. Development of common processes		x				
41. Integrated project team	x	x	x	x	x	
42. Separate conversations in small groups per discipline		x				
43. Unrestricted cross-sharing of information in the project	x	x	x		x	
44. Equitable relation and respect for all		x	x			
45. Involving the right people at the right moment		x		x	x	
Additional factors categorized under team integration from literature and exploratory interviews						
46. Integration of cost aspects: estimate price parallel to the development of the design			x	x		
47. No loss of information/knowledge gained during the Bouwteam phase					x	
48. People who are actually engineering in the Bouwteam should also be involved during execution					x	
Team working						
49. Formal regular meetings	x	x		x		x
50. Mutual trust		x	x	x		
51. High level of commitment		x	x	x		
52. Good communication	x	x	x	x		x
53. Alignment of objectives		x		x	x	x
54. Have an elaborated project-start up (PSU)		x				x
55. Evaluate the Bouwteam during the project		x			x	x
Additional factors categorized under team working from literature and exploratory interviews						
56. Team events, informal events and meetings				x	x	x
57. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?			x	x	x	
58. A good working relationship	x				x	x

3.3 Step 2: Select Q-Sample

The subject to research on requires a Q-sample, which is the set of collaboration factors that is selected from the concourse. The Q-sample should not be too large nor too small. There is no hard bottom or upper limit, but guidelines do exist: the final Q-set consists of 40-80 statements (Minkman & Molenveld, 2020; Watts & Stenner, 2005). Fewer statements might be a problem to cover the whole problem and more statements might be unnecessarily unwieldy (Watts & Stenner, 2005). As mentioned earlier, the statements are categorized under the aspects of Suprapto et al. (2015). Using these categories ensures that different aspects of client-contractor collaboration are taken into account. Each category might influence collaboration during the transition in a different way, so several factors are used per category to cover the whole subject.

Validation interviews

The first version of the Q-set consisting of 58 factors derived from literature and transition experiences from practice, shown in Appendix D, is validated during three validation interviews. As this research focuses on client-contractor collaboration. It is chosen to conduct validation interviews with a client, a contractor and a consultant to create balance. As a consultant can work for the client and contractor, all three parties are included. The transcripts can be found in Appendix E. There are three important points of attention when selecting the final Q-set (Watts & Stenner, 2012):

- All statements relate to the subject of interest.
- All statements answer the same question. In this case, that would be: 'Positively influencing the client-contractor collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project is…'
- Every statement has to be unambiguous.

The three validation interviews check whether the Q-set meets those requirements. In case the majority (2 out of 3 experts) agree with these criteria, the factor is taken into the final Q-set, which resulted in removement of five collaboration factors, namely: contractor's track-record in terms of innovation, independent cost expert, contractual financial incentives, propose solutions when raising problems and integrated project team. The validation check on collaboration factors is shown in Appendix F.

Final Q-set

Based on the validation interviews, the final Q-set is set up. This Q-set consists of 53 collaboration factors used in this research and shown to the respondents of the Q-method, as shown in Table 8.

Table 8: Final Q-set (collaboration factors) used in this research

Nr. Statement	Chao-Duivis (2012)	De Hoog (2020)	Van der Pas (2021)	Interviewee A	Interviewee B	Interviewee C
Capability						
1. Sufficient resources (time and money) to make collaboration happen	x	x		x	x	x
2. Early involvement of stakeholders		x		x	x	
3. A continued involved project team leader		x				
4. Early involvement of contractor(s)		x		x		
5. Team leader's leadership ability		x		x		
Additional factors categorized under capability from literature and exploratory interviews						
6. Enough guidance for collaboration (e.g. collaboration document)	x			x		
7. Exemplary behavior of the team leader: apply leading by example				x		
8. Experience of Bouwteam participants with Bouwteam projects			x		x	
9. Sufficient expertise of the client regarding costs			x			
10. Early involvement of decision-makers (intern client) at the contracting phase				x		
11. Active client				x		x
Contract						
12. Clear definition of roles before the Bouwteam starts working	x	x	x	x		
13. Fair risk allocation	x	x	x	x	x	
14. Specified payment arrangements		x		x		
15. Financial range is agreed upfront by client and contractor		x		x		
16. Clear defined scope of the Bouwteam	x	x	x	x		

Additional factors categorized under contract from literature and exploratory interviews						
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation			x			
18. Involvement of the contractor when writing the contract				x		
19. High degree of the level of detail of the design				x	x	
20. Risk management: identify, quantify and control risks			x	x	x	
Joint working						
21. Shared risks	x	x	x	x	x	
22. Agreed process for dispute resolution	x	x				
23. Performance management	x	x	x		x	x
24. Joint planning with all participants		x	x	x		
25. Joint problem solving		x	x			x
Additional factors categorized under joint working from literature and exploratory interviews						
26. Jointly establish early agreements on how to execute the realization contract					x	x
Relational attitude						
27. Support of senior management from client and contractor		x		x		
28. Long-term orientation	x	x		x		
29. Understanding each other's objectives	x	x		x	x	x
30. Project team leader's adaptability to changes in the project		x		x	x	x
31. Transparency		x	x	x	x	x
32. Win-win attitude	x	x		x	x	
33. Strive for equality in behavior and duties for client and contractor	x	x			x	
Additional factors categorized under relational attitude from literature and exploratory interviews						
34. Innovation and technological developments: give the contractor freedom to optimize during the process	x		x		x	x
35. Collaboration experience within a Bouwteam prior to the transition	x					
Team integration						
36. Development of common processes		x				
37. Unrestricted cross-sharing of information in the project	x	x	x		x	
38. Equitable relation and respect for all		x	x			
39. Involving the right people at the right moment		x		x	x	
Additional factors categorized under team integration from literature and exploratory interviews						
40. Integration of cost aspects: estimate price parallel to the development of the design			x	x		
41. No loss of information/knowledge gained during the Bouwteam phase					x	
42. People who are actually engineering in the Bouwteam should also be involved during execution					x	
43. Separate conversations in small groups per discipline		x				
Team working						
44. Formal regular meetings	x	x		x		x
45. Mutual trust		x	x	x		
46. High level of commitment		x	x	x		
47. Good communication	x	x	x	x		x

48. Alignment of objectives		x		x	x	x
49. Have an elaborated project-start up (PSU)		x				x
50. Evaluate the Bouwteam during the project		x			x	x
Additional factors categorized under team working from literature and exploratory interviews						
51. Team events, informal events and meetings				x	x	x
52. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?			x	x	x	
53. A good working relationship	x				x	x

It is noted that, in principle, there is a balance in factors for every category. However, this was the most difficult for joint working (6 factors). This inequality is something to take into account when interpreting the perspectives in Chapter 4.

3.4 Step 3: Select P-Sample

The Q-methodology does not require a large group of respondents (Watts & Stenner, 2005). On the contrary, it is about a strategic selection of respondents (Kroesen & Cuppen, n.d.), and concerns clients, contractors and consultants which are expected to take different perspectives on collaboration during the transition in a Bouwteam project. The group of respondents is not randomly, but strategically chosen (Minkman & Molenveld, 2020). Requirements to participate in the online survey are:

- Respondents that have passed the transition in a Bouwteam project at least one time;
- There is diversity in projects among respondents;
- There is diversity in companies among respondents;
- There is diversity in functions among respondents;
- There is diversity in years of experience among respondents;
- There is diversity in number of completed projects among respondents;
- There is diversity in type of Bouwteam projects among respondents.

Via the network of Sweco's employees, potential respondents are approached. Besides, an article at the website of CROW, see Appendix H, is placed where potential participants could send an email to the author. In case the emailer meets the most important requirements, the emailer is allowed to participate in the online survey. Most important relates to a mix of participants that is most diverse, as not all requirements can be met at the same time. Also, emails are sent to experts in the field if their contact information was available on the internet.

3.5 Step 4: Collect Q-Sorts

The respondents are asked to rank the Q-set according to the degree of importance, which is called Q-sorting (Brown, 1993). In this research consultants, clients and contractors are asked to rank statements from least important (-5) to most important (+5). The sorting scheme has the following distribution: 2-4-5-5-7-7-7-5-5-4-2, see Figure 6. There is no standard sorting scheme, which means that there is a certain freedom in the formation of the scheme (Brown, 1980). However, it is desirable to have a small number of statements at the extremes (Watts & Stenner, 2005), because the extremes are seen as significantly (un)important, and statements at neutral positions are considered 'neutral important' (Brown, 1980). Therefore, given the quite large number of 53 statements, it is chosen to have 11 less important conditions (ranked -5 to -3), 31 neutral important conditions (ranked -2 to +2) and 11 more important conditions (ranked +3 to +5), in which there are two statements at the extremes (-5 and +5).

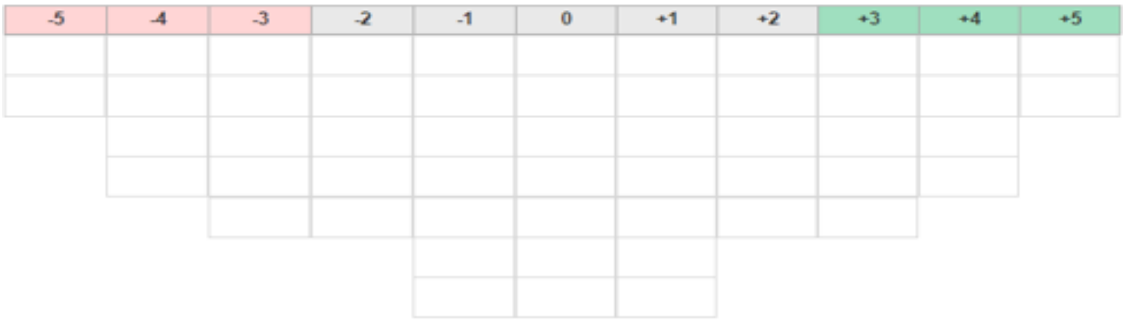

Figure 6: Sorting scheme

Online tool: FlashQ

The results of conducting the survey online are highly congruent with those from face-to-face interviews (Van Exel & De Graaf, 2005). This is one of the reasons to do Q-sorting online. A Q-sort is the way participants rank the statements in the predetermined forced sorting scheme (Kroesen & Cuppen, n.d.). FlashQ is an online user-friendly tool that organizes statements in a forced distribution. FlashQ has the advantage that the survey is completed much faster and can be easily distributed. Respondents have the freedom to fill in the survey at any time that suits them and it is completely anonymous. On the other hand, there is less interaction with the respondents and the online survey requires some technical knowledge. To create more interaction, FlashQ has the option for respondents to explain their extreme positions, so at -5 and +5. In addition, there was a constant opportunity to ask questions and get help completing the survey.

Q-sorting process

The online survey starts with a short introduction on the research. Thereafter, the subject is described and the respondents are asked to rank 53 conditions for collaboration in three columns: agree, neutral and disagree. After all the 53 factors are placed in the three columns, the respondents are asked to place the factors in a forced ranking scheme from +5 (completely agree) to -5 (completely disagree). When all the factors are placed in the ranking scheme, the respondents are asked to place comments on the factors they put on the most extreme positions, so +5 and -5. Also, questions on their background are asked. These relate to the requirements that have to be met and are described earlier in Section 3.4. The elaborated Q-sorting process is presented in Appendix G.

Pilot test

After the survey set-up was done, a pilot test was conducted. The pilot test is to avoid repetition of statements in the Q-set, to make sure that all statements are clear, that statements represent one factor only, that the Q-set is balanced and covers the whole subject (Watts & Stenner, 2005). During the pilot test one participant who has knowledge about the subject is asked to give feedback on the development of the Q-set (Watts & Stenner, 2005). The participant chosen for this pilot test, is a consultant at Sweco with more than 20 years of experience of which 10 years as a project manager and 15 years as a contracting and tendering consultant. His expertise is in drawing up contracts for UAV-IC, D&C, E&C, alliances and Bouwteam agreements. Within Bouwteam agreements the consultant has been involved in the preparation phase for tendering of the Bouwteam and in the start-up of the execution. This interviewee is chosen because of extensive knowledge about collaboration, in particular about Bouwteam projects, and has not participated in this research before or after the pilot test. This pilot test is conducted online via Microsoft Teams whereby each factor has been gone through and checked on clarity and unambiguity, which only led to slight reformulations of the collaboration factors.

3.6 STEP 5: ANALYSIS

The Q-method eventually results in perspectives regarding collaboration during the transition in a Bouwteam project. To create perspectives, the Q-sorts collected from the online survey are analyzed through factor analysis. Factor analysis obtains factors whereby each factor represents one perspective. The Q-sorts are analyzed in PQMethod version 2.35 from November 2014. PQMethod is a statistical program which is used during Q-studies (Schmolck, 2002).

Data exploration

The survey was online for three weeks which resulted in 29 responses. However, one Q-sort was not usable, because the repsondent did not understand how to answer the survey and mentioned this by email. This was checked and indeed, it was seen that there were some misunderstandings: the comments at -5 are actually comments that belong to +5, but also the comments of +5 belong to +5. This means that actually four instead of two comments were placed at +5 which was not the intention of this survey. Therefore, this Q-sort is not used for further analysis and the remaining 28 Q-sorts are taken into account. The requirement for every participant is to have passed the transition in a Bouwteam project at least one time. For the 28 respondents, the distribution among the background characteristics is shown in Table 9. It can be concluded that the participants are diverse in function, but not very much in years of experience, number of completed Bouwteam projects and type of Bouwteam projects.

Table 9: Background information of respondents

Background information			
Organisation		Number of respondents	
Client Contractor Engineering company		7 15 6	
Function	Number of respondents	Function	Number of respondents
Strategic consultant Supervisor Project manager Contract manager Senior consultant	1 2 9 3 2	Project leader Technical manager conditioning Project engineer Branch manager Corporate lawyer	4 1 2 3 1
Years of experience		Number of respondents	
5-10 10-20 > 20		3 2 23	
Completed Bouwteam projects		Number of respondents	
1 2-5 > 5		6 15 7	
Type of Bouwteam projects		Number of respondents	
Infrastructure Hydraulic engineering Utility construction		19 4 5	
Involved at the side of the		Number of respondents	
Contractor Client Both client and contractor		11 10 7	

Factor analysis

Clustering of people takes place by factor analysis. During the factor analysis, the objective is to correlate and factor the Q-sorts of the respondents to find clusters of similar Q-sorts (Kroesen & Cuppen, n.d.). There are two different methods in PQMethod to do the factor analysis: Centroid Additionalction Method and Principal Component Analysis (PCA) (Schmolck, 2014). Centroid analysis is used as standard for the Q-method (Schmolck, 2014). However, the PCA is the default of factor analysis in statistical software like SPSS (Schmolck, 2014). The difference between these methods is the focus on individual specificity when additionalcting factors (Webler et al., 2009). The Centroid Additionalction Method focuses only on the communalities of the Q-sorts and not on the individual Q-sorts (Webler et al., 2009). Communalities indicate in percentages how the Q-sorts relate to each other (Kroesen, 2018). The PCA focuses on the communalities of the Q-sorts, but also on the individual Q-sorts (Webler et al., 2009). However, according to Webler et al. (2009) the results of both methods are quite the same. This research wants to find the best mathematical solution, taking into account both aspects (communalities and individual Q-sorts) and therefore the PCA is performed.

Correlation matrix

Based on the 28 Q-sorts a correlation matrix is made, shown in Appendix I. The correlation matrix indicates whether the 28 Q-sorts (1 Q-sort per respondent) are sufficiently related to each other. If there is no correlation between Q-sorts, factor analysis cannot be performed, because it indicates that there are no perspectives (Kroesen, 2018). It can be concluded that there is correlation between almost all Q-sorts (except for three Q-sorts), whether positive (similarities) or negative (differences), which indicates sufficient correlation. Therefore, the data can be used for analysis. The interpretation of correlation coefficients is shown in Table 10.

Table 10: Interpretation of correlation coefficients (Dancey & Reidy, 2004)

Correlation coefficient	Interpretation
|1|	Perfect
|0.9|-|0.7|	Strong
|0.6|-|0.4|	Moderate
|0.3|-|0.1|	Weak
0	None

PCA analysis

The first step for the PCA in PQMethod is to extract a number of factors. This is standard eight factors, thus eight factors are extracted. This process is repeated for the 2- to 8- factor solutions whereby the most optimal factor solution is chosen. All factor solutions are discussed in detail in Appendix J. To find the most optimal factor solution, there is no ideal mathematical answer (Webler etl., 2009). In other words: there is not one way to choose the optimal factor solution, it differs for every researcher (Minkman & Molenveld, 2020). The criteria that are used to choose the most optimal factor solution in this research are explained below.

Criteria 1: Eigenvalue

The factor should have an Eigenvalue > 1 (Watts & Stenner, 2005; Webler et al., 2009). The eigenvalue is “the sum of squared factor loadings for each factor” (Van Exel & De Graaf, 2005, p.18). Factors with eigenvalues less than 1 are assumed insignificant and of too little interest to take into account (Brown, 1980). As seen in Table 11, all factors have an Eigenvalue > 1.

Table 11: Eigenvalues and (cumulative) explained variance

Factor	1	2	3	4	5	6	7	8
Eigenvalues	7.0913	2.2422	1.7828	1.7271	1.5009	1.4564	1.3484	1.2390
Explained variance [%]	25	8	6	6	5	5	5	4
Cumulative explained variance [%]	25	33	40	46	51	56	61	66

Criteria 2: Explained variance & cumulative explained variance

The factor should have an explained variance > 3% (Webler et al., 2009). In addition, the cumulative explained variance should be at least 50% (Suprapto, 2015). This is the percentage of the total amount of Q-sorts explained by a factor. Even though, when using the Q-method, the objective is not to explain as much as variance as possible, as in a classical factor analysis, but rather to find unique points of view (Akhtar-Danesh et al., 2008; Jedeloo & Van Staa, 2009), the objective of this research is to reveal the range of viewpoints that are favored by the respondents. Therefore, it makes sense to pay extra attention to the factor solution which maximizes the amount of explained variance (Watts & Stenner, 2005). Varimax rotation produces the factor solution that maximizes the amount of variance explained on as few factors as possible (Webler et al., 2009). As seen in Table 11, all factors have an explained variance > 3%. However, only the 5-, 6-, 7- and 8- factor solutions have a cumulative explained variance of at least 50%.

Criteria 3: Significant loadings

At least two people have to load significantly on a factor, to take that factor into account (Minkman & Molenveld, 2020). Only when there are at least two significant loadings, there is a shared perspective (Kroesen & Cuppen, n.d.). It should be noted that two significant loadings are the absolute minimum, however, if possible it is preferred to level this up to minimal three significant loadings (Kroesen & Cuppen, n.d.) The value for significant factor loading can be calculated through: $\text{Factor loading} = ABS(1.96 \div \sqrt{\text{N}})$ (Webler et al., 2009). For N = 53, because there are 53 statements, the factor loading is 0.2692. It should be avoided that respondents load on multiple factors (Webler et al., 2009). The Varimax rotation is used to approach the simple structure (Kroesen, 2018). This means a high loading on one factor and low loadings on all the other factors. As can be seen in Table 12 all factor solutions have at least two significant loadings on a factor.

Criteria 4: Highest number of loaders

The highest number of loaders. The maximum number of loaders in this research is 28. It should be tried to minimize non loaders (Webler et al., 2009). As presented in Table 12, the 5-, 6- and 7- factor solutions have the highest number of loaders.

Criteria 5: Most distinguishing statements per factor

The distinguishing statements are statements that were ranked significantly differently compared to the other factors (Webler et al., 2009). As seen in Table 12 below, the three factor solution has the most distinguishing statements.

Criteria 6: Least correlation

The least correlation between factors to get as distinctive as possible factors (Webler et al., 2009). The correlation indicates the dependency between Q-sorts (Kroesen, 2018). The meaning of the values of correlation is given in Table 10. It is not a problem if there are high correlations, but their distinguishing statements are very different (Webler et al., 2009). It can be seen in Table 12 that the 8- factor solution has the lowest correlations.

Criteria 7: Least factors

Less factors are better because it makes the perspectives easier to understand (Webler et al., 2009). However, there should not be important and interesting information lost about differences in people's perspectives (Webler et al., 2009). Logically, the 2 factor solution has the least factors and the 8 factor solution the most factors. To conclude, if factor solutions score equally high on a criteria, the solution with less factors is preferable.

Factor extraction

Table 12 shows the outcome of all criteria for 2- till 8- factor solution. If the factor solution meets the criteria, it is marked in green. The factor solution with the most green markings is chosen as the optimal factor solution. As can be seen in Table 12, the 5-factor solution meets the most requirements and is therefore chosen as the most optimal factor solution. The absolute criteria are met and the preferred criteria are almost met, which makes it a balanced solution that best represents the perspectives present in the project team. The extracted five factors will be interpreted in the next Chapter.

Table 12: Outcome of factor solutions

Criteria	2 factors	3 factors	4 factors	5 factors	6 factors	7 factors	8 factors
Eigenvalue > 1	YES (7.0913)	YES (2.2422)	YES (1.7828)	YES (1.509)	YES (1.4564)	YES (1.3484)	YES (1.2390)
Explained variance > 3%	YES (25%)	YES (8%)	YES (6%)	YES (6%)	YES (5%)	YES (5%)	YES (4%)
% Cumulative explained variance ≥ 50%	NO (34%)	NO (40%)	NO (46%)	YES (50%)	YES (56%)	YES (60%)	YES (67%)
% factors with ≥ 3 significant loadings	100 (2/2)	100 (3/3)	75 (3/4)	100 (5/5)	67 (4/6)	57 (4/7)	50 (4/8)
% loaders	75 (21/28)	75 (21/28)	79 (22/28)	89 (25/28)	89 (25/28)	89 (25/28)	71 (20/28)
% non-loaders	25 (7/28)	25 (7/28)	21 (6/28)	11 (3/28)	11 (3/28)	11 (3/28)	29 (8/28)
% correlation ≤ 0.33	0 (4-2-2/4)	22 (9-3-4/9)	38 (16-4-6/16)	56 (25-5-6/25)	72 (36-6-4/36)	69 (49-7-8/49)	81 (64-8-4/64)
Number of distinguishing statements	34	68	50	44	24	30	20
Number of green markings	**5**	**5**	**3**	**7**	**6**	**6**	**5**

3.6 CONCLUSION

This Chapter introduced the Q-methodology that eventually helps to answer the third sub-question: *'What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?*.

There are five steps for this method:

1. Identify concourse
2. Select the Q-sample
3. Select the P-sample
4. Collect Q-sorts
5. Software analysis PQMethod
6. Identify perspectives

To identify the concourse, literature research was done, and exploratory interviews were conducted. Based on the exploratory interviews that gave insight in the factors that are of influence on the collaboration during transition, the second sub-question is answered: *'What are the experiences during the transition from the Bouwteamphase into the execution phase in a Bouwteam project?'* The concourse identified in total 58 statements. The Q-sample consists of statements from the concourse that represent the complete subject of interest. Three validation interviews were conducted to come to the final the Q-set which resulted in 53 statements. For the P-sample, the group of respondents was chosen strategically. There were requirements to participate in the online survey. During the online survey, respondents were asked to rank the Q-set from agree to disagree, which is called Q-sorting. To extract factors, the Q-sorts were analyzed through factor analysis The five factor solution came out as the most optimal solution. This means that five factors will be interpreted in the next Chapter which will eventually result in five perspectives. This Chapter was the starting point for answering the third sub-question, as mentioned above.

4 PERSPECTIVES

Chapter 4 interprets the five factor solution in Section 4.1. Each factor results in one perspective which means that five perspectives are described. The five factors are indicated by the PQMethod, which highlights the most distinguishing statements per factor. These high scoring distinguishing statements are then interpreted to come from a factor to a perspective. These perspectives are described in Sections 4.2-4.6 which answers the third sub-question: '*What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?*'. Similarities and differences between perspectives are presented in Section 4.7. The Chapter ends with a conclusion in Section 4.8.

4.1 FIVE FACTOR SOLUTION

The five factor solution is chosen to continue within this research and is shown in Table 13.

Table 13: Five factor solution

Respondents	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
RESP01 Strategic consultant	-0.1882	-0.2657	-0.1688	0.1456	0.5882X
RESP02 Supervisor	0.5254X	-0.0639	0.1105	0.0052	0.2290
RESP03 Project manager	0.5074X	0.0814	0.0785	0.2422	-0.1031
RESP04 Project manager	0.4423	0.0016	0.5689X	0.1469	0.0965
RESP05 Senior consultant	0.2878	-0.2795	0.4797X	0.3769	-0.0162
RESP06 Project manager	0.1840	-0.0106	0.5683X	0.4470	0.1162
RESP07 Contract manager	0.0100	0.7446X	-0.0159	0.2336	-0.0457
RESP08 Senior consultant	0.1413	-0.0560	0.0655	0.6323X	-0.1542
RESP09 Project engineer	0.3686	0.5207X	0.1093	0.0546	-0.1289
RESP10 Supervisor	0.6089X	0.1911	-0.2801	0.4184	-0.0858
RESP11 Technical manager conditioning	0.5267X	0.0411	0.4349	-0.3153	0.2437
RESP12 Project leader	0.3713	-0.2258	0.4169	0.3279	-0.4038
RESP13 Contract manager	0.0938	0.2461	0.1073	0.6034X	0.2548
RESP14 Project engineer	0.0506	0.1949	0.5882X	-0.1090	0.0769
RESP15 Branch manager	0.1803	0.2343	0.2888	0.4197X	0.2533
RESP16 Branch manager	0.0261	0.1201	0.5633X	0.1918	-0.1221
RESP17 Project manager	0.5490X	0.0671	0.3675	0.2656	0.1796
RESP18 Project manager	0.6707X	0.0003	0.2780	0.2041	-0.1008
RESP19 Branch manager	0.4179	0.0230	0.2191	0.3624	0.3031
RESP20 Project manager	0.6047X	-0.0016	0.0998	0.0425	0.0915
RESP21 Corporate lawyer	0.6587X	0.2386	-0.0495	0.1959	0.2310
RESP22 Project leader	0.4162	0.1348	0.4867	0.1252	0.4580
RESP23 Project manager	0.2108	-0.0496	-0.0909	0.6037X	0.1928
RESP24 Project leader	0.0042	0.1024	0.4868	0.6342X	-0.1577
RESP25 Project manager	0.1620	0.2347	0.2565	0.4420X	0.1807
RESP26 Project manager	0.2384	0.2393	0.1835	0.1145	0.5161X
RESP27 Project leader	-0.0708	0.6005X	0.3326	-0.1287	0.2949
RESP28 Contract manager	0.2764	0.0117	0.0364	0.0147	0.7618X
Explained variance [%]	14	6	11	11	8
Defining sorts	8	3	5	6	3
Distinguishing statements	7	12	9	7	9
Cumulative explained variance [%]	50				

4.1.1 Interpretation of factors

For each factor, Z-scores are indicated for the 53 statements (abbreviated S; e.g. S1). The Z-scores indicate the importance of a statement for a perspective (Kroesen, 2018). Z-scores higher than the absolute value of 1 indicate extreme positions. The distinguishing statements are statements which were ranked significantly different compared to the other perspectives (Webler et al., 2009). These statements are leading for the perspectives, and are therefore used to describe the perspectives in the next paragraphs. The distinguishing statements are indicated with * and **, respectively having a

significance level of 0.05 and 0.01. The Z-scores used for the perspective descriptions are combined with the comments placed by respondents (abbreviated RESP; e.g. RESP01).

4.1.2 Background of respondents

The background answers are also of importance to include in the interpretation. It might be the case that certain perspectives are present among certain functions, organizations or experiences. This also applies to the categories by Suprapto (2015), which are taken into account and linked to. However, when interpreting the categories, it should be taken into account that the division of the collaboration factors per category is unequal.

4.1.3 Non-loaders

Some respondents did not load unique on a factor: confounders. These are RESP12 (project leader), RESP19 (branch manager) and RESP22 (project leader), see Table 14. There are more significant loadings (higher than |0.2692|) for each respondent, as indicated in blue. Therefore, these three respondents are not taken into consideration during the interpretation of the five perspectives.

Table 14: Non-loaders

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
RESP12 Project leader	0.3713	-0.2258	0.4169	0.3279	-0.4038
RESP19 Branch manager	0.4179	0.0230	0.2191	0.3624	0.3031
RESP22 Project leader	0.4162	0.1348	0.4867	0.1252	0.4580

(Chapter continues on the next page)

4.2 PERSPECTIVE 1: CLEAR, HIGH LEVEL SCOPE DEFINITION & CLEAR BOUWTEAM ROLES

The first perspective is called: clear, high level scope definition & clear Bouwteam roles. This perspective has an explained variance of 14% and is shared by 8 respondents, namely: RESP02, RESP03, RESP10, RESP11, RESP17, RESP18, RESP20 and RESP21. Figure 7 shows the characterizing and distinguishing statements of perspective 1.

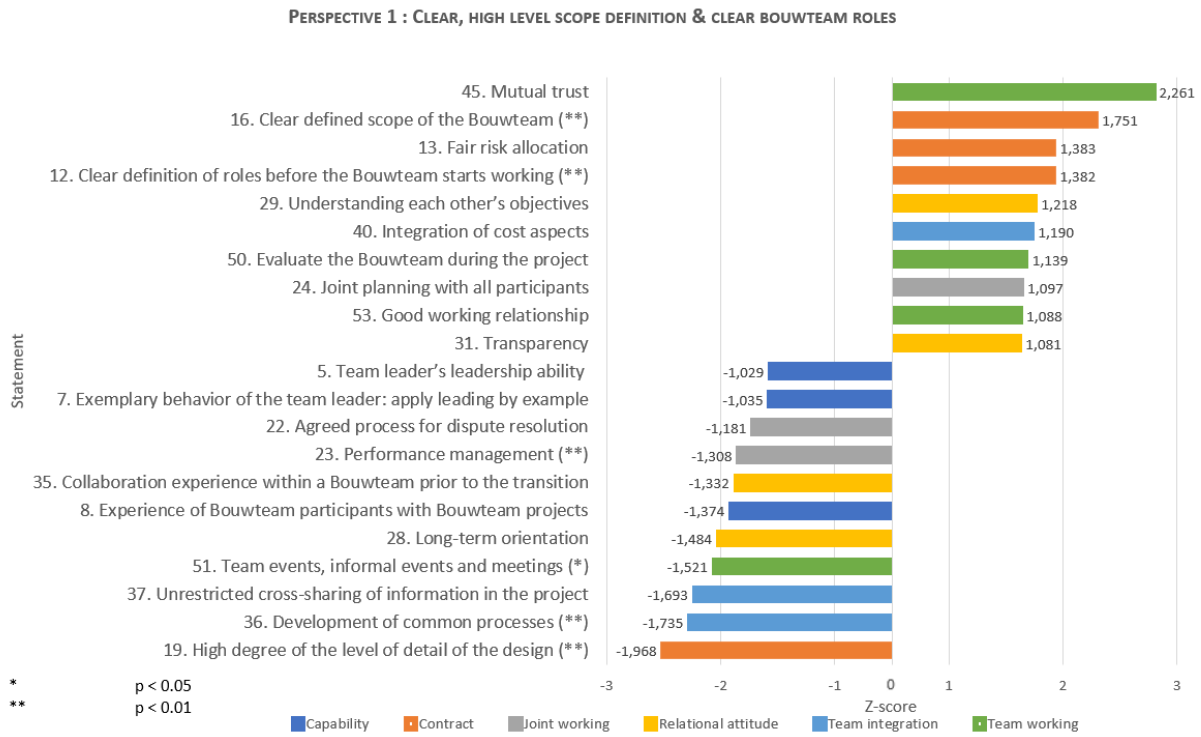

Figure 7: Most and least important statements of perspective 1

Description

A clear defined scope of the Bouwteam is an important characteristic of the first perspective (s16; 1.751**). In addition, a clear definition of roles before the Bouwteam starts working (s12; 1.382**) is relatively important for this perspective. The detail level of the design does not need to be high (s19;-1.968**), as it depends on the project risks and degree of control in the execution phase which is independent of collaboration (RESP03). The development of common processes (e.g. BIM) (s36;-1.735**) is relatively unimportant, while BIM is not per definition included in a project and is therefore not seen as an important collaboration factor for a Bouwteam project (RESP18). Informal team events and team outings (s51;-1.521*) is a characteristic of this perspective and not considered as very important, because a professional and accessible attitude of all parties should be sufficient (RESP21). Performance management (s23; -1.308**) also is a characteristic statement of the first perspective and not considered to be most important, as having a clear defined scope of the project and roles within the team is more important for a good performance of the Bouwteam project.

Respondents who load on perspective 1

The loaders on this perspective are given in Table 15. This perspective is shared by clients and contractors and therefore not characteristic for one of those. There is no consultant loading on this perspective. Next to different parties loading on this perspective, there are also different functions loading on this perspective: supervisors, project managers, corporate lawyer and technical manager conditioning. Most of the loaders have a lot of work experience (>20 years), but are not necessarily

very experienced with Bouwteam projects (mostly 2-5 Bouwteam projects completed). A lot of projects in this perspective are related to infrastructure projects. These three last mentioned characteristics are not distinguishing in the participants as most of the P-set match those.

Table 15: Loaders perspective 1

Respondent	Working at	Function	Years of experience	Completed Bouwteam projects	Type of project(s)	Involved at the side(s) of
RESP02 (M)	Client	Supervisor	>20	2-5	Infrastructure	Client
RESP03 (F)	Contractor	Project manager	>20	2-5	Infrastructure	Client and contractor
RESP10 (M)	Client	Supervisor	>20	2-5	Infrastructure	Client
RESP11 (M)	Client	Technical manager conditioning	10-20	2-5	Infrastructure	Client and contractor
RESP17 (M)	Client	Project manager	>20	2-5	Infrastructure	Client
RESP18 (M)	Contractor	Project manager	>20	2-5	Infrastructure	Client and contractor
RESP20 (M)	Client	Project manager	>20	1	Hydraulic engineering	Client
RESP21 (F)	Contractor	Corporate lawyer	>20	>5	Utility construction	Contractor

Link to theoretical categories

The first perspective has six distinguishing statements that have extreme positions (absolute value > 1), which means these statements are characteristic for this perspective, see Table 16.

Table 16: Extreme distinguishing statements perspective 1

Statement	Categories by Suprapto (2015)
16. Clear defined scope of the Bouwteam	Contract
12. Clear definition of roles before the Bouwteam starts working	Contract
19. High degree of the level of detail of the design	Contract
36. Development of common processes (e.g. BIM)	Team integration
51 Team events, informal events and meetings	Team working
23. Performance management: steer towards objectives	Joint working

The three most distinguishing statements come from the category 'Contract', one from 'Team integration', one from 'Team working' and one from 'Joint working'. This means that this perspective is mostly focused on the contract which specifies roles, responsibilities and the scope. It is relatively less important to focus on information exchange and on team members working together based on synergies of their relationship (Suprapto, 2015). Besides, this perspective focuses less on a relationship which enables parties to make joint efforts for managing project tasks (Suprapto, 2015).

4.3 Perspective 2: Focus on a good professional relationship with less informal events

The second perspective is called: focus on a good professional relationship with less informal events. This perspective has an explained variance of 6% and is shared by 3 respondents, namely: RESP07, RESP09 and RESP27. Figure 8 shows the characterizing and distinguishing statements of perspective 2.

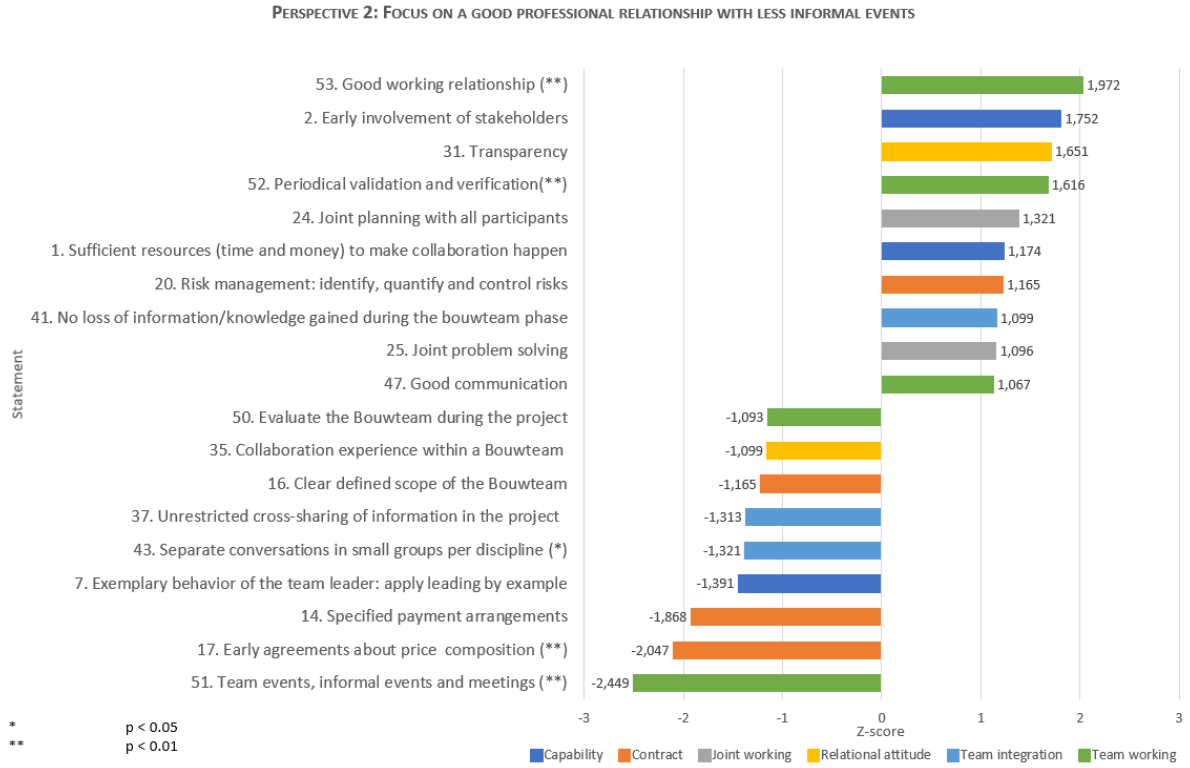

Figure 8: Most and least important statements of perspective 2

Description

The highest ranked statement for this perspective is a good working relationship (s53; 1.972**), which is thus a relatively important characteristic. It is important to work in an open and easy going environment (RESP27). Periodical validation and verification (s52; 1.616**) is relatively important, because it checks whether the design meets the requirements and if the client is satisfied (RESP07). In addition, it is also important whether the design still fits within the financial bandwidths and time schedule (RESP07). As the design within the Bouwteam project progresses (sketch design, preliminary design, definitive design), the bandwidth can be determined more accurately and it can be reduced (RESP07). The lowest ranked statement for this perspective is team events, informal events and meetings (s51; -2.449**), which are therefore not considered to be very important to improve the collaboration during the transition. Some informal meetings and events can be helpful to create a better work relationship, but these informal interactions should not be too much, and the focus should be on a professional working relationship (RESP07). Due to COVID-19 pandemic there have not been any team events, which provides insight in how a Bouwteam project team work as a team with less informal contact moments (RESP27). Early agreements about the price composition, tariffs and price determination plan, including moments of sharing the cost estimation, is not significantly important (s17; -2.047**), as well as separate conversations in small groups per discipline (s43; -1.321**). In order to get and maintain involvement of all disciplines, plenary consultations are more important than separate conversations (RESP07), having an integral overview over the Bouwteam project (RESP07).

Respondents who share perspective 2

The loaders on this perspective are given in Table 17. This perspective is shared only by contractors with different functions, coming from different projects. They have at least 10 years of work experience and completed 2-5 Bouwteam projects. The last two mentioned characteristics are not distinguishing in participants as most of the P-set match those.

Table 17: Loaders perspective 2

Respondent	Working at	Function	Years of experience	Completed Bouwteam projects	Type of project(s)	Involved at the side(s) of
RESP07 (M)	Contractor	Contract manager	>20	2-5	Hydraulic engineering	Client
RESP09 (M)	Contractor	Project engineer	10-20	2-5	Utility construction	Client and contractor
RESP27 (M)	Contractor	Project leader	>20	2-5	Infrastructure	Contractor

Link to theoretical categories

For the second perspective there are five distinguishing statements that have extreme positions (absolute value higher than 1), which means these statements are characteristic for this perspective, see Table 18.

Table 18: Extreme distinguishing statements perspective 2

Statement	Category by Suprapto (2015)
53.Good working relationship	Team working
52. Periodical validation and verification: does the design meet the requirements and is the client satisfied?	Team working
51. Team events, informal events and meetings	Team working
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Contract
43. Separate conversations in small groups per discipline	Team integration

The three most distinguishing statements come from 'Team working', one from 'Contract' and one from 'Team integration'. This perspective focuses on a team that works together based on synergies in their professional relationships (Suprapto, 2015) and promotes a favorable environment where information and knowledge are exchanged (Suprapto, 2015) and is less focused on contract specificities.

4.4 PERSPECTIVE 3: FOCUS ON A LONG-TERM COLLABORATION WITH A WIN-WIN ATTITUDE WITHOUT THE RISKS INNOVATION WOULD BRING

The third perspective is called: focus on a long-term collaboration with a win-win attitude without the risks innovation would bring. This perspective has an explained variance of 11% and is shared by 5 respondents, namely: RESP04, RESP05, RESP06, RESP14 and RESP16. Figure 9 shows the characterizing and distinguishing statements of perspective 3.

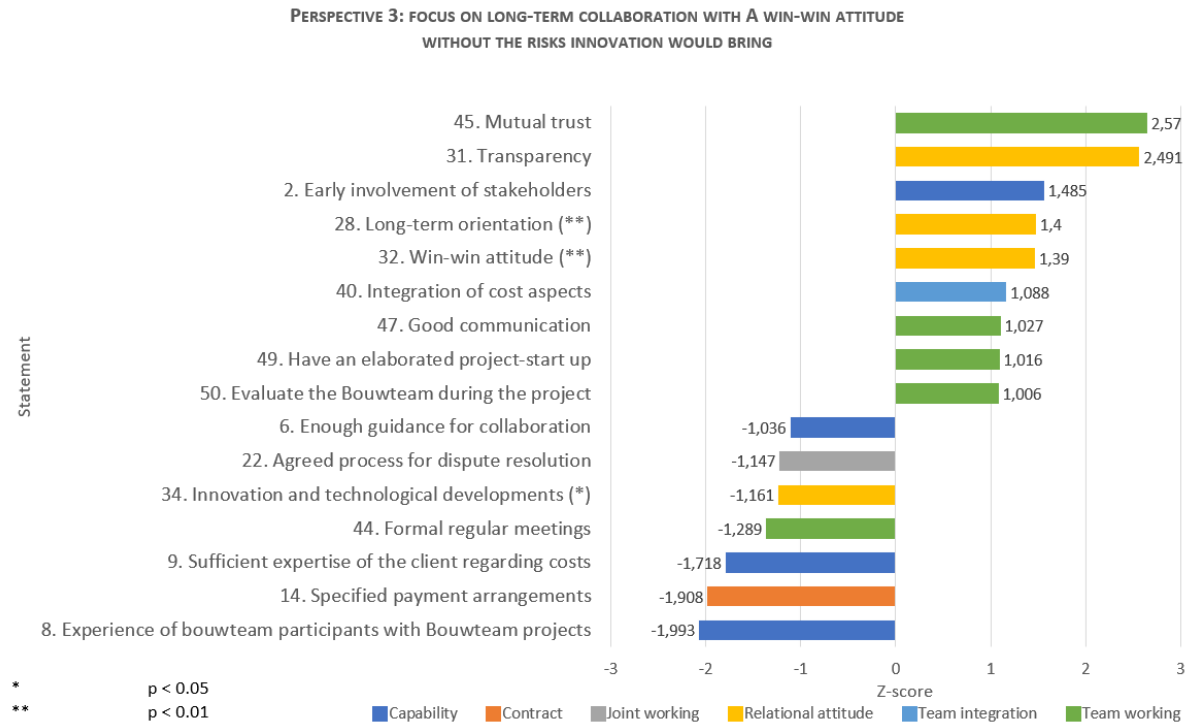

Figure 9: Most and least important statements of perspective 3

Description

For this perspective, the most important characteristic statement is long-term orientation (s28; 1.400**). Long-term orientation is seen as the foundation for collaboration, as you also want to work together on next projects, which requires to deal with each other differently (RESP04). The other most distinguishing statement is a win-win attitude (s32; 1.390**), which supports the long-term orientation by taking into account the interests of both organizations while realizing the project (RESP04). Taking this into account can be a basis for future collaboration (RESP04). Relatively unimportant is taking innovation and technological developments into account (s34; -1.161*), as these are not considered to be essential factors of collaboration, but more linked towards developments that are present regardless of parties collaborating (RESP05). It can also be a cause of slight adaptations within a well-known process, which can lead to difficult situations in which a win-win attitude cannot always be guaranteed. This perspective contains statements that are relatively important and unimportant that are not distinguishing statements, which means that the perspective has quite some overlap with other perspectives.

Respondents who share perspective 3

The loaders on this perspective are given in Table 19. This perspective is shared by all three parties: client, contractor and engineering company. Within these parties, different functions loaded on this perspective, as well as diverse years of experience (ranking from 5-10 years to over 20 years). A lot of projects in this perspective are related to infrastructure projects which is not distinguishing as most of the participants from the P-set are involved in those type of projects.

Table 19: Loaders perspective 3

Respondent	Working at	Function	Years of experience	Completed Bouwteam projects	Type of project(s)	Involved at the side(s) of
RESP04 (M)	Contractor	Project manager	>20	2-5	Infrastructure	Contractor
RESP05 (M)	Engineering Company	Senior consultant	>20	>5	Infrastructure	Client
RESP06 (M)	Client	Project manager	5-10	1	Infrastructure	Client
RESP14 (M)	Contractor	Project engineer	>20	>5	Infrastructure	Contractor
RESP16 (M)	Contractor	Branch manager	5-10	2-5	Utility construction	Contractor

Link to theoretical categories

For the third perspective there are three distinguishing statements that have extreme positions (absolute value higher than 1), which means these statements are characteristic for this perspective, see Table 20.

Table 20: Extreme distinguishing statements perspective 3

Statement	Z-score	Category by Suprapto
28. Long-term orientation/sustainable relationship	1.400	Relational attitude
32. Win-win attitude	1.390	Relational attitude
34. Innovation and technological developments: give the contractor freedom to optimize during the process	-1.161	Relational attitude

The three distinguishing statements come from ‘Relational attitude’. This means that this perspective focuses on aligning different attitudes and mindsets from different parties. A set of relational norms, factors or routines need to be co-developed specific to their relationship (Suprapto, 2015).

4.5 Perspective 4: Focus on leadership ability and minimize monodisciplinary meetings

The fourth perspective is called: focus on leadership ability and minimize monodisciplinary meetings. This perspective has an explained variance of 11% and is shared by 6 respondents, namely: RESP08, RESP13, RESP15, RESP23, RESP24 and RESP25. Figure 10 shows the characterizing and distinguishing statements of perspective 4.

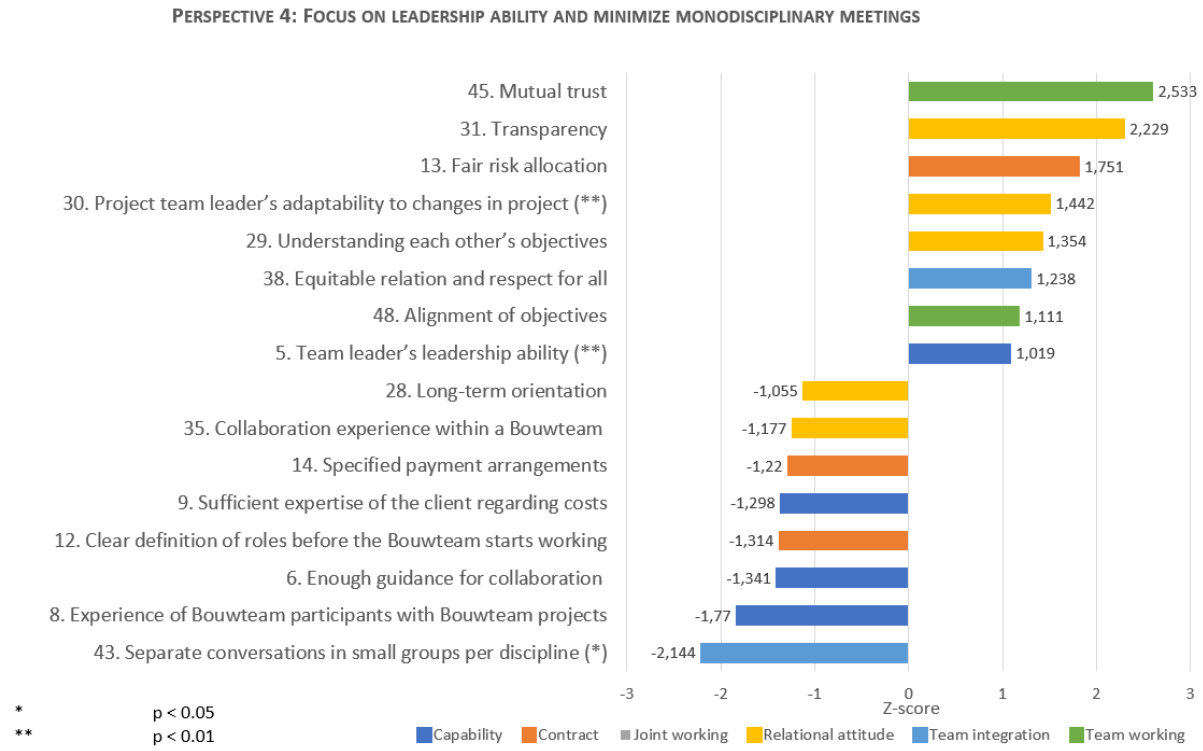

Figure 10: Most and least important statements of perspective 4

Description

The highest scoring distinguishing statements are related to leadership. On one hand the project team leader's adaptability to changes (s30; 1.442**), on the other hand the project leader's leadership ability (s5; 1.019**). The project leader is seen as the key officer for collaboration, because he is the main person in the project team and has to facilitate the collaboration (RESP08). The least important statement for this perspective is separate conversations in small groups per discipline (s43; -2.144**). Having separate conversations is seen as a bad aspect of collaboration, which traditionally is a cause of harming the way of working together, as well as it takes way too long and is quite inefficient (RESP08). Within most projects you can keep consultation structures efficient (RESP08). You sometimes cannot avoid implementing a limited clustering of consultations in very large projects, but strive for minimization (RESP08). Quite some discipline meetings are not as effective as integrally organized meetings, since the interfaces between disciplines should be safeguarded in meetings, which is not always done in separate discipline meetings (RESP08).

Respondents who share perspective 4

The loaders on this perspective are given in Table 21. This perspective is shared both the client and engineering company. Within these parties, different functions loaded on this perspective, as well as diverse experience of completed Bouwteam projects. All respondents have over 20 years of experience and a lot of projects in this perspective are related to infrastructure projects. These two last mentioned characteristics are not distinguishing for the participants as most of the P-set match those.

Table 21: Loaders perspective 4

Respondent	Working at	Function	Years of experience	Completed Bouwteam projects	Type of project(s)	Involved at the side(s) of
RESP08 (M)	Engineering company	Senior consultant	>20	2-5	Utility construction and infrastructure	Client and contractor
RESP13 (M)	Engineering company	Contract manager	>20	1	Infrastructure	Client
RESP15 (M)	Contractor	Branch manager	>20	>5	Infrastructure	Contractor
RESP23 (M)	Engineering company	Project manager	>20	1	Infrastructure	Client
RESP24 (M)	Engineering company	Project leader	>20	2-5	Infrastructure	Client and contractor
RESP25 (M)	Contractor	Project manager	>20	2-5	Infrastructure	Contractor

Link to theoretical categories

For the fourth perspective there are three distinguishing statements that have extreme positions (absolute value higher than 1), which means these statements are characteristic for this perspective, see Table 22.

Table 22: Extreme distinguishing statements perspective 4

Statement	Category by Suprapto (2015)
30. Project team leader's adaptability to changes in the project	Relational attitude
5. Team leader's leadership ability	Capability
43. Separate conversations in small groups per discipline	Team integration

These statements come from 'Relational attitude', 'Capability' and 'Team integration': one for each category. Therefore, it can be concluded that this perspective does not focus on a specific category, and the statements are interpreted without taking into account a specific category.

4.6 PERSPECTIVE 5: FOCUS ON EARLY AGREEMENTS ON PRICE-RELATED ASPECTS & SPECIFIC COMPETENCES OF PEOPLE

The fifth perspective is called: focus on early agreements on price-related aspects & specific competences of people. This perspective has an explained variance of 8% and is shared by 3 respondents, namely: RESP01, RESP26 and RESP28. Figure 11 shows the characterizing and distinguishing statements of perspective 5.

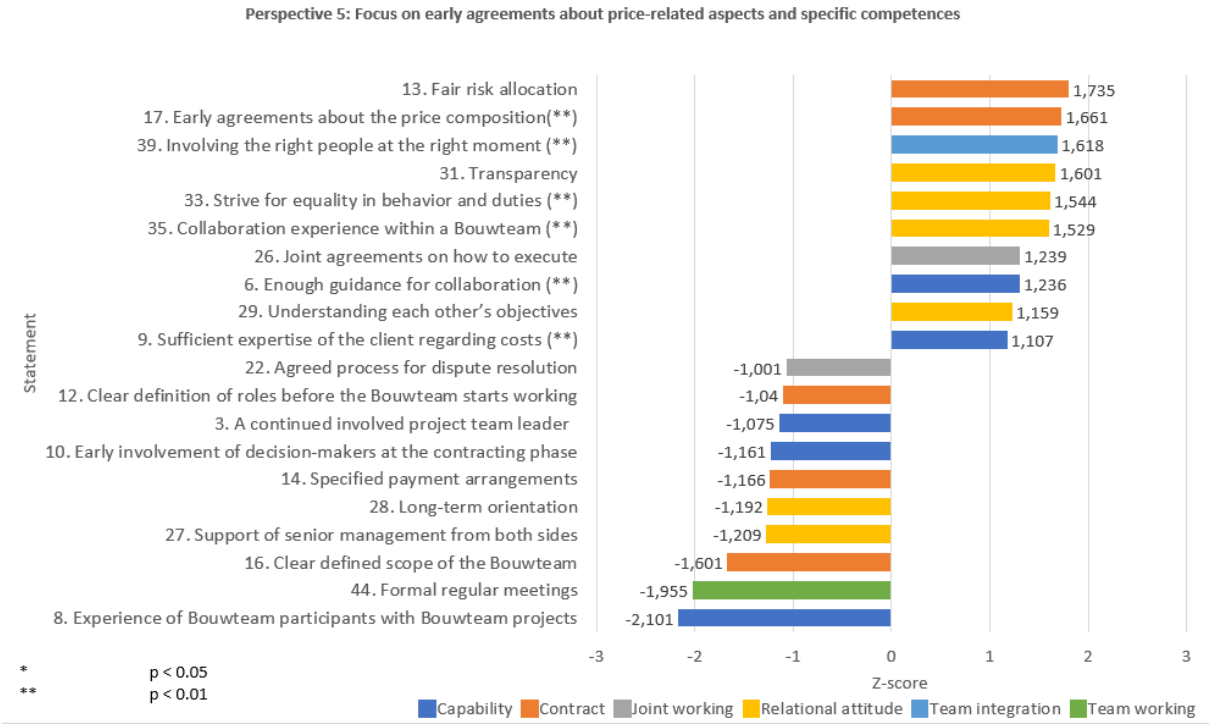

Figure 11: Most and least important statements of perspective 5

Description

Early agreements about price composition, tariffs and price determination plan, including moments of sharing the cost estimation (s17; 1.661**) is most important according to this perspective. The other most important statement is the availability of the right people (s39; 1.618**), as people in the end are the ones who make the project work (RESP28). Particularly, in this 'new' Bouwteam form, specific competences and expertise might be more needed to make the project a success (RESP28). To strive for equality in behavior and duties for the client and contractor (s33; 1.544**) is relatively important as well, which contradicts the traditional client-contractor relationship, as the goal of the Bouwteam is collaboration (RESP28). Therefore, the Bouwteam is not suitable for traditional behavior. Within this perspective, the following statements are considered relatively important as well, but not as much as the ones explained above: collaboration experience within a Bouwteam prior to the transition (s35; 1.529**), enough guidance for collaboration in the form of a collaboration document (s6; 1.239**), sufficient cost expertise of the client (s9; 1.107**).

Respondents who share perspective 5

The loaders on this perspective are given in Table 23. This perspective is shared both the client and contractor. Within these parties, different functions loaded on this perspective, as well as diverse experience of completed Bouwteam projects (ranging from 1 to over 5) and experience in the working field (5-10 to >20). The project types are diverse and therefore not specific for a certain type of projects.

Table 23: Loaders perspective 5

Respondent	Working at	Function	Years of experience	Completed Bouwteam projects	Type of project(s)	Involved at the side(s) of
RESP01 (M)	Contractor	Strategic consultant	>20	>5	Utility construction	Contractor
RESP26 (M)	Contractor	Project manager	>20	1	Water safety	Contractor
RESP28 (M)	Client	Contract manager	5-10	1	Hydraulic engineering	Client

Link to theoretical categories

For the fifth perspective there are six distinguishing statements that have extreme positions (absolute value > 1), which means these statements are characteristic for this perspective, see Table 24.

Table 24: Extreme distinguishing statements perspective 5

Statement	Category by Suprapto (2015)
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Contract
39. Availability of the right people: right people at the right moment	Team integration
33. Strive for equality in behavior and duties for client and contractor	Relational attitude
35. Collaboration experience within a Bouwteam prior to the transition	Relational attitude
6. Enough guidance for collaboration (e.g. collaboration document)	Contract
9. Sufficient expertise of the client regarding costs	Contract

Three statements come from 'Contract', one from 'Team integration' and two from 'Relational attitude'. This means there is more focus on the process and arrangements within the collaboration.

4.7 SIMILARITIES AND DIFFERENCES BETWEEN PERSPECTIVES

Five perspectives are identified for collaboration during the transition in a Bouwteam project. These are: clear, high level scope definition and clear Bouwteam roles (P1), focus on a good professional relationship with less informal events (P2), focus on long-term collaboration with a win-win attitude without the risks innovation would bring (P3), focus on leadership ability and minimize monodisciplinary meetings (P4) and focus on early agreements on price-related aspects and specific competences of people (P5).

4.7.1 Consensus statements

The more correlation between perspectives, the more consensus is reached on the ranking of statements, which means that the way respondents think about certain statements is somehow the same (Kraus, 2018). These statements are called consensus statements and all significant ones are listed in Table 25. The consensus statements with significant scores on a higher level are indicated with asterisks (*/**), meaning the perspectives agree most on the importance of the collaboration factor.

The collaboration factors without asterisks are ranked four or five by the majority of the perspectives.

Table 25: Consensus statements (core values)

Statement	Q-sort value P1	Q-sort value P2	Q-sort value P3	Q-sort value P4	Q-sort value P5
46. High degree of commitment (*)	1	2	2	2	2
25. Joint problem solving (**)	2	3	1	1	1
27. Support from managing board (*)	-1	-1	-2	-1	-4
47. Good communication (*)	2	3	3	2	1
14. Specified payment agreements	-2	-4	-5	-4	-4
31. Transparency	3	4	5	5	4
45. Mutual trust	5	0	5	5	2

A Z-score of absolute 4 or 5 indicate very extreme positions. Therefore, it is only looked at the factors that include more absolute fours and/or fives, which means it is important for multiple perspectives (or not). These factors are included (in the later designed strategies) so that it can be focused/managed/steered on in general. In this case, transparency and mutual trust are seen as very important factors by most of the perspectives, while specified payment agreements are really not. A simple payment is sufficient and possible when there is mutual trust (RESP04). The payment agreements are something that can be worked out together in a Bouwteam and does not have to be written out in detail (RESP09; RESP28). For collaboration, it is less important to have this clear upfront, because it emerges based on trust and transparency (RESP17; RESP28; RESP22). As the main research question of this research focuses specifically on improvement of collaboration, there will be focused on the factors that are considered most important by the majority of the perspectives, the core values: transparency and mutual trust. Thereby, it is said that specified payment agreements are not necessary and is a result of transparency of trust.

Transparency

Description: Transparency (s31) is seen as the foundation of collaboration (RESP06; RESP24). Hidden agendas should be eliminated (RESP17) and success and losses should be shared openly (RESP07; RESP17; RESP24). Transparency is a core value that a Bouwteam should meet so that the maximum of a Bouwteam project can be achieved (RESP15; RESP16 RESP25).

Link to theoretical categories: Transparency belongs to the category relational attitude. In each party there are different behaviors and mindsets that are brought into the relationship when working together. Since both parties interact, a set of relational factors are co-developed specific to their relationship. Transparency is, according to most perspectives, an important factor to positively influence the collaborative relationship between client and contractor during the transition.

Mutual trust

Description: Mutual trust (s45) is also seen as the basis for collaboration (RESP03; RESP04; RESP06; RESP11; RESP12; RESP15; RESP17; RESP18; RESP21; RESP23; RESP24). Mutual trust might work exponentially in collaboration (RESP19). It makes collaborating easier and simpler (RESP04). When there is no mutual trust, traditional behavior might be triggered in which there is an us-against-them attitude (RESP11). Being in a pattern of client and contractor has sometimes damaged the trust of some parties (RESP12). By letting people being their selves, listening to their motivations and using the knowledge of all Bouwteam members, trust might grow, and the client and contractor become one, which might make that traditional client-contractor behavior disappear (RESP14). Mutual trust is

necessary for full disclosure and answering of underlying interests (RESP26). If these underlying interests can be explored, a solution to common challenges can be found (RESP26).

Link to theoretical categories: Mutual trust belongs to the category team working. This is the extent to which team members work together based on synergies in their relationships. Mutual trust is, according to most perspectives, an important collaboration factor to make team working happen in the collaborative relationship between client and contractor.

4.7.2 Correlation

The relation between the perspectives are indicated with correlations. The higher the correlation, the more similarities the perspectives have (Minkman & Molenveld, 2020). The lower the correlations, the more distinctive the perspectives are (Minkman & Molenveld, 2020). As can be seen in Table 26, perspectives 1, 3 and 4 are relatively strongly correlated and perspectives 2 and 5 are reasonably stand alone. Regardless the degree the perspectives are correlated, the two described core values: transparency and mutual trust are similarly ranked as important by most perspectives to improve the collaboration during the transition in a Bouwteam project.

Table 26: Correlation between perspectives

Perspective	P1	P2	P3	P4	P5
P1	1.0000	0.2407	0.4966	0.4566	0.3085
P2	0.2407	1.0000	0.2003	0.2802	0.0734
P3	0.4966	0.2003	1.0000	0.5105	0.2013
P4	0.4566	0.2802	0.5105	1.0000	0.1894
P5	0.3085	0.0734	0.2013	0.1894	1.0000

Perspectives that correlate means that these perspectives agreed upon the main principles about collaboration and therefore the way they can be influenced can overlap sometimes. Stand alone perspectives do not agree that much with the other perspectives. It can be said that collaboration can be influenced, but due to the high correlation between some perspectives, the differences are not that much as was assumed beforehand. The overlap between the perspectives is shown in a Venn-diagram, see Figure 12.

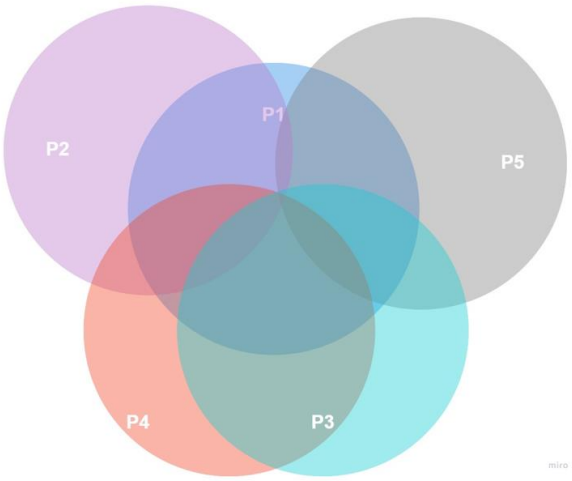

Figure 12: Venn-diagram of the overlap between perspectives

The Venn-diagram shows that there are similarities between perspectives. Knowing these similarities, people of different perspectives could try to find each other to positively influence the collaboration

during the transition in a Bouwteam project. Identifying these similarities is done by analyzing the differences in Z-scores between two individual perspectives, having a maximum absolute difference of one, in combination with a Z-score above positive one for both perspectives. The absolute value is used to identify the collaboration factors that are ranked (relatively) similar, and the score above positive one is used to identify the collaboration factors that are (relatively) important to both perspectives. To gain insight into the similarities between individual perspectives, an overview is given in Table 27. In this overview, the two core values are not mentioned, as they are important to most perspectives.

Table 27: Similarities between perspectives

Perspective	P1	P2	P3	P4	P5
P1		Good working relationship; Joint planning.	Integration of cost aspects; Evaluate the Bouwteam.	Fair risk distribution; Understanding each other's objectives.	Fair risk distribution; Understanding each other's objectives.
P2	-		Early stakeholder involvement; Good communication.	None except core values.	None except core values.
P3	-	-		None except core values.	None except core values.
P4	-	-	-		Fair risk distribution; Understanding each other's objectives.
P5	-	-	-	-	

It can be concluded that there is some overlap between the perspectives based on the correlations. However, that does not mean the perspectives rank the same important collaboration factors equally high. Some more neutral conditions and least important conditions (negative Z-scores) might be ranked relatively equal, resulting in a higher correlation between perspectives. This higher correlation can also be based on more important factors (positive Z-scores), which are most important for this research. Taking the factors into account that two perspectives agree upon as most important results in an overview containing not that much similarities between individual perspectives, but it does contain the conditions that are superiorly ranked important by both perspectives.

4.8 CONCLUSION

Chapter 4 answered the third sub-question: '*What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?*' The five factor solution was used to elaborate on the perspectives. These perspectives are:

1. Clear, high level scope definition & clear Bouwteam roles;
2. Focus on a good professional relationship with less informal events;
3. Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring;
4. Focus on leadership ability and minimize monodisciplinary meetings;
5. Focus on early agreements on price-related aspects & specific competences of people.

Perspective 1: Clear, high level scope definition & clear Bouwteam roles
Characteristic for this perspective is to have a clearly defined scope of the Bouwteam, and the roles in the Bouwteam should also be agreed to in advance, even before the Bouwteam gets started. A high detail level of design is not very crucial for the collaboration, because the level of detail concerns project risks and the degree of control in the execution, which is more considered as a project task rather than an influencing collaboration factor. Within this perspective, there is also less need for the development of common processes. There is also less need for informal events and team events, as a professional and accessible attitude from all parties should be sufficient for good collaboration. Finally, performance management is not necessarily needed according to this perspective. This perspective is shared by clients and contractors with different functions. This perspective is mostly linked to the category contract, while it contains roles, responsibilities and scope as stated in the contract.

Perspective 2: Focus on a good professional relationship with less informal events
Characteristic for this perspective is a good working relationship to positively influence the collaboration during the transition. It is important to create an open and easy going environment where people can do their job properly. In addition, periodic verification and validation is important: does the design meet the requirements and is the client satisfied? It should also be tested whether it still fits within the financial bandwidth and time schedule. There is less need for team events and informal events. Even though this perspective requires a good environment, it is more about a professional attitude towards each other. Early agreements on the price composition, tariffs and price determination plan are also less important, as are separate discussions in small groups per discipline. In order to maintain the involvement of all disciplines, plenary meetings are more necessary. This perspective is shared only by contractors with different functions, coming from different projects. This perspective is mostly linked to the category team working, while it contains a team environment and work relationship between project team members.

Perspective 3: Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring
This perspective is characterized by a long-term orientation to positively influence collaboration during the transition. A long-term orientation is seen as the basis for collaboration. A project is not a one-off profit, but people also want to work together on future projects, which means that they have to deal with each other differently. There is also a focus on a win-win attitude, which helps to form a basis for future collaboration. Respondents from this perspective agree that it is less necessary to include innovation and technological developments to positively influence collaboration during the transition, as it is considered a development regardless the collaboration. This perspective is shared by all three parties: client, contractor and engineering company. This perspective is linked to the category 'Relational attitude', as it mainly deals with the alignment of different attitudes and mindsets between different parties and within the team.

Perspective 4: Focus on leadership ability and minimize monodisciplinary meetings
Characteristic for this perspective is the focus on leadership. It is about the project leader's adaptability to changes in the project and his leadership ability. The project leader is seen as the key officer for collaboration and the main person to facilitate collaboration within the project team. It is less important to have separate conversations in small groups per discipline, while integrally coordinated meetings are more efficient for the project. Consultation structures therefore should be kept efficient. This perspective is shared both the client and engineering company. Within these parties, different functions loaded on this perspective, as well as diverse experience of completed Bouwteam projects. This perspective cannot be linked to a certain category, as the three distinguishing statements are placed in three different categories.

Perspective 5: Focus on early agreements on price-related aspects & specific competences of people
This perspective is characterized by early agreements on price composition, tariffs and price determination plan, including moments of sharing the cost estimation. It is also relatively important that the right people are available. People make the work and especially in a Bouwteam, specific skills and expertise might be needed for the project to be a success. It is desirable to strive for equality between client and contractor, which contradicts the traditional behavior of having contradictory interests. A Bouwteam environment is an environment which focuses on collaboration of all parties involved, probably more than any other traditional contract. The Bouwteam collaboration that preceded the transition determines the collaboration during the transition. This makes sense from the reasoning that early price-agreements are relatively important for this perspective. If the price-negotiations do not go well, it is a bad start for the execution, precisely because they attach so much value to that price moment. There should be enough guidance for collaboration for example in the form of a collaboration guideline. It is relatively important that the client has sufficient cost expertise. This can again be linked to the importance of the price component. This perspective is shared both the client and contractor. Within these parties, different functions loaded on this perspective, as well as diverse experience of completed Bouwteam projects (ranging from 1 to over 5) and experience in the working field (5-10 to >20). This perspective is mostly linked to contract and relational attitude, resulting in a focus on process and arrangements within the collaboration.

Link to transition
The five perspectives give insight on how to improve collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project as it indicates how people look at this collaboration. For perspective 1, there should be a clear, high level scope definition and clear Bouwteam roles to improve the collaboration during the transition. For perspective 2, there should be a focus on a good professional relationship with less informal events to positively influence the collaboration during the transition. For perspective 3, there should be a long-term collaboration with a win-win attitude and no risks of innovation to improve the collaboration during transition. For perspective 4, there should be a focus on leadership ability and minimalization of monodisciplinary meetings to positively influence the collaboration during the transition. For perspective 5, the price-related aspects are important, as well as specific competences of people. Taking those into account will positively influence the collaboration during the transition according to those who belong to perspective 5.

Regarding these identified five perspectives, it can be concluded that besides general collaboration factors for projects, such as scope, roles, professional relationship, long-term orientation and leadership ability, the early agreements on price-related aspects are considered more important as the project progresses and the transition comes closer.

These five perspectives are used in the next Chapter to come up with strategies to improve the collaboration during the transition from the Bouwteam phase into the execution phase.

5 DEVELOPING STRATEGIES FOR USING THE PERSPECTIVES IN PRACTICE

Chapter 5 contains strategies for using the five perspectives in practice. Based on input from five expert interviews regarding the distinguishing statements of each perspective, combined with literature, strategies are developed that can be applied in practice to improve collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project. This Chapter leads to answering the last sub-question: '*How can client and contractor use the perspectives in practice to influence collaboration during the transition into the execution phase?*' Section 5.1 explains the development of strategies, Section 5.2 describes the expert interviews, Section 5.3 the expert evaluation, Section 5.4 the strategies and a conclusion is given in Section 5.5.

5.1 DEVELOPMENT OF STRATEGIES

The process on how the strategies of the different perspectives and core values are developed is shown in Figure 13 and described below.

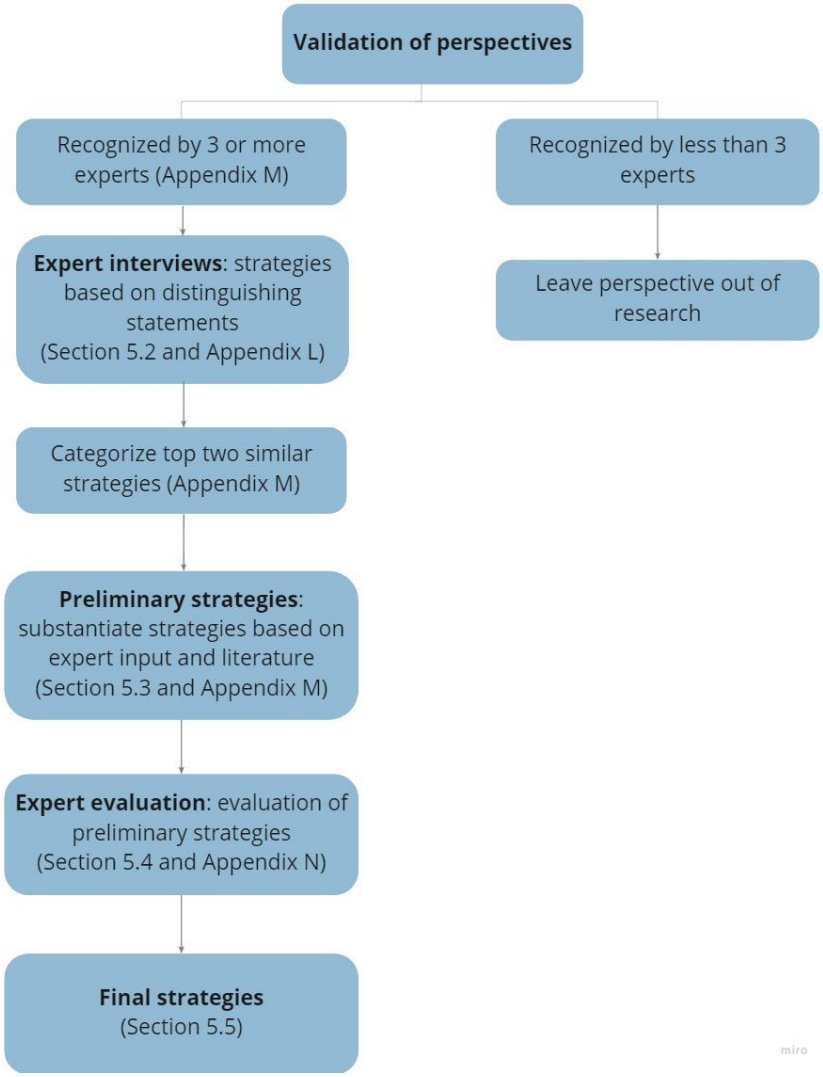

Figure 13: Development process of strategies

Each of the experts is asked whether the perspective is recognized in practice. If this is the case by the majority of the experts, meaning three of the five, the perspective is taken into consideration for this research. All perspectives are taken into consideration for this research. The backgrounds of the five experts are described in Section 5.2. If the perspective is recognized, the experts are asked on how to cope with the two most positive distinguishing statements of the perspective. These are chosen because the main research question is about improvement of collaboration, therefore the focus is on the positive distinguishing statements which are the strong and leading statements for the perspective.

A transcript is made of all given strategies, after which similar strategies are categorized. For all five experts a transcript is made, as shown in Appendix L. To focus only on the most important strategies that are considered most important by (almost) all experts, it is chosen to take strategies into account when at least four experts have a similar strategy. The strategies are linked to the highest scoring (positively) distinguishing statements, as these are the points to focus on to improve the collaboration. Based on their input, a merged top two strategy for each perspective is made. After that, the strategies

are substantiated with input from the experts and literature. Substantiation from literature is an essential link to have, because the experts could say things from practice based on experiences, but the link to existing literature and what is known about this topic in previous research is important. This is done to among others know to which degree the outcomes of this research are the same or different compared to what is already known. These preliminary strategies will be evaluated in an expert evaluation interview, as described in Section 5.4. The input of the expert evaluation leads to the final strategies as outcome of this research and are presented in Section 5.5

5.2 EXPERT INTERVIEWS

Expert interviews generate in-depth knowledge (Verschuren & Doorewaard, 2010) which could be used to write strategies. The expert interviews are used to validate the gained perspectives and gather input to write strategies on how to cope with these perspectives. These five experts outside Sweco were chosen based on their current experience with Bouwteam projects. The expert interviews were conducted with two experts (expert 2 and 5) who deal with the legal side of Bouwteam projects and two experts (expert 1 and 3) who actually participate in, and contribute to, Bouwteam projects. One expert has a background on both sides and is working as a project manager but with a lot of legal knowledge (expert 4). The expert group was composed such that the experiences from the people who prescribe the theory about Bouwteam projects and the people who work in these Bouwteam projects, in practice, can be understood. The reality is that theory and practice about collaboration in Bouwteam projects do not always align. Insights from these two angles might gain input for a well-considered strategy. The five experts are briefly described below.

Expert 1
Expert 1 has 21 years of work experience. The expertise of expert 1 lies in project management, design leader and test coordinator. Expert 1 has experience in Bouwteam projects and UAC-IC contracts executed both on the side of the client and contractor. Expert 1 has participated in Bouwteams in the past and still is part of Bouwteams. Currently, expert 1 is active as a project manager in four Bouwteams. In three of these Bouwteams, expert 1 is also active as a design leader.

Expert 2
Expert 2 has 38 years of work experience. Expert 2 was involved in at least 15 to 20 Bouwteams. In the Netherlands and abroad. Expert 2 was formerly known as one of the best-known projects and construction lawyers in The Netherlands with a broad international track record and widely respected as a strategic thinker. Expert 2 is an experienced arbitrator, mediator and negotiator and has a combination of management and board level experience in a variety of organizations, allied to widely regarded communication skills.

Expert 3
Expert 3 has 15 years of work experience in the infrastructure industry. Expert 3 has been extensively focused on Bouwteam projects for the last 5 years. Expert 3 has supervised or experienced as a team member at least 15 Bouwteam projects. The largest two Bouwteam projects expert 3 was part of are now in the realization phase. Expert 3 has developed a Bouwteam wheel with a team and a game in which behavioral characteristics are tested.

Expert 4
Expert 4 has 16 years of work experience. Expert 4 has participated in multiple Bouwteam projects over the past few years as a project manager and is still active in Bouwteam projects. Currently, expert 4 is participating in an important Bouwteam project as project manager. Expert 4 has both technical and juridical background which expert 4 uses to fulfil the role of project manager successfully.

Expert 5
Expert 5 has 16 years of work experience. Expert 5 is specialized in construction and tender law. Expert 5 has a broad range of experience in giving construction strategy, whether it is to employers, investors or contractors on projects. Expert 5 has extensive knowledge of the construction field and is a convincing negotiator.

Interview set-up
The format of the expert interviews is illustrated in Appendix L. During these interviews, which lasted about one hour, the experts are asked the following questions:

1. Do you recognize the five perspectives that are obtained through the Q-method?
2. If so, how to use these perspectives in practice? If not, how can these perspectives be used in practice?
3. Are there any obstacles with the way you (would) use them?

The answers to these questions can be found in Appendix M. When the majority of the experts recognizes the perspective, this perspective is noted as recognition in practice. This is true for all perspectives:

1. Clear, high level scope definition & clear Bouwteam roles
2. Focus on a good professional relationship with less informal events
3. Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring
4. Focus on leadership ability and minimize monodisciplinary meetings
5. Focus on early agreements on price-related aspects & specific competences of people

5.3 PRELIMINARY STRATEGIES

A combination of the experts' strategies is used as input to write a final strategy for this Chapter. Prior to presenting the final strategies, preliminary strategies are set up. When at least 4 out of 5 experts gave the similar strategy regarding the most distinguishing statements, this is taken into account as a preliminary strategy. These strategies are shown in Appendix M. To not repeat the strategies, only the final strategies are presented in this report.

As the preliminary strategies end with the author's own interpretation, these strategies are evaluated with another expert, see Section 5.4. A total overview of the merging of the individual expert strategies to the final strategies, as well as the scientific substantiation is also given in Appendix M and Section 5.5.

5.4 EXPERT EVALUATION

The expert evaluation is used to evaluate the preliminary strategies (Appendix M).

Expert 6

Expert 6 who is chosen to evaluate the interpretation of the five experts' input and literature is based on experience with both client and contractor, having 28 years of work experience. Expert 6 has participated in and completed several Bouwteam projects since 2003, having experienced all phases of a Bouwteam project. This includes several transitions from the Bouwteam phase to the execution phase: the focus of this research. Expert 6 for example has participated as a consultant in Bouwteam projects and is currently participating in two Bouwteam projects as project leader. As this research focuses on client-contractor collaboration, Expert 6 can be seen as 'top expert', therefore being able to evaluate the final strategies.

Interview set-up

Expert 6 was asked the following set of questions:

1. Does the strategy fit the perspective it is linked to?
2. Does the strategy result in improved collaboration during the transition from the Bouwteam phase into the execution phase?
3. Does the perspective correspond to the type of project is it linked to?

Interview conclusion

Expert 6 evaluated if the strategies fit the perspectives they are linked to, as well as if all strategies might result in improved collaboration during the transition from the Bouwteam phase into the execution phase. Expert 6 concluded that the perspectives were linked to the right type of project, which means that, according to this expert, all results and conclusions based on the interpretation of the Q-method, the expert interviews and literature are evaluated as correct. Very small adjustments are made during the evaluation interview on the preliminary strategies, which mainly were adjustments on the way the strategies were formulated, and not on the context of the strategies. The final strategies are shown in Section 5.5, in which the small adjustments are included.

5.5 FINAL STRATEGIES

The final strategies per perspective come forward from the expert evaluation of the preliminary strategies, and are described below. The 12 strategies are numbered and indicated with the letter S.

5.5.1 General strategy for all perspectives

Previous Chapter described two factors on which most perspectives positively agreed on, the core values: transparency and mutual trust. For these core values two strategies: the general strategies, are developed which apply to most of the perspectives. Focusing on these core values is important for companies, as they are present at most of the perspectives among the team members involved in the project, and therefore might positively influence the collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project. Transparency and mutual trust are connected as there might be no trust without transparency (Expert 1). According to the study of Rawlins (2008) and Tulli et al. (2019), trust and transparency are indeed positively linked. It could be concluded that more transparency might lead to more trust (Rawlins, 2008). These two core factors are explained below based on input from experts and literature.

Strategy Transparency
S1: Create an environment in which information, that meets quality requirements, is openly available for all Bouwteam members.

Substantiation of strategy with literature and experts
Transparency is a core value that a Bouwteam should meet, so that the maximum of a Bouwteam project might be achieved (RESP15; RESP16 RESP25; Expert 1; Expert 2; Expert 3; Expert 4). Hidden agendas should be eliminated (RESP17; Expert 4) and success and losses should be shared openly (RESP07; RESP17; RESP24). Give mutual insight in what drives the team and proactively report problems and interests (Expert 3; Expert 4). Information should meet quality requirements as organizations depend on data for managing their daily activities and decision-making, thereby, having information with less quality might lead to undesirable results (Gharib & Giorgini, 2015). Information should be accurate, believable, trustworthy, complete, timeless and consistent (Gharib & Giorgini, 2015). A transparent team climate without any information hiding is desirable, as it enables a safe atmosphere in which the team members are willing to share (H. Yi et al., 2016). One should be totally transparent, also about the financial system in order to create understanding and the interest from the client (Baykal, 2019; Expert 1; Expert 4). Transparency can be checked within the Bouwteam by asking the team members if they are satisfied with the available information (Expert 2). The project leader could take a role in this by keeping an overview (Expert 3). Transparency positively affects collaborative situations and relationships (Tulli et al., 2019), which means that it might positively affect the collaboration during the transition in a Bouwteam project.

Strategy Mutual trust
S2: Invest in collaboration from the start by social interaction between team members and maintain the collaboration during the project.

Substantiation of strategy with literature and experts
Mutual trust is one of the most important factors in collaborative relationships (Nielsen, 2004). Trust arises during the collaboration, as it is might not be there from the start or suddenly at the transition (Expert 1). Give mutual trust the time to arise (Expert 1). Therefore, invest energy in social interaction from the beginning of the Bouwteam project (Expert 1), because team members can build mutual trust through social interaction (Chen et al., 2009). Social interaction strengthens the team spirit, which might motivate team members to work and collaborate within the project team (Expert 1). Team members should pay attention to understanding each other, letting people be themselves, listening to their motivations, use all knowledge within the team, and testing whether the team goes into the right direction (RESP14 RESP16, Expert 1; Expert 3; Expert 4). Mutual trust therefore results in people who are more willing to share and to collaborate (Rawlins, 2008). Having team members who are willing to share and collaborate might result in improved collaboration, as they are more open to work with and for each other on a trustful basis (Expert 6).

5.5.2 Strategy perspective 1: clear, high level scope definition & clear Bouwteam roles

Strategy kick-off
S3: Organize a kick-off at the beginning of a Bouwteam project with all team members in which the scope and Bouwteam roles are clearly presented, with the option for further clarification at a later moment.

Substantiation of strategy with literature and experts
The kick-off meeting is one of the most important meetings and its goal is to share information (Sampietro, 2016). In this work-related meeting the scope of the Bouwteam and the division of

Bouwteam roles are refreshed (Expert 1; Expert 2; Expert 3; Expert 4; Expert 5; Hamburger, 1992) as they are agreed upon before the kick-off (Expert 6). A complete scope and roles definition prior to project execution might lead to a successful project (Expert 6; Mirza et al., 2013). An incomplete scope and roles definition at early stages of the project makes the progress more difficult (Fageha & Aibinu, 2013). Therefore, having the scope and roles clear upfront might positively influence the collaboration during the transition (Expert 6). If the fixed scope description and division of roles are written out in detail upfront, it might avoid conflicts and unclarities later on, during the transition (Expert 2; Expert 3; Expert 5). Studies have found that (relationship) conflicts could negatively influence collaboration for which reason should be avoided (Neumeyer & Santos, 2020; Meyer, 2004). If the client has a clear vision and know what the wants and needs, the kick-off might be of more added value to the collaboration (Expert 4; Hamburger, 1992). In addition, the project documents should be available and shared before the kick-off meeting so that everyone has the possibility to give feedback, also later on (Sampietro, 2016). This way, it is tested whether the scope and roles are clear and complete which increases the effectiveness of the kick-off (Sampietro, 2016). If these are clear upfront, it might affect the Bouwteam positively as every team member knows and understands what to do, and what to expect from each other, and therefore it might improve the collaborative relationship among team members during the transition (Expert 6).

Strategy DiSC management profiles

S4: Use DiSC management profiles, and communicate these, to establish roles by analyzing team members at the start of the Bouwteam project, so that it becomes clear which people are in the Bouwteam and how to cope with those different characters.

Substantiation of strategy with literature and experts

In construction projects, project team members have differences in (cultural) backgrounds, knowledge, values, skills and professional experiences (Wu et al., 2019). A Bouwteam consists of many diverse players (Expert 1; Expert 2; Expert 3; Expert 5), in which every team member should make the greatest contribution to the project (Expert 2; Expert 3). A multi-colored team indicates many complementary characteristics in a team (Expert 1; Expert 2; Expert 3), which creates counterforce within the team, using each individual's strength (Expert 2; Expert 3). If a character is missing, it might be the case that characteristics are missing (Expert 6). Someone could be appointed to do the task or someone could be brought into the project to fulfill the role (Expert 6). Diverse project team members might lead to extended knowledge within the team and solutions that improve collaboration performance (Expert 6; Yi et al., 2017; Kearney et al., 2009). Therefore, the team composition influences collaboration and team performance (Batenburg et al., 2013). However, take into consideration that too many diversity could lead to conflicts that negatively influence performance (Lovelace et al., 2001; Expert 6). Being aware of a person's character beforehand can avoid having different expectations from the team collaboration (Expert 1; Expert 5). Therefore, at the start of the Bouwteam project, the characters of the potential team members should be analyzed to prepare on how to cope with these different profiles within the project team, in order to try to avoid conflicts or resolved appropriately (Expert 1; Expert 2; Expert 3; Expert 5). Conflicts can cause situations that harm the mutual relationship (Senaratne & Udawatta, 2013; Liubchenko, 2017). Analysis of Bouwteam members can be done by means of management DiSC profile (Expert 1; Expert 2), indicating someone's character by one of the four prime colors (Payne, 2014). Each color refers to a dimension: dominance, influence, steadiness and conscientiousness (Payne, 2014). DiSC is a tool that helps team members to better understand themselves and each other to reduce conflicts and thereby improving collaboration (DiSCprofile, n.d.). Thus, by analyzing the DiSC profiles of the team members, it is known what type of people are involved in the project and the chance of being able to know how to deal with them and

thereby know how to maintain a positive collaborative relationship (during the transition) might increase (Expert 6).

5.5.3 Strategy perspective 2: focus on a good professional relationship with less informal events

Strategy joint design sessions
S5: Organize joint sessions related to the content (e.g. about the design or approach during execution) to share knowledge, and verify and validate the work to deliver quality.

Substantiation of strategy with literature and experts
Having joint sessions focusing on the content creates an integral overview, which means decisions can be made based on what is best for project, keeping in mind the same project or design objective(s) (Expert 3; Expert 4; Expert 5). Knowledge and insights about the project should be shared (Storck, 2000; Kotlarsky & Oshri, 2005), about the design, as well as the approach during execution and collaboration (Expert 3). For example, joint design sessions fulfill the needs of both the client and contractor, while taking their expectations and objectives into consideration (Bacattini et al., 2017). Sharing this information can lead to improvements in the design and an early recognition of potential issues arising in the collaboration (Expert 3; Storck, 2000; Kotlarsky & Oshri, 2005). Questions could be immediately answered and looked at (Expert 6). In addition, design quality is an important factor in construction projects (Savolainen et al., 2018). Therefore, maintaining design quality through verification and validation is very important (Savolainen et al., 2018; Expert 1). Periodic verification and validation traces errors at early stages which reduces rework and thereby reducing additional time, costs and resources, later on in the project (Kumaresh & Baskaran, 2010). Additional time, costs and resources can lead to irritations within the project team, and could harm the collaborative relationship (Expert 6). Taken this into consideration, joint design sessions might improve collaboration during the transition.

Strategy collaboration plan
S6: Document agreements together in a collaboration plan on how to collaborate, and especially expectations within the team and as individuals.

Substantiation of strategy with literature and experts
Having a document that sets out the principles of collaboration and its objectives establishes a reference point for all involved parties (Manchester Business School, 2009). Discuss how things will be handled in a collaboration plan (Expert 1): document activities, expectations, minimum requirements to make the project a success and back-ups (Expert 1; Expert 2; Expert 3; Expert 5). Managing among other's requirements and expectations of a project could lead to a successful project (Ireland, 1992). If it is not spoken out or recorded, there might be nothing to hold up to (Expert 1). It creates clarity on how to cope with collaboration and addresses anticipated challenges (Hall et al., 2019). Think about investing in work-related collaboration from the start (Delgadillo, 2016) by getting to know each other (on a work-related basis) in an open, light-hearted and relaxed atmosphere (Expert 1; Expert 2; Expert 5). Getting to know each other on a work-related basis might contribute to a professional collaboration (Fapuhonda, 2013). If this is also done in an open work environment, it might improve working relationships (Pravamighte, 2014). An open environment could help the team member's ability to answer questions, coordinate actions and share information rapidly (Heerwagen et al., 2004). Documenting the agreements on how to collaborate can be done for example in a collaboration plan (Manchester Business School, 2009). Having this collaboration plan signed by the involved parties indicates the importance of sticking to the agreements noted in the document (Manchester Business School, 2009). This collaboration plan could also be in the form of a drawing or PowerPoint (Expert 6).

Agreeing and sticking to the collaboration plan might result in having a good and professional working relationship (Expert 1; Expert 6). In addition, it could be helpful that team members have insight and accessibility to the content of the collaboration plan (Manchester Business School, 2009). Having a good working relationship stated and followed, prevents issues and discussions, as team members know how to collaborate and what is expected from each other (Expert 1; Expert 2; Expert 3; Expert 5). Right where it gets exciting towards the execution, such a plan could be brought up to see what everyone agreed upon (Expert 6). This might positively contribute to collaboration during the transition as it provides clarity for all involved parties what to do in the project and in specific situations that might occur during the project (Expert 6).

5.5.4 Strategy perspective 3: focus on a long-term collaboration with a win-win attitude without the risks innovation would bring

Strategy similar project vision
S7: Speak out about each other's interests and objectives to jointly come to a clear and similar project vision.

Substantiation of strategy with literature and experts
A win-win attitude is achieved by talking about both parties' interests and accepting that there are outcomes that are a win for both parties, converted into a joint project vision (Expert 5). This means a shift from self-interests and individual gains, to shared interests and mutual profitable outcomes, which is crucial to a win-win attitude (Expert 6; Tsai & Chi, 2015). If the other's interests and objectives are known, people can take them into account, by which the collaboration might be more effective (Treurniet et al., 2012). In addition, the team members should have the same (long-term) objectives with a clear and similar project vision (Expert 4). Alignment of objectives within the team is one of the most important factors to successful collaboration (Gulati et al., 2012; Liubchenko, 2017). In case someone is convinced that they are fighting for the same objective, it is a way to a long-term relationship, as everyone involved is focused, and works towards the same objectives (Expert 3; Expert 6). A project vision could change, especially in a long-term relationship, but the team has to agree upon it together (Expert 6). More effectivity is reached when consistency is present, due to less interruptions (Kotrba et al., 2012). Therefore, a clear and similar vision is needed as inconsistency might negatively influence the collaboration during the transition (Expert 4; Expert 5).

Strategy learning culture
S8: Create a long-lasting learning culture by organizing possibilities to actively share knowledge between team members.

Substantiation of strategy with literature and experts
If long-term orientation is a goal, it might be important to learn with, and from each other (Expert 1; Expert 6). The team collaborates, makes mistakes and gains knowledge which should be shared within the team (Expert 3; Expert 4; Expert 6). In a long-term orientated project, team members might be more willing to participate actively in knowledge sharing (Ford & Chan, 2003). By sharing knowledge, a team learns from each other and becomes stronger (Expert 1), which might increase the success of a project (Hoegl & Gemuenden, 2001). A stronger team has a positive impact on both parties for the long-term (Expert 1). Knowledge prepares team members with facing uncertainties that projects, especially long-lasting projects, can bring and supports the learning culture (Liebowitz & Megbolugbe, 2003). Effective collaboration is ensured as team members are encouraged to share their specific knowledge and learn from each other (Jamshed et al., 2018). There are different ways to share knowledge, such as: installing mentoring systems, trainings for new team members, information and

communication technologies, vocational training and constructive handling of mistakes (Mueller, 2012). Regardless the way knowledge is shared, it might result in solving tasks better, faster and cheaper (Akhavan et al., 2012). Taking these advantages into account, it might positively influence the collaboration during the transition, as the collaborative design process before the transition went smoother, as it ensured a safe culture (Expert 3). It also is linked to both core values, as actively sharing information improves the openness and transparency to share project related information with each other, as well as the relationship with each other will be more trustworthy. The two core values are important aspects to focus on, as they might improve the collaboration during the transition for most perspectives.

5.5.5 Strategy perspective 4: focus on leadership ability and minimize monodisciplinary meetings

Strategy efficient meeting structure
S9: Organize an efficient meeting structure dependent on the nature of the project (e.g. complexity, size), commonalities and subject of the meeting.

Substantiation of strategy with literature and experts
There is more need for integrality and plenary consultations to be scheduled (Expert 1; Expert 3; Expert 4; Expert 5). Different disciplines look differently at the possible solution, which can integrally be coordinated in meetings to jointly come to an integrated reaction (Expert 5). A multidisciplinary perspective focuses on redefinition of issues outside own boundaries supported by different insights from various disciplines and reach solutions based on a new understanding of complex situations (Palaniyandi, 2018). Plenary consultations should not be endless, but an efficient consultation structure might be needed (Expert 5). It is important to consider whether a consultation is necessary for all involved parties (LeBlanc & Nosik, 2019). One has to look at the subject of the meeting, nature of the project and commonalities between people (Expert 1; Expert 2; Expert 3; Expert 6). The goal and structure of the meeting should be clearly communicated within the team (LeBlanc & Nosik, 2019). The meeting should be interesting for the participants and not take too long, it has to be useful (Expert 6). Scheduling the meeting is in charge of the appointed meeting leader, who has another function in the project team and takes this one next to his other functions' activities (LeBlanc & Nosik, 2019). Having an efficient consultation structure means having frequent meetings in which the progress of the project can be discussed and decision can integrally be coordinated and made (LeBlanc & Nosik, 2019). The more efficient the consultation structure, the better people can better be guided on what to do in relation to the project and the better the results will be, which might positively influence the collaboration during the transition (Expert 6).

Strategy capable project leaders
S10: Appoint project leaders who are capable to lead the project, both the overall project as the separate disciplines, based on their personal capabilities and project experience.

Substantiation of strategy with literature and experts
Project leaders are very important to make sure the project is led into the right direction, in which experience plays an important role (Expert 3; Expert 5). The project leader's leadership competences on the project success might be vital (Geoghegan & Dulewicz, 2008; Ahmed et al., 2013). Therefore, it can be concluded that a capable project leader might have a positive influence on the collaboration during the transition. A project leader should be selected based on their experience and personal capabilities: knowledge, skills, authority and good understanding of the project (Abdulsamad Ali & Chileshe, 2009). Taking this into consideration, project leaders should fulfill a crucial role regarding the extent to which monodisciplinary meetings can be minimized (Expert 1; Expert 2; Expert 3; Expert 4).

The more capable the project leader is, the more knowledge he or she has of the various disciplines (Expert 3). The project leader has to able to connect all disciplines in such a conversation and manage the interfaces (Expert 1; Expert 4). Skilled project leaders keep everyone on board during meetings (Expert 3). Personal capabilities can be trained, as it is proven that training has been relevant and positively contributes to the skills and competences of project leaders (Expert 3; Expert 5; Palotie et al., 2017). As the project leader is continuously leading the project team into the right direction, he or she makes sure that team members from different disciplines are working towards the same goals and therefore the collaboration during the transition might be positively influenced (Expert 6).

5.5.6 Strategy perspective 5: focus on early agreements on price-related aspects & specific competences of people

Strategy financial expertise
S11: Involve (independent) financial experts to help the client examine the price-related aspects of the design.

Substantiation of strategy with literature and experts
It is important to make early agreements about the price composition, tariffs and the price determination plan with moments of sharing the cost estimation (Van der Pas, 2021). The open cost estimate is often done by the contractor, but has to be examined by the client (Expert 1; Expert 5; Expert 6). To ensure that this happens properly, sufficient cost expertise at the client is of importance (Van der Pas, 2021). This is achieved when the client has the same in-house parties or hires a(n) (independent) party who can fulfill this role (Expert 2; Expert 3; Expert 4; Expert 5; Expert 6). A(n) (independent) cost expert can provide input during the discussion about price-related aspects (Schierholz & Gransberg, 2014; Van der Pas, 2021; Expert 6). The transition will only take place after price-agreement is reached (Chao-Duivis, 2012). Early agreements about price-related aspects are therefore important for the collaboration, as having someone who has expertise on financial related aspects might avoid surprises at the price-negotiations phase. Having this expertise should make it easier to come through the price-negotiations, which therefore avoid problems and conflicts, as these two situations are negatively influencing the collaboration. As the collaboration continues after the price-negotiations towards the transition, the collaboration during the transition might be improved as well (Expert 6).

Strategy team members selection
S12: Make effort to win the right people for the project by using an intern application procedure.

Substantiation of strategy with literature and experts
The availability of the right people is very important (Expert 1; Expert 2; Expert 4; Expert 5). The success of the project depends among others on hiring the right people for the appropriate positions (Ahmed et al., 2013; Kang et al., 2005). Therefore, it is a great challenge for the project manager to choose the right persons for the job (Markaki et al., 2011). Having the right people at the right places ensures successful projects (Ahmed et al., 2013). There are different methods to make effort to win the right people for the project. One of them is an application procedure system where a potential team member should apply for a role in a Bouwteam project (Expert 4; Expert 6). This makes sure that the team consists of people who really want to be there and are intrinsic motivated (Expert 6). First, an interview is held and it is checked whether the candidate has the right competencies (Expert 4), however, this could also be a motivational letter, game or short video (Expert 6). An interview is the most common method of selecting people (Markaki et al., 2011). After the interview, the candidate is nominated and subsequently a process is followed in which they either can get the job or not (Expert 4). In addition, marketing could be applied (Expert 4). Team members could be recruited via job advertisements within the organization, which are proven to be effective in attracting potential team

members (Ahsan et al., 2013). With the help of marketing the project can seem more inviting and exciting to be part of for the people within the organization (Expert 4). An organization should represent that their projects are only for the best people (Expert 4). Collaboration will run smoother when the right people are at the right places within a project, as they have a positive attitude towards the project and have affinity with the tasks they have to perform, which might positively affect the collaboration during the transition (Expert 1; Expert 6).

5.6 CONCLUSION

This Chapter answers the last sub-question: '*How can client and contractor use the perspectives in practice to influence collaboration during the transition into the execution phase, in practice?*'. The strategies are based on a combination of input from five experts, literature and an expert evaluation. This led to general strategies for the core values and specific strategies for each perspective, presented in Table 28.

Table 28: Overall strategies based on perspectives

Core value	Strategy
Transparency	S1: Create an environment in which information that meets quality requirements is openly available for all Bouwteam members.
Mutual trust	S2: Invest in collaboration from the start by social interaction between team members and maintain the collaboration during the project.
Perspective	Strategy
P1	S3: Organize a kick-off at the beginning of a Bouwteam project with all team members in which the scope and Bouwteam roles are clearly presented, with the option for further clarification at a later moment. S4: Use DiSC management profiles and communicate these to establish roles by analyzing team members at the start of the Bouwteam project, so that it becomes clear which people are in the Bouwteam and how to cope with those different characters.
P2	S5: Organize joint sessions related to the content (e.g. about the design or approach during execution) to share knowledge, and verify and validate the work to deliver quality. S6: Document agreements together in a collaboration plan on how to collaborate, and especially expectations within the team and as individuals.
P3	S7: Speak out about each other's interests and objectives to jointly come to a clear and similar project vision. S8: Create a long-lasting learning culture by organizing possibilities to actively share knowledge between team members.
P4	S9: Organize an efficient meeting structure dependent on the nature of the project (e.g. complexity, size), commonalities and subject of the meeting. S10: Appoint project leaders who are capable to lead the project, both the overall project as the separate disciplines, based on their personal capabilities and project experience.
P5	S11: Involve (independent) financial people to help the client examine the price-related aspects of the design. S12: Make effort to win the right people for the project by using an intern application procedure.

6 DISCUSSION

Chapter 6 presents the discussion and limitations of this research. Section 6.1 contains the discussion. Section 6.2 elaborates on the limitations of this research. Section 6.3 explains the practical and scientific contribution of this research. The Chapter ends with a reflection on the writing process of this thesis in Section 6.4.

6.1 DISCUSSION

Interpretation online Q-ranking

The Q-ranking is done via the online tool FlashQ, which means that the researcher was not able to give any further explanation about possible unclarities. The statements and the way the ranking should be done is based on the interpretation of the respondents. The ranking process was clear, as no one contacted the researcher about not understanding what to do. This also applies to the interpretation of the statements. However, some of the statements might have a higher chance of resulting in a different interpretation by respondents.

The online survey has many advantages, such as among others anonymity, less social desirable responses and a shorter processing time (Evans & Mathur, 2005; Siva Durga Prasad Nayak & Narayan, 2019). Unfortunately, 2 out of the 28 respondents reported by e-mail the same technical problem on the website: after placing statements in the sorting scheme, they could not proceed to the next page. Luckily, they wanted to do the survey again. Therefore, no information was lost. However, doing the same survey twice might result in proceeding less careful, but both participants remembered which statements they placed under the most important and least important factors, which are the most valuable ones for the Q-method. In practice this means that due to possibly taking less time, there might be a change of statement ranking from 0 to 1 and the other way around, but that might not have a big influence on the outcome of the Q-method.

Respondent input

The input of the respondents from the Q-method were coming from the online tool, which means that only limited input could be given (Andrews et al., 2003). Due to limited input, more input on ranking was needed to come up with strategies, as comments were only placed at the extremes. Therefore additional information on the distinguishing statements was gained by interviewing five experts on their views and opinions on the perspectives.

Uniqueness of transition

The perspectives of this research are linked to the transition and can be compared to the perspectives of De Hoog (2020), which are linked to the Bouwteam phase. This comparison can be made because the Q-set of De Hoog (2020) is used as a basis for the Q-set of this research. Her three perspectives are relationship first, early involvement of right people, and structure first. The comparison to the perspectives is that the structure first can be linked to the first perspective of this research, since they both deal with definitions and roles. The relationship first can be linked to the second and third perspectives of this research, since they all deal with collaborative relationships. This means that the relationship first perspective of De Hoog (2020) is more specified in this research. The early involvement of the right people cannot be linked to a perspective of this research, since that perspective deals with early involvement and the perspectives in this research deal with the right people. Defining the right people is split up in both having leadership abilities (perspective 4 of this research) and having price-related people (perspective 5 of this research). Mainly the price-related people being the right people involved in the collaboration is an aspect that is not present in the research of De Hoog (2020), but it is in this research, which is unique. As not being able to agree on the price during the price-negotiations is determining whether the transition will continue or not (Chao-Duivis, 2012).

Limited collaboration factors for transition

The obtained collaboration factors for the transition is limited as these could not be found in the literature. Only the factors for the tender phase, Bouwteam phase and price-negotiations phase were found in earlier researches (Chao-Duivis, 2012; Van Riggelen, 2019; De Hoog, 2020; Van der Pas, 2021). Based on three exploratory interviews, factors specifically for the collaboration during the transition were obtained. These were added to the other factors for the tender phase and Bouwteam phase which resulted in the concourse. This was validated with three interviewees and led to the final Q-set. However, transition factors might be missed in the study because these factors are based on three exploratory interviews. This can be improved by organizing more exploratory interviews. As this research came up with strategies for Sweco, these interviews were conducted with Sweco's employees to get an overview for what is needed regarding collaboration during transition from Sweco's point of view. It might be the case that other companies experience other aspects and that these were not taken into account in this research, which could lead to other outcomes (Faber & Fonseca, 2014).

Suitability of perspectives

This research found five perspectives that are present regarding collaboration during the transition from the Bouwteam phase into the execution phase. However, each project is unique (Tilford et al., 2000). The question is: which perspective might be good in which situation? Some perspectives might be more useful than others in certain situations. As the perspectives are linked to people, the question is: which perspective can be linked to which type of project? Dependent on a perspective someone belongs to, the choice might be not to put that person on the project. In other words: how to choose the right person for the right project (Markaki et al., 2011). One perspective is not better than the other, but a certain perspective (and type of people who are linked to a certain perspective) could fit a project better than another. The suitability of perspectives is only evaluated with one expert and requires further research. However, the set-up of the link from perspectives to type of projects is described below. In addition, it should be noted that there are different ways to link perspectives to a type of project. As the strategies mentioned earlier should be implemented by the people who set up, and manage the Bouwteam project and team, this set-up is developed for the people who determine which employee is placed in which projects.

Someone who belongs to perspective 1 might be suitable for all types of projects, as it is important to have a clear division of roles and responsibilities. The more complex a construction project, the more need for clarity (Wang et al., 2018). In less complex projects, certain project tasks can be arranged relatively informal (Burgan & Burgan, 2014), in which perspective 1 might not come out well.

Someone who belongs to perspective 2 has more need for a professional working relationship. The focus is on the content of the work, rather than the informal interaction, to achieve high performance (Leading teams, 2015). This might come out well in short projects, in which there is less time (and money) for informal events and getting to know each other on a personal level, as well as in more complex projects in which there is more need for specialized people who focus on their own expertise and might not need that much informal social interaction.

Someone who belongs to perspective 3 has a higher preference for project that are long-lasting and most ideally a repeating and standardized process. This might be linked to doing the same kind of tasks, which is more done in less complex project (Hertogh, 1997), such as the housing industry.

Someone who belongs to perspective 4 might be suitable for large and multidisciplinary projects, as the need for multidisciplinary meetings is high (Hertogh, 1997). This probably means that projects with

not that much disciplines might not have these problems as they mostly occur in larger projects when certain decisions are made within a certain discipline. A project leader has a major influence and responsibility to manage the collaboration among different disciplines, which is preferred by people linked to perspective 4.

Someone who belongs to perspective 5 might be suitable for all types of projects, as it is important to have clear insight in the price-related aspects. Having this insight is important to all Bouwteam projects (Van der Pas, 2021), as the transition from the Bouwteam phase into the execution phase will only be there in case there is price-agreement (Chao-Duivis, 2012).

6.2 LIMITATIONS

Dutch context
The Bouwteam project is a Dutch concept. This means that the respondents and the organizations involved in this research are all Dutch. Also the legislation involved in the collaborative relationship are country-specific (Chao-Duivis et al., 2018). In case the Bouwteam phase is introduced in other countries, the research results might not be applicable in these countries, due to the Dutch orientated research scope.

No price-agreement
This research focuses on the contractor of the Bouwteam who becomes the executive contractor after price-agreement is reached. However, there is also another variant in which there is no price-agreement reached and the client looks for another contractor to execute the work (Chao-Duivis, 2012). It should be noted that if there is no transition of the client and contractor involved, and thus another situation occurs, the results of this research might not be applicable, as a different study is required.

6.3 CONTRIBUTION

Practical contribution
The results of this research can be used by clients, contractors and consultants to improve the collaboration during the transition from the Bouwteam phase into the execution phase in practice. How to improve this collaborative relationship is dependent on the perspective the team members are linked to, but the main practical contribution is the way to deal with the different perspectives. These are the 12 strategies to improve the collaboration, which can be applied to improve the collaboration during the transition in a Bouwteam project.

Scientific contribution
This research tried to fil the gap of knowledge on how to improve the collaboration in a Bouwteam during the transition from the Bouwteam phase into the execution phase. This contribution therefore relates to existing literature in which there is known what to do to improve several specific collaborative relationships in other Bouwteam project phases (Chao-Duivis, 2012; Van Riggelen, 2019; De Hoog, 2020; Van der Pas, 2021), but not the relationships as researched in this study.

Literature states that getting to know each other on a personal level is important to improve collaboration (Head, 2009; Fapohunda, 2013; De Hoog, 2020), which is partly contradictory to this research. This research made clear (with perspective 2) that there are people who do not value such a

relationship that much. They would rather focus more on a professional relationship, focusing on the content of the work, and less on a personal relationship.

6.4 REFLECTION

At the end of the graduation process, a personal reflection is given. This reflection is based on the graduation process and what I learned and went through. This reflection is based on the STARR-method: Situation, Task, Action, Result, Reflection. The most important points of reflection are described below.

Analyzing results
Situation: At first, I performed the centroid analysis and elaborated on that. This analysis did not give the best outcome (the explained variance of all factor solution were below 50%).
Task: My graduation committee recommended to perform the analysis again, by using the PCA.
Action: I performed the PCA and deleted the part that was based on the centroid analysis.
Result: This resulted in a higher explained variance for the factor solutions, which then formed the basis for further interpretation and elaboration of the research.
Reflection: If I will perform a Q-method in future research, I now know to use the PCA instead of the centroid analysis, because it results in a more balanced solution.

Professional conversations
Situation: I had to do different (exploratory, validation and expert) interviews for this research with interviewees with different backgrounds.
Task: I had to prepare and conduct the interviews and after that process the output.
Action: Making documents to present during the interviews, doing the interviews, making transcripts based on recorded interviews, analysis of the transcripts. I then had to deal with different interviewees, which was new for me.
Result: I interviewed the different people, in which I noticed that I did it more easily in the last interviews compared to the first ones. This resulted in a better conversation and probably in the interviewee feeling more comfortable and being more open to tell their opinion.
Reflection: I now have experience interviewing, which I can use in future interviews and in future work situations. This is based on being less nervous, better being prepared on what to do and what to expect. This therefore is a personal development during the graduation process.

Scientific process of results
Situation: I had interpreted the perspectives based on respondents' input and the strategies based on expert input. The perspectives were then validated by experts, however, I did not validate the final strategies.
Task: In the green light meeting I got feedback that I had to end with a validation and to make a link with literature, since ending with an interpretation of expert input alone was not scientifically sufficient.
Action: The validation and link to literature should then be made in order to validate the results and input, in the end completing the research with a validation instead of interpretation.
Result: The result is that I ended up with a link to literature for the strategies, which were based on input of several experts, and in the end validated by another expert.
Reflection: I now know how to scientifically process the results of the research and not to end with my own interpretation of input, but with a validation of the interpretation.

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7 CONCLUSION

Chapter 7 contains the conclusion of this research. The objective of this research is to provide insight into ways to improve client-contractor collaboration during the transition from the Bouwteam phase into the execution phase in a Bouwteam project. The main research question is:

'In what way can client-contractor collaboration be improved in a Bouwteam project during the transition from the Bouwteam phase into the execution phase?'

The conclusions for each of the four sub-questions are provided in Section 7.1. The main research question is answered in Section 7.2. The recommendations for future research and organizations in practice is presented in Section 7.3.

7.1 ANSWERS TO SUB-QUESTIONS

Sub-question 1: *'What is needed in the previous phases to make the execution a success, in terms of collaboration, in a Bouwteam project?'*

A Bouwteam project consists of several phases, of which the transition is after the tender phase and the Bouwteam phase and prior to the execution phase and the aftercare phase. The client-contractor collaboration in the previous phases are of influence to the collaboration in the transition and is influenced by several success factors. These factors are categorized in six important aspects of the client-contractor collaboration: capability, contract, joint working, relational attitude, team integration and team working. The success factors define what is needed in previous phases based on literature to make the execution a success in terms of collaboration, and are shown Table 29 in the first three columns.

Table 29: Concourse

Nr. Statement	Chao-Duivis (2012)	De Hoog (2020)	Van der Pas (2021)	Interviewee A	Interviewee B	Interviewee C
Capability						
1. Sufficient resources (time and money) to make collaboration happen	x	x		x	x	x
2. Early involvement of stakeholders		x		x	x	
3. Contractor's track-record in terms of innovation	x	x				
4. A continued involved project team leader		x				
5. Early involvement of contractor(s)		x		x		
6. Team leader's leadership ability		x		x		
Additional factors categorized under capability from literature and exploratory interviews						
7. Enough guidance for collaboration (e.g. collaboration document)	x			x		
8. Exemplary behavior of the team leader: apply leading by example				x		
9. Experience of Bouwteam participants with Bouwteam projects			x		x	
10. Independent cost expert	x		x			
11. Sufficient expertise of the client regarding costs			x			
12. Early involvement of decision-makers (intern client) at the contracting phase				x		
13. Active client				x		x
Contract						
14. Contractual financial incentives (positive and negative)	x	x	x	x	x	x
15. Clear definition of roles before the Bouwteam starts working	x	x	x	x		
16. Fair risk allocation	x	x	x	x	x	
17. Specified payment arrangements		x		x		
18. Financial range is agreed upfront by client and contractor		x		x		
19. Clear defined scope of the Bouwteam	x	x	x	x		
Additional factors categorized under contract from literature and exploratory interviews						

20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation			x			
21. Involvement of the contractor when writing the contract				x		
22. High degree of the level of detail of the design				x	x	
23. Risk management: identify, quantify and control risks			x	x	x	
Joint working						
24. Shared risks	x	x	x	x	x	
25. Agreed process for dispute resolution	x	x				
26. Performance management	x	x	x		x	x
27. Joint planning with all participants		x	x	x		
28. Joint problem solving		x	x			x
29. Propose solutions when raising problems		x				
Additional factors categorized under joint working from literature and exploratory interviews						
30. Jointly establish early agreements on how to execute the realization contract					x	x
Relational attitude						
31. Support of senior management from client and contractor		x		x		
32. Long-term orientation	x	x		x		
33. Understanding each other's objectives	x	x		x	x	x
34. Project team leader's adaptability to changes in the project		x		x	x	x
35. Transparency		x	x	x	x	x
36. Win-win attitude	x	x		x	x	
37. Strive for equality in behavior and duties for client and contractor	x	x			x	
Additional factors categorized under relational attitude from literature and exploratory interviews						
38. Innovation and technological developments: give the contractor freedom to optimize during the process	x		x		x	x
39. Collaboration experience within a Bouwteam prior to the transition	x					
Team integration						
40. Development of common processes		x				
41. Integrated project team	x	x	x	x	x	
42. Separate conversations in small groups per discipline		x				
43. Unrestricted cross-sharing of information in the project	x	x	x		x	
44. Equitable relation and respect for all		x	x			
45. Involving the right people at the right moment		x		x	x	
Additional factors categorized under team integration from literature and exploratory interviews						
46. Integration of cost aspects: estimate price parallel to the development of the design			x	x		
47. No loss of information/knowledge gained during the Bouwteam phase					x	
48. People who are actually engineering in the Bouwteam should also be involved during execution					x	
Team working						
49. Formal regular meetings	x	x		x		x
50. Mutual trust		x	x	x		
51. High level of commitment		x	x	x		
52. Good communication	x	x	x	x		x
53. Alignment of objectives		x		x	x	x

54. Have an elaborated project-start up (PSU)		x				x
55. Evaluate the Bouwteam during the project		x			x	x
Additional factors categorized under team working from literature and exploratory interviews						
56. Team events, informal events and meetings				x	x	x
57. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?			x	x	x	
58. A good working relationship	x				x	x

Sub-question 2: *'What are the experiences during the transition into the execution phase in a Bouwteam project?'*

The experiences of three practitioners who have dealt with a transition in a Bouwteam project are used to obtain additional and unique collaboration factors. These factors provide insight in the practical side of the transition, as the factors conducted from literature do not cover the Bouwteam transition. These additional factors, in combination with the ones provided in the first sub-question, resulted in an overview of all factors that might influence the client-contractor collaboration during the transition. The additional coming from the transition experiences from practitioners are shown in Table 29 in the last three columns. This set including factors from literature and interviews are validated in three interviews which led to the final Q-set presented in Table 30.

Table 30: Final Q-set after validation

Capability
1. Sufficient resources (time and money) to make collaboration happen
2. Early involvement of stakeholders
3. A continued involved project team leader
4. Early involvement of contractor(s)
5. Team leader's leadership ability
6. Enough guidance for collaboration (e.g. collaboration document)
7. Exemplary behavior of the team leader: apply leading by example
8. Experience of Bouwteam participants with Bouwteam projects
9. Sufficient expertise of the client regarding costs
10. Early involvement of decision-makers (intern client) at the contracting phase
11. Active client
Contract
12. Clear definition of roles before the Bouwteam starts working
13. Fair risk allocation
14. Specified payment arrangements
15. Financial range is agreed upfront by client and contractor
16. Clear defined scope of the Bouwteam
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation
18. Involvement of the contractor when writing the contract
19. High degree of the level of detail of the design
20. Risk management: identify, quantify and control risks
Joint working
21. Shared risks
22. Agreed process for dispute resolution
23. Performance management

24. Joint planning with all participants
25. Joint problem solving
26. Jointly establish early agreements on how to execute the realization contract
Relational attitude
27. Support of senior management from client and contractor
28. Long-term orientation
29. Understanding each other's objectives
30. Project team leader's adaptability to changes in the project
31. Transparency
32. Win-win attitude
33. Strive for equality in behavior and duties for client and contractor
34. Innovation and technological developments: give the contractor freedom to optimize during the process
35. Collaboration experience within a Bouwteam prior to the transition
Team integration
36. Development of common processes
37. Unrestricted cross-sharing of information in the project
38. Equitable relation and respect for all
39. Involving the right people at the right moment
40. Integration of cost aspects: estimate price parallel to the development of the design
41. No loss of information/knowledge gained during the Bouwteam phase
42. People who are actually engineering in the Bouwteam should also be involved during execution
43. Separate conversations in small groups per discipline
Team working
44. Formal regular meetings
45. Mutual trust
46. High level of commitment
47. Good communication
48. Alignment of objectives
49. Have an elaborated project-start up (PSU)
50. Evaluate the Bouwteam during the project
51. Team events, informal events and meetings
52. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?
53. A good working relationship

Sub-question 3: *'What are the client-contractor perspectives on collaboration in a Bouwteam project during the transition into the execution phase?'*

The perspectives that are present within the client-contractor collaboration are identified by analyzing the final Q-set ranking of the 28 participants in the Q-methodology. These participants differ from each other in functions, years of experience and number of completed Bouwteam projects, in order to gain insight of different viewpoints. The ranking of the collaboration factors, which are the factors providing the answers to the first and second sub-question, resulted in five perspectives.

1. Clear, high level scope definition & clear Bouwteam roles;
2. Focus on a good professional relationship with less informal events;
3. Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring;

4. Focus on leadership ability and minimize monodisciplinary meetings;
5. Focus on early agreements on price-related aspects & specific competences of people.

Core values

The majority of the perspectives agree that some factors are of equal importance. This resulted in the following factors that are important for most of the perspectives: transparency and mutual trust. Having this agreement means that there is overlap between the perspectives, as shown in Figure 14. It can be concluded that perspectives P1, P3 and P4 agree the most with each other, while perspectives P2 and P5 are more stand alone perspectives. These perspectives are defined below.

Perspective 1 (P1): Clear, high level scope definition & clear Bouwteam roles

Perspective 1 is characterized by a clearly defined scope of the Bouwteam and by roles that are agreed on in advance of the Bouwteam start. A high level of detail of the design is not very crucial for the collaboration, and there is less need for informal events and team events. This perspective is shared by clients and contractors with different functions, and is mostly linked to the category contract, while it contains roles, responsibilities and scope as stated in the contract

Perspective 2 (P2): Focus on a good professional relationship with less informal events

Perspective 2 is characterized by a good working relationship to positively influence the collaboration during the transition. In addition, periodic verification and validation is important: does the design meet the requirements and is the client satisfied? Even though this perspective requires a good environment to work in, it is not necessary to get to know each other on a personal level by having informal events and outings. Early agreements on price related aspects are also less important, as are separate discussions in small groups per discipline. This perspective is shared only by contractors with different functions, coming from different projects. This perspective is mostly linked to the category team working, while it contains a team environment and work relationship between project team members.

Perspective 3 (P3): Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring

Perspective 3 characterized by a combination of a long-term orientation and a win-win attitude. It is less necessary to include innovation and technological developments during the transition in order to possibly influence the collaboration. This perspective prefers to avoid innovation what can cause anxiety within the project. This perspective is shared by all three parties: client, contractor and engineering company. This perspective is linked to the category 'Relational attitude', as it mainly deals with the alignment of different attitudes and mindsets between different parties and within the team.

Perspective 4 (P4) : Focus on leadership ability and minimize monodisciplinary meetings

Perspective 4 is characterized by the focus on the project leader, both his adaptability to changes in the project and his leadership ability. It is less important to separate conversations in small groups by discipline. Moreover, this perspective would like to have an efficient meeting structure in which monodisciplinary meetings are minimized. This perspective is shared both the client and engineering company. Within these parties, different functions loaded on this perspective, as well as diverse experience of completed Bouwteam projects. This perspective cannot be linked to a certain category, as the three distinguishing statements are placed in three different categories.

Perspective 5 (P5): Focus on early agreements on price-related aspects & specific competences of people

Perspective 5 is characterized by early agreements on price related aspects, which is stimulated in case the client has sufficient cost expertise. It is also important that the right people are available, desirably striving for equality between client and contractor. The Bouwteam collaboration that preceded the

transition determines the collaboration during the transition. There should be enough guidance for collaboration, for example in the form of a collaboration guideline. This perspective is shared both the client and contractor. Within these parties, different functions loaded on this perspective, as well as diverse experience of completed Bouwteam projects (ranging from 1 to over 5) and experience in the working field (5-10 to >20). This perspective is mostly linked to contract and relational attitude, resulting in a focus on process and arrangements within the collaboration.

Sub-question 4: *'How can client and contractor use the perspectives in practice to influence collaboration during the transition in a Bouwteam project?'*

The five perspectives, including the core values, that are obtained in the previous sub-question are validated in five expert interviews. In addition, these interviews collected input to draw strategies on how to cope with these perspectives. Based on the most important (distinguishing) statements for a certain perspective, a strategy is written based on experts' input and literature. The strategies are validated in an expert evaluation interview which led to the following final strategies explained below.

Strategies core values: transparency and mutual trust

For the majority of the perspectives, transparency and mutual trust should be present to improve the collaboration during the transition in a Bouwteam project. The strategies for these two core values are shown in Table 31.

Table 31: Strategies for core values

Core value	Strategy
Transparency	S1: Create an environment in which information that meets quality requirements is openly available for all Bouwteam members.
Mutual trust	S2: Invest in collaboration from the start by social interaction between team members and maintain the collaboration during the project.

Strategies five perspectives

For each perspective, certain strategies are developed. These are presented in Table 32. All presented strategies are the answer to the fourth sub-question.

Table 32: Strategies for each perspective

Perspective	Strategy
P1	S3: Organize a kick-off at the beginning of a Bouwteam project with all team members in which the scope and Bouwteam roles are clearly presented, with the option for further clarification at a later moment. S4: Use DiSC management profiles and communicate these to establish roles by analyzing team members at the start of the Bouwteam project, so that it becomes clear which people are in the Bouwteam and how to cope with those different characters.
P2	S5: Organize joint sessions related to the content (e.g. about the design or approach during execution) to share knowledge, and verify and validate the work to deliver quality. S6: Document agreements together in a collaboration plan on how to collaborate, and especially expectations within the team and as individuals.
P3	S7: Speak out about each other's interests and objectives to jointly come to a clear and similar project vision. S8: Create a long-lasting learning culture by organizing possibilities to actively share knowledge between team members.
P4	S9: Organize an efficient meeting structure dependent on the nature of the project (e.g. complexity, size), commonalities and subject of the meeting.

	S10: Appoint project leaders who are capable to lead the project, both the overall project as the separate disciplines, based on their personal capabilities and project experience.
P5	S11: Involve (independent) financial people to help the client examine the price-related aspects of the design. S12: Make effort to win the right people for the project by using an intern application procedure.

7.2 ANSWER TO MAIN RESEARCH QUESTION

Main research question

Based on the answers of the sub-questions, the main research can be answered. The main research question was:

'In what way can client-contractor collaboration be improved in a Bouwteam project during the transition from the Bouwteam phase into the execution phase?'

This research gives insight into ways to improve client-contractor collaboration during transition in a Bouwteam project. There are five perspectives on how to improve this collaboration, containing different collaboration factors as being the most important ones to focus on. Next to these five perspectives, there are also two core values that are important for the majority of the perspectives: transparency and mutual trust. Strategies are developed based on the core values and the perspectives, which contain advices to implement in the Bouwteam project to improve the collaboration during the transition into the execution phase.

For most perspectives, it is important to create an environment in which information of quality is openly available for all Bouwteam members. In addition, there should be invested in collaboration from the start of the Bouwteam project by social interaction between team members which requires maintenance to eventually achieve mutual trust within the team. Except for focusing on these two strategies, specific strategies for each perspective is developed, which show possibilities on how to cope with the perspectives. Applying these strategies in practice might improve collaboration during the transition in a Bouwteam project. However, someone who implements the strategies in the project needs to realize and investigate which perspectives are present among the project team members. Based on which perspectives are present within the team, several strategies should be implemented to improve the collaborative relationship between client and contractor during transition. The strategies per perspective are shown in Table 32.

7.3 RECOMMENDATIONS

The research shows that there are different ways to influence the obtained perspectives regarding collaboration during the transition from the Bouwteam phase into the execution phase. It might therefore be useful to build on parts of this research. In this way, even more in-depth knowledge can be obtained in the future.

7.3.1 Recommendations for future research

Different distribution ranking scheme
It can be recommended for future research to have a different ranking scheme. In case of more statements in the middle/neutral of the scheme (deeper V-form), the perspectives can become more distinctive. This does not mean the number of collaboration factors should be reduced, but there should be less possibilities to place them under the 4s and 5s in the ranking scheme.

Focus on Bouwteam model agreement
There are three Bouwteam model agreements: VG 1992, DG 2020 and the new one by *Bouwend Nederland* which was published in Might 2021. During this research it appeared that there is (very) little experience with the DG 2020 model, let alone with the new model from 2021 in projects that have passed the transition. In future research, the experiences of the DG 2020 model and the new model of 2021 can be included, for example in the exploratory interviews. In this way new factors might be obtained. In addition, specific research on the Bouwteam model agremeents could be done and how these agreements influence collaboration during the transition. The details in the Bouwteam model agreements might be relevant for transition.

Validity of this research
Exactly the same research be carried out with other participants. This way there will be other people involved in the P-set, which could lead to the same perspectives or there might be slight differences due to differences in background of the participants. As this research focused on the client, contractor and consultant, future research could repeat the same research with only one of these parties. It can be investigated whether the same results are found with the new group of respondents or whether new insights are given.

Face-to-face instead of FlashQ
The Q-sorting is done by using the online program FlashQ, which is chosen due to the COVID-19 pandemic and corresponding restrictions. Although it is a good way to gain input from the respondents and avoiding socially desirable answers, face-to-face interviews might have resulted in gaining more input on the way the respondents ranked the collaboration factors. Also technical problems and misinterpretations can be avoided, despite the fact that there were no technical problems affecting the outcome of this research, as well as there were no signs of misinterpretations.

Develop a tool to recognize perspectives
This research comes with strategies to improve the collaboration during the transition in a Bouwteam project, but does not describe how to recognize the perspectives in practice. This might also be necessary to know when to apply which strategies. To know when to implement which strategies, a quick and easy tool should be set up. A set up is made during this research. However, it is not checked in practice and therefore is not validated and still a pilot. The set-up is shown in Appendix O.

Static or dynamic relation between perspectives and people

The perspectives are based on the input of respondents, but whether the respondents load on the same perspective after some time is not known. This means that future research can be done on whether or not someone keeps the same perspective over years (static relation between perspective and a person) or that the perspectives someone loads on can change (dynamic relation between perspective and a person). A possible reason for changing might be having a certain (learning) experience. The outcomes of this research are still useful, as a change of perspective means applying different strategies, but does not mean someone falls out of the range of the strategies. Whether someone loads on perspective 2 or 5 means applying different strategies, but these strategies are also developed in this research. In case there might be a change of perspectives within a given time period, the perspectives recognition tool (discussed above) might be done for example once a year.

7.3.2 Recommendations for organizations in practice

Better prepared for market demand

Sweco does not apply Bouwteam projects that regularly. Within Sweco there are not that much experts regarding Bouwteam projects which became apparent when a search was made for Bouwteam experts within Sweco for this research. The employees often have little experience or there are a few with a lot of experience. However, practice shows that there is more demand for Bouwteam projects. Therefore, Sweco could consider responding to this trend. This can be done by training people or attracting people who already know how to work with this model. This way, Sweco might be better prepared on the demand for Bouwteam projects.

Include core values in personnel policy

The Q-method resulted in core values which are very important, for the majority of the perspectives a team member belongs to. These two core values are: transparency and mutual trust, and should be included in the personnel policy of the organization to improve the collaboration between client and contractor during the transition from the Bouwteam phase into the execution phase in a Bouwteam project. There might be possibilities to develop these core values within the organization as all employees must think and act according to those core values (e.g. training employees) (Conti et al., 2003).

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APPENDICES

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APPENDIX A: BOUWTEAM MODEL AGREEMENTS: VG 1992 AND DG 2020

Appendix A contains a very general overview of the Bouwteam model agreements VG 1992 and DG 2020.

VG 1992

VGBouw had set up a committee charged with creating a model for Bouwteams (DuurzaamGebouwd, 2020). It was created by mutual consultation and therefore has a certain support (Chao-Duivis, 2012). VG 1992 does not assume equality between the client and other Bouwteam members (Chao-Duivis, 2012). If there are agreements about equality within the Bouwteam, they mainly concern the relationship between the Bouwteam members excluding the client, even though he is a member of the Bouwteam (Laan, 2020). The input from the contractor is not for the entire design process: it concerns the execution aspects and cost-technical aspects and only insofar as they are important (Chao-Duivis, 2012). The liability for strategy and design lies with the person to whose specific field in the Bouwteam those strategy and designs relate, provided that the person has accepted those strategy and designs and made them his own (Chao-Duivis, 2012). It is assumed that if the client and contractor reach price-agreement for the work to be carried out, the UAC will apply on the execution (Van Werven, 2019). In principle, VG 1992 only concerns execution using the UAC, so it was associated with traditional collaboration (Chao-Duivis, 2012). The UAC-IC did not exist at that time.

DG2020

On Might 14, 2020, the final version of a new Bouwteam model called Model Agreement Bouwteam DG 2020 was presented. Compared to the VG 1992, there is less experience with this model as it is quite new. It did not come about through mutual consultation (Henriquez & Overbeeke, 2020). Important legal changes compared to 1992 model include that DG 2020 really describes the process that the Bouwteam goes through, from A to B (Duurzaamgebouwd, 2020). It is also made clear what is expected of each other and what attitude and behavior should be in the bouweam (Duurzaamgebouwd, 2020). DG 2020 model concerns execution using UAC, but also UAC-IC (Van Werven, 2019). In DG 2020, it is chosen to set up bilateral agreements between client and contractor, but taking into account collaboration with multiple parties (DuurzaamGebouwd, 2020).
DG 2020 describes the starting point and the end point of the process that Bouwteam participants go through with each other (DuurzaamGebouwd, 2020). The route from A to B is described: what is expected from every party in the Bouwteam? What does that expectation mean regarding to the document itself, in terms of attitude and behaviour? DG 2020 contains collaborative contracting documents how attitude and behaviour should be. This is not very common in the Netherlands, but has added value. It makes much more clear what is expected from each other.

General differences between VG 1992 and DG 2020

On December 11, Jella Jongerius from Sweco presented her analysis about general differences between the two Bouwteam models: VG 1992 and DG 2020. These are shown in Table 33 on the next page.

Table 33: VG 1992 vs DG 2020

Subject	VG 1992	DG 2020
1. Attitude and behaviour	- Only mentioned in the objective, not further elaborated.	- Included collaboration, attitude and behaviour in considerations. - Separate Section for attitude and behaviour. - Starting point is an active role of the client.
2. Price	- No price included.	- Provisional budget determined for the preparation and realisation activities.
3. Tasks client	- Client has a leading role. - Client's role: very controlling, chairing role. - For example: coordinate and monitor activities.	- Client's role: guiding role. - For example: assigning roles, announcing decisions and requirements.
4. Tasks contractor	- Advise on certain matters. - Make a design for variants that the client came up with. - Us/them-thinking	- Assess whether everything is correct. - Advise on specific matters of which the client has no knowledge about: (financial) feasibility and risks.
5. Liability	- According to RVOI 1987, the whole project amount with a maximum of €680.000.	- According to TNR 2011, for consultancy costs maximum €1.000.000 or an amount equal to the consultancy costs times three with a maximum of €2.500.000.
6. Price-negotiation	- No preconditions.	- First negotiate about execution contract, then offer and finally price-negotiations. - No clarity about experts.
7. Decision-making	- Guiding, decision by approval of client.	- Majority decides, but client must agree. - Determine decision-making process together.
8. Termination conditions	- No agreement on price. - Room for additions.	- No agreement on price. - Room for additions.

APPENDIX B: EXPLORATORY INTERVIEW SET-UP

Appendix B contains the set-up of the exploratory interviews. It shows the questions that are asked during the interview in Table 34. The interview is about client-contractor collaboration during the transition. Therefore, to stay consistent, the categories by Suprapto (2015) for client-contractor collaboration are taken into account to come up with questions for the survey. This means that every question in the interview can be categorized under one of the six factors. All questions are not answered in literature yet and are important to give insight in collaboration during the transition.

In every interview the interviewees are asked if they recognize the aspects of client-contractor collaboration by Suprapto (2015). These are: capability, contract, joint working, relational attitude, team integration and team working.

Table 34: Exploratory interview questions

Semi-structured interview
Background information
1. Wat is uw functie? 2. Hoe lang heeft u ervaring binnen deze functie? 3. Hoe veel Bouwteams heeft u doorlopen? 4. Meest recente afgeronde referentie project? 5. Indicatie van het budget van het referentie project? 6. Was u betrokken aan de kant van OG/ON? 7. Met welke Bouwteamovereenkomst is er gewerkt? VG 1992 of DG 2020? 8. Realisatiecontractvorm van het referentie project? UAV of UAC-IC?
Contract
9. Hoe heeft contracttype invloed gehad op de samenwerking tijdens de transitie? 10. Welke gedragsveranderingen zag u bij de OG/ON tijdens de transitie die de samenwerking beïnvloedde?
Team Integration
11. Waren de mensen die aanwezig waren bij het ontwerp, ook aanwezig bij de uitvoering? Zo nee, hoe vond overdracht van informatie tijdens de transitie plaats?
Capability
12. Wat zijn, volgens u, condities voor succesvolle samenwerking tijdens de transitie naar de uitvoeringsfase? 13. Hoe kunnen deze condities beïnvloed worden, zodat samenwerking tijdens de transitie kan worden verbeterd?
Joint working
14. Welke obstakels/belemmeringen voor samenwerking heeft u ervaren tijdens de transitie naar de uitvoeringsfase? *15.* Hoe kunnen deze obstakels voorkomen worden in de toekomst?
Koppeling contract en condities voor succesvolle samenwerking
16. Was UAV/UAC-IC een geschikt contract om de condities voor succesvolle samenwerking te bereiken? Waarom wel, waarom niet?
Teamwork
17. Welke activiteiten onderneemt OG/ON om samenwerking goed te laten verlopen tijdens de transitie? 18. Hoeveel tijd werd geïnvesteerd in het creëren/onderhouden van goede samenwerking? Met name bij problemen of periodiek?
Relational attitude
19. Hoe werd open communicatie gestimuleerd gedurende de transitie?
Afsluitende vraag
20. Waar hebben we het niet over gehad, maar moesten we het wel over hebben?

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APPENDIX C: EXPLORATORY INTERVIEWS

Appendix C contain short summaries of the three exploratory interviews (A, B and C).

Summary Interviewee A

Organization	: Engineering company
Function	: Project manager
Years of experience	: 15
Number of completed Bouwteam projects	: 1 (at another engineering company)

Interviewee A has 21 years of work experience. The interviewee is specialized in project management, team management, Bouwteams, UAC/UAC-IC and consultancy. The interviewee has been involved in different projects, fulfilling different roles on the side of advisors, contractor, client and end user. The interviewee has been involved with Bouwteams for over fifteen years. These projects were mainly in the field of waste water transport, waste water purification, sludge digestion/treatment and raw material recovery. Currently, the interviewee is active in XXX as a team manager of 15 professionals in the field of wastewater treatment, sludge treatment, partial flow treatment and conveyance

I fully completed a Bouwteam project at XXX, where I worked as a project manager. I filled the position of a project manager from the consultant's point of view. In collaboration with the client, we have drawn up the contract for the contractor. This occurred prior to the Bouwteam phase. The project concerned sewage treatment in Utrecht.
A large UAC-IC project had started and in anticipation of that project, I prepared the treatment plan in Bouwteam association. The main project was the conversion of the entire treatment plan. We did a preparatory project where the terrain had to be cleared, the reason for this was to create space for the building process. With an estimated budget of €1.800.000, the project started in 2016 and ended in 2017. Bouwteams have started quite late in the wastewater world. Now, you'll see that the clients request two parties to be involved in the project, namely a separate consultant and a separate contractor. Before this, the intention was that the contractor would do the execution of the project. This was as soon as the price was in line with the market and the people were satisfied with the contractor.

The project was carried out under an UAC-contract. This was done on purpose because the lead time was very short and the scope would be fully worked out in the Bouwteam. We wanted to prevent us from getting another piece of design with the accompanying review of that design during the execution phase. We worked towards a UAC-contract as soon as possible because we wanted to prevent delays as much as possible. When the UAC contract is in place and all parties agree on the contract, risks and open estimate, the execution of the project can begin. The rules of UAC are very simple. The client gets what is stated in the contract and the contractor executes the work in for the pre-agreed price. There is little design work left unless it is specifically stated in the UAC contract. The same applies for this project, only a few thing had to be detailed. Actually mostly was ready to build. Because the scope of the work was limited and easy to frame, we were already able to make a good and complete design in the Bouwteam phase. Extensive engineering was no longer required after the Bouwteam phase. This meant that the UAC contract fitted the project quite well.
We have been conscious from the start and this meant that all risks, opportunities or any doubts we had, were openly discussed and immediate action was taken as a response. Examples of occurring discussion points could be collaboration, distribution of risks, chance of additional work, etc.

In the beginning, there was a lot of 'explain yourself' behavior/mindset. In a Bouwteam this is handled differently and everyone participates evenly in thinking about what each party can deliver in advantage to the project. You can stimulate this by initiating an open environment that enables you to become aware of each other's risks and interests. Thus everyone tries to understand each other and is ready to compromise for the benefit of the project. This was all possible by simply starting the discussion. Everyone became aware of each other's acceptable risks. Because of this everyone was evenly committed to the collaboration during the transition.

In the beginning we talked a lot about the design, like what is the end product? How much of everything? And where should it be? Halfway through the project, a contract had to be written. We asked the contractor to write his own contract, because he understands what should and should not be in a contract. Then, you see the contractor writes down things that are very smart, things we would never think about. And vice versa, the other parties start to understand why certain things are in the contract and also understand that it is not very easy to write a contract properly. Eventually a contract is made that is fully supported by the contractor because he wrote it himself. The client eventually supports this contract as well because he has seen everything come by at least twice and has been able to have his own say about it. The moment the price is also within budget and turns out to be in line with the market, you have full commitment from each other. This resulted a very quick price-negotiations phase.

Risk management and trust are very important to focus on. Trust is important for all parties involved, this will make sure that everyone takes each other seriously. So risks that are mentioned, are actually heard. That goes against the undertone of: 'The contractor is pre-sorting for more work in a moment, just watch it.'. The client is not going to think that, but he will think: 'Why is that contractor asking that? Explain why you ask that?'. And the contractor also gets the chance to explain why he is concerned about certain things. So if you trust each other, then you will eventually get a contract that is not only better in terms of content, but you are both fully committed.
Another condition is that all parties who make decisions, sit at the table during the contract forming phase. The most important thing is a very clear contract as the starting point for the Bouwteam phase, in which you agree with each other. We will embark on this adventure together and if this is a good design and we reach price-agreement, the contractor will put it together. The contract must also state what is in line with the market, what a good Bouwteam phase is, how you will assess that together and who will assess it. Once you have this, you can also tackle the Bouwteam phase together. During the Bouwteam phase you will build that trust. When something unexpected happens, do not start pointing fingers, but first talk to each other and discuss the problem and from there express doubts.

A problem I bumped into that influenced this transition, was that at first, the decision-maker, the internal client, was not involved, they did not have a seat at the table. Ultimately there was an UAC-contract and the whole Bouwteam signed it. Thereafter, the contract went to the internal client and he came up with a lot of questions, which led to a lot of meetings. This resulted in a delay but also caused a lot of irritation. Therefore the contractor does not feel that he is being taken seriously. He explained for months why things need to happen in a certain way and why certain costs occur. The internal client is asking questions he already answered. This should be avoided. Embedding the project within the internal organization is very important. The internal client should understand what is happening to gain support. Another obstacle is that many clients still tend to think that the contractor is only there to make money and that the contractor wants to make it more expensive. This thought should also be eliminated. The transition into the execution phase can only happen if everyone agrees on the price. Therefore you need to avoid that the estimation happens at the end, because only then will people look at details and ask questions about it. With such an estimation, you must immediately include the associated costs from the first sketch design. An overview of what is going to be built with the corresponding budget, planning and risks is needed. If you are doing this from the first sketch, then it will be easier to make adjustments. It is also easier to have a good conversation about it in which the

client asks critical questions that require good answers. It is thereby essential to keep an eye on the risk-file.

As a consultant, we supervised the content of the project, but in particular also the collaboration within the project. Every minimal sign of doubt or irritation needs to be discussed immediately. This way a solution can be sought on time. In the beginning this was quite annoying, because you work together with many technicians. Until at some point you found out that if you do it the right way, you really bond with each other. Those tensions can run up towards the end of the Bouwteam and during the transition it all comes together or not. What we saw was that there was so much confidence that you now really operate as a team.
Twenty percent of the time was spent only on collaboration within the Bouwteam. There were various collective and individual conversations. Exemplary behavior is very important in this. So as soon as you notice something in yourself, but also in someone else, immediately speak up and show what you would like to see from others. This is a slightly different method than people are used to in our world. Therefore you have to apply 'leading by example'. When you notice that someone does not feel okay, you ask them about it and solve it together. This creates trust.
Something very important that does not need to be forgotten during the transition is verification and validation. It is extremely important to do this right during the transition. We are not talking about that because we all really want to start building. When that transition phase is over, this will give you the greatest possible problems. And anyone can make huge investments in solving the problem.
If you focus specifically on the transition from the Bouwteam phase into the execution phase, then you are talking about contract negotiations. This is theory, the paper, versus reality. As a client, you really need to write things down like how you want it. Be clear about that. Because when the product is there, you can check whether it has everything that is required and as it was written down before. During the transition phase this should become very clear for the client. It should not be the case, and I saw that happen in the past, that a contractor has to keep on declaring, verifying and validating himself to the client.

At XXX we aim for a long-term relationship with a client. It is possible to earn a lot of money in one project at the expense of your client but it is better to act as a true partner and steer what is good for that client. Then it might happen that you make choices that do not give you the maximum return in one project, but where you are seen as a partner by your client. So a positive influence for a sustainable relationship.

Summary Interviewee B

Organization	: Engineering company
Function	: Consultant
Years of experience	: 20
Number of completed Bouwteam projects	: 3

Interviewee B has 19 years of work experience. The interviewee's expertise lies in project management. The interviewee has been a part of Bouwteams in the past and is still part of Bouwteams. Currently, the interviewee is a project manager at XXX.

At the start of every Bouwteam I was a part of, I noticed that there were always people that were new in the form of a Bouwteam. It just needs some work to impart that thinking to get from Bouwteam to execution.

This Bouwteam used the VG 1992 model. It was adapted to the project but the basis was used. Even though not everything was clear about what is yet to come, they tried to fairly divide the responsibilities and risks in the agreement.

The choice of contract is also one of the important choices to make and influences collaboration during the transition. Because I am not from the client or contractor, this is something I can guide properly. I tried to hold up a mirror to both parties: what do you really want and how do you want to distribute risks? When you choose an UAC contract, you must 'engineer' all the details in the Bouwteam phase until the design is ready to execute. When you choose an UAC-IC contract, then you do not have to design everything. It is important to look carefully at the risks together. A number of details can be very important and you will have to fully engineer them in the Bouwteam phase so that no misunderstandings arise. But if you have standard solutions where you can choose from a diverse amount of options and you do not see a lot of risks there, then you do not have to fully engineer that in the Bouwteam phase, you can do that to the level that the risk is acceptable. In an UAC contract you have to specify everything completely. This contact choice is therefore essential for how your Bouwteam will work together because you go into the details completely or are you going to let go of certain things in a risk-driven way? There is also the difficulty because a technician who engineers a certain part of the whole, who is completely crazy about his profession, could be tempted to go on for too long, while that is not desired at all in the Bouwteam. That can cause friction. So the choice of contract type in advance is essential for how you organize the collaboration and also how you come up with those rules together (towards transition).

The reason to choose for an UAC-IC contract in this project is because it would be the fastest. In time it is in principle more logic to start earlier with execution when you choose not to engineer all details. This brings risks with it. It can occur that you are already busy with executing certain things, while you are already designing certain parts that will be executed later on. This can lead to a mismatch because mistakes can occur during the designing process. This is called the risk profile. As long as the risk profile is acceptable, the process can be shortened in time. Another important reason for choosing the UAC-IC contract, is that the contractor has the freedom to keep on optimizing during the process. So, applying progressive insights that you gain together during the project. This means that innovation and technology can be included in the contract, without making a lot of adjustments to the agreement. In UAC-IC contract this proves to be more difficult, because you will have to break open the entire contract to continue.

Complying with preconditions of the project can be unclear during the transition and this forms a problem. That resulted in a sketch design that was verified and it occurred that this design was not in compliance with the preconditions. Because of this behavioral changes occurred in the Bouwteam, in contrast to using a standard contract, the client and contractor decided how to achieve the end goal. In a Bouwteam you notice more benevolence from all parties because you work together and solve problems together as well. In a traditional contract, the whole process is paused to make the needed adjustments in order to see how the situation can be handled properly. The behavior of the contractor in a Bouwteam is different: I stop the activities versus orientate together to reach the best solution in order the finish the project. This is the power of the Bouwteam: if there occur problems within the preconditions of the project, it will be easier to switch and adapt to changes.

The choice if the same people that are present at the Bouwteam phase are also present during execution depends on who wants to take responsibility for the activities for the parties. For example, the case here was that the client requires a supplier 'A' for a specific component that is required in the work. In order to design this component integrally, this supplier 'A' is now part of the Bouwteam in the Bouwteam agreement. If the contractor does not want to or cannot bear the risks of the work of supplier 'A' during the execution, while these can only be performed by that party, after everyone's approval, it can be decided to explicitly include supplier 'A' as the party in the realization agreement. My opinion about this is that, in principle, people who will execute must also be present in the preparatory phase, engineering in the Bouwteam. This way you do not lose knowledge. Otherwise you will get the well-known within our jargon: 'throw over the fence' and that is exactly what you can prevent with a Bouwteam.

In a Bouwteam project we actually make the contract with the client and contractor together in a Bouwteam. In a non-Bouwteam project, the client does everything and holds a tender and finally the tender is awarded and the contractor gets to work. That is actually no different in a Bouwteam project. However, in the preparatory phase you set up the contract documents together. It might the case that the execution is not done at all by the contractor who is currently helping in the Bouwteam to draw up the contract documents. This could be the case when there is no agreement. For example, that the target budgets are not feasible or that there is another reason. Then the client still retains the right to award the contract to another party.

During transition it is important while drawing up the contract, that both client and contractor together establish the method of controlling the execution already in the Bouwteam phase. This consist of a lot of parts. The contractor has a lot of systems and a lot of quality checks that the already does for all activities. It is important that the contractor involves the client in what those quality checks are and what those processes look like. Because what you really want as a contactor is to unburden your client and showing that he does not have to worry because you know what you are doing as a contractor. In contrast, the client must indicate very clearly to the contractor what he needs to fulfill his responsibility obligation. This means that he needs information that what is being designed also meets the requirements and wishes. You have to make clear agreements about having a number of such moments during execution in which you actually just keep it at a good equivalent level. This makes it possible to match the wishes of the client and contractor, so that you make arrangements on how to execute the realization contract together. In a Bouwteam you should already know how to execute the realization contract: know what system is being used. This means that you can make a quick start when it is time to execute. This saves a lot of calibration. You can just perform right away with each other and that is very important to already to that in the Bouwteam: make arrangements on how to control the execution in the realization contract.
This is applied in this project by asking questions like : why do you do certain things? And can we

help each other with that? This is not always possible because there are conflicting interests. It is better to experience errors and obstacles between the different parties during the Bouwteam phase than in the realization phase. Defending your own interest will never be a success, it should never be the client vs the contractor. The interest of the client and contractor will always clash. This forms a big risk if you enter the contract with this traditional form.

I also give UAC-IC courses and one of the first things I always say is: this little blue book. That's a collaboration booklet. And, that's also the key. UAC-IC makes it possible to make the most of what there is currently in innovation and opportunities in the market to use them. with a UAV one party always fully details it and you therefore do not fully utilize another party, its expertise. And with a UAC-IC this is actually arranged automatically, because you enter into a client-contractor relationship with each other, in which you therefore have joint rights and obligations. It is better to choose to be sure that you write out exactly what you want to have realized by means of a UAV. Then a UAC-IC is extremely suitable for collaboration. Because if a project is simple in terms of technology, it is often very complex in the environment. But if the technology, the environment, and the process control, those three pillars, are complex, then it is best to opt for a UAC-IC.
In the field of collaboration between client and contractor different activities are being done like zooming in on the collaboration and how things are going. People are also explicitly asked about each other: what are the points for improvement? How did you experience certain things? And that in order to really actively bring that collaboration to light rather than on the surface. In order to improve there with each other and in that you are really asked not to mince words, also to really say what you think, how you experienced things or if you were hurt in something, but also, and that is at least as important, what did you think went really well? What should we absolutely keep doing? Because that is of course true, putting the emphasis on positive things helps enormously to stimulate a collaboration in a positive way. This can be in the form of team events.

During the entire project open communication is stimulated by being as open and transparent as everyone can be. We use an open Share Point in which all Bouwteam members are included and in principle process all information. So basically you can see what everyone is up to.
The joint risk file is what the Bouwteam is really about. But I think that a successful Bouwteam stands or falls with a target budget for both parties, but a target budget that consists of parts based also on the risk pot. that is 1. good for the collaboration, but 2. also good for the environment and for the technical aspects of the project. Because you actually want to look for the most optimal situation together, but also want to manage the risks well in that way. And at the end of the project you will be paid for it. And it has another added advantage that is very important within a Bouwteam. That is in traditional tenders, after award, when changes occur, you will have to make your amendment agreement for each change. This is not necessary in a Bouwteam if you include that risk pot, because then you can say: OK, work that falls within the risk pot, so they are actually already part of the agreement. Those are in there and we want to keep that as limited as possible, so that at the end we just have as much profit as possible with each other from that risk pot. So we don't have to make contractual agreements separately with each other, so it's much easier to work.

Summary Interviewee C

Organization	: Engineering company
Function	: Contract manager
Years of experience	: > 10
Number of completed Bouwteam projects	: 1

Interviewee C has over 10 years of work experience. The interviewee's expertise lies in procurement/contract management and circular economy. The interviewee has been part of one Bouwteam from the beginning until the end. Next to that, the interviewee has been part of two Bouwteams during the preparatory phase. The interviewee fulfilled the role as a contract manager, monitoring the interfaces.

During the Bouwteam phase I was on the clients side as consultancy. Included in these discussions and both contractors also each had their own consultancy firm, so we sat around the table with a client, two contractors and 3 consultancy firms.

The outcome of the Bouwteam setting in which we worked together led to a total of 3 VTWS. So one with one contractor and two with the other under the UAC-IC, because this was a deviation from how the interface was addressed in both contracts. Then you automatically end up in a VTW atmosphere from the UAVC-IC. Everyone in the Bouwteam remained present during the execution. , the handling of this VTWS went a lot smoother as a result. So at some point you know well, this is the solution. You do that and then everyone knows. The moment you agree on the financial settlement, you know what to do. And of course, this project also had a pretty hard deadline. We just wanted to open in June last year. That was also communicated to the environment. That track will open in June and yes, well, we also aimed to ensure that the settlement of this interface would in any case also be resolved within the schedule. , the handling of this VTWS went a lot smoother as a result. So at some point you know well, this is the solution. You do that and then everyone knows. The moment you agree on the financial settlement, you know what to do. And of course, this project also had a pretty hard deadline. We just wanted to open in June last year. That was also communicated to the environment. That track will open in June and yes, well, we also aimed to ensure that the settlement of this interface would in any case also be resolved within the schedule. I think the main focus for collaboration during transition to implementation should be collaboration and communication. What did help is that in the end we all saw that this was just a common problem. And the moment you choose to work in a Bouwteam setting and everyone commits to the proposed solution and just communicates openly and honestly with each other, well then everyone can come to the right solution. We also had PSUs and PFUs separately with both contractors, so project follow-ups. The project lasted three and a half years, so you occasionally have a project follow-up in the meantime. In those we have also clearly agreed how we wish to deal with each other. And yes, to a certain extent, that's just how we did it. And look a contractor who sometimes holds certain cards to himself, huh? That's just the game. They just do that. But I have to say, because we had already invested in the PSU especially at the start: how do we enjoy working with each other and what do we especially not want? Suppose it goes in the wrong direction, the people just call to listen: we have agreed this with each other at the front. I see you doing this now, I don't like it. Yes, I would like to see it differently. We did have some obstacles, but that is usually the case. ? In hindsight, look the choice to cut into two contracts was mainly motivated by the fact that we wanted a skate track builder, so a skate track builder contractor who could just do his thing, without him being a subcontractor to a larger contractor. Because the quality of this job was just really a thing. We just

wanted a high-quality Olympic-level track. That's just the goal we had with this project. And the moment you say: dude, I'm going to a Heijmans or a KWS or a BAM, a major contractor and best skate track builder, you have to work with them. Yes, then that could create friction that could be at the expense of quality. A skatepark builder is just a small contractor versus a very big one. Yes, we wanted to prevent them from being squeezed, so to speak. Which then simply hurts financially and could be at the expense of quality. That's one. In the end it did result in a good job. Only that whole interfaces that happen around it is simply underestimated. I say that honestly, huh? And we also had quite a few problems in the run-up. So mightbe you know the PFAS discussion? That is the dust that was found in the ground at one point. Well that was just at the beginning of the realization phase of the project and then the project was shut down. And yes, at that time there was no standard for PFAS. Yes, we had to investigate that, but we had already awarded two contractors. And yes, the longer such a discussion takes before you make a decision. Yes, both contractors then say: well, we are on hold, bring on waiting pay please. Well, we had done that and then sand would be delivered, there was no sand. So well, then we went into the delay for the second time. So yes, pay money twice again, so to speak. Yes, that interface discussion has been very annoying. We also had quite a few issues in the soil and subsoil. And these have become VTW discussions that eventually also involved lawyers. So that's not a game you want either, but that's what happened.

The transition went pretty smoothly, it did cost a hefty amount of money. This interface is right, so yes, sitting with such a Bouwteam together with two contractors and 3 consultancy firms, then yes, the bill runs on every consultation you have with each other. But in the end we did come up with a solution that was simply the best for this project and also simply feasible. It went smoothly by making good agreements up front, I can ask in two ways. I can say: gosh, here's the shopping list and that apple pie has to contain 3 eggs, an amount of flour and so many apples, and of that and that brand, those apples have to be in it. And then you have to do such and such and such steps to prepare it in the oven. That's a UAV. I can also say: I just want an apple pie and I am confident that you as a baker simply deliver top work and that apple pie that should be suitable for 12 people, good luck.

We opted for a UAC-IC contract, because we wanted to leave some room for the contractor to implement optimizations, especially towards the market in terms of skate track design. The rough layout of that skating rink was designed by a Danish skate architect. They exist, so that man basically designed the track, but we also wanted the Dutch skaters in particular and also the Dutch skate track builder to be able to exert some influence on that design to a certain extent. If you choose cutlery, everything is fixed and you get what you have designed. We just didn't want that, so they've come along and it's just kind of been an organic process. Then when you build up you think: yes, that slope is not going well. Let's just adjust it a bit visually, because then it skates more pleasantly? Well, go ahead.
To ensure smooth collaboration the project manager had meetings with the contractors every one or two months. These meetings are usually lowkey, like having some coffee or drinks. During the meeting updates are given to and from all parties. we have agreed with each other in this project is that we are not only working on hard technology and hard figures, but that you also indicate during consultations at times what a certain reaction from someone does to you. And that takes some getting used to at first. You answer something and I don't really like it that you say that, because that's what this and this does to me. And then I think, okay, fine, I won't do that next time. In that respect, we just sat down at the table together.

APPENDIX D: CONCOURSE

This appendix consists of a table and is actually the original Q-set of De Hoog (2020). Table 35 is divided into the categories for client-contractor collaboration, so: capability, contract, joint working, relational attitude, team integration and team working.

Each category by Suprapto consist of several factors, exactly like the original Q-set by De Hoog (2020). The left column are the factors that belong to that category. The second column shows what is said in literature and exploratory interviews about this specific factor. The third column shows the source, so which statements can be found where. Merging this information from exploratory interviews and literature can lead to adding factors to the original Q-set by De Hoog (2020). These are mentioned under the additional factors.

Table 35: Additional factors from literature and interviews including Q-set of De Hoog (2020)

Category 1 Capability	**Statement: what is mentioned about this factor?**	**Source**
1. Sufficient resources (time and money) to make collaboration happen	Sufficient resources for collaboration	(De Hoog, 2020)
	The secondary contract is signed by all Bouwteam participants which states that all participants are willing to collaborate and consult. This is further substantiated by among others resources.	(Chao-Duivis, 2012)
	20% of the time busy with collaboration	(Interviewee A)
	Time reserved to collaborate and getting to know each other	(Interviewee B)
	Important to have the resources to make collaboration happen; invest more time and money to achieve active collaboration	(Interviewee C)
2. Early involvement of stakeholders	Early involvement of stakeholders	(De Hoog, 2020)
	All parties were involved from the start, this is important	(Interviewee A)
	Attention should be paid to the environment as it has much influence on the project	(Interviewee B)
3. Contractor's track-record in terms of innovation	Contractor's track-record in terms of innovation	(De Hoog, 2020)
	Innovation stimulates effectivity and efficiency and is therefore important	(Chao-Duivis, 2012)
4. A continued involved project team leader	A continued involved project team leader	(De Hoog, 2020)
5. Early involvement of contractors	Early involvement of contractors	(De Hoog, 2020)
	Early involvement of (sub)-contractors with specific knowledge is important	(Interviewee A)
6. Team leader's leadership ability	Team leader's leadership ability	(De Hoog, 2020)
	The Bouwteam's project leader had very little experience with leadership, therefore I was hired as a consultant to advise him	(Interviewee A)
Additional factors categorized under capability from literature and exploratory interviews		
7. Enough guidance for collaboration (e.g. collaboration guideline)	The secondary contract is signed by all Bouwteam participants which states that all participants are willing to collaborate and consult.	(Chao-Duivis, 2012)
	Guide collaboration within project, do not only focus on content	(Interviewee A)
8. Exemplary behavior of the team leader:	Exemplary behavior of the team leader: apply leading by example	Interviewee A

apply leading by example		
9. Experience of Bouwteam participants with Bouwteam projects	Bouwteam is quite new. This is noticed when you have all the parties together. There are always people who are new in the form of a Bouwteam. It needs some work to impart that thinking to get from the Bouwteam phase into the execution phase	(Interviewee B)
	Open-book budget is characteristic for Bouwteams. A lack of experience might be the reason for negative views on a cost benchmark	(Van der Pas, 2021)
10. Independent cost expert	Independent cost expert can be appointed for the verification of the contractor's cost estimation	(Van der Pas, 2021)
	Cost expert can make an end to price-negotiations if he judges the price of the contractor to be unreasonable	(Chao-Duivis, 2012)
11. Sufficient expertise of the client regarding costs	Sufficient expertise of the client regarding costs which allows the client to have a well-substantiated discussion about costs with the contractor	(Van der Pas, 2021)
12. Early involvement of decision-makers (intern client) at the contracting phase	Involvement of decision-makers (intern client) at the contracting phase, not at the end when the contract needs to be signed. Then it is too late.	(Interviewee A)
13. Active client	Involved client; critical questions from the client; active client	(Interviewee A)
	Involved and active Bouwteam participants	(Interviewee C)
Category 2: Contract	**Statement: what is mentioned about this factor?**	**Source**
14. Contractual financial incentives (positive and negative)	Contractual incentives (positive and negative)	(De Hoog, 2020)
	Incentives ensure that the client and contractor have a similar interest in the management of the risks in the provisional budget	(Van der Pas, 2021)
	Bonus malus to get a win-win situation	(Chao-Duivis, 2012)
	Defined in quantitative part of tender	(Interviewee A)
	Budget that consists of parts based also on the risk pot Consequences from the contract: financial incentives	(Interviewee B)
	Penalty clause	(Interviewee C)
15. Clear definition of roles before the Bouwteam starts working	Clear definition of roles before the Bouwteam starts working	(De Hoog, 2020)
	Roles are defined in VG 1992	(Chao-Duivis, 2012)
	Arrangement of roles and connected responsibilities	(Van der Pas, 2021)
	Defined in qualitative part of tender	(Interviewee A)
16. Fair risk allocation	Fair risk allocation	(De Hoog, 2020)
	Project risks should be allocated to the parties who are best able to manage the risks; Contractors should be only responsible for risks which they can handle	(Van der Pas, 2021)
	Balance in risks	(Chao-Duivis, 2012)
	Defined in qualitative part of tender	(Interviewee A)
	Ask all parties on how to allocate the risks; Choice to engineer the design completely and include all details ór risk-based lettings things go; The client must indicate very clearly to the contractor what he needs to fulfill his responsibility obligation	(Interviewee B)
17. Specified payment arrangements	Specified payment agreements	(De Hoog, 2020)
	Defined in quantitative part of tender	(Interviewee A)
18. Financial range is agreed upfront by client and contractor	Financial range is agreed upfront by client and contractor	(De Hoog, 2020)
	Defined in quantitative part of tender	(Interviewee A)
	Defined scope of the Bouwteam	(De Hoog, 2020)

19. Clear defined scope of the Bouwteam	Well-defined scope	(Van der Pas, 2021)
	Clear contract; Clear and easy understandable contract	(Chao-Duivis, 2012)
	Defined in qualitative part of tender	(Interviewee A)
Additional factors categorized under contract from literature and exploratory interviews		
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Early financial agreements by client and contractor Early agreements about the price composition, tariffs and the price determination plan with moments of sharing the cost estimation	(Van der Pas, 2021)
21. Involvement of the contractor when writing the contract	Involvement of the contractor when writing the contract: sometimes the contractor comes up with smart ideas. Also the contractor gets more understanding that writing a contract is difficult. Eventually, you will get a contract that everyone completely agrees with	(Interviewee A)
22. High degree of level of detail of the design	High detail level of the design makes the transition easier	(Interviewee A)
	Detail level of the design influences the way of collaboration within a Bouwteam	(Interviewee B)
23. Risk management: identify, quantify and control risks	Risk identification; Start with risk identification; Risk management integration	(Van der Pas, 2021)
	Risk management: be open about risks, doubts and opportunities Risk management: identify, quantify and control risks Focus on control measures for risks Risk-file and control measures defined in qualitative part of tender	(Interviewee A)
	Look very good at the risks	(Interviewee B)
Category 3: Joint working	**Statement: what is mentioned about this factor?**	**Source**
24. Shared risks	Shared risks	(De Hoog, 2020)
	Risk sharing	(Chao-Duivis
	Joint risk management	(Van der Pas, 2021)
	Joint risk-file; shared risks	(Interviewee B)
	Get to know each other's risks and interests	(Interviewee A)
25. Agreed process for dispute resolution	Agreed process for dispute resolution	(De Hoog, 2020)
	Pay attention to dispute resolution to prevent conflicts and involving third parties (judges)	(Chao-Duivis, 2012)
	Determine ways to deal with conflicts	(Chao-Duivis, 2012)
26. Performance management	Performance management	(De Hoog, 2020)
	Performance measurement	(Chao-Duivis, 2012)
	Use KPIs	(Van der Pas, 2021)
	Client and contractor are looking for ways to achieve the end objective.	(Interviewee B)
	Steer on good quality	(Interviewee C)
27. Joint planning with all participants	Joint planning with all participants	(De Hoog, 2020)
	Integrated planning	(Van der Pas, 2021)
	Defined in qualitative part of tender	(Interviewee A)
	Joint problem solving	(De Hoog, 2020)

28. Joint problem solving	Developing a solution to the problem together	(Van der Pas, 2021)
	Eventually problems were solved together	(Interviewee C)
29. Propose solutions when raising problems	Propose solutions when raising problems	(De Hoog, 2020)
Additional factors categorized under joint working from literature and exploratory interviews		
30. Jointly establish early agreements on how to execute the realization contract	Jointy establish the method of controlling the execution already in the Bouwteam phase	(Interviewee B)
	Early agreements on how to execute the project	(Interviewee C)
Category 4: Relational attitude	**Statement: what is mentioned about this factor?**	**Source**
31. Support of senior management from client and contractor	Support of senior management from both sides	(De Hoog, 2020)
	When the intern organization is involved, they got your back most of the times	(Interviewee A)
32. Long-term orientation	Long-term orientation	(De Hoog, 2020)
	Bouwteam phase results in people knowing each other better and wanting to continue due to the good working relationship	(Chao-Duivis, 2012)
	Focus on long-term relationship: it might happen that you make choices that do not yield the maximum profit in one project, but where you are seen as a partner by your client.	(Interviewee A)
33. Understanding each other's objectives	Understanding each other's objectives	(De Hoog, 2020)
	Take into account each other's justified objectives	(Chao-Duivis, 2012)
	'Explain yourself' behavior: tell me why you do what you do; Try to understand each other's perspective; Get to know each other's risks and interests	(Interviewee A)
	Ask each other: why do you do certain thing? And can we perhaps help each other?	(Interviewee B)
	Realize what the common problem is	(Interviewee C)
34. Project team leader's adaptability to changes in the project	Project team leader's adaptability to changes in the project	(De Hoog, 2020)
	Sketch design is not in line with current starting points	(Interviewee A)
	Give the contractor freedom to optimize during the process	(Interviewee B)
	Unforeseen circumstances (e.g. PFAS); Fast processing of VTWs (Request for changes)	(Interviewee C)
35. Transparency	Transparency	(De Hoog, 2020)
	Openness and transparency at the front of a Bouwteam project are essential for the pricing process	(Van der Pas, 2021)
	Any sign of doubt or irritation immediately open to discussion	(Interviewee A)
	Use of an Open Share Point: in principle, everything is as open and transparent as it can be. All Bouwteam participants are allowed to have a look into each other's information	(Interviewee B)
	Open and honest communication	(Interviewee C)
36. Win-win attitude	Win-win attitude	(De Hoog, 2020)
	Bonus when costs are lower than estimated which results in a win-win situation	(Chao-Duivis, 2012)
	Eliminate the thought that the contractor only wants to make money; Eliminate traditional way of thinking; Looking for a compromise that everyone is happy with	(Interviewee A)
	Eliminate us-against-them attitude (client vs. contractor)	(Interviewee B)
37. Strive for equality in behavior and duties for client and contractor	Strive for equality in behavior and duties for client and contractor	(De Hoog, 2020)
	Equality between Bouwteam participants	(Chao-Duivis, 2012)
	Joint rights and obligations; Eliminate us-against-them attitude (client vs. contractor)	(Interviewee B)
Additional factors categorized under relational attitude from literature and exploratory interviews		

38. Innovation and technological developments: give the contractor freedom to optimize during the process	Innovation and technological developments: give the contractor freedom to optimize during the process Enough design freedom Maximize innovation and opportunities (UAC-IC)	(Interviewee B)
	Bouwteam provides opportunities for innovation	(Van der Pas, 2021)
	Innovation stimulates effectivity and efficiency	(Chao-Duivis, 2012)
	Design freedom for the contractor to optimize design	(Interviewee C)
39. Collaboration experience within a Bouwteam prior to the transition	There is a 'moral relationship' or a feeling that people are condemned to each other because it would take too much effort to approach the market again to find a new contractor for the execution process The amount of time and money that is already invested in collaboration results in continuation of collaboration instead of really wanting to collaborate	(Chao-Duivis, 2012)
Category 5: Team integration	**Statement: what is mentioned about this factor?**	**Source**
40. Development of common processes	Development of common processes	(De Hoog, 2020)
41. Integrated project teams	Integrated project teams	(De Hoog, 2020)
	Integrated collaboration between people within the project	(Chao-Duivis, 2012)
	Involve the same people of the Bouwteam in the execution	(Interviewee A)
	Integrated ways of working	(Van der Pas, 2021)
	Parties with specific knowledge have to participate in a Bouwteam to get the whole together properly	(Interviewee B)
42. Separate conversations in small groups per discipline	Separate conversations in small groups per discipline	(De Hoog, 2020)
43. Unrestricted cross-sharing of information in the project	Unrestricted cross-sharing of information in the project	(De Hoog, 2020)
	Open-book accounting is a manifestation of information exchange	(Van der Pas, 2021)
	Necessity of information exchange	(Chao-Duivis, 2012)
	Use of an Open Share Point	(Interviewee B)
44. Equitable relation and respect for all	Equitable relation and respect for all	(De Hoog, 2020)
	Disagreement is okay but keep respecting each other's opinions	(Van der Pas, 2021)
45. Involving the right people at the right moment	Involving the right people at the right moment	(De Hoog, 2020)
	Embedding the project within the intern organization: project leader updates the intern client on what is happening.	(Interviewee A)
	Availability of the right people	(Interviewee B)
Additional factors categorized under team integration from literature and exploratory interviews		
46. Integration of cost aspects: estimate price parallel to the development of the design	Integration of cost aspects (in the design process): estimate price parallel to the development of the design; Alignment of the cost estimate and scope during the design process; Risk management integration	(Van der Pas, 2021)
	Cost estimate: write down the associated costs and planning from the first sketch design and further	(Interviewee A)
47. No loss of information/knowledge gained during the Bouwteam phase	No loss of information/knowledge gained during the Bouwteam phase	(Interviewee B)
48. People who are actually engineering in the Bouwteam should	People who are actually engineering in the Bouwteam should also be involved during execution	(Interviewee B)

also be involved during execution		
Category 6: Team working	**Statement: what is mentioned about this factor?**	**Source**
49. Formal regular meetings	Regular meetings	(De Hoog, 2020)
	Collective and individual meetings, informal and formal	(Interviewee A)
	Practical arrangements about meetings	(Chao-Duivis, 2012)
	Monthly meetings	(Interviewee C)
50. Mutual trust	Mutual trust	(De Hoog, 2020)
	Trust is important and has a high priority for the price determination process	(Van der Pas, 2021)
	If there is trust, you will eventually get a contract that is not only better in terms of content, but also if you trust each other when writing the contract, then you are committed	(Interviewee A)
51. High level of commitment	High level of commitment	(De Hoog, 2020)
	There should be commitment of the contractor to share the cost estimation	(Van der Pas, 2021)
	Understanding Bouwteam participants's objectives results in commitment	(Interviewee A)
52. Good communication	Good communication	(De Hoog, 2020)
	Communication is a success factor in the execution phase and the overall bouwteam project process	(Van der Pas, 2021)
	Stimulation and importance of communication	(Chao-Duivis, 2012)
	Talk about serious concerns	(Interviewee A)
	Important influencing factor for the transition	(Interviewee C)
53. Alignment of objectives	Alignment of objectives	(De Hoog, 2020)
	Talk about the design: what is the end product?	(Interviewee A)
	Match wishes of the client and contractor Realize what the common objective is Good mindset	(Interviewee B)
	Realize that there is a common problem	(Interviewee C)
54. Have an elaborated project start-up (PSU)	Have an elaborated project start-up (PSU)	(De Hoog, 2020)
	PSU: discuss the desired way of collaboration, wishes and concerns PSU: make agreements on how to collaborate	(Interviewee C)
55. Evaluate the Bouwteam during the project	Evaluate the Bouwteam during the project	(De Hoog, 2020)
	Monthly evaluate the collaboration within a Bouwteam: points of improvement and what went well? Also emphasize positive things Active survey in which a grade is given to each other, periodically	(Interviewee B)
	Project Follow-Ups (PFUs): reflect on the project and discuss lessons learned	(Interviewee C)
Additional factors categorized under team working from literature and exploratory interviews		
56. Team events, informal events and meetings	Collective and individual meetings, informal and formal	(Interviewee A)
	Informal events, team events, informal events	(Interviewee B)
	Monthly meetings, but also informal conversations; Informal meetings	(Interviewee C)

57. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?	Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?	(Interviewee B)
	Verification of the contractor's cost estimate of the price determination process	(Van der Pas, 2021)
	A lot of times forgotten: verification and validation. Specific for the transition into the execution: contract negotiations which is the gap between paper and reality	(Interviewee A)
58. A good working relationship	A good working relationship	(Chao-Duivis, 2012)
	Learn to know each other a bit to create a good working relationship	(Interviewee B)
	Extern party to facilitate PSU sessions	(Interviewee C)

The Q-set of De Hoog (2020) consist of 38 factors. The concourse in Table 36 consists of 58 factors which means that 20 factors are added to the original Q-set of De Hoog (2020). The added or modified factors are marked in grey.

Table 36: Set presented in validation interviews

Collaboration factors during the transition from the Bouwteam phase into the execution phase in a Bouwteam project
Capability
1. Sufficient resources (time and money) to make collaboration happen
2. Early involvement of stakeholders
3. Contractor's track-record in terms of innovation
4. A continued involved project team leader
5. Early involvement of contractor(s)
6. Team leader's leadership ability
7. Enough guidance for collaboration (e.g. collaboration document)
8. Exemplary behavior of the team leader: apply leading by example
9. Experience of Bouwteam participants with Bouwteam projects
10. Independent cost expert
11. Sufficient expertise of the client regarding costs
12. Early involvement of decision-makers (intern client) at the contracting phase
13. Active client
Contract
14. Contractual financial incentives (positive and negative)
15. Clear definition of roles before the Bouwteam starts working
16. Fair risk allocation
17. Specified payment arrangements
18. Financial range is agreed upfront by client and contractor
19. Clear defined scope of the Bouwteam
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation
21. Involvement of the contractor when writing the contract
22. High degree of the level of detail of the design
23. Risk management: identify, quantify and control risks
Joint working

24. Shared risks
25. Agreed process for dispute resolution
26. Performance management
27. Joint planning with all participants
28. Joint problem solving
29. Propose solutions when raising problems
30. Jointly establish early agreements on how to execute the realization contract
Relational attitude
31. Support of senior management from client and contractor
32. Long-term orientation
33. Understanding each other's objectives
34. Project team leader's adaptability to changes in the project
35. Transparency
36. Win-win attitude
37. Strive for equality in behavior and duties for client and contractor
38. Innovation and technological developments: give the contractor freedom to optimize during the process
39. Collaboration experience within a Bouwteam prior to the transition
Team integration
40. Development of common processes
41. Integrated project team
42. Separate conversations in small groups per discipline
43. Unrestricted cross-sharing of information in the project
44. Equitable relation and respect for all
45. Involving the right people at the right moment
46. Integration of cost aspects: estimate price parallel to the development of the design
47. No loss of information/knowledge gained during the Bouwteam phase
48. People who are actually engineering in the Bouwteam should also be involved during execution
Team working
49. Formal regular meetings
50. Mutual trust
51. High level of commitment
52. Good communication
53. Alignment of objectives
54. Have an elaborated project-start up (PSU)
55. Evaluate the Bouwteam during the project
56. Team events, informal events and meetings
57. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?
58. A good working relationship

APPENDIX E: VALIDATION INTERVIEWS

Appendix E consists of three summaries of the validation interviews. The set-up is given in Appendix F.

Validation interview summary	Validation Interviewee 1
Interviewee 1 has 37 years of work experience. The interviewee has experience in contract management, project and process management, and civil engineering. This interviewee has participated in several Bouwteam projects as project and/or contract manager. Currently, the interviewee is participating in a large Bouwteam project.	
Capability	
1. Sufficient resources (time and money) to make collaboration happen	Yes, interviewee 1 said: 'I personally think that time always has an influence and that it is always too short. Well, lack of time is lack of money. Or budget shortage, so yes, I always think that everything has to be done too quickly.'
2. Early involvement of stakeholders: parties that have an interest in the project and can either affect or be affected by the project	Yes, interviewee 1 said: 'I think that if you look at a problem from multiple perspectives, you also include risks and the environment.'
3. Contractor's track-record in terms of innovation	No
4. A continued involved project team leader	Yes
5. Early involvement of contractor(s)	Yes
6. Team leader's leadership ability	Yes
7. Enough guidance for collaboration (e.g. collaboration document)	Yes, interviewee 1 said: : 'Every Bouwteam works differently, so the document should be supplemented for the specific circumstances of the Bouwteam and the people who are in it. General points can therefore be described, but in general this applies to every project, regardless of the form.'
8. Exemplary behavior of the team leader: apply leading by example	Yes
9. Experience of Bouwteam participants with Bouwteam projects	No
10. Independent cost expert	No
11. Sufficient expertise of the client regarding costs	Yes, interviewee 1 said: 'I assume that you are interviewing clients. I think that clients, in the sector where we make the most assignments, should explain budgets. I think they know a completely different reality than the reality is. We are always too expensive. Contractors are always too expensive. That is said and then you do get a certain attack and defense strategy, so that rubs off. So I think it's very important and I see that it's underexposed.'
12. Early involvement of decision-makers (intern client) at the contracting phase	Yes
13. Active client	Yes
Contract	
14. Contractual financial incentives (positive and negative)	No
15. Clear definition of roles before the Bouwteam starts working	Yes
16. Fair risk allocation	Yes
17. Specified payment arrangements	No
18. Financial range is agreed upfront by client and contractor	Yes, interviewee 1 said: 'What we often see is a ceiling amount or a maximum amount or an hours budget that you register with a list of hours of what you

	think you need to achieve the goal. But how can you know if you don't know your team members yet? If you haven't met your teammates yet, you know how much time you need to reach the goal. You are completely missing the point when you say: you are allowed a maximum of € 25,000 to achieve the goal, because that's not how it works.'
19. Clear defined scope of the Bouwteam	Yes
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Yes
21. Involvement of the contractor when writing the contract	Yes
22. High degree of the level of detail of the design	Yes
23. Risk management: identify, quantify and control risks	Yes
Joint working	
24. Joint risk management: shared risks	Yes, interviewee 1 said: 'I think that is the biggest advantage of the Bouwteam. Namely that you get to know each other's interests, so you can name the risks that you are afraid of and that you will run into and which you want to control.'
25. Agreed process for dispute resolution	Yes
26. Performance management: steer towards objectives	Yes
27. Joint planning including activities, deadlines and decision-moments	Yes, interviewee 1 said: 'I see that very often evokes old behavior, as we call it within our company, as soon as a contract has been signed, so the assignment is clear, then we will start doing the old habits again. Yes, but you promised that? You have this. But you say: I want my house ready in June. Then I say again: yes, but that was with two sockets and now you want three.'
28. Joint problem solving	Yes
29. Propose solutions when raising problems	Yes, but what is different with the previous one then?
30. Jointly establish early agreements on how to execute the realization contract	Yes, interviewee 1 said: 'You can if you know your team, you know each other's qualities, you know what you are good at, you know what your healthcare chain is. Then you can make a division, who does what and then you can also make agreements about it. Only often do we see that Bouwteams also have a pretty big finger in the implementation agreement. So a Bouwteam agreement is a nice big finger in the follow-up contract.'
Relational attitude	
31. Support of managing board from both sides	Yes
32. Long-term orientation/sustainable relationship	Yes
33. Understanding each other's objectives	Yes
34. Project team leader's adaptability to changes in the project	Yes
35. Transparency	Yes
36. Win-win attitude	Yes
37. Strive for equality in behavior and duties for client and contractor	Yes
38. Innovation and technological developments: give the contractor	Yes

freedom to optimize during the process	
39. Collaboration experience within a Bouwteam prior to the transition	No
Team integration	
40. Development of common processes (e.g. BIM)	No
41. Integrated project team: one joint team	No
42. Separate conversations in small groups per discipline	Yes
43. Unrestricted cross-sharing of information in the project (e.g. an Open Share Point)	No
44. Equitable relation and respect for all	Yes
45. Availability of the right people: right people at the right moment	Yes, interviewee 1 said: 'Everyone always pretends that you have to have the right man in the right place. Unfortunately, the best people are not always available. You make trade-offs. And if a customer indicates something very far in advance, you can reserve people for that. And if the client says: you have to settle for the lowest price, you might have it next week. Yes, then you cannot anticipate that, then the customer must also be a bit lucky. Besides, you can't always know each other in advance. Some jars don't fit a lid.'
46. Integration of cost aspects: estimate price parallel to the development of the design	Yes
47. No loss of information/knowledge gained during the Bouwteam phase	Yes
48. People who are actually engineering in the Bouwteam should also be involved during execution	Yes
Team working	
49. Formal regular meetings	Yes
50. Mutual trust	Yes
51. High level of commitment	Yes
52. Good communication	Yes
53. Alignment of objectives	Yes, interviewee 1 said: 'We do that way too short, don't we. Do you ever call someone and the first thing you say is: the reason I'm calling is? Nobody does that anyway, but that's actually how it should be. Phone call to everyone, but it's a little weird when you call your mom: the reason I'm calling you is because I'm coming to dinner tomorrow.'
54. Have an elaborated project-start up (PSU): share expectations of the Bouwteam, the form of collaboration and tasks distribution	Yes
55. Evaluate the Bouwteam during the project: reflect on the project and discuss lessons learned in Project Follow-Ups (PFUs)	Yes
56. Team events, informal events and meetings	Yes, interviewee 1 said: 'We should really just have a Bouwteam meeting on the terrace every Friday and just stick around, because that's the kind of atmosphere we have in general. We can create that very quickly. Only yes, time does not help us. And also the internal team meetings. If you want to forge it, and that is with friendships, if I look at my own friendships, it's all

	based on things you've experienced together. So before you are a good team, you have to experience things together. In addition to sitting on a terrace, you could also, for example, cross the Wadden Sea together on a sailboat. Or you can all go to the golf course for an afternoon or you go to a museum to view art. Something silly that you don't like in general, or you go cycling around the Veluwe. But experiencing things: laughing together and getting to know each other. I think that's very important for forging the team. And I think people still think very old-fashioned.'
57. Periodical validation and verification: does the design meet the requirements and is the client satisfied?	Yes
58. Good working relationship	Yes

Validation interview summary	**Validation Interviewee 2**
Interviewee 2 has expertise in groundwork and road construction. This interviewee has participated in several Bouwteam projects, and is currently still participating in one. The interviewee has participated in several smaller and a few larger Bouwteam projects over the years. The interviewee contributes/contributed knowledge of technology to the Bouwteam projects, with an eye on the environment and creating a pleasant relationship with the client.	
Capability	
1. Sufficient resources (time and money) to make collaboration happen	Yes
2. Early involvement of stakeholders: parties that have an interest in the project and can either affect or be affected by the project	Yes
3. Contractor's track-record in terms of innovation	
4. A continued involved project team leader	Yes
5. Early involvement of contractor(s)	Yes
6. Team leader's leadership ability	Yes
7. Enough guidance for collaboration (e.g. collaboration document)	Yes
8. Exemplary behavior of the team leader: apply leading by example	Yes
9. Experience of Bouwteam participants with Bouwteam projects	Yes
10. Independent cost expert	Yes, interviewee 2 said: 'He should definitely be there. But that is a bit difficult, often those cost experts are in the stable with the contractor. Yes, it is somewhat colored, I always say. It is not completely independent. A contractor would never give his rock bottom prices. He also keeps some on hand. He also wants to keep his margins. I understand that, he is also a company, but to what extent is the client's cost expert independent? Can you raise your doubts? I'm not saying it's always like that. You won't hear me say that, but they prefer not to look in the kitchen of a contractor. You get that more in a Bouwteam, so to speak.'
11. Sufficient expertise of the client regarding costs	Yes, interviewee 2 said: 'A bit more difficult, because in general the client relies a lot on input from the contractor, so the intention is actually for the contractor to estimate this. But it is useful that the client knows what things cost. They should not be the specialists as far as I am concerned.'
12. Early involvement of decision-makers (intern client) at the contracting phase	Yes

13. Active client	Yes
Contract	
14. Contractual financial incentives (positive and negative)	Yes
15. Clear definition of roles before the Bouwteam starts working	Yes
16. Fair risk allocation	Yes
17. Specified payment arrangements	Yes
18. Financial range is agreed upfront by client and contractor	Yes, interviewee 2 said: 'You have to agree on that in advance, because that's what you have to manage. What you often see when you make a budget of 4 million, there is a certain margin in the budget estimate of the commissioning. There are already some risk factors in it. The trick, of course, is to get smarter and smarter and to be a little ahead of those risks. But you will always have to bring a piece of risk reservation with you. You can never completely remove that.'
19. Clear defined scope of the Bouwteam	Yes
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Yes
21. Involvement of the contractor when writing the contract	Yes
22. High degree of the level of detail of the design	Yes, that's a good one. I have some Bouwteam experiences and one party that wants to have a complete implementation design with detailing. It can even go as far as the clients wanting a job description, then you go a bit to a RAW thought. I also have experience with Bouwteams where they said: 'Well make a DO, then we know enough and then we can manage outside. Just what the client feels good about. Some can already make the work from the DO, they don't want any cutlery at all. The contractor then says: I'll just manage with that. You also have variants that they make an abbreviated work description to record some more detailed matters or go to a RAW specification or a UAV-GC contract. So dependent on the specific project/job.'
23. Risk management: identify, quantify and control risks	Yes
Joint working	
24. Joint risk management: shared risks	Yes
25. Agreed process for dispute resolution	Yes
26. Performance management: steer towards objectives	Yes
27. Joint planning including activities, deadlines and decision-moments	Yes
28. Joint problem solving	Yes
29. Propose solutions when raising problems	Yes, but already said before
30. Jointly establish early agreements on how to execute the realization contract	Yes
Relational attitude	
31. Support of managing board from both sides	Yes
32. Long-term orientation/sustainable relationship	Yes
33. Understanding each other's objectives	Yes
34. Project team leader's adaptability to changes in the project	Yes
35. Transparency	Yes
36. Win-win attitude	Yes

37. Strive for equality in behavior and duties for client and contractor	Yes
38. Innovation and technological developments: give the contractor freedom to optimize during the process	Yes
39. Collaboration experience within a Bouwteam prior to the transition	Yes, interviewee 2 said: 'Look, you are often given a task-setting budget at the front and that means that you have to make that work within that budget. So that's what you're going to steer towards in a Bouwteam. So it would be a little odd if you were a million short at the end of the engineering phase. Then you haven't done your homework properly. That would have an impact on collaboration during the transition. It is the intention that at the end of the journey you have an implementation design with a budget that the client can continue with. So that the client can give 'assignment', because otherwise it would have failed completely, wouldn't it? Because then you have wasted all the money. And sometimes the contractor also takes the risks with him.'
Team integration	
40. Development of common processes (e.g. BIM)	Yes
41. Integrated project team: one joint team	No
42. Separate conversations in small groups per discipline	Yes
43. Unrestricted cross-sharing of information in the project (e.g. an Open Share Point)	Yes
44. Equitable relation and respect for all	Yes
45. Availability of the right people: right people at the right moment	Yes
46. Integration of cost aspects: estimate price parallel to the development of the design	Yes
47. No loss of information/knowledge gained during the Bouwteam phase	Yes
48. People who are actually engineering in the Bouwteam should also be involved during execution	Yes
Team working	
49. Formal regular meetings	Yes
50. Mutual trust	Yes
51. High level of commitment	Yes
52. Good communication	Yes, interviewee 2 said: 'a SharePoint environment is of course also ideal for that.'
53. Alignment of objectives	Yes
54. Have an elaborated project-start up (PSU): share expectations of the Bouwteam, the form of collaboration and tasks distribution	Yes, interviewee 2 said: 'Well, that's really a must. If you don't, you're going up the beet bridge in my experience. Sometimes in the past before the corona time we could link that with lunch or something like that, a working visit to get a little team building. And often you are also invited to the contractor, who also wants to present himself. He also wants to show his company of course. Then you do that one time at the contractor or the engineering firm. Yes, you should definitely pay attention to that.'
55. Evaluate the Bouwteam during the project: reflect on the project and discuss lessons learned in Project Follow-Ups (PFUs)	Yes, interviewee 2 said: 'That could have room for improvement. What you often see at the end of the project when all the work is done. You should actually do that earlier, that's what you use the project follow ups for. In general, this should happen more often.

	Collaboration is first discussed in the PFU. How is that going? Did we find each other, did we find each other in time? What are things that went wrong? And not so much to address people about it, but what can we learn from that for next time? And with one project it goes wrong here and with another it goes wrong there.'
56. Team events, informal events and meetings	Yes, interviewee 2 said: 'That is also important and you don't just do that by keeping a PSU and sitting together every month, but visit each other regularly while enjoying a cup of coffee. Get to know each other, so to speak. How is someone privately huh? Yes, it is important. We remain people. You just always have to plug it in once, don't just go to the fixed pattern, but also plug it once separately from the regular consultations. I also do that. Once in a while I will visit the contractor separately to make a cup of coffee. And with your legs on the table, ask: how are you, huh? Do you think it's going well? Do you have disagreements somewhere? He often does not fully reveal himself in the regular meetings, which is difficult.'
57. Periodical validation and verification: does the design meet the requirements and is the client satisfied?	Yes, interviewee 2 said: 'well I have a very clear opinion about that. Verification is a must. You have those requirements and you check whether they are met. Guys, that's not the point. It's about validation. Validation just means that if you've done some engineering, you say: this is what I think are the requirements that are required, does that match what you want? Does that also match your image? Because I think validation is even more important than verification. Then I am a separate thing in this. Everyone can check the requirements of: yes I have to do this, but the point is: does the client get what he has in mind? He has a certain image of this and formulating requirements is already very difficult, but understanding what he means by that, the client, is even more difficult. So I'm a big proponent of validation.'
58. Good working relationship	Yes

Validation interview summary	**Validation Interviewee 3**
Interviewee 3 has 34 years of work experience. The expertise of this interviewee lies in ground, road and hydraulic engineering. The interviewee is currently participating in a Bouwteam project as project leader. This interviewee has 1 year of experience in Bouwteam projects, but has participated in similar projects before.	
Capability	
1. Sufficient resources (time and money) to make collaboration happen	Yes, interviewee 3 said: 'That certainly plays a role. Collaboration in particular is the most important thing in this. That you need some time and some space for that, that is undoubtedly true. I just have to say that you don't necessarily have to be together physically.'
2. Early involvement of stakeholders: parties that have an interest in the project and can either affect or be affected by the project	Yes
3. Contractor's track-record in terms of innovation	
4. A continued involved project team leader	Yes
5. Early involvement of contractor(s)	Yes

6. Team leader's leadership ability	Yes
7. Enough guidance for collaboration (e.g. collaboration document)	Yes
8. Exemplary behavior of the team leader: apply leading by example	Yes
9. Experience of Bouwteam participants with Bouwteam projects	Yes
10. Independent cost expert	
11. Sufficient expertise of the client regarding costs	Yes
12. Early involvement of decision-makers (intern client) at the contracting phase	Yes
13. Active client	Yes
Contract	
14. Contractual financial incentives (positive and negative)	
15. Clear definition of roles before the Bouwteam starts working	Yes
16. Fair risk allocation	Yes
17. Specified payment arrangements	Yes
18. Financial range is agreed upfront by client and contractor	Yes, interviewee 3 said: 'If that falls within the framework of what has been said what it can or might cost, then it is not an issue. The problem is not so much that you can agree or not, because perhaps you can agree, because you also get a lot more in return. In that sense it is not a problem. But it is a problem, because we work with a budget. If it's over that budget, I can't afford it. Even if I wanted to and I think it's right and worth the money. I cannot give what I do not have and in that sense I think it is very important that it stays within the limits.'
19. Clear defined scope of the Bouwteam	Yes
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	Yes
21. Involvement of the contractor when writing the contract	Yes
22. High degree of the level of detail of the design	Yes, interviewee 3 said: 'I think that depends a bit on what you put with that contractor. To what extent are you going to do that. We now leave a lot to him, but then I think it is an important issue for him. Actually, it should have been the other way around. In fact, we should have done more with the design and therefore had the expertise and the time to do it. We were pretty clear about it, in how we wanted it to be.'
23. Risk management: identify, quantify and control risks	Yes
Joint working	
24. Joint risk management: shared risks	Yes
25. Agreed process for dispute resolution	Yes, interviewee 3 said: 'We write in the agreement, i.e. what we put out to tender. It states how we do that and I am quite one-sided about that. That's how we write it. I think it is important that you be clear about this, but it does not have to be decided together. I assume if you're both reasonable then it's okay, eh? So then no matter what it says, it never applies, so it doesn't matter. If it does apply, then I think it should be very clear. For example, now in the latest model agreement. Then it is again through the

	intervention of that and an external this and I know a lot what. I find that all too cumbersome and far too many ifs and buts. And is the project still ongoing or not? Those kind of things. I am quite firm about that. If there is a dispute, we try to resolve it together, because we have a collaboration agreement for a reason. And actually that should work, and if that doesn't work, we'll go to court.'
26. Performance management: steer towards objectives	Yes
27. Joint planning including activities, deadlines and decision-moments	Yes, interviewee 3 said: 'That is possible, because then you have started. Then you can agree: yes, listen, I have to finish that by that time to be able to finish the next one in time, so that's a deadline for a certain topic and that's possible. It is best to draw up these together, because the beginning and the end are fixed. You will agree on what you will do in between, the deadlines and this and that. That could be us too, huh? That he says: yes, listen, I have to know this and that from you, because otherwise I will get into trouble myself. You will agree on that.'
28. Joint problem solving	Yes
29. Propose solutions when raising problems	Yes, but I guess the same as joint problem solving
30. Jointly establish early agreements on how to execute the realization contract	Yes
Relational attitude	
31. Support of managing board from both sides	Yes, interviewee 3 said: 'That shouldn't really be necessary. This might be a bit distorted, but I actually decide and that's about it. So I definitely have support in that sense. Support from the environment is important, because that has to do with that collaboration. Without it, I don't think you have a collaboration, and that doesn't mean you can always please everyone. But at least you have to talk about it and talk it out and stuff like that. And then you can still get support, even if someone doesn't completely agree with it, so to speak.'
32. Long-term orientation/sustainable relationship	Yes
33. Understanding each other's objectives	Yes
34. Project team leader's adaptability to changes in the project	Yes
35. Transparency	Yes
36. Win-win attitude	Yes
37. Strive for equality in behavior and duties for client and contractor	Yes, interviewee 3 said: 'I think that's a very good goal. Despite the hierarchical relationship, that doesn't mean you can't do it together. Because of the contract form, he needs you to be able to do that. That is why collaboration is so important and it works best if you treat each other equally and do not dictate, so to speak. And that he also feels free to say: yes, but that is not possible or yes but this or yes but that.'
38. Innovation and technological developments: give the contractor freedom to optimize during the process	Yes
39. Collaboration experience within a Bouwteam prior to the transition	Yes
Team integration	
40. Development of common processes (e.g. BIM)	Yes
41. Integrated project team: one joint team	Yes

42. Separate conversations in small groups per discipline	Yes, interviewee 3 said: 'That can be very useful functionally, but that depends a bit on the subject. It quickly tends to compartmentalization and that you are no longer working as a team. That not everyone is involved and aware of what the other is doing. But I can imagine for a detail thing, that can work very functionally and quickly and conveniently, but not in general. It is possible with feedback to the rest of the team. Then I think that's fine, because it makes no sense to sit together with an entire team, when you really only have a focused subject.'
43. Unrestricted cross-sharing of information in the project (e.g. an Open Share Point)	Yes
44. Equitable relation and respect for all	Yes
45. Availability of the right people: right people at the right moment	Yes
46. Integration of cost aspects: estimate price parallel to the development of the design	Yes
47. No loss of information/knowledge gained during the Bouwteam phase	Yes
48. People who are actually engineering in the Bouwteam should also be involved during execution	
Team working	
49. Formal regular meetings	Yes
50. Mutual trust	Yes
51. High level of commitment	Yes
52. Good communication	Yes
53. Alignment of objectives	Yes
54. Have an elaborated project-start up (PSU): share expectations of the Bouwteam, the form of collaboration and tasks distribution	Yes
55. Evaluate the Bouwteam during the project: reflect on the project and discuss lessons learned in Project Follow-Ups (PFUs)	Yes, interviewee 3 said: 'For example, we have said with single underhand and with multiple underhand: we work with a top list. The top list is the contractors who have scored an 8 or higher on the average of the last two ratings. So it's also not the case that if you ever made it, you'll keep it until finite. In the case of multiple underhand, two from that top list and one from the other list are drawn, so those who are below 8 are drawn. Well if there are five of us in the top list, then you have a reasonable chance that you will be there every time, so to speak. Because two are removed from that top list and one remains, so then you are asked a lot.'
56. Team events, informal events and meetings	Yes
57. Periodical validation and verification: does the design meet the requirements and is the client satisfied?	Yes
58. Good working relationship	Yes

APPENDIX F: VALIDATION CHECK

Appendix F consists of the set-up of the validation interviews and the check on factors.

Set-up validation interviews

The experts were asked to sort the statements as agree, neutral or disagree. Each factor is gone through one by one. At the end of the interview the interviewees are asked if they miss a factor in the list. None of the interviewees did.

In the majority of the interviewees agree with the factor, this factor is taken into account in the final Q-set. This led to 53 factors instead of 58. See Table 37 where all factors that meet the requirement are marked green.

Table 37: Validation on collaboration factors

Collaboration factors during the transition into the execution phase in a Bouwteam project	Validation interview 1 (contractor)	Validation interview 2 (consultant)	Validation interview 3 (client)
Capability			
1. Sufficient resources (time and money) to make collaboration happen	x	x	x
2. Early involvement of stakeholders	x	x	x
3. Contractor's track-record in terms of innovation			
4. A continued involved project team leader	x	x	x
5. Early involvement of contractors	x	x	x
6. Team leader's leadership ability	x	x	x
7. Enough guidance for collaboration (e.g. collaboration document)	x	x	x
8. Exemplary behavior of the team leader: apply leading by example	x	x	x
9. Experience of Bouwteam participants with Bouwteam projects		x	x
10. Independent cost expert		x	
11. Sufficient expertise of the client regarding costs	x	x	x
12. Early involvement of decision-makers (intern client) at the contracting phase	x	x	x
13. Active client	x	x	x
Contract			
14. Contractual financial incentives (positive and negative)		x	
15. Clear definition of roles before the Bouwteam starts working	x	x	x
16. Fair risk allocation	x	x	x
17. Specified payment arrangements		x	x
18. Financial range is agreed upfront by client and contractor	x	x	x
19. Clear defined scope of the Bouwteam	x	x	x
20. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	x	x	x
21. Involvement of the contractor when writing the contract	x	x	x
22. High degree of the level of detail of the design	x	x	x
23. Risk management: identify, quantify and control risks	x	x	x
Joint working			
24. Shared risks	x	x	x
25. Agreed process for dispute resolution	x	x	x
26. Performance management	x	x	x
27. Joint planning with all participants	x	x	x
28. Joint problem solving	x	x	x
29. Propose solutions when raising problems			

30. Jointly establish early agreements on how to execute the realization contract	x	x	x
Relational attitude			
31. Support of senior management from client and contractor	x	x	x
32. Long-term orientation	x	x	x
33. Understanding each other's objectives	x	x	x
34. Project team leader's adaptability to changes in the project	x	x	x
35. Transparency	x	x	x
36. Win-win attitude	x	x	x
37. Strive for equality in behavior and duties for client and contractor	x	x	x
38. Innovation and technological developments: give the contractor freedom to optimize during the process	x	x	x
39. Collaboration experience within a Bouwteam prior to the transition		x	x
Team integration			
40. Development of common processes		x	x
41. Integrated project team			x
42. Separate conversations in small groups per discipline	x	x	x
43. Unrestricted cross-sharing of information in the project		x	x
44. Equitable relation and respect for all	x	x	x
45. Involving the right people at the right moment	x	x	x
46. Integration of cost aspects: estimate price parallel to the development of the design	x	x	x
47. No loss of information/knowledge gained during the Bouwteam phase	x	x	x
48. People who are actually engineering in the Bouwteam should also be involved during execution	x	x	
Team working			
49. Formal regular meetings	x	x	x
50. Mutual trust	x	x	x
51. High level of commitment	x	x	x
52. Good communication	x	x	x
53. Alignment of objectives	x	x	x
54. Have an elaborated project-start up (PSU)	x	x	x
55. Evaluate the Bouwteam during the project	x	x	x
56. Team events, informal events and meetings	x	x	x
57. Periodical validation and verification: does the design meet the requirements? And does the design meet the client's wishes?	x	x	x
58. A good working relationship	x	x	x

APPENDIX G: ONLINE Q-SURVEY

Appendix G consists of the online survey in FlashQ. The survey can be found on: www.q-onderzoek.nl/transitiesamenwerking. First, there is an short introduction on the research. Thereafter, the subject is described and the respondents are asked to rank 53 conditions for collaboration in three columns: agree, neutral and disagree. After all the 53 factors are placed in the three columns, the respondents are asked to place the factors in a forced ranking scheme from +5 (completely agree) to -5 (completely disagree). When all the factors are placed in the scheme, the respondents are asked to place comments on the factors they putted on the most extreme positions, so +5 and -5. Also, questions on their background are asked. The process of the online survey is shown below in Figure 14 till Figure 22.

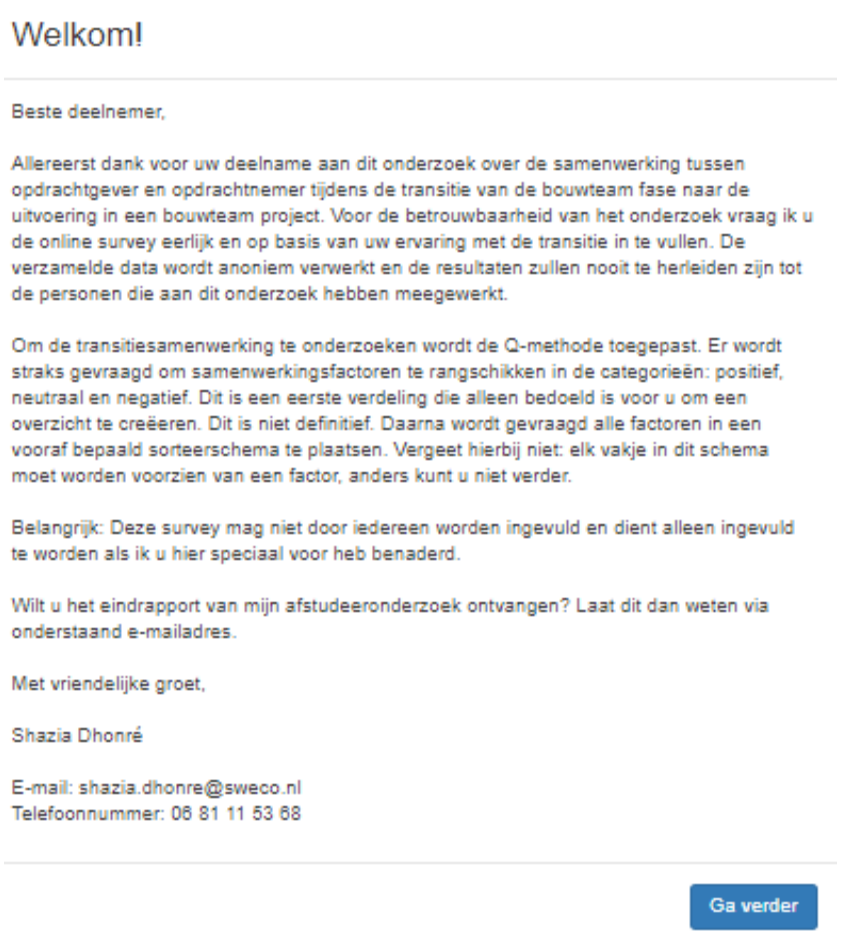

Figure 14: Welcome page

Figure 15: Introduction about research

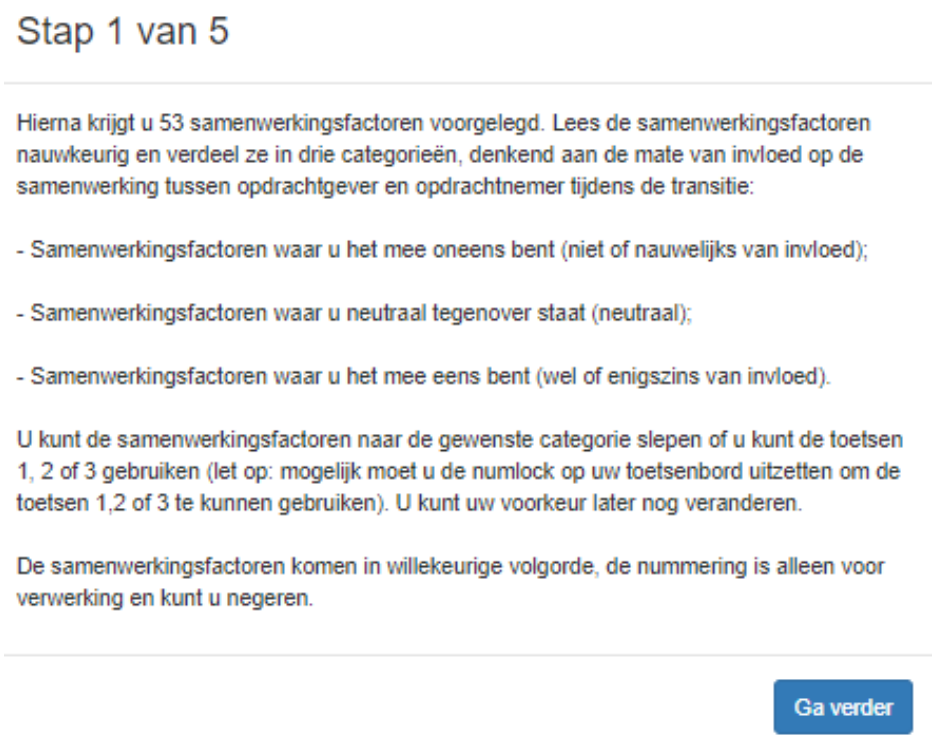

Figure 16: Explanation first distribution in columns

Figure 17: Explanation Q-sorting

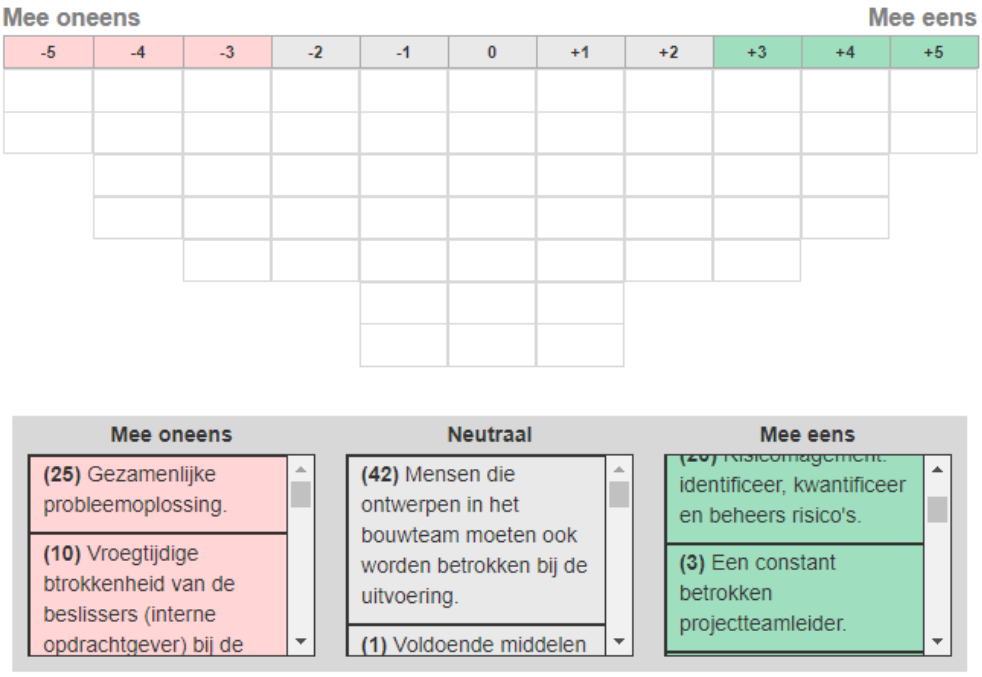

Figure 18: Sorting scheme

Figure 19: Completed ranking scheme

Figure 20: Last check on Q-sorting

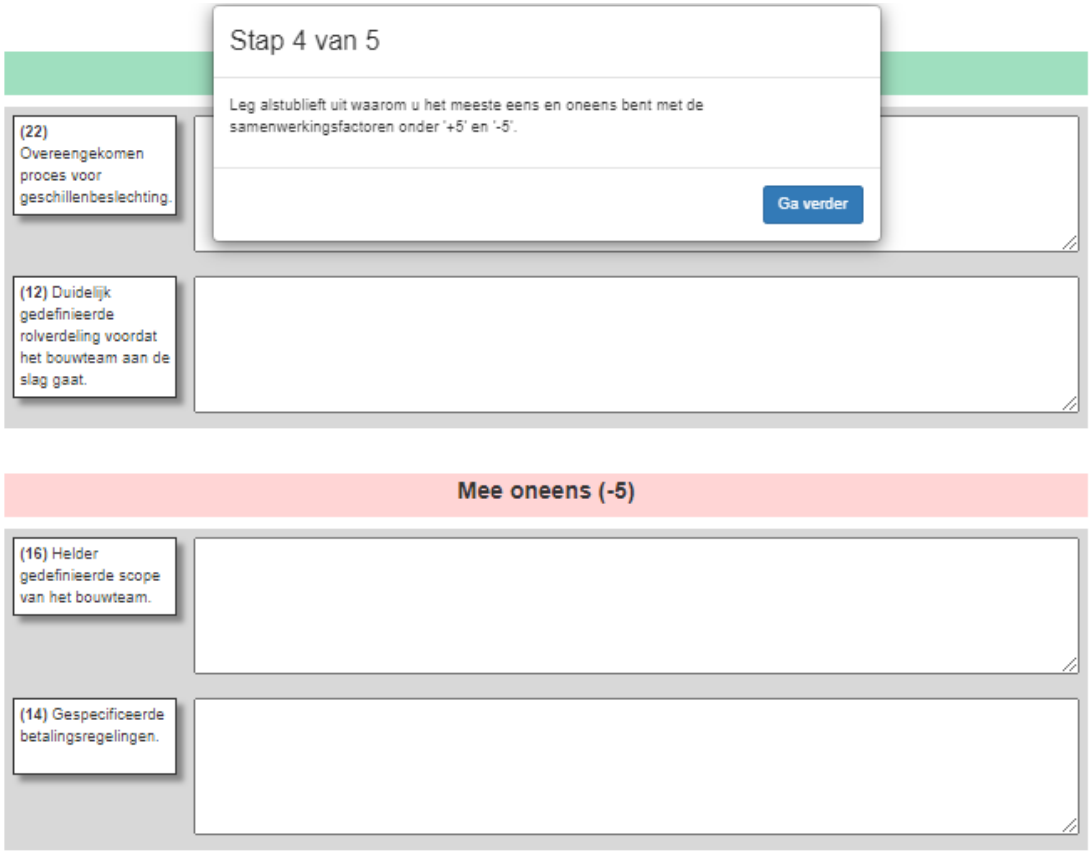

Figure 21: Comments at extreme positions

Figure 22: Questions about respondents

Table 38: Background questions in online survey

Background question nr.	Background question
1	What is your gender?
2	What company do you work for?
3	What is your function within this organisation?
4	How many years of relevant work experience do you have?
5	How many Bouwteam projects did you complete, from start till end?
6	Type of Bouwteam project(s)?
7	At which side were you involved? Client or contractor?
8	What is not mentioned in this survey but essential for the collaboration during transition?
9	Room for comments regarding this research or online survey

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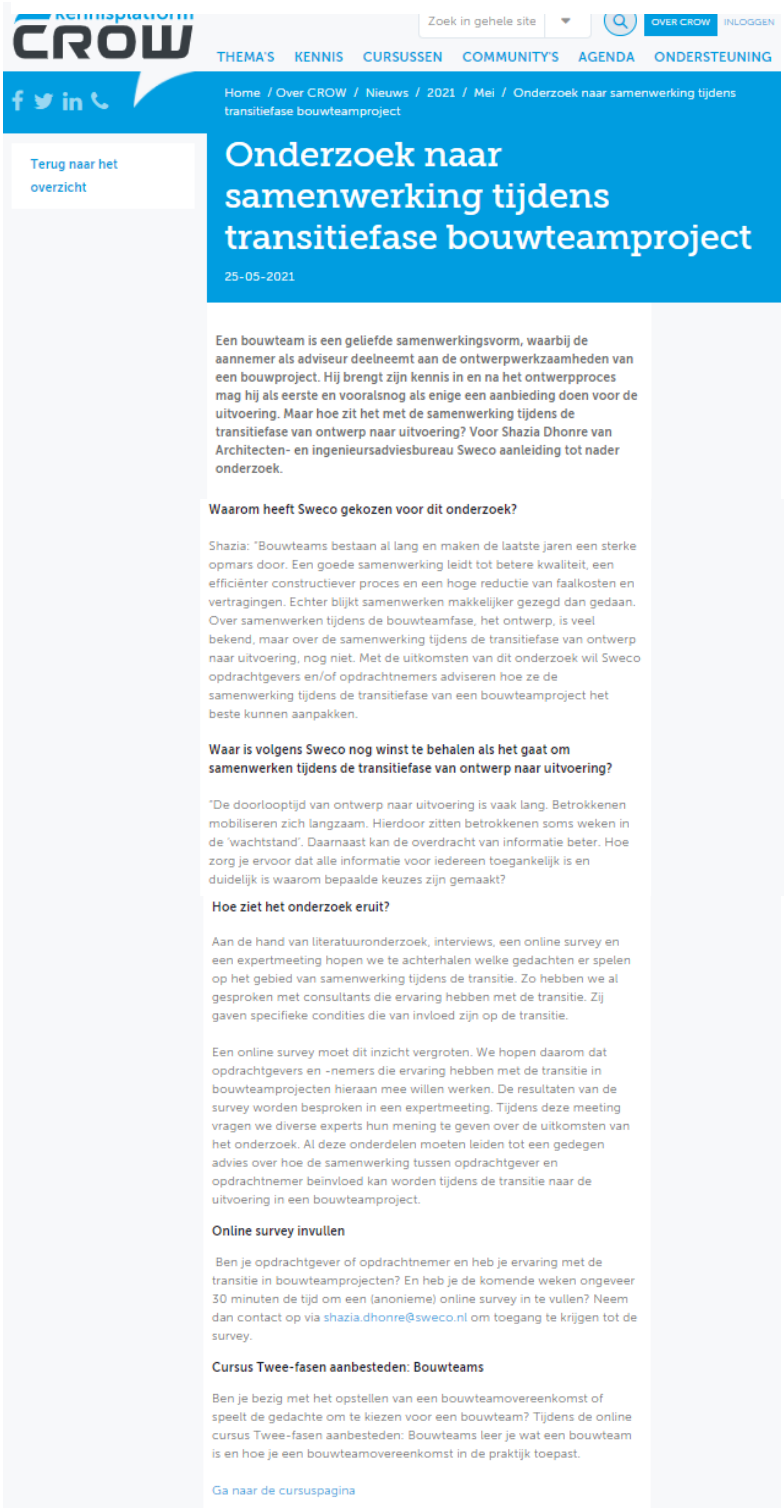
APPENDIX H: ARTICLE CROW

Appendix H consists of the article that was published on the website of CROW regarding this research. The article is shown in Figure 23 and can be found on: https://www.crow.nl/over-crow/nieuws/2021/mei/onderzoek-naar-samenwerking-tijdens-transitiefase.

Figure 23: Article in CROW



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Terug naar het overzicht

Onderzoek naar samenwerking tijdens transitiefase bouwteamproject

25-05-2021

Een bouwteam is een geliefde samenwerkingsvorm, waarbij de aannemer als adviseur deelneemt aan de ontwerpwerkzaamheden van een bouwproject. Hij brengt zijn kennis in en na het ontwerpproces mag hij als eerste en vooralsnog als enige een aanbieding doen voor de uitvoering. Maar hoe zit het met de samenwerking tijdens de transitiefase van ontwerp naar uitvoering? Voor Shazia Dhonre van Architecten- en ingenieursadviesbureau Sweco aanleiding tot nader onderzoek.

Waarom heeft Sweco gekozen voor dit onderzoek?

Shazia: "Bouwteams bestaan al lang en maken de laatste jaren een sterke opmars door. Een goede samenwerking leidt tot betere kwaliteit, een efficiënter constructiever proces en een hoge reductie van faalkosten en vertragingen. Echter blijkt samenwerken makkelijker gezegd dan gedaan. Over samenwerken tijdens de bouwteamfase, het ontwerp, is veel bekend, maar over de samenwerking tijdens de transitiefase van ontwerp naar uitvoering, nog niet. Met de uitkomsten van dit onderzoek wil Sweco opdrachtgevers en/of opdrachtnemers adviseren hoe ze de samenwerking tijdens de transitiefase van een bouwteamproject het beste kunnen aanpakken.

Waar is volgens Sweco nog winst te behalen als het gaat om samenwerken tijdens de transitiefase van ontwerp naar uitvoering?

"De doorlooptijd van ontwerp naar uitvoering is vaak lang. Betrokkenen mobiliseren zich langzaam. Hierdoor zitten betrokkenen soms weken in de 'wachtstand'. Daarnaast kan de overdracht van informatie beter. Hoe zorg je ervoor dat alle informatie voor iedereen toegankelijk is en duidelijk is waarom bepaalde keuzes zijn gemaakt?

Hoe ziet het onderzoek eruit?

Aan de hand van literatuuronderzoek, interviews, een online survey en een expertmeeting hopen we te achterhalen welke gedachten er spelen op het gebied van samenwerking tijdens de transitie. Zo hebben we al gesproken met consultants die ervaring hebben met de transitie. Zij gaven specifieke condities die van invloed zijn op de transitie.

Een online survey moet dit inzicht vergroten. We hopen daarom dat opdrachtgevers en -nemers die ervaring hebben met de transitie in bouwteamprojecten hieraan mee willen werken. De resultaten van de survey worden besproken in een expertmeeting. Tijdens deze meeting vragen we diverse experts hun mening te geven over de uitkomsten van het onderzoek. Al deze onderdelen moeten leiden tot een gedegen advies over hoe de samenwerking tussen opdrachtgever en opdrachtnemer beïnvloed kan worden tijdens de transitie naar de uitvoering in een bouwteamproject.

Online survey invullen

Ben je opdrachtgever of opdrachtnemer en heb je ervaring met de transitie in bouwteamprojecten? En heb je de komende weken ongeveer 30 minuten de tijd om een (anonieme) online survey in te vullen? Neem dan contact op via shazia.dhonre@sweco.nl om toegang te krijgen tot de survey.

Cursus Twee-fasen aanbesteden: Bouwteams

Ben je bezig met het opstellen van een bouwteamovereenkomst of speelt de gedachte om te kiezen voor een bouwteam? Tijdens de online cursus Twee-fasen aanbesteden: Bouwteams leer je wat een bouwteam is en hoe je een bouwteamovereenkomst in de praktijk toepast.

Ga naar de cursuspagina

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APPENDIX I: CORRELATION MATRIX

Appendix I consists of the correlation matrix between Q-sorts, see Table 39. It indicates the extent to which Q-sorts have correlation. The correlation between Q-sorts show the whole pattern of positions (perspectives) of respondents. When the correlation is negative it means that the Q-sorts disagree. When the correlation is positive, the Q-sorts agree. When the correlation is zero, there is no expected position.

(Table 39 on next page)

Table 39: Correlations between Q-sorts

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
RESPONDENT 1	100	10	-17	2	-6	-3	-14	-11	-12	4	-6	-16	7	-8	12	-14	2	-14	-3	-24	1	10	15	-8	-7	5	-2	24
RESPONDENT 2	10	100	9	38	13	9	-3	22	13	24	27	21	13	5	22	8	38	33	30	10	43	41	-1	5	15	15	11	21
RESPONDENT 3	-17	9	100	32	33	29	15	24	14	23	16	22	19	8	26	2	24	39	38	42	29	17	22	15	17	10	9	10
RESPONDENT 4	2	38	32	100	43	49	13	14	31	21	41	34	17	29	33	24	58	39	22	26	22	51	21	37	25	24	11	19
RESPONDENT 5	-6	13	33	43	100	31	-13	30	18	9	23	47	37	7	42	19	39	34	29	31	6	37	17	34	33	-2	2	17
RESPONDENT 6	-3	9	29	49	31	100	15	29	7	14	25	32	29	31	37	44	37	39	38	26	28	36	30	56	23	43	0	18
RESPONDENT 7	-14	-3	15	13	-13	15	100	-4	24	18	-1	-2	30	2	15	7	18	14	11	-1	10	16	20	21	16	10	30	0
RESPONDENT 8	-11	22	24	14	30	29	-4	100	12	29	-23	29	35	8	28	26	17	15	14	21	24	8	23	36	16	9	-5	2
RESPONDENT 9	-12	13	14	31	18	7	24	12	100	40	28	5	12	10	32	17	27	14	6	18	24	26	3	23	20	16	14	2
RESPONDENT 10	4	24	23	21	9	14	18	29	40	100	1	27	24	0	21	12	40	30	33	35	48	16	33	14	26	12	-14	8
RESPONDENT 11	-6	27	16	41	23	25	-1	-23	28	1	100	18	3	13	19	9	34	41	34	29	28	47	5	16	-4	38	22	26
RESPONDENT 12	-16	21	22	34	47	32	-2	29	5	27	18	100	17	10	13	33	33	51	18	15	22	20	15	43	19	-2	-4	-18
RESPONDENT 13	7	13	19	17	37	29	30	35	12	24	3	17	100	12	33	4	26	26	30	22	26	27	24	35	40	30	20	24
RESPONDENT 14	-8	5	8	29	7	31	2	8	10	0	13	10	12	100	16	30	30	18	10	17	9	40	-10	6	20	12	25	7
RESPONDENT 15	12	22	26	33	42	37	15	28	32	21	19	13	33	16	100	19	28	27	31	12	35	27	19	36	30	24	28	26
RESPONDENT 16	-14	8	2	24	19	44	7	26	17	12	9	33	4	30	19	100	20	19	13	21	6	17	10	34	15	22	18	9
RESPONDENT 17	2	38	24	58	39	37	18	17	27	40	34	33	26	30	28	20	100	44	44	35	36	55	31	30	51	15	11	30
RESPONDENT 18	-14	33	39	39	34	39	14	15	14	30	41	51	26	18	27	19	44	100	37	28	58	35	30	30	17	19	4	6
RESPONDENT 19	-3	30	38	22	29	38	11	14	6	33	34	18	30	10	31	13	44	37	100	22	31	58	33	37	39	27	10	27
RESPONDENT 20	-24	10	42	26	31	26	-1	21	18	35	29	15	22	17	12	21	35	28	22	100	23	23	13	-4	19	37	-4	43
RESPONDENT 21	1	43	29	22	6	28	10	24	24	48	28	22	26	9	35	6	36	58	31	23	100	42	22	14	24	37	20	31
RESPONDENT 22	10	41	17	51	37	36	16	8	26	16	47	20	27	40	27	17	55	35	58	23	42	100	22	26	51	33	26	38
RESPONDENT 23	15	-1	22	21	17	30	20	23	3	33	5	15	24	-10	19	10	31	30	33	13	22	22	100	33	17	27	-10	17
RESPONDENT 24	-8	5	15	37	34	56	21	36	23	14	16	43	35	6	36	34	30	30	37	-4	14	26	33	100	33	17	5	-16
RESPONDENT 25	-7	15	17	25	33	23	16	16	20	26	-4	19	40	20	30	15	51	17	39	19	24	51	17	33	100	14	17	19
RESPONDENT 26	5	15	10	24	-2	43	10	9	16	12	38	-2	30	12	24	22	15	19	27	37	37	33	27	17	14	100	25	43
RESPONDENT 27	-2	11	9	11	2	0	30	-5	14	-14	22	-4	20	25	28	18	11	4	10	-4	20	26	-10	5	17	25	100	22
RESPONDENT 28	24	21	10	19	17	18	0	2	2	8	26	-18	24	7	26	9	30	6	27	43	31	38	17	-16	19	43	22	100

APPENDIX J: FACTOR ADDITIONALCTION

Appendix J shows how the most optimal factor solution is chosen.

Unrotated factor matrix

The first step of the PCA leads to an unrotated factor matrix, see Table 40. The values in the unrotated factor matrix show the factor loading. Each respondents loads on a factor: the higher the factor loading, the more the respondent defines that factor (Webler et al., 2009). The last column of Table 40 shows the communalities. The higher the communality, the more the Q-sort relates, thus the more the Q-sort has in common with other Q-sorts (Van Exel & De Graaf, 2005). Low communalities indicate that there is little in common between the Q-sorts and therefore cannot be associated with any of the additionalfactors (De Hoog, 2020). There are no low communalities in this research.

Table 40: Unrotated factor matrix

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Communalities
RESPONDENT 1	-0.0507	0.3168	0.3399	0.1198	-0.5185	-0.3295	0.1165	0.2107	0.6683
RESPONDENT 2	0.4398	0.2196	0.0544	-0.3163	-0.0136	-0.4125	-0.0737	0.3551	0.6465
RESPONDENT 3	0.4789	-0.1375	0.1106	-0.2020	0.1954	0.2628	-0.0748	-0.3483	0.5354
RESPONDENT 4	0.6674	0.0057	-0.2890	-0.1197	-0.0832	-0.1456	0.0455	0.0033	0.5735
RESPONDENT 5	0.5569	-0.2860	-0.1417	-0.1313	-0.3225	-0.0354	-0.3327	-0.2406	0.7032
RESPONDENT 6	0.6483	-0.1751	-0.1676	0.1641	-0.2534	0.2910	0.2935	0.0722	0.7462
RESPONDENT 7	0.2401	0.0161	0.0991	0.5077	0.5349	-0.0649	0.2183	-0.2385	0.7202
RESPONDENT 8	0.3884	-0.4648	0.2580	0.0979	-0.0890	0.1721	-0.2788	0.3982	0.7169
RESPONDENT 9	0.3879	0.0274	-0.0530	0.0738	0.5282	-0.1425	-0.1107	0.1678	0.4992
RESPONDENT 10	0.4751	-0.1511	0.5059	-0.1924	0.3560	-0.0679	-0.0668	0.2054	0.7195
RESPONDENT 11	0.4697	0.4026	-0.3710	-0.3231	0.0480	-0.0141	0.3458	-0.1337	0.7647
RESPONDENT 12	0.4771	-0.5396	-0.2040	-0.2652	-0.0506	-0.1427	0.0778	0.0791	0.6660
RESPONDENT 13	0.5137	-0.0621	0.2963	0.3869	-0.0680	0.0513	-0.1766	-0.1078	0.5553
RESPONDENT 14	0.3288	0.1241	-0.5076	0.1520	-0.0009	0.0686	-0.2466	0.1480	0.4917
RESPONDENT 15	0.5687	0.0288	0.0689	0.2815	-0.0535	-0.0800	-0.0958	0.1486	0.4488
RESPONDENT 16	0.3883	-0.2149	-0.3842	0.1954	-0.0370	0.2831	0.0256	0.4087	0.6319
RESPONDENT 17	0.7245	0.0527	-0.0308	-0.1219	-0.0121	-0.2343	-0.1387	-0.1141	0.6308
RESPONDENT 18	0.6522	-0.1305	-0.0410	-0.3385	0.1425	-0.0591	0.2828	-0.0271	0.6632
RESPONDENT 19	0.6323	0.0842	0.1512	-0.0225	-0.1273	-0.0666	0.1030	-0.3187	0.5631
RESPONDENT 20	0.4843	0.1155	0.0574	-0.3482	0.1158	0.5936	-0.2955	-0.0833	0.8324
RESPONDENT 21	0.5956	0.2191	0.2923	-0.1795	0.2540	-0.0829	0.1265	0.2981	0.6967
RESPONDENT 22	0.7057	0.3396	-0.1507	0.0287	-0.1299	-0.2582	-0.0612	-0.1336	0.7420
RESPONDENT 23	0.4213	-0.1509	0.4673	0.0910	-0.1727	0.0922	0.3852	-0.1595	0.6390
RESPONDENT 24	0.5405	-0.4825	-0.1062	0.3510	-0.1230	-0.1143	0.3013	-0.0163	0.7787
RESPONDENT 25	0.5350	-0.0405	0.0852	0.2819	-0.0226	-0.2094	-0.4095	-0.2433	0.6458
RESPONDENT 26	0.4651	0.4191	0.0714	0.1650	-0.0531	0.4398	0.2936	0.1916	0.7435
RESPONDENT 27	0.2367	0.4097	-0.2890	0.4649	0.2371	-0.0664	-0.0837	0.0293	0.5920
RESPONDENT 28	0.3811	0.6312	0.2136	-0.0053	-0.2630	0.2767	-0.1960	0.0102	0.7735
Eigenvalues	7.0913	2.2422	1.7828	1.7271	1.5009	1.4564	1.3484	1.2390	
Explained variance [%]	25	8	6	6	5	5	5	4	

Cumulative explained variance [%]	25	33	40	46	51	56	61	66

Two factor solution

The cumulative explained variance of this two factor solution is 34%, see Table 41. This is below 50% which means that it does not meet the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 12 and on factor 2 is 9. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. There are 21/28 loaders and 7/28 non-loaders in this factor solution. This is because it should be avoided that respondents load on multiple factors (Webler et al., 2009). There are 34 distinguishing statements on factor 1 and this factor solution has the minimal number of factors that could be additionalcted.

Table 41: Two factor solution

	Factor 1	**Factor 2**
RESPONDENT 1	-0.2491	0.2022
RESPONDENT 2	0.1812	0.4569X
RESPONDENT 3	0.4486X	0.2170
RESPONDENT 4	0.4934	0.4494
RESPONDENT 5	0.6057X	0.1584
RESPONDENT 6	0.5998X	0.3020
RESPONDENT 7	0.1682	0.1722
RESPONDENT 8	0.5994X	-0.0872
RESPONDENT 9	0.2707	0.2792
RESPONDENT 10	0.4548X	0.2044
RESPONDENT 11	0.0814	0.6132X
RESPONDENT 12	0.7154X	-0.0838
RESPONDENT 13	0.4242X	0.2964
RESPONDENT 14	0.1622	0.3118X
RESPONDENT 15	0.4045	0.4008
RESPONDENT 16	0.4326X	0.0989
RESPONDENT 17	0.5046	0.5225
RESPONDENT 18	0.5730X	0.3378
RESPONDENT 19	0.4149	0.4845
RESPONDENT 20	0.2838	0.4091X
RESPONDENT 21	0.2976	0.5606X
RESPONDENT 22	0.2992	0.7237X
RESPONDENT 23	0.4145X	0.1687
RESPONDENT 24	0.7245X	0.0010
RESPONDENT 25	0.4256X	0.3267
RESPONDENT 26	0.0669	0.6225X
RESPONDENT 27	-0.0970	0.4631X
RESPONDENT 28	-0.1371	0.7245X
Explained variance [%]	18	16
Defining sorts	12	9
Distinguishing statements	34	-
Cumulative explained variance [%]	34	

According to Table 42 the correlation is moderate.

Table 42: Correlation two factor solution

Factors	1	2
1	1	0.4996
2	0.4996	1

Three factor solution

The cumulative explained variance of this three factor solution is 40%, see Table 43. This is below 50% which means that it does not meet the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 9, on factor 2 is 6 and on factor 3 is 6. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. There are 21/28 loaders and 7/28 non-loaders in this factor solution. There are 27 distinguishing statements on factor 1, 23 on factor 2 and 18 on factor 3.

Table 43: Three factor solution

	Factor 1	Factor 2	Factor 3
RESPONDENT 1	0.1569	0.0684	-0.4350X
RESPONDENT 2	0.3155	0.3802	0.0223
RESPONDENT 3	0.4328X	0.1169	0.2440
RESPONDENT 4	0.2657	0.4857	0.4717
RESPONDENT 5	0.3324	0.1520	0.5277X
RESPONDENT 6	0.3627	0.2938	0.5111X
RESPONDENT 7	0.2354	0.1036	0.0400
RESPONDENT 8	0.5185X	-0.2321	0.3328
RESPONDENT 9	0.2314	0.2539	0.1899
RESPONDENT 10	0.7080X	-0.0538	0.0170
RESPONDENT 11	0.0135	0.7017X	0.1666
RESPONDENT 12	0.2688	-0.0529	0.6967X
RESPONDENT 13	0.5762X	0.1168	0.0997
RESPONDENT 14	-0.1413	0.4749X	0.3683
RESPONDENT 15	0.4431X	0.3049	0.1992
RESPONDENT 16	0.0346	0.2091	0.5474X
RESPONDENT 17	0.4795	0.4478	0.3134
RESPONDENT 18	0.4475	0.2778	0.4082
RESPONDENT 19	0.5373X	0.3474	0.1426
RESPONDENT 20	0.3636	0.3270	0.1099
RESPONDENT 21	0.5910X	0.3697	-0.0474
RESPONDENT 22	0.3418	0.6963X	0.1854
RESPONDENT 23	0.6433X	-0.0676	0.0152
RESPONDENT 24	0.3735	-0.0156	0.6297X
RESPONDENT 25	0.4406X	0.2291	0.2202
RESPONDENT 26	0.3168	0.5338X	-0.1087
RESPONDENT 27	-0.0937	0.5464X	0.0071
RESPONDENT 28	0.3272	0.5863X	-0.3721
Explained variance [%]	16	13	11
Defining sorts	9	6	6

Distinguishing statements	27	23	18
Cumulative explained variance [%]	40		

According to Table 44 the correlation is dominant moderate.

Table 44: Correlation three factor solution

Factors	1	2	3
1	1	0.4095	0.4861
2	0.4095	1	0.2735
3	0.4861	0.2735	1

Four factor solution

The cumulative explained variance of this four factor solution is 46%, see Table 45.This is below 50% which means that it does not meet the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 4, on factor 2 is 10, on factor 3 is 2 and on factor 4 is 6. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. There are 22/28 loaders and 6/28 non-loaders in this factor solution. There are 13 distinguishing statements on factor 1, 8 on factor 2, 12 on factor 3 and 11 on factor 4.

Table 45: Four factor solution

	Factor 1	Factor 2	Factor 3	Factor 4
RESPONDENT 1	-0.4598X	0.0500	-0.0418	0.1312
RESPONDENT 2	0.0017	0.5860X	0.0343	0.0058
RESPONDENT 3	0.2361	0.4319X	-0.1262	0.2078
RESPONDENT 4	0.3892	0.5199X	0.3088	0.1617
RESPONDENT 5	0.4976X	0.3633	0.0272	0.2212
RESPONDENT 6	0.4069	0.2966	0.2511	0.4351
RESPONDENT 7	-0.0731	-0.0960	0.2141	0.5148X
RESPONDENT 8	0.3252	0.0993	-0.2852	0.4961X
RESPONDENT 9	0.1218	0.2439	0.1724	0.2355
RESPONDENT 10	0.0317	0.4709	-0.4105	0.3876
RESPONDENT 11	0.1016	0.6197X	0.4325	-0.2082
RESPONDENT 12	0.7203X	0.2847	-0.1325	0.1154
RESPONDENT 13	-0.0094	0.1715	0.0446	0.6883X
RESPONDENT 14	0.2595	0.1299	0.5646X	0.0357
RESPONDENT 15	0.0793	0.2738	0.2184	0.5285X
RESPONDENT 16	0.4629X	0.0462	0.3392	0.2265
RESPONDENT 17	0.2341	0.6134X	0.1610	0.2941
RESPONDENT 18	0.3920	0.6189X	-0.0348	0.1440
RESPONDENT 19	0.0656	0.5242X	0.0698	0.3825
RESPONDENT 20	0.0991	0.6008X	-0.0238	0.0332
RESPONDENT 21	-0.0978	0.6528X	-0.0396	0.2883
RESPONDENT 22	0.0487	0.5980X	0.4518	0.2697
RESPONDENT 23	-0.0136	0.2646	-0.2717	0.5319X
RESPONDENT 24	0.5405	0.0116	0.1099	0.5959
RESPONDENT 25	0.1121	0.2268	0.1646	0.5325X
RESPONDENT 26	-0.2326	0.4014	0.3383	0.3076

RESPONDENT 27	-0.1580	0.0124	0.6681X	0.2281
RESPONDENT 28	-0.4684	0.5303	0.2502	0.1617
Explained variance [%]	9	17	8	12
Defining sorts	4	10	2	6
Distinguishing statements	13	8	12	11
Cumulative explained variance [%]	46			

According to Table 46 the correlation is dominant moderate.

Table 46: Correlation four factor solution

Factors	1	2	3	4
1	1	0.4459	0.1153	0.3923
2	0.4459	1	0.2840	0.4832
3	0.1153	0.2840	1	0.2184
4	0.3923	0.4832	0.2184	1

Five factor solution

The cumulative explained variance of this five factor solution is 50%, see Table 47. This meets the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 8, on factor 2 is 3, on factor 3 is 5, on factor 4 is 6 and on factor 5 is 3. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. There are 25/28 loaders and 3/28 non-loaders in this factor solution. There are 7 distinguishing statements on factor 1, 12 on factor 2, 9 on factor 3, 7 on factor 4 and 9 on factor 5.

Table 47: Five factor solution

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
RESPONDENT 1	-0.1882	-0.2657	-0.1688	0.1456	0.5882X
RESPONDENT 2	0.5254X	-0.0639	0.1105	0.0052	0.2290
RESPONDENT 3	0.5074X	0.0814	0.0785	0.2422	-0.1031
RESPONDENT 4	0.4423	0.0016	0.5689X	0.1469	0.0965
RESPONDENT 5	0.2878	-0.2795	0.4797X	0.3769	-0.0162
RESPONDENT 6	0.1840	-0.0106	0.5683X	0.4470	0.1162
RESPONDENT 7	0.0100	0.7446X	-0.0159	0.2336	-0.0457
RESPONDENT 8	0.1413	-0.0560	0.0655	0.6323X	-0.1542
RESPONDENT 9	0.3686	0.5207X	0.1093	0.0546	-0.1289
RESPONDENT 10	0.6089X	0.1911	-0.2801	0.4184	-0.0858
RESPONDENT 11	0.5267X	0.0411	0.4349	-0.3153	0.2437
RESPONDENT 12	0.3713	-0.2258	0.4169	0.3279	-0.4038
RESPONDENT 13	0.0938	0.2461	0.1073	0.6034X	0.2548
RESPONDENT 14	0.0506	0.1949	0.5882X	-0.1090	0.0769
RESPONDENT 15	0.1803	0.2343	0.2888	0.4197X	0.2533
RESPONDENT 16	0.0261	0.1201	0.5633X	0.1918	-0.1221
RESPONDENT 17	0.5490X	0.0671	0.3675	0.2656	0.1796
RESPONDENT 18	0.6707X	0.0003	0.2780	0.2041	-0.1008
RESPONDENT 19	0.4179	0.0230	0.2191	0.3624	0.3031
RESPONDENT 20	0.6047X	-0.0016	0.0998	0.0425	0.0915
RESPONDENT 21	0.6587X	0.2386	-0.0495	0.1959	0.2310
RESPONDENT 22	0.4162	0.1348	0.4867	0.1252	0.4580

RESPONDENT 23	0.2108	-0.0496	-0.0909	0.6037X	0.1928
RESPONDENT 24	0.0042	0.1024	0.4868	0.6342X	-0.1577
RESPONDENT 25	0.1620	0.2347	0.2565	0.4420X	0.1807
RESPONDENT 26	0.2384	0.2393	0.1835	0.1145	0.5161X
RESPONDENT 27	-0.0708	0.6005X	0.3326	-0.1287	0.2949
RESPONDENT 28	0.2764	0.0117	0.0364	0.0147	0.7618X
Explained variance [%]	14	6	11	11	8
Defining sorts	8	3	5	6	3
Distinguishing statements	7	12	9	7	9
Cumulative explained variance [%]	50				

According to Table 48 the correlation is dominant weak.

Table 48: Correlation five factor solution

Factors	1	2	3	4	5
1	1	0.2407	0.4966	0.4566	0.3085
2	0.2407	1	0.2003	0.2802	0.0734
3	0.4966	0.2003	1	0.5105	0.2013
4	0.4566	0.2802	0.5105	1	0.1894
5	0.3085	0.0734	0.2013	0.1894	1

Six factor solution

The cumulative explained variance of this six factor solution is 56%, see Table 49. This meets the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 7, on factor 2 is 3, on factor 3 is 2, on factor 4 is 5, on factor 5 is 3 and on factor 6 is 2. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. It should be noted that this is already the basal lower limit for two factors. There are 25/28 loaders and 3/28 non-loaders in this factor solution. There are 2 distinguishing statements on factor 1, 5 on factor 2, 5 on factor 3, 3 on factor 4, 5 on factor 5 and 4 on factor 6.

Table 49: Six factor solution

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
RESPONDENT 1	0.1621	-0.2022	-0.2943	0.1719	-0.5952X	0.2695
RESPONDENT 2	0.7025X	0.0126	-0.1399	0.0140	-0.0093	0.0384
RESPONDENT 3	0.2042	0.0404	0.0485	0.2469	0.5407X	0.0980
RESPONDENT 4	0.6113X	0.0253	0.3846	0.1861	0.1193	0.0173
RESPONDENT 5	0.4044	-0.2625	0.3366	0.4091	0.1182	-0.0869
RESPONDENT 6	0.1878	-0.0618	0.5344	0.5054	0.1930	0.1937
RESPONDENT 7	-0.0531	0.7507X	0.0052	0.2109	0.0692	-0.0063
RESPONDENT 8	-0.0189	-0.0673	0.0486	0.6281X	0.2669	-0.0873
RESPONDENT 9	0.2922	0.5416X	0.0346	0.0351	0.2653	-0.0849
RESPONDENT 10	0.3241	0.2210	-0.4045	0.3819	0.4572	-0.0212
RESPONDENT 11	0.5968X	0.0266	0.3032	-0.2651	0.1863	0.2708
RESPONDENT 12	0.3977	-0.1838	0.2724	0.3184	0.3032	-0.4406
RESPONDENT 13	0.1032	0.2440	0.0501	0.6253X	0.0001	0.2209
RESPONDENT 14	0.2033	0.1656	0.5715X	-0.0619	0.0020	0.0989
RESPONDENT 15	0.3038	0.2496	0.1770	0.4496	-0.0377	0.1673
RESPONDENT 16	0.0099	0.0636	0.6053X	0.2295	0.2026	0.0054

RESPONDENT 17	0.6787X	0.1120	0.1408	0.2916	0.1270	0.0662
RESPONDENT 18	0.5748X	0.0181	0.1079	0.2101	0.4387	-0.0599
RESPONDENT 19	0.4764	0.0397	0.0552	0.3961	0.0887	0.2336
RESPONDENT 20	0.1616	-0.1115	0.1349	0.0819	0.6883X	0.4482
RESPONDENT 21	0.5281X	0.2561	-0.2125	0.2013	0.3131	0.2524
RESPONDENT 22	0.7059X	0.1722	0.2608	0.1813	-0.1118	0.2813
RESPONDENT 23	0.1092	-0.0493	-0.1605	0.6138X	0.1186	0.1854
RESPONDENT 24	0.1688	0.1349	0.3965	0.6436X	-0.0068	-0.2635
RESPONDENT 25	0.3316	0.2764	0.1184	0.4579X	-0.0862	0.0387
RESPONDENT 26	0.0972	0.1462	0.2145	0.1835	0.1768	0.6920X
RESPONDENT 27	0.1191	0.5883X	0.3298	-0.0942	-0.1966	0.2599
RESPONDENT 28	0.2506	-0.0507	-0.0065	0.0914	-0.0171	0.8130X
Explained variance [%]	14	6	8	12	8	8
Defining sorts	7	3	2	5	3	2
Distinguishing statements	2	5	5	3	5	4
Cumulative explained variance [%]	56					

According to Table 50 the correlation is dominant weak.

Table 50: Correlation six factor solution

Factors	**1**	**2**	**3**	**4**	**5**	**6**
1	1	0.2694	0.3125	0.4284	0.3169	0.4238
2	0.2694	1	0.1911	0.2609	0.1402	0.1495
3	0.3125	0.1911	1	0.2307	0.2196	0.1637
4	0.4284	0.2609	0.2307	1	0.2224	0.2083
5	0.3169	0.1402	0.2196	0.2224	1	0.2396
6	0.4238	0.1495	0.1637	0.2083	0.2396	1

Seven factor solution

The cumulative explained variance of this seven factor solution is 60%, see Table 51. This meets the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 8, on factor 2 is 3, on factor 3 is 2, on factor 4 is 2, on factor 5 is 2, on factor 6 is 4 and on factor 7 is 4. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. It should be noted that this is already the basal lower limit for three factors. There are 25/28 loaders and 3/28 non-loaders in this factor solution. There are 2 distinguishing statements on factor 1, 3 on factor 2, 8 on factor 3, 4 on factor 4, 5 on factor 5, 5 on factor 6 and 3 on factor 7.

Table 51: Seven factor solution

	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	**Factor 6**	**Factor 7**
RESPONDENT 1	0.1428	-0.1212	-0.2383	0.2717	-0.1882	-0.6360X	0.1350
RESPONDENT 2	0.7011X	-0.1260	-0.0331	0.0125	-0.0298	-0.0257	0.1008
RESPONDENT 3	0.2249	0.1650	-0.1129	0.1113	0.0452	0.5275X	0.1758
RESPONDENT 4	0.5993X	0.3803	0.2101	0.0450	-0.0026	0.1034	0.1134
RESPONDENT 5	0.3606	0.3111	0.1850	-0.0779	-0.3480	0.1890	0.4705
RESPONDENT 6	0.1841	0.7644X	0.0393	0.2860	-0.0055	0.1254	0.1539
RESPONDENT 7	-0.0192	0.1471	-0.0560	0.0281	0.7907X	0.0149	0.1097
RESPONDENT 8	-0.0355	0.2572	-0.1594	-0.0631	-0.0943	0.3050	0.5997X

RESPONDENT 9	0.3115	-0.0372	0.1204	-0.0989	0.4989X	0.2811	0.1430
RESPONDENT 10	0.3604	-0.0699	-0.4594	-0.0218	0.2455	0.4010	0.3314
RESPONDENT 11	0.6200X	0.2283	0.1920	0.2911	0.0576	0.1071	-0.4171
RESPONDENT 12	0.3887	0.4957	-0.0496	-0.3930	-0.1579	0.2540	0.1285
RESPONDENT 13	0.0903	0.2041	-0.0710	0.2455	0.2052	0.0282	0.6211X
RESPONDENT 14	0.1719	0.1791	0.6098X	0.0894	0.0548	0.1095	0.1155
RESPONDENT 15	0.2896	0.2416	0.0751	0.1901	0.2056	-0.0202	0.4473X
RESPONDENT 16	-0.0049	0.5388X	0.3241	0.0555	0.0504	0.2260	0.1131
RESPONDENT 17	0.6681X	0.1647	0.0876	0.0683	0.0523	0.1353	0.3331
RESPONDENT 18	0.6037X	0.3848	-0.1839	-0.0138	0.0837	0.3261	-0.0512
RESPONDENT 19	0.4803X	0.2705	-0.1351	0.2673	0.0525	0.0340	0.2531
RESPONDENT 20	0.1779	0.0104	0.0725	0.4295	-0.1614	0.7456X	0.1486
RESPONDENT 21	0.5662X	0.0082	-0.2704	0.2603	0.2852	0.2326	0.1042
RESPONDENT 22	0.6880X	0.1643	0.2572	0.2837	0.0999	-0.0967	0.2406
RESPONDENT 23	0.1344	0.4079	-0.5543X	0.2630	0.0731	-0.0250	0.2163
RESPONDENT 24	0.1575	0.7628X	-0.0689	-0.1652	0.1982	-0.0894	0.3041
RESPONDENT 25	0.2982	0.0517	0.1779	0.0259	0.1596	0.0070	0.6612X
RESPONDENT 26	0.1247	0.3014	-0.0134	0.7393X	0.1972	0.1137	-0.0430
RESPONDENT 27	0.1114	-0.0021	0.4888	0.2479	0.5054	-0.1285	0.0802
RESPONDENT 28	0.2460	-0.1596	0.0921	0.7866X	-0.1186	0.0349	0.2120
Explained variance [%]	14	10	6	8	6	7	9
Defining sorts	8	3	2	2	2	4	4
Distinguishing statements	2	3	8	4	5	5	3
Cumulative explained variance [%]	60						

According to Table 52 the correlation is dominant weak.

Table 52: Correlation seven factor solution

Factors	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1	1	0.4673	0.0471	0.4298	0.2095	0.3190	0.4747
2	0.4673	1	-0.0221	0.1616	0.2105	0.2212	0.5322
3	0.0471	-0.0221	1	-0.0703	-0.0796	0.0708	-0.0396
4	0.4298	0.1616	-0.0703	1	0.0729	0.2657	0.2859
5	0.2095	0.2105	-0.0796	0.0729	1	0.1377	0.2128
6	0.3190	0.2212	0.0708	0.2657	0.1377	1	0.3035
7	0.4747	0.5322	-0.0396	0.2859	0.2128	0.3035	1

Eight factor solution

The cumulative explained variance of this eight factor solution is 67%, see Table 53. This meets the requirement of the cumulative explained variance. The number of significant loadings on factor 1 is 3, on factor 2 is 2, on factor 3 is 2, on factor 4 is 2, on factor 5 is 3, on factor 6 is 2, on factor 7 is 3 and on factor 8 is 3. This means that there are at least two significant loaders on each factor and therefore this factor solution meets the requirements of at least two significant loadings on a factor. It should be noted that this is already the basal lower limit for four factors. There are 20/28 loaders and 8/28 non-loaders in this factor solution. There is 1 distinguishing statements on factor 1, 2 on factor 2, 4 on factor 3, 4 on factor 4, 3 on factor 5, 1 on factor 6, 2 on factor 7 and 3 on factor 8.

Table 53: Eight factor solution

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
RESPONDENT 1	0.0547	-0.1897	0.1988	-0.0100	-0.7039X	0.2643	-0.1091	0.1114
RESPONDENT 2	0.6103X	-0.1859	-0.1466	0.3551	-0.2367	0.0536	-0.0013	0.1815
RESPONDENT 3	0.1368	0.0385	0.2288	0.1737	0.5868X	0.0662	0.0429	0.2867
RESPONDENT 4	0.1981	-0.0279	-0.0842	0.5308	0.0630	0.0015	0.3399	0.3538
RESPONDENT 5	-0.0177	-0.3150	-0.0007	0.1949	0.2405	-0.1002	0.2530	0.6586X
RESPONDENT 6	-0.0215	0.0334	0.2160	0.2824	0.1039	0.2083	0.7210X	0.2103
RESPONDENT 7	0.0799	0.8117X	0.1607	0.0095	0.1045	-0.0465	0.0308	0.1226
RESPONDENT 8	0.3945	-0.1934	0.0802	-0.4074	0.1194	0.0078	0.5045	0.2876
RESPONDENT 9	0.4836	0.3855	-0.2306	0.0949	0.1672	-0.0656	0.0880	0.1206
RESPONDENT 10	0.7531X	0.0619	0.2628	-0.0702	0.2130	0.0088	0.0295	0.1680
RESPONDENT 11	0.0672	0.0591	-0.0587	0.8300X	0.1219	0.2093	0.0663	-0.0358
RESPONDENT 12	0.2444	-0.2268	0.0926	0.2760	0.1846	-0.4222	0.4644	0.2053
RESPONDENT 13	0.1314	0.2249	0.2063	-0.1496	0.0419	0.2205	0.2118	0.5721X
RESPONDENT 14	-0.0308	0.0743	-0.5233X	0.1866	0.0728	0.1268	0.3300	0.2152
RESPONDENT 15	0.2686	0.1751	-0.0091	0.0552	-0.1007	0.1862	0.3297	0.4351
RESPONDENT 16	0.0744	0.0307	-0.2508	0.0290	0.0997	0.0826	0.7382X	0.0065
RESPONDENT 17	0.3353	0.0052	-0.0055	0.4232	0.1038	0.0362	0.1168	0.5599
RESPONDENT 18	0.3948	-0.0024	0.2346	0.5388X	0.2586	-0.0824	0.2699	0.1245
RESPONDENT 19	0.1133	0.0758	0.3308	0.3936	0.0977	0.1727	0.0770	0.4846
RESPONDENT 20	0.2095	-0.1981	-0.0375	0.1024	0.6967X	0.4639	0.0874	0.1707
RESPONDENT 21	0.7092X	0.1217	0.1312	0.2710	0.0251	0.2674	0.0981	0.0797
RESPONDENT 22	0.1728	0.1068	-0.1012	0.5558	-0.0913	0.2325	0.0931	0.5572
RESPONDENT 23	0.1179	0.0822	0.7056X	0.0826	-0.0009	0.1552	0.2176	0.2056
RESPONDENT 24	0.0107	0.2273	0.2954	0.1476	-0.0672	-0.2620	0.6562X	0.3378
RESPONDENT 25	0.1209	0.1810	-0.0505	-0.0032	0.0609	0.0155	0.0420	0.7682X
RESPONDENT 26	0.1177	0.2022	0.1291	0.2238	0.0322	0.7042X	0.3488	-0.0578
RESPONDENT 27	-0.0159	0.5432X	-0.4044	0.1450	-0.1121	0.2502	0.0762	0.1765
RESPONDENT 28	0.0937	-0.1010	-0.0278	0.1409	-0.0086	0.8030X	-0.0892	0.2846
Explained variance [%]	9	6	6	10	6	8	10	12
Defining sorts	3	2	2	2	3	2	3	3
Distinguishing statements	1	2	4	4	3	1	2	3
Cumulative explained variance [%]	67							

According to Table 54 the correlation is dominant weak.

Table 54: Correlation eight factor solution

Factors	1	2	3	4	5	6	7	8
1	1	0.1316	0.2108	0.3157	0.2321	0.3008	0.2048	0.3043
2	0.1316	1	0.0865	0.0774	0.1084	0.1151	0.1825	0.1647
3	0.2108	0.0865	1	0.0337	-0.0167	0.1587	0.1168	0.1235
4	0.3157	0.0774	0.0337	1	0.2958	0.3450	0.2726	0.1380
5	0.2321	0.1084	-0.0167	0.2958	1	0.1804	0.2258	0.2774
6	0.3008	0.1151	0.1587	0.3450	0.1804	1	0.2066	0.2559
7	0.2048	0.1825	0.1168	0.2726	0.2258	0.2066	1	0.3853
8	0.3043	0.1647	0.1235	0.1380	0.2774	0.2559	0.3853	1

Conclusion

For the criteria minimal two significant loaders on a factor, it should be noted that two significant loadings are already the basal lower limit. Therefore it is chosen to level this up to minimal three significant loadings.

Table 55: Trade-off table for factor solutions

Criteria	2 factors	3 factors	4 factors	5 factors	6 factors	7 factors	8 factors
Eigenvalue > 1	YES (7.0913)	YES (2.2422)	YES (1.7828)	YES (1.509)	YES (1.4564)	YES (1.3484)	YES (1.2390)
Explained variance > 3%	YES (25%)	YES (8%)	YES (6%)	YES (6%)	YES (5%)	YES (5%)	YES (4%)
% Cumulative explained variance ≥ 50%	NO (34%)	NO (40%)	NO (46%)	YES (50%)	YES (56%)	YES (60%)	YES (67%)
% factors with ≥ 3 significant loadings	100 (2/2)	100 (3/3)	75 (3/4)	100 (5/5)	67 (4/6)	57 (4/7)	50 (4/8)
% loaders	75 (21/28)	75 (21/28)	79 (22/28)	89 (25/28)	89 (25/28)	89 (25/28)	71 (20/28)
% non-loaders	25 (7/28)	25 (7/28)	21 (6/28)	11 (3/28)	11 (3/28)	11 (3/28)	29 (8/28)
% correlation ≤ 0.33	0 (4-2-2/4)	22 (9-3-4/9)	38 (16-4-6/16)	56 (25-5-6/25)	72 (36-6-4/36)	69 (49-7-8/49)	81 (64-8-4/64)
Number of distinguishing statements	34	68	50	44	24	30	20
Least number of factors	2	3	4	5	6	7	8
Number of green markings	5	5	3	**7**	6	6	5

For every row, the factor solutions that meets the criteria is marked in Green. The factor solution with the most green markings is the chosen as the optimal factor solution. As can be seen in Table 55 The 5-factor solution meets the most requirements and is therefore chosen as the most optimal factor solution.

APPENDIX K: EXPERT INTERVIEW SET-UP

Appendix K consists of the set-up of the expert interview. Every perspective is shortly described to the interviewee. After that three questions are asked for each perspective:

Herkent u dit perspectief?

1. Herkent u dit perspectief?
2. Zo ja, hoe wordt met dit perspectief omgaan? Of hoe denkt u dat er met dit perspectief omgegaan zou moeten worden?
3. Wat zijn de mogelijke obstakels/barrières voor de implementatie van deze strategie?

Perspective 1: clear, high level scope definition & clear Bouwteam roles

Karakteristiek voor dit perspectief is om een helder gedefinieerde scope van het bouwteam te hebben, maar ook de rollen in het bouwteam moeten vooraf worden afgesproken, nog voordat het bouwteam aan de slag gaat. Hierbij hoeft het detailniveau van het design niet zeer gedetailleerd te zijn.

Perspective 2: focus on a good professional relationship with less informal events

Karakteristiek voor dit perspectief is een goede werkrelatie om de samenwerking tijdens de transitie positief te beïnvloeden. Het is belangrijk om een open en luchtige sfeer te creëren. Daarnaast is periodieke verificatie en validatie nodig: voldoet het ontwerp aan de eisen en is de opdrachtgever tevreden? Er is minder behoefte aan teamuitjes en informele events. Het gaat meer om een professionele houding.

Perspective 3: focus on a long-term collaboration with a win-win attitude without the risks innovation would bring

Karakteristiek voor dit perspectief is een lange termijn oriëntatie om de samenwerking tijdens de transitie positief te beïnvloeden. Een lange termijn oriëntatie is de basis voor samenwerking. Er is ook een focus op een win-win houding. Echter zijn de respondenten van dit perspectief het erover eens dat het minder noodzakelijk is om innovatie en technologische ontwikkelingen mee te nemen om de samenwerking tijdens de transitie positief te beïnvloeden.

Perspective 4: focus on leadership ability and minimize monodisciplinary meetings

Karakteristiek voor dit perspectief is de focus op de projectleider. Het gaat om zijn aanpassingsvermogen aan veranderingen in het project en zijn leiderschapsbekwaamheid. De project leider is de sleutelfunctionaris voor samenwerking. Het is minder belangrijk dat er apart gesprekken zijn in kleine groepen per discipline. Met veel projecten kun je deze overlegstructuren compact houden. Soms is het niet te vermijden, maar probeer het te minimaliseren.

Perspective 5: focus on early agreements on price-related aspects & specific competences of people

Karakteristiek voor dit perspectief zijn de vroegtijdige afspraken over de prijs. Het is daarnaast ook belangrijk dat de juiste mensen beschikbaar zijn, dus de juiste mensen op het juiste moment worden ingeschakeld. Mensen maken het werk en vooral in een bouwteam zijn specifieke competenties en expertises nodig om het project een succes te maken. Het is belangrijk dat de opdrachtgever voldoende kostenexpertise heeft. Het is wenselijk om te streven naar gelijkwaardigheid tussen OG-ON. De traditionele OG-ON relatie werkt niet om goede samenwerking te bereiken.

Gemeenschappelijke factoren

Een aantal factoren zijn sowieso belangrijk, ongeacht het perspectief. Dit zijn: Hoge mate van commitment, gezamenlijke probleemoplossing, goede communicatie, transparantie, billijke relatie en respect voor iedereen, wederzijds vertrouwen.

1. Herkent u deze factoren als basiswaarden voor een goede samenwerking tijdens de transitie naar de uitvoering van een Bouwteam project?
2. Zo ja, hoe wordt hiermee omgaan? Of hoe denkt u dat er met deze vijf kernwaarden omgegaan zou moeten worden?
3. Wat zijn de mogelijke obstakels/barrières voor de implementatie van deze strategie?

APPENDIX L: FIVE EXPERT INTERVIEWS

Appendix L consists of summaries of five expert interviews. For every perspective it is stated what the expert says about that perspective. The strategies to cope with certain factors are marked in green. These green markings are used in Appendix N to analyze the text and come up a strategy.

Perspective 1

Expert 1 mostly recognizes perspective 1. Clear scope of the Bouwteam and a clear division of roles are very important, known at the start of the Bouwteam project. However, expert 1 finds it difficult to relate to the lesser need for Informal team events and team outings. Informal team events and team outings make it possible to know how someone else reacts, because then you know what kind of person someone is (character, work style). A Bouwteam consists of different characters. Not being aware of the persons character beforehand can lead to having different expectations. If these expectations are not met it can lead to irritations. It is important to draw up a collaboration plan in which processes are agreed to and where the tools are defined. Common processes are agreed upon, but they do not have to be developed. The creation of new common processes is undesirable in a Bouwteam. Within the Bouwteam, there must be looked at existing common processes to look at what is best for the Bouwteam. According to expert 1, agreements can be clearly laid down in, for example, a Bouwteam agreement. This agreement will later be converted into a realization agreement. There is always an escape within the Bouwteam. For example when the client and contractor do not see another way out. This is because the client can start tendering again. This means that products must be designed in such a way that they can possibly be put out to tender if the client switches to another contractor. This can be found regularly in the agreements. Furthermore, it is precisely at the beginning of the Bouwteam project that the team invests in collaboration. This can be done by means of the DiSCmanagement profile, which shows which profile the Bouwteam members have. A Bouwteam coach can also be used to initiate the collaboration. The focus is not on the content, but purely on collaboration between different parties. One obstacle could be that there might be too much focus on the contract. A Bouwteam is less suitable when the contract is constantly being brought up during the process. In this case it is better to use a client-contractor contract.

Perspective 1 is recognized by expert 2. A clearly defined scope, together with the division of roles in each project is important. Level of detail is not important as long as the initial situation is clear and what needs to be delivered is clear. The development of common processes depends on where the parties stand in this situation. It is conceivable that there is less need for informal events and team events, because people are just working. It is also conceivable that there is less need for performance management, if it is written that way and presented to the respondents. Expert 2 does think there is a need for insights and updates into how the team is doing, in the form of a dashboard. Expert 2 recommends to start with speaking to all members of a Bouwteam project. The kick-off (PSU) discusses the scope of the Bouwteam, how to work together, the division of roles, the common processes that must be followed and what is needed to make the project a success. Having this clear avoids problems. Thereby, everyone has to tell something about themselves: how he/she handles things, what his/her hobbies are and what this person input will be to success. Management profiles is a commonly used system to measure competences of people as the Bouwteam consists of different kind of people. The purpose of this is that there are people in a team with various 'colors'. It is about being as multi-colored as possible within a team, which means that there are many complementary qualities in a team. This creates counterforce and more inspiration within the team, this ensures nobody does the same. If this is done in a nice way and people do not feel uncomfortable, there are no obstacles. If there is tension, it mostly originates from the behavior. Obstacles occur because of tension, because people become more hesitant. This leads to a stark conversation.

Perspective 1 is recognized by expert 3 in multidisciplinary projects where everyone is a little more strict in the rules. There is a need for more clarity about the responsibilities of different parties

involved. The transition is about the realization of the realization agreement, then the Bouwteam is actually finished. Then you have to agree on the design down to the detail level, but the level of complexity of the design does not matter for the collaboration. According to expert 3, it is important that during the transition from preparation to implementation it is agreed upon how tasks and responsibilities are divided within team. However, this should not be too rigid. If a new team member comes on board, this member should always be able to deployed with added value to the project. The project objectives must be clear and each team member must be able to make the greatest contribution to the objectives. At the start of the Bouwteam, it is important that there is a clearly defined scope description of the Bouwteam. In the Bouwteam phase, a clear scope is defined together within the team. The transition to implementation becomes very difficult if it is unclear what needs to be done. The fixed scope description must be written out in detail, so discussions can be avoided during execution. It does not matter which party writes this out. Sometimes the consultant makes the specifications, but the contractor or client can also do this. The party that has the best people at the table or the people that have time can write a clear defined scope description. In the case of the cost price, it is more logical if the contractor determines this. A standard can be used for the realization agreement. A commonly used standard in infrastructure is the standard UAC-2012. Specifications are made with a very detailed description of what must be done during the realization. An obstacle here is that the RAW contract is never 100% opaque. In the end there are always things that should have been done differently. In addition to that, it is important to properly capture the risks. There are always some failure costs, which cannot be prevented, partly because the RAW contract is never 100% opaque. That is why the risk session is so important. The more experience someone has with Bouwteams, the more relevant risks are brought to the table. Discuss the risks within the team, reserve money for those risks or come to an agreement about who is responsible for it. A Bouwteam always consists of many diverse players. Their personal characteristics should be made clear. It is important that there is a balanced team. Those who do not feel the need to develop common processes are involved in a different way. It is useful to emphasize within the team that informal events are useful. It is not always necessary, but a number (one or two) informal sessions where people get to know each other. The frequency depends on the size and duration of the project. The longer the collaboration, the better it is to know more about each other, so that each other can be taken into account. If private things are going on, that is good to know, so that less pressure is exerted on each other.

Expert 4 recognizes perspective 1. This perspective is instrumental in nature and fits the more classical approach. This classic approach means that the client decides and the contractor does his job. The client is of it, was of it and remains of it. The lesser degree of need for informal events is very old school, but it does happen in practice. If the contractor wants to end up in this spread-out bed, it has to be there. If a client has this in-house, it is understandable that this type of Bouwteam exists. This can also work if the preconditions are met. Expert 4 notes that an integrated approach, customer satisfaction and thinking along do not come about automatically in this perspective. This also presupposes a considerable amount of knowledge, expertise and organizational strength on the part of the client. Informal events can be enforced or discussed. It might happen that people need it less, but there also might come a time when it does not work that way. That means it has to be handled differently. For this perspective it is necessary that there is a client who has experience with this, knows exactly what he wants and what he needs at the start of the project. However, it is often the case that the client cannot offer this and does not want to. This is very classical thinking. Most clients do not wait for a contractor to do just do his own thing. For most challenging projects, it is not a realistic premise that it works according to the classical thinking. This can work for a simple project, but the moment it becomes integral, becomes complicated, or the moment there is a certain degree of complexity or size, it becomes very difficult to hold on to the classical thinking.

Expert 5 recognizes perspective 1. There are a number of lawyers who believe that the scope and Bouwteam team roles do not need to be worked out in detail at all, others do. It is a point that is discussed quite regularly among lawyers. According to expert 5, the expectations of each other should

be specifically known to everyone involved. Only in this way, someone can do what is expected of him/her. If something has to be structured in a certain way, knowing that it is not in one's nature due to different characters, then it needs to be communicated properly to this party. The new Bouwend Nederland model does not elaborate on this aspect either. A clearly defined scope and roles can be documented in a (quite detailed) Excel sheet in which tasks are listed, including responsibilities and deadlines to avoid issues. An obstacle might be that the terms are not unambiguous when the parties get to work. Documents can also get lost which happens in contract world anyway. However, that is just dredging contract management. After all, it is a matter of making sure that the PDFs (for example via email) are provided to everyone. In a PSU, the team can get to know each other. This might be a work-related meeting, but not purely for business. This contact can improve mutual understanding.

Perspective 2

Perspective 2 is mostly recognized by expert 1. The focus on a good professional environment is understandable. However, less need for Informal team events and team outings is difficult to place. Quality must be delivered, so periodic verification and validation is a requirement. A good professional environment is created by getting to know each other. It is important to create an open and airy atmosphere. This is done by talking to each other and discussing how things will be handled. You can invest in a Bouwteam for the first months in only (work-related) collaboration. In an ideal Bouwteam, everyone is equal and it is impossible to see who belongs to which party. That is a lengthy process and at some point it just happens. That is by trusting and being there for each other. Something can always happen due to different circumstances, but a good Bouwteam takes care of each other. A professional environment is where roles and expectations are expressed to each other. It must be clear how the roles are tackled and what the backup is. If it is not spoken out or recorded, there is nothing to hold up to. There should be invested in this by sessions and a collaboration plan. Agreements are made with the team in the collaboration plan. For example, about the system that is used to store documents or the way in which this is done. People have to coordinate with each other in conversations, include each other in the process and record it. With periodic verification and validation, it is necessary to know whether the scope is clear, what the client wants, where the team should go, whether the principles are clear, how they arrived at this and what considerations were made. Only then will the solution come. An obstacle here is that nobody likes to make agreements, but that has to happen and that is a matter of getting used to. Agreements in the collaboration plan must be complied with. In a Bouwteam, each other's strengths must be used. Sometimes that requires adjustment. For example, if the other party's management system is better developed, it will become habituated to apply that system. This can be an obstacle, but one has to get used to it. The party that knows most about it should give tips on how to deal with it: pay attention to this and that. At some point it will just run smoother.

Perspective 2 is recognized by expert 2. Informal outings are non-work related outings that are less needed and that is understandable. For this, it must be clearly agreed on what is informal. Getting to know each other on a work-related basis in a light-hearted relationship and relaxed atmosphere can actually contribute to the success of the project. The team members do not have to become each other's best friends or have a drink every week from now on. However, a little human interest is important, so you know some things about the other. It is okay that people do not want to get to know each other on a personal level. However, according to expert 2, it is important that everyone tells something about themselves. Also about expectations and activities and important values. An obstacle to this can be that people are shy when introducing themselves and do not dare to share their opinion openly.

Perspective 2 is recognized by expert 3 in multidisciplinary projects. Sometimes a team is very much after verification, validation and professional working relationship, but less on collaboration. The client does not actually share any knowledge and this does not yield the maximum in a Bouwteam project

when looking at the objectives that must be achieved. The client makes the contractor responsible for everything, but does not think along. That is a pity, because there is always more to be gained by working together in a different way. It does not have to be less professional, but it is about attitude and behavior. It must be ensured that the team has the same objective in mind. Everything that is conceived must yield the most for the project. Do not just try to fight for your own gain, either the client or the contractor. To create a professional environment, conversations can be organized. Not about the content of the work, but about the expectations: objective of the project, what is the minimum that needs to be done to make the project successful (see circle sent by Adriaan). Creating a good working relationship is very difficult because it really comes down to personal qualities. Not everyone is suitable for working in a Bouwteam project, because they remain in their traditional role, as they have been used to for years. During the Bouwteam, the biggest challenge is to get the right people together who understand how to get the most out of a team. That is speaking very openly about expectations: who does what, who is very good at something and sharing information and knowledge with each other. Those are different conversations than conversations about technology. In that sense, the technical risks are not that interesting at all if the best people are present, they come naturally. The budget is always fixed. From the moment of registration, a budget assessment is made based on the knowledge at that time. It is shown openly and honestly: if these are the rules and frameworks of the project, then the budget is sufficient or not. This is one of the most important pillars through which realization does or does not go ahead. If it is over the budget, the project won't go through. Sometimes there is resistance and this cannot always be avoided, for example if someone is in a different role than one would like. For a large project, the technical manager checks the design and thinks that everything should be explained completely as if he knows nothing about it, while he himself also has a lot of experience and knows perfectly well what is and what is not possible. That is a shame in the Bouwteam, because this takes a lot of time. The technical manager comes up with things that the contractors already know and vice versa. If that knowledge is not shared, it will take much longer to test and process what he finds each time. That is a real shame. This does not strengthen the team. When joint design sessions are held and there is an agreement on what will be made, it takes much less time.

Expert 4 partly recognizes perspective 2. Expert 4 has difficulty seeing a link between a good working relationship, but less need to get to know each other on a personal level. It is useful to know where irritations can occur. A good working relationship cannot be stated without attention to the human being you are working with. It should be made clear that the team outing is work. It is nothing outside of work. A good working relationship is created by integrality and also having the same objectives. Think about design work. One should appreciate and give each other compliments. Successes should be celebrated together and the team should have a good time together. If something bad happens in the life of a team member, it is on the team to show the team member that he or she is in their thoughts. Financial issues or technical problems should be out in the open, only then the collaboration and people-oriented approach can be maintained properly within the team. There are projects that almost failed but where people continue to treat each other well.

Perspective 2 is recognized by expert 5. Expert 5 can imagine that people think they have more than enough to do, so those informal events are not necessarily important. Still, team events and casual events can be a way to get into a light-hearted relationship. It is nice to have a friendly relationship. It is not necessary to go to the Efteling together or to be best friends, but it is important to see each other as a person. Like asking how things are going before starting hard negotiations. A good working relationship is achieved through good communication: express expectations to each other and do not just make assumptions. People do not like surprises. Therefore, one must be reliable and responsive. The process must be guarded by interface risks. This plays a role in loss of integrity in which all disciplines are individually compartmentalized. This leads to problems with alignment. Just putting something out there and wanting someone to look is not enough. It works when one looks plenary and

works through things together and also having same project goals (e.g. same design in mind). This helps preventing obstacles.

Perspective 3

Expert 1 recognizes perspective 3. If people want to invest in the future, and want to do several projects together, then learning will go on. These lessons learned must be shared with each other, so the team learns from each other. With that learning perspective, the team becomes strong. People often think innovations are fine, but not on their own project. Of course innovations are exciting, but 70% of innovating requires to 'learn the job'. If they succeed and the risks are managed, then it is less scary. Every innovation must be tested and pilots are needed for this. New tools must also be tested and applied in the project. One example is Smart Gira (communication / review means) which is actually an innovation. It will automatically become clear whether the tool can be used in a project. Another party might have a different system. It does not matter where it comes from, what matters is that the communication tool is used. Do what is best for the early agreed similar project goals even if that requires adaptation.

Expert 2 recognizes perspective 3. Long-term orientation and win-win attitude are important. Innovation depends on the mission of the team. There are Bouwteams that are set up precisely to achieve a necessary innovation. If innovation is an objective, then this is difficult. If you are already part of a Bouwteam and are asked for innovation, it is understandable that there is no need for this. It should be considered what is needed, when you want to create a team and how that needs to be done. An obstacle might be that people do not see the necessity, the opposing forces. That is very human.

Expert 3 recognizes perspective 3. Collaboration contributes to long-term situations. If one is convinced that we are fighting for the same objective, no matter which team someone is in, that will be the only way to a long-term relationship. Less need for innovation depends on the project objective. The more innovation in a project, the more risks there are and the more agreements have to be made about who will be held responsible if an innovation fails. If one does not innovate, there is more certainty and there will be less agreements required. In addition, create a learning culture. One should be curious about each other. There must be a safe culture in which it is okay to make mistakes

Expert 4 recognizes perspective 3. Certainly the project that is more fitting for a programmatic approach. People should feel free to learn from each other and make mistakes which creates a long-lasting learning culture. It should be clear what the long-term objectives are. There should be a clear vision and one must be consistent. It cannot be said: this is the vision for 20 years, and then after a year doing something completely different. It will be greatly disrupted. This is not about one project, but more about objectives for collaborations between organizations and how they want to shape it. So that has to be translated into projects, but there is something about it that is being shaped. What gets exciting is how this should be tendered. Tender is done at project level, not at the organizational level. Programmatic work is required. Another obstacle might be that the government does not remain consistent in its objectives. There are elections every four years, so the question is whether the government can be a good partner to deliver that.

Expert 5 recognizes perspective 3. Sometimes a sidenote is made that it is assumed that the party who has inserted the innovation, will have to deal with the mistakes therein. It depends on what is meant by innovation and whether someone is being held responsible if an innovation turns out not to work. If someone is really responsible for it, then that is a whole different situation. A long-term orientation can be achieved through a framework agreement. A best way to ensure that a contractor

does his job, is the long-term orientation. The point is that the contractor knows that if he does his job well and there is not too much hassle, he will get more work in the future. This way, he can also see any failure costs as learning money, which he can earn back on future projects. Why parties can be so skeptic about this, is because they think they might not recover their loss (failure costs) in different future projects. In part, it is also traditional behavior. Win-win attitude is achieved by being aware of each other's interests. Everyone must also accept that there are outcomes that it is a win for both parties, converted into a joint project vision. There is not necessarily always one game to win and one game to lose. The call regarding innovation lies with the client. If he sees that the team does not need that, then he needs to find out why. What is the fear? Is the client afraid of liability? Is that because the people in the teams are too traditionally schooled or are they just not interested themselves? Is it because the contractor just thinks it is nonsense to innovate, because there are plenty of perfect solutions that work super well that do not require innovation? Do not innovate to innovate. An obstacle regarding this, can be the tender. In terms of procurement law, you really have to be careful with a framework agreement. In the traditional sector, a framework agreement might last a maximum of four years, in the utility sector a maximum of eight years. There are even more procurement law snags. If the contractor is allowed to get all the work done in the coming years , the market will be locked. This must be handled carefully. It should be made very clear when one can get rid of each other. When does it no longer work, so it can be dissolved ? Win-win attitude knows an obstacle which is that people are afraid. The parties are afraid to share their interest , because they think it will be misused. But actually, it is very powerful to speak out, so everyone is aware everyone's attitude and thoughts. This way all parties can handle the right way without making assumptions. This is based on the assumption that human beings are fundamentally good. With innovation and the conversations to innovate, it should not lead to endless conversations. At a certain point decisions have to be made. It is important that the client does have a clear vision and not five different drawees who have different opinions.

Perspective 4

Perspective 4 is recognized by expert 1. Expert 1 tells about the core team (a project manager, project operator, project environment manager and design leader). The environment manager has his own consultations and he takes that into account in the core team. A design leader also has his own consultations that involve several disciplines. It must be ensured that there is a consultation with all the discipline leaders. Some discipline leaders could have no influence during consultations, that is inefficient. One has to look at the subject and the agenda that is needed and put those people together. If they have certain commonalities, they should meet together . There is always a project manager/project leader who is looked upon with expectations from other parties, also in the structure of meetings. There are expectations and roles. People have certain expectations of the project leader, that he sets out the strategy or that he sets out a certain line. That is traditional thinking, because the Bouwteam is together. In the beginning , the project leader is needed to have his vision and ideas, but in the core team the strategy is determined together . That is real client-contractor functioning. When people fall into their old pattern, they should be confronted and told that this is not the agreement. This is done in an open conversation. That is the basis of the Bouwteam: daring and having the opportunity to say everything. If Bouwteam members are very dependent on the project leader, it must be determined where this comes from. People have to sit together and explain how to treat each other. Ultimately there is only one decision maker, the money decision maker, but if there is criticism of the leadership then it is criticism of everyone, because people do it together. An obstacle can be that people do not dare to speak freely. Sometimes criticism is not expressed and that causes irritation and friction. Then one has to go back to the core and people have to be put back together to see what the problem is. It is difficult to react without knowing each other, the objective or what the other one is doing.

Expert 2 recognizes perspective 4. A good leader is a success factor for a successful project. If there is a good leader, that does not mean it cannot work, but it does help to have someone who really stands out as a leader in such a project. Separate discussions per discipline depend very much on the nature of the project. So there are all kinds of projects that are complex in which all kinds of project teams are involved and they have to talk to each other. If it is a small Bouwteam for a small project, with just an architect and a contractor, then it is fine. If it is a very complex project, then real conversations in those project teams are necessary. Let the project leader determine what is needed for the project based on the topic and connections between disciplines. If meetings are necessary, they must be organized. People who do not think it is necessary should just go there. A possible obstacle to this could be resistance.

Expert 3 recognizes perspective 4. This fits within our organization, we have adapted that. Our tender managers had an engineer/designer background and have knowledge/experience in implementation, but not nearly as much as needed. This also means that they have a much broader view and can keep everyone on board during meetings based on among other the complexity of the project. It is not only about realization, but also about verification and validation, collaboration and design. They control many more aspects of the project than our traditional implementation project leaders. Therefore, that leadership role is very important. This is because the client has expectations: pro-activity, organizing, leading the way and above all no unnecessary delays. To ensure that the project leaders of Bouwteams perform well, they are trained. Every year, all tender managers, who are also project leaders, have training sessions about these types of properties. How are you able to motivate and inspire a team with everything you know? Is there sufficient visibility and overview with regard to the project? Is there enough knowledge on board? How do you keep a team motivated for the same objective? Often it is the case that players only think of themselves and become selfish. That requires very different skills than people have until now accustomed to in the civil engineering. At first they just had to make things and that was it. Minimizing monodisciplinary meetings also depends on the size of the project. The extent to which monodisciplinary meetings can be minimized depends on the knowledge level and project experience of the project leader. In any case, try as much as possible together. The stronger the project leader, the more knowledge he has of the various disciplines. Then he is the link between the different disciplines, he has to tie everything together. He has to keep that overview and manage the interfaces. If he is able to connect all disciplines in such a conversation and manage the interfaces, then it is very doable. If the discipline leader has to review the disciplines with other disciplines, it will cause risks. To prevent missing interfaces, all disciplines have to be at the same table at the same time. The biggest obstacle is keeping the right people available and recruiting the right people for these kinds of roles. It is a very intensive role as project manager when it comes to building team to some extent. It is not possible to build two teams of reasonable size at the same time to run . So this leads to a shortage of people and this is an obstacle.

Expert 4 recognizes perspective 4. This perspective sees the project leader as a "parent" who cares for his/her children. I see that in practice. A solution for this can be a Bouwteam manager who also regulates meetings. It is important to implement that the team members themselves have ownership. This means that a team does not consist of individuals who must be told what to do every week/day . One must want to move towards a situation in which team members actively step to the team with their struggles. A Bouwteam should not actually be focused on the project leader, but on the assignment. The project leader must of course facilitate this in a coaching manner and is important in this (exemplary behaviour), but he is not the omniscient person. If there was an omniscient person, the Bouwteam would not have been necessary. It must be encouraged that adaptability to changes in the project is something that a project leader must hear. One should not be shocked by changes and recognize that it is part of the process, especially with a Bouwteam. It is a good sign if there is less need for monodisciplinary consultations. In fact , the team actually says: it only gets better if interdisciplinary consultations take place. If a team comes up with that by themselves and is curious

about different inputs, that is a very good sign. This proves there is a greater need for integrated perspectives to solve the problem. One obstacle is that it should not be ruled completely by the project leader. The project leader is important and this is also the case with the behavior the project leader shows. The team should not become very dependent on the client.

Expert 5 recognized perspective 4. People need to be connected to each other in order to see the interface too. Nobody looks beyond the border from his own discipline. Different disciplines look differently at the possible solution, resulting in an integrated reaction. It adds the inputs together. The meetings should not be endless, ensure a compact consultation structure. People need to talk about things that are useful. The project leader is very important. There have been projects that were expected to go awry. But thanks to smart interventions, good understanding and flexibility of project leaders, they were saved after all. Projects can also go wrong because there is a clash at an individual level, because people do not like each other. They can't separate personal and professional attitude. An organization must understand this and intervene by separating people from each other. An obstacle for the project leader as a role model is the project leader could not be good at his job, does not dare to make decisions, or is very risk averse. Only if it is someone who complicates things even more, this can have a negative impact because the project leader mostly has a very guiding role. Integrity can lead to infinite discussions.

Perspective 5

Expert 1 recognizes perspective 5. All these aspects together, that is collaborating. The client-contractor relationship must be avoided, there should be collaboration. It is desirable to take the energy of the Bouwteam before the price moment to the realization phase. The realization people must understand what has been invented. That is the task of the Bouwteam, to include them in this process. Everything must have already been tackled. You have to verify the idea in the Bouwteam with the realization people, because they were included early. This way there are no surprises and everyone understands exactly what to do. The focus on price-agreements are actually the thoughts of the trade-offs in design choices. The design choices are made based on consideration criteria (sustainable, less time, feasible, price-technical). At a certain point the prices will be known and a choice will be made. That has also already been tackled with the people of the realization. It is important to know how prices are reached, and what coordination has taken place . Everything must be checked with the realization people. Present the design choice to the realization people. Explain the thinking of how much the design will cost, present it to the realization people (is it feasible or not?). It can be a hugely expensive design choice, but if that is a lot of money in execution time, then it might just be fine. Use trade-off matrixes. The right people must be deployed in the right place. The good people are often busy. Nevertheless , efforts must be made to win them over for the project . It is a consideration within the organization to involve that person, because otherwise it could cost money. So someone can be taken away from a project and used for another project. There are no barriers to this strategy. The man of realization wants to know what he is going to make and whether it fits within budget. The design is delivered in advance to something that fits within the budget. So there are equal objectives . The client does not want to spend too much , but does want to have the right quality and results. That is weighing each other out. The realization people know what to make, the designers know what to design and the client knows that it fits within budget.

Expert 2 recognizes perspective 5. It is important that everyone agrees on how the price will come about. Firstly, there is no price, but a budget. The price itself can only be announced when more details are known. The availability of the right people in the right place and striving for equality are very important. It is understandable that collaboration prior to transition determines collaboration during transition. Because if that does not go well, it requires more effort. If there have been struggles or irritations at the start, this will cast its shadow in the next phases of the project. If it has been a good

collaboration , it has a positive influence. Having a guide to collaborate according everyone's wishes is crucial. This is not about the words in the booklet, but how they are obtained, a process of how the collaboration is initiated. It is useful if the client understands the costs. Involving financial people helps to make early agreements on pricing. The right financial people guarantees ensuring proper agreements in a partnership about pricing in the early stages. The right people in the right places is achieved by getting commitment from the parties at a high level. It is also important to have the ability to speak up when things go sideways. Client-contractor equality can be achieved by having someone on the Bouwteam who checks if there are complaints, someone who observes this. Suppose the collaboration before the transition did not go well, then by talking to each other, being transparent and sharing experiences, people can ensure that they know what has set them apart. This is followed by agreements being implemented to prevent the obstacles from occurring again. A guideline for collaboration could be output from a workshop. It makes no sense for someone to write it for them, someone outside the team. Sufficient cost expertise at the client can be achieved when the client has the same in- house parties or hires the same parties. The human factor can be an obstacle to this, possibly counteract it.

Expert 3 recognizes perspective 5. From the tender on both should have the same objective and opinion in the price. This way they all give openness and consideration based on only knowledge. For each step in the design process and any consideration that you make as a team, the impact on prices should be visible. It has been agreed at the front (AK and WR), what the revenue model is. That needs to be set aside and not looked at again. The rest of the budget goes to the project. Everyone should understand that very well. Two financial pots can also be used (one for AK and one for WR): as a contractor you can never earn money from the pot that is for the project. There might not be a revenue model for the contractor. Otherwise it creates inequality and the trust is gone. Make two financial pots, two project numbers: one project number for the WR part and one for just the costs. If there is money left, it is returned, because it was never the contractor's money. We have agreed on what we can earn and we are happy with that. If there is such an attitude is, should you just buy together. We do that too, we include our clients in the purchasing process: request quotes or try to negotiate as a client yourself. To ensure that there is equality between the client and the contractor , it is important to be fully transparent and open. The client can take a look at our financial system with quotations on the table as well. There are no secrets in a Bouwteam. The client could hire a party to help to examine the price related aspects if they do not have the knowledge their selves. That is completely different from other projects. Old behavior is the biggest obstacle. Our project leaders and executors are also easily tempted to keep the gains that are made during the project, the client immediately loses trust when the client sees this, because that was not the agreement. That is the biggest pitfall. Right people at tirght placeur entire organization has been adapted when it comes to Bouwteams. There are other players on board. Traditionally, people in the bouw/infrastructure are raised with 'you have to realize a project for the lowest price'. During the execution of the project all opportunities should be taken in advantage to earn a little money as a contractor. In a Bouwteam this is different, because at the start it is already established what the revenue model is by the securing the percentages. Anything that is left in budget will benefit the project . That means other players are needed at the table. This is solved by not putting the players at the table who have been competing for the last dime for over 20 years. The tender managers within our organization have become the project leaders of the Bouwteams. Our regional leaders/project leaders have no role in Bouwteams. It is about the right people at the table. An obstacle here is that the right people are not available. That is a problem for us, because if people become project leaders when they were tender managers, there is no one left to carry out the tenders. That is now also the case. There is a shortage in tender capacity.

Expert 4 recognizes perspective 5. During a complex assignment in which the contractor integrally participates in the process, things should be handled from this perspective. Otherwise it will not really

work. This perspective is maximum overkill. When it comes to a complex project, these are all elements that need to be organized. Not only saying that you want it to be this way, but also actively contributing to the fact that people start working together in a team in such a way. That cost expertise must be organized. A party must be brought in who can fill this role in. A cost expert can provide input during the discussion about price (formation). Early agreements on pricing happen in a process-oriented way. It is not possible to say how much it will cost at the start of a Bouwteam. What is possible is to make an estimate and find out during that process whether this is the case . It might happen that after months it is discovered that the estimate was incorrect. A Bouwteam can be a means of saying: we do not know exactly what it will be, but we know it will be more and this will be because of these points. You can further investigate this in the Bouwteam and further optimize it. The availability of the right people is regulated by promising up front that the right people will be taken care of. This is also handled within the organization and it must be made clear how these people are to get involved. Availability of the right people is also regulated by not admitting the wrong people to the project. So no people who are just 'left' for the job. We have an onboarding system. To do this, one must apply for a role in the Bouwteam. An interview is held and it is checked whether the candidate has the right competencies. The candidate is nominated and then a process is followed in which you either can get the job or you do not. People can also be actively involved in marketing projects within the organization, so it is more inviting for people to be a part of the contractor's project. With the help of marketing the project can seem more inviting and exciting to be part of for the people within the organization. It is a bit of advertising. If you want to have the best people, then you must also radiate that this work is only for the best people.
Contractor-client equality is achieved by steering the project team members towards the same objectives and concerns. You can be equal by deploying people based on their expertise and not based on where they come from. The team members should feel like part of a team, instead of feeling like you are working for the client or contractor. Guidance of collaboration can be done by outsourcing this task. Collaboration does not just happen, you have to work on it. For this, the right collaboration structure must be set up (meeting, how do I involve management, where do I record which decisions, mandating) and the collaboration culture must be clear. The collaboration culture are the norms and values. A mission statement can be made, which describes what is important (open and honest: what that means). By giving meaning to the core values as a team, people start discussing in the same language. This is what we stand for and over address each other properly. If there were problems regarding the price before the transition, it should be ensured that the negative atmosphere is eliminated. This negative atmosphere is namely upheld by the people itself. If you think something is wrong, just do not do it. If all sides agree with each other at the end of the negotiation procedures, there should not occur disagreements later on. There must made peace with the agreed outcomes. An obstacle here is that a lot has to be arranged in order to do this properly. Things can be arranged incorrectly or just not properly. That just makes the whole process a little more vulnerable.

Expert 5 recognizes perspective 5. The question that always arises is: What is equality? That must be unambiguously defined. Does equality mean we both have veto rights? Does equality mean that we take each other seriously in terms of content? Does equality mean that we let each other finish? Etcetera. As much as one would like to, except in an alliance, there is no equality between parties. The client ultimately decides. But what is meant here by equality is probably that one wants to be taken seriously. It is important that you treat people with respect, you must be open to a responsive and substantive discussion. Early agreements on pricing are necessary. It is not necessary to enter into a Bouwteam agreement yet, if it is not yet known how the price will ultimately be determined. That is important for everyone, including procurement law. But you do not to be tendered for every project. The availability of the right people is important. One creates particular rapport: a certain understanding. You (recognize) each other, trust each other, there is a certain predictability. A new person is unpredictable and you do not know yet, so no report is built up. You have to build that up. By putting in new people every time, you break the flow. To deal with the aspect: sufficient cost

expertise of the client, it is indicated in the DG 2020 model that a target budget must be devised in advance by the client. The contractor must indicate in advance whether he thinks it is feasible in broad terms. If he thinks it can't be done, he should say so. An obstacle can be if they do not have it or it is unrealistic or because they cannot subsequently assess the contractor's offer. That makes it more difficult. Early agreements on pricing are quite difficult to determine. Simpler projects, such as laying kilometers of asphalt, can be used to convert into unit prices. There are also more complex projects that you simply cannot convert into unit costs. Then you have to get into it a bit more abstractly. But the way to do that is a bit difficult. Clients might find it difficult on a personal level to take the contractor seriously. Contractors can also think that the traditional role suits them just fine, where they can lean back.

Core factors (recognized by all experts)

Recognition

Expert 1 recognizes these factors as basic values for good collaboration during the transition to the execution of a Bouwteam project. Expert 2 also recognizes these factors as basic values for good collaboration during the transition to the execution of a Bouwteam project. Expert 3 recognizes these factors as basic values for good collaboration during the transition to the execution of a Bouwteam project. Expert 4 recognizes these factors as basic values for good collaboration during the transition to the execution of a Bouwteam project. These are overarching themes that you can put on any construction project. Expert 5 recognizes these factors as basic values for good collaboration during the transition to the execution of a Bouwteam project.

Transparency

Expert 1: Transparency is necessary anyway, otherwise there will be no trust. If you are transparent, also about the costs, people understand where you come from, it creates understanding. You must be open with each other, that is how you achieve that. Understand each other. This will make sure the best is getting out of the Bouwteam.

Expert 2: Transparency is a good objective, you can check this with everyone: are you satisfied? This way the Bouwteam will be at its best. Do you know enough? Vulnerability must also be shown.

Expert 3: Transparency is important, especially in a Bouwteam to get the best out of it. You have to be completely transparent. An example was that a few months ago we had a Bouwteam where we were struggling with the ceiling budget, we were just slightly above that. The client did not like that, so he said we are not going to the realization agreement. We let the client see what we are struggling with. We have gone through the entire budget and quotes on the table. We saw some possibilities then, but then we had to buy in advance. The client wanted to continue then, because otherwise he would have planning problems and he had already coordinated things with the environment, so giving up was not an option. Then we went shopping and we were able to save on procurement. At one point we even came under budget, as expected. Then the principal said you can keep what's left, because you've earned it. Our project leader then said: I'll put that in our pocket. Then I said, no, we do not. We make a risk pot of that or we give it back. We have already agreed on what we can earn. If you do not stick to that firmly, it will be at the expense of collaboration. The project leader must keep that overview on transparency. The client can simply look into our financial system, the costs and the revenues. This way you create understanding and the interest of clients. A barrier can be business sensitivity. You cannot just show everything, how your company is financially organized: rates, wages, how everything works, that would be a bit too much. If you understand each other and know each other better than just professionally, it helps to create this. If you do not have the right people at the table , you will not get this done. The more insight you give, the more insight is also given from the other side

Expert 4: Transparency. I think that perspective 1, 2 and 3 do not necessarily contribute much to

transparency. Transparency is about providing insight into what drives you, and proactively reporting your problems and interests, to achieve the maximum out of a Bouwetam. Transparency is achieved by applying the right communication skills and asking for commitment at a higher level from the management and involving them in the project. If the team members see that there is no hidden agenda at the board, then they do not have to keep things hidden either. You work towards more safety. Social safety: the space to make mistakes and share problems, you work on that. Doing that makes it more transparent. Transparency is a consequence. Obstacle can be if you have a checkout culture. For example, no anonymity in satisfaction measurements. Then you are not concerned with creating a safe setting in which people can express themselves. That sort of thing hinder transparency.
Expert 5: The trouble with this is that it has to be made smart. You need to know about every factor: what does that mean? We all have a feeling about it, but it has to be made clear. In a general sense we know what it means, but if we look at a situation: what does it mean? Only if you make it clear enough, you can make something of it so that people can benefit from it in practice. When you think about these kinds of things, think of situations and how you deal with each other in those situations. Think of cases and test it against them. The parties must discuss exactly what such a factor means. People come from different backgrounds. The DG 2020 model is a step in this direction. We all understand that we have to work well together, but what do we mean by that? An obstacle might be that you have not properly discussed what it means exactly.

Mutual trust
Expert 1: Mutual trust is achieved by investing energy in collaboration in the beginning. Trust arises. At a certain point you understand each other and you test whether you are going in the right direction with each other. That is a natural process.
Expert 3: Mutual trust. That is giving insight. The more insight you give, the more insight is also given from the other side. This gives you more insight into problems that you did not see before (on the client side). The political game that often takes place in the background is something you do not often see. The more you show, you learn that they show more. It also helps you understand why things happen. If you are not fully open, this will just go wrong. You should actually find a method to test a team whether they are suitable for a Bouwteam. There are many methods to get personal characteristics on the table and to see what someone is good at or not. Not only the plan to acquire the work, but the interview is important as well. That last point can be a problem because not all of us are good at giving interviews.
Expert 4: Mutual trust is important. What is that then? By adding reciprocal you make it reciprocal. As if you can only give trust when you get it. So someone has to start with trust, otherwise you will not get it back. Do you start giving trust or do you wait for someone else to give you trust? What does that show and when do you let it go? When was the trust breached? Trust starts by showing what you stand for, showing that you deliver (knowledge), listening to each other, and by being approachable. If you make mistakes you have to name and report them. Trust lies in the fact that if something becomes difficult/complicated or comes under pressure, you will remain standing. Do not go out of the way to avoid to dealing with it, you have to show you are there when needed. We always start with giving trust (prisoner's dilemma). Even if that does not work, the scenario when you start with no trust at all, is always worse. A lot of people do not understand that. Every scenario gets worse if you start with distrust.
Expert 5: What is mutual trust? Think of cases and work it out.

Obstacles
Expert 2: An obstacle can again be resistance, an attitude that is not attuned to it. There must be good leadership. In communication, it is possible that incorrect means of communication are used, for

example a text instead of calling. In collaborative problem solving, it either goes well or it does not. With transparency, it might be that people just do things . The world of construction often contains people with a technical background who can find it difficult to bring something of humanity into it or be concerned with what someone else is feeling. Sometimes they do not think that is relevant, they just want to do their job. That is, of course, very in contrast to the medical world.

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APPENDIX M: PRELIMINARY STRATEGIES

Appendix M consists of the analysis of expert interviews. The preliminary strategies for every perspective are written based on five expert interviews and substantiation from literature. These five experts are asked to validate the perspectives and how to cope with them in practice. Their input is shown in Appendix L. When 3 out of 5, the majority, of the experts have similar ways to deal with a factor, this is taken into account in the strategy. All strategies given by the experts are marked in green in the summary of expert interviews, see Appendix M.

Recognition of perspectives

When the majority (3 out of 5 experts) recognize the perspective, this perspective is noted as recognition in practice. See Table 56.

Table 56: Recognition of perspectives by experts

	Perspective 1 (recognized?)	**Perspective 2 (recognized?)**	**Perspective 3 (recognized?)**	**Perspective 4 (recognized?)**	**Perspective 5 (recognized?)**
Expert 1	Mostly	Mostly	Yes	Yes	Yes
Expert 2	Yes	Yes	Yes	Yes	Yes
Expert 3	Yes	Yes	Yes	Yes	Yes
Expert 4	Yes	Partly	Yes	Yes	Yes
Expert 5	Yes	Yes	Yes	Yes	Yes
Outcome	RECOGNIZED	RECOGNIZED	RECOGNIZED	RECOGNIZED	RECOGNIZED

Preliminary strategies

The ways to cope with factors are given in the right column: 'expert input'. When three or more experts give a similar strategy, a combination of their strategies is used to write a preliminary strategy, see left column: 'strategy' in Tables 57 till Table 63. These are also substantiated with literature.

Table 57: Combined input for strategy 1

PERSPECTIVE 1: Clear, high level scope definition & clear Bouwteam roles	
Strategy based on expert input and literature	**Expert input**
S3: Organize a kick-off at the beginning of a Bouwteam project with all team members in which the scope and Bouwteam roles are clearly presented, with the option for further clarification at a later moment. *Substantiation of strategy with literature and experts* The kick-off meeting is one of the most important meetings and its goal is to share information (Sampietro, 2016). In this work-related meeting the scope of the Bouwteam and the division of Bouwteam roles are refreshed (Expert 1; Expert 2; Expert 3; Expert 4; Expert 5; Hamburger, 1992). It is necessary to have a complete scope and roles definition prior to project execution for a project to be successful	Expert 1: Clear scope of the Bouwteam and a clear division of roles are very important, known at the start of the Bouwteam project. It is precisely at the beginning of the Bouwteam project that the team invests in collaboration Expert 2: Clearly defined scope, together with the division of roles in each project is important. Start with speaking to all members of a Bouwteam project. The kick-off presented the scope of the Bouwteam, how to work together, the division of roles, the common processes that must be followed and what is needed to make the project a success. Having this clear avoids problems. Expert 3: The project objectives must be clear. It is important that during the transition from preparation to execution it is agreed upon how tasks and responsibilities are divided within team. At the start of the Bouwteam, it is important that there is a clearly defined scope description of the Bouwteam. In the Bouwteam phase, a clear scope is defined together within the

(Expert 6; Mirza et al., 2013). An incomplete scope and roles definition at early stages of the project make the progress more difficult (Fageha & Aibinu, 2013). The fixed scope description and division of roles should be written out in detail before, so conflicts and unclarities are avoided later on, during transition (Expert 2; Expert 3; Expert 5). Studies have found that (relationship) conflicts could negatively influence collaboration for which reason they should be avoided (Neumeyer & Santos, 2020; Meyer, 2004). The client should have a clear vision and know what the wants and needs in order to have a kick-off that is of added value of the collaboration (Expert 4; Hamburger, 1992). In addition, the project documents should be available and shared before the kick-off meeting so that everyone has the possibility to give feedback, also later on (Sampietro, 2016). This way, it is tested whether the scope and roles are clear and complete which increases the effectiveness of the kick-off (Sampietro, 2016).	team. The transition to execution becomes very difficult if it is unclear what needs to be done. The fixed scope description must be written out in detail, so discussions can be avoided during execution. Expert 4: This classic approach means that the client decides and the contractor does his job. The client is of it, was of it and remains of it. An integrated approach, customer satisfaction and thinking along do not come about automatically in this perspective. This also presupposes a considerable amount of knowledge, expertise and organizational strength on the part of the client. For this perspective it is necessary that there is a client who has experience with this, knows exactly what he wants and what he needs at the start of the project. Expert 5: There are a number of lawyers who believe that the scope and Bouwteam roles need to be worked out in detail at all. A clearly defined scope and roles can be documented in a (quite detailed) Exel sheet in which tasks are listed, including responsibilities and deadlines to avoid issues. In a PSU, the team can get to know each other. This might be a work-related meeting, but not purely for business. This contact can improve mutual understanding.
Agreements about the Bouwteam phase can be clearly defined in a Bouwteam model agreement. For example that products needs to be designed in such a way that they can possibly be put out to tender if the client switches to another contractor after the price-negotiations. Agreements about execution can be clearly defined in the realization agreement. A standard can be used for the realization agreement. A commonly used standard in infrastructure is the standard UAC-2012. Specifications are made with a very detailed description of what must be done during the realization. Specifications are written down by the party that has the best people at the table or the people that have time can write a clear defined scope description	Expert 1: Agreements can be clearly laid down in, for example, a Bouwteam agreement. This agreement will later be converted into a realization agreement. Lay down in the agreements that products need to be designed in such a way that they can possibly be put out to tender if the client switches to another contractor. Draw up a collaboration plan with agreed processes and defined tools (e.g. system used to store documents). The creation of new common processes is undesirable in a Bouwteam. Expert 3: It does not matter which party writes this out. Sometimes the consultant makes the specifications, but the contractor or client can also do this. The party that has the best people at the table or the people that have time can write a clear defined scope description. A standard can be used for the realization agreement. A commonly used standard in infrastructure is the standard UAC-2012. Specifications are made with a very detailed description of what must be done during the realization. Agreement upon tasks and responsibilities should not be too rigid. Expert 5: A Bouwteam model agreement can be used for this.
Draw up a collaboration plan with agreed existing processes and defined tools	Expert 1: Draw up a collaboration plan with agreed processes and defined tools (e.g. system used to store documents). Common processes are agreed upon, but they do not have to be developed. The creation of new common processes is undesirable in a Bouwteam. Within the Bouwteam, there must be looked at existing common processes to look at what is best for the Bouwteam.
S4: Use DiSCmanagement profiles, and communicate these, to establish roles by analyzing team members at the start of the Bouwteam project, so that it becomes clear which people are in the Bouwteam and how to cope with those different characters.	Expert 1: It is precisely at the beginning of the Bouwteam project that the team invests in collaboration. A Bouwteam consists of different characters. Not being aware of the persons character beforehand can lead to having different expectations. If these expectations are not met it can lead to irritations. A DiSCmanagement profile shows which profile the Bouwteam members have.

Substantiation of strategy with literature and experts In construction projects, project team members have differences in (cultural) backgrounds, knowledge, values, skills and professional experiences (Wu et al., 2019). A Bouwteam always consists of many diverse players (Expert 1; Expert 2; Expert 3; Expert 5), in which every team member should make the greatest contribution to the project (Expert 2; Expert 3). A multi-colored team indicates many complementary characteristics in a team (Expert 1; Expert 2; Expert 3), which creates counterforce within the team, using each individual's strength (Expert 2; Expert 3). Diverse project team members might lead to extended knowledge within the team and solutions that improve collaboration performance (Yi et al., 2017; Kearney et al., 2009). Therefore, the team composition influences collaboration and team performance (Batenburg et al., 2013). However, take into consideration that too many diversity could lead to conflicts that negatively influence performance (Lovelace et al., 2001). Being aware of a person's character beforehand can avoid having different expectations from the team collaboration (Expert 1; Expert 5). Therefore, at the start of the Bouwteam project, the characters of the potential team members should be analyzed to prepare on how to cope with these different profiles within the project team, in order to try to avoid conflicts or resolved appropriately (Expert 1; Expert 2; Expert 3; Expert 5). Conflicts can cause situations that harm the mutual relationship (Senaratne & Udawatta, 2013; Liubchenko, 2017). Analysis of Bouwteam members can be done by means of management DiSCprofile (Expert 1; Expert 2), indicating someone's character by one of the four prime colors (Payne, 2014). Each color refers to a dimension: dominance, influence, steadiness and conscientiousness (Payne, 2014). DiSCis a tool that helps team members to better understand themselves and each other to reduce conflicts and thereby improving collaboration (DiSCprofile, n.d.).	Expert 2: Everyone has to tell something about themselves: how he/she handles things, what his/her hobbies are and what this person input will be to success. Management profiles is a commonly used system to measure competences of people as the Bouwteam consists of different kind of people. The purpose of this is that there are people in a team with various 'colors'. It is about being as multi-colored as possible within a team, which means that there are many complementary qualities in a team. This creates counterforce and more inspiration within the team which ensures nobody does the same. Expert 3: If a new team member comes on board, this member should always be able to deployed with added value to the project. Each team member must be able to make the greatest contribution to the objectives. If a new team member comes on board, this member should always be able to deployed with added value to the project. A Bouwteam always consists of many diverse players. Their personal characteristics should be made clear. It is important that there is a balanced team. It is useful to emphasize within the team that informal events are sometimes useful. It is not always necessary, but a number (one or two) informal sessions where people get to know each other. The frequency depends on the size and duration of the project. The longer the collaboration, the better it is to know more about each other, so that each other can be taken into account. If private things are going on, that's good to know, so that less pressure is exerted on each other. Expert 4: Informal events can be enforced or discussed. It might happen that people need it less, but there also might come a time when it doesn't work that way. Expert 5: The expectations of each other should be specifically known to everyone involved. Only in this way, someone can do what is expected of him/her. If something has to be structured in a certain way, knowing that it is not in one's nature, due to different characters, then it needs to be communicated properly to this party.
Avoid uncomfortable situations	Expert 1: If people do not feel uncomfortable, there are no obstacles. If there is tension, it mostly originates from the behavior. Obstacles occur because of tension, because people become more hesitant. This leads to a stark conversation.

Use a Bouwteam coach to initiate collaboration	Expert 1: A Bouwteam coach can also be used to initiate the collaboration. The focus is not on the content, but purely on collaboration between different parties.
An obstacle of this strategy could be too much focus on the contract which eventually can destroy collaboration. A contract is never 100% opaque nor unambiguous. Include flexibility.	Expert 1: One obstacle could be that there might be too much focus on the contract. A Bouwteam is less suitable when the contract is constantly being brought up during the process. Expert 3: An obstacle here is that the RAW contract is never 100% opaque. In the end there are always things that should have been done differently. There are always some failure costs, which cannot be prevented, partly because the RAW contract is never 100% opaque. It is important that during the transition from preparation to execution it is agreed upon how tasks and responsibilities are divided within team. However, this should not be too rigid. Expert 5: An obstacle might be that the terms are not unambiguous when the parties get to work. Documents can also get lost which happens in contract world anyway. However, that is just dredging contract management. After all, it is a matter of making sure that the PDFs (for example via email) are provided to everyone.
Discuss the risks within the team, reserve money for those risks or come to an agreement about who is responsible for it	Expert 3: The more experience someone has with Bouwteams, the more relevant risks are brought to the table. Discuss the risks within the team, reserve money for those risks or come to an agreement about who is responsible for it
Use a dashboard	Expert 2: A need for insights and updates into how the team is doing, in the form of a dashboard.
Avoid challenging projects	Expert 4: This is very classical thinking. Most clients do not wait for a contractor to do just do his own thing. For most challenging projects, it is not a realistic premise that it works according to the classical thinking. This can work for a simple project, but the moment it becomes integral, becomes complicated, or the moment there is a certain degree of complexity or size, it becomes very difficult to hold on to the classical thinking.

Table 58: Combined input for strategy 2

PERSPECTIVE 2: Focus on a good professional relationship with less informal events	
Strategy based on expert input and literature	**Expert input**
S6: Document agreements together in a collaboration plan on how to collaborate, and especially expectations within the team and as individuals. *Substantiation of strategy with literature and experts* Having a document that sets out the principles of collaboration and its objectives establishes a reference point for all involved parties (Manchester Business School, 2009). Discuss how things will be handled in a collaboration plan (Expert 1): document activities, expectations, minimum requirements to make the project a success and back-ups (Expert 1; Expert 2; Expert 3; Expert 5). Managing among others requirements and expectations of a project could lead to a successful project (Ireland, 1992). If it is not spoken out or recorded, there is nothing to hold up to (Expert 1). It creates clarity on how to cope with collaboration and make the most of facilitators and address anticipated challenges (Hall et al., 2019). Think about investing in work-related collaboration from the start (Delgadillo, 2016) by getting to know each other (on a work-related basis) in an open, light-hearted and relaxed atmosphere (Expert 1; Expert 2; Expert 5). Getting to know each other on a work-related basis contributes to professional collaboration (Fapuhonda, 2013). If this is also done in an open work environment, it improves working relationships (Pravamighte, 2014). An open environment could help team member's ability to answer questions, coordinate actions and share information rapidly (Heerwagen et al., 2004). Documenting the agreements about how to collaborate can be done for example in a collaboration plan (Manchester Business School, 2009). Having this collaboration plan signed by the involved parties indicates the importance of sticking to the agreements noted in the document (Manchester Business School, 2009). Agreeing and sticking to the collaboration plan should result in having a good and professional working relationship (Expert 1). In addition, it could be helpful that team members have insight and accessibility to the content of the collaboration plan (Manchester Business School, 2009). Having a good working relationship stated and followed, prevents issues and discussions, as team members know how to collaborate and what is expected from each other (Expert 1; Expert 2; Expert 3; Expert 5).	Expert 1: A good professional environment is created by getting to know each other. It is important to create an open and airy atmosphere. This is done by talking to each other and discussing how things will be handled. You can invest in a Bouwteam for the first months in only (work-related) collaboration. A professional environment is where roles and expectations are expressed to each other. It must be clear how the roles are tackled and what the backup is. If it is not spoken out or recorded, there is nothing to hold up to. There should be invested in this by sessions and a collaboration plan. Agreements are made with the team in the collaboration plan. For example, about the system that is used to store documents or the way in which this is done. People have to coordinate with each other in conversations, include each other in the process and record it. Agreements in the collaboration plan must be complied with. Expert 2: Informal outings are non-work related outings that are less needed and that is understandable. Getting to know each other on a work-related basis in a light-hearted relationship and relaxed atmosphere can actually contribute to the success of the project. It is okay that people do not want to get to know each other on a personal level. However, it is important that everyone tells something about themselves. Also about expectation and activities and important values. Expert 3: To create a professional environment, conversations can be organized. Not about the content of the work, but about the expectations: objective of the project, what is the minimum that needs to be done to make the project successful (see circle Adriaan). Talk about who does what. Creating a good working relationship is very difficult because it really comes down to personal qualities. Expert 4: A good working relationship cannot be stated without attention to the human being you are working with. It is useful to know where irritations can occur. Expert 5: It is nice to have a friendly relationship. A good working relationship is achieved through good communication: express expectations to each other and do not just make assumptions.
Nobody likes to make agreements	Expert 1: An obstacle here is that nobody likes to make agreements, but that has to happen and that is a matter of getting used to.

Make sure the team trusts each other and helps each other out when there are (personal) problems.	Expert 1: Something can always happen due to different circumstances but a good Bouwteam takes care of each other. Expert 4: If something bad happens in the life of a team member, it is on the team to show the team member that he or she is in their thoughts. Expert 5: People do not like surprises. Therefore, one must be reliable and responsive.
S5: Organize joint sessions related to the content (e.g. about the design or approach during execution) to share knowledge, and verify and validate the work to deliver quality. *Substantiation of strategy with literature and experts* Having joint session focusing on the content creates an integral overview, which means decisions can be made based on what is best for project, keeping in mind the same project or design objective(s) (Expert 3; Expert 4; Expert 5). Knowledge and insights about the project should be shared (Storck, 2000; Kotlarsky & Oshri, 2005), about the design, as well as the approach during execution and collaboration (Expert 3). For example, joint design sessions fulfill the needs of both the client and contractor, while taking their expectations and objectives into consideration (Bacattini et al., 2017). Sharing this information can lead to improvements in the design and an early recognition of potential issues arising in the collaboration (Expert 3; Storck, 2000; Kotlarsky & Oshri, 2005). In addition, design quality is an important factor in construction projects (Savolainen et al., 2018). Therefore, maintaining design quality through verification and validation is very important (Savolainen et al., 2018; Expert 1). Periodic verification and validation traces errors at early stages which reduces rework and thereby reducing additional time, costs and resources, later on in the project (Kumaresh & Baskaran, 2010). Taken this into consideration, joint design sessions will improve collaboration during transition.	Expert 1: Quality must be delivered, so periodic verification and validation is a requirement. In a Bouwteam, each other's strengths must be used. Sometimes that requires adjustment. For example, if the other party's management system is better developed, it will become habituated to apply that system. This can be an obstacle, but one has to get used to it. The party that knows most about it should give tips on how to deal with it: pay attention to this and that. At some point it will just run smoother. Expert 3: In this perspective the client does not actually share any knowledge and this does not yield the maximum in a Bouwteam project when looking at the objectives that must be achieved. It must be ensured that the team has the same objective in mind. Everything that is conceived must yield the most for the project. Do not just try to fight for your own gain, either the client or the contractor. Talk about which member is very good at something and share information and knowledge with each other. During the Bouwteam, the biggest challenge is to get the right people together who understand how to get the most out of a team. That is speaking very openly about expectations: who does what, who is very good at something and sharing information and knowledge with each other. If knowledge about design is not shared, it will take much longer to test and process each time. This does not strengthen the team. When joint design sessions are held and there is an agreement on what will be made, it takes much less time. Creating a good working relationship is very difficult because it really comes down to personal qualities. Not everyone is suitable for working in a Bouwteam project, because they remain in their traditional role, as they have been used to for years. During the Bouwteam, the biggest challenge is to get the right people together who understand how to get the most out of a team. Expert 4: A good working relationship is created by integrality and also having the same objectives. Think about design work. Expert 5: It works when one looks plenary and works through things together and also having the same project goals (e.g. same design in mind).
Avoid shyness	Expert 2: It is okay that people do not want to get to know each other on a personal level, but they have to tell something about themselves and nothing more. An obstacle could be that people are shy. Try to avoid people not daring to share their opinion openly.
Cope with resistance	Expert 3: Sometimes there is resistance and this cannot always be avoided, for example if someone is in a different role than one would like.
Be open and honest about budget assessment to create comprehension.	Expert 1: With periodic verification and validation, it is necessary to know whether the scope is clear, what the client wants, where the team should go, whether the principles are clear, how they arrived at this and what considerations were made. Expert 3: Budget assessment is shown openly and honestly: if these are the rules and frameworks of the project, then the budget is sufficient or not. This

	is one of the most important pillars through which realization does or does not go ahead. Expert 4: Financial issues or technical problems should be out in the open, only then the collaboration and people-oriented approach can be maintained properly within the team.

Table 59: Combined input for strategy 3

PERSPECTIVE 3: Focus on a long-term collaboration with a win-win attitude without the risks innovation would bring	
Strategy based on expert input and literature	**Expert input**
S8: Create a long-lasting learning culture by organizing possibilities to actively share knowledge between team members. *Substantiation of strategy with literature and experts* If long-term orientation is a goal, it is important to learn with and from each other (Expert 1; Expert 6). The team collaborates, makes mistakes and gains knowledge which should be shared within the team (Expert 3; Expert 4). In a long-term orientated project, team members are more willing to participate actively in knowledge sharing (Ford & Chan, 2003). By sharing knowledge, a team learns from each other and becomes stronger (Expert 1), which increases the success of a project (Hoegl & Gemuenden, 2001). A stronger team has a positive impact on both parties for the long-term (Expert 1). Knowledge prepares team members with facing uncertainties that projects, especially long-lasting projects, can bring and supports the learning culture (Liebowitz & Megbolugbe, 2003). Effective collaboration is ensured as team members are encouraged to share their specific knowledge and learn from each other (Jamshed et al., 2018). There are different ways to share knowledge, such as: installing mentoring systems, trainings for new team members, information and communication technologies, vocational training and constructive handling of mistakes (Mueller, 2012). Despite the way how knowledge is shared, it results in solving tasks better, faster and cheaper (Akhavan et al., 2012). Taking these advantages into account, it positively influences the collaboration during transition, as the collaborative design process before the transition went smoother as it ensured a safe culture (Expert 3). It also is linked to both core values, as actively sharing information improves the openness and transparency to share project related information with each other, as well as the relationship with each other will be more trustworthy. The two core values are of course the most important aspects to focus on, as they are	Expert 1: If people want to invest in the future, and want to do several projects together, then learning will go on. These lessons learned must be shared with each other, so the team learns from each other. With that learning perspective, the team becomes strong. People often think innovations are fine, but not on their own project. Of course innovations are exciting, but 70% of innovating requires to 'learn the job'. If they succeed and the risks are managed, then it is less scary. Every innovation must be tested and pilots are needed for this. New tools must also be tested and applied in the project. One example is Smart Gira (communication / review means) which is actually an innovation. It will automatically become clear whether the tool can be used in a project. Another party might have a different system. It does not matter where it comes from, what matters is that the communication tool is used. Expert 3: Create a learning culture. One should be curious about each other. There must be a safe culture in which it is okay to make mistakes. One should appreciate and give each other compliments. Successes should be celebrated together and the team should have a good time together. Expert 4: People should feel free to learn from each other and make mistakes which creates a long-lasting learning culture. Expert 5: A best way to ensure that a contractor does his job, is the long-term orientation. The point is that the contractor knows that if he does his job well and there is not too much hassle, he will get more work in the future. This way, he can also see any failure costs as learning money, which he can earn back on future projects.

improving the collaboration during transition regardless of the perspectives.	
S7: Speak out about each other's interests and objectives to jointly come to a clear and similar project vision. *Substantiation of strategy with literature and experts* A win-win attitude is achieved by talking about both parties' interests and accepting that there are outcomes that are a win for both parties, converted into a joint project vision (Expert 5). This means a shift from self-interests and individual gains to shared interests and mutual profitable outcomes, which is crucial to a win-win attitude (Tsai & Chi, 2015). If the other's interests and objectives are known, people can take them into account, by which the collaboration will be more effective (Treurniet et al., 2012). In addition, the team members should have the same (long-term) objectives with a clear and similar project vision (Expert 4). Alignment of objectives within the team is one of the most important factors to successful collaboration (Gulati et al., 2012; Liubchenko, 2017). In case someone is convinced that they are fighting for the same objective, it will be the only way to a long-term relationship as everyone involved is focused and works towards the same objectives (Expert 3; Expert 6). A project vision could change, especially in a long-term relationship, but change and agree upon it together (Expert 6). More effectivity is reached when consistency is present, due to less interruptions (Kotrba et al., 2012). Therefore, a clear and similar vision is needed as inconsistency might negatively influence the collaboration during transition (Expert 4; Expert 5).	Expert 1: Do what is best for the early agreed similar project goals even if that requires adaptation. Expert 2: It should be considered what is needed, when you want to create a team and how that needs to be done. Expert 3: If one is convinced that we are fighting for the same objective, no matter which team someone is in, that will be the only way to a long-term relationship. Expert 4: It should be clear what the long-term objectives are. There should be a clear vision and one must be consistent. It cannot be said: this is the vision for 20 years, and then after a year doing something completely different. It will be greatly disrupted. An obstacle might be that the government does not remain consistent in its objectives. There are elections every four years, so the question is whether the government can be a good partner to deliver that. Expert 5: Win-win attitude is achieved by being aware of each other's interests, this becomes clear just by talking to each other. Everyone must also accept that there are outcomes that it is a win for both parties, converted into a joint project vision. There is not necessarily always one game to win and one game to lose. It is important that the client does have a clear vision and not five different drawees who have different opinions.
Be aware of the complication of tendering more projects	Expert 4: Tender is done at project level, not at the organizational level. Programmatic work is required. Expert 5: A long-term orientation can be achieved through a framework agreement. However, in terms of procurement law, you really have to be careful with a framework agreement. In the traditional sector, a framework agreement might last a maximum of four years, in the utility sector a maximum of eight years. There are even more procurement law snags. If the contractor is allowed to get all the work done in the coming years , the market will be locked . This must be handled carefully. It should be made very clear when one can get rid of each other. When does it no longer work, so it can be dissolved ?
Be aware that people are afraid to speak out	Expert 5: The parties are afraid to share their interest , because they think it will be misused. But actually, it is very powerful to speak out, so everyone is aware everyone's attitude and thoughts. This way all parties can handle the right way without making assumptions.

Table 60: Combined input for strategy 4

PERSPECTIVE 4: Focus on a leadership ability and minimize monodisciplinary meetings	
Strategy based on expert input and literature	**Expert input**
S9: Organize an efficient meeting structure dependent on the nature of the project (e.g. complexity, size), commonalities and subject of the meeting. *Substantiation of strategy with literature and experts* There is more need for integrality and plenary consultations to be scheduled (Expert 1; Expert 3; Expert 4; Expert 5). Different disciplines look differently at the possible solution, which can integrally be coordinated in meetings to jointly come to an integrated reaction (Expert 5). A multidisciplinary perspective focuses on redefinition of issues outside own boundaries supported by different insights from various disciplines and reach solutions based on a new understanding of complex situations (Palaniyandi, 2018). Plenary consultations should not be endless, but a compact consultation structure is needed (Expert 5). It is important to consider whether a consultation is necessary for all involved parties (LeBlanc & Nosik, 2019). One has to look at the subject of the meeting, nature of the project and commonalities between people (Expert 1; Expert 2; Expert 3). The goal and structure of the meeting should be clearly communicated within the team (LeBlanc & Nosik, 2019). Scheduling the meeting is in charge of the appointed meeting leader, who has another function in the project team and takes this one next to his other functions' activities (LeBlanc & Nosik, 2019). Having an efficient consultation structure means having frequent meetings in which the progress of the project can be discussed and decision can integrally be coordinated and made (LeBlanc & Nosik, 2019).	Expert 1: Expert 1 tells about the core team (a project manager, project operator, project environment manager, design leader). The environment manager has his own consultations and he takes that into account in the core team. A design leader also has his own consultations that involve several disciplines. It must be ensured that there is a consultation with all the discipline leaders. Some discipline leaders could have no influence during consultations, that is inefficient. One has to look at the subject and the agenda that is needed and put those people together. If they have certain commonalities, they should meet together. Expert 2: Separate discussions per discipline depend very much on the nature of the project. So there are all kinds of projects that are complex in which all kinds of project teams are involved and they have to talk to each other. If it is a small Bouwteam for a small project, with just an architect and a contractor, then it is fine. If it is a very complex project, then real conversations in those project teams are necessary. Try to determine what is needed for the project based on the topic and connections between disciplines. If meetings are necessary, they must be organized. Expert 3: This fits within our organization, we have adapted that. Our tender managers had an engineer/designer background and have knowledge/experience in implementation, but not nearly as much as needed. This also means that they have a much broader view and can keep everyone on board during meetings based on among others the complexity of the project. Expert 4: It is a good sign if there is less need for monodisciplinary consultations. In fact, the team actually says: it only gets better if interdisciplinary consultations take place. If a team comes up with that by themselves and is curious about different inputs, that is a very good sign. This proves there is a greater need for integrated perspectives to solve the problem. Expert 5: People need to be connected to each other in order to see the interface too. Nobody looks beyond the border from his own discipline. Different disciplines look differently at the possible solution, resulting in an integrated reaction. It adds the inputs together. The meetings should not be endless, ensure a c compact consultation structure. People need to talk about things that are useful. Integrity can lead to infinite discussions.
Eliminate traditional thinking/people falling in their old pattern. This means eliminating team members having certain expectations of the project leader and leadership dependence. In other words a team should not consist of individuals who must be told what to do every week/day. This can be done by means of an open conversation where people are confronted with their traditional behavior and how they treat each other. Create comprehension by going back to the core: what are the objectives and what are the expectations?	Expert 1: There is always a project manager/project leader who is looked upon with expectations from other parties. There are expectations and roles. People have certain expectations of the project leader, that he sets out the strategy or that he sets out a certain line. That is traditional thinking, because the Bouwteam is together. When people fall into their old pattern, they should be confronted and told that this is not the agreement. This is done in an open conversation. If Bouwteam members are very dependent on the project leader, it must be determined where this comes from. People have to sit together and explain how to treat each other. An obstacle can be that people do not dare to speak freely. Sometimes criticism is not expressed and that causes irritation and friction. Then one has to go back to the core and people have to be put back

	together to see what the problem is. It is difficult to react without knowing each other, the objective or what the other one is doing. Expert 2: A possible obstacle to this could be resistance. Expert 4: It is important to implement that the team members themselves have ownership. This means that a team does not consist of individuals who must be told what to do every week/day . One must want to move towards a situation in which team members actively step to the team with their struggles. A Bouwteam should not actually be focused on the project leader, but on the assignment. The project leader must of course facilitate this in a coaching manner and is important in this (exemplary behaviour), but he is not the omniscient person. One obstacle is that it should not be ruled completely by the project leader. The project leader is important and this is also the case with the behavior the project leader shows. The team should not become very dependent on the client. Expert 5: An obstacle for the project leader as a role model is the project leader could not be good at his job, does not dare to make decisions, or is very risk averse. Only if it is someone who complicates things even more, this can have a negative impact because the project leader mostly has a very guiding role.
Use the project leader to share his vision and ideas, but let the team determine the strategy together	Expert 1: In the beginning , the project leader is needed to have his vision and ideas, but in the core team the strategy is determined together.
S10: Appoint project leaders who are capable to lead the project, both the overall project as the separate disciplines, based on their personal capabilities and project experience. *Substantiation of strategy with literature and experts* Project leaders are very important to make sure the project is led into the right direction, in which experience plays an important role (Expert 3; Expert 5). The project leader's leadership competences on the project success is vital (Geoghegan & Dulewicz, 2008; Ahmed et al., 2013). Therefore, it can be concluded that a capable project leader has a positive influence on the collaboration during transition. A project leader should be selected based on their experience and personal capabilities: knowledge, skills, authority and good understanding of the project (Abdulsamad Ali & Chileshe, 2009). Taking this into consideration, project leaders should fulfill a crucial role regarding the extent to which monodisciplinary meetings can be minimized (Expert 1; Expert 2; Expert 3; Expert 4). The more capable the project leader is, the more knowledge he or she has of the various disciplines (Expert 3). The project leader has to able to connect all disciplines in such a conversation and manage the interfaces (Expert 1; Expert 4). Skilled project leaders keep everyone on board during meetings (Expert 3). Personal capabilities can be trained, as it is proven that training has been relevant and positively	Expert 1: There is always a project manager/project leader who is looked upon with expectations from other parties, also in the structure of meetings. Expert 2: A good leader is a success factor for a successful project, because it does help to have someone who really stands out as a leader in such a project. Let the project leader determine what is needed for the project based on the topic and connections between disciplines Expert 3: The extent to which monodisciplinary meetings can be minimized depends on the knowledge level and project experience of the project leader. In any case, try as much as possible together. The stronger the project leader, the more knowledge he has of the various disciplines. Then he is the link between the different disciplines, he has to tie everything together. He has to keep that overview and manage the interfaces. If he is able to connect all disciplines in such a conversation and manage the interfaces, then it is very doable. If the discipline leader has to review the disciplines with other disciplines, it will cause risks. To prevent missing interfaces, all disciplines have to be at the same table at the same time. The project leader should have a much broader view and can keep everyone on board during meetings. It is not only about realization, but also about verification and validation, collaboration and design. They control many more aspects of the project than our traditional implementation project leaders. Therefore, that leadership role is very important. This is because the client has expectations: pro-activity, organizing, leading the way and above all no unnecessary delays. To ensure that the project leaders of Bouwteams perform well, they are trained. Every year, all tender managers, who are also project leaders, have training sessions about these types of properties. How are you able to motivate and inspire a team with everything you know? Is there sufficient visibility and overview with regard to the project? Is there enough knowledge on board? How do you keep a team motivated for the same objective? Often it is the case that players only think of themselves and become selfish. That requires very different skills than people have until

contributes to the skills and competences of project leaders (Expert 3; Expert 5; Palotie et al., 2017).	now accustomed to in the civil engineering. Skilled project leaders keep everyone on board during meetings Expert 4: A Bouwteam should not actually be focused on the project leader, but on the assignment. The project leader must of course facilitate this in a coaching manner and is important in this (exemplary behaviour), but he is not the omniscient person. It must be encouraged that adaptability to changes in the project is something that a project leader must hear. One should not be shocked by changes and recognize that it is part of the process, especially with a Bouwteam. This perspective sees the project leader as a "parent" who cares for his/her children. I see that in practice. A solution for this can be a Bouwteam manager who also regulates meetings. Expert 5: The project leader is very important. There have been projects that were expected to go awry. But thanks to smart interventions, good understanding and flexibility of project leaders , they were saved after all.
Have an eye for interface risks: look plenary at things to avoid loss of integrity	Expert 5: The process must be guarded by interface risks. This plays a role in loss of integrity in which all disciplines are individually compartmentalized. This leads to problems with alignment. Just putting something out there and wanting someone to look is not enough.
Be aware that it is difficult to keep the right people available and recruiting the right people for fulfilling the role as project leader.	Expert 3: The biggest obstacle is keeping the right people available and recruiting the right people for these kinds of roles. It is a very intensive role as project manager when it comes to building team to some extent. It is not possible to build two teams of reasonable size at the same time to run. So this leads to a shortage of people and this is an obstacle Expert 4: It must be encouraged that adaptability to changes in the project is something that a project leader must hear. One should not be shocked by changes and recognize that it is part of the process, especially with a Bouwteam. Expert 5: Projects can also go wrong because there is a clash at an individual level, because people do not like each other. They can't separate personal and professional attitude. An organization must understand this and intervene by separating people from each other

Table 61: Combined input for strategy 5

PERSPECTIVE 5: Focus on early agreements on price-related aspects & specific competences of people	
Strategy based on expert input and literature	**Expert input**
Avoid client-contractor inequality by having someone on the Bouwteam who checks if there are complaints and by steering the project team members towards the same objectives, values and concerns.	Expert 2: Striving for equality is very important. Client-contractor equality can be achieved by having someone on the Bouwteam who checks if there are complaints, someone who observes this. Expert 3: To ensure that there is equality between the client and the contractor, it is important to be fully transparent and open. The client can take a look at our financial system with quotations on the table as well. There are no secrets in a Bouwteam. That is completely different from other projects. Expert 4: Contractor-client equality is achieved by steering the project team members towards the same objectives and concerns. You can be equal by deploying people based on their expertise and not based on where they come from. The team members should feel like part of a team, instead of feeling like you are working for the client or contractor.

S12: Make effort to win the right people for the project by using an intern application procedure. *Substantiation of strategy with literature and experts* The availability of the right people is very important (Expert 1; Expert 2; Expert 4; Expert 5). The success of the project depends among others on hiring the right people for the appropriate positions (Ahmed et al., 2013; Kang et al., 2005). Therefore, it is a great challenge for the project manager to choose the right persons for the job (Markaki et al., 2011). Having the right people at the right places ensures successful projects (Ahmed et al., 2013). There are different methods to make effort to win the right people for the project. One of them is an application procedure system where a potential team member should apply for a role in a Bouwteam project (Expert 4; Expert 6). This makes sure that the team consists of people who really want to be there and are intrinsic motivated (Expert 6). First, an interview is held and it is checked whether the candidate has the right competencies (Expert 4), however, this could also be a motivational letter, game or short video (Expert 6). An interview is the most common method of selecting people (Markaki et al., 2011). After the interview, the candidate is nominated and subsequently a process is followed in which they either can get the job or not (Expert 4). In addition, marketing could be applied (Expert 4). Team members could be recruited via job advertisements within the organization, which are proven to be effective in attracting potential team members (Ahsan et al., 2013). With the help of marketing the project can seem more inviting and exciting to be part of for the people within the organization (Expert 4). An organization should represent that their projects are only for the best people (Expert 4). Collaboration will run smoother when the right people are at the right places within a project, as they have a positive attitude towards the project and have affinity with the tasks they have to perform, which positively effects the collaboration during transition (Expert 1; Expert 6).	Expert 1: The good people are often busy. Nevertheless , efforts must be made to win them over for the project. It is a consideration within the organization to involve that person, because otherwise it could cost money. So someone can be taken away from a project and used for another project. Expert 2: The availability of the right people is very important. The right people in the right places is achieved by getting commitment from the parties at a high level. Expert 3: Our entire organization has been adapted when it comes to Bouwteams. There are other players on board. Traditionally, people in the bouw/infrastructure are raised with 'you have to realize a project for the lowest price'. During the execution of the project all opportunities should be taken in advantage to earn a little money as a contractor. In a Bouwteam this is different, because at the start it is already established what the revenue model is by the securing the percentages. Anything that is left in budget will benefit the project. That means other players are needed at the table. This is solved by not putting the players at the table who have been competing for the last dime for over 20 years. It is about the right people at the table. An obstacle here is that the right people are not available. That is a problem for us, because if people become project leaders when they were tender managers, there is no one left to carry out the tenders. That is now also the case. There is a shortage in tender capacity Expert 4: The availability of the right people is regulated by promising up front that the right people will be taken care of. This is also handled within the organization and it must be made clear how these people are to get involved. Availability of the right people is also regulated by not admitting the wrong people to the project. So no people who are just 'left' for the job. We have an onboarding system. To do this, one must apply for a role in the Bouwteam. An interview is held and it is checked whether the candidate has the right competencies. The candidate is nominated and then a process is followed in which you either can get the job or you do not. People can also be actively involved in marketing projects within the organization, so it is more inviting for people to be a part of the contractor's project. With the help of marketing the project can seem more inviting and exciting to be part of for the people within the organization. It is a bit of advertising. If you want to have the best people, then you must also radiate that this work is only for the best people. Expert 5: The availability of the right people is important. One creates particular rapport: a certain understanding. You (recognize) each other, trust each other, there is a certain predictability. A new person is unpredictable and you do not know yet, so no report is built up. You have to build that up. By putting in new people every time , you break the flow.
S11: Involve (independent) financial experts to help the client examine the price-related aspects of the design. *Substantiation of strategy with literature and experts* It is important to make early agreements about the price composition, tariffs and the price determination plan with moments of sharing the cost estimation (Van der Pas, 2021). The open cost estimate is done often by the contractor but has to be examined by the	Expert 1: The realization people must understand what is invented earlier. That is the task of the Bouwteam, to include them in this process. Everything must have already been tackled. You have to verify the idea in the Bouwteam with the realization people, because they were included early. This way there are no surprises and everyone understands exactly what to do. The focus on price-agreements are actually the thoughts of the trade-offs in design choices. The design choices are made based on consideration criteria (sustainable, less time, feasible, price-technical). At a certain point the prices will be known and a choice will be made. That has also already been tackled with the people of the realization. It is important to know how prices are reached, and what coordination has taken place.

client (Expert 1; Expert 5). To ensure that this happens properly, sufficient cost expertise at the client is of importance (Van der Pas, 2021). This is achieved when the client has the same in-house parties or hires a(n) (independent) party who can fulfill this role (Expert 2; Expert 3; Expert 4; Expert 5). A(n) (independent) cost expert can provide input during the discussion about price-related aspects (Schierholz & Gransberg, 2014; Van der Pas, 2021). The transition will only take place after price-agreement is reached (Chao-Duivis, 2012). Not having price-agreement could influence the collaboration, as the parties do not continue in the execution phase (Chao-Duivis, 2012). Early agreements about price-related aspects are very important for the collaboration, as having someone who has expertise on financial related aspects is important to avoid surprises at the price negotiation phase. Having this expertise should make it easier to come through the price-negotiations, which therefore avoid problems and conflicts, as these two situations are negatively influencing the collaboration.	Everything must be checked with the realization people. Present the design choice to the realization people. Explain the thinking of how much the design will cost, present it to the realization people (is it feasible or not?). It can be a hugely expensive design choice, but if that saves a lot of money in execution time, then it might just be fine. Use trade-off matrixes. The man of realization wants to know what he is going to make and whether it fits within budget. The design is delivered in advance to something that fits within the budget. So there are equal objectives. The client does not want to spend too much, but does want to have the right quality and results. That is weighing each other out. The realization people know what to make, the designers know what to design and the client knows that it fits within budget. The man of realization wants to know what he is going to make and whether it fits within budget. The design is delivered in advance to something that fits within the budget. So there are equal objectives . The client does not want to spend too much , but does want to have the right quality and results. That is weighing each other out. The realization people know what to make, the designers know what to design and the client knows that it fits within budget. Expert 2: It is useful if the client understands the costs. Involving financial people helps to make early agreements on pricing. The right financial people guarantees ensuring proper agreements in a partnership about pricing in the early stages. Sufficient cost expertise at the client can be achieved when the client has the same in- house parties or hires the same parties. It is important that everyone agrees on how the price will come about. Firstly, there is no price, but a budget. The price itself can only be announced when more details are known. Expert 3: For each step in the design process and any consideration that you make as a team, the impact on prices should be visible. The client can take a look at our financial system with quotations on the table as well. There are no secrets in a Bouwteam. The client could hire a party to help to examine the price related aspects if they do not have the knowledge their selves. Expert 4: Early agreements on pricing happen in a process-oriented way. It is not possible to say how much it will cost at the start of a Bouwteam. What is possible is to make an estimate and find out during that process whether this is the case. It might happen that after months it is discovered that the estimate was incorrect. A Bouwteam can be a means of saying: we do not know exactly what it will be, but we know it will be more and this will be because of these points. You can further investigate this in the Bouwteam and further optimize it. That cost expertise must be organized. A party must be brought in who can fill this role in. A cost expert can provide input during the discussion about price (formation). Expert 5: Early agreements on pricing are necessary. Early agreements on pricing are quite difficult to determine. To deal with the aspect: sufficient cost expertise of the client, it is indicated in the DG 2020 model that a target budget must be devised in advance by the client. The contractor must indicate in advance whether he thinks it is feasible in broad terms. If he thinks it can't be done, he should say so.
Set agreements when collaboration before transition did not go well to prevent the obstacles from occurring again	Expert 1: It is desirable to take the energy of the Bouwteam before the price moment to the realization phase.

	Expert 2: Suppose the collaboration before the transition did not go well, then by talking to each other, being transparent and sharing experiences, people can ensure that they know what has set them apart. This is followed by agreements being implemented to prevent the obstacles from occurring again. Expert 4: If there were problems regarding the price before the transition, it should be ensured that the negative atmosphere is eliminated. This negative atmosphere is namely upheld by the people itself. If you think something is wrong, just do not do it. If all sides agree with each other at the end of the negotiation procedures, there should not occur disagreements later on. There must made peace with the agreed outcomes.
Set up a guideline for collaboration based on input from a workshop.	Expert 2: Having a guide to collaborate according everyone's wishes is crucial. This is not about the words in the booklet, but how they are obtained, a process of how the collaboration is initiated. A guideline for collaboration could be output from a workshop. It makes no sense for someone to write it for them, someone outside the team. Expert 4: Guidance of collaboration can be done by outsourcing this task. Collaboration does not just happen, you have to work on it. For this, the right collaboration structure must be set up (meeting, how do I involve management, where do I record which decisions, mandating) and the collaboration culture must be clear. The collaboration culture are the norms and values. A mission statement can be made, which describes what is important (open and honest: what that means). By giving meaning to the core values as a team, people start discussing in the same language . This is what we stand for and over address each other properly.
Be aware of the human factor that knows resistance	Expert 2: The human factor can be an obstacle to this, possibly counteract it. Expert 3: Expert 3: It has been agreed at the front (AK and WR), what the revenue model is. That needs to be set aside and not looked at again. The rest of the budget goes to the project. Everyone should understand that very well. Two financial pots can also be used (one for AK and one for WR): as a contractor you can never earn money from the pot that is for the project. There might not be a revenue model for the contractor. Otherwise it creates inequality and the trust is gone. Make two financial pots, two project numbers: one project number for the WR part and one for just the costs. If there is money left, it is returned, because it was never the contractor's money. We have agreed on what we can earn and we are happy with that. Old behavior is the biggest obstacle. Our project leaders and executors are also easily tempted to keep the gains that are made during the project, the client immediately loses trust when the client sees this, because that was not the agreement. That's the biggest pitfall.
Include client in procurement process	Expert 3: We include our clients in the purchasing process: request quotes or try to negotiate as a client yourself.
Be aware of the amount and difficulty of arrangements	Expert 4: An obstacle here is that a lot has to be arranged in order to do this properly. Things can be arranged incorrectly or just not properly. That just makes the whole process a little more vulnerable. Expert 5: What is equality? That must be unambiguously defined.

Core factors

All experts recognize the factors, see Table 62.

Table 62: Recognition of core factors by experts

	Core factors (recognized?)
Expert 1	Yes
Expert 2	Yes
Expert 3	Yes
Expert 4	Yes
Expert 5	Yes
Outcome	RECOGNIZED

Table 63: Combined input for strategy core factors

Core factors	
Strategy based on expert input and literature	**Expert input**
S1: Create an environment in which information, that meets quality requirements, is openly available for all Bouwteam members. *Substantiation of strategy with literature and experts* Transparency is a core value that a Bouwteam should meet, so that the maximum of a Bouwteam project can be achieved (RESP15; RESP16 RESP25; Expert 1; Expert 2; Expert 3; Expert 4). Hidden agendas should be eliminated (RESP17; Expert 4) and success and losses should be shared openly (RESP07; RESP17; RESP24). Give mutual insight in what drives the team and proactively report problems and interests (Expert 3; Expert 4). Information should meet quality requirements as organizations depend on data for managing their daily activities and decision-making, thereby, having information with less quality might lead to undesirable results (Gharib & Giorgini, 2015). Information should be accurate, believable, trustworthy, complete, timeless and consistent (Gharib & Giorgini, 2015). A transparent team climate without any information hiding is desirable, as it enables a safe atmosphere in which the team members are willing to share (H. Yi et al., 2016). One should be totally transparent, also about the financial system in order to create understanding and the interest from the client (Baykal, 2019; Expert 1; Expert 4). Transparency can be checked within the Bouwteam by asking the team members if they are satisfied with the available information (Expert 2). The project leader could take a role in this by keeping an overview (Expert 3). Transparency positively affects collaborative situations and relationships (Tulli	Expert 1: Transparency is necessary anyway. If you are transparent also about the costs, people understand where you come from, it creates understanding. You must be open and honest with each other, that's how you achieve that. Understand each other. This will make sure the best is getting out of the Bouwteam. Expert 2: You can check transparency with everyone: are you satisfied? Do you know enough? This way the Bouwteam will be at its best. Vulnerability must also be shown. Expert 3: Transparency is important, especially in a Bouwteam to get the best out of it. You have to be completely transparent. The client can simply look into our financial system, the costs and the revenues. This way you create understanding and the interest of clients. A barrier can be business sensitivity. You cannot just show everything, how your company is financially organized: rates, wages, how everything works, that would be a bit too much. If you understand each other and know each other better than just professionally, it helps to create this. If you do not have the right people at the table, you will not get this done. The more insight you give, the more insight is also given from the other side. The project leader must check on transparency. Expert 4: Transparency is about providing insight into what drives you, and proactively reporting your problems and interests, to achieve the maximum out of a Bouwteam. If the team members see that there is no hidden agenda at the board, then they do not have to keep things hidden either. You work towards more safety. Social safety: the space to make mistakes and share problems, you work on that.

et al., 2019), which means that it positively affects the collaboration during the transition.	
S2: Invest in collaboration from the start by social interaction between team members and maintain the collaboration during the project. *Substantiation of strategy with literature and experts* Mutual trust is one of the most important factors in collaborative relationships (Nielsen, 2004). Trust arises during the collaboration, as it is not there from the start or suddenly at the transition (Expert 1). Give mutual trust the time to arise (Expert 1). Therefore, invest energy in social interaction from the beginning of the Bouwteam project (Expert 1), because team members can build mutual trust through social interaction (Chen et al., 2009). Social interaction strengthens the team spirit, which motivates team members to work and collaborate within the project team (Expert 1). Team members should pay attention to understanding each other, letting people be themselves, listening to their motivations, use all knowledge within the team, and testing whether the team goes into the right direction (RESP14 RESP16, Expert 1; Expert 3; Expert 4). Mutual trust therefore results in people who are more willing to share and to collaborate (Rawlins, 2008).	Expert 1: Mutual trust is achieved by investing energy in collaboration in the beginning. Trust arises. At a certain point you understand each other and you test whether you are going in the right direction with each other. That is a natural process. Expert 3: Mutual trust. That is giving insight. The more insight you give, the more insight is also given from the other side. This gives you more insight into problems that you did not see before (on the client side). The political game that often takes place in the background is something you do not often see. The more you show, you learn that they show more. It also helps you understand why things happen. Expert 4: Trust starts by showing what you stand for, showing that you deliver (knowledge), listening to each other, and by being approachable. If you make mistakes you have to name and report them. Trust lies in the fact that if something becomes difficult/complicated or comes under pressure, you will remain standing. Do not go out of the way to avoid to dealing with it, you have to show you are there when needed. We always start with giving trust (prisoner's dilemma). Even if that does not work, the scenario when you start with no trust at all, is always worse. A lot of people do not understand that. Every scenario gets worse if you start with distrust.

APPENDIX N: EVALUATION INTERVIEW ON STRATEGIES

Alle strategieën zijn besproken met Expert 6. De beargumentering vanuit de literatuur en de eerste vijf experts zijn gebruikt tijdens het gesprek om de strategie toe te lichten. Hierna is gevraagd om validatie van de gegeven informatie. De volgende vragen werden gesteld:

- Past de strategie bij het gegeven perspectief?
- Zorgt de strategie daadwerkelijk voor verbetering van de samenwerking tijdens de transitie van de bouwteamfase naar de uitvoeringsfase?
- Is het perspectief gelinkt aan het juist type project?

Kernwaarden

Ongeacht het perspectief zijn er twee factoren die altijd belangrijk zijn. Deze zijn transparantie en wederzijds vertrouwen. Hiervoor zijn de volgende strategieën geschreven.

Transparantie strategie 1

Creëer een omgeving waarin informatie voor alle Bouwteamleden toegankelijk is.

Expert 6: Eens

Wederzijds vertrouwen strategie 2

Investeer in samenwerking vanaf de start van het Bouwteam project door sociale interactie tussen teamleden.

Expert 6: Eens

Geschikte projecten voor deze factoren

Ongeacht het type project is vertrouwen en transparantie erg belangrijk. Dit zou in elke soort Bouwteam project aanwezig moeten zijn.

Expert 6: Eens

Strategie perspectief 1: duidelijke, gedetailleerde scopedefinitie & Bouwteamrollen

Geschikte projecten voor dit perspectief

Dit perspectief is eigenlijk geschikt voor elke situatie. Het is altijd goed om duidelijk te hebben wie, wat doet en wie, welke rol heeft. Echter, kan het bij complexere projecten nog belangrijker zijn dit vastgelegd te hebben. Dit perspectief zit strikter in de regels en is daarvoor meer geschikt voor uitdagende projecten, complexe en multidisciplinaire projecten. Bij de complexere projecten is er behoefte aan meer duidelijkheid. Dit perspectief is van instrumentele aard en kan deze behoefte vervullen. Minder complexe of monodisciplinaire projecten kunnen deze zaken nog onderling met elkaar regelen. Projecten die vragen om flexibiliteit passen minder bij dit perspectief, omdat werken volgens regels en richtlijnen minder behoort tot een flexibele werkomgeving.

Expert 6: Eens

Strategie 3
Organiseer een kick-off aan het begin van het Bouwteam project met alle bouwteamleden om de scope en rollen duidelijk door te spreken.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja, dit moet je altijd doen, een kick-off. Het zou al eerder vastgelegd moeten zijn, bijvoorbeeld in een bouwteamovereenkomst en in een kick-off spreek je het door. Aannemer van bouwteam heeft op aanbesteding meegedaan en heeft ergens op ingeschreven en moet weten waar hij aan toe is en de opdrachtgever ook. Ergens staat het al als het goed is, in een bouwteamovereenkomst, maar die gaat dan aan de kant en daar kijkt niemand meer naar. Maar doe het dan ook in een interactieve setting met elkaar. Opfrissen en uitspreken naar elkaar. En kijken of het duidelijk is voor elkaar. Ik kan wel weten wat ik moet doen, maar ik vind het ook fijn om te weten waar jij van bent. Misschien vallen dingen tussen wal en schip als je het doorspreekt: maar wie doet dit dan? Dat werkt het beste in een setting met elkaar. Het kan kick-off zijn of allereerste bouwteamoverleg. Tegenwoordig start een project altijd met een kick-off, maar zet dit dan zeker op de agenda. Ik vind dit een heel goed advies.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Het is een voorwaarde voor goede samenwerking. Samenwerkende mensen bepalen het, maar uiteindelijk moeten je randvoorwaarden op orde zijn. Je moet duidelijk hebben. Als je niet weet wat je moet doen, is het heel moeilijk om samen te werken. Het is essentieel voor de samenwerking, dat werkt ook door in de transitie. Het werkt door in het Bouwteam, dus dan ook automatisch in de transitie.

Strategie 4
Aan het begin van het Bouwteam project moeten teamleden worden geanalyseerd op basis van hun DiSCprofiel zodat het duidelijk wordt wat voor soort mensen in het team zitten en hoe er met verschillende karakters kan worden omgegaan.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja, er zijn natuurlijk ook meerdere dingen die meespelen. Je kunt het DiSCprofiel hebben, maar je moet ook de ervaring hebben. Waar ik een voorstander van ben, is dat als je het team hebt, en je kent elkaars profiel, dat je daar zo goed mogelijk mee om moet gaan. Dat je ziet waar de overeenkomsten en verschillen zitten. Als je allemaal mensen van één kleur hebt, is de samenwerking misschien top, want je lijkt veel op elkaar, maar je gaat een heleboel dingen missen. Als je erachter komt dat je team heel erg hetzelfde is en niet divers, dan kun je overwegen iemand erbij te halen, die iets brengt. Het is leuk om het van elkaar te weten om te weten waar je goed in bent en waar je valkuilen zitten en dat dus levend te houden. Als je echt een kleur mist, dan kun je concluderen dat dingen niet gebeuren omdat je een kleur mist. Je kunt dan iemand die taak op zich laten nemen of iemand erbij halen die het heel leuk vindt om te doen. Maar een basis van je Bouwteam is inderdaad je kennis en ervaring. Als je een heel divers team hebt, kan de samenwerking ook heel lastig zijn. Voor de werking van het team is het wel goed. Maar als je heel divers team hebt, kan je soms helemaal niet goed samenwerken. Als je allemaal hetzelfde bent kun je fijn samenwerken. Dat wil niet zeggen dat het resultaat beter is.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Ja. Je kunt de kennis van DiSCbenutten. Dat is heel verstandig. Omarm de verschillen en de kennis die je hebt.

Strategie perspectief 2: focus op een goede professionele relatie met minder informele meetings

Geschikte projecten voor dit perspectief
Dit perspectief heeft vooral behoefte aan professionele omgang. Als projecten korter duren, dan is dit perspectief ook meer geschikt. Je hebt bij kortlopende projecten minder tot geen tijd voor informele events. Bij kortlopende projecten kun je prima uit doe voeten met dit perspectief. Bij langlopende projecten, gaat het vanzelf en leer je elkaar beter kennen. Dan is dit perspectief minder geschikt.

Strategie 5
Organiseer gezamenlijke ontwerpsessies om kennis te delen en het ontwerp te verifiëren en valideren om kwaliteit te leveren.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja, dit is een hele belangrijke, sowieso in een Bouwteam. Met name aan het einde is het belangrijk dat je er gezamenlijk erdoorheen gaat. Ik ben ook heel erg van gezamenlijke sessies en niet het over en weer sturen van tekeningen of wat dan ook. Vragen kunnen zo meteen worden beantwoord, meteen samen ernaar kijken. Ik denk dat dit een heel goed advies is.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Ja. Omdat het heel erg zit op de inhoudelijke kant en waar de mensen elkaar gaan vinden en dingen gaan uitleggen. Zeker bij technische mensen (ontwerpers) vinden het heel fijn om over de inhoud te praten. Ze hebben misschien wat minder met het informele en zijn er echt voor de inhoud en deskundigheid. Ik vind dat een hele goede. Vooral dat samendoen, dus geen tekeningen over en weer met rode strepen erdoorheen en dat de ander boos wordt als 'ie m krijgt, maar echt samen zitten; dat gaat veel sneller en je vindt elkaar. Echt een heel goed advies.

Strategie 6
Documenteer samen afspraken in een samenwerkingsplan over hoe er moet worden samengewerkt, en in het bijzonder verwachtingen van het team en de individuen worden vastgelegd.

Past dit advies bij het beschreven perspectief?
Expert 6: Samenwerkingsplan klinkt heel mooi. Dat gebeurt ook in de praktijk. Het moet door OG en ON worden gemaakt. Verwachtingen, persoonlijke belangen moeten worden vastgelegd. Of dat een plan is, tekening, of powerpoint, dat maakt niet uit. Maar vooral dat samendoen en het samen opstellen van zulke plannen is echt essentieel. Wat doe je erna mee? Met het plan? Stel dat er iets niet goed gaat. Je zit aan het einde, het wordt spannend, richting de uitvoering, de tijd gaat knellen, iedereen gaat misschien afwijken van wat er was afgesproken va tevoren. Haal dan het plan erbij en kijk wat je ook alweer met elkaar had afgesproken en had verwacht. Oh ja zo zouden we werken. Dat werkt heel goed.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Juist daar waar het spannend wordt en dat is daar. Op het laatste moment moeten knopen doorgehakt worden en dan komt er soms ook weer een stukje risicomijdend gedrag terug bij partijen en kun je het plan weer naar boven halen.

Strategie perspectief 3: focus op een lange termijn samenwerking met een win-win houding zonder potentiële risico's van innovatie

Geschikte projecten voor dit perspectief
Dit perspectief komt het beste tot uiting bij projecten waar innovatie niet van belang is. Dit gaat dan meer om repeterende en standaard projecten. Denk hierbij aan langjarige, beheer- en onderhoudsprojecten of vrij standaard werk. Het gaat om werk waarin samenwerking met de andere partij voor lange-termijn belangrijk is, maar innovatie geen doel is. Vooral in de woningbouw zijn projecten meer standaard.

Strategie 7
Wees bewust van elkaars belangen en doelen om een gezamenlijk tot een duidelijke en gelijke project visie te komen.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja. Die belangen zijn echt super belangrijk. De mens is belangrijk maar ook je belangen, ambities en afspraken. Alle kaders eromheen zijn ook belangrijk. Iedereen heeft zijn belangen, maar je moet komen tot gezamenlijke belangen, zeker als je een lange-termijn samenwerking wilt, want je zit lang aan elkaar gebonden, en je moet ook samen dezelfde richting op willen. Dat is essentieel. Je visie kan veranderen in de loop van de tijd als je zo veel jaar verder bent, maar dat moet dan ook gezamenlijk vastgesteld worden. Je leert natuurlijk ook als je lang met elkaar samenwerkt (omgeving, technieken, etc.), dan moet je ook aanpassen. Als je er op dezelfde manier inzit, dan moet het lukken. Als je lange-termijn samenwerking wilt, moet je die belangen echt op tafel gooien, je moet het met elkaar eens zijn. Als ze allebei niet het belang hebben om niet te innoveren, dan is het ook hetzelfde belang. OG en ON hebben andere belangen, maar je moet wel hetzelfde doel nastreven (kwaliteit, eerlijk geld voor eerlijk werk) en hoe je dat dan bereikt. Dat moet je van elkaar weten en er moet iets gezamenlijks inzitten anders werkt het niet

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Het is essentieel.

Strategie 8
Organiseer mogelijkheden waarbij kennis actief met elkaar wordt gedeeld tussen teamleden om een langdurige leercultuur te creëren.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja het klinkt logisch. Op zich denk ik wel dat het heel fijn is om met elkaar te leren, want je gaat heel lang met elkaar samenwerken. We werken ook onder de ISO, de kwaliteitsnormen waarbij je ook moet verbeteren. Dit is daarin ook essentieel. Je gaat met elkaar werken, er worden fouten gemaakt, je doet kennis op, dat wil je met elkaar delen. Als je dit voor mekaar krijgt, dan bevordert het de samenwerking. Dit is een hele moeilijke, want het gebeurt vaak niet, ondanks dat het vaak wordt geroepen. Omdat je lang met elkaar werkt, heeft het ook veel effect. Een project dat langer loopt, kan dit vooral als doel maken (kennis met elkaar delen). Bouwprojecten zit de tijd altijd krap, het is past altijd amper in de planning. In een langer project is er meer kans om dit te doen en kun je dit als doel maken. Zeker als het een lang project is waar een jaarcyclus in zit als het gaat over onderhoud, dan is het gewoon essentieel om dat te doen, want je moet de assets van OG leren kennen en misschien ook goedkoper te kunnen werken. Het kan een doel op zich worden. Dit is makkelijker te realiseren op een langer project, of op een kort/klein project met weinig geld. Dit kost namelijk ook geld (want tijd). Je zit vaak krap in tijd, dus daarom past het goed bij lange termijn oriëntatie. Of het nou perse meetings

kunnen zijn, het kan ook op een andere manier. Maar de essentie is: deel kennis met elkaar. Je zou het kunnen doen door alleen al in een Bouwteam samen te werken, dat bevordert het lerend vermogen al. Geef eens een presentatie, neem je klant mee naar je loods, evenementen, momenten, etc.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Samen leren is heel goed voor de samenwerking. Kennis is macht. Als je durft kennis te delen, krijg je altijd wat terug. Voor de verhouding tussen de mensen en daarmee de samenwerking werkt het zeker.

Strategie perspectief 4: focus op leiderschapsbekwaamheid en minimaliseer monodisciplinaire meetings

Geschikte projecten voor dit perspectief
Dit perspectief is geschikt voor grote multidisciplinaire projecten. Bij kleinere monodisciplinaire projecten is er geen probleem betreft minimalisatie van monodisciplinaire meetings, omdat je dan vaak in een klein groepje bent, en het dus geen issue is of er sub-meetings zijn, omdat alles met elkaar wordt gedaan. Dit perspectief past vooral wanneer het complexer wordt en disciplines bij elkaar moeten worden gezet. De projectleider heeft dan een belangrijke rol om dit in goede banen te leiden en ervoor te zorgen dat de verschillende disciplines met elkaar samenwerken.

Strategie 9
Organiseer een efficiënte vergaderstructuur afhankelijk van de aard van het project (complexiteit, grootte, etc.), raakvlakken en onderwerp van de vergadering.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja. Efficiënt in de zin van: wat wil je bereiken in zo'n vergadering? Zorg dat de vergadering interessant is voor iedereen, dat iedereen is aangehaakt, het moet niet te lang duren, dat iedereen z'n zegje kan doen, het moet nuttig zijn.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Ja. Als je goede efficiënte vergaderingen hebt waar mensen niet in slaap vallen of chagrijnig van worden, dat is positief is. Het draagt wel bij aan een verbeterde samenwerking tijdens de transitie. Hij is wel heel belangrijk voor je resultaten. Je komt meer tot resultaat met efficiënte vergaderingen en dat is natuurlijk fijn en werkt wel door.

Strategie 10
Wijs projectleiders aan die capabel zijn om het project te leiden, zowel het gehele project als de aparte disciplines op basis van hun persoonlijke vaardigheden en ervaring met projecten.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja. De projectleider komt ook uit een discipline van origine (bijv. wegenbouwer die is doorgegroeid naar projectleider). Je moet iemand hebben die het totaal kan hendelen en het even belangrijk vindt en ziet dat het even belangrijk is. Als het echt doorgegroeide projectleiders zijn, vinden ze het ook wel leuk om met de techniek mee te denken.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Ja. Met name op het punt van niet te veel in monodisciplinaire dingen knippen, dat is slecht voor de samenwerking. Het zal altijd wel nodig zijn om in kleine groepjes dingen uit te zoeken, maar bij Bouwteamoverleg zit iedereen bij. Dat helpt bij de samenwerking omdat het helpt bij het gevoel

dat je erbij hoort, dat je belangrijk bent en dat je er mag zijn. Dat is ook-p nodig voor de samenwerking. Als je er nooit bij betrokken wordt, is het ook moeilijk om samen het project te doen. Projectleider faciliteert de samenwerking, dus dat is ook een positieve invloed op de samenwerking.

Strategie perspectief 5: focus op vroegtijdige afspraken over prijsaspecten & specifieke competenties van mensen

Geschikte projecten voor dit perspectief
Dit perspectief is van belang bij alle Bouwteam projecten, ongeacht het type. Bij alle Bouwteams moet er worden overeengekomen tot de definitieve prijs, het meest spannend van een Bouwteam. Daarnaast zijn de juiste mensen met de juiste expertises nodig om tot de juiste prijs en het juiste ontwerp te komen. Dit perspectief is de essentie om een Bouwteam te laten slagen. Hoe complexer het project, des te moeilijker het is. Meestal is een Bouwteam ook een beetje complex anders hoeft er geen Bouwteam e zijn. Dan is er iets wat de OG niet kan of wat ze nog niet weten en hebben ze daar de aannemer voor nodig.

Strategie 11
Betrek financiële mensen om de opdrachtgever te helpen bij het toetsen van de kostenraming van het ontwerp.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja. Kostenraming doet vaak de aannemer. Dat moet getoetst worden door de OG. Dat hangt er vanaf wie de OG is en wie ze daarbij hebben. Vaak huren ze kostendeskundigen in. Wat je ook weleens ziet, is dat je in het Bouwteam een externe onafhankelijke kostenadviseur inhuurt, niet van de OG of ON, maar onafhankelijk. Betrekken van onafhankelijke kostendeskundige is sowieso nodig. Als OG geen kostendeskundigheid in huis heeft, moet hij dat inhuren. Hij moet de ON kunnen toetsen. Zeker als de OG een gemeente, provincie of overheid is, die moet zijn financiën verantwoorden. Vaak beginnen ze heel snel met opbouwen van raming en ben je daar allebei van. Dan maak je SO, VO, DO en dan kostenplaatje erbij. En dan zeg je het is te duur of niet, dan moet er wat vanaf, of moet er wat van het ontwerp weg, of moeten ze besparing zoeken. Aan het einde weet je wat het kost. Dan wordt het spannend want dan moet ON zijn definitieve prijs indienen, ook de dingen die hij vergeten is. Het idee is van Bouwteam is dat je samen. Het is belangrijk dat OG kostendeskundigheid heeft zodat de aannemer ze niet voor de gek kan houden en dat de OG een goed en een eerlijk beeld hebben van de kosten zijn, omdat ze soms een onrealistisch beeld hebben (denken dat goedkoper is dan het is). Dat is essentieel om tot een eerlijke prijs te komen.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Ja. Dit is het hele spannende. Ellende aan achterkant wordt voorkomen als vooraf kennis aan tafel zit (bij Bouwteamoverleg).

Strategie 12
Doe moeite om de juiste mensen voor het project te winnen door het gebruik van een interne sollicitatieprocedure.

Past dit advies bij het beschreven perspectief?
Expert 6: Ja. Super leuk. Dit hebben wij ook eerder gedaan voor een project. Zo hebben we gekeken wie nou echt een goede passie voor het project had. We kregen er echt een top team uit. We kregen hele enthousiaste mensen die helemaal gingen voor het project. Het is zeker van belang. Als iemand solliciteert en het graag wil en zich goed kan verkopen, werkt dat mee. Je bent dan intrinsiek

gemotiveerd. Dat is heel belangrijk. Je kan dit doen door brief, spel, filmpje, procedure. Voor bepaalde typen projecten waar je echt helemaal belang bij hebt als organisatie, is het een leuke methode. Dan vind je de mensen die het echt willen. Als het wilt, dan heb je al één stap gewonnen.

Zorgt dit advies voor verbetering van samenwerking tijdens transitie?
Expert 6: Ja. Als je ze specifiek uitzoekt op de Bouwteamgedachte en ze snappen dat goed en ze kunnen goed in alle belangen denken, dan zal dat zeker werken. De mens is heel belangrijk voor de samenwerking, ze hebben heel veel invloed, omdat zij het moeten doen.

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APPENDIX O: SET-UP RECOGNITION TOOL

Appendix O consists of a set-up to recognize perspectives in practice.

Before strategies can be given on how to deal with these perspectives, a way should be find to recognize the perspectives within a team. Table 64 provides a method for recognizing who holds which perspective within the team. The distinguishing statements are distinguished for a certain perspective compared to other perspectives. These statements are thus leading for the perspectives and are therefore also used to recognize perspectives. However, not all distinguishing statements have an extreme position and are thus important. Therefore, the four absolute most distinguishing factors are taken into account as these are the most characteristic for a certain perspective.

Each team member is presented the different distinguishing statements in the form of a short survey and has to give them a score between 1 and 3, see Table 64. At the end of the survey, it is checked to which perspective the participant belongs. Based on which perspective the participant belongs to, the strategies can be applied in the project in which these participants are present.

Table 64: Set-up survey to provide to team members

Survey on perspectives (provided to team members) (1=least important, 2=neutral; 3= most important)	**1**	**2**	**3**
16. Clear defined scope of the Bouwteam			
12. Clear definition of roles before the Bouwteam starts working			
36. Development of common processes (e.g. BIM)			
19. High degree of the level of detail of the design			
53. Good working relationship			
52. Periodical validation and verification			
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation			
51. Team events, informal events and meetings			
28. Long-term orientation/sustainable relationship			
32. Win-win attitude			
20. Risk management: identify, quantify and control risks			
34. Innovation: give the contractor freedom to optimize during the process			
30. Project team leader's adaptability to changes in the project			
5. Team leader's leadership ability			
3. A continue involved team leader			
43. Separate conversations in small groups per discipline			
33. Strive for equality in behavior and duties for client and contractor			
35. Collaboration experience in the Bouwteam phase prior to transition			
39. Right people at the right places			

As Table 64 is presented and filled in by the team members, the analysis of the output should result into which perspective can be linked to the responding team member. In the output, the ranking at the 1 and 3 should be taken into account, in which a certain couple of rankings result in a certain perspective. The statement ranking that should be looked for when analyzing the output is shown in Table 65. The only point of attention is statement number 17, which is ranked only once (at the 7th position), but should be analyzed for the fifth perspective as well. In other words, if the three statements for the fifth perspective are ranked 3, then number 17 should be checked as well if this one is ranked 3 as well.

Table 65: Analysis to check to which perspective someone belongs to

Survey on perspectives (used for analysis) (1=least important, 2=neutral; 3= most important)	**1**	**2**	**3**
16. Clear defined scope of the Bouwteam			X
12. Clear definition of roles before the Bouwteam starts working			X
36. Development of common processes (e.g. BIM)	X		
19. High degree of the level of detail of the design	X		
53. Good working relationship			X
52. Periodical validation and verification			X
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation	X		
51. Team events, informal events and meetings	X		
28. Long-term orientation/sustainable relationship			X
32. Win-win attitude			X
20. Risk management: identify, quantify and control risks	X		
34. Innovation: give the contractor freedom to optimize during the process	X		
30. Project team leader's adaptability to changes in the project			X
5. Team leader's leadership ability			X
3. A continue involved team leader			X
43. Separate conversations in small groups per discipline	X		
33. Strive for equality in behavior and duties for client and contractor			X
35. Collaboration experience in the Bouwteam phase prior to transition			X
39. Right people at the right places			X
17. Early agreements about the price composition, tariffs and price determination plan with moments of sharing the cost estimation.			X