Embed trust in performance measurement of infrastructural alliance PPP-projects

Geertje van Engen
Embed trust in performance measurement of infrastructural alliance PPP-projects
A literature review and qualitative case study research

By

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This thesis is confidential and cannot be made public until July 7th, 2017
This research project was conducted as final element of the Master programme Systems Engineering, Policy Analysis and Management of Delft University of Technology.

Within this project I had the opportunity to apply knowledge I have obtained during my studies. I have enjoyed conducting this research the past six months, because of the freedom, the challenge, and the link with practice. I would not be able to conduct this research without my graduation committee.

Firstly, I would like to thank my supervisor Mark de Bruijne for his infinite help and support, not only during the execution of this research project, but also during the preparation. The conversations before and during my graduation project were always valuable and stimulated me to reflect critically on my own work. Secondly, I would like to thank my supervisors from KPMG, Mirjam Bult and Anke Vries, for giving me the opportunity to conduct my research within the KPMG Public Sector department, and for providing me with many advices based on their practical experience.

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I am looking forward to present and defend my findings during the public presentation on July 7th, 2015.

Geertje van Engen
Delft, June 2015
Executive summary

Introduction of the problem
Public-private partnerships in construction has become an interesting project delivery form (Klijn & van Twist, 2007). Due to the increased size and complexity of infrastructural construction projects, knowledge and skills from both public and private parties is required for project realization (de Bruijn, Jong, & Korsten, 1996; Flyvbjerg, Bruzelius, & Rothengatter, 2003). Two forms of public-private partnerships can be distinguished: the concession PPP and the alliance PPP. The second form, project alliancing, is, according to literature, an attractive option for delivering large, complex construction projects (Mistry & Davis, 2009). Project alliancing is characterized by connecting public and private parties, and working in equal partnership on a joint project in which they share responsibilities (Eversdijk & Korsten, 2009). However, one for the critical success factors for this PPP-form is trust.

During the rise of the PPP-projects in the last decades, several researchers investigated the application of performance measurement in PPP-projects (Liu J., Love, Smith, Regan, & Sutrisna, 2014; Kagioglou, Cooper, & Aouad, 2001). Kaplan (1990) once argued that performance measurement is a prerequisite for performance improvement. Over the years performance measurement (PM) was applied in construction projects, for example by measuring and monitoring traditional measures, such as the planning and the budget. However, it was argued by some that PM with these traditional indicators might not reflect the complexity of a PPP-project (Blanc-Brude, Goldsmith, & Valila, 2006). Therefore Hodge & Greve (2007) stated that a clear performance measurement system (PMS) for PPP-projects is lacking.

Because of the expected increase in PPP-projects in the Netherlands, it is needed that the demand for a PMS, mentioned by Hodge & Greve (2007), will be fulfilled (Government of the Netherlands, 2015). Due to the high expectations from literature regarding the alliance-PPP form, in the search for a performance measurement system for PPP-projects, this PMS should be suited for alliances as well. Furthermore, trust is identified as critical success factor for (alliance) PPP-projects (Mistry & Davis, 2009; Vrieling, Favié, Kranendonk, & Maas, 2008; Jefferies, Brewer, Rowlinson, Cheung, & Satchell, 2006), and therefore trust should be embedded in this PMS as well. However, the difficulty is that trust is an abstract concept, which might be hard to measure. Performance measurement, on the other hand, is mainly developed for measuring the more ‘hard’ and ‘traditional’ measures, such as time and budget. This arises the question if trust can be operationalized and be monitored, and if PMS can be suitable for measuring a ‘soft element’ like trust?

Proposed research: phase 1
The complexity of this research is to combine alliance projects and their critical ‘soft’ success factor trust, with performance measurement, which is experienced in measuring ‘hard’ indicators. The question is if these two – trust and PM – can be brought together. This results in the main research question:
By which means can the effects of the **critical success factor trust** on the performance of **infrastructural alliance PPP-projects** be monitored, as part of a broader **performance measurement system**?

This question is answered in three stages: firstly by means of a literature review, secondly by a Quantitative Comparative Analysis (QCA) of infrastructural alliance PPP-projects, and finally by a synthesis of information from theory and empirics. The literature review should provide a basis and the starting points for embedding trust in a PMS for alliance projects. An exploratory method like QCA – existing of semi structured interviews – is suitable for this study, because limited theory about this topic is developed and limited data is available. This phase in the research should generate the design requirements for embedding trust in PMS, namely: an operationalization of the concept of trust and functional requirements for a PMS that includes ‘soft elements’. For the QCA (the only) five Dutch infrastructural alliance PPP-projects were selected for case study research, and were investigated in two rounds. Firstly, by researching the four past and already realized projects (‘Waardse Alliantie’, ‘Bataafs Alliantie’, ‘A2 Hoogegelegen’ and ‘N201’), from which information is obtained about their past experience with trust and PM in an alliance project, and an evaluation of this experience. Secondly, by researching a currently running project: OV SAAL. A perspective from this fifth project can contribute to insights into the daily practice, usefulness, and suitability of a PMS that includes trust, from their current experience. Furthermore, this second interview round provides a more in-depth perspective on elements discussed by respondents from the four realized projects. It has to be remarked that this phase of the research does not aim at validating theoretical statements, but aims at providing a more specific interpretation of the theoretical constructs (trust and performance measurement) for the specific context of Dutch infrastructural alliance PPP-projects. Finally, the last stage of this research, the synthesis, brings the theoretical and empirical information obtained in both stages together.

**Identifying of the starting points: phase 2**

Before actual design requirements for a PMS that includes trust can be obtained, the perspectives on the central theoretical concepts of this study need to be clear. These central concepts are: infrastructural alliance PPP-projects, trust, and performance measurement. Infrastructural alliance projects as project delivery method are characterized by, on the one hand, several organizational elements, such as a joint contract, joint responsibilities, and a joint organization that shares risks, and on the other hand by acting based on principles of mutual trust, commitment, and communication (Mistry & Davis, 2009; Lahdenperä, 2009). This dichotomy should be kept in mind when analysing project alliances. In addition, alliances are mostly established for projects with a certain degree of complexity.

Trust can be seen as the expectation that things or people (e.g. in the form of an alliance partner) will not fail you, even if there are opportunities for it. Trust is the willingness to take this risk (Nooteboom, 2002). Trust can be characterized by a two-sidedness. On the one hand a trustor: an individual who trusts, and on the other hand a trustee: an organization or individual who is trustworthy. Therefore trust, and issues regarding trust, requires especially attention on interfaces between alliance partners (e.g. between the client and the alliance, and between the contractor and the alliance). Because of the vague boundaries between the trustworthiness of an organization and the trustworthiness of an individual, the so-called boundary spanning individuals can play a crucial role in establishing a trusting relationship. Furthermore, trust is dynamic and can increase and decrease over time, which requires a process approach (Laan, 2009). In addition, literature proposes several elements that should be included when trust is operationalized or measured (Klijn, Edelenbos, & Steijn, 2010; She, 2013; Wong, Cheung, Yiu, & Pang, 2008). From an analysis of these aspects, the following five elements were identified as of influence on trust, according to literature: affection, intention, organization, interaction, and compliance.

Finally, performance measurement is analysed from a broader perspective than only “the efficiency and effectiveness of actions” (Neely, Gregory, & Platts, 2005, p. 1229). PM is mainly about the satisfaction level of stakeholders and meeting
customer needs (Liu J., Love, Smith, Regan, & Sutrisna, 2014). When a PMS is developed for PPP-projects, a real-time monitoring needs to capture the dynamics of the project, the KPIs should reach beyond traditional indicators, and the PMS should take a multiple stakeholder perspective into account. Furthermore, the approach of the PMS should be process-based, from a life-cycle perspective and should focus on both organizational level as well as project level (Liu J., Love, Smith, Regan, & Sutrisna, 2014). Lastly, possible perverse effects of performance measurement should be kept in mind when developing a PMS (van Thiel & de Leeuw, 2002; de Bruijn, 2002). Strategies to prevent the occurrence of perverse effects should be included in the design.

**Generating the design requirements: phase 3**

By means of a QCA of several Dutch case studies, the design requirements for a PMS that includes trust were generated. The geographical context of these five cases is the Netherlands. The projects were executed between 1999 and today, and all five projects were characterized by a certain complexity in time, technical challenges or because of the surrounding area. Furthermore, the projects and the trust between partners in the alliances were all evaluated fairly positive. The alliance form is evaluated by a majority of the respondents as a success for the specific project. Regarding the PMSs in these projects, all projects used traditional measures (e.g. time, budget, quality), a few projects formulated additional KPIs, such as safety and the surrounding area, and only a single project actively monitored the attitude, behaviour, and collaboration.

As a result of an analysis of the experience from practice with PM in alliance projects, on the following elements should be decided: the KPIs (content and number), the parties to involve in PM, the frequency of monitoring, the way to obtain information, the type of information to obtain, the communication about the results, and the process before and during the project. According to respondents, the KPIs should at least include traditional measures, supplemented by additional indicators such as safety, collaboration, and the surrounding area. Furthermore, the number of KPIs should be limited to stay focused (e.g. maximum of 6 KPIs). Furthermore, information about soft elements (like collaboration, trust, and attitude) could be obtained by conversations based on questionnaires, for example every quarter or at moments when the project is heading towards a milestone. This monitoring should involve more people than only the key figures, for example the complete project team or people beyond the boundaries of the alliance, such as the boundary spanning people in the parent organizations. Furthermore, the PMS should include a component in which people can evaluate each other and each other’s behaviour and attitude. The outcomes of such a monitoring can be communicated publicly, with a focus on trends and extreme values, instead of averages and absolute values. In addition, goals, intentions, and roles should be discussed in an early dialogue (e.g. project start-up session). Finally, during the project the PMS should be applied in a consequent, open and transparent manner. The AMT has a crucial role in carrying out KPIs and explaining the PMS.

A reflection on trust in alliance projects by respondents results in an operationalization of the concept of trust into eleven elements, namely: people, communication, relation to parent organization, working principles, organizational, collectivity, dealing with conflicts, compliance, culture, project progress, and division of roles. These elements can contribute to the development of a trusting relationship in the alliance and between alliance partners, and can be influenced by many actions. Forty-two actions were identified, and these actions can be upfront measures that should be undertaken at the start or in an early stage of the project, or these actions can be undertaken during the project. Furthermore, according to some respondents good management can also function as monitoring of ‘soft elements’, for example when trust is related to culture, compliance, and working principles.

By a large majority of the respondents the people in and around the alliance were mentioned as crucial element. This can be influenced by upfront actions like: team selection and attention for project start-up, and by actions during the
project, such as: feedback and evaluation moments, HR-policy, and the attitude of team members. In addition, communication was mentioned as important element that influences trust. This can be influenced upfront, by establishing communication procedures and organizing counterpart communication. During the project, attention should be paid to: openness and transparency, frequent and direct communication, a proactive attitude of team members and the way of decision making. Finally, the relation with the parent organization was mentioned by a large majority of the respondents as of central importance to a trusting relationship. This can be influenced upfront by organizing mandate and commitment, and by appointing ‘ambassadors’ of the alliance. During the project the attitude of parent organizations, the attitude of team members, and arranging a relation on board level, can contribute to a trusting relationship. For the other eight elements concrete actions were formulated as well, which are presented in chapter 11.

**Developing an instrument: phase 4**

By merging the information from theory and practice, it became clear that performance measurement according to literature overlaps strongly with PM according to respondents. However, the subject is discussed on a different abstraction level. Literature provides broad and abstract fundamentals for instrument development, and empirics on the other hand, presents concrete and practical requirements for PMS. This combination can function as input for the development of an instrument.

Looking at the combination of theoretical and empirical information on the concept of trust, some differences can be observed. A strong overlap between theory and empirics can be remarked for the elements: people, communication, culture, collectivity, and compliance. A partial overlap is seen for the elements: dealing with conflicts, working principles, division of roles, organizational, and a small overlap regarding the relation to parent organization. It was remarkable that the relation with parent organizations was mentioned by a majority of the respondents, however it was not found as central theme in literature. In addition, the only element that was not found in the literature review at all, was project progress. An analysis of these overlaps and differences resulted in a distinction between the more basic elements of trust, which were mentioned both in literature and by respondents, and possible additional elements to stimulate a trusting relationship, which were only mentioned in empirics. However, regarding the relative importance of basic and additional elements, nothing can be concluded. As mentioned, the aim of the research was not to validate theory, so further research and validation is required. Furthermore, the distinction between upfront measures and actions during the project can be made as well.

With the starting points for development of a PMS for PPP-projects in mind, a process-based approach should have a central role. Firstly, because this was mentioned as a requirement from a theoretical analysis of literature on PM (Liu J., Love, Smith, Regan, & Sutrisna, 2014) and trust (Laan, 2009). Secondly, the empirical research resulted in a diverse range of answers from respondents, and it seemed that there is not one comprehensive answer to the main research question, possibly due to the complexity of the concept of trust and due to the fact that project context does matter. So, because the obtained information from theory and empirics does not provide conclusive answers regarding a specific PMS that includes trust, an outline for a process instrument is developed. This process instrument includes steps and suggestions to consider when designing a PMS, and when soft elements are included in this PMS. Furthermore, the steps provide suggestions about which basic and additional actions can be undertaken upfront, and which basic and additional measures can be implemented during the project (e.g. especially when the project is heading towards a milestone) in order to stimulate the development of a trusting relationship.
Conclusions, recommendations and reflection: phase 5

Finally, the aim of this research was to answer the central research question:

By which means can the effects of the critical success factor trust on the performance of infrastructural alliance PPP-projects be monitored, as part of a broader performance measurement system?

A process instrument (as presented in paragraph 12.3) in which eleven elements are included as operationalization of trust, could be a suitable mean to monitor the concept of trust during infrastructural alliance PPP-projects, which can be used as guidance (e.g. for project managers. As part of this process instrument, eleven elements and forty-two actions of trust were identified. The actions were distinguished between basic and additional actions, and upfront measures and actions during the project, as shown in Table 1 below.

**Table 1: Forty-two identified actions that can contribute to a trusting relationship, according to theoretical and empirical information**

<table>
<thead>
<tr>
<th>Basic actions</th>
<th>Additional actions</th>
</tr>
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<tbody>
<tr>
<td><strong>Upfront</strong></td>
<td></td>
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<tr>
<td>- Selection of the team (people)</td>
<td>- Organize counterpart communication (communication)</td>
</tr>
<tr>
<td>- Attention for project start-up (people)</td>
<td>- Appoint ambassador of the alliance (relation to parent organizations)</td>
</tr>
<tr>
<td>- Establish communication procedures (communication)</td>
<td>- Working together physically (organizational)</td>
</tr>
<tr>
<td>- Organize mandate and commitment (relation to parent organizations)</td>
<td>- Arrange a platform for help (dealing with conflicts)</td>
</tr>
<tr>
<td>- Define working principles jointly (working principles)</td>
<td>- Getting to know each other in an early stage (dealing with conflicts)</td>
</tr>
<tr>
<td>- Define process agreements (organizational)</td>
<td>- Make agreements in an early stage (compliance)</td>
</tr>
<tr>
<td>- Contractual agreements (organizational)</td>
<td>- Divide roles not too strictly (division of roles)</td>
</tr>
<tr>
<td>- Establish joint goals (collectivity)</td>
<td></td>
</tr>
<tr>
<td>- Discuss interests (collectivity)</td>
<td></td>
</tr>
<tr>
<td>- Discuss issues from the past (culture)</td>
<td></td>
</tr>
<tr>
<td>- Establish an own identity (culture)</td>
<td></td>
</tr>
<tr>
<td>- Discuss responsibilities in an early stage (division of roles)</td>
<td></td>
</tr>
<tr>
<td><strong>During project</strong></td>
<td></td>
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<tr>
<td>- Attitude of team members (people)</td>
<td>- Feedback and evaluation moments (people)</td>
</tr>
<tr>
<td>- Openness and transparency (communication)</td>
<td>- Human resource policy (people)</td>
</tr>
<tr>
<td>- Frequent and direct communication (communication)</td>
<td>- Way of decision making (communication)</td>
</tr>
<tr>
<td>- Discuss working principles (working principles)</td>
<td>- Proactive attitude of people (communication)</td>
</tr>
<tr>
<td>- Working jointly on tasks (collectivity)</td>
<td>- Arrange relation at board level (relation to parent organizations)</td>
</tr>
<tr>
<td>- Discuss conflicts (dealing with conflicts)</td>
<td>- Attitude of parent organizations (relation to parent organizations)</td>
</tr>
<tr>
<td>- Dealing with the first conflict (dealing with conflicts)</td>
<td>- Attitude of team members (relation to parent organizations)</td>
</tr>
<tr>
<td>- Consistent compliance with agreements (compliance)</td>
<td>- Organize events and sessions (organizational)</td>
</tr>
<tr>
<td>- Pay attention to and discuss culture (culture)</td>
<td>- Attitude focused on collaboration (collectivity)</td>
</tr>
<tr>
<td></td>
<td>- Sessions for goal revision and recalibration (collectivity)</td>
</tr>
<tr>
<td></td>
<td>- Substantiate decisions with argumentation (dealing with conflicts)</td>
</tr>
<tr>
<td></td>
<td>- Joint pride when achieving milestones (project progress)</td>
</tr>
<tr>
<td></td>
<td>- Make uncertainties clear (division of roles)</td>
</tr>
<tr>
<td></td>
<td>- Monitor role consistency (division of roles)</td>
</tr>
</tbody>
</table>

Furthermore, the monitoring of the concept of trust is about the interplay between good management on the one hand and the application of measurement instruments on the other hand. An early recognition by the management (e.g. with help of a measurement instrument) of possible future risks on the relational level is important in developing and maintaining a trusting relationship. It could be expected that not every manager is able to recognize and detect all small and developing conflicts, and therefore measurement instruments can provide support to the management. In this context, a measurement instrument can function as an ‘opener’ for conversations about trust, and about possible developing issues regarding trust. Therefore, the result of a measurement instrument should not be seen as final...
outcome, but as starting point for conversations and further improvements. More important than organizing the right measurement instrument, is having the right conversation with the right people about the outcomes. In addition, these ‘right people’ could include more people than only the alliance members and should focus on boundary spanning persons beyond the borders of the alliance as well (e.g. in parent organizations). Furthermore, when measurement instruments for trust are applied, special attention should be paid to individual and extreme values, instead of generalized group averages. Finally, in order to secure the quality of the process of monitoring trust, several upfront measures were identified, such as the selection of the team, organizing mandate, attention for the start-up and discussing interests, goals, intentions, communication procedures, working principles, and roles (elaborated on in chapter 12). In a broader context of trust in alliance projects, the following lessons can be learned from this research:

1. The relation with the parent organizations and the role of boundary spanning people is crucial to a trusting relationship in alliance PPP-projects.
2. Influencing a trusting relationship in alliance PPP-projects is a combination between organizing upfront and steering by good management, possibly with support from performance instruments.

As a result from this study, some recommendations were formulated. Firstly, it is recommended to gain practical experience with the application of the process instrument, and to further test and validate this process instrument. Secondly, it is recommended to implement some trust-stimulating actions in future alliance PPP-projects, such as time and attention for the project start, the involvement of boundary spanning persons, and the role of management with support of a monitoring instrument. Thirdly, some suggestions regarding further research are presented, in order to further improve and validate the process instrument, which are discussed elaborate in chapter 14.

When reflecting on this research, the exploratory character has to be kept in mind when interpreting the outcomes of the study (e.g. the process instrument, the operationalization of the concept of trust, and the concluding lessons). The study was focused on gaining new insights with the limited available data, limited theoretical basis, and within a very narrow scope (Dutch infrastructural alliance PPP-projects). Therefore, the findings from this research require further validation and testing. Gaining practical experience with the use of the process instrument can lead to valuable insights and improvements to the instrument. Additionally, given the narrow scope of the research no conclusive statements can be made about the application of these conclusions for other (PPP-) projects, other sectors and other countries. Therefore, further research is required.

Finally, as a reflection on this research, it was questioned why it is so hard to find a comprehensive instrument to monitor trust. Although trust is a critical success factor for PPP-projects, the concept of trust is very complex and therefore hard to capture in one comprehensive instrument. Trust can have different functions, can be perceived in many ways, is dynamic, can influence interfaces between stakeholders, and is definitely not easy to measure. Although various organizations have tried to measure trust, the lesson from this study is that trust should not be measured in a rigid way. Furthermore, it was observed that each project is different and that these difference should be taken into account. Therefore, trust could be monitored best by means of a flexible process, in which an ‘all-round’ instrument can function as guidance for the management, instead of as one strict manual.
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<tr>
<td>AMT</td>
<td>Alliance Management Team</td>
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<td>BSC</td>
<td>Balanced Score Card</td>
</tr>
<tr>
<td>BVP</td>
<td>Best Value Procurement</td>
</tr>
<tr>
<td>DBFM(O)</td>
<td>Design, Build, Finance, Maintain (Operate)</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resource</td>
</tr>
<tr>
<td>IF</td>
<td>Injury Frequency</td>
</tr>
<tr>
<td>KPIs</td>
<td>Key Performance Indicators</td>
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<tr>
<td>PFU</td>
<td>Project Follow-up</td>
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<td>PM</td>
<td>Performance Measurement</td>
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<td>PMS</td>
<td>Performance Measurement System</td>
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<td>PoBr</td>
<td>Project organization Betuweroute</td>
</tr>
<tr>
<td>PSU</td>
<td>Project Start-up</td>
</tr>
<tr>
<td>QCA</td>
<td>Qualitative Comparative Analysis</td>
</tr>
<tr>
<td>RWS</td>
<td>Rijkswaterstaat</td>
</tr>
<tr>
<td>SAV</td>
<td>Samenwerking in Alliantieachtig Verband (Collaboration in the form of an Alliance)</td>
</tr>
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Phase 1

Setting up the research design

Preliminary research
Infrastructural construction projects are getting larger and more complex. This requires knowledge and skills from both public as well as private parties. A collaboration between government and market arises the question: how can the interaction between these parties be organized, in order to realize such a complex construction project? Public-private partnerships can be seen as an answer to this question, because it is an instrument to organize interaction. This chapter will present the types of public private partnership forms that exists, and will discuss challenges and opportunities with which these types of projects deal.

1.1 Infrastructural alliance PPP projects

Both in policy discussions as well as in practice the Dutch government attention for public-private partnerships (PPP) has increased the last decades (Eversdijk, 2013; Klijn & van Twist, 2007). A PPP-project can be characterized as a project with:

- One or more public and one or more private parties,
- who collaborate in order to realize a mutually agreed objective in an organizational relation,
- with a contribution of resources, risk acceptance and revenue sharing (Bult-Spiering, Blanken, & Dewulf, 2005).

Some well-known examples of Dutch PPP-projects are: HSL-Zuid, A2 Hoogelegen, N31 and the new building of the Ministry of Finance (Klijn & van Twist, 2007). Apart from these practical experiences with PPP-projects, the Dutch government also integrated PPP in their policy. When major new government buildings and infrastructure projects are being planned, consideration is first given to whether PPP would produce better results than traditional procurement (Government of the Netherlands, 2015).

One of the reasons for this increase in PPP-projects is the fact that projects are getting larger and more complex (de Bruijn, Jong, & Korsten, 1996; Flyvbjerg, Bruzelius, & Rothengatter, 2003). For these kinds of complex projects the classic governmental policy-making and execution has its limitations (de Bruijn, 2002). It is assumed that PPP-projects should lead to higher efficiencies, better plans and quicker decision-making (Klijn, Koppenjan, & van Ham, 2002). Therefore it is expected that in the future PPP forms will be used structurally in new large engineering projects.

According to van Ham and Koppenjan (2002) two types of PPP-projects can be distinguished, based on the type of collaboration between parties: the concession and alliance model (Koppenjan & Ham, 2002). A concession-PPP is characterized by a more hierarchical contractor-client relation, in which the public party often has the control and the private party is responsible for the execution and implementation (Eversdijk, 2009). In a concession-PPP the collaboration between public and private parties is less extensive, responsibilities are divided and process management is hardly present.
An alliance-PPP is more focused on connecting public and private parties, interactive process management and bringing parties together in an early stage (Eversdijk & Korsten, 2008; Eversdijk, 2013). Alliance PPP-projects are characterized by a more equal partnership, for which often a joint venture is established in order to reach common objectives with shared responsibilities (Eversdijk, 2009). This complex relation between interdependent actors in alliance PPP-projects has characteristics of a network structure (Klijn & van Twist, 2007).

Although the concession model is in practice the commonly used form in infrastructural projects in The Netherlands, the alliance model is favoured in literature and often used in spatial development projects (Eversdijk & Korsten, 2009; Eversdijk, 2013). Because of the high expectations from literature for alliance PPP-projects and because of the limited experience with this contract form in Dutch infrastructural projects, this research will focus on the alliance form.

1.2 Trust in PPP projects

“Trust is a mean that can help to realize a project within time and within budget. When trust is lacking, files can be in the pipeline for a long time” (Interview Round 1, 2015).

According to Mistry (2009), these project alliances have become an attractive option for delivering large, complex infrastructure construction projects. However, for these forms of projects the development of the relationship between stakeholders is central to the performance of the project. One of the most critical success factors of alliance PPP-projects is trust (Mistry & Davis, 2009). Trust between the involved parties in a project can strengthen the cooperation (Ngowi & Pienaar, 2005).

There are several definitions of trust. According to Nooteboom (2002, p.45) trust is the expectation that people or things do not let us down, even when this is possible. Trust is the willingness to take this risk (Nooteboom, 2002, p. 45). In most of the definitions trust has the following main attributes (Ngowi & Pienaar, 2005):

- It inherently involves uncertainty about the future.
- It implies vulnerability, i.e. the risk of losing something of value. The magnitude of the potential loss from untrustworthy behaviour is typically much greater than the anticipated gains from trustworthy behaviour.
- It is placed in another whose behaviour is not under one’s control, so each partner duly exercises partial influence over alliance outcomes

Given the fact that trust can be seen as one of the most important factors that leads to success of alliance projects (Mistry & Davis, 2009; Klijn, Edelenbos, & Steijn, 2010; Ngowi & Pienaar, 2005; Che Ibrahim, Constello, & Wilkinson, 2013), trust will be a central factor in this research.

1.3 Performance measurement in PPP-projects

Furthermore, in order to realize these large, complex construction projects, performance measurement is commonly applied as tool to increase success. According to Kaplan (1990), performance measurement is even a prerequisite of performance improvement. Some even state that performance improvement by using performance measurement is critical to business success, particularly on project level (Gunasekaran & Kobu, 2007; Liu J., Love, Smith, Regan, & Sutrisna, 2014).

The performance of infrastructural projects is traditionally measured in terms of time, costs and quality (Crawford, 2004). However, as stated in the previous paragraph, the factor trust can have a large influence on project success of alliance PPP-projects. This raises the question if measuring only traditional factors in alliance projects, might not lead to oversimplification, because these measures might not be able to reflect the complexity of an alliance PPP-project.
(Blanc-Brude, Goldsmith, & Valila, 2006). Therefore, many researchers have been looking into the topic of performance measurement of PPP-projects during the last decades (Liu J., Love, Smith, Regan, & Sutrisna, 2014; Kagioglou, Cooper, & Aouad, 2001; Yuan, Zeng, Skibniewski, & Li, 2009), but a clear PPP-evaluation or performance measurement tool is still lacking (Hodge & Greve, 2007). This in turn makes it hard to determine whether a PPP-project is a success or a failure, which factors had a significant contribution to the performance and how these influential factors can be steered and monitored. The complexity of measuring and monitoring project success of alliance PPP-projects is part of this study.

In addition, it has to be taken into account that performance measurement is no guarantee for success. On the one hand, performance measurement can be an incentive for innovation, production and adequate accountability, but on the other hand it can create a large number of perverse effects (de Bruijn, 2002). There are many examples in which performance management has led to strategic behaviour, to situations where innovation was blocked or to more internal bureaucracy. For example, in order to steer towards a good performance on paper, processes can be adjusted strategically, so that the ‘numbers’ might seem better, but in fact nothing has changed. Furthermore, performance measurement rewards when organizations produce what is measured, and therefore reproduce what already exists. Innovation, on the other hand, means taking risks and accepting that organizational output or performance might be less at a certain moment in time (de Bruijn, 2002).

These possible perverse effects make it even more difficult to find a suitable way to measure the outcome of performance of organizations, especially organizations with public goals and outcomes, which already is very complex given the fact that these outcomes simply depend on too many factors (de Bruijn, 2002). Therefore this complexity in measuring performance should be taken into account in this research.

1.4 Trust embedded in performance measurement

As mentioned, the Dutch government policy can lead to an increase in PPP-projects the coming years (Government of the Netherlands, 2015). However, there is still a demand for a performance measurement instrument for these projects, as mentioned by Hodge & Greve (2007). Furthermore, given the high expectations from literature for the project alliance form – of which a critical success factor is trust –, this should be taken into account when developing a PMS for PPP-projects. In the search for such a performance measurement system, trust should be embedded and the PMS should be suited for project alliances. However, embedding trust in a PMS leads to a complexity, because on the one hand, trust is an abstract and may be even intangible concept that might be hard to measure. Within performance measurement, on the other hand, there is mainly experience with measuring ‘hard’ and traditional factors (e.g. time and budget).

Therefore the challenge of this research is to seek for ways to bring the ‘hard’ performance measurement and the ‘soft’ factor trust more closely together in a mean to monitor trust as part of a broader PMS. Can soft elements be monitored with a performance measurement system, and can the abstract factor trust be operationalized and be made tangible, as part of such a monitoring system?

In order to make this complexity clear, Figure 1 below present a visualization of the described relation between trust, alliance projects and performance measurement.
Figure 1: Visualization of the challenge of this research project
Alliance PPP-projects deal with challenges and opportunities, which were discussed briefly in the previous chapter. This chapter will elaborate on this introduction and will present the central problem in this research. Furthermore, the chapter will provide insight in the proposed method to address the problem, and will present the structure of this research.

2.1 Research problem, objective and relevance

2.1.1 Problem
Taking the expected future increase of PPP-projects in The Netherlands and the positive effect of performance measurement on project success into account, a suitable instrument to monitor and measure the performance of infrastructural alliance PPP-projects should be developed (Liu J., Love, Smith, Regan, & Sutrisna, 2014; Liu J., Love, Davis, Smith, & Regan, 2013; Yuan, Zeng, Skibniewski, & Li, 2009). Given the high expectations for the alliance model in literature and limited experience with this model in infrastructural projects, such an instrument should be suitable for the application in alliance-PPP projects. Moreover, the tool should also be able to measure and monitor the performance of a project, so that it can be applied directly on the many expected PPP-projects, in line with the Dutch government policy. In addition, given the influence of the factor trust on project success of alliance PPP-projects, it would be valuable to develop a system that is able to monitor this factor.

So, due to the high expectations from literature for alliance PPP-projects, the limited experience in infrastructure with alliances and the limited knowledge on measuring trust, it is interesting to focus specifically on monitoring the factor trust as part of a PMS for infrastructural alliance PPP-projects (Eversdijk, 2013; Koppenjan & Ham, 2002). Current performance measurement systems (PMSs), however, are mainly developed for measuring traditional factors such as time and costs, instead of in measuring a ‘soft factor’ as trust (Crawford & Pollack, Hard and soft projects: a framework for analysis, 2004). Furthermore, the factor trust might not be easy to capture in a monitoring system, because of the many diverse perspectives on this concept, and due to the high level of abstraction. One of the challenges of this research is to operationalize and concretize the concept of trust.

Given this analysis, the central problem in this research is:

The fact that there is no instrument developed that is able to monitor the critical success factor trust and its effect on the success of alliance PPP-projects, as part of a broader performance measurement system for these kinds of projects.
2.1.2 Objective and relevance
This central problem results in a main research objective, namely: the development of an instrument that is able to monitor the critical success factor trust, as part of a broader performance measurement system for alliance PPP-projects. Such an instrument should take the characteristics of alliance PPP-projects, the operationalization of the abstract concept of trust, and possible perverse effects of performance measurement into account. Furthermore, the instrument should be suitable for future application in alliance PPP-projects, which requires a certain practical usability.

From a scientific perspective the research is relevant, because it elaborates on questions from many previous research studies, such as Liu (2014) and Hodge & Greve (2007). Currently a performance measurement tool for alliance PPP-projects is lacking, and the experience with measuring a ‘soft factor’ as trust is limited. There is, in literature, not yet a clear and unambiguous answer to the problem presented earlier in this paragraph. However, already in 1990 Robert Kaplan stated that a performance measurement system is needed to improve performance. Therefore the development of a performance measurement instrument for alliance PPP-projects has a scientific relevance. Due to the high expectations from literature for alliance PPP-projects, the limited experience in infrastructure with alliances and the limited knowledge on measuring trust, it is interesting to focus specifically on monitoring the factor trust as part of a PMS for infrastructural alliance PPP-projects (Eversdijk, 2013; Koppenjan & Ham, 2002)

From a more societal perspective a performance measurement instrument can be used in practice, because an increase in PPP-projects is expected, due to the policy goals of the Dutch government regarding this form of project delivery (Government of the Netherlands, 2015). An instrument can help both governmental organisations who have a ‘client role’ in a project (such as Rijkswaterstaat or ProRail) as well as contractors (such as Heijmans, Boskalis, VolkerWessels and others) to improve the project performance (Kaplan, 1990). Taking this practical relevance into account, and the ambition to execute the expected future large and complex projects in a successful manner, it might be more interesting to focus on the development of a monitoring instrument or upfront tool, instead of an evaluation instrument. A monitoring instrument is able to directly steer the performance of projects, and an upfront tool can influence the success already in an early stage of a project. An evaluation instrument, which can be used only at the end of projects, might be more suited for improvements on the very long run. Finally, for KPMG Public Sector a performance measurement instrument can on the one hand assist them to support current or new clients in these kinds of project trajectories and processes. On the other hand a study into this topic can contribute to the development of the broader vision of KPMG on PPP.

2.2 Research questions

Given the research objective stated in the previous chapter, the main research question for the proposed research project is:

By which means can the effects of the critical success factor trust on the performance of infrastructural alliance PPP-projects be monitored, as part of a broader performance measurement system?

Due to the complexity of the question, this cannot be answered directly. Therefore, the next paragraph will present the sub questions that lead to an answer on the main research question.
The following sub questions are formulated, in order to answer the main research question.

1. What are infrastructural alliance PPP-projects, how are these projects defined, what are their characteristics and critical success factors?

2. How can trust in a project-context be defined, what is the role of trust in project success, and how can trust be operationalized?

3. What is performance measurement and monitoring, what are strengths and weaknesses of performance measurement, how can be dealt with these weaknesses, and how can PM be applied in infrastructural alliance PPP-projects?

4. What are, based on practical experience, functional requirements for a performance measurement system suited for alliance PPP-projects?

5. By which means can the critical success factor trust be measured and monitored, and included in a performance measurement system, which is suited for alliance PPP-projects?

6. In which way, based on literature and empirical research, can findings from this study be translated to a performance measurement instrument, which includes the factor trust and is suited for infrastructural alliance PPP-projects?

2.3 Research scope

Although the research questions provide guidance for the study, this paragraph will shortly discuss some additional remarks regarding the scope of the study. Firstly, this research will concentrate only on Dutch infrastructural alliance PPP-projects. Reasons for this focus are that, as mentioned in paragraph 1.1, the Dutch government included public-private partnerships for infrastructural construction projects in their policy goals. Therefore it is expected that the number of PPP-projects in the Netherlands will increase the coming years. Furthermore, as discussed earlier, the experience with the alliance form is especially limited in the Netherlands. Finally, given the practical limiting conditions of this study in time and budget, it will be more feasible to obtain information via people involved in Dutch projects.

Besides this scope restriction, it has to be remarked once more that the focus of this research is on the factor trust, in the broader perspective of a performance measurement system. No complete new performance measurement system will be developed, but the research will provide starting points and possibly a rough sketch for a PMS, with a concretization of the factor trust. This means that further validation of the research and the concept instrument is required.

Although many parties (e.g. local residents, road and rail users, municipalities etc.) are indirectly linked to an alliance project, this research only includes the perspective of people directly involved in an infrastructural alliance project, namely the public and private parties. The reason is that especially a trusting relation between these project partners in the alliance (the public and private party) is mentioned in literature as of influence on success (Ngowi & Pienaar, 2005). However, the perspective of independent researchers who investigated this topic could also be valuable for this research. Therefore their perspective is included in the research scope as well.

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1 “When major new government buildings and infrastructure projects are being planned, consideration is first given to whether PPP would produce better results than traditional procurement” (Government of the Netherlands, 2015).
2.4 Methodology

In order to work towards an instrument for monitoring trust during an alliance PPP-project, this paragraph presents a proposed methodology to answer the central research question and the related sub-questions. This proposed method exists of five phases. A visualization of these phases and its content, is shown in Figure 2 below. The following sub-paragraph will shortly discuss each of these research stages. Finally, some phases and elements of the proposed method will require some extra explanation.

2.4.1 Research outline

The research exists of five stages. These stages, including the method, outcomes and related chapter, are summarised and visualised in Figure 2. In support of the figure, the phases will be discussed shortly in this paragraph.

Figure 2: Research design diagram
Phase 1 functions as introduction of the central topics and the problem. This provides the reader a certain basic background into the subjects. Furthermore, the phase presents the proposed research method, which results in a research design. This research design functions as guidance for the rest of this study, and is therefore input for all the other stages in the research. The information for this introduction and research proposal is obtained by a literature study. The outcomes are presented in chapter 1 and 2.

Phase 2 will form the theoretical basis for this research, and answers sub questions 1, 2 and 3. In this phase an in-depth literature review is conducted on three main topics: infrastructural alliance PPP-projects and its characteristics, the role of the success factor trust in these projects, and performance measurement and monitoring of PPP-projects. This review should lead to input for the formulation of interview questions for interview round 1 (phase 3). Furthermore, this theoretical basis can result in first principles and requirements for the development of a PMS that includes the factor trust. In order to explain the relation between theory and practice further, Figure 3 provides an overview. In this figure it can be seen that the literature review functions as input for the interviews (topic list) as well as for the final synthesis to develop an instrument. The topic list functions as basis for the first interview round (line 1 in Figure 3), and the conclusions from interview round 1 will form the basis for the topic list of interview round 2 (line 2 in Figure 3). Finally, the conclusions from both interview rounds will function as input for the synthesis, in order to come to conclusions and to the development of an instrument.

Since there is a rough basis for the development of an instrument presented in literature and these findings from theory can function as input for interviews, it is chosen to first conduct a literature review and then a case study research, instead of vice versa. By using this sequence, the information from theory can help as ‘topic list’ or ‘interview protocol’ in the interviews.

Phase 3 will answer sub questions 4 and 5. In this stage the main goal is to involve experience from practice in this study. This should lead to a list of requirements for a performance measurement instrument, and an operationalization of the factor trust and how this factor can be influenced. These outcomes are presented in chapter 10 and 11. The aim of this phase is not to validate information and statements from literature, but to provide a more specific interpretation of theoretical constructs (as trust and performance measurement), for the specific context of Dutch infrastructural alliance PPP project.

The used method in this stage is a Qualitative Comparative Analysis (QCA) (Ragin, 1987; Verweij & Gerrits, 2012). On this method will be elaborated in paragraph 2.4.3. In this phase two perspectives are chosen to obtain information, namely:

---

**Figure 3: Explanation of information from literature and interviews**

---

Challenge the future
- A perspective from previous experience: the used PMS and an evaluation of these systems in previous projects, and providing a rough framework for trust in several previous (and realized) alliance projects. Sketching a rough framework, based on stories from practice. This is interview round 1.

- A perspective from current experience: a more in-depth perspective, based on the rough framework from round 1 (which is input for the interview protocol of round 2). This perspective is based on a currently executed project, which can reflect on the usability and daily practice of a possible instrument. This is interview round 2.

The first perspective is used to learn from lessons from the past, and to provide a broader perspective on trust and PM in several alliance projects. However, in order to come to the development of an instrument, a more practical, in-depth and current perspective on the topics might be valuable. The first perspective seeks for a rough framework regarding the content of an instrument, and the second perspective will elaborate on this frame and provides furthermore insight into the form of a PMS.

Phase 4 of this study will bring the obtained information from theory and practice together, and will work towards an instrument to embed trust in performance measurement of alliance PPP-projects. Therefore, the input for this stage of the research are both phase 2 as well as phase 3. The method used in research stage 4 is a synthesis of the obtained information, and will presented in chapter 12 of the report. The presented instrument to monitor trust is a concept instrument, which will need further testing and validation, because it is developed by means of an exploratory study and is based on a small amount of cases.

Phase 5 will finally present the conclusions and recommendations of this study in chapter 13 and 14. Furthermore, a critical reflection on the research is provided in chapter 15. The instrument will have its weaknesses and will not be applicable for every PPP-project. By evaluating the complete design process, a final evaluation and reflection can be carried out. Therefore, recommendations for improvement of the instrument and further research will be discussed in this phase.

Finally, regarding the structure of the report, it has to be remarked that there are concluding remarks or paragraphs in the chapters. For the chapters in phase 2 (chapter 3 up to and including chapter 7), there are figures presented in concluding paragraphs. For the chapters in phase 3, 4 and 5, grey boxes with concluding remarks (or ‘recap’ in the reflection) are presented at the end of each paragraph.

2.4.2 Literature research methodology
In the literature review of phase 2, three topics will be discussed: alliance PPP-projects and its characteristics, the role of trust in these projects, and performance measurement and monitoring of PPP-projects.

Several studies have already been conducted in these three fields. Table 2 below provides an overview of the main researchers and their perspectives. Information from these studies was used in already in chapter 1 and 2 of this research, and will also be used in the literature review of phase 2.

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Perspective and contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liu, J. et al</td>
<td>2014</td>
<td>Theoretical base for the development of a PPP performance measurement tool</td>
</tr>
<tr>
<td>Eversdijk, A.W.W.</td>
<td>2013</td>
<td>Definition of PPP. Alliance and concession PPP. Examples of Dutch PPP-projects</td>
</tr>
<tr>
<td>Klijn, E.H. et al</td>
<td>2010</td>
<td>An operationalization of the concept of trust</td>
</tr>
<tr>
<td>Laan, A.</td>
<td>2009</td>
<td>A perspective on trust in construction projects (case: infrastructural alliance)</td>
</tr>
<tr>
<td>Klijn, E.H. et al</td>
<td>2007</td>
<td>Definition and two types of PPP. Examples of Dutch PPP-projects</td>
</tr>
<tr>
<td>Mistry, D.</td>
<td>2009</td>
<td>Trust as critical success factor of alliance PPP-projects</td>
</tr>
<tr>
<td>Ngowi, A.B. et al</td>
<td>2005</td>
<td>Importance of trust for alliances and its definition and perspectives</td>
</tr>
</tbody>
</table>
These studies are used in this phase as a starting point for the study. References from these research studies were also used to obtain further information on certain topics. Furthermore, other sources were found by using databases (e.g. Google Scholar and the TU Delft repository). In these databases the following key words, among others, were used in different combinations: alliance project, public private partnership (PPP), trust, construction projects, infrastructural projects, success factor, alliancing, partnering, and performance measurement. Firstly, a rough scan through the literature was conducted. In a excel datasheet, the related literature was categorized in three topics: alliance PPP-projects, performance measurement (and perverse effects), and trust. Furthermore, the publications were shortly described, for example by means of keywords and the central problem the article addresses. After this first overview, the articles were analysed more in-depth. Chapter 3 up and to 7 will present how this obtained information is used.

2.4.3 Qualitative research methodology

As mentioned in the previous paragraph, the proposed research in phase 3 exists of a Qualitative Comparative Analysis of infrastructural alliance PPP-cases. A QCA is a ‘mix’ between qualitative case study research and the more quantitative ‘variable oriented’ research. QCA is, among others, suited for the development of new theoretical statements (Verweij & Gerrits, 2012). A qualitative comparative analysis is suited for this research, because in order to develop a generic instrument that is useful for a group of projects (‘Dutch infrastructural alliance PPP-projects’), a comparison between a group of projects has to be made. The qualitative approach ensures the preservation of the complexity of these projects (Verweij & Gerrits, 2012). Furthermore, QCA is a suitable method for topics on which limited theory is developed and limited data on practical experience is available, which is applicable to this research: only 4 infrastructural projects have been executed as alliance PPP-project in the Netherlands. Therefore QCA is suited for the development of a performance measurement instrument, based on theory and practice, which includes certain variables (e.g. performance measurement, trust) in a structured manner.

In this proposed research is chosen to focus specifically on infrastructural alliance PPP-projects, for the following three reasons:

- The high expectations from literature for alliance PPP-projects
- The limited experience with alliance PPP-projects in Dutch infrastructure
- The ambitious policy goals of governmental organisations (e.g. Rijkswaterstaat and ProRail) regarding PPP

Given this focus there is only a small variety of cases, due to the limited experience with infrastructural alliance PPP-projects. Table 3 below presents the cases that will be used in this research. This selection is based on previous research into Dutch PPP-projects (Rahat, 2014).

<table>
<thead>
<tr>
<th>Case</th>
<th>Type</th>
<th>Period</th>
<th>Alliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betuweroute Sliedrecht-Gorinchem</td>
<td>Rail</td>
<td>‘99 – ‘03</td>
<td>Waardse Alliantie</td>
</tr>
<tr>
<td>Onderbouw Houten 4-sporig</td>
<td>Rail</td>
<td>‘07 – ‘10</td>
<td>Bataafse Alliantie</td>
</tr>
<tr>
<td>A2 Hooggelegen</td>
<td>Road</td>
<td>‘07 – ‘11</td>
<td>RWS, Trajectum Novum &amp; Municipality of Utrecht</td>
</tr>
<tr>
<td>N201</td>
<td>Road</td>
<td>‘07 – ‘12</td>
<td>Alliantie N201</td>
</tr>
<tr>
<td>OV-SAAL</td>
<td>Rail</td>
<td>‘10 – ‘16</td>
<td>Alliantie Amstelspoor &amp; Alliantie WALTZ</td>
</tr>
</tbody>
</table>

According to the research of Rahat (2014) these five PPP-projects are the only five infrastructural alliance PPP-projects in the Netherlands. The main characteristic of the projects is the formation of a project alliance, which exists of both private as well as public parties. In other PPP-projects there is often worked with a consortium or partnership, which only exists of private parties. For these projects a public party functions as client.
The data from these cases will be gained by semi-structured interviews with the involved parties. This is a suitable method for a QCA (Rubin & Rubin, 2005; Flick, 2006). From each of the cases, it will be valuable to speak to, for example: the alliance manager, the performance manager or the person in charge of project control, the project manager or director of the public party and project manager or director of the private parties. The number of interviews will be approximately 25. The case study approach and preparation of the interviews can be made with help of the literature, such as: (Baarda & de Goede, 2007; Yin, 1994). As shown in Table 3, the four cases that will be used in interview round 1 of phase 3 are all finished (or in the maintaining stage). Therefore these cases are suited for data collection, because it is possible to evaluate the used performance measurement system in these projects. The fifth case, OV SAAL, is a currently executed project, and therefore more suited to reflect on daily practice and usability of a PMS. The OV SAAL case will be used in interview round 2 of phase 3.

Given the fact that several case studies are used and provide information on more than one indicator, the method can be seen as an embedded case study (Yin, 1994). In the first interview round, especially the indicators trust and performance measurement will be discussed for each of the four case studies. If possible, the topic monitoring trust can be discussed as third indicator. For the OV SAAL case the subject will be more focused on monitoring trust, and the other two indicators (trust and performance measurement) will only be discussed shortly.

Furthermore, some valuable advices and input for the semi-structured interviews is presented by several researchers, namely (van Thiel, 2007):

- Flexibility during the interviews is very important, because exploratory research is about what the respondent finds most important (Bryman, 2004). Therefore, open and non-suggestive questions can be used.
- The following stages in an interview can be distinguished (Rubin & Rubin, 2005):
  1. Introduction of the interviewer, the topic and the interviewee
  2. Asking easy questions, showing empathy
  3. Asking the tough questions
  4. Toning down the emotional level and encouraging good feeling of the interviewees for their assistance and participation in the research
  5. Closing while maintaining contact for possible future follow-up questions
- Based on the literature, a topic list or interview protocol can be provided, in order to present topics to the respondent that seem to be important according to literature
  - Present these topics as points for discussion in an open and non-suggestive manner, so that the respondent can react freely to this topic (van Thiel, 2007)
When the information from the interviews is obtained, the interviews have to be processed in a structured manner. A description of this process is presented in appendix A.2, A.3, and A.4.

The data that should be gained by these case interviews can be seen as the most important possible drawback for this project that can affect the outcome of the research. At first, companies, public organisations and experts should be willing to share their information. When they can or will not provide this, it can limit the quality of the research. Secondly, the information gained by interviews with a selection of people will possibly be subjective, which as well can lead to a lower quality study. In addition, the limited time and busy schedules of the interviewees can cause delays of the project.

Finally, it has to be remarked that the function of these case studies and interviews is not to validate information and statements from literature. The research is exploratory, and aims at providing a more specific interpretation of theoretical constructs (as trust and performance measurement), for the specific context of Dutch infrastructural alliance PPP project.
Phase 2

Identify the starting points

Literature review
Infrastructural alliance PPP projects

It is remarkable that there is so limited experience with alliance PPP project in the Netherlands, since this project delivery method is favoured in literature. Given these high expectations, but limited practical experience this chapter will zoom in on infrastructural alliance projects, their characteristics, success factors and the perceptions on these types of projects. The central question in the chapter will be:

“What are infrastructural alliance PPP-projects, how are these projects defined, what are their characteristics and critical success factors?”

3.1 Definition of infrastructural alliance PPP

Many authors have defined alliance PPP projects in the last years (Eversdijk & Korsten, 2008; Klijn & van Twist, 2007; Plantinga & Dorée, 2013; Lahdenperä, 2009). There are several overlapping elements in each of these definitions, such as a joint contract, pain-gain sharing, public and private parties, cooperation and the importance of soft skills. Additionally, alliancing can be seen as a dynamic concept, which has developed over time due to interfaces with other project delivery forms (Lahdenperä, 2012).

Given these differences in definitions and the dynamics of the concept, it is needed to establish a working definition for this research. The definition of Lahdenperä (2009) includes many aspects that are mentioned by other authors, namely:

“Project alliancing is a project delivery method based on a joint contract between the key actors to a project whereby the parties assume joint responsibility for the design and construction of the project to be implemented through a joint organization, and where the actors share both positive and negative risks related to the project and observe the principles of information accessibility in pursuing close cooperation.”

At first, this research focused on alliancing as a project delivery method, instead of a strategic alliance. Secondly, a main component of an alliance is working jointly. The definition Lahdenperä includes many of these joint elements, such as a joint contract, shared responsibilities and jointly addressing positive and negative risks.

Although this definition focusses on some crucial factual and organizational factors of alliance PPP projects, the definition emphasizes to a lesser extent on the soft elements of these projects. Mistry (2009) provides a description that includes these components.

“Unlike traditional (transactional) types of procurement where the focus is on maximizing individual outcomes, alliances work on the principles of mutual trust, commitment and communication to reduce conflict and enhance productivity and overall performance” (Mistry & Davis, 2009; Lambe, Robert, & et al, 2000; Lee & Cavusgil, 2006)
The combination of the definition of Lahdenperä (2009) and the description of Mistry (2009) provides a perspective on alliance projects that covers both the factual organizational aspects as well as the soft characteristics, which is in line with the perspective of this study.

3.2 Alliance PPP explained

In addition to the definition stated in the previous paragraph and due to the limited experience with alliance PPP in the Netherlands, the form of an alliance is not well-known and needs some explanation.

In the history of Dutch infrastructure projects the first alliance was part of the Betuweroute and is called the ‘Waardse Alliantie’. This project started 15 years ago and meanwhile only 4 projects have been executed in an alliance form and the fifth is currently carried out. Not all the five projects were tendered as an alliance directly. A more used model was a regular Design & Construct (D&C) contract with an option for forming an alliance. However, after the alliance was formed, the organizational structure differs from traditional arrangements. Figure 6 provides a visualization of the main difference between the structures, as explained in (Interview Round 1, 2015).

![Figure 6: Difference between an alliance and a traditional arrangement (Interview Round 1, 2015)](image)

The figure above shows the interfaces between partners in different contract arrangements. The traditional arrangement is characterized by one interface between the client and the contractor. In these traditional contracts tension on this interface between client and contractor is not uncommon, the interactions in these relations can be conflict-oriented (Laan, 2009). With the addition of an alliance organization in the arrangement, the structure attempts to transform this tensioned interface into two less problematic interfaces. The assumption is that, by establishing an alliance, a shared domain is created. The greater this shared domain is, the fewer conflicts of interests may be expected (Plantinga & Dorée, 2013, p. 794). The larger the alliance organization, the greater the chance is that a problem falls within the responsibility of the shared domain (Interview Round 1, 2015). However, on the other hand it can be argued that instead of one interface, or ‘barrier’ between contractor and client, two barriers are established. Hence, an alliance might not be able to eliminate all friction between partners (Interview Round 1, 2015).

Since it is argued by Laan (2009) and Nooteboom (2002) that trust involves a subject (someone who trusts) and an object (someone trusted), it can be argued that trust and possible issues with less trust exist mainly on the interfaces between parties presented in Figure 6 (Laan, 2009, p. 25; Nooteboom, 2002; Interview Round 1, 2015). This topic will be discussed more elaborate in paragraph 4.2.

3.3 Characteristics of infrastructural alliance PPP

Not every project is suited to be carried out in the form of an alliance. The construction of a roundabout at the street of a small village might not outweigh the effort of establishing a new alliance-organization. However, given its complexity, rebuilding an important infrastructural node in the middle of the Netherlands might do. Klijn and van Twist (2007) discuss in their article the key differences between concession and alliance PPP projects, these are shown in Table 4.
The characteristics mentioned in Table 4 are in line with the definition of alliance PPP, discussed in the previous paragraph. The key components are joint decision-making based on connected goals, joint problem solving and finding solutions together, in close cooperation and by working according to process management principles.

**Table 4**: Characteristics of alliance PPP arrangements according to Klijn & van Twist (2007)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Alliance PPP arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of relation</td>
<td>Joint decision-making (search for connections)</td>
</tr>
<tr>
<td>Type of problem and specification of solutions</td>
<td>Public and private parties both involved in joint process of problems and solutions</td>
</tr>
<tr>
<td>Scope of the project</td>
<td>Tendency to search for broadening the scope and connecting the elements</td>
</tr>
<tr>
<td>Conditions for success</td>
<td>Connecting ambitions and goals, good set of rules for interaction and creating commitment and a successful cooperation</td>
</tr>
<tr>
<td>Management principles</td>
<td>More focused on process management principles (goal seeking, connect activities of actors and connect decisions)</td>
</tr>
<tr>
<td>Kind of coproduction</td>
<td>Extensive during the whole process, especially about the ambitions and searching for connections, later more in coproduction in realizing ambitions jointly</td>
</tr>
</tbody>
</table>

Not only in literature the characteristics of alliance PPP projects has the attention, the topic is also discussed in practice. The Dutch Rijkswaterstaat has developed a project alliancing assessment framework, which functions as decision support tool on the form of the arrangement: whether or not this might be suited for an alliance. The three main indicators that could make it interesting to form an alliance, are (de Bruijne, 2014):

- The expectation that the project will face **many uncertainties, unexpected situations** and **dilemmas** that can best be controlled jointly by client and contractor
- The expectation that the project will face **significant** (technological) **product** and/or **process innovations** (either innovations needed to find a solution as well as stimulating the development of innovations), in which it is desired to involve the public party closely in finding solutions and meeting requirements
- The expectation that the project will face significant **risks** for a **reliable** and **safely functioning system**, in which cooperation between disciplines in the market and involvement of the public party is a key success factor

On the one hand these characteristics provide a more complete perspective on what an alliance project is, and on the other hand the characteristics sketch the context of the projects that are included in this research, which should be taken into account in further research.

This decision support tool shows that the alliance arrangement is more suitable for projects with a high degree of complexity. In the past, alliances were established for relatively complex project as well\(^2\). However, as it was stated by Plantinga et al (2013), the expectation is that fewer conflicts arise when an alliance (shared domain) is created. From these two observations, a question arises, because is it not paradoxical that an alliance arrangement suggests the expectation of fewer conflicts of interests, but it might be likely that in a complex project more tension can be expected, for example because complex projects appear to suffer from high levels of unmanageability (Leijten, 2009)? In order to provide a perspective on this paradox, one of the respondents mentioned that “the project would probably be even more problematic, if it was not executed in the form of an alliance” (Interview Round 1, 2015). Therefore “an alliance might help to realize a project within time and budget, given a certain (high) degree of complexity” (Interview Round 1, 2015).

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\(^2\) Chapter 8 will provide a description of the past alliance projects in Dutch infrastructure
From this perspective, the alliance arrangement can be seen as a possible answer to an allocation issue regarding complex projects: how can public and private parties best allocate the risks that come with a project with a high degree of complexity (e.g., in the form of: many uncertainties, expected innovations, significant risks)? When these public and private parties are allocating the risks of a more complex project, they might run through the following steps, described by Plantinga et al. (2013):

- Transfer risks to the party that can best manage them, but;
- If that party has only limited influence on a specific risk, then the client will not benefit much from transferring that risk;
- In such situations, perhaps the risk is more manageable when the client and the other party have a common interest in avoiding or managing that risk;
- A common interest is best stimulated by including pain-gain sharing arrangements³ (Plantinga & Dorée, 2013, pp. 794-795)

For a more complex project, it might be likely that one party has only limited influence on a specific risk, due to difficulties and complexities⁴. In such situations, it is possible that the risk is more manageable when the public and private party manage this risk jointly, with a joint interest and a pain-gain sharing arrangement: for example in the form of an alliance. This line of reasoning shows that it might not be so paradoxical to establish an alliance arrangement and expect less conflicts, for complex projects in which more tension can be expected. However, on the opposite, it should be kept in mind that alliance projects might be more complex and that the projects deal with two interfaces instead of one⁵, which, on the other hand, could be lead to more tension.

### 3.4 Success factors of public-private partnerships

Although many projects are established in the form of a public-private partnership, and several even in an alliance arrangement, the success of these projects and the factors that influence this success are still topic of discussion. However, in order to strive for a successful project, insight in factors that influence project success can be valuable. Before it can be attempted to identify these factors, it can first be questioned what project success actually is. The concept of project success has remained ambiguously defined, it is an abstract concept, and determining whether a project is a success or a failure is highly complex. Project success means different things to different people, each individual has a definition for success (Chan, 2001). Chapter 9 attempts to provide some insight in what alliance project success can be according to respondents. However, because alliance project success can mean different things to different individuals, it might be likely that “project success is about what you jointly and upfront formulate that it is”, as argued by some respondents (Interview, Round 1, 2015).

So, when defining project success is already difficult, how should the success factors can be identified? Chan (2001) defines criteria of project success as “the set of principles or standards by which favourable outcomes can be completed within a set specification” (Chan, 2001, p. 4). However, there is no clear and unambiguous overview of this ‘set of principles’ or success factors for construction PPP-projects, and additionally also not for alliance projects. Factors that were mentioned in literature more frequent are mutual trust, common objectives and commitment. Based on the study of Vrieling (2008) and supplemented by studies from Mistry (2009), Che Ibrahim (2013) and Jefferies (2006), an overview of success factors that are mentioned more often in scientific papers is shown in Table 5 (Vrieling, Favié,

---

³ Pain-gain sharing means that public and private

⁴ Because projects are getting more complex, knowledge and skills from both public and private parties might be required, as discussed in paragraph 1.1 (de Bruijn, Jong, & Korsten, 1996; Flyvbjerg, Bruzelius, & Rothengatter, 2003)

⁵ As shown in figure 6 and discussed in paragraph 3.2
Kranendonk, & Maas, 2008; Mistry & Davis, 2009; Che Ibrahim, Constello, & Wilkinson, 2013; Jefferies, Brewer, Rowlinson, Cheung, & Satchell, 2006).

As shown in the table below, mutual trust is mentioned as a key factor of influence on project success. Apart from these studies that discuss success factors, several other authors dedicate their study to trust as success factor (Ngowi & Pienaar, 2005; Klijn, Edelenbos, & Steijn, 2010; Laan, 2009). Given the importance of trust for the success of public private partnership projects, this research will zoom in on this factor. Chapter 4 will elaborate on this subject.

Table 5: Overview of success factors mentioned in literature, based on Vrieling (2008)

<table>
<thead>
<tr>
<th>Success factors</th>
<th>Cited by authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual trust</td>
<td>1</td>
</tr>
<tr>
<td>Common objectives</td>
<td>1</td>
</tr>
<tr>
<td>Commitment</td>
<td>1</td>
</tr>
<tr>
<td>Equality</td>
<td>1</td>
</tr>
<tr>
<td>Conflict resolution</td>
<td>1</td>
</tr>
<tr>
<td>Financial objective</td>
<td>1</td>
</tr>
<tr>
<td>Management support</td>
<td>-</td>
</tr>
<tr>
<td>Improve performance</td>
<td>1</td>
</tr>
<tr>
<td>Effective communication</td>
<td>-</td>
</tr>
<tr>
<td>Interdependency</td>
<td>1</td>
</tr>
</tbody>
</table>

Finally, it has to be remarked that the extent to which a success factor (e.g. trust) has effect on project success is hard to define: is trust a requirement, and can a project not be successful without a trusting relationship? Or is trust only a factor that has an added positive impact on alliance outcomes, for example because it improves the level of communication and commitment (Mistry & Davis, 2009)? Mutual trust is identified as requirement by some (Jaggar, Ross, Love, & Smith, 2001; Humphreys, Matthews, & Kumaraswamy, 2003). According to Rockart (1982), success factors are “those few key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his or her own goals”, success factors are “those limited number of areas where things must go right” (Rockart, 1982; Jefferies, Brewer, Rowlinson, Cheung, & Satchell, 2006, p. 4). However, success factors are seen by others just as added positive impact on the outcomes (Mistry & Davis, 2009) or as factors that contribute to success (Chan A., et al., 2004), and not necessarily as requirements for success. Although these two perspectives on the extent to which trust influences success (as a requirement for success or as a contribution to success) is an interesting subject, it is not directly relevant for answering the main research question. Therefore, no choice between both perspectives is made, but it is assumed that trust is an important success factor, and it is valuable to monitor this factor during an alliance PPP-project.

3.5 A critical perspective on PPP and alliances

Well-known criticism on concession PPP projects is that many clients and contractors still try to realise their conflicting objectives. This can lead to difficulties in the relationship and counteract innovation (Vrieling, Favié, Kranendonk, & Maas, 2008). Klijn & Teisman (2005) state that concession PPP is in fact not different from traditional forms of contracting: real joint risk taking and product development hardly take place. It is even stated that concession PPP is not actually a PPP at all, but a revamped form of tendering in which there is still a sharp risk division (Klijn & Teisman, 2005). According to some an alliance arrangement could be the answer to these weaknesses of concession PPP. The study of Larson (1995) shows that partnerships can create more cooperative and trusting relationships (Larson, 1995).
It is assumed that these cooperative relations can improve the performance of construction projects (Laan, 2009; Dainty, Millett, & Briscoe, 2001; Li, Cheng, & Love, 2000; Back & Sanders, 1996). An alliance form could be more goal seeking, open and has added value for quality, support, innovation and commercial success of a construction project (Esselbrugge & Teisman, 1998; Eversdijk & Korsten, 2008).

Even though alliance PPP is favoured over concession PPP in several scientific papers (Eversdijk & Korsten, 2008; Esselbrugge & Teisman, 1998), there is more than only the positive stories. Firstly, the empirical evidence that the alliance form actually leads to innovations and financial benefits is diffuse (Eversdijk & Korsten, 2008; Skelcher, 2005). Not all partnerships perform well and establishing an alliance for a construction project is certainly no direct guarantee for success (Laan, 2009; Bresnen & Marshall, 2000). According to Lageveen (2011) studies show that 70% of the project alliances is terminated prematurely (Lageveen, 2011). The cause of these early terminations is mostly related to relational factors, such as the reduced trust in each other, conflicting cultures and the feeling that the commitment of the partner has decreased (Lageveen, 2011; Groenendijk, 2000). Therefore the weaknesses and possible risks of alliance PPP should be taken into account when establishing an alliance. One of the weaknesses of this contact form are the high transaction costs, due to the intensive cooperation (Klijn & van Twist, 2007). The possible risks of alliance projects is that bureaucracy will increase and that the functioning of the partnership becomes an objective, instead of a mean to realize a project (Lorange, Roos, & Simcic Bronn, 1992; Eversdijk, 2013). Finally, a possible benefit of concession PPP is that separating responsibilities can reduce complexity (Eversdijk & Korsten, 2008; Klijn & van Twist, 2007). In alliances these responsibilities are shared instead of separated, which could make it hard to reduce complexity.

### 3.6 Conclusions

This chapter has given more insight into alliance PPP, what important is in these kinds of projects and the chosen perspective in this study. Apart from the more general explanation of the concept of alliancing and its characteristics, some specific elements will be used in the continuation of the research. A complete overview of the conclusions from this chapter is shown in Figure 7. This figure should be interpreted as overview and summary, the lines do not reflect a hierarchical relation. Firstly, by the analysis of the success factors for PPP-projects, the motivation for focussing on the factor trust has been further substantiated, since mutual trust was referred to as success factor by many literature studies. Furthermore commitment and common objectives were remarked as critical success factors. Secondly, the perspective on alliance PPP projects focuses on the more ‘soft elements’ mentioned in the definition, such as principles of mutual trust, commitment and communication. In addition, there are some context elements that should be kept in mind during the study, for example the fact that alliances are often established for highly complex projects. Although there are several arguments in favour of alliances mentioned in literature (e.g. that it is more open, goal seeking, and can create trusting relations), there are also some critical perspectives on this PPP arrangement. It has to be kept in mind that an alliance form is not necessarily a guarantee for success, and that it can lead to, among others, high costs and bureaucracy. Finally, it is remarkable to take into account that the alliance form is favoured in literature, but limited used in practice.
Figure 7: Overview of conclusions from chapter 3

Infrastructural alliance
PPP projects

A project delivery method, in which parties work jointly (contract, responsibilities and risks) based on principles of mutual trust, commitment and communication to reduce conflict and enhance performance.

Characterized by: joint decision-making, connected goals, joint problem solving, work in close cooperation and according to process management principles.

Suitable for: projects with many uncertainties, significant innovations and/or risks for a reliable system.

Success factors: mutual trust, common objectives and commitment.

Literature

- Dutch practice
  1. Betuweroute – Waardse Alliantie
  2. Houten – Bataafse Alliantie
  3. A2 Hooggelegen
  4. N201
  5. OV SAAL

Pro-alliance perspective

- An alliance is more goal seeking, open, and has added value for quality, support, innovation and commercial success.
- Partnerships create more cooperative and trusting relations, that improve performance.

Critical perspective

- Alliances are no guarantee for success: the empirical evidence that alliances lead to innovations and financial benefits is diffuse.
- Weakness: high transaction costs.
- Risks: more bureaucracy, partnership as objective instead of mean and no reduction of complexity.

Conventional contract

Client \( \rightarrow \) Contractor

Interfaces

Client \( \rightarrow \) Alliance \( \rightarrow \) Contractor

Project alliancing

Challenge the future
The success factor trust

One of the success factors of PPP projects is mutual trust. More trusting relations between public and private parties can result in higher project performance. Forming a partnership could create these cooperative relationships based on trust. However, if it is desired to get grip on this success factor trust by monitoring it, it should be known what trust actually is. Trust is an abstract concept, which can be described in many ways. The central question in the chapter is:

“How can trust in a project-context be defined, and what is the role of trust in project success?”

This chapter will function as a broad introduction into the concept of trust, instead of an in-depth chapter that covers all perspectives on trust and provides a narrow definition. The reason for this relatively superficial and broad approach, is that the research is exploratory, and aims at open and broad conversations with respondents. As mentioned in paragraph 2.4: flexibility during the interviews is very important, because exploratory research is about what the respondent finds most important (Bryman, 2004). Therefore, the aim is not to come to a specific, detailed and narrow delineation of the concept of trust. However, a rough working definition to keep in mind during the research, might be valuable.

4.1 Definition of trust

Trust is a central subject in newspapers and media. Trust in banks, managers, the economy, the government, politics, Europe, science, et cetera. Some say trust does not exist, others say trust is indispensable. Some say that ‘we should trust more’, others say that control is better. However, the concept of trust seems to come with many misunderstandings (Nooteboom, 2009, p. 1). Additionally, each scientific discipline tends to have a different perspective on trust: economists view trust as either calculative or institutional; psychologists define trust in terms of attributes of trustors and trustees; and sociologists often find trust socially embedded properties of relationships among people or institutions (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 393). Although many insights by many scientific disciplines have been given about trust, there is still confusion about this complex concept. The many insights use partly overlapping, but also partly conflicting definitions, analyses, explanations and conclusions (Laan, 2009). These perspectives are discussed more elaborate in, e.g. Laan (2009), Rousseau (1998) and Nooteboom (2002), and are not discussed, reviewed or selected in this research. Because, as mentioned in the introduction of this chapter, the aim is to have a flexible and open conversation with respondents, without a too narrow and delineated perspective on trust.

When trust is discussed in literature, a distinction is made between inter-organizational trust and intra-organizational trust. Inter-organizational trust is about the trust between organizations, and intra-organizational trust refers to the trust within one organization (Laan, 2009, p. 1). In the context of this research, an alliance in itself can be seen as one organization, and therefore intra-organizational trust can play a role. In addition, because more organizations are involved in an alliance (or are in collaboration with the alliance), inter-organizational trust could be applicable in this research as well. According to Laan et al (2012) trust between organizations is especially important in an industry that
is characterized by constantly changing combinations of organizations working on temporary projects, as the construction industry (Laan, Voordijk, Noorderhaven, & Dewulf, 2012). Therefore, with the aim of this research in mind (developing an instrument to monitor trust in alliance PPP-projects) both types of trust (inter- and intra-organizational) might be applicable.

As already mentioned, trust is an abstract and even vague term and the concept of trust is widely discussed in science, and described in many ways by many researchers (Klijn, Edelenbos, & Steijn, 2010). However, some overlapping elements can be remarked. Some characteristics of trust that are frequently mentioned in literature, are: vulnerability, risk and expectations (Klijn, Edelenbos, & Steijn, 2010). Furthermore, a commonly used definition that includes these frequently mentioned terms, is the definition of Nooteboom (2002, p. 45):

“The expectation that things or people will not fail us, or the neglect or lack of awareness of the possibility of failure, even if there are perceived opportunities and incentives for it. Trust is the willingness to take this risk” (Nooteboom, 2002, p. 45)

In the context of trust in construction projects there are comparable definitions of trust used (Ngowi & Pienaar, 2005; Klijn, Edelenbos, & Steijn, 2010; Laan, 2009; Edelenbos & Klijn, 2007). The definition of Klijn et al (2010) is about the willingness to assume an open and vulnerable position. When this definition is applied to alliances, trust in an alliance project is related to the stable positive expectation that a party (e.g. your project alliance partner) has the intentions and motives to refrain from opportunistic behaviour, even if the opportunity arises. Trust is based on the expectation that a party will take the interest of his alliance partner into account (Edelenbos & Klijn, 2007). Given the fact that the focus of this research is on trust in the alliance and a trusting relationship between the alliance partners, the definitions of Nooteboom (2002), Ngowi (2005), Klijn (2010), Laan (2009), and Edelenbos (2007) all provide a related perspective.

Finally, because it was stated that trust is an abstract and even vague term, it can be questioned if information is known about the factors that influence the vague concept of trust in construction projects. Therefore, chapter 6 will elaborate further on the concept of trust and on the factors that might influence trust.

### 4.2 Two-sidedness of trust

Although this chapter provides only a broad perspective on trust, some relevant themes regarding trust should be addressed. Nooteboom (2002) states that “perhaps the most basic point in the analysis of trust is that we should systematically recognize the two-sidedness of trust. We should distinguish trust on the part of the trustor, and trustworthiness on the side of the trustee” (Nooteboom, 2002, p. 8). The distinction between the trustor and the trustee was already mentioned briefly in paragraph 3.2. On the side of the trustor it is about giving trust, and on the side of the trustee it is about trustworthiness (Laan, 2009; Nooteboom, 2002). In the definition of Nooteboom this means that the trustor has the expectation that the trustee will not engage in opportunistic behaviour. When this perspective is related to alliance projects, the question arises if as well the client, contractor, as the alliance organization can be seen as both trustor and trustee. For answering this questions, the perspective of Laan (2009) on inter-organizational trust can provide some insights. Laan (2009) makes a distinction between organizations and individuals, and argues that trusting (from the perspective of the trustor) can only be an individual-level phenomenon and that organizations cannot trust (Laan, 2009, p. 26; Doney & Cannon, 1997; Currall & Inkpen, 2002). This statement follows from the assumption that trust is not behaviour, but a state of mind, and therefore an individual matter (Nooteboom, 2006). Therefore, it is assumed that both individuals and organizations can be trustees, but that only individuals can be trustors (Laan, 2009).

This perspective can be linked to the proposed research method in phase 3, as described in sub-paragraph 2.4.3. The individual respondents could reflect on their ‘status’ as trustor in alliance projects (or reflect on other individuals acting as a trustor). These respondents could share their trust in the trustee, which can be both an organization as an individual.
Furthermore they could share their perspective on what influenced their trust in the trustee(s). With this perspective in mind, it becomes clear that this research does not aim at concretizing trust in an alliance project from the viewpoint of a specific organization, because it is argues that organizations as such cannot trust (Laan, 2009, p.26). This research does aim at collecting several individual viewpoints on trust in organizations and in individuals involved in the alliance, from which more general conclusions can be derived and eventually an instrument can be developed.

However, it might be hard to draw a tight line between trust in individuals and trust in organizations, because they influence each other. The trust in individuals can be based on trust in the organization (e.g. organizational culture, structure, procedures). Trust in organizations can be formed by the individuals who act on behalf of the organization (Currell & Judge, 1995; Laan, 2009, p. 26; Perrone, Zaheer, & McEvily, 2003). Because of this connection between trust in organizations and trust in individuals, the so-called boundary spanning individuals might fulfil a crucial role in a trusting relationship (Janowicz & Noorderhaven, 2006). Boundary spanning individuals are the people who fulfil roles and positions that connect organizations with outside partners (Laan, 2010, pag. 26). Janowicz and Noorderhaven (2006) therefore argue that it might be more interesting to study the trust of these individuals, instead of the trust held by non-boundary spanning individuals (Laan, 2010, pag. 26). Regarding the proposed research methodology (paragraph 2.4.3), this remark can be taken into account when the respondents are selected.

Finally, because of the characteristic of trust being two-sided it could be argued that trust (or distrust) especially exists when parties interact. Therefore, it might be stated that trust and possible issues with trust arise on the interfaces between client, alliance and contractor, which was visualized in figure 6 from paragraph 3.2.

### 4.3 Dynamics of trust

Just as regarding the definition of the concept of trust, many different researchers have shared their opinion on the dynamics of trust (Laan, 2009; Nooteboom, 2002; Rousseau, Sitkin, Burt, & Camerer, 1998). For a more elaborate description of the dynamics of trust the publications of Laan (2009), Nooteboom (2002), and Rousseau et al (1998) can be consulted. Because of the importance of a flexible attitude during the interviews (exploratory research), this paragraph will only present a short overview of the main conclusions regarding the dynamics of trust, which should be taken into account in the development of the instrument.

As argued by Laan (2009), the dynamics of (inter-organizational) trust could be compared to the developmental view of inter-organizational relationship development, as discussed by Ring and Van de Ven (1994). It is argued that, when no relational experience had previously occurred, the initial levels of trust will be based on a conscious estimation of someone’s trustworthiness (Laan, 2009, p. 37; Ring & Van de Ven, 1994). Over time, this more rational form of trust can develop into a so-called relational form of trust, which is more personalized and less deliberate. In this stage, feelings of personal attachment and tacit mutual understanding can arise and might influence someone’s actions (Laan, 2009, p. 37). Furthermore, an important remark regarding the development of trust is that the initial levels of trust can be of great influence on the development of a trusting relationship in a later stage. When, for example due to time pressure, project partners are not able to develop trust in an early stage, they might make stereotypical impressions of each other, which might make it harder to develop personal or relational trust (Laan, 2009, p. 38).

Finally, since trust is a dynamic phenomenon, which can increase and decrease over time, a process approach is required in order to understand its role in relationships (Laan, 2009). Therefore, the dynamics of trust and the required process approach need to be taken into account in the development of an instrument.
4.4 Trust as a success factor

As mentioned, trust is seen by many authors as success factor for projects executed by a collaboration of public and private parties (Mistry, 2009; Ngowi, 2005; Klijn, Edelenbos & Steijn, 2010; Laan, 2009; and others). But could this directly be translated for the specific form of PPP discussed in this research: alliancing?

There are studies that confirm that alliance arrangements can create more trusting relationships between the involved stakeholders (Larson, 1995; Bennett & Jayes, 1995; 1998). Given the assumption that trust is indeed an important success factor, it could be inferred that alliance arrangements can contribute to project success, via the trusting relationship it can create. In addition, Klijn (2010) mentions that trust is more important if the issue at stake is more complex. As discussed in the previous chapter: alliances are often established for projects with a certain level of complexity, according to the alliancing assessment framework of Rijkswaterstaat (2014). Because of this characteristic of alliance projects and the fact that trust is especially of importance in complex projects, it could be assumed that trust is even more important in project alliances.

However, Mistry (2009) argues the other way around: project alliances have become an attractive option for delivering large complex infrastructural construction projects. In these partnership arrangements the development of relationships is central to performance and achievement of project objectives. A critical success factor to this relationship is trust, and therefore trust is a critical success factor for the performance and achievement of objectives in large complex infrastructural construction projects (Mistry & Davis, 2009, p. 217).

4.5 Conclusion

It was stated and substantiated in the previous chapters that trust needed to be incorporated as a central factor in this research. Therefore, this chapter aimed at providing more insight into this abstract concept of trust. Given the fact that many researchers have described trust, a perspective on this term needed to be chosen. The selected viewpoint from which trust will be approached, and which is often used in the context of construction projects, is the definition of Nooteboom (2002). This definition can easily be translated to the practice of alliance projects, the relation between alliance partners, and the expectation that project partners will not fail each other, even if the opportunity for opportunistic behaviour arises. Furthermore, the two-sidedness of trust is discussed by Nooteboom (2002), Laan (2009) and others. An explanation of this characteristic (two-sidedness) of trust, provides more insight into the relationship between the trustor (the one who trusts), the trustee (the one who can be trustworthy), individuals and organizations. It is concluded that a trustee can be both an organization as well as an individual, but that a trustor only can be an individual, because trust is a state of mind. Moreover, there is a connection between trust in individuals and trust in organizations. Because of this strong connection, the role of boundary spanning individuals is crucial for a trusting relationship. These statements can function as valuable input for the preparation of the interviews rounds in phase 3.

Furthermore it was remarked in paragraph 3 that trust can increase and decrease over time. The dynamics of trust are not easily captured, and therefore a process approach is required. Moreover, it seems that the first stages in the process of trust development are of great importance for the further development of a trusting relationship.

Finally, paragraph 4.4 presented more substantiation for this focus on the concept of trust. Three main arguments were mentioned, namely:

- Trust is an important success factor for PPP, and alliance projects can create a trusting relationship
- Trust is more important when a project is more complex: alliances are often formed for complex challenges
- Alliancing has become an interesting way to realize a large project; the development of a good relationship in an alliance is central to the performance; the critical success factor for a good relationship is trust
Figure 8 provides a short conclusion of this chapter, including the chosen definition and perspective of this research, and the main arguments for the central position of trust in this study.

**Trust**

The **expectation** that the project alliance partner will not fail us, even if there are perceived opportunities and incentives for it. Trust is the willingness to take this risk.

- **Is two-sided**
  - Trust exists of a trustor (an individual who trusts) and a trustee (an individual or an organization that is trustworthy). Because of the strong connection between trustworthiness of individuals and organizations, boundary spinning persons are crucial.

- **Success factor, because:**
  1. Trust is an important success factor for PPP; alliances can create a trusting relationship
  2. Trust becomes more important when a project is more complex; alliances are often formed for complex challenges
  3. Project alliancing has become an interesting way to realize large projects; the development of a good relationship in an alliance is central to the performance; the critical success factor for a good relationship is trust

- **Is dynamic**
  - Trust can increase and decrease over time. The dynamics of trust are not easily captured, and therefore a process approach is required. Moreover, it seems that the first stages in the process of trust development are of great importance for the further development of a trusting relationship

**Figure 8:** Overview of conclusions from chapter 4
Performance measurement of PPP projects

Every project strives for success and this success might be positively influenced by performance measurement, as stated by Kaplan (1990) and others. However, it can be questioned what performance measurement is and how it can be used in alliance PPP projects. Since performance measurement is central in this research, this chapter aims at providing more insight in what performance measurement exactly is and how it can be applied. Therefore, the central question in this chapter is:

“What is performance measurement and monitoring, what are strengths and weaknesses of performance measurement, how can be dealt with these weaknesses, and how can PM be applied in infrastructural alliance PPP-projects?”

Just as the function of chapter 4, this chapter will function as well only as a broad introduction into performance measurement. Due to the exploratory character of the research, a flexible attitude towards the respondents is required, so no strict and narrow delineation of performance measurement is required. However, an introduction into what performance measurement is and some relevant related subjects will be discussed.

5.1 Definition of performance measurement

Although some say performance measurement is a prerequisite of performance improvement, only a few people agree on what performance measurement actually is (Kaplan, 1990; Hodge, 2007). There is no clear and unambiguous definition of the concept, but there are some various versions.

A well-known and often used definition of performance measurement is ‘the process of quantifying the efficiency and effectiveness of action’ by Neely (Neely, Gregory, & Platts, 2005). However, in the context of the research this definition might be too narrow, because it might not be possible to quantify trust in terms of efficiency and effectiveness. In addition, performance measurement can be more than only quantifying efficiency and effectiveness of action. Performance can also be measured with more qualitative methods instead of only focussing on quantifying actions. In order to analyse some (complex) processes, more is needed than only quantitative measurements. Mintzberg (1996) speaks of the ‘Myth of measurement’ in this context: the myth that reducing complex public actions to a few measureable indicators is useful (de Peuter, de Smedt, van Dooren, & Bouckaert, 2007; Mintzberg, 1996). In addition, performance measurement does not have to be limited to efficiency and effectiveness of action, but might also be related to more abstract and vague concepts as stakeholder satisfaction, commitment, behaviour and attitude. Because fundamentally performance measurement is applied to ‘assess the success of organisations’ (Kennerley & Neely, 2003; Liu J., Love, Smith, Regan, 6

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6 As can be derived from the description of trust in chapter 4: the concept of trust is abstract, hard to concretize and dynamic
This success can be whatever the organisation defines it is: not only efficiency or effectiveness of action.

As a result of many research studies on the topic of performance measurement, the study of Liu et al (2014) shows that the definition has evolved to a theoretical system aiming to help organisations:

“Identify success, satisfaction level of customer needs, where problems exist, and where improvements are essential; Understand their processes and what they know or what they do not know; Ensure the appropriateness of every decision making; Indicate whether the expected and planned outcomes have been met.”

(Liu J., Love, Smith, Regan, & Sutrisna, 2014)

This definition is the result of a long history on the theoretical development of performance measurement (Kaplan, 1990; Gunasekaran & Kobu, 2007; Neely, Gregory, & Platts, 2005; Liu J., Love, Smith, Regan, & Sutrisna, 2014). The article of Liu et al (2014) presents a description of the theoretical development of performance measurement over time. This development can be traced back to the medieval period, when the assessment for ‘time’ performance was used in organizations (Johnson, 1983). However, since the 1900s this dominant position of ‘time’ was replaced by financial measures (e.g. return on investment, cash flow, profit margin) (Kennedy & Neely, 2003). By the 1980s it became clear that organizations had to respond to external activities and long-term success, instead of only focussing on financial measures, in order to satisfy the customer. Therefore, both academics as well as industry started seeking for indicators that provide insights into how an organization’s performance is achieved and how this can be improved. In addition, financial measures fail to indicate a set of more intangible critical factors, such as customer satisfaction and strategy (Liu J., Love, Smith, Regan, & Sutrisna, 2014, p. 501; Skinner, 1974; Parker, 2000). As a result, researchers started to develop all kinds of balanced performance measurement systems in the last decades, in order to work towards a PMS in which strategic, tactical and operational actions are linked, and provide information that is required to improve the program or service on a systematic basis (Liu J., Love, Smith, Regan, & Sutrisna, 2014). In line with these developments, the definition of performance measurement changed as well, as presented in the definition above. Although there are other definitions of performance measurement as well (Neely, Gregory, & Platts, 2005), the broad definition of Liu et al (2014) seems to be a suitable working definition for this research. The reason is that Liu et al (2014) apply the concept of performance measurement to PPP-projects in the construction industry, just as this research aims to do. Furthermore, other studies that discuss performance measurement in PPP-projects, use a comparable (broad) definition focused on success and stakeholder satisfaction (Kagioglou, Cooper, & Aouad, 2001; Yuan, Zeng, Skibniewski, & Li, 2009). Finally, it has to be remarked that this definition will not be used strictly in this research, but only as a rough working definition.

Because of the exploratory character of the research, it might be interesting to find out how respondents involved in Dutch infrastructural alliance PPP-projects define performance measurement.

Furthermore, when influential success factors of PPP-projects are only measured by a system, this is no guarantee for increased performance and project success. The actual ‘improvement’ of the project starts after the measurement and is about how organisations deal with the findings from their performance measurement system (PMS). There are generally two ways of dealing with findings from a performance measurement: evaluation and monitoring (de Peuter, de Smedt, van Dooren, & Bouckaert, 2007). The most fundamental difference between the two is that direct adjustment within the process is possible with monitoring, and is not possible with evaluation (de Peuter, de Smedt, van Dooren, & Bouckaert, 2007; Casely & Kumar, 1987; Gosling & Edwards, 1995). Monitoring is, due to its permanent character, useful for the management and as a tool to increase the performance of actions directly. Compared to evaluation, which

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* As discussed in 3.4: project success is what people define upfront that successful outcomes are
has a more in-depth approach, often applied in a broader context (De Peuter et al, 2007). This makes evaluation a more indirect method compared to monitoring.

In the context of this research, which aims at the development of a concept instrument that can improve the performance of infrastructural alliance PPP projects directly, the focus of the study is monitoring. It is assumed that direct learning within a project is valuable, due to the characteristics of the construction industry. This project-based industry is namely characterized by temporary relationships between organisations in order to establish a clear goal: the realization of a project (Laan, 2009). Therefore, monitoring in order to achieve this goal successfully might be more needed in the sector than in-depth evaluations, which can only be used after the realization of the project.

5.2 Requirements for performance measurement in PPP

Currently performance measurement is applied in different areas, such as manufacturing, business service, logistics, and also in PPP projects in the construction industry (Liu J., Love, Smith, Regan, & Sutrisna, 2014, p. 502; Skinner, 1974; Fitzgerald, Johnston, Birgnall, Silvesto, & Voss, 1991; Bagchi, 1996; Gunasekaran & Kobu, 2007). Where strategic objectives form often the basis of a PMS, a PPP project should base its PMS on objectives of the involved parties, which exist of at least the public and private party (Solomon & Young, 2007; Liu J., Love, Smith, Regan, & Sutrisna, 2014). A method, often used in the UK and Australia, is based on realizing the ‘best value’ for both parties, in which an important indicator is the Value for Money. However, it is argued that this often-used method focuses mainly on traditional measures as ‘time’ and ‘costs’ and does not reflect the complexity of PPP. Apart from this limitation in the current method, Liu et al (2014) shows in a study that incomplete process measurement and product-oriented evaluation are two main problems in existing performance measurement of PPPs (Liu et al, 2014).

A suited method to measure the performance of future PPP projects should therefore include the following requirements (Liu et al, 2014; Chan, 2004):

- A ‘real-time’ monitoring tool for the process and whole project performance, to capture the dynamic of the project
- Key Performance Indicators (KPIs) are general indicators of performance that focus on critical aspects of outputs or outcomes
  - Performance indicators (KPIs) that reach beyond traditional measures as time and budget (Liu J., Love, Smith, Regan, & Sutrisna, 2014)
  - Only a limited, manageable number of KPIs is maintainable for regular use. Having too many (and too complex) KPIs can be time- and resource consuming (Luu, Kim, & Huynh, 2008; Chan & Chan, 2004)
  - Systematic use of KPIs is essential. The value of KPIs is almost completely derived from their consistent use
  - Data collection must be as simple as possible, and the KPIs should be accepted, understood and owned across the organization
  - KPIs will need to evolve, KPIs will be subject to change and refinement
  - Graphic displays of KPIs need to be simple in design, easy to update and accessible (Chan & Chan, 2004, pp. 209-210)
- A process-based life-cycle approach instead of a product-oriented evaluation
- A multiple stakeholder perspective
- Focus on both the organizational level as well as the project level in a long-term context (Liu J., Love, Smith, Regan, & Sutrisna, 2014)
Kagioglou (2000) proposes a system in which these requirements can be captured partially. The proposed system originates from the balanced scorecard (BSC), just as many other PMSs in the construction industry, but some extra elements and perspectives were added (Kagioglou, Cooper, & Aouad, 2001; Liu J., Love, Smith, Regan, & Sutrisna, 2014). However, this method is also criticized by many, due to its perspective, which might be too narrow to capture the essential indicators (Neely, 2001; Liu, 2014). Because these essential indicators or critical success factors are, among others: mutual trust, common objectives and commitment, as described in paragraph 3.4.

According to Liu (2014) the Performance Prism might be a method that can capture the complexity of a PPP and that covers the mentioned requirements. Performance Prism is able to deal with the complexity of multiple stakeholders, as was one of the requirements from Liu et al (2014) (Neely, 2001; Liu, 2014). The message of the Performance Prism of Neely (2002) is that, in order to survive and prosper in an increasingly complex and connected world, the management has to understand what their various stakeholders want and need from the organization or project, and vice versa what the organization or project needs from them. In addition they have to link and align strategies, processes and capabilities of stakeholders in order to satisfy those diverse sets of wants and needs, so that a project can deliver value to the stakeholders (Neely, Adams, & Kennerley, 2002, p. 7). A more elaborate description of the Performance Prism can be found in Neely et al (2002). However, because this exploratory research aims at obtaining information from the specific practice of Dutch infrastructural alliance PPP-projects, instead of a validation of developed PMSs, on these possible performance measurement methods (e.g. BSC, Performance Prism) will not be further elaborated.

5.3 Perspectives on performance measurement

Performance measurement is widely discussed as positive and necessary for achieving project success (Hodge & Greve, 2007; Gunasekaran & Kobu, 2007; Liu J., Love, Smith, Regan, & Sutrisna, 2014). Using a PMS can bring transparency into processes of organizations, it can be an incentive for working towards output and results, and it can help in shaping accountability (de Bruijn, 2002). However, there are also critical remarks mentioned in literature (van Thiel & de Leeuw, 2002; de Bruijn, 2002).

Van Thiel (2002) argues that evaluation studies show that many attempts to introduce result-based management are still unsuccessful (van Thiel & de Leeuw, 2002; Leeuw & van Gils, 1999). The weak correlation between performance indicators and the actual performance is described as ‘Performance Paradox’ by van Thiel (van Thiel, 2007; Scott, 2001). One of the causes of this phenomenon is the fact that performance indicators lose value over time, as a result that the relationship between actual and reported correlation declines (van Thiel, 2002). According to de Bruijn (2002) performance measurement in the public sector can create a large number of perverse effects, besides its contribution to production, innovation, adequate accountability and reinforcement of an organisation’s external orientation (de Bruijn, 2002). In order to provide some more concrete insights into these perverse effects, performance measurement can, among others, lead to:

- **Strategic behaviour** and ‘gaming the numbers’: people will raise their output in accordance with the standards of the system, which might not be best from professional perspective
- **Less innovation**: performance measurement rewards the constant reproduction of the existing
- **More bureaucracy**: many procedures have to be organized in order to meet the requirements of a performance measurement system
- **Less ambition**: organisations try to optimize their input (‘creaming’ or cherry picking’) in order to obtain the desired output
- **Ignored complexity** and **less professional** attitude: performance measurement focuses on clearly defined aspects, which can to less focus on more complex tasks and a professional attitude
Less system responsibility: when organisations compete with each other in terms of performance, it is less likely that they will share their ‘best practices’ and work together on professional insights in a sector.

Punishment of good performance: budgets or rewards can decrease when an organisation performs well, because the expectation is they can perform in the same way the following year (de Bruijn, 2002).

In order to develop a performance measurement system suited for infrastructural alliance PPP, it is important to take these possible perverse effects into account during the design of the system. De Bruijn (2002) argues that there are chances that perverse effects can force out beneficial effects of performance measurement. Therefore de Bruijn (2002) describes three design principles that may be helpful in designing a performance measurement system. These three design principles are:

- Interaction between professionals and management
- Variety and redundancy of product definitions, performance indicators, and ways of measurement
- Dynamics on the level of products and processes (de Bruijn, 2002)

In addition, de Bruijn (2002) and van Thiel (2002) both mention strategies to prevent the occurrence of perverse effects.

Table 5 below provides an overview of the strategies mentioned by the two authors and to which subjects the strategies of the authors relate.

The authors mention generally the same topics, however there are some contradictions between both. Where van Thiel argues that changing indicators over time can lead to a performance paradox, de Bruijn promotes the opposite of a ‘clear and unambiguous definition that is applied consistently’, and proposes working with a certain tolerance for variety in definitions. Additionally, there are some small differences in focus: de Bruijn discusses the importance of people who give meaning to outcome, van Thiel on the other hand mentions the importance of the organization or professional who develops the indicators. Finally, van Thiel mentions the role of the type of organization: she argues that a bureaucratic organization guided by manuals and procedures, might lead to the occurrence of a performance paradox (de Bruijn, 2002; van Thiel, 2002). Although the authors provide some different strategies, both perspectives will be taken into account in the further development of a PMS. An overview is shown in Table 6 below.

Table 6: Strategies to prevent the occurrence of perverse effects according to de Bruijn and van Thiel (2002)

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection and definition of indicators and design of performance measurement system</td>
<td>Tolerance for a variety of (competing) product definitions</td>
<td>Few indicators for a limited part of total performance facilitate the occurrence of performance paradox, which is reinforced when indicators do not change over time</td>
</tr>
<tr>
<td>Professionals and organizations dealing with defining and interpreting indicators</td>
<td>A strategic selection of products</td>
<td>Pay attention to the professional or organization who develops the indicators</td>
</tr>
<tr>
<td>Agreements on the use and outcome of measurement</td>
<td>Managing the competing ‘product approach’ and ‘process approach’</td>
<td>Establish whether all accountability requirements are met</td>
</tr>
<tr>
<td>Insight in the type of organization</td>
<td>A ban on a monopoly on meaning giving</td>
<td>Reducing functions and forums</td>
</tr>
<tr>
<td>-</td>
<td>Establish whether all accountability requirements are met</td>
<td>Investigate the administrative and organizational underpinning the performance measurement system</td>
</tr>
</tbody>
</table>

For further development of a performance measurement instrument it is important to take possible perverse effects into account and to address these effects by implementing a suited strategy. However, these strategies do not have to be carried out directly. There should be a balance between the beneficial effects of performance measurement and its possible drawbacks, like perverse effects.
Finally, de Bruijn (2002) mentions the relation between trust and the incentive to cause the system to pervert. When there is distrust between the management and the professionals, this can increase the chances of the occurrence of perverse effects. This relation is visualized in Figure 9 above. It was already concluded that trust can positively influence project success. From this chapter performance measurement can be added as having both a positive effect as well as negative influence (via perverse effects) on project success. As soon as there is distrust between management and professionals, strong incentives will arise to cause the system to pervert (de Bruijn, 2002, p. 56). One of the reasons that distrust might lead to perverse effects, is that performance is achieved in co-production, but a PMS may lead to ‘unfair appraisal, and so undermine trust in the system. Furthermore, PM might tempt the management to adopt a ‘command and control’ type attitude, which further undermines mutual trust between management and professionals. Additionally PM might tempt the professionals to cause the system to pervert, for example by strategic behaviour (de Bruijn, 2002, p. 56).

![Figure 9: Relation between trust, performance measurement and project success](image)

### 5.4 Conclusion

This chapter provides an introduction into performance measurement, its definition, strengths, weaknesses, why PM is relevant and how it can be applied in PPP projects. In addition, Figure 10 below gives a short overview of the main conclusions following from this chapter.

Firstly, as perspective on performance measurement is chosen for a broad view: performance measurement can be more than just the efficiency of actions, but is also about stakeholders, processes and appropriateness of decision making. Within performance measurement the focus of the research is on monitoring, aimed at directly influencing the performance of actions within projects. Secondly, there are some requirements formulated to include when designing a PMS for PPP projects. These requirements relate to, among others, the indicators and perspectives. Finally, in the design of a PMS the possible consequences from perverse effects should be taken into account. De Bruijn and van Thiel (2002) propose some strategies and design principles to prevent the occurrence of perverse effects.
Figure 10: Overview of conclusions from chapter 5

Requirements for a PMS for PPP

- Real-time monitoring for the process and project performance
- Indicators that reach beyond traditional measures
- A process-based life-cycle approach
- Multiple stakeholder perspective
- Focus on the organizational and project level in a long-term context

Performance measurement

Identify success, satisfaction level of customer needs, where problems exist, and where improvements are essential; Understand their processes and what they know or what they do not know; Ensure the appropriateness of every decision making; Indicate whether the expected and planned outcomes have been met.

Design principles to deal with perverse effects

- Interaction
- Variety
- Dynamics

Monitoring

- Adjustment within the process is possible
- A permanent character, which is useful for the management as tool to increase the performance of actions directly

Strategies that relate to:

- Selection and definition of indicators and design of PMS
- Professionals and organizations dealing with defining and interpreting indicators
- Agreements on the use and outcome of measurement
- Insight in the type of organizations
In previous chapters it is concluded that, on the one hand, trust is an important factor for project success and that, on the other hand, there is a need for a performance measurement system for PPP projects. From these statements the question arises is trust can be measured and monitored in an alliance PPP project? The central question in this chapter therefore is:

“How can trust be operationalized?”

6.1 Different perspectives on measuring trust

Several authors have discussed the topic of measuring the abstract and conceptual factor trust and therefore there are several ways to operationalise trust and make it more concrete (Klijn, 2010). The article of Klijn (2010) provides an overview of five items to measure trust, derived from literature, such as (Rousseau, Sitkin, Burt, & Camerer, 1998; Sako, 1998):

1. **Agreement trust**  – the parties in this project generally live up to agreements made with each other
2. **Benefit of the doubt**  – the parties in this project give one another the benefit of the doubt
3. **Reliability**  – the parties in this project keep in mind the intentions of the other parties
4. **Absence of opportunistic behaviour**  – parties do not use the contributions of other actors for their own advantage
5. **Goodwill trust**  – parties in this project can assume that the intentions of other parties are good in principle

Other authors, like Ngowi (2005), She (2013), Wong (2008), Laan (2009) and Van Garsse (2007) use their own concepts to operationalize trust. Some of these are in line with Klijn or on the same abstraction level, others have a different focus. Wong (2008) makes, just as She (2013), a distinction between three trust types, namely:

- **System based trust**  (formalized and procedural arrangements, no personal issues)
- **Cognition based trust**  (develops from the confidence built upon knowledge that reveals the cognitive bearings of an individual or organization)
- **Affect based trust**  (describes an emotional bond that ties individuals to invest in personal attachment and be thoughtful to each other)

In the article of Wong (2008) he translates these broad trust types into trusting behaviour on several attributes. This is a valuable step towards the concretization of the concept of trust.

Finally, the perspective of Laan (2009) is interesting to look into, because the concept of trust he describes is applied on several Dutch infrastructural alliance PPP projects (Laan, 2009). Where Wong (2008) focuses on development of trust via the three trust types, Laan (2009) choses a broader perspective that focuses on the dynamics of trust.
6.2 Conclusion: framework of trust in PPP-projects

Although many authors tried to operationalize the concept trust, some of them propose an operationalization that is still quite conceptual and abstract. Therefore it is tried to merge the different perspectives on trust into a new scheme, which focuses on making the concept even more concrete. Given the chosen research method (interviews) and the aim to include trust in a performance measurement system, it is preferred to discuss the topic trust in a more concrete manner with the respondents. The scheme in Figure 11 can function as a rough guidance for this.

As shown in Figure 11 there are five concepts formulated that contribute to trust, according to an interpretation of literature from Klijn (2010), Wong (2008), Laan (2009), Ngowi (2005), She (2013), Mistry (2009) and Van Garsse (2007). Appendix A.1 provides an explanation of how this scheme is developed.

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**Figure 11: Overview of trust concretized**

<table>
<thead>
<tr>
<th>Affection</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good personal relationships</td>
<td>• Open and transparent communication</td>
</tr>
<tr>
<td>• Staff with ‘interpersonal skills’</td>
<td>• Frequent communication and interaction</td>
</tr>
<tr>
<td>• Connecting cultures and skills</td>
<td>• Making arrangements and keeping to appointment related to communication procedures</td>
</tr>
<tr>
<td>• Good impression of each other (e.g. track record, reputation)</td>
<td>• Previous collaboration or expected future collaboration</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intention</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Assume that your alliance partner has good intentions</td>
<td>• Act in the interest of jointly defined goals</td>
</tr>
<tr>
<td>• Be aware of each others’ goals and intentions</td>
<td>• Take responsibilities, as agreed upon</td>
</tr>
<tr>
<td>• Give each other the benefit of the doubt (when problems occur)</td>
<td>• Keeping to appointments (e.g. about procedures, the process, philosophy, the contract)</td>
</tr>
<tr>
<td>• Act from a ‘best for project’ perspective</td>
<td></td>
</tr>
<tr>
<td>• Do not abuse each other and do not take irresponsible risks</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clearly defined goals, tasks and responsibilities</td>
<td></td>
</tr>
<tr>
<td>• Support of top management</td>
<td></td>
</tr>
<tr>
<td>• Good management</td>
<td></td>
</tr>
<tr>
<td>• (Contractual) arrangements about e.g. procedures, processes, mutual problem-solving philosophy, pain-gain sharing, feedback moments</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion: starting points for including trust in PMSs for alliance PPP projects

This phase of the research has provided a literature review on three topics: infrastructure alliance PPP projects, performance measurement of PPP and the factor trust in these projects and how this factor can be made measureable. This chapter presents an overview of the main conclusions from the literature research.

The literature review aimed at answering three sub questions, namely:

1. What are infrastructural alliance PPP-projects, how are these projects defined, what are their characteristics and critical success factors? (Chapter 3)
2. How can trust in a project-context be defined, what is the role of trust in project success, and how can trust be operationalized? (Chapter 4 and 6)
3. What is performance measurement and monitoring, what are strengths and weaknesses of performance measurement, how can be dealt with these weaknesses, and how can PM be applied in infrastructural alliance PPP-projects? (Chapter 5)

Related to the first sub-question, it can be stated that alliance PPP is a project delivery method characterized by a joint contract, joint responsibilities, a joint organization, in which parties work on the basis of mutual trust, commitment, and communication. Compared to traditional contracts there are two interfaces (client – alliance and alliance – contractor). Trust or issues with trust occur often on interfaces between parties, because of the two-sidedness of trust. Furthermore, project alliances are often formed when a project is highly complex. Factor of influence on success of PPP-projects are mutual trust, common objectives and commitment. Finally, a critical remark on the alliance arrangement is that the transaction costs are high and that more bureaucracy follows from an alliance.

Regarding the second sub-question, the perspective on trust in alliance projects is about the expectation that people (e.g. the alliance partner) will not fail us, even if there are opportunities for this. Trust can be seen as the willingness to take that risk. Trust is a state of mind, and is characterized by two-sidedness: someone who trusts (a trustor, which can be an individual), and someone who is trustworthy (trustee, which can be both an individual as well as an organization). Because trust in an organization and trust in an individual are closely related, special attention should be paid to the boundary spanning individuals. Furthermore, the dynamics of trust were discussed and should be kept in mind. Trust can increase and decrease over time, which requires a process-approach. Finally, chapter 6 presents a concretization of the factor trust, based on theory. The main elements that might influence trust, are: affection, intention, organization, interaction and compliance.
Finally, sub-question 3 was answered in chapter 5. According to findings from theory, performance monitoring for alliance PPP-projects should be broader than only the efficiency of action. PM is about identifying success, and strive to meet the satisfaction level of customer needs. Monitoring can be used as a permanent instrument and is about adjusting the performance ‘real-time’, during a project. For the application of performance measurement in PPP-projects, several requirements should be taken into account, such as the multiple stakeholder perspective, the process-based life-cycle approach, and KPIs that reach beyond time and budget. These requirements for PM in PPP-projects, are discussed in paragraph 5.2. Finally, performance measurement is no guarantee for success and might result in some undesired, perverse effects. There are some strategies to prevent that these effects occur. These strategies relate to, among others: defining the KPIs, design of the PMS, how is dealt with the PMS by people, and how outcomes were handled.

The answers to the sub-questions, on which is elaborated in the previous four chapters, can be divided into three categories of answers: perspectives, requirements and other comments. In order to provide the reader insight into the chosen viewpoint of the research, there are conclusions regarding the perspectives on the three concepts. Secondly, there are specific requirements and elements that can directly be used in the continuation of this research. Finally, there are some other comments to take into account regarding the three subjects. Table 7 provides an overview of these findings, categorized by subject.

<table>
<thead>
<tr>
<th>Perspectives on the concepts</th>
<th>Infrastructural alliance PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Besides that the parties are working jointly, the focus of the definition of an alliance is on the ‘soft elements’ like principles of mutual trust, commitment and communication</td>
<td></td>
</tr>
<tr>
<td>Trust is an important success factor for alliance projects</td>
<td></td>
</tr>
<tr>
<td>Trust is the expectation that the project alliance partner will not fail us, even if there are opportunities and incentives for it. Trust is the willingness to take this risk</td>
<td></td>
</tr>
<tr>
<td>Keep the two-sidedness of trust in mind, and pay especially attention to the boundary spanners</td>
<td></td>
</tr>
<tr>
<td>Performance measurement</td>
<td></td>
</tr>
<tr>
<td>Performance measurement is broader than only the efficiency of actions, and is about identifying success and satisfaction level of stakeholders, and about if expected outcomes were met</td>
<td></td>
</tr>
<tr>
<td>The focus is on monitoring, so that adjustment during the project is still possible</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirements and other elements to include directly in further research</th>
<th>Infrastructural alliance PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch infrastructural alliance PPP projects to use in the empirical research:</td>
<td></td>
</tr>
<tr>
<td>- Waardse Alliantie</td>
<td></td>
</tr>
<tr>
<td>- Bataafse Alliantie</td>
<td></td>
</tr>
<tr>
<td>- N201</td>
<td></td>
</tr>
<tr>
<td>- A2 Hooggelegen</td>
<td></td>
</tr>
<tr>
<td>- OV SAAL</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td></td>
</tr>
<tr>
<td>In order to capture the dynamic character of trust, a process approach is required</td>
<td></td>
</tr>
<tr>
<td>When the abstract concept trust is operationalized, the following components might be included:</td>
<td></td>
</tr>
<tr>
<td>- Affection</td>
<td></td>
</tr>
<tr>
<td>- Intention</td>
<td></td>
</tr>
<tr>
<td>- Organization</td>
<td></td>
</tr>
<tr>
<td>- Interaction</td>
<td></td>
</tr>
<tr>
<td>- Compliance</td>
<td></td>
</tr>
<tr>
<td>Performance measurement</td>
<td></td>
</tr>
<tr>
<td>Requirements for a performance measurement system for PPP:</td>
<td></td>
</tr>
<tr>
<td>- Real time monitoring for the process and project performance</td>
<td></td>
</tr>
<tr>
<td>- Indicators that reach beyond traditional measures</td>
<td></td>
</tr>
<tr>
<td>- Process-based life-cycle approach</td>
<td></td>
</tr>
<tr>
<td>- Multiple stakeholder perspective</td>
<td></td>
</tr>
<tr>
<td>- Focus on both organizational and project level in long term context</td>
<td></td>
</tr>
</tbody>
</table>
This literature review provides sufficient first insights into the problem and possible solutions, however there are still challenges that will be addressed in the empirical phase of this research.

Finally, the outcomes presented in table 7 above will be used in chapter 12, in which a synthesis of information from theory and information from empirics will be presented and will be translated into a monitoring instrument. However, as already discussed, the aim of the empirical research is not to validate the findings from literature, but the aim is to provide a more specific and in-depth perspective on theoretical constructs (trust and performance measurement) in the specific context of Dutch infrastructural PPP-projects. Therefore, the information from these theoretical chapters is only used as rough input for the topic list that will be used as guidance during the interviews in the empirical phase of the research.

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8 As presented and explained in appendix A.2
Phase 3

Generate the design requirements

Empirical research in two rounds
Introduction of the cases

In order to gain information about the requirements for a performance measurement instrument including the factor trust, Dutch infrastructural alliance projects that were carried out over the last 15 years are used in this research. These five cases were presented in Figure 4 in paragraph 2.4. Four projects (Waardse Alliantie, Bataafse Alliantie, A2 Hooggelegen and N201) are projects that were realised years ago, between 1999 and 2013. Insight in these projects provides a perspective on the past experience and an evaluation of this experience. Information from these cases is presented in paragraph 10.1, 11.1 and 11.2. The fifth case, OV SAAL, is a currently running case. The results from this case provide insight in the perspective from current, daily practice. These results are presented in paragraph 10.2 and 11.3.

This chapter aims at providing the reader some context regarding the five projects, by presenting the case studies and how these cases are characterized. The information presented in this chapter is gained both by interviews with involved stakeholders, as well as by documentation about the cases – often suggested by respondents. An overview of the cases and the chapters are shown in Figure 12 below, which is an adjustment to Figure 4 in paragraph 2.4.

As presented in the figure above, the function of this chapter is to provide insight into the context of the five cases. Furthermore, Figure 13 below gives an overview of the cases over time. The first four cases have been realized. The fifth case, OV SAAL, is currently carried out. Given the fact that the OV SAAL case has been used in another way than the four realized projects, the context description in this chapter will also address other elements. Appendix A.2 will provide supporting information regarding the interpretation of obtained information and the used interview protocols for conversations with respondents involved in these cases.
8.1 Case “Waardse Alliantie”

8.1.1 General project description
The ‘Waardse Alliantie’ was the first alliance in the Netherlands, as part of the well-known freight railway the ‘Betuweroute’. “The Waardse Alliantie was an experiment” (Interview Round 1, 2015). The table below provides general information about the project.

Table 8: General project information about case ‘Waardse Alliantie’
(Rahat, 2014; CFE, BR1/2 Betuweroute Sliedrecht - Gorinchem, 2015)

<table>
<thead>
<tr>
<th>Project management</th>
<th>Waardse alliantie (collaboration between project organization Betuweroute (V&amp;W and ProRail) and HBSC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>PoBr (collaboration between the Ministry of Transport and Water (V&amp;W) and ProRail)</td>
</tr>
<tr>
<td>Contractor</td>
<td>Construction consortium HBSC: Heijmans, Boskalis, Strukton, and CFE</td>
</tr>
<tr>
<td>Contract type</td>
<td>Design &amp; Construct, executed as alliance</td>
</tr>
<tr>
<td>Start construction</td>
<td>December 1999</td>
</tr>
<tr>
<td>Completion</td>
<td>November 2003</td>
</tr>
<tr>
<td>Project duration</td>
<td>2 years and 11 months</td>
</tr>
<tr>
<td>Contract price</td>
<td>€ 239,604,680</td>
</tr>
<tr>
<td>Actual costs</td>
<td>10% less than contract price</td>
</tr>
<tr>
<td>Location</td>
<td>Sliedrecht - Gorinchem</td>
</tr>
<tr>
<td>Objects in project</td>
<td>A tunnel; 2 bridges; 1 open box construction; 1 junction with A27; 15 viaducts; 150 divers; 23 km road construction; service buildings; 4900 foundation blocks for sound barriers</td>
</tr>
<tr>
<td>Media reports</td>
<td>- €25 million savings (approximately 10% of budget), because of project alliance</td>
</tr>
<tr>
<td>Other remarks</td>
<td>- Design is optimized on 50 points</td>
</tr>
<tr>
<td></td>
<td>- Project execution within time and with positive scores on KPIs</td>
</tr>
<tr>
<td></td>
<td>Project crosses 6 municipalities</td>
</tr>
</tbody>
</table>
8.1.2 Project history

The history of the ‘Betuweroute’, of which the Waardse Alliantie was a part, already started around 1990 with rough plans of the Dutch Railways (Nederlandse Spoorwegen). These plans resulted in an approval for the freight railway in 1994. In these early stages project Betuweroute gained already much attention from the Dutch media, due to the large cost overruns. ‘Maximum resistance’ is a description that matches the phase in which the alliance was established (Betuweroute kennis, 2005, p. 21). In the design stage the initial plan was adjusted and these technical changes finally led to a new design. For this design an extra budget of hundreds of millions Dutch guilders was made available, which caused political discussions and media attention (Neele, 2003). More concrete, in 1992 the costs were estimated on approximately €2.3 billion, however the final costs for the complete project were in the end €4.7 billion (Algemene Rekenkamer, 2001). However, these cost overruns were mainly the result of the policy-making and design phase, and not during project execution. As presented in the research of Flyvbjerg, which he conducted for the Dutch Ministry of Transport, Public Works and Water Management, the cost overruns during the project execution were only 2% (Flyvbjerg & Westerveld, 2007).

The first plans for the trajectory between Sliedrecht and Gorinchem was a contract based on a so-called Dutch ‘RAW-bestek’. The ideas for an alliance as part of the Betuweroute started a few years later, in 1999. During this period the tender process, in the form of a Design, Construct and Maintain (DC&M), for the trajectory between Sliedrecht and Gorinchem was running. Although the project was awarded to a construction consortium in 1999, the DC&M contract was executed in the form of an alliance, which was decided in January 2000. The parties in the Waardse Alliantie made the agreement that the consortium was responsible for the actual execution (building) of the project, under the supervision of the alliance. In addition, the alliance formulated in this stage their project goals (KPIs), which will be discussed in paragraph 8.1.3 (Neele, 2003). According to a respondent the “steps from RAW to D&C, and then an alliance is not ideal” (Interview Round 1, 2015).

8.1.3 Project success and performance measurement

“Performance measurement is very much needed. Indicators are a must, and PM is a great mean to keep involved peoples’ minds to the job.” (Interview Round 1, 2015).

Project success was jointly defined by the public and private party working together in the alliance. Defining project success is about the objectives and interests of the parties in the alliance, and their expected satisfaction after realization of the project. These objectives were translated into key performance indicators (KPIs). For the Waardse Alliantie the parties formulated the following five KPIs (Interview Round 1, 2015; Betuweroute kennis, 2005, p. 34):

- **Budget**: the alliance fund. A budget funded by ProRail and HBSC. This budget was available to address the shared risks and opportunities, and to finance the alliance. At the end of the project the final balance of the budget was shared by client and contractor.

- **Surrounding area**: minimum hindrance, complaints and claims. This worked based on protocols (e.g. when there was damage, this should be reported back within a week and solved within three months). The alliance tried to communicate as one organization, which is perceived as positive by external stakeholders.

- **Time**: planning. The initial planning was fixed from the beginning of the project, and was realized. Without any delays the project was delivered on the planned date of November 12th 2003.

- **Quality**: quality control. This was steered by the alliance by reporting on differences. Furthermore, internal audits were conducted, and the completion of the project is described, so that this knowledge obtained by experience can be used by the operator, maintenance management, and third parties afterwards.
- **Safety**: prevent and reduce incidents. This related to both the safety in the construction area, as well as the safety for the surrounding area (e.g. school kids, cyclists, pedestrians). This was done by rules for safety clothing and for entering the construction area.

These five KPIs were managed in a traditional way: the Alliance Management Team (AMT) had to report to the Alliance Board once a month. The Alliance Board tested and checked the performance of the project based on these monthly reports, in which the KPIs had a central role. In addition, the AMT reported the results to the project team, simply by displaying these in the cafeteria. A respondent mentioned, about showing the results to the employees, the following: “This was very valuable, because everyone could see for what they were working” (Interview Round 1, 2015). Finally, the Alliance Manager organized a so-called ‘zeepkist’ session, were there was a tribune for sharing project performance (Interview Round 1, 2015; Betuweroute kennis, 2005, p. 34).

Although the general opinion of respondents involved in the Waardse Alliantie on the used KPIs is fairly positive, some say that the focus was too little on the long-term goal of the project. This limited focus on the long term resulted in many repairs afterwards, by rail infrastructure maintenance company ProRail, after the project delivery. One of the respondents mentions that in the first stages, the focus of the project was on quality. However, in a later phase the budget became more important, and the project organization focused on budget cuts instead of on quality. On the short term this might be beneficial (e.g. no budget overruns), but on the long term the quality of a sustainable connection between two locations can come under pressure (Interview Round 1, 2015). Furthermore, there were many discussions about the actual design of the performance measurement system. Goals might be established easily, how they were measured was more complex (Interview Round 1, 2015).

### 8.1.4 Project results, satisfaction and lessons learned

The Waardse Alliantie is often referred to as success story (Betuweroute kennis, 2005; Interview Round 1, 2015). The project was realized within the predetermined period of time. Additionally, a saving of 10% on the alliance budget was realized, which is equal to 25 million euros. These savings were realized by jointly addressing risks and seeking for optimizations together. Finally, due to close collaboration, the design was optimized on approximately 50 points (Neele, 2003).

In general, the respondents involved in project the Waardse Alliantie evaluate the project positive as well. Apart from one exception, all the respondents would start this project in roughly the same structure again, if they had to decide. Although by some is mentioned that the focus in a new alliance should be more on the functioning of the alliance and the people who work in this organization: a stronger focus on the process. A respondent argues that they should “Pay more attention to the role of the people in the team” (Interview Round 1, 2015). Furthermore, it is mentioned that the focus should have been more on the long term goals: “Focus not only on what is ‘best-for-project’, but pay attention to what is best on the long term” (Interview Round 1, 2015). It was mentioned that ProRail had to do some reparation work after the project delivery.

The relation between the involved stakeholders is, in general, characterized by most as a trusting relationship (Interview Round 1, 2015). However, that was some doubt in the first phase of the project: “At the start the client was questioning if the construction consortium was the right one” (Interview round 1, 2015). However, the best of the Waardse Alliantie was “That so many people stayed to work in the alliance. They all have good memories, great satisfaction and pride. When they worked in a traditional project afterwards, it was really like rehabilitation” (Interview Round 1, 2015).
Finally, based on an evaluation of the project Waardse Alliantie, several ‘lessons learned’ were formulated, which can be taken into account when starting a new alliance project. Namely (Betuweroute kennis, 2005):

- **Only start an alliance** if all requirements were met (e.g. technical complexity or complex surrounding, size of the project is more than 40 million euros)
- **Have a good project preparation**: business case, dialogue between parties, parties delve into each other’s interests, identification of risks, formulate goals, risks and KPIs, make sure people have enough mandate, select people with quality who believe in the alliance, and pay attention to the conditions in an early stage
- **Trust is the basis**: the alliance partners that work closely together should trust each other. Even if partners should match on paper, if there is no trust, it is not recommended to start an alliance
- **During the project**: focus on the content, AMT functions between board and execution, manage the failure factors, equality in information, think about a situation that limits the losses, manage the urge for optimizations
- **Finally**: **preserve information and knowledge**, make a plan for after project delivery (make sure people can still contribute to the project, e.g. for operations and maintenance)

**Concluding remarks paragraph 8.1**
From this context sketch it can be concluded that the Waardse Alliantie applied performance measurement in a quite traditional manner, with some additional indicators (safety and surrounding area). Furthermore, the project is evaluated positive by almost all respondents, but there are suggestions for improvement especially regarding the working of the team and the process, and about the long-term perspective of the project.

### 8.2 Case “Bataafse Alliantie”

#### 8.2.1 General project description

The project ‘Bataafse Alliantie’ started as a pilot project for the functioning of an alliance form for a smaller project, with a budget size less than €50 million. “Everyone identified themselves with the project, and was aware of the fact that this was something new: that they were pioneers” (Interview Round 1, 2015).

More general project information about the Bataafse Alliantie can be found in Table 9 below.

| **Table 9**: General project information about case ‘Bataafse Alliantie’ (Rahat, 2014; CFE, 2015-2) |
|-----------------|------------------------------------------|
| **Bataafse Alliantie – rail project** |
| **Project management** | Bataafse Alliantie |
| **Client** | ProRail (financed by the Ministry of Infrastructure & Environment) |
| **Contractor** | Construction consortium Houten-4: Mobilis, CFE, Haverkort Voormolen, and KWS Infra |
| **Contract type** | Design & Construct, executed as alliance |
| **Start construction** | February 2007 |
| **Completion** | December 2010 |
| **Project duration** | 3 years and 10 months |
| **Contract price** | € 37.500.000 |
| **Actual costs** | - |
| **Location** | Between Houten and Houten Castellum (as part of VleuGel project, between Lunetten and Culemborg) |
| **Objects in project** | 2 rail viaducts; 2 underpasses; railway bridges; railway station shelter; pedestrian- and bicycle bridge; stopover location; noise barriers; relocation of the station Houten |
8.2.2 Project history
The history of project Houten 4-sporing dates back to 1997. In March of this year a first exploration for project ‘Randstadspoor’ starts. This project aims at establishing a railway network in the Utrecht area, and exists of three sub-projects, of which one is the trajectory between Utrecht and Houten. From this perspective, the rail extension project between railway stations Houten and Houten Castellum starts in 2007 (Projectbureau Randstadspoor, 2015).

Houten 4-sporing was initially tendered as a traditional project, in a design and construct contract form. After this tender period, the client ProRail and the construction consortium ‘Combinatie Houten-4’ decided jointly to work together in this project in the form of an alliance. In order to establish this, the partnership ‘VOF Bataafse Alliantie’ was formed. This partnership made the D&C design and supervised the project execution as a delegated client. Furthermore the partnership functioned as a pilot project, to determine if an alliance can lead to success for smaller projects and additionally, to gain experience with an alliance within ProRail (Stichting Nederlandse Bouwpluim, 2015; Stichting Nederlandse Bouwpluim, 2015-2). “Quite quick client, alliance organization and contractor were fused together in the alliance” (Interview Round 1, 2015).

During the start of the project it was noticed that some goals, tasks, and responsibilities were ‘fuzzy’. It is argues that “We started too early at some moments. It is sometimes better to wait a bit longer and seek for ways to optimize, instead of starting directly” (Interview Round 1, 2015).

8.2.3 Project success and performance measurement
The performance of project ‘Houten 4-sporing’ was “measured on purpose in a subconscious way”, according to a few respondents involved in the project (Interview Round 1, 2015). Project Houten was mainly steered by flexible management and by being a redundant organization, to overcome unexpected situations. Thus the AMT did not work with many KPIs (Interview Round 1, 2015). Although several indicators were not defined as actual KPIs, there were some aspects mentioned that contributed to project success, namely: time, budget, solving problems jointly, quality, and surroundings. Only on the performance indicators time and budget was managed actively (Interview Round 1, 2015).

The AMT did not create a system for monitoring time and budget, but worked with a simple excel spreadsheet and reported monthly the results to the Alliance Board of Directors. Furthermore, these reports and the way of measurement was relatively simple, and therefore clear and understandable for everyone in the alliance (Interview Round 1, 2015).

- **Budget**: both parties contributed to the alliance budget, which was established to finance the joint risks. Both parties contributed 2 million euros in this risk budget at the start. “We were very surprised that ProRail also brought in 2 million for the joint budget: this created trust” argues one of the employees from the contractor-side (Interview Round 1, 2015).

- **Time**: the alliance set some milestones, not only at the end of the project, but also during the project. “There were milestones postponed, but the final milestone never changed” (Interview Round 1, 2015).
Furthermore, the satisfaction of the surrounding area was no KPI, but they managed the local residents by having a quarterly dialogue with them. “A stronger focus on the surrounding area is a point for improvement” (Interview Round 1, 2015).

Finally, it has to be remarked that during the project a researcher was involved in the Bataafse Alliantie and conducted so-called ‘action research’. In the context of a doctoral research, a scientist looked into the subject of trust for this specific project (Interview Round 1, 2015). In action research a scientist is focused on his or her research, but can provide for example the project management with feedback, as a result from the research findings. Although, these feedback moments were too limited used in project Bataafse Alliantie, according to involved respondents, it was mentioned that conversations between the scientist and the alliance manager were valuable (Interview Round 1, 2015). The researcher was able to uncover behaviour and explain the mechanism of trust, and the alliance manager was able to understand this mechanism and to apply this in the project practice (Interview Round 1, 2015). Although no concrete list of outcomes or evaluation about the usefulness of the action research was conducted, it might be interesting to keep in mind that the Bataafse Alliantie was evaluated very positive and that it was the only project that worked with action research.

8.2.4 Project results, satisfaction and lessons learned

Regarding the project results Houten 4-sporig was realized within the period of time, and money was left in the alliance budget. Due to the alliance form, savings of €5 million were realized. This meant that both parties, the client and the contractor, each got back €2.5 million from the alliance budget (Interview Round 1, 2015).

It is remarkable that the respondents who were involved in this project, all unanimously evaluate the project very positive: “The group was a united team, people could say everything to each other. The alliance manager was part of the team and accessible in contact: this created trust” mentions one of the respondents (Interview Round 1, 2015). Additionally, the trust between parties in the project is reviewed very positive as well. Reasons mentioned for this trusting relationship are the small scale of the project and the informal behaviour of people in the project. Moreover, the openness and the good start of the project (e.g. by addressing the first problem in a right way was crucial, and by paying attention to the understanding of people about the ‘game’ of the alliance). Although the trust between the alliance partners was evaluated positive, the trust between the alliance and the surrounding stakeholders was not optimal. For example, the alliance had some issues with the municipality (Interview Round 1, 2015).

Finally, no formal evaluation of the project was conducted, but respondents involved in the project do mention some ‘lessons learned’ and recommendations for a future alliance:

- Make sure there is enough mandate within the parent organizations: that boundary spanning persons, within the parent organizations and who are needed for the working for the alliance, have enough mandate to make decisions
- Organize enough feedback moments with each other: frequent and short feedback moments, to make sure small issues are discussed, before they run up and result in a conflict
- Think carefully about certain actions upfront, and do not start too early: sometimes things should have been organized in an earlier stage, or more optimizations were possible
- Manage the surroundings in an early stage: communicate clearly to them in order to overcome complaints in a later stage
- Pay attention to learning aspects for the parent organizations: due to a large number of external employees, this might be very limited
Concluding remarks paragraph 8.2  
Project Houten and the trust between involved people is evaluated by all respondents very positive, it was a close team that worked successful together. The performance monitoring was mainly characterized by flexible management, and on performance indicators was steered ‘on purpose in a subconscious manner’. The only KPIs that were measured and reported, were time and budget. Furthermore, the management tried to make the organization redundant, so that they could overcome unexpected problems. Finally, there are some suggestions regarding: the mandate and learning aspects within parent organizations, feedback moments, upfront actions, and monitoring the surrounding area.

8.3 Case “A2 Hooggelegen”

8.3.1 General project description

A2 Hooggelegen was the first and only project of Rijkswaterstaat (RWS) that was executed as an alliance. Furthermore, the project is characterized because it was tendered as an alliance, in contrast with the other projects, which were tender as a D&C project with the option of forming an alliance. Table 10 below presents the general project information as background and context of the project A2 Hooggelegen.

<table>
<thead>
<tr>
<th><strong>A2 Hooggelegen – road project</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project management</strong></td>
</tr>
<tr>
<td><strong>Client</strong></td>
</tr>
<tr>
<td><strong>Contractor</strong></td>
</tr>
<tr>
<td><strong>Contract type</strong></td>
</tr>
<tr>
<td><strong>Start construction</strong></td>
</tr>
<tr>
<td><strong>Completion</strong></td>
</tr>
<tr>
<td><strong>Project duration</strong></td>
</tr>
<tr>
<td><strong>Contract price</strong></td>
</tr>
<tr>
<td><strong>Actual costs</strong></td>
</tr>
<tr>
<td><strong>Location</strong></td>
</tr>
<tr>
<td><strong>Objects in project</strong></td>
</tr>
</tbody>
</table>
| **Media reports** | - Project success on KPIs: time, budget, hindrance, safety, quality, image and reputation  
- First and only project alliance of Rijkswaterstaat, as an experiment |
| **Other remarks** | Goals of the experiment:  
   - Find another approach to improve partnership  
   - Limit the time needed for a complex project  
   - Realize positive results for all stakeholders  
- Complexity compared to other parts of the A2: limited space and crowded environment |

8.3.2 Project history

The history of the project A2 Hooggelegen dates back to 2002. In this year politics, society and the construction sector were shocked by the findings from a Parliamentary Committee. This committee presented that contractors in this sector did not work in line with legal rules, by forming cartels. According to the committee, this had cost society hundreds of millions financial damage, and was not only due to the behaviour of contractors, but clients had problems as well. The Netherlands Competition Authority (Nederlandse Mededingingsautoriteit, NMa) implemented disciplinary measures,
and therefore it was the right moment for the construction industry to show that they were willing to cooperate more closely in innovative and experimental relations: such as Covenant A2 (Rijkswaterstaat/Trajectum Novum, 2011).

Project A2 Hooggelegen was part of this Covenant A2, in which parties agreed in November 2005 to start a building project on the trajectory of A2 Holendrecht – Ouderenrij. The aim of the project was to realize 2x5 lanes between Amsterdam and Utrecht in 2010. Another goal of the project was to develop knowledge about realizing infrastructure project quickly and in a sustainable way. Therefore, clients has the opportunity to experiment with tenders and process innovations. Given the complexity (due to the small and crowded) of the trajectory between Ouderenrij and the Leidsche Rijn tunnel, it was concluded that it would be impossible to realize this project in time with traditional processes. Therefore it was decide to execute the project in the form of a ‘collaboration in alliance-like partnership’ (SAV: Samenwerking in Alliantieachtig Verband), which started in November 2007. Although the municipality of Utrecht was not part of the Alliance-link (or SAV), they were closely involved in the project (Rijkswaterstaat/Trajectum Novum, 2011).

At the start of the project “many contractual elements were organized well, to give the alliance a flying start: for example by thinking upfront how interests can be unified best”, mentions a respondent (Interview Round 1, 2015). According to another respondent, the start was good because there was “a direct focus on best-for-project, because a joint project management plan was made in an early start” (Interview Round 1, 2015).

8.3.3 Project success and performance measurement
In the first stage of project A2 Hooggelegen project success was expressed by 6 KPIs, namely: time, budget, traffic hindrance, safety, quality and image. These KPIs were monitored in the following manner (Rijkswaterstaat/Trajectum Novum, 2011):

- **Time**: the goal was to make sure that the project was available before January 1st, 2011. For this KPI a financial bonus was organized if the project was realized earlier. A penalties would be given if the project is delivered too late. The contract requirement was to realize the project in 3 year and 2 months, finally the project was delivered in 2 year and 10 months.
- **Budget**: the goal was to realize the project within the available budget, and the ambition of the alliance (SAV) was to earn the maximal bonus of 22 million euros. During the project the budget increased due to extra work.
- **Traffic hindrance**: the goal of this KPI was to make sure the realisation of the project leads to maximal avoidance of traffic hindrance for users. A tool was developed to measure for example the increase in traffic jams and the extra travel time of people.
- **Safety**: the goal of this KPI was to realize a safe project for all involved people: users, surrounding residents, and constructors. For the monitoring an injury frequency (IF) was used.
- **Quality**: the goal was to realize the project according to the quality that was demanded, regarding the products that should be delivered, the project control, and the collaboration. For this, they mainly worked with external audits (on CMMi levels) and the number of differences with their own quality system.
- **Image**: the aim of this KPI was to realize the project in such a way, that it has a positive image with the surrounding area: users, the public, surrounding residents, stakeholders, and other governments. This was measured by investigating the perception of organizations and road users, and finally by counting complaints and positive publicity.

During the project monthly progress reports presented an overview of the KPIs and the progress on these indicators. By a positive score on these KPIs, a maximum budget of €22 million (10% of the total budget) could be earned.
Internally the progress was also presented by working with smiley’s (green, yellow and red), which indicated the progress and was shown in the cafeteria.

In a later stage of the project the AMT reconsidered when project A2 Hooggelegen is a success, and came to three main points, namely:

- Client and contractor are willing to collaborate in this way again
- The project matches with the surrounding projects: as part of the project Covenant A2, were A2 Hooggelegen among others linked to the delayed project Leidserijntunnel
- A healthy (financial) return: for both parties and on the alliance budget

Finally, A2 Hooggelegen was the only project of the five alliances that monitored the ‘soft elements’ of the project, via the so-called ‘Performability scan’ (De Rooij, 2009; Performability, 2015). This scan was conducted every six months, during a period of 2.5 years. The goal of this evaluation was to monitor the quality of the collaboration (as evaluation for Rijkswaterstaat), to gain insight in the functioning of the team and to provide input for improving performance. This scan was based on a questionnaire in the form of an online survey for the complete project organization: not only the alliance, but also people from the operating contractor. The response of the questionnaire was between 66% and 85% during the project. The complete scan exists of 48 aspects about the behaviour in teams regarding joint management, job management, and boundary management. These aspects were based on the 3R-model of Kuipers, a simplification of this model is presented in Figure 14 below (Kuipers, 2005).

![Figure 14: Simplification of the 3R-model of Kuipers (Kuipers, 2005)](image)

The 48 aspects fall within the 3R-model, visualized above. The main elements are (Kuipers, 2005; De Rooij, 2009):

- Responsibilities: workload and leadership
- Responsiveness: internal relations (joint management), task management (job management), and external relations (boundary management)
- Results: motivation and workload

These seven broader elements were scored by the respondents on a scale from zero to five. The result was an overview of how A2 Hooggelegen performed on ‘soft elements’, like collaboration, leadership, motivation and other aspects. Regarding the results, it was remarked as important to discuss the outcome of the scan. In addition to scores on the above mentioned elements, examples of outcomes from the scan were:
- The fact that workload influenced the evaluation of collaboration in a negative way (when people were exhausted due to the workload, they are less satisfied with the collaboration)
- When the interaction with external stakeholders became larger, addressing collaboration problems were evaluated less good (external expectations can influence the quality of the relation in the alliance) (De Rooij, 2009)

Finally, the use of the scan was evaluated positive by the respondents (Rapportage Performability Scan A2 Hooggelegen, 2008; Interview round 1, 2015). “The performability scan was valuable: it makes you look at yourself in a different way” argues a respondent (Interview Round 1, 2015).

8.3.4 Project results, satisfaction and lessons learned

The satisfaction with the project, according to the involved respondents, is unanimously positive. All respondent would start this project again if they had do decide, in more or less the same structure. Although some respondents had suggestions for improvement (Interview round 1, 2015).

Regarding trust, the general opinion according to the respondents is that there was a trusting relationship within the alliance during the project, but that trust was less optimal between the alliance and the parent organizations and other stakeholders. One of the explanations for this, mentioned by respondents, is that “trust within the alliance was so strong, that this strong connection created distance to the parent organizations” (Interview round 1, 2015).

As a result from the analysis of project A2 Hooggelegen, which is presented in the book ‘Het Experiment A2 Hooggelegen’, five lessons were formulated as recommendations for future alliance projects, namely (Rijkswaterstaat/Trajectum Novum, 2011):

- Bundling of interests does work: focus on the ‘best for project’ perspective, the attitude of RWS, and the bonus structure
- Openness performs better: open communication with stakeholders and authorities leads to quicker procedures, less claims and legal issues, and a higher stakeholder satisfaction level
- Suited for the heavy work: external urgency (time or quality), high complexity, large risks and need for trust
- Balance between control and moving along: dynamic management, combined with a basis of control
- Soft scores hard: commitment, process, interaction, and collaboration on the basis of trust contributes to the ‘hard’ project results

The respondents involved in project A2 Hooggelegen discussed their ‘lessons learned’ as well. The following suggestions for future projects were mentioned by some of the respondents (Interview Round 1, 2015):

- Pay more attention to the key figures ‘on the edge’ of the project (e.g. from parent organizations)
- Organize enough mandate from the parent organization for people within the alliance
- Pay even more attention to the soft elements of the project
- Do not only work on trust within the alliance, but between the alliance and the parent organizations and other stakeholders as well

Concluding remarks paragraph 8.3

Project A2 Hooggelegen is characterized by the fact that it was tendered as alliance, and that it is the first and only
8.4 Case “N201”

8.4.1 General project description
Project N201 (connection A4: Aalsmeer – Uithoorn) is the only project with a local government as client, namely the province of North-Holland. The project is part of a larger project: Masterplan N201. Table 11 below presents the general project information regarding the N201.

<table>
<thead>
<tr>
<th>N201 – road project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project management</td>
</tr>
<tr>
<td>Client</td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td>Contract type</td>
</tr>
<tr>
<td>Start construction</td>
</tr>
<tr>
<td>Completion</td>
</tr>
<tr>
<td>Project duration</td>
</tr>
<tr>
<td>Contract price</td>
</tr>
<tr>
<td>Actual costs</td>
</tr>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Objects in project</td>
</tr>
<tr>
<td>Media reports</td>
</tr>
<tr>
<td>Other remarks</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

8.4.2 Project history
The N201 rerouting project between Uithoorn and Aalsmeer is part of the larger project Masterplan N201+. In 2005 the managerial agreement concerning the N201+ project was arranged, and one of the first sub-projects was the rerouting project of Uithoorn – Aalsmeer. This project was tendered in a European procedure as Design & Construct contract, but with the intention to form an alliance. When in December 2005 a construction consortium with contractors Boskalis and Heijmans was selected, they jointly thought about what should be arranged in the alliance. Finally, the project started in June 2006 as an alliance (Boskalis, 2015; Interview Round 1, 2015).

“The project was put in the market as D&C contract, with an intention to form an alliance. Then, the selected party was involved and for half a year they jointly thought about what should be organized in an alliance”, mentions a respondent (Interview Round 1, 2015).
8.4.3 Project success and performance measurement

The performance measurement of project N201 can best be characterized by a quote of one of the respondents, who said, while laughing: “Performance measurement, did we do something like that?” (Interview Round 1, 2015). This quote makes clear that success factors were not defined clearly and a PMS was not organized. However, the alliance did report on the indicators budget, time and quality. The progress on these KPIs was described in quarterly reports (Interview Round 1, 2015).

Apart from time, budget and quality, no other KPIs were formulated and on no other indicators was reported. However, the surrounding area was managed in a more flexible manner. The alliance was responsible for the communication with the surrounding area and paid attention to this. They did not work with questionnaires, but with frequent conversations with for example associations of local residents. Furthermore, the manager of the surrounding area made an analysis of the complaints and possible suggestions for improvement (Interview Round 1, 2015).

Finally, another quote from a respondent involved in N201 is typical for the PM of this project: “Performance measurement of N201 was organized a bit as a half-baked solution, which was may be due to the small size of the alliance” (Interview Round 1, 2015).

8.4.4 Project results, satisfaction and lessons learned

The general opinion according to respondents, and related to the project success, is that the project in this alliance form has probably been a greater success than when this project was executed in a traditional manner (without forming an alliance). “Because an alliance forces you to collaborate, you can address the issues jointly”, is mentioned by a respondent as reason for the relative success of the alliance (Interview Round 1, 2015).

Regarding the trust within the project, most respondents evaluate the relationship between alliance partners slightly positive. Most of the respondents mention that there were moments of trust during the project, but also moments of less trust. A respondent argues that “within project N201, there never was 100% trust” (Interview Round 1, 2015).

When it comes to conducting this project again in the same form, the opinions are divided. Although respondents are moderately positive about the alliance, an interesting alternative for these kinds of projects is mentioned by some, namely Best Value Procurement (BVP). Furthermore, some respondents discuss suggestions to improve a possible future alliance, namely (Interview Round 1, 2015):

- **Less external employees** and more people from the parent organizations in the alliance
- Pay more attention to the **functioning of the alliance** and the people, and involve the alliance manager in an early stage
- Pay more attention to the **surrounding area**
- Create more **clarity** in an early stage, regarding the ‘grey areas’ (e.g. who is responsible for what)

Finally, an evaluation was conducted by the project organization. The following recommendations for future alliances were mentioned:

- **Requirements** for alliances: the project should be suited for an alliance
  - Check the requirements that an alliance project should meet upfront (project characteristics); make sure price is a less important factor (and quality more important) in the tender procedure; consider the
pros and cons of forming an alliance after a tender procedure based on a D&C contract; identify the risks by testing the initial design and initial budget; take enough time for the process of negotiations

- **Philosophy** for alliances: can be organized on a specific domain, and should not be a goal on its own
  - Formulate joint goals; act from an alliance philosophy; guarantee autonomy and trust in the organization
- **Organize decision-making power** and **mandate** on all levels of the alliance, and create **transparency** between the AMT and Alliance Board of Directors

**Concluding remarks paragraph 8.4**
The N201 project comes not forward as success story, compared to the other three realized projects. The lead time of the project was very long (almost 7 years), and not all involved people would directly choose for an alliance again. Furthermore, the trust within the alliance project is evaluated not strongly expressed as positive. The performance measurement was characterized as a “half-baked solution” and was, apart from some traditional monitoring on budget, time and quality, not filled in. Reflecting on the N201 alliance, suggestions are: to work with less external people, to pay more attention to the functioning of the alliance and the surrounding, and to create more clarity in an early stage. Furthermore, a project should be suited for an alliance, and mandate should be organized upfront. Finally, it can be remarked that, compared to for example projects Waardse Alliantie and A2 Hooggelegen, less information or evaluation documents are available about project N201.

**8.5 Case “OV SAAL”**

**8.5.1 General project description**
In contrast with the four projects in the previous phase, the OV SAAL project is currently carried out. In order to gain information about the practical use, application and suitability of a possible PMS that includes trust, a running project is chosen to retrieve information. This chapter aims at providing the reader some context regarding this running case. Table 12 below presents some general project information of OV SAAL.

**Table 12:** General project information about case ‘OV SAAL’ (Rahat, 2014; ProRail, 2015)

<table>
<thead>
<tr>
<th>OV SAAL – rail project</th>
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<tbody>
<tr>
<td><strong>Project management</strong></td>
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<tr>
<td><strong>Client</strong></td>
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<tr>
<td><strong>Contractor</strong></td>
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<tr>
<td><strong>Contract type</strong></td>
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<tr>
<td><strong>Start construction</strong></td>
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<td><strong>Completion</strong></td>
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<td><strong>Project duration</strong></td>
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<tr>
<td><strong>Contract price</strong></td>
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<tr>
<td><strong>Actual costs</strong></td>
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<tr>
<td><strong>Location</strong></td>
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<tr>
<td><strong>Objects in project</strong></td>
</tr>
</tbody>
</table>
8.5.2 Project history
The OV SAAL sub-project that is used as case in this research, is part of the larger OV SAAL project, which is a rail extension between Amsterdam Airport Schiphol, Amsterdam, Almere and Lelystad. The reason for this project is the expected increase in mobility between Schiphol and Lelystad, due to the growth of Almere, the Area of Amsterdam, the Zuidas and Schiphol (VHB Infra, 2015).

The start of the broader OV SAAL project dates back to 2008. In March of this year the Dutch cabinet decides to expand the rail infrastructure between Schiphol, Amsterdam, Almere and Lelystad. The aim of the project is to increase the number of trains per hour from six (in 2008) to twelve (in 2023). Therefore, in 2008 was decided by the Minister of Infrastructure and Environment to make a budget available for the project, and the sub-projects were divided. The execution of the broader OV SAAL project started in 2010. The sub-projects (WALTZ and Amstelspoor) were tendered as alliances and started in 2012 (ProRail, 2015; Rahat, 2014; Rijksoverheid, 2015).

8.5.3 Performance measurement
The performance of the project under supervision of the WALTZ alliance is monitored with six KPIs, namely: budget, time, collaboration, surrounding awareness, sustainability and safety. For the KPI budget, the alliance fund is managed, and for the indicator time the planning and project delivery date are monitored. Collaboration is measured with a mark, which is the result of a satisfaction research among stakeholders. Sustainability is a less tangible KPI. The alliance works on sustainability by realizing small projects, such as solar panels, a CO2-performance ladder, an electric vehicle and bicycles. Finally, the KPI safety is determined by using an injury frequency (IF). The alliance reports about the progress of these KPIs in their quarterly reports to the Alliance Board of Directors (Amsterdamse WALTZ, 2015; Interview Round 2, 2015).

The project under the supervision of the Alliance Amstelspoor works with 4 KPIs, namely: budget, time, satisfaction of the surroundings, and transfer to the rail infrastructure management. The KPIs budget and time are managed in a traditional way, however there is a bonus-structure related to project delivery in time. For the satisfaction of the surrounding, the alliance works with a questionnaire with 30 stakeholders. Furthermore, collaboration is no KPI, but is measured with the general performance measurement system of ProRail. This method is slightly adjusted by Amstelspoor: they prepare the performance measurement of ProRail together with the operating contractor and discuss the main issues (Interview Round 2, 2015; Amsterdamse WALTZ, 2015).

Concluding remarks paragraph 8.5
The currently running OV SAAL project exists of two alliances: WALTZ and Amstelspoor. The project is after Waardse and Bataafs Alliantie, the third (and fourth) project in an alliance form with client ProRail. The performance measurement of both WALTZ and Amstelspoor is characterized by some traditional (time and budget) and additional (surrounding area, sustainability, safety) indicators. Furthermore, WALTZ uses a KPI for collaboration. However, this KPI is mainly focused on the collaboration with and satisfaction of external stakeholders, not specifically within the alliance. Finally, the general impression of the satisfaction about the project and the collaboration within the project is positive.
Alliance PPP and project success in practice

As mentioned, alliance PPP and project success are no clear and unambiguous concepts. Perspectives on these concepts can differ. Where chapter 3 discussed these two terms from a literary perspective, this chapter presents the perspective based on empirical data gained by interview round 1. Given the chosen view on alliances and project success earlier in this research, it is might be interesting to notice if respondents look back on the alliance projects with a comparable or different perspective.

Just as chapter 8, this chapter contributes to providing the reader context regarding the cases (explanation can be found in Figure 12 from chapter 8). This chapter does not directly contribute to insight in trust, PM, or monitoring trust, but provide insights in what alliance projects are and what success for these projects is, according to respondents.

9.1 Characteristics of alliance PPP

With the practical experience from one (or more) of the four realized Dutch alliance projects, respondents reflected on what an alliance actually is and how this project delivery method is characterized. Some respondents mentioned that an alliance is about “joint risks and opportunities”, while others discussed the attitude of project partners, which should be “transparent and without traditional behaviour” (Interview Round 1, 2015). Furthermore, respondents focused on the “collaboration and collectivity, that creates a win-win situation” and the “joint goals and interests” (Interview Round 1, 2015). In addition, some organizational requirements were mentioned, such as “sharing staff, mandate with parent organizations, and the establishment of a new entity”. Finally, several respondents remarked that not every project is suitable to execute as an alliance, “there has to be a challenge: regarding time, technology, complexity or the surrounding area”, and there are criteria for starting an alliance (Interview Round 1, 2015).

Respondents mentioned these, and many other, characteristics. By a stepwise clustering process, as explained in appendix A.3 (and partially in A.4). The suggestions from respondents were translated into six elements, namely (Interview Round 1, 2015):

- **Sharing risks and opportunities** – Joint control on risks and opportunities, sharing risks and budget
- **Collaboration between 2 parties** – Create optimal situation for public and private parties and work on a joint challenge
- **Attitude** – Based on openness, trust and equality among people
- **Goals and interests** - Joint interests and a shared, clear project goal
- **Organizational requirements** – Such as mandate, soft and hard factors, early involvement, and sharing staff
- **Criteria for starting an alliance** – An instrument for (a certain domain of) large and complex projects
A more elaborate presentation of the empirical findings is shown in Figure 15 below and in appendix A.3. In the figure below more detailed information about each of the six elements is presented. It can be remarked that none of these six elements was mentioned significantly more or significantly less than other elements.

**Figure 15:** Characteristics of alliance PPP according to respondents (Interview round 1, 2015)

As a result from the literature review, some of the key elements of an alliance PPP mentioned, were: a joint contract and joint responsibilities, sharing positive and negative risks, working in close cooperation, based on principles of mutual trust, commitment and communication, as mentioned in chapter 3. Based on information from empirics, alliance PPP-projects are about: collectivity in goals and interests, sharing risks and opportunities, collaboration between two parties, some organizational requirements, and attitude. It can be stated that these characteristics, mentioned by involved stakeholders in the four Dutch alliance projects, are closely in line with the characteristics mentioned in literature, which is presented in Table 13 below (Interview round 1, 2015).

**Table 13:** Compare literature and empirics on definition of alliance PPP

<table>
<thead>
<tr>
<th>Literature</th>
<th>Empirics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint contract</td>
<td>Organizational requirement</td>
</tr>
<tr>
<td>Joint responsibilities</td>
<td>Collectivity in goals and interests</td>
</tr>
<tr>
<td>Sharing positive and negative risks</td>
<td>Sharing risks and opportunities</td>
</tr>
<tr>
<td>Working in close cooperation</td>
<td>Collaboration between two parties</td>
</tr>
<tr>
<td>Based on principles of mutual trust, commitment and communication</td>
<td>Attitude</td>
</tr>
</tbody>
</table>

However, one addition that was mentioned by respondents and that was not notable in scientific literature, are the criteria to start an alliance (although this was mentioned by Rijkswaterstaat). In Figure 15 above, these criteria are placed in a different box on purpose, because it is in fact no part of the alliance project, but a process that should be walked through before the start of the alliance.

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9 Criteria to start an alliance in paragraph 3.3 (de Bruijne, 2014). However, this is no scientific literature, but a more practical working document
Concluding remarks paragraph 9.1

Important elements in defining an alliance are, according to respondents: collectivity in goals and interests, sharing risks and opportunities, collaboration between two parties, attitude, and organizational requirements. Furthermore, based on certain criteria it has to be decided upfront if a project is suitable to execute as an alliance. It can be noticed that the academic perspective on alliance-PPP is to a large extent similar to the perspective according to respondents with practical experience in alliances.

9.2 Project success of alliance PPP projects

When respondents were asked to discuss what project success of alliance PPP-projects is, nearly all respondents are of the opinion that ‘project control’ (in Dutch: projectbeheersing, often about time, budget and quality) is an important indicator for project success. Controlling the planning and the budget contributes, according to most respondents, to a large extent to project success. Furthermore, as part of ‘project control’, indicators as quality and scope were mentioned. However, apart from project control, some other indicators were mentioned as of influence on alliance project success.

Several respondents mentioned that “support from the surrounding area and the satisfaction of users” is an important success factor, while others mentioned that project success is “being satisfied with the goals you defined jointly in an early stage” (Interview Round 1, 2015). Furthermore, the final “added value to society” of the project, and the fact that “client and contractor are willing to collaborate more often” are mentioned by a few respondents as project success indicators (Interview Round 1, 2015).

By a stepwise clustering process, as explained in appendix A.3 (and partially in A.4), all these (and many other) suggestions from respondents were translated into five elements. Project success according to respondents is related to the following elements (Interview Round 1, 2015):

- **Project control** – Especially time and budget, but also quality and scope
- **Surrounding area** – Satisfaction of and support among the surrounding area; minimum hindrance
- **Satisfaction with the jointly formulated goals** – Satisfaction of the involved parties
- **Long term goal** – The final societal outcome and added value
- **Collaboration** – A close team who wants to cooperate more often

Figure 16 below provides an overview, which is explained more elaborate in this paragraph and is supported by the information from appendix A.3.

In contrast with the indicator project control, which was mentioned by almost every respondent, indicators that were related to the long term goal and to collaboration were only mentioned by several respondents. Besides the five indicators above, some other interesting remarks from respondents were that “Project success is about both ‘hard’ as well as ‘soft’ elements” (Interview Round 1, 2015). This statement can be recognized within the five elements: project control might be ‘hard’, and ‘collaboration’ might be a more ‘soft’ element.

Another respondent argued that “Project success exists of a few standard components, but can also be customized work” (Interview Round 1, 2015). This is also recognized within the five elements: project control seems quite a standard component, but the other four elements can be added in a customized manner. Finally, it was mentioned that project success is about finding the balance between on the one hand moving with the involved stakeholders, making sure they are satisfied and that you have their support, but on the other hand about achieving your project milestones and controlling the project. This statement represents what was mentioned by many respondents: that project control (and
achieving milestones) is very important, but has to go hand in hand with a broader perspective (e.g. surrounding area, long-term) (Interview Round 1, 2015).

![Alliance project success](image)

**Figure 16:** Overview of project success according to respondents (Interview round 1, 2015)

It was mentioned by many respondents that project success is “achieving the goals that were formulated beforehand” (Interview Round 1, 2015). Therefore it might be interesting to compare the project success indicators mentioned by respondents to the KPIs that were used in the four Dutch projects. KPIs are formulated beforehand, so should be the right representation of the project goals, formulated jointly by public and private parties. The table below provides an overview of the KPIs of the four alliance projects used in the research. Although these KPIs were remarked with a same term (e.g. ‘budget’, ‘time’), this does not mean the KPIs in various projects were measured and monitored in exactly the same manner. Chapter 8 presents a more elaborate description of these KPIs, discussed per case.

![Table 14: Overview of KPIs used in Dutch alliance projects](image)

<table>
<thead>
<tr>
<th>Project</th>
<th>KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waardse Alliantie</td>
<td>Budget, Time, Quality, Safety, Surrounding area</td>
</tr>
<tr>
<td>Bataafse Alliantie</td>
<td>Budget, Time</td>
</tr>
<tr>
<td>A2 Hooggelegen</td>
<td>Budget, Time, Quality, Safety, Traffic disruption</td>
</tr>
<tr>
<td>N201</td>
<td>Budget, Time, Quality</td>
</tr>
<tr>
<td>OV SAAL (WALTZ)</td>
<td>Budget, Time, Collaboration, Safety, Surrounding area, Sustainability</td>
</tr>
</tbody>
</table>

In the explanation of chapter 8 it becomes clear that some KPIs were measured slightly different in the various projects. However, it can still be interesting to discuss the differences and discuss on which performance indicators the past alliance projects have focused. So, as shown in Table 14, budget and time are used as performance indicators in each of the alliance projects (although slightly different, as explained per case in chapter 8). In addition, another indicator that relates to project control is often applied, namely ‘quality’. Two of the four projects have used additional indicators, which relate mostly to the surrounding area. This table shows what one of the respondents mentioned: that project...
success exists of a few standard components, but can also be customized work (Interview Round 1, 2015). The standard components for Dutch alliance projects were budget, time and quality, which were sometimes supplemented with factors related to safety, the surrounding area, traffic disruption and image. The comments of the respondents about project success are to a large extent in line with the KPIs of the projects: there is an almost unanimous view on the importance of the indicators time and budget. However, it need to be remarked that time and budget were not measured or defined exactly in the same manner in each project, although a KPI in different projects does have a fundamental overlap (e.g. time was in each project related to achieving the planned milestones, and budget was mostly about staying within the upfront defined alliance budget).

Additionally, the surrounding area and keeping the stakeholders satisfied (e.g. by a positive image, no accidents, and minimal traffic hindrance) were mentioned by respondents, and were also used as performance indicators in alliance projects (Interview Round 1, 2015). Finally, it can be remarked that ‘collaboration’ was mentioned by some respondents as project success indicator, but is never used as performance indicator in one of the alliance projects. Collaboration was defined by respondents as: being a close team at the end of the project, public and private parties are willing to collaborate again, less claims, and involved people (e.g. team members and project parties) who are enthusiastic about and proud of the project (Interview Round 1, 2015). One of the reasons might be that collaboration is mentioned by many respondents as a mean, not as a goal in itself: and KPIs should have to be goals, according to many respondents. Another reason could be that it is hard to measure collaboration, so it will not be easy to develop a system that can measure this. In addition, because it is hard to measure, the actual effect of a good collaboration on project success is hard to define.

Concluding remarks paragraph 9.2
Project success is for a large part related to project control, according to respondents. Project control is about managing and controlling ‘hard’ indicators such as: time, budget, quality and scope. Other elements that define project success, are: the surrounding area, satisfaction with joint goals, collaboration, and the long-term. These elements were mentioned by respondents, but to a large extent these elements can be seen in the KPIs of alliance projects as well. However, ‘collaboration’ seems to be a missing KPI: this indicator is remarked as of influence on alliance project success, but is never used as KPI in the past alliance projects.
This chapter aims at answering the following sub-question:

“What are, based on practical experience, functional requirements for a performance measurement system suited for alliance PPP-projects?”

In order to work towards a performance measurement system (PMS) for alliance PPP projects, that includes the factor trust, a lot can be learned from experience from the past and an evaluation of previous projects. In order to explain the role of this chapter in the research, Figure 17 below can provide some overview again. Now chapter 8 and 9 sketched the context of the cases, chapter 10 will zoom in on one of the units of analysis: performance measurement, and will also aim at providing insight in how a sociological (or ‘soft’) factor as trust can be embedded in a PMS.

Within this chapter, paragraph 10.1 presents the evaluation of respondents on the performance measurement systems of the four Dutch realized alliance projects. This can function as rough framework for answering the sub-question. However, apart from the previous experiences, paragraph 10.2 provides a perspective on a desired PMS in current, daily practices. This focuses on desired situations, based on practical and current experience from the OV SAAL project. Finally, paragraph 10.3 will present a conclusion. Figure 18 below shows a visualization of the structure of this chapter. In appendix A.4 the background information that supports this chapter can be found.
10.1 Evaluation of previous performance measurement systems

The performance measurement systems of the four Dutch infrastructural alliance PPP projects are largely comparable, as already presented in chapter 8. Where the N201 and the ‘Bataafse’ Alliance both worked with a traditional performance measurement system that included only time and budget, the projects A2 Hooggelegen and ‘Waardse’ Alliantie used a slightly broader system, which also included KPIs as the surrounding area, quality and safety. With the experience of these projects in mind, respondents involved in the cases gave their perspective on performance measurement systems for alliance PPP projects. In general, the way the performance of previous infrastructural alliance PPP projects in the Netherlands was measured, is evaluated moderately positive by the majority of the respondents. However, there are many additions to the used performance measurement systems. Roughly, the respondents addressed additions related to the following five elements (Interview Round 1, 2015):

- KPIs: the number and type of KPIs (type of KPI is about the content of the KPI, e.g. time, budget, quality, surrounding area etc.)
- The way to obtain information (e.g. questionnaires, conversations etc.)
- Communication about the results (e.g. reports, numbers, presentations etc.)
- Process beforehand (e.g. formulating KPIs)
- Process during monitoring

It can be remarked that the evaluation of respondents on the PMS was mostly related to the type of KPIs. Additionally, the process beforehand was also discussed by a majority of the respondents. Some of the respondents mentioned the process during monitoring, the way to obtain information and the communication about the results. The following sub-paragraphs will describe the evaluation of respondents on these elements of the PMS. Finally, the last sub-paragraph will present some other remarks. Appendix A.4 provides the supporting information with this chapter.

10.1.1 KPIs

Only a few respondents discusses the number of KPIs to work with in an alliance project, and the opinions were quite diverse. When this topic was addressed, some say that a project should only use a very limited amount of KPIs (2 or 3) in order to keep the focus of the project. Others mention that the number of KPIs in projects Waardse Alliantie and A2 Hooggelegen is a suitable number (5 or 6). Finally, one respondent remarks that in an ideal situation, when parties work constantly from the perspective that is best for the project, you would not need any KPIs. However, in practice KPIs might be needed because they help project partners to continue the dialogue about how their goals can be achieved.
Although the number of KPIs was addressed by only a very few, the type of KPIs was discussed by almost every respondent. An additional indicator for a PMS mentioned by many respondents is related to the ‘soft’ or sociological elements of an alliance project. From the experience of previous projects and according to respondents it would be desirable to include factors as: attitude, behaviour, collaboration, trust and teamwork. Apart from these sociological elements, the surrounding area and its satisfaction with the project would be a valuable addition to a PMS for alliance projects, according to a significant part of the respondents. A few respondents mention that the factor safety should not be included in a performance measurement system, because this might stimulate non-ethical behaviour (e.g. making a trade-off between the investments in a certain safety measure, compared to the chance that an accident will happen). Finally, a few people mention indicators as risks and opportunities, optimizations in design, innovation, sustainability, and indicators related to a more long-term oriented perspective.

10.1.2 Way to obtain information
When KPIs are formulated, the information needed to score these KPIs can be obtained in several ways. For some KPIs measurement might be more straightforward: although KPIs like time and budget are also hard to measure, it is to a certain extent at least clear how to measure them (e.g. for time you keep an eye on the planning and for the KPI budget one should check if budgets are not exceeded). However, for certain KPIs it is even more complex to gain information, therefore some respondents remarked this. A few respondents mentioned, in addition to current PMs, that stakeholder interviews might be a valuable way to obtain information about project performance, because involved stakeholders can give direct feedback on the work the project team delivers. This can be an indicator for the project performance. Some other respondents mention that conversations with people inside the alliance might be a useful addition to current systems: assuming that peoples’ satisfaction (e.g. motivation, workload (Kuipers, 2005)) might be an indicator for project performance. About this subject, a respondent argues that “an alliance is about the people, their experience and perceptions” (Interview Round 1, 2015).

In addition to the way to obtain information, only a very few respondents addressed the frequency of monitoring. “A certain frequency in monitoring is necessary, and works as an incentive” (Interview Round 1, 2015). Conducting a single monitoring moment, or maybe two in a complete project lead team, does not contribute to success, according to respondents. When the satisfaction of alliance employees is monitored, this frequency might be very often (e.g. a quick daily check), according to respondents. It is argued that when the satisfaction of external stakeholders is monitored, this frequency might be less, but these stakeholders still have to be monitored regularly.

10.1.3 Communication about results
As mentioned, monitoring is about the direct adjustment of processes, in order to increase performance. Keeping this in mind, KPIs should not only be measured, but something should be done with these results. Several respondents suggest additions to current performance measurement systems, which are related to the communication of results. These respondents mention that the outcome of a performance measurement should be discussed with the people within the alliance, in order to realize that this outcome actually can influence the performance.

A few respondents suggest to involve a third, independent party to support this process, because it could contribute to an independent and objective perspective on the performance: the alliance should not mark their own paper. In addition to a discussion about the outcomes, the results should be available to everybody (e.g. hanging in the cafeteria). Besides that, an alliance has the formal duty to prove to their Board of Directors that a certain performance is actually delivered (accountability structure). The monthly or quarterly reports function as proving and reporting on this performance.

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10 As mentioned in paragraph 5.1 (de Peuter, 2007)
Furthermore, some respondents mention that one should focus on trends and differences between values, instead of focusing on the exact numbers. Especially for more soft elements a PMS is probably not able to provide a ‘quantified truth’, and presents only an indication. Therefore the focus must be on difference and trends. In addition, one respondent made the remark that measurement systems can sometimes level out the weak or extreme signals. Especially these weak signals can be a risk for the project, and are therefore interesting to discuss. The suggestion is to pay in particular attention to these weak signals.

10.1.4 Process before the start of the project

According to a majority of the respondents, performance measurement systems can be improved by taking the time and carefully organizing the PMS before the start of the project. Many respondents provide suggestions that are related to the process of formulating KPIs at the beginning of the project. A comment that was mentioned by many, is that parties should focus on the consistency between their jointly formulated project goals and the KPIs. From the perspective of several respondents, a KPI should always be in line with the project goals and should follow logically from these goals.

Other remarks regarding the process of formulating KPIs is that these indicators should keep their value over time: a KPI should not be worthless after the first project year, e.g. because it became impossible to reach the target. Another remark in formulating KPIs is that it can be valuable to formulate a KPI to which every department can contribute. Otherwise a KPI might not function in the stimulating manner that is desired. Finally, a very few respondents argue that all KPIs should have a specific target, be measurable and assignable, realistic and time-related (SMART).

In addition to the comments related to the formulation of KPIs, there are some other remarks regarding the early process. Some respondents relate the functioning of the performance measurement system to more basic factors, such as: a close and well-composed team with clear roles and tasks, and the support from the involved parties, especially the parent organization. The importance of these actions, according to a few respondents, is that the starting situation is key to success. In this first stage the parties should discuss their perspectives (especially about each other) and intentions, and establish a process how they deal with this. An open dialogue about these subjects in an early stage, might make feedback and monitoring in a later stage easier. Finally, a single respondent suggests that it might be valuable to simulate processes (e.g. the monitoring process) upfront. This can prevent the occurrence of first problems and teething troubles.

10.1.5 Process during monitoring

Apart from organizing processes upfront, there are some elements to keep in mind during performance monitoring suggested by several respondents. Many of these respondents mention that KPIs should be carried out clearly by the parties, e.g. via the AMT. The AMT can partly do this already by making sure that all their decisions are in line with the KPIs. In addition, it is important to have ‘guardians’ of the KPIs, who can propagate the ideology of these KPIs. These guardians should enthuse the alliance-employees in order to work in line with the KPIs and should make sure that employees are aware of these KPIs. They can only do this, when the performance measurement method is known to everybody in the alliance. Therefore, during the project, it is important to make sure that people in the alliance know how KPIs are measured. In order to realize this understanding among the people, the PMS should have a high degree of acceptance, should be tangible and understandable. Respondents remark that it is important to be open and transparent about this process of performance measurement. Alliance employees can only act in line with the KPIs, if they actually understand the KPIs. So the AMT needs to invest in communicating and explaining the PMS. A final remark made by some respondents regarding the KPIs, is that they should be used in a consistent manner. If KPIs are changed over time, it will be hard to compare the different outcomes.
Furthermore, a very few respondents mention the importance of milestones and discharge moments in the process of monitoring. Milestones can work motivating and discharge moments can prevent later discussions about old arguments.

Finally, during the monitoring, and as a result from a certain outcome of the PMS, some projects work with a financial bonus and penalty structure (e.g. the example of A2 Hooggelegen in chapter 811). Only a very few respondents mentioned this subject. A comment regarding this topic is that in general working with bonus is more interesting for the contractor than working with penalties.

10.1.6 Experiences with measuring soft elements in construction projects

Although the focus of this chapter was on PMS and the experience with PMS in alliance projects, some information about experiences with measuring ‘soft elements’ came across during interview round 1. Before paragraph 10.2 will elaborate more in-depth on measuring soft elements in an alliance project (based on information from interview round 2: OV SAAL), this sub-paragraph will shortly discuss findings from interview round 1 regarding this subject. Even though soft elements, like attitude, behaviour, trust and collaboration, were not included in the performance measurement systems of the four Dutch alliance projects, respondents shared their experience from other construction projects. Even though these measuring systems might not be applied in alliance projects, ideas from these systems can provide interesting ideas for the development of a PMS which includes the factor trust.

Organizations that are working on or have developed a measurement system for sociological elements are: the Regieraad Bouw, construction company Heijmans, Rijkswaterstaat, ProRail, Neerlands Diep, Performability, and a few individuals (Regieraad Bouw & PSIBouw, 2008; Interview Round 1, 2015; Rijkswaterstaat, 2014; ProRail, 2012). Appendix A.5 presents a more elaborate explanation of how these measurement methods were used in practice. This paragraph will focus on the specifications and differences between these PMSs. Because paragraph 10.1 already provides the elements of differences in performance measurement systems (that were distinguished by respondents), the methods (e.g. Regieraad Bouw, Heijmans, RWS, ProRail etc.) were analysed on these five elements. Table 15 provides an overview of the different methods. However, because an in-depth analysis of these methods (used in projects that were no alliance) is not part of the scope of the project, information about the process is limited. The interviewees were not always closely involved in the use of these methods, and most of the information was obtained by documents, which present more factual information than information about the process (Regieraad Bouw & PSIBouw, 2008; Interview Round 1, 2015; Rijkswaterstaat, 2014; ProRail, 2012). Therefore, these methods roughly vary on four elements: the content of the performance measurement method, the method used to obtain the information, the frequency of the tool and the way outcomes are communicated.

As shown in Table 15 the majority of the methods to measure soft elements works with statements, which are rated on a scale of 3, 4 or 5. These statements can be more general and relate to the overall team performance or to working principles, however the statements can also be more specific: rate yourself or your colleague on a specific statement. The most commonly used method to obtain this information is a personal questionnaire, this can be written or via an app. Some methods work with more open and shared questionnaires, by which one can fill in the questions together with a colleague. It might be even more transparent to make the questionnaire completely public, for example by handing a survey, questionnaire or list in the cafeteria. In the methods, these questionnaires or surveys are mostly used with a frequency of four times per year (once every quarter).

The outcomes are presented in different ways. Many methods choose for a presentation of overall conclusions, for example by generating one score, graph (e.g. pie-chart, spider web graph) or rating after processing all questionnaires.

11 In paragraph 8.3.3 was mentioned that A2 Hooggelegen worked with a bonus structure and a maximum of 22 million euros
Only the method in which a public questionnaire is used, shows the response of every individual. In this method it is possible to zoom in on a specific issue, instead of discussing only the overall average scores.

Table 15: Overview of different systems to measure ‘soft elements’ (Interview Round 1, 2015; Interview Round 2, 2015)

<table>
<thead>
<tr>
<th>Content</th>
<th>Method</th>
<th>Frequency</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regieraad Bouw</td>
<td>15 statements about the team and its performance (rate on scale of 3)</td>
<td>Personal questionnaire</td>
<td>Approx. every two months</td>
</tr>
<tr>
<td>Heijmans</td>
<td>17 personal statements and 2 open questions about your own and others behaviour during a meeting (rate on scale of 3)</td>
<td>Shared questionnaire (yourself and the team)</td>
<td>Approx. every quarter</td>
</tr>
<tr>
<td>Rijkswaterstaat</td>
<td>17 specific questions for the client about the contractor (rate on scale of 4)</td>
<td>Questionnaire</td>
<td>Every quarter</td>
</tr>
<tr>
<td>ProRail</td>
<td>45 statements about different themes, and 15 open questions (rate on scale of 5)</td>
<td>Personal questionnaire</td>
<td>Every six months</td>
</tr>
<tr>
<td>Neerlands Diep</td>
<td>84 questions about different themes (rate mostly on scale of 5)</td>
<td>Questionnaire</td>
<td>Approx. every quarter</td>
</tr>
</tbody>
</table>

Concluding remarks paragraph 10.1
Regarding the number of KPIs, the opinions were quite diverse. Furthermore, in addition to the KPIs used in the previous alliance projects, respondents suggest to include as KPIs: sociological elements, the satisfaction of the surrounding area, risks and opportunities, optimizations in design, innovation, sustainability, and a long-term perspective. Regarding the way of obtaining information about ‘soft elements’, interviews might be a useful manner to obtain information. Furthermore, the frequency of monitoring should be considered. Moreover, the communication about outcomes should be considered. It seems to be important to share the results and communicate or discuss about the outcomes to the (complete) alliance organization (not only on formal moments or by formal reports, but also by showing them in the cafeteria). When communicating about the outcomes, the focus should be on trends and extreme (or weak) values, instead of averages and absolute values. Furthermore, many respondents remark the importance of organizing a PMS upfront, for example by jointly discussing and formulating KPIs. It is important that the KPIs are in line with the project goals. Furthermore: KPIs should keep their value over time, every department should be able to contribute to a KPI, and KPIs should be SMART. KPIs should be carried out clearly during the project, for example by the AMT. Make sure that alliance employees know the KPIs, and know what they mean: otherwise they cannot act in line with KPIs. Use KPIs in a consistent manner during the project, to make sure that outcomes are comparable. Finally, although it was not the focus of this paragraph and interview round 1, there was some information obtained about measuring ‘soft elements’ in other construction projects. Elements on which these various methods to measure soft elements differ, are: the content of what is monitored, the method to obtain information, the frequency, and the communication of outcomes. These elements were all discussed in paragraph 10.1, so on these elements will be elaborated in the next paragraph. Paragraph 10.2 will provide a more in-depth perspective on methods to measure soft elements.
10.2 Desired performance measurement system according to current experience

10.2.1 KPIs

Based on their current practical experience in the rail project OV SAAL, respondents discussed their ideal performance measurement systems. According to many of the respondents, both from public as well as from private parties, an ideal PMS should include the following KPIs:

- **Time** – e.g. monitoring the project planning
- **Budget** – e.g. monitoring the project and alliance budget
- **Safety** – e.g. minimizing the number of accidents, actions to prevent incidents from happening
- **Surroundings and hindrance** – e.g. maximizing satisfaction of stakeholders in the surrounding area, minimizing hindrance (for the infrastructure users) from construction

These four indicators were mentioned by a large majority of the respondents. Furthermore, several respondents had the opinion that **quality** and **collaboration** should be included as KPI in an optimal PMS for alliance projects. Only a single respondent mentioned the **image**, the **transfer to the rail maintenance management**, and a factor related to **sustainability, long term, and responsible construction**. Apart from the content of the KPIs, some respondents argue that, in general, KPIs should be clear and **SMART** (specific, measurable, assignable, realistic, and time-related), so that KPIs cannot be understood incorrectly. The performance indicators should also be concretized, in order to function in an operational way, according to some respondents. A single respondent remarks the fact that a measurement system for these KPIs should be undisputed and constant, without too many intermediate adjustments.

In an ideal PMS the number of indicators should be limited to **approximately 5 KPIs**, is the general opinion of the respondents. The main reason is that a limited number of KPIs makes sure the alliance will keep its focus. However, some of the respondents mention that the number of KPIs depends on how active these indicators are used in the daily practice. It is mentioned by a single respondent that it would be valuable to link every KPI to a ‘KPI-owner’ (e.g. AMT members), in order to make sure someone feels responsible for achieving this KPI.

According to another respondent, it is important that KPIs should suit the challenge of the alliance. As mentioned in chapter 3, an alliance is often only established when there is a certain complexity in the situation, for example in terms of time or surrounding area. It is argued that this complexity, for which the alliance is established in the first place, should be a KPI. Additionally, many respondents argue that it is important to make sure that the KPIs formulated for the project, do not only match with the project goals, but to a certain extent also match with the organizational goals of the parent organizations.

Furthermore, a very few respondents have suggestions regarding the outcomes of a PMS (e.g. in terms of results or scores from the monitoring instrument). A single respondent mentions that a bonus structure based on penalties is commonly used, but this might not be the most favourable structure. Furthermore, parties should discuss the way they report to each other and should think about the right way to communicate with the outside world. It might be valuable to communicate to other stakeholders (e.g. the client and the surroundings) if project progress is realized, milestones are achieved and the project is successful.

10.2.2 Monitoring of soft elements

Although there is some first experience in monitoring the more ‘soft elements’ in project OV SAAL, there is no tested and widely used system applied in this case. However, respondents have shared their opinions about a PMS, which is
suited for monitoring softer elements. Mainly based on the information gained in paragraph 10.1.6 (presented in Table 15), the topics discussed are:

- Frequency of measurement
- Type of information
- Way to obtain information
- Communication of outcomes
- Involved parties

Although the aspect ‘involved parties’ was not specifically mentioned in paragraph 10.1.6, this element is included. The reason is that in chapter 4 was mentioned that tension mainly exists on interfaces between parties, and the importance of boundary spanning persons. Therefore it might be interesting to check if a monitoring instrument for soft elements should be applied only on the alliance, or on the client and contractor (or others) as well.

According to most respondents, an ideal PMS that measures also the soft elements in a project is used approximately once every quarter or once every six months. Some respondents argue that a frequent measurement moment is necessary, in order to give parties the opportunity to improve. However some say, it can also depend on the length of the project (e.g. longer project lifetime needs less frequent monitoring). Additionally, a single respondents argues that monitoring can be flexible, and might be more needed in critical moments, such as moments close towards a milestone. Furthermore, the importance of a baseline measurement is remarked by one of the respondents. Finally, a very few respondents mention that, whatever the term and frequency is, the focus should always and only be on the last period of time. As main reason, a respondent mentioned that issues and old arguments from many months or years ago, should not be discussed in the evaluations, where the focus should be on current issues (e.g. from the last quarter). It is argued that if such a system is applied, no ‘old and endless’ problems can arise.

Paragraph 10.1 of the research presented that trust is especially important on interfaces between organizations. This arises the question, which parties should be involved in monitoring trust in alliance projects? Many of the respondents have the opinion that in such a monitoring, more people should be involved than only key figures. Some argue the complete alliance and the operating contractor should be involved (on all levels of the alliance), in order to make sure that developing problems in all levels of the project organization can be recognized by the PMS. Additionally, the importance of involving parent organizations is mentioned by some. Therefore it might be valuable to involve (key) persons of the contractor and client organization in monitoring of soft elements. When the parent organizations are not involved, it might be a risk that the alliance itself will become so close, that the parent organizations will become very distant. It is even remarked by one single respondent, that it could be interesting to involve surrounding parties and other stakeholders. Only a few respondents are in favour of monitoring in which only key figures are involved, such as the AMT members or other people who are involved in the public-private interaction.

According to most of the respondents, a monitoring system should at least include an evaluation of each other (for example by means of a questionnaire). It is proposed to review each other, for example in terms of actions, openness in communication, attitude, behaviour, and reaction to questions and feedback. A very few respondents remark that such an evaluation can be done best with counterparts. In project OV SAAL a ‘zipper structure’ is organized: this means that one person in the alliance has a counterpart, namely one person in the parent organization. This structure is evaluated positively by a few respondents, and is proposed as suitable structure for counterpart-evaluations. However, a single respondents remarks the difficulty of evaluating each other personally, and proposes to review each other’s

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12 As discussed in paragraph 3.2 and 4.2
work or deliverables. Furthermore, some respondents argue that it is especially important to monitor the **satisfaction** of people, both in their work as well as in the team (e.g. do they feel involved, do they dare to give their opinion, do they have pleasure in working). Additionally, a single respondent proposes an evaluation of more difficult situations: how do people act when something went wrong, do they communicate, and do they jointly seek for a solution? Finally, as remarked by one of the respondents, the type of information obtained in these monitoring moments should be defined jointly and should suit your goals.

This information should be collected by conversations, based on questionnaires (e.g. with your counterpart), according to most of the respondents. A questionnaire can facilitate that people already thought about their answers before the conversation actually starts, and provides some focus. One of the functions of a conversation is to create mutual understanding. Only a single respondents argues that conversations are desirable, but are often hard to realize (in terms of time). Few of the respondents argue that a questionnaire depend strongly on the moment, this should be taken into account when discussing the outcomes. Regarding the content of the questionnaires, very few respondents argue that this should be a short and simple questionnaire, which includes room to elaborate or to give feedback (e.g. an open question).

When information is collected, it can be used and presented in different ways, as already mentioned in paragraph 10.1. According to some people involved in project OV SAAL, outcomes of the monitoring should be discussed with the participants. However, argue a few, this conversation can best take place on the basis of reports and outcomes (if necessary with help of an external independent party). Because on the one hand, the outcomes of a questionnaire or a report can function as an input for the discussion (e.g. critical issues, ‘low scores’, developing problems on the agenda). On the other hand, the team members are prepared for a conversation, if they have reflected on the trust (or other sociological aspects) in the project team already. Otherwise a discussion or conversation might come as a surprise, and team members might not be well-prepared. Another proposed method to communicate the outcomes, is a so-called ‘zeepkistsessie’: a public platform session, which is open to people in the alliance to speech. Some others argue that conversations or speeches are not necessary, but (quarterly) reports and internal newspapers are sufficient. Additionally, respondents discussed the expression of outcomes. Most of them argued that a score or grade can be hard to determine for aspects like trust. However, it is favoured to express the results in a physical way, for example by visuals, colours or smiley’s. A very few respondents argue that, in these outcomes, it is not about the averages and the exact numbers, but it is about the extreme values and the interpretation of the outcomes.

Finally, respondents from the OV SAAL project reflected on the process of monitoring, as remarked of importance in the previous paragraph of this chapter. When a PMS is designed, it is of importance to make sure the system is **transparent** and applied in a **consequent manner**, according to a few respondents. Because the results are more about trends than about absolute values, it is important that the system is not adjust, but applied in the same manner (and optional with the same lead time). Furthermore, a few respondents remark the importance of **discussing the goals** of monitoring, and the importance of discussing this jointly. Only single respondents remarked that KPIs should even be more specified and concrete, that discussions should be about supporting examples with scores (not about number and scores itself), and finally the importance of a good project start.

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**Concluding remarks paragraph 10.2**

It should be considered which KPIs to include in a PMS (in line with project goals), but an ideal PMS should at least include some ‘basic’ KPIs like: time, budget, safety, and surroundings and hindrance. Furthermore, the PMS can be supplemented with KPIs like: quality and collaboration, or even more additional indicators. These KPIs should be **SMART** and applied in a consistent manner. The number of KPIs used in a PMS should be approximately 5. Based on alliance project experience from the OV SAAL case, respondents shared their opinion on a PMS that includes
soft elements, like trust. The frequency of such a monitoring system should be once every quarter or once every six months. Within this monitoring more people than only the key figures should be involved, it could be considered to involve the complete alliance and people beyond the boundaries of the alliance. Furthermore, this monitoring should include an evaluation of each other, and information can best be gained by conversations based on questionnaires. The outcomes from this monitoring system should be openly communicated and discussed.

### 10.3 Conclusion: functional requirements for a performance measurement system

Based on the evaluation of respondents on the PMS used in the Dutch alliance projects and based on the information gained by analysing current methods to measure ‘soft elements’ (paragraph 10.1), an overview of requirements for a future PMS can be made, based on Interview Round 1 (2015). These requirements are shown in Table 16 below.

**Table 16: Requirements for a performance measurement system**

<table>
<thead>
<tr>
<th>Content of KPIs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A limited number of KPIs to stay focused (e.g. 2 to 6)</td>
<td></td>
</tr>
<tr>
<td>□ The possible addition of a factor for ‘soft elements’, like attitude, behaviour, collaboration, trust and teamwork</td>
<td></td>
</tr>
<tr>
<td>□ The possible addition of a factor for the surrounding area and its satisfaction with the project</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Way to obtain information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ The possible addition of stakeholder interviews</td>
<td></td>
</tr>
<tr>
<td>□ The possible addition of interviews with alliance employees</td>
<td></td>
</tr>
<tr>
<td>□ A certain frequency in the monitoring</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication about the results</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Discussion about the outcomes of the performance measurement, with the people working in the alliance</td>
<td></td>
</tr>
<tr>
<td>□ Results should be made available for everybody</td>
<td></td>
</tr>
<tr>
<td>□ Publication of formal reports</td>
<td></td>
</tr>
<tr>
<td>□ Focus on trends and differences in values, instead of exact numbers and a ‘quantified truth’</td>
<td></td>
</tr>
<tr>
<td>□ Pay attention to weak signals, do not level them out by drawing general conclusions</td>
<td></td>
</tr>
<tr>
<td>□ Consider and discuss the bonus and penalty system</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process beforehand</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ KPIs should result from jointly formulated project goals</td>
<td></td>
</tr>
<tr>
<td>□ A KPI should be formulated so that it can keep its value over time</td>
<td></td>
</tr>
<tr>
<td>□ A KPI should be formulated in a way that every team member and every discipline can contribute to this KPI</td>
<td></td>
</tr>
<tr>
<td>□ KPIs should be SMART and measurable</td>
<td></td>
</tr>
<tr>
<td>□ Early dialogue: discuss the starting situation, perspectives of the cooperation parties (especially about each other) and intentions</td>
<td></td>
</tr>
<tr>
<td>□ Positive for the process beforehand is: A well-composed team with clear roles and tasks, and support from parent organizations and other involved parties</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process during monitoring</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ The AMT or appointed ‘guardians’ should carry out and propagate the KPIs and its ideology</td>
<td></td>
</tr>
<tr>
<td>□ Decisions of the AMT should be in line with the KPIs</td>
<td></td>
</tr>
<tr>
<td>□ The performance measurement method should be known to everybody</td>
<td></td>
</tr>
<tr>
<td>□ The PMS should have a high degree of acceptance, should be tangible and understandable</td>
<td></td>
</tr>
<tr>
<td>□ The process of performance measurement should be open and transparent: communicate and explain the PMS</td>
<td></td>
</tr>
<tr>
<td>□ The PMS should be used in a consistent manner: changing KPIs over time makes it hard to compare them</td>
<td></td>
</tr>
<tr>
<td>□ Work with milestones and discharge moments</td>
<td></td>
</tr>
</tbody>
</table>
Although paragraph 10.1 provided some information about possible methods to monitor ‘soft elements’ in construction projects, these methods are not specifically suited for alliances and additionally there is no evaluation about the success of the methods. Therefore, there are no requirements or assumptions following directly from these methods. However, the elements on which these used methods differ, as presented in Table 15, can be used as tool for considerations about the design of a PMS that includes a factor like trust. Based on the information gathered in paragraph 10.1, more information was gathered about a desired PMS, based on experience from the currently running OV SAAL case, and within the framework of the mentioned elements in paragraph 10.1. Figure 19 below visualizes the characteristics of what might be an ideal PMS, based in information from both previous experience (the four realised alliance projects) as well as current experience (OV SAAL) in an alliance project.

In the figure below the black coloured (small) text was obtained by interview round 2 (2015), discussed in paragraph 10.2. The blue coloured (small) text is following from the requirements in Table 16 above, which was constructed based on that information from interview round 1 (2015), discussed in paragraph 10.1.

**Concluding remarks paragraph 10.3**

Based upon the suggestions from respondents from Interview Round 1, a list of requirements of a PMS that could include a ‘soft factor’ as trust was formulated and presented in table 16 above. In addition, the respondents from Interview Round 2 provided even more concrete information. Therefore, the information from both interview rounds was merged into one overview: figure 19 below. The information from these empirical rounds provides requirements for the design of a PMS, in which the KPIs, the processes and the monitoring of ‘soft’ elements are presented. Finally, figure 19 will function as input for the development of an instrument that aims at embedding trust in a PMS for infrastructural alliance PPP-projects. Therefore, figure 19 will be used in paragraph 12.1 and is finally input for paragraph 12.3.
### Ideal PMS

<table>
<thead>
<tr>
<th>Type of KPIs</th>
<th>Number of KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time, Budget, Safety, Surroundings and hindrance, Quality, Collaboration, Image, Transfer to rail maintenance management, Sustainability, long-term and responsible construction, Possible addition of a factor for ‘soft elements’, Possible addition of a factor for surroundings and satisfaction</td>
<td>Approximately 5 KPIs, A limited number to stay focussed (2 to 6)</td>
</tr>
</tbody>
</table>

### Other requirements

- KPIs should be clear and SMART
- KPIs should have a responsible person, ‘owner’ or guardian
- KPIs should match with goals and complexity of alliance project
- KPIs result from jointly formulated goals
- KPI should keep its value over time
- KPIs and the PMS should be understandable for everybody, and each discipline can contribute to the KPI

### Processes

#### Process beforehand

- Discuss goals of monitoring beforehand
- Pay attention to the importance of project start-up
- Early dialogue: discuss starting points, perspectives and intentions
- Select a well-composed team with clear roles, tasks and support from parent organizations

#### Process during the project

- Apply a transparent PMS in a consequent manner
- Focus on examples and stories, instead of actual numbers and scores
- The AMT should make sure decisions are in line with KPIs
- Pay attention to the acceptance of the PMS, make sure the method is known, tangible and understandable
- Process of PM should be open and transparent: explain the PMS
- Use and apply the PMS in a consistent manner
- Work with milestones and discharge moments

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**Figure 19:** Characteristics of an ideal PMS, based on the framework from paragraph 10.1 and opinions of respondents involved in project OV SAAL (Interview round 1, 2015; Interview round 2, 2015)
Trust in alliance PPP projects

In each of the five Dutch infrastructural alliance projects trust came and trust went. In some periods a project can be characterized by a trusting relationship, and another moment there can be less trust between the parties. This chapter aims at answering the following sub-question:

“By which means can the critical success factor trust be measured and monitored, and included in a performance measurement system, which is suited for alliance PPP-projects?”

In contrast to chapter 8 and 9, this chapter will zoom in on one of the units of analysis: trust and monitoring of trust, just as chapter 10. For further explanation of the function of this chapter is referred to Figure 17 in chapter 10 and Figure 2 in chapter 2.

In paragraph 11.1 and 11.2 a perspective on this dynamic and abstract concept of trust will be presented, from the perspective of stakeholders from public, private and independent organizations, who were involved in one of the four Dutch realized alliance projects. These paragraphs provide a rough framework for answering the sub-question, from the perspective of past experiences and the evaluation of previous alliance projects. Additionally to this perspective, paragraph 11.3 will present a more in-depth perspective, which includes the practical side of measuring trust and suitability, according to participants of a currently running project (OV SAAL). It needs to be remarked that this paragraph 11.3 will not function as validation of the findings from 11.1 and 11.2, but will function as deepening process in addition to paragraph 11.1 and 11.2.

Finally, paragraph 11.4 will discuss the conclusions from this chapter. An overview of the structure of this chapter is presented in the figure below.
11.1 Factors influencing trust in alliance PPP projects according to an 
evaluation of previous experience

When respondents were asked to tell something about trust in the project they were involved in, many topics came across. Supported by stories from practice, a joint search for the operationalization of trust resulted in eleven elements by which trust in alliance PPP-projects can be influenced. These eleven elements are formulated by interpreting and clustering the information of respondents. Appendix A.2 and A.6 provides more insight into this interpretation and process of clustering. An overview of all elements is shown in Figure 21.

![Figure 21: Elements that influence trust, according to respondents (Interview Round 1, 2015)](image)

It can be remarked that a large majority of the respondents mentioned the factors: people (1.1), communication (1.2) and relation with parent organization (1.3), as of influence on trust in the alliance project. The elements working principles (1.4), organizational (1.5), and collectivity (1.6) were only mentioned by several respondents. The other factors, 1.7 up to and including 1.11, were discussed by only a few.

Each element is discussed more elaborate in the following sub-paragraphs. Given the assumption that these elements influence trust, suggestions are given how to influence trust in a positive manner: both before start of the project as well as during the project. The colour of each element is used in chapter 12 (paragraph 12.3) of this research.

Finally, it can be remarked that a large majority of the respondents has the opinion that the alliance project they participated in was characterized by a trusting relationship.
11.1.1 People

Nearly all the respondents have the opinion that the individual people who work in an alliance influence trust between the involved organizations. According to them, individuals can play a central role in the extent to which the relation between the involved parties is characterized by trust, and thereby the success or failure of the alliance. “Central to project success, are the people” is mentioned by a respondent (Interview Round 1, 2015). People who are open-minded, think broad, and listen to other people, can contribute to a trusting relationship. Furthermore, respondents argue that, in order to have a trusting relationship, people should have a certain alliance-oriented attitude and should have certain characteristics in their personality. In addition, the complete team should be matched to each other, for example in diversity (e.g. different personalities) and equality (e.g. in skills and knowledge).

According to several respondents, the personality and attitude are especially of importance for the key figures in a project, for example the AMT, boundary spanning people and the Board of Directors. These key figures (and sometimes also other participants in the alliance) should have an exemplary role for people in the alliance. Therefore, it might even be more important to select suited key players, in terms of e.g. attitude, cooperation-focused, openness, and communicative.

Most of the respondents have the opinion that people can be influenced best by an upfront selection of the team, in which people can be selected based on their attitude and personality. Related to the attitude, several respondents mention specifically that people in an alliance should not have a traditional attitude, which is characterized by distrust, asymmetrical risk distribution and a focus on personal gain. When people act in a traditional manner, this could lead to a decrease in trust. Apart from a selection upfront, it is argued by some that the attitude of people can be influenced positively by a project start-up event. This start-up can have the function to make people aware of the working of the alliance and the required (non-traditional) attitude.

After an interpretation of the data, it is assumed that trust between organizations in an alliance can positively be influenced by:

- An upfront selection of the team
- Attention for a project start-up event
- Feedback and evaluation moments during the project
- A sufficient human resource policy
- The attitude of people during the project

Figure 22 provides a complete overview of how these five factors can be positively stimulated, in order to create a trusting relationship in the alliance. On the other hand, these same elements can do harm to trusting relationships. For example, when individuals in an alliance do not have an equal level (e.g. in terms of knowledge and capabilities), this can result in fears and worries by the one with less capabilities, which can finally result in less trust. Other examples of possible risks, mentioned by respondents, are shown in Figure 22.
### Risks
- If there is no equality between people, this can lead to fears and worries (especially from the one on the bottom), and finally less trust
- A traditional attitude of people, focused on profit and self-interest, can lead to a clash
- People without alliance attitude can stimulate an ‘us vs. them’ feeling, and finally result in a longer lead time, because more questions will be asked

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**Figure 22:** Perspective on how trust can be stimulated by individual people

#### 11.1.2 Communication

It is argued by nearly all respondents that the way of communicating with each other, can influence a trusting relationship between parties in an alliance. Most of these respondents have the opinion that openness and transparency is key to trust-stimulating communication. “A high degree of openness led to a trusting relationship within the alliance” mentions one of the respondents, referring to project A2 Hooggelegen.

Examples mentioned by respondents to stimulate openness and transparency are: information accessibility, open budgets, AMT or board members who mention that the process is open, and being transparent about your actions, issues and success. In addition to open and transparent communication, the parties should communicate frequent and direct with each other in order to stimulate a trusting relationship. Frequent communication means that individuals in an alliance should communicate more than they are used to in traditional projects, both in an informal as well as in a formal way. “Stay continuously in conversation: know what is going one!” mentions a respondent regarding frequent communication.

Furthermore, several respondents have the opinion that a certain way of decision making can lead to a more trusting relationship. When decision criteria are clear, all arguments and motivations are mentioned, and the right people (with...
mandate) are on the decision-making table, it is more likely to succeed and to influence trust positively. Finally, it is important that decision-making proceeds with a certain speed. When files are in the pipeline too long and decisions are postponed, this can result in project delays and frustration and disappointment of stakeholders.

According to the respondents, communication can almost solely be influenced during the project, instead of upfront (compared to, for example the element ‘people’). When respondents were asked to mention actions to undertake in order to influence trust in a positive manner through communication, only a very few respondents came up with upfront measures. The only element mentioned, which can be organized upfront, is drawing up communication procedures. Figure 23 provides an overview of the key elements.

Figure 23: Perspective on how trust can be stimulated by the way of communication

Although these suggestions to stimulate a trusting relationship by communicating in a certain way, might be valuable, one should keep possible risks in mind. When an alliance is focused on frequent and open communication, this could lead to the development of a meeting culture.

11.1.3 Relation to parent organization

By a large majority of the respondents, the relation to the parent organization influences trusting relationships between parties within an alliance. Almost all respondents who mention this element, argue that especially the mandate of key players is important. Not only the alliance manager and the AMT, but also key players within the parent organization who have a link with the alliance (boundary spanners), should have enough mandate to make decisions. According to respondents, mandate can best be organized upfront, just as the commitment of the parent organizations. The link
between the alliance and parent organizations is formally often formed by the Alliance Board of Directors, but an even closer link (e.g. by appointing a ‘connecting-officer’) can be valuable to the relationship.

Apart from aspects that can be organized upfront, the relation with parent organizations can also be influenced in a positive way during the project. Three elements are of importance during the project:

- The attitude of parent organizations
- The arrangement of a relation at board level
- The attitude of alliance team members

For the parent organizations it is important to adjust the mandate structure of their organization in traditional projects: a contractor should accept the mandate is smaller before he escalates, and a client should arrange more mandate than normally. Furthermore, the relation between the alliance and parent organizations can be improved by a good relation (e.g. by frequent and informal contact) between board members. Finally, the attitude of the alliance team members influence the relation with parent organizations. As individual you should be able to deal with the dual role you have, as alliance member and as employee at the parent organization. Finding a balance between these roles and being aware of differences between the alliance and a parent organization, are key to success. An overview of all these factors influencing trust and the relation to parent organizations, are presented in Figure 23.

Finally, it has to be remarked that some respondents mentioned specifically that trust is most problematic at the interfaces. As shown in figure 6 in chapter 3 (Interview Round 1, 2015), there is an interface between the client and the alliance, and between the contractor and the alliance. This substantiates the importance of attention for the relation with parent organizations. Furthermore, it was noticed that trust on the interface seemed to be more problematic on the interface between client and alliance, than between contractor and alliance. “It is desired to have a trusting relation with the parent organizations, however the trust between the alliance and the client was sometimes less” argues a respondent involved in project A2 Hooggelegen. It can also be noticed that issues with other interfaces (e.g. client with stakeholders, contractor with subcontractor), were hardly mentioned.

According to some respondents a lack of trust can start with higher, conflicting interests from the parent organization. Goals, interests or situations might change over time, which can lead to an inconsistency between the alliance goals and the goals of a parent organization. The changed organizational goals might not be in line anymore with the goals the alliance partners established for the project upfront, this conflict in goals might lead to problems. Tackling these possible risks in an early stage, by a good relation and close link between the alliance and parent organizations, can prevent the development of distrust.
11.1.4 Working principles

Some respondents share their positive experience with so-called working principles in an alliance project, and have the opinion that these kinds of principles can positively stimulate trust in the alliance. Working principles are a sort of basic principles, which the parties agree to work upon. Alliance partners can discuss upfront on the basis of which principles they prefer to work together, for example during the project start-up meeting. After these principles are jointly defined, the parties should live up to them. When these principles are not implemented and discussed, this might lead to non-desired behaviour (e.g. a traditional attitude), which can finally result in clashes and a lack of trust.

Many respondents gave examples of working principles of which they think they are valuable. Some of the principles that were mentioned relate to: intentions, alliance-attitude, respect, best for project, openness, and acceptance of mistakes. “Get people out of their natural tendency for distrust, for example by establishing working principles and explain people how working together in an alliance works” argues a respondent involved in the Bataafse Alliantie.

Furthermore, the process of working principles is simple: before the start of the project the working principles are defined jointly, and during the project these principles are discussed by the participating parties. Although it is important to be aware of the principles and comply with them during the project, one should also watch out for being too strict with the principles: they should function as a guidance, not as a clear, definite handbook. The complete overview of the factor working principles is shown in Figure 25 below.

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**Figure 24:** Perspective on how trust can be stimulated by the relation with parent organizations

<table>
<thead>
<tr>
<th>Upfront Organize mandate and commitment</th>
<th>During project Attitude of parent organizations</th>
<th>During project Arrange relation at board level</th>
<th>During project Attitude of alliance team members</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Alliance manager with enough mandate</td>
<td>• Contractor: accept that the mandate before you escalate is smaller</td>
<td>• Board of directors should represent the interests of parent organizations</td>
<td>• People who can function with a dual role: balance between alliance member and employee at parent organization</td>
</tr>
<tr>
<td>• Alliance management team with mandate</td>
<td>• Client: arrange more mandate and clarify choices later</td>
<td></td>
<td>• Work in close cooperation, but stay open to the parent organization</td>
</tr>
<tr>
<td>• Key players within parent organizations with enough mandate</td>
<td>• Involve especially the client in an early stage of the decision-making</td>
<td></td>
<td>• People with an awareness of differences between alliance and parent organizations, who can bring these differences up for discussion</td>
</tr>
<tr>
<td>• Visible coverage of line managers (for the alliance)</td>
<td></td>
<td>• Arrange frequently informal and formal contact between board members from both parent organizations</td>
<td></td>
</tr>
<tr>
<td>• Involve key players 'on the edge' of the organizations in an early stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Appoint a 'connecting-officer' between the parent organization and the alliance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Appoint an alliance Board of Directors (existing of board members from both parent organizations)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 25: Complete overview of the factor working principles**

- Higher, conflicting interests from the parent organizations can lead to less trust, especially when the parent organizations are trying to achieve these conflicting goals
- If the link with the parent organization is not good, this can result in extra work and can harm people personally
11.1.5 Organizational

Several respondents argue that certain organizational factors can be of influence on trust in an alliance PPP project, of which Figure 26 provides an overview. With organizational factors, these respondents refer to:

- Working together physically
- Define process agreements
- Agree on the contract

Firstly, working together at the same office location is mentioned by some of the respondents who discussed organizational factors. They argue that when people meet more often (e.g. in the cafeteria, coffee break or in the hallways), it is likely they share their activities, questions and issues more often, and create a trusting relationship. Furthermore, the respondents have the opinion that parties should define process agreements at the start of the project. These agreements can relate to the decision-making structure, stakeholder management, quality, scope, and other topics. Finally, parties should discuss the contractual agreements in an early stage. These agreements should, at least to a certain extent, be on an equal level in terms of risk, budget, and responsibilities.

Logically the organizational factors can mainly be influenced before the start of the project. None of the respondents mentioned any actions that could be carried out during the project.
11.1.6 Collectivity

Several respondents have the opinion that a trusting relationship between parties in an alliance PPP requires a certain collectivity between these parties. This is a broad term, which not only covers collectivity in executing mutual goals and interests, but covers also a certain attitude, which is in line with such a close collaboration.

Figure 26: Perspective on how trust can be stimulated by organizational factors

Figure 27: Perspective on how trust can be stimulated by collectivity
In order to positively influence trust by collectivity, it is important that before the start of the project parties discuss their interests and jointly establish their goals. A few respondents remark that, although an alliance is about joint goals, it might be at least as important to clearly discuss conflicting interests. It is argued that insight in and respect for each other’s interests, can contribute to a trusting relationship. Apart from the conflicting interests, there also should be a joint interest, from which the project goal can be formulated. When the goals are formulated upfront, it is important that alliance employees are jointly carrying out tasks in order to achieve these project goals, by searching together for solutions and chances. Additionally, collectivity requires a certain attitude. In order to actually work collectively on a joint task, people should work from a best for project perspective, and should not act out of power, but out of trust. A very few respondents mention the risk of acting out of a powerful position, and conclude this could lead to a decrease in trust. An overview is presented in Figure 27.

11.1.7 Dealing with conflicts

According to few respondents the way parties deal with conflicts, can be of influence on a trusting relationship. Firstly, some of these respondents argue that the way parties deal with the first conflict is a leading example for the rest of the project. If this first conflict is solved jointly, in close collaboration and without shifting responsibilities to the other party, this could have a stimulating effect and could create trust. In addition, it is argued by respondents that conflicts should be discussed by the parties, at least on AMT level, but if necessary also in a project follow-up, by an incident analysis or with help of an external chairman in meetings.

None of the respondents who discussed dealing with conflicts, mentioned specifics risks. Additionally, there were no upfront measures mentioned to stimulate that parties handle conflicts properly in a later stage. Finally, Figure 28 shows a complete overview of the influencing elements.

![Figure 28: Perspective on how trust can be stimulated by the way in which is dealt with conflicts](image)

11.1.8 Compliance

Only a few respondents remark the importance of compliance to the agreements made with each other, in order to come to a trusting relationship. Most of these respondents discuss this topic straightforward: compliance is about making agreements, and live up to those agreements. Figure 28 presents an overview of this factor.
According to the respondents, parties have to make agreements with each other in an early stage. These agreements can relate to accountability, expectations and compliance. After the agreements are made and the project is carried out, it is important that individuals in the alliance project comply by them. Therefore individual people should mention explicitly what the agreements and their own tasks are.

![Figure 29: Perspective on how trust can be stimulated by compliance](image)

11.1.9 Culture

A few respondents argue that culture is of influence on the level of trust between parties in an alliance project. However, most of these respondents find it also hard to concretize the concept of culture, and to make this elements measureable in a way. Due to the high abstraction level of the term culture, it is hard to come to specific actions and measures to influence culture. Nevertheless, some respondents gave examples of how one can try to create a trusting relationship via culture. An overview of this elements is shown in Figure 30.

According to respondents, the establishment of an own identity for the alliance can be valuable, so that people feel part of the alliance and eventually might develop an organizational culture as alliance. Another element mentioned by respondents relates to the past and prejudices about the alliance-partner. It is possible that parties who collaborate in an alliance have an opinion, or even prejudices, about their partner. Therefore, it is important to discuss possible issues from the past or prejudices in an early stage. “Make sure issues from the past are discussed, for example during the PSU or PFU”, argues a respondent involved in project N201.

Because culture is hard to influence, the only suggestion mentioned by respondents is to pay attention to and discuss culture during the project. Discussing culture might be a role of the AMT. An example is the Bataafse Alliantie: as explained in chapter 8 project Houten was steered by ‘on purpose subconscious’ management. ‘Soft elements’, like culture, were not measured or monitored, but they were noticed by the AMT via their informal conversations with the alliance employees. Culture might be an element which is more suited to monitor by management, than via a monitoring system, given its abstract and intangible character.

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13 In sub-paragraph 8.2.3
11.1.10 Project progress

Project progress is mentioned by a few respondents as influencing trust in an alliance PPP positively. Project progress means that the project milestones are achieved. According to a few respondents achieving these milestones can contribute to a trusting relationship. Some of them mention that not only achieving goals is enough, but that these achievements should be carried out with pride. The focus in these project should, according to the respondents, be more on the positive elements instead of on negative aspects (e.g. cost overruns and delays). Finally, it is important to express this project progress and the achieved results in understandable units. Figure 31 provides a short visualization of this factor.

**Figure 30:** Perspective on how trust can be stimulated by culture

**Figure 31:** Perspective on how trust can be stimulated by project progress
11.1.11 Division of roles

Finally, a few respondents mention that a clear division of roles and tasks in an alliance, can stimulate a trusting relationship between the parties. This means that involved parties should discuss responsibilities, roles, mandate and tasks in the beginning of the project. Although it is important that roles are clear to the individual people in the alliance, some respondents remark that this division should not be too strict. With a less strict division of roles interfaces between people stay retained, which stimulates people to contact each other.

Even when roles are divided clearly upfront, it might be possible that there still be uncertainties about roles and responsibilities during the project. Some respondents argue that it is of importance to ensure that possible uncertainties are resolved and made clear quickly. In Figure 32 is shown how trust can be stimulated by the division of roles.

![Figure 32: Perspective on how trust can be stimulated by the division of roles](image)

Concluding remarks paragraph 11.1

As presented in this paragraph, eleven elements (and related actions upfront and during the project) were identified by respondents as of influence on a trusting relationship between project partners and team members in an alliance PPP-project. Most respondents mentioned the importance of the people in the project, the way of communication between team members, and the relation between the alliance and parent organizations. Furthermore, several respondents discussed the effect of working principles, organizational aspects, and collectivity on a trusting relationship. Finally, only a few respondents argued that dealing with conflicts, compliance with agreements, culture, project progress, and the division of roles, is of influence on trust development in an alliance project. This operationalization of trust will be further supplemented by information from Interview Round 2 (2015) in paragraph 11.3, and will be combined with information from the literature research in paragraph 12.2. Finally, this will function as input for the development of an instrument in paragraph 12.3.

11.2 First perspectives on measuring trust and dynamics of trust according to an evaluation of previous experience

Although the previous paragraph already provided more insight into the elements influencing trust, some respondents provided more insight into the way these elements should be measured. In order to explain the structure clearly, a
reference to Figure 17 in chapter 10 can be made. Where paragraph 11.1 focused on the unit of analysis ‘trust’, the following sub-paragraph 11.2.1 aims at contributing to the unit of analysis ‘monitoring trust’, as visualized in Figure 17. Furthermore, sub-paragraph 11.2.2 will shortly discuss the dynamics of trust in an alliance project.

11.2.1 Measuring trust
Some respondents share ideas on the actual measurement of trust. These rough ideas vary strongly, but might provide some first perspectives on the form in which trust can be measured. A first suggestion, mentioned by a few respondents, is to work with conversations and interviews to obtain information about trust, attitude and behaviour of people. This could be done in a formal way, such as a project start-up, follow-up, or with interviews based on questionnaires, but information can also be obtained in an informal way. A single respondent even argues that measurement is not even necessary, because good management should be able to have a correct idea of the level of trust between organizations in the alliance. It is argued that it is not possible to make trust measurable, that it is related to feeling and experience, and therefore should be dealt with by the management.

However, several other respondents propose a more structured method. It is mentioned a ‘team monitor’, a ‘performability scan’ or a ‘tool to evaluate yourself’, but in general they are all comparable: structured methods to get a grip on trust in an alliance project. Nevertheless, some of these methods differ in what is evaluated (e.g. yourself, others, relations, tasks, performance, leadership, pressure, motivation, et cetera). Very few of the respondent remark that a conversation about the results of these measurement methods is important. Finally, a single respondent refers to the frequency of those measurement moments, and argues that short cycle feedback moments are valuable, in order to make sure that small issues not become major problems.

Other respondents, only a very few, are in favour of a more conflict-oriented approach, for example in which an incident analysis is carried out. It could be measured how long it takes to solve incidents or how many people of the personnel are changed. Incidents could also be used to analyse in detail (e.g. what went wrong, what went right), in order to learn from these conflicts. Such analysis could be executed by action research, mentions one of the respondents. In action research an independent researcher is investigating for example the trust in an alliance project from an academic perspective. Only the fact that this research is carried out, and that the topic is discussed, could lead to a more trusting relationship.

11.2.2 Dynamics of trust
Even though trust might be stimulated in various way, it is very unlikely that the level of trust in an alliance is continuously high. There always will be moments of trust, and moments of less trust. Several respondents used the same Dutch proverb to describe these dynamics of trust, namely: ‘komt te voet, gaat te paard’. This means that it takes quite some time to realize a trusting relationship, which can be over very quickly. Building up trust takes a long time, but only by one incident or action of distrust a trusting relationship can be over.

Only a very few respondents shared an opinion on the dynamics of trust, which related to two topics:

- Trust has to develop over time, so at the start of a project is might be less. This could be taken into account when trust-stimulating actions are deployed (e.g. might be more necessary at the start of the project)
- There are chances that trust decreases in moments of stress and high pressure, for example towards a project milestones. Less trust in these periods can lead to conflicts and longer lead times (because decision-making takes longer), which can finally result in not achieve the milestones
Therefore it might be more important to pay extra attention to the elements of trust during the project start-up phase, and during the moments in which is worked towards a project milestone.

**Concluding remarks paragraph 11.2**

A way to monitor trust might be by having conversations with people about this topic, both in a formal (e.g. PSU, based on questionnaires) as well as an informal way (e.g. by management). Some respondents even remark that monitoring or measuring trust is not possible, but that this should be checked by (flexible) management. Some respondents discuss a more structured method, for example a ‘team monitor’, ‘scan’ or ‘evaluation’. The results from such a monitoring instrument should be discussed. Finally, other means to monitor trust that were mentioned are: conflict analysis, short cycle feedback moments, or action research. Regarding the dynamics of trust it can be concluded that it takes time to build a trusting relationship, and that a trusting relation can be harmed quickly (e.g. by one incident). Furthermore, trust can decrease at moments towards milestones. This can result in (more) conflicts and longer lead times, which can cause project delays. Therefore, at these certain moments (towards milestones) it might be valuable to pay extra attention to trust.

**11.3 Elements of trust in-depth and practical from a current perspective**

The following sub-paragraphs are the result of the analysis in paragraph 11.1, were eleven elements of influence on trust were presented\(^\text{14}\). Each of the eleven elements will discussed in this paragraph more elaborate, and is based on interview round 2 (OV SAAL). It should be remarked that this paragraph will not function as test of validation of interview round 1. This paragraph, which presents results from interview round 2, will provide a more in-depth perspective based on current, practical experience from the running case OV SAAL. This can be seen as a deepening process, not as a validation. For a further explanation of the function and the perspective of this paragraph, Figure 17 from chapter 10 can be consulted.

Finally, the information presented in this chapter will contribute to the operationalization of the concept of trust, which will be input for the development of a monitoring instrument. The information will be used in the concluding paragraph 11.4, and in chapter 12, which will present the developed instrument.

**11.3.1 People**

In general, four topics regarding people and their influence on a trusting relation, are discussed by most of the respondents, namely:

- **Upfront selection of the team**
- **Monitoring of people** (with an instrument)
- **Attitude of people**
- **Teambuilding moments**

Just as mentioned by respondents from the four realized alliance projects, also by respondents from OV SAAL is selection of the team often mentioned. However, a possible valuable addition, mentioned by only a single respondent, is to compose a team over the borders of the organizations. Additionally, it is mentioned that a good team does not only mean good people with the right competences, but also a team that fits together: so attention should be paid to the team as a total (not only the individual people). Moreover, some respondents have an opinion about the attitude of

\(^{14}\) As visualized in Figure 20 in paragraph 11.1
people in the project (e.g. open, joint responsibility, with respect), especially of key figures who have an exemplary role. Finally, a single respondent states that people should change positions if they do not function.

Although it was not mentioned often by the respondents in paragraph 11.1, a few people from project OV SAAL remark the importance of actually monitoring trust (via an instrument) in the alliance. Such a monitoring instrument can help in making participants aware of trust in the team, but this can also be done by giving each other feedback and compliments. Apart from this action more focus on the content, it is also mentioned by a few respondents that teambuilding moments and getaways can stimulate trust positively. This might be even more important during the start of the project and during phase transitions, especially for people on crucial positions. Finally, a single respondent states that it is important to openly discuss issues related to trust.

11.3.2 Communication

Many elements are mentioned by respondents, in order to influence trust in alliance projects positively, namely:

- **Discuss** expectations, rules and agreements **beforehand** and during **phase transitions**
- **Daily communication** characterized by: short communication lines, face-to-face, and **clear agreements** (e.g. summarize what the other said, and ask control questions)
- **Attitude** of people: communicating **open**, **transparent** and **pro-active** (e.g. by conversation trainings)
- **Counterpart** communication (with parent organizations) and **crucial roles**

In line with the information gathered in paragraph 11.1, open and transparent communication and establishing procedures upfront are both again mentioned as important factor. However, the respondents from OV SAAL provide some additional information. A topic addressed by some respondents, is related to the communication with parent organizations. As earlier discussed, a ‘zipper-structure’ is proposed, so that persons in the alliance have a counterpart in the parent organization. This might be more important in hierarchical organizations (often the client organization), than in more flat horizontal organizations. However, there should always be a balance: communicate approximately equal to both client and contractor. Additionally, the Alliance Board of Directors (with members from client and contractor) has a crucial role in the project. Lastly, a single respondent mentions the importance of both formal as well as informal communication.

11.3.3 Relation to parent organizations

Just as mentioned in the first paragraph of this chapter, a few respondents of project OV SAAL remark the importance organizing some matters upfront, such as mandate. However, a very few respondents give a possible valuable addition: it might be interesting to jointly think about the complete process, which parties you come across (both internally and externally), and what their interest is. Based on this overview, you can determine which parties you should involve.

As already mentioned, the ‘zipper-structure’ can be a contribution, but the relation with parent organizations should also be organized on the level of the Alliance Board of Directors. According to some of the respondents, the Board of Directors has an important role, because they represent the interests of the parent organizations. Therefore they should have frequent informal as well as informal contact to check if the relation between the alliance and parent organizations is still functioning well. In general, it is recognized that roles in an alliance are different than people are used to. Therefore it is even more important to be aware of this difference, and seek for ways to develop. During the project this can be monitored, for example via an instrument or more informally by discussing this and by giving each other feedback.

Finally, a few respondents remark the fact that an alliance is often unknown, and therefore maybe unloved, within some parent organizations. Given the fact that some parent organizations can be very large, and have many internal
stakeholders, it is important to propagate the alliance within these kinds of parent organizations. A proposed method to achieve this, is by appointing ‘ambassadors’ of the alliance: for example people in the parent organization, who work closely together with the alliance, such as a member of the Alliance Board of Directors. By giving lectures or by informing specific key figures, the alliance might gain more positive attention in the parent organizations.

11.3.4 Working principles

In general, the perspective of respondents from project OV SAAL is comparable with the perspective from the past four alliance projects, and consists basically of:

- **Define** working principles **upfront**
- **Discuss** the principles **during the project**

These two aspects were mentioned by nearly all respondents. However, some valuable additions were made too. It is mentioned by a few respondents to formulate not only working principles upfront, but also processes, expectations, and levels of escalation. Regarding the expectations, a single respondents provides an interesting perspective, namely the so-called KANO-model. The KANO-model, as shown in Figure 33, provides an explanation of the importance of discussing expectations upfront. If expectations (even the most basic ones) are not discussed extensively, chances are that ‘baseline expectations’ are not met. If these expectations are not met, the satisfaction can never become high. However, when all baseline expectations are met the satisfaction will be steady, but will not be (exceptional) high, because it was expected that these basic tasks would be carried out. On the other hand, when extra tasks beyond the baseline expectations are carried out, this can strongly increase the level of satisfaction, because it is unexpected (‘delighters’). This KANO-model could help parties to see the importance of discussing expectations upfront. Finally, it is mentioned by a single respondent that discussing these fundamental issues and principles is not only important upfront, but that this could be repeated when there is a transition of phase during the project.

![Figure 33: The KANO-model (Kano, 1984; Interview Round 2, 2015)](image)

Although it is important to establish principles upfront, this cannot lead directly to trusting relationships. However, consequent behaviour in line with this principles does, argues one of the respondents. These principles can be a mean to start a conversation and give each other feedback about attitude, behaviour in trust. These kinds of conversations can already force some small friction in an early stage, before issues are running high. Additionally to what is mentioned in paragraph 11.1, important principles mentioned are: no ‘punishment culture’ (only discussions about the real important issues), and no continuous control of each other’s work.
11.3.5 Organizational

According to most of the respondents organizational aspects can positively influence a trusting relationship, via one or more of the following elements:

- Work **physically together**
- Agree on **roles and processes upfront**
- Organize **events and sessions**

In line with what most respondents in paragraph 11.1 of this research mentioned, the importance of working physically together is confirmed by respondents from project OV SAAL. Furthermore, some respondents discussed the importance of agreement on roles and processes upfront. In addition to what is mentioned by respondents from the past four alliance projects, a few participants of OV SAAL mention the equality in the team, especially for management positions. Apart from equality in staffing, some positions can also be carried out by a person from one of the parent organizations (e.g. manager of the surrounding area from the client, technical manager from the contractor). Related to the personnel, it might also be interesting to consider the formation of certain sub-teams within the project, for example a team with people from public and private parties, and from different disciplines, working closely together on one specific milestone. Apart from the roles and staffing, there are other aspects on which parties should agree, such as: meeting structure, levels of escalation, and contract agreements.

Thirdly, organizing sessions and events is mentioned as contributing to a trusting relationship. This can be informal social events, but can also be more project content related meetings, such as ‘zeepkistsessies’, which were explained earlier in this report. Related to the social events, it is important to organize this for the whole project team. When groups (e.g. only people from one party) are organizing their own events, this can lead to decreased trust.

11.3.6 Collectivity

The importance of collectivity, especially in goals and interests, is already remarked in the previous phase of this research, but is supported by respondents from the OV SAAL project. Most of the respondents discuss both upfront measures, as well as measures during the project to stimulate a trusting relationship via collectivity in goals and interests. Upfront, some respondent argue, should parties invest in extensively discussing goals and interests. In line with earlier statements from paragraph 11.1, they should not only seek for joint goals, but should also pay attention to conflicting interests. After an identification of the interests, it is proposed to map these interests and seek for tension and overlaps. Furthermore, very few respondents argue, these project interests should match with the overall interests of the company or organization (in order to overcome issues with internal stakeholders in a later stage). The result of a conversation about goals and interests, could be a clear project goal and matching KPIs.

During the project it might be valuable to pay attention to the goals once in a while, for example by organizing a separate session or project follow-up meeting. During these kinds of sessions, the goals can not only be discussed, but it might also be necessary to revise and recalibrate these goals. However, some respondents mentioned that these goals should not be changed too much during the project. Finally, each individual should monitor if their personal goals or organizational goals are negatively affected during the project.

11.3.7 Dealing with conflicts

Although paragraph 11.1 only present an overview of elements that can be organized during the project in order to deal with conflicts in a proper way, respondents from OV SAAL mention some upfront measures to make sure that people deal with problems in a right manner. A few respondents argue that getting to know the other party in an early stage,
and know how this party would like to be approached, can lead to less problems when it comes to a conflict. Furthermore, the following topics can be discussed upfront, in order to make sure conflicts do not get out of hand: establishing working principles (e.g. unanimity), discuss the levels of escalation, and a structure for problems (e.g. a platform for help). Finally, in order to prevent that conflicts become worse, it might be valuable to pay attention to a solid substantiation of choices. Providing arguments and motivation for choices can lead to less questions, uncertainties and eventually conflicts.

However, these upfront measures are no guarantee that conflicts will not happen. Therefore most of the respondents propose ways to deal with a conflict when this occurs. The general opinion of some of the respondents is that the following steps should be undertaken to deal with a conflict properly:

- **Recognize the emergence of conflicts in an early stage**, openly mention what the problem is, seek for the underlying problems or interests, and show the intention to solve the problem
- Keep the problem **within the escalation level**: try to solve the problem first, before you escalate
- Focus on **solving the fundamental problem** (content) by working closely together, before starting to appoint the guilty party

Furthermore, it is mentioned by a single respondent that the Board of Directors can play a role in solving problems: if they conclude and approve that the problem can be solved within the alliance, this works stimulating. It can also be tried to first solve the problem in an informal way, before the formal way is tried. If this does not work, it could be valuable to involve an external independent party and to discuss the problem outside the office location. Finally, if conflicts are solved in a right manner, this can have a very stimulating effect for a trusting relationship.

### 11.3.8 Compliance

Just as mentioned by stakeholders from the four previous cases, respondents from OV SAAL also have the opinion that compliance is about making upfront agreements, especially about expectations, and live up to those agreements. In addition, it is mentioned by a few respondents that it is the task of AMT members to address these agreements and to check whether or not people comply with them. However, some respondents argue that everybody in an alliance should be able to call on each other if people do not comply. This can be stimulated by facilitating conversation and interview trainings, so that people become more comfortable while giving feedback, and a culture of addressing issues and feedback develops. Additionally, there should be room for feedback, so these moments should be facilitated. For example by adding ‘compliance’ (or other subjects related to attitude and behaviour) as an agenda item in meetings. These moments can function as control moments, in which can be checked if a tasks is executed, but in which people can also express appreciation or give feedback.

Furthermore, in line with what was mentioned in the first paragraph of this chapter, the importance of expressing your tasks and agreements is mentioned by a few respondents. People make agreements with each other, but should check is this agreement is feasible and if the other party understands the agreement correctly.

### 11.3.9 Culture

Most of the respondents argue, just as presented in paragraph 11.1, that culture is something to openly discuss. It might be a concept that is hard to concretize, measure and influence, but it is something that could be discussed. In addition to the aspects mentioned in paragraph 11.1 (e.g. discuss differences, prejudices, work very closely to overcome differences), some respondents from project OV SAAL argue that noticing cultural issues and discussing these, is a task of the AMT and in particular of the Alliance Manager. The focus in conversations about culture should be on differences, and on providing each other more context, argumentation, and background about why certain people act
as they do. A proposed method is to use the information that organizations have about their culture (e.g. on their website) as a basis for such a conversation. Therefore, it is important to be aware of the weaknesses of your own organization.

In line with the information gathered in the first paragraph, only a very few respondents notice the importance of the development of an own alliance culture. Furthermore, it is noticed that culture can be influenced by selecting certain people upfront, for example people who have a broader perspective than only their own tasks and organizations, people with a proactive attitude, and people who have a central focus on the project instead of on their own interests.

In addition to the elements mentioned in paragraph 11.1, a very few respondents from project OV SAAL propose the appointment of ‘missionary people’, who can function as an ambassador of the alliance within their parent organization. These people can realize that processes within the parent organizations that contribute to the alliance, will run smoothly. Additionally, they can prevent the occurrence of issues between the alliance and parent organizations. Due to the many internal stakeholders and the hierarchy within some parent organizations, these ambassadors can fulfil an important role.

11.3.10 Project progress
In line with what was mentioned in the first paragraph (11.1), nearly all respondents of project OV SAAL support the importance of project progress. Most of the respondents mention that achieving milestones and goals should be celebrated, and should be communicated clearly. Many respondents remark that successes should be communicated internally, however a single respondents notices that achievements should also be communicated to the outside world. Suggestions to realize that project progress is celebrated, are: treats for the alliance (e.g. cake, drinks), communicating via an e-mail, newsletter, a short movie, social media or the intranet of parent organizations, a speech (e.g. by the AMT), compete for prizes, and invite visitors at the project location.

Furthermore, it is mentioned by a single respondent that it might be good to make a person responsible for the internal and external communication of successes. A year calendar, in which milestone moments and events are planned, is proposed to guarantee that celebrating milestones actually happens.

11.3.11 Division of roles
It is argued by some of the OV SAAL respondents that discussing roles upfront is important for a trusting relationship, especially for key figures, such as the AMT. Apart from roles, tasks, and expectations that should be discussed upfront, a few respondents remark that mandate should be discussed before the start of the project. Especially within the alliance organizations (e.g. the AMT) should work people with enough mandate, so that decisions do not have to be discussed with the parent organizations anymore. Additionally, it is proposed by a single respondent to appoint people with a role as ‘ambassador’ of the alliance in their parent organization. These ambassadors can inform the parent organization, so that decisions made in the alliance are no (undesired) surprise for parent organizations.

During the project it is important to continue with discussing these roles, and to make sure people know what their colleagues are doing, and even more important: that people know how far their own responsibility reaches. When people do not know this, it is important that ambiguities in roles are discussed during the project. Furthermore, only a very few respondents have the opinion that role consistency might be even more important than the actual division of roles. People should act clear, according to their role. Finally, just as mentioned in paragraph 11.1, a single respondent argues that roles should not be divided too strictly. For a trusting relationship, it is important to have a broad view, and to organize integral tasks, so that people help each other.
Concluding remarks paragraph 11.3
This paragraph presented a more in-depth perspective on the eleven elements, which were identified as of influence on trust in alliance project\textsuperscript{15}. With experience from current, daily practice (project OV-SAAL), respondents in Interview Round 2 (2012) partly mentioned the same elements and actions as the respondents from Interview Round 1 (2015), however they also mentioned some new actions to stimulate trust. Regarding these new suggestions related to communication, the proactive attitude of team members and organizing counterpart communication between public and private parties, were mentioned. Furthermore, it was suggested to appoint ambassadors of the alliance to improve the relation with parent organizations and to organize sessions, events or ‘zeepkistsessies’ once a while. Regarding collectivity, sessions for goal revision were suggested, and regarding the division of roles it was suggested to divide roles not too strictly and to monitor role consistency as well. Finally, in order to deal correctly with conflicts, it was suggested to arrange a platform for help, to get to know each other in an early stage and to substantiate decisions with argumentation.

11.4 Conclusion: how to measure and monitor the critical success factor trust
Firstly, paragraph 11.1 provided a first framework to operationalize the factor trust, based on an evaluation of the experience from four realized Dutch alliance PPP-projects. Within this framework, a perspective from current practice was added, in the form of interview round 2 with respondents from the OV SAAL project. The conclusions from these two interview rounds are visualized in Figure 34 below.

The eleven elements (in the larger white boxes) are the core elements that influence trust in alliance PPP-projects. The smaller, blue outlined, boxes present the measures that can be undertaken upfront, to influence trust in a positive way. The smaller grey boxes present the measures that were mentioned by respondents from interview round 1. For a further substantiation of the content of these boxes is referred to Figure 22 up to and including Figure 32, in paragraph 11.1.

The orange boxes present the additions to the framework from paragraph 11.1, provided by the information gathered in interview round 2 and presented in paragraph 11.3. The orange boxes only present the most notable additions to the framework. Elements that were already mentioned in paragraph 11.1 (and repeated in interview round 2), are not included in the figure, but are discussed in paragraph 11.3 and appendix A.6.

Finally, although the dynamics of trust were only discussed briefly in paragraph 11.2, because a small number of respondents from interview round 1 had an opinion on this topic, it can be remarked that the statement of this paragraph (that trust becomes more important towards a milestone or critical moment) has been endorsed by respondents from the OV SAAL case. It was mentioned by some of these respondents that trust related issues were especially of importance during phase transitions, and there should be paid more attention to trust during these moments.

Concluding remarks paragraph 11.4
As a result from Interview Round 1 (2015) and Interview Round 2 (2015) eleven elements and forty-two related actions were identified to contribute to the development of a trusting relationship in alliance projects. These elements and actions are presented in Figure 34 below. Furthermore, the elements and actions are used in paragraph 12.2 and function as input for the development of an instrument for embedding trust in a PMS. Therefore, the eleven elements and forty-two actions can be found in the instrument, which is presented in paragraph 12.3.

\textsuperscript{15} As presented in paragraph 11.1
**Figure 34**: Operationalization of the factor trust (Interview round 1, 2015; Interview round 2, 2015)
Phase 4

Developing an instrument

Synthesis
A performance measurement instrument for alliance projects that includes trust

In order to come to instrument development, information from both theory and practice is required. Therefore this chapter will present the synthesis of the information obtained in phase 2 and phase 3 of this research. This chapter aims at answering the following sub-question:

“In which way, based on literature and empirical research, can findings from this study be translated to a performance measurement instrument, which includes the factor trust and is suited for infrastructural alliance PPP-projects?”

In order to answer the question above, paragraph 12.1 presents a combination of information from theory (chapter 5) and practice (chapter 10), related to performance measurement systems. Additionally, paragraph 12.2 will provide information about the operationalization of trust, based on theory (chapter 4 and 6) and practice (chapter 11). The perspective of both paragraphs is to seek how theory and practice complement each other. Because the concluding frameworks presented in paragraph 10.3 and 11.4 are more elaborate than the requirements from phase 2 of this research, these will function as starting point and will be supplemented with the information from literature. In addition, the aim of the research was not to validate the findings from theory, but to provide a specific in-depth perspective on theoretical constructs (trust and PM) in the specific context of Dutch infrastructural alliance PPP-projects.

Furthermore, the obtained information in chapter 8 and 9, about the context of the case studies, will be used in this chapter as well. The aim is to come to conclusions based on information from three sources, as shown in figure 35 below: the literature review, the case interviews about the units of analysis (trust, PM, and monitoring trust), and context information (e.g. project evaluations). Although this chapter strives to come to conclusions based on these three sources of information, if information was only mentioned in one or two of the sources, this could be relevant as well and is therefore included. It might be assumed that the information found in less than three sources, needs more validation. Although, given the exploratory character of this research, in fact all findings need further validation. Finally, information from paragraph 12.1 and 12.2 is merged into an outline for a process instrument to work towards monitoring of trust in alliance projects, and is presented in paragraph 12.3. The substantiation of the information presented in this chapter, can be found in appendix A.7.
12.1 A performance measurement instrument based on theory and practice

In chapter 5 and chapter 7 the fundamental, first principles for developing a PMS for PPP-projects, was provided\textsuperscript{16}. These principles were aimed at combining the characteristics of PPP with performance measurement, for example by a process-based approach, real-time monitoring, and a multiple stakeholder perspective. Furthermore, these principles include strategies to overcome the occurrence of perverse effects as a consequence from performance measurement. When these fundamental principles are linked to the information obtained by empirical research, as presented in the concluding Figure 19 from chapter 10 (paragraph 10.3), interfaces can be observed.

In general it can be remarked that the findings from literature relate closely to the results of the interview rounds, however the level of abstraction differs. The literature provides broad and abstract fundamentals for instrument development, in contrast with the empirics, in which more practical aspects of a PMS come across. Overlapping elements can be found in the process related elements of a PMS, and in formulating KPIs and goals. Less overlap between theory and practice is found in the form in which soft or sociological elements can be measured in a PMS. Finally, it can therefore be concluded that information from both literature as well as from practice complements each other (both related to the content as well as to the abstraction level) and is both needed to develop a sufficient performance measurement instrument.

Figure 36 at the end of this paragraph shows the relation between data from literature and data from the empirical research (about the context and about the units of analysis). This figure is formed based upon the information from theory (e.g. table 7 in chapter 7 and figure 10 in chapter 5) and the obtained information from empirics (figure 19 in paragraph 10.3). Because the aim was not to validate theory, and because information from empirics was more concrete, the starting point for figure 35 was the obtained information from interviews (empirics). As shown in this figure, it can be observed that requirements to a PMS based on literature mainly relate to KPIs and to processes. Each of the elements of an ideal PMS according to interviewees, and based on the context and theory, will be discussed in the following subparagraphs.

12.1.1 KPIs

It was mentioned in literature that too many KPIs is not manageable, therefore it was suggested to make a strategic selection of KPIs\textsuperscript{17}. Furthermore, it was suggested in literature to include indicators that reach beyond traditional

\textsuperscript{16} As presented in figure 10 (chapter 5) and table 7 (chapter 7)
\textsuperscript{17} As presented in paragraph 5.2 (Chan & Chan, 2004)
measures as time and budget. Although it seems that not each Dutch infrastructural alliance project used far-reaching KPIs in the past\textsuperscript{18}, the majority of the respondents proposes a broader set of KPIs. These respondents argue that in addition to time and budget, factors as ‘collaboration’, ‘surroundings’, ‘safety’, ‘image’, ‘sustainability’ and ‘transfer to rail maintenance management’ might be interesting to include in a PMS. Furthermore, in literature is remarked that the type of KPIs should include the identification of success and the satisfaction level of stakeholders. This could also be related to the diversity of broad and more far-reaching KPIs. As discussed in phase 3 of this research, goals (and therefore KPIs) differ per stakeholder. For a contractor budget might be an important factor, a client could be more interested in the surrounding area, hindrance and the image of the project. Additionally, this statement from literature confirms the opinion that KPIs should result from jointly formulated goals, which follow from the interests of stakeholders. Related to the frequency of the KPIs it can be argued that a ‘strategic selection of KPIs’, as mentioned in literature, could mean a limited number; just as mentioned by interviewees in the empirical phase of this research. When analysing the box ‘other requirements’ in Figure 36, both overlapping elements as well as additions to empirical information can be seen. During the (joint) formulation of goals and KPIs, the involved stakeholders should focus not only on the project goals, but should also relate this to their organizational goals.

A link between organizational and project goals, might make the contact with parent organizations more easily because the interests of the alliance and the parent organization are more aligned. Although two stakeholders (client and contractor) participate in the process of formulating goals, it might be interesting to involve other parties to in order to guarantee that KPIs are formulated from a multiple stakeholder perspective. During the formulation of KPIs, the process-based life-cycle approach should be taken into account, according to Liu (2014). A process-based approach related to the measurement of a KPPI and means that a KPI is not only measured on its final performance, but also on if the process was completed in a correct manner. An example from practice is the KPI ‘quality’, which is often measured by auditing processes that should guarantee quality, instead of measuring only the end-product. However, some KPIs might be more suited to measure with a product-approach, therefore it is argues in literature to include both a product as well as a process approach. Furthermore, the life-cycle approach as mentioned by Liu (2014) can result in KPIs as sustainability, long-term, and responsible construction. However, a life-cycle approach can also be implemented in the further development of a KPI. An example is the KPI ‘budget’: this can include only the budget during the project lifetime (e.g. 5 years), however from a life-cycle perspective it would be favoured to formulate the KPI budget over a lifetime period, for example 30 years.

In order to prevent perverse effects from occurrence, it might be valuable to incorporate redundancy in the formulation of KPIs and tolerate variety in defining the KPIs. When for example a certain KPI does not reflect the reality and the actual performance in the right manner, another KPI (redundancy) can notice this. For example a KPI ‘image’, might also measure a part of the ‘surroundings and hindrance’: if there is hindrance as result of the project, there might be more complaints and the image will be influenced negatively. When formulation KPIs, these kinds of overlapping elements might prevent perverse effects from happening. Furthermore, variety and redundancy can also be incorporated in one single KPI. When measuring for example the KPI ‘collaboration’, information could be obtained by interviews, questionnaires or (group) conversations. Such an approach can reduce the risk that a KPI does not function, because of its measurement method. However, when it occurs that a KPI is indeed measured in a wrong way, literature argues that one should not be scared to change a KPI over time\textsuperscript{19}. Nevertheless, according to empirical data the risk of changing a KPI is that data might not be comparable anymore. Lastly, a final check it the KPIs actually cover the total performance will be valuable to confirm if KPIs really match with the goals of the alliance project.

\textsuperscript{18} As presented in the case descriptions in chapter 8

\textsuperscript{19} As discussed in paragraph 5.3, according to Van Thiel (2002)
Finally, based on the project evaluations and context discussed in chapter 8, the KPIs used in the performance measurement systems of the alliance projects were evaluated moderately positive. In these projects some basic indicators (e.g. time and budget) were combined with additional indicators, such as the surrounding area and safety. This is in line with what was mentioned in literature and by respondents in interview round 1 and 2.

12.1.2 Monitor soft elements in a PMS

As presented in chapter 8 only one project, A2 Hooggelegen, worked actively with a system to monitor sociological aspects during the project. Although there was limited experience with the monitoring of these soft elements in the other projects, the respondents seem to have an opinion on this subject. Therefore, information about the more concrete form in which soft elements can be measured in a PMS was obtained in during the interviews. Although literature does not provide much insights in this specific form of monitoring, some principles from theory might be applicable to the performance measurement system for soft elements. As already mentioned in the previous sub-paragraph, variety and redundancy can overcome risks related to perverse effects. Therefore variety and redundancy should not only be incorporated in the KPIs and the way these indicators are further developed, but it should also be included in the way that information is obtained. As stated above, information could be gained by questionnaires, conversations, group sessions, interviews, analysing behaviour, et cetera. A certain redundancy in the way to obtain information could contribute to a correct measurement of the reality. Furthermore, if a multiple stakeholder perspective is embedded in the KPIs, it might also be valuable to include these stakeholders in the monitoring of soft elements.

Related to the outcomes of a monitoring system and in addition to what is mentioned in by interviewees, it must be checked if all accountability requirements are met, according to van Thiel (2002). This means that the performance indicators on which is reported, cover the complete performance. For example by checking the formal (quarterly) report. Furthermore it is argued by de Bruijn (2002) that, when presenting the outcomes, functions and forums of this information should be reduced. Therefore organizations should discuss upfront with each other which purposes performance measurement (and its outcomes) will serve. Both statements, by de Bruijn and van Thiel, are an addition to the remarks mentioned by respondents.

Furthermore, a completely different method, which was only mentioned by one of the respondents, is action research. This relatively unstructured and flexible way of monitoring, might had a positive (indirect) effect on the one project in which it was used (Bataafse Alliantie). However, because this was only shortly mentioned by one of the respondents, and nothing was said about the direct effect of action research, this is not directly included in the PMS, but seems an interesting subject for further research.

Finally, information from interviews round proposes to discuss the results of performance measurement. In addition, de Bruijn (2002) has the opinion that a monopoly on meaning giving should be banned. Discussing outcomes with the group, and paying attention to different interpretations of these outcomes, might overcome the occurrence of perverse effects.

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20 In sub paragraphs: 8.1.4, 8.2.4, 8.3.4 and 8.4.4.
21 Because it should ‘monitor’ indirectly, only by sharing research results, as explained in paragraph 8.2.3.
**Ideal PMS**

<table>
<thead>
<tr>
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<th>Monitor soft elements in a PMS</th>
<th>Involved parties</th>
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<tr>
<td><strong>Type of KPIs</strong></td>
<td><strong>Way to obtain information</strong></td>
<td><strong>Multiple stakeholder perspective</strong></td>
<td><strong>Establish whether all accountability requirements are met</strong></td>
</tr>
<tr>
<td>- Include indicators that reach beyond traditional measures</td>
<td>- Incorporate variety and redundancy in way of measurement</td>
<td>- More people than only key figures</td>
<td>- Simple graphic display of KPIs</td>
</tr>
<tr>
<td>- Include identifying success and satisfaction level of stakeholders</td>
<td>- Possible addition of interviews with stakeholders and alliance employees</td>
<td>- Involve people from parent organizations</td>
<td>- Reducing functions and forums</td>
</tr>
<tr>
<td>- Possible addition of a factor for ‘soft’ elements;</td>
<td>- Conversations based on questionnaires</td>
<td>- Involve at least the key figures</td>
<td>- A ban on a monopoly on meaning giving</td>
</tr>
<tr>
<td>- Possible addition of a factor for surroundings and satisfaction</td>
<td>- Short and simple questionnaires, with room for additions</td>
<td>- Discussion about outcomes with alliance employees</td>
<td>- Discussion about outcomes with alliance employees</td>
</tr>
<tr>
<td>- Time</td>
<td><strong>Frequency</strong></td>
<td>- Results available to everyone (e.g. publication of formal reports)</td>
<td>- Focus on trends and differences</td>
</tr>
<tr>
<td>- Budget</td>
<td>- A certain frequency in monitoring</td>
<td>- Pay attention to weak signals</td>
<td>- Pay attention to weak signals</td>
</tr>
<tr>
<td>- Safety</td>
<td>- Approximately every quarter or six months</td>
<td>- Consider and discuss a bonus system</td>
<td>- Focus on trends and differences</td>
</tr>
<tr>
<td>- Surroundings and hindrance</td>
<td>- Depends on total project lead time</td>
<td>- Discuss outcomes with participants (e.g. session for speeches)</td>
<td>- Focus on trends and differences</td>
</tr>
<tr>
<td>- Quality</td>
<td>- Monitor when necessary: close towards milestones or critical moments</td>
<td>- Reports and internal newspapers</td>
<td>- Discuss outcomes with participants (e.g. session for speeches)</td>
</tr>
<tr>
<td>- Collaboration</td>
<td>- Baseline measurement needed</td>
<td>- Express results in physical manner (e.g. visuals, colours)</td>
<td>- Reports and internal newspapers</td>
</tr>
<tr>
<td>- Image</td>
<td>- Focus only on last period of time</td>
<td>- Focus on extreme values and interpretation of outcomes</td>
<td>- Focus on extreme values and interpretation of outcomes</td>
</tr>
<tr>
<td>- Transfer to rail maintenance management</td>
<td>- Type of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Sustainability, long-term and responsible construction</td>
<td>- Evaluate each other (in terms of: actions, openness, attitude, behaviour etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Let counterparts evaluate each other</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Pay attention to the acceptence of the PMS</td>
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<tr>
<td></td>
<td><strong>Involved parties</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Multiple stakeholder perspective</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- More people than only key figures</td>
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<tr>
<td></td>
<td>- Involve people from parent organizations</td>
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<td></td>
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<tr>
<td></td>
<td>- Involve at least the key figures</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of KPIs</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Make a strategic selection of KPIs. The number of KPIs should be manageable</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- A limited number to stay focused (2 to 6)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Approximately 5 KPIs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Explanation of text**

- Light blue text: literature
- Blue text: interview round 1
- Black text: interview round 2

**Figure 36**: A framework with principles for an ideal PMS for alliance PPP-projects, based on literature and practice
12.1.3 Processes

Related to the process of performance measurement, some aspects should be organized upfront, in order to work towards optimal performance measurement. Additional to what is mentioned by respondents, it might be interesting to pay attention to the professional or the organization who develops the KPIs, and to the background of this organization. Some individuals or organizations might have their preferences, or specific ways of organizing businesses. Context regarding the person or organization might help to interpret KPIs or ways of measurement in a right manner. Van Thiel (2002) argues that when for example a more bureaucratic organization organizes performance measurement, this could lead to strict procedures on how to handle requests from auditors, which might increase to the occurrence of perverse effects. In the early dialogue, in which starting points, perspectives and intentions are shared, this therefore might also be a topic to discuss.

Finally, regarding the process of monitoring during the project, a few elements from theory and practice can be related to each other. According to literature, it is important to arrange interaction between the professionals and the management. Therefore, the management should make sure the process of performance measurement should be open and transparent: the PMS should be explained and should be understandable for everyone. It might be valuable to organize these moments of interaction during the monitoring process. Furthermore, during the project it should not be forgotten that the focus is on monitoring instead of evaluation, which means that actions and processes can be adjusted as a result of the performance measurement. Lastly, one of the risks of performance measurement according to literature, is that the drawbacks of performance measurement (e.g. perverse effects) will dominate its benefits. Therefore a frequent reflection on the balance between benefits and drawbacks of the PMS, might be valuable.

Concluding remarks paragraph 12.1

The above discussed elements seem to be of importance in organizing a PMS for alliance projects, based on information from theory and practice (both context as well as interviews on units of analysis). It can be remarked that the level of abstraction differs between theory and practice. Where theory provides general and broad principles on which PM can be based, empirics is able to provide more concrete actions to organize a PMS. Finally, it can be concluded that the process is of importance, and that for many elements there is not ‘one right answer’: the elements need to be considered, and need to be filled in in a way that is in line with project goals.

12.2 Trust based on theory and practice

Chapter 6 provided five broad elements that can be of influence on a trusting relationship between parties involved in an alliance PPP-project, namely: affection, interaction, intention, organization and compliance. In the empirical phase of the research, a more specific perspective (in the context of Dutch infrastructural alliance projects) on the theoretical construct of trust was obtained. This phase did not function as a validation of the literature review. However, as a result from these interview rounds, eleven elements were formulated as of influence on trust (presented in chapter 11). There is overlap observed between the theoretical and empirical perspectives, but the empirical information also provides some new elements that were not specifically mentioned in literature. A rough overview of the overlap between theory and practice can be found in Figure 37 below.
This figure is formed by a comparative analysis between the (clustered) information from empirics and the information from literature. The formulated clusters from both sources were compared and matched to each other, which is explained more elaborate in appendix A.7. As shown in the figure above the elements (from empirical data) communication, culture, people, collectivity and compliance largely overlap with the elements provided by literature. It therefore might be assumed that theory and practice largely confirm each other, and that communication, culture, people, collectivity and compliance seem to be quite basic elements for a trusting relationship. Additionally, it can be remarked that the two of the five overlapping elements (people and communication) were mentioned by nearly all respondents. However, it is also noticed that the element ‘relation to parent organization’ was discussed by a majority of the respondents, but that this is not remarked as influential factor according to literature. Finally, it is remarkable that one element from the empirical data, namely project progress, has no overlap with elements from literature at all. A more extensive overview of the relation between conclusions from practice and conclusions from theory, is visualized in Figure 38 below. Based on this figure, the eleven elements will be discussed more elaborate in the following sub-paragraphs.

Regarding the interpretation of this information it could be assumed that the elements that were mentioned both in literature and in practice might be basic elements of a trusting relationship (“basics of trust”), and that one should therefore pay attention to these elements. Because the additional elements were mentioned by only one source (theory or empirics), it is more likely that these elements need further validation before a statement can be made regarding their usefulness. However, because of the exploratory character of this research it needs to be remarked that all actions and elements that might contribute to a trusting relationship, need further validation. In addition, the goal of the empirical research was not to validate or test the clusters from literature, but was an in-depth study into the concept of trust.
specifically for infrastructural alliance PPP-projects. Therefore, the exploratory character and the fact that the empirical study did not aim for a validation of theory, need to be kept in mind when the presented information is interpreted.

Furthermore, although the basic elements were mentioned both in literature and in empirics, it might also be interesting to focus on the elements that were not mentioned in literature. These elements might provide an innovative perspective on the concept of trust (‘innovative trust-stimulating actions’ or ‘additional actions’). Therefore both the overlapping components as well as the differences will be discussed.

**Figure 38:** A more elaborate overview of the overlap between elements influencing trust from theory and practice
12.2.1 People
The element (from literature) ‘affection’ strongly relates to the element ‘people’ from practice. It is important to seek for connecting cultures and skills (affection) when selecting a team. Furthermore, good personal relationships are mentioned in literature, and might be stimulated by the selection of the team, attention for the project start-up, and the attitude of the team members. In addition, it was mentioned in paragraph 4.3 (dynamics of trust) that the first stages in the process of trust development are of great importance for the further development of a trusting relationship. Therefore, extra attention for the first stage (for example the project start-up session) could be valuable for the development of a trusting relationship in a later stage. Moreover, the element people also relates to ‘intention’ and ‘organization’. Team members should show that they have good intentions by adopting a certain attitude. Finally, the organizational element from literature ‘good management’, can be influenced by the selecting procedure (e.g. assessments, interviews, and people with mandate).

Apart from the overlap, there are two elements mentioned by respondents that were not came across in literature. Feedback and evaluation moments during the project can be valuable to monitor the performance and behaviour of people. A monitoring instrument could facilitate this. Furthermore, a human resource policy focused on personal development, and not scared of changing people if they do not function, could be of influence on the trusting relationship, according to respondents.

12.2.2 Communication
The element communication has a strong overlap with the element ‘interaction’ from literature. Open, transparent, and frequent communication, based on communication principles and agreements, is according to both literature as well as practice the basis for successful communication in order to stimulate trust. Therefore it can be assumed that this is a required basis for a trusting relationship.

Subjects that were not specifically discussed in literature as of influence on a trusting relationship, but were mentioned by respondents, are: the way of decision making, the proactive attitude of people regarding communication, and the organization of counterpart communication. Being clear about your decision criteria, and understand each other’s arguments could therefore be a renewing element to influence trust positively. Furthermore, people with a proactive attitude (e.g. by conversation trainings) and organized communication between counterparts from the alliance and the parent organization, might be innovative ways to optimize communication.

12.2.3 Relation to parent organizations
Although the relation to parent organizations was mentioned by a large majority of the respondents, it is remarkable that this topic was limited discussed in literature. Only the support from top management (as part of ‘organization’) seemed, according to literature, a factor that contributed to a trusting relationship. However, there are many other suggestions presented by respondents, to stimulate trust in an alliance by influencing the relation with the parent organizations.

Upfront it is important to organize not only support from the management, but also organize the mandate structure and make sure the AMT has enough mandate. Furthermore, it might be innovative to appoint ambassadors of the alliance within a parent organization, in order to complete processes within these organizations more easily. During the project extra attention can be paid to the attitude of parent organizations (e.g. working with other mandate structures), the attitude of alliance team members (e.g. balance between alliance and parent organization), and arranging a relationship at board level (e.g. frequent informal and formal contact).
Furthermore, it needs to be remarked that in some of the evaluation of alliance projects (as presented in chapter 8), the relation to parent organization was mentioned specifically. According to these evaluations mandate should be organized upfront, and there should also be focused on a trusting relationship between the alliance and the parent organization (instead of only focusing on trust within the alliance).

12.2.4 Working principles
Working on the basis of certain principles seems to be a basic element for a trusting relationship, because this was mentioned as a result from the literature and the empirical study. Parties that have the right intentions and work from the perspective that is best for project (and not best for one of the parties), is a basic elements. This can be established by first defining these principles jointly. Secondly, people should live up to these principles, and should therefore discuss these once in a while.

Some small, possible innovative, suggestions regarding this element were made by respondents. These can be found in appendix A.7.

12.2.6 Organizational
From a theoretical and an empirical perspective, defining agreements seems to be an important element for trust, and therefore this might be a basic component for a trusting relationship. These agreements should be made upfront, and include not only contractual appointments, but also agreements on the process, mutual problem-solving philosophy, feedback moments, level of escalation, and many other aspects on which agreement in an early stage is valuable.

Additional to these basics, the very practical and organizational elements of working together on the same location can influence trust positively, according to respondents. Furthermore, the organization of social events and project-content related events are also an organizational element that could be a renewing action to stimulate a trusting relationship.

12.2.6 Collectivity
Collectivity in the alliance relates to several elements mentioned in literature, namely intentions, organization and compliance. Being aware of each other’s goals, interests and intentions, by discussing these upfront might be a basis for a trusting relation. This discussion should result in a clearly defined goal, according to sources from literature and from practice. Furthermore working jointly on tasks that are in the interests of the jointly defined goals (and not only in someone’s own interest), might also be a basic element.

Additions to these basic fundaments are the attitude of people (focused on collaboration) and organizing sessions to discuss, reflect on and if necessary revise goals.

12.2.7 Dealing with conflicts
Dealing with conflicts in a right manner has a connection with giving each other the benefit of the doubt, which is covered in literature by the element ‘intentions’. Having such an attitude, and giving each other the benefit of the doubt, could be fundamental when it comes to conflicts. However additional to this basic attitude, upfront actions could be undertaken to overcome the risk that people deal with conflicts in a wrong way. Establishing a platform for help, and making sure that people got to know each other in a personal way, might stimulate successful actions after the occurrence of a conflict. Finally, continuously providing arguments and motivations for decisions might make it easier to understand each other’s perspective, when it comes to a conflict.

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22 Presented in chapter 6 and further elaborated on in appendix A.1
12.2.8 Compliance
Compliance is a central element from both perspectives: theory and practice. As sketched in literature, compliance is about keeping to appointments, taking responsibilities as agreed upon and acting in the interest of joint goals. Complying with agreements made was also the main component mentioned by respondents, and might therefore be a basic element for a trusting relationship. However, as respondents argue, people can only comply with agreements that are made in an early stage, that are feasible, and that are understood by the involved parties. Therefore it is valuable to discuss topics as accountability, expectations and compliance in an early stage of the project.

12.2.9 Culture
Many facets of the element culture were mentioned in literature. Culture is mainly about affection, but also relates to intentions and interaction. Regarding possible issues from the past, it is important to have a good impression of your collaboration partner, both in a business way (e.g. track record and reputation), as well as in a way related to attitude (e.g. good intentions). Furthermore, previous interaction and collaboration or expected future collaboration, could influence the project. Therefore these issues should be discussed in an early stage. As mentioned in paragraph 4.3, if project partners are not able to develop trust in an early stage, they might make stereotypical impressions of each other, which might make it harder to develop personal or relational trust (Laan, 2009, p. 38). This substantiates the importance of discussing possible prejudices.

Other basic fundamentals to stimulate a trusting relationship, are related to affection: connecting cultures and skills and a good impression of each other. This could be stimulated by paying attention to culture and discuss the topic during the project once in a while. Stimulate people to connect with each other, might be realized by establishing an own identity as alliance.

12.2.10 Project progress
Although project progress was mentioned from the empirical perspective as of influence on trust, this topic was not discussed in the literature review at all. Therefore celebrating project progress, and carrying out joint pride when milestones are achieved, might not be a basic element for achieving a trusting relationship. However, it could be a renewing action to stimulate trust in the alliance in a positive manner.

12.2.11 Division of roles
Finally, defining tasks and responsibilities before the start of the project can be seen as a basic element for developing a trusting relationship, because this was mentioned both in literature and in practice. However, additional to dividing clearly the roles and responsibilities, it should be taken into account that a too strict division of roles can have a negative effect. Divide roles in a clear manner, but with attention for a broad view of every individual, and some overlap and integral tasks, so that people should help each other.

Possible additional actions that can be undertaken during the project are the monitoring of consistent execution of roles, and actions to make uncertainties in roles quickly clear.

Concluding remarks paragraph 12.2
It is remarkable that regarding trust, it seems harder for both theory as well as practice, to be concrete. Especially compared to PM, about which empirics is very concrete. Furthermore, compared to PM, for trust more differences between theory and practice can be remarked, as visualized in Figure 37. Elements that come forward in both theory and practice, and seem therefore quite basic elements for trust, are: communication, culture, people, collectivity, and
compliance. An interesting indicator that is mentioned limited in literature\(^{23}\) (e.g. boundary spanning persons), but came forward very notable in practice (both from context as from units of analysis) was the relation with parent organizations.

12.3 A performance measurement instrument that includes trust based on theory and practice

Finally, now performance measurement and trust are both analysed from theoretical and empirical perspectives, and these perspectives are merged, interpreted and translated into a design, a suggestion for an outline for a process instrument can be presented. Figure 39 provides a complete overview of this instrument, which is explained in a more elaborate way in appendix A.8.

The instrument is designed as an ‘all-round’ process, because of the following reasons:

- In literature the importance of including the process in a performance measurement system was mentioned, especially in PPP-projects\(^{24}\). In addition, a certain flexibility and tolerance for variety is required\(^{25}\).
- Furthermore, not only according to literature about PM a process-approach was required. Because it was observed that trust can increase and decrease over time (Laan, 2009)\(^{26}\), a process-approach is required according to trust-related literature as well.
- The fact that the concrete implementation of a PMS strongly depends on the project and its project goals (Interview Round 1, 2015; Interview Round 2, 2015). For example, no statements can be made regarding the type and content of KPIs for ‘each infrastructural alliance PPP project’, because this depends strongly on the challenge of the alliance. Therefore a process that includes elements to consider seems more suitable.
- It seemed to be hard to come up with a uniform and definite way to embed trust in a PMS\(^{27}\), but an operationalization of the concept of trust was realized. Therefore, this operationalization, which exists of forty-two actions, can be considered to undertake upfront or during the project.

So, taking the importance of the process into account\(^{28}\), the fact that each (alliance) project is different, and the fact that it is hard capture the complex concept of trust completely in one comprehensive PMS, the outcome of this research is a stepwise process. Therefore, this instrument can function as a guidance during an alliance PPP-project. It should be taken into account that the suggested actions and considerations are no guarantee for project success and trusting relationships, but they could help as checklist or guidance in monitoring and steering towards a successful project. This process instrument could possibly be used by the management of the alliance (AMT). In paragraph 13.5 and chapter 15, will be further elaborated on practical recommendations and the use of the instrument.

\(^{23}\) Only addressed in paragraph 4.2  
\(^{24}\) As discussed in paragraph 5.2 and mentioned by Liu (2014)  
\(^{25}\) As presented in Table 5 in paragraph 5.3  
\(^{26}\) As discussed in paragraph 4.3  
\(^{27}\) Because the answers of respondents in Interview Round 1 (2015) and Interview Round 2 (2015) varied quite strongly, not one comprehensive answer to the main research question could be formulated  
\(^{28}\) As mentioned in chapter 7 as a result from a literature review on trust (chapter 4) and a literature review on PM (chapter 5)
Figure 39: Overview of an instrument that can function as guidance for performance measurement that includes the factor trust, and is suited for alliance PPP-projects.

Figure 39 only provides an overview of the outline for a process figure. The elements of this process will be discussed in the following sub-paragraphs. In general, the green block at the left remarks the start of a possible alliance project and the red block remarks the end of the project (e.g. the abolition of the alliance). This means that the process figure should be read from left to right: the project from start to end over time. The white box at the lower left corner, and Figure 40 below presents the explanation of symbols.

Figure 40: Explanation of symbols of the process instrument.
12.3.1 Starting an alliance

As mentioned in all evaluations of the four realized projects, before an alliance is established it needs to be decided if the project is suitable to be executed as an alliance. Also according to many respondents, this was a fundamental element before the start of an alliance. Furthermore, also by client organizations, as Rijkswaterstaat, documents are written about the criteria to start an alliance (de Bruijne, 2014). Therefore, the first step of the outline for a process instrument is to decide if the project should be executed as an alliance and if trust will have a central role in the monitoring of this project. This first step is visualized in Figure 41.

Because of the importance of the ‘match’ between the project (challenge) and an alliance arrangement, the decision to execute a project as an alliance needs to be made carefully, for example based on the criteria of Rijkswaterstaat from de Bruijne (2014). If it is decided to execute the project as an alliance, the involved parties should decide whether or not they would like to embed trust as central element in the monitoring of the project. This might be based on certain criteria (e.g. the complexity of the project, the attitude of involved parties), however, these criteria were not included in this study. Therefore, a weakness of this instrument is that it does not provide requirements or criteria about when trust should have a central role. It might be likely that this choice would be made by the AMT or the Board of Directors. However, it is suggested to conduct further research on this subject, in order to make a substantiated choice about including trust or not.

If trust is not included in the monitoring of an alliance project, the considerations regarding KPIs might still be valuable, but if trust is included as central factor, the rest of the process instrument might be valuable as well.

Figure 41: First step in the outline for a process instrument: deciding if the project should be executed as alliance

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29 In chapter 8: paragraph 8.1.4, 8.2.4, 8.3.4, and 8.4.4.
30 In chapter 9: paragraph 9.1
12.3.2 Upfront measures

Within this process instrument, a distinction can be made between two stages:

- **Before start of the execution of the project**: measures that can be organized upfront
- **During the execution of the project**: actions that can be undertaken during the project lead-time

This sub-paragraph will discuss the measures that should be undertaken before the start of the project. The following sub-paragraph (12.3.3) will present the measures during the project. Firstly, for the general design of the PMS several actions can be undertaken. These steps are visualized in Figure 42 below.

For the formulation of the KPIs, which is shown in the upper part of Figure 42, it is important to first make sure the process starting points are right. Suggestions for this are: an early dialogue between the involved parties, discuss the types of organizations, roles and tasks, and discuss the goal of monitoring upfront. If these process starting points (‘rules of the game’) are discussed jointly, the KPIs can be formulated. The alliance partners have to decide jointly which KPIs they will include in the project, which depends on the challenge and goals of the project. The process instrument provides some suggestions regarding basic KPIs (e.g. time, budget, scope, quality) and KPIs that reach beyond the traditional ones (e.g. safety, collaboration, surrounding area, image). Furthermore, a strategic choice should be made about which KPIs to include. The total number should be taken into account, because a maximum of 6 KPIs is recommended. When this decision is made, the alliance partners should check whether the KPIs meet certain requirements, for example regarding the perspective (e.g. multiple-stakeholder, process based), the variety, if it covers the complete performance and matches joint goals, if KPIs are formulated SMART, and is they have a ‘guardian’. If these requirements are not met, it can be chosen to reformulate the KPIs again. If the requirements are met, this might provide a sufficient first basis to work with a PMS. However, these steps should not be seen as guarantee for project success.
Figure 42: Performance measurement as part of the outline for a process instrument

During this phase (upfront) the alliance partners should have to decide if they would like to include the soft element trust in the monitoring system. If they decide to include trust, the following elements (presented in the purple box of Figure 42) should be considered and should be decided upon:

- **Which parties to involve** in the monitoring of trust. For which it is recommended to involve at least the key figures, but probably more (e.g. the complete alliance and boundary spanning persons within the parent organizations).

- **The frequency of monitoring trust**: for which it is recommended to do this at least every quarter or every six months, but this might be more towards milestones.

- **The type of information to collect** in order to monitor trust: an evaluation of each other could be valuable, and monitoring peoples’ job satisfaction. Furthermore, this information is strongly related to the...
operationalization of trust. The link between the operationalization of trust and the type of information to collect in a PMS, will be further discussed in sub-paragraph 12.3.3.

- The way to obtain information: it is recommended to work with conversations (e.g. with alliance employees and stakeholders), based on (short and simple) questionnaires

- The way to communicate about the outcomes: for which it is recommended to discuss the outcomes publicly, by which is focused on trends, differences, weak signals, and interpretation

It needs to be remarked that, if trust is included in a PMS, the alliance partners should decide upon these five elements, but that the possible implementation of these elements are only suggestions that could be considered. These suggestions are no guarantee for successful monitoring, but could help in the process of designing a suitable PMS.

When trust is included in the monitoring and the alliance aims at steering on trust, some steps visualized in Figure 43 need to be considered upfront. Within this process of monitoring and stimulating trust, a distinction is made between basic actions and additional actions:

- **Additional actions** were only mentioned by one source (empirics), which makes it more uncertain to make statements regarding these actions. Because these actions were only mentioned in empirics, it is necessary to further validate and investigate these actions and their contribution to a trusting relationship

- **Basic actions** were mentioned both in literature as well as in practice. It has to be remarked that not only the additional, but also the basic actions need further validation.

The basic actions to consider relate to the elements: people, communication, relation to parent organization, working principles, collectivity, culture and division of roles. This is shown in Figure 43 below.

When these actions are undertaken, and the alliance partners decide that more actions are needed, they can consider some of the additional actions. It needs to be noticed that the research does not provide any information about the decision whether or not additional actions are needed. These additional actions are specified in Figure 43, but relate to: communication, organizational actions, dealing with conflicts, compliance and division of roles.

Finally, when all these upfront actions are undertaken, this might be a good basis to start monitoring trust in an alliance projects. Additionally, these measures will not guarantee successful monitoring, but might help during this process.
12.3.3 Actions during the project

When the project is started, actions should be undertaken to guarantee the sufficient working of a PMS. Regarding the process of monitoring, the alliance partners can make some decisions that might increase the success of monitoring. This can be, for example: making decisions in line with KPIs, explain the working of the PMS and the KPIs, use the PMS in a consistent manner, work with discharge moments, no focus on numbers and scores of the PMS (but on interpretation and examples), be open to making adjustments during the project, arrange interaction between AMT and employees, and keep monitoring possible drawbacks of the PMS. Although these actions should be undertaken during the project, it might be valuable to discuss some of these actions or some of the process agreements already before the start of the execution. Furthermore, these actions might help the management of the alliance (or the person or group responsible for monitoring) with an effective application of the PMS. An overview of these actions are presented in the upper right corner of Figure 42.

Figure 43: Trust described as part of the outline for a process instrument
Furthermore, when the project is started there are some specific actions regarding trust. Again, the distinction between basic and additional actions is made. The basic actions relate to: people, communication, working principles, collectivity, dealing with conflicts, compliance, and culture. The additional actions relate to: people, communication, relation to parent organization, organizational, collectivity, dealing with conflicts, project progress and division of roles. A complete overview of this actions can be seen in Figure 43.

Regarding the monitoring of trust, some of these actions can be included in the type of information that is obtained during monitoring. Namely, apart from evaluating each other and monitoring job satisfaction (as mentioned in 12.3.2 and Figure 42), information about or an evaluation of the following elements might help to get an impression of trust in the project alliance:

- The attitude of team members: e.g. evaluate role models, who work with respect, have an alliance attitude focused on collaboration, and have a proactive attitude regarding communication
- Openness, transparency and frequency of communication: e.g. evaluate each other and yourself how open and frequent you or the other communicate(s), and how transparent and substantiated decisions are made
- Dual role of team members and parent organizations: e.g. evaluate if team members balance their ‘dual role’ (as part of alliance and parent organization) in a right way, and evaluate if parent organizations accept other mandate and decision-making structures
- Working principles: evaluate if people work in line with the working principles on which was agreed
- Working jointly: evaluate if you and if others (e.g. alliance partner) seek jointly for solutions and challenges
- Compliance: evaluate if people in the alliance comply with agreements made in an early stage
- Culture: discuss and pay attention to culture, evaluate is cultural differences might lead to issues
- Conflicts: evaluate how conflicts were addressed, e.g. by means of an incident analysis.

Apart from these elements that can be monitored, other actions during the project can be undertaken to stimulate a trusting relationship, such as: a HR-policy (e.g. change people and positions if it does not work), arranging a relation between parent organizations on board level, and by organizing sessions and events (e.g. zeepkistsessie, sessions to evaluate and revise project goals).

Extra attention to the elements of trust mentioned in this sub-paragraph could be paid when the project is heading towards a milestone. As discussed in paragraph 11.2.2, trust might decrease when there are moments of stress and high pressure, such as when the project is heading towards a milestone. Furthermore, the elements should be monitored with a certain frequency during the project, as discussed in paragraph 12.3.2. However, there is no specific information obtained about the frequency of the other actions mentioned in the right part of Figure 43. Further research might be needed to draw conclusions about that topic.

It has to be remarked that for possible use of this process instrument, the scope of this research and used method should be kept in mind. Therefore, the reflection (chapter 15) of this research should be read carefully. The reason is that, as already mentioned, the research is exploratory and this process instrument is only a rough outline, which is not validated. Furthermore, the context of the used cases should be kept in mind. Because of the small number and the very specific type of cases (Dutch infrastructural alliance PPP-projects), this context might have had a strong influence on the results of this research.

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31 In sub-paragraph 11.2.2 about dynamics of trust
Finally, given the remarks mentioned above (e.g. exploratory character and narrow scope of the research, context of the case study projects) the instrument is no strict manual that is ‘ready to use’. It is relatively broad and ‘all-round’ instrument, so that it can be applied in different projects with various contexts. Therefore, not much specific information was obtained during the theoretical and empirical research, based on which a strict manual could be developed. However, in chapter 14 (recommendations) and paragraph 15.2 (reflection) some suggestions regarding the practical use of the process instrument were discussed. For example, by using the process instrument in a flexible manner as guidance for the management.

Concluding remarks paragraph 12.3
As presented in this paragraph, a broad and ‘all-round’ process instrument is developed for monitoring trust in infrastructural alliance PPP-projects. This process instrument could be used by the management as a guidance before and during the project. A distinction is made between the actions or measures that should be conducted before the start of the project, and actions during the execution of the project. Furthermore, for trust a distinction is made between ‘basic’ and ‘additional’ actions that can contribute to a trusting relationship. In Figure 39 up to and include Figure 43 the steps of the process instrument are visualized. For further elaboration on the use of the instrument, chapter 14 and paragraph 15.2 can be consulted.
Phase 5

Final synthesis

Analysis and reflection
13

Conclusions

Now information from both theory and practice is obtained and analysed, this chapter aims at answering the main research question and presenting the conclusions of this research.

By which means can the effects of the critical success factor trust on the performance of infrastructural alliance PPP-projects be monitored, as part of a broader performance measurement system?

This chapter will discuss all sub-questions that contributed to this main research question briefly, in paragraph 13.1 and 13.2. This will result in a final, overall conclusion in paragraph 13.3. Finally, a short conclusion about the contribution to science and the contribution to practice, will be presented in paragraph 13.4 and 13.5.

13.1 Conclusions: answering the theoretical sub-questions

By means of a literature review, this study aimed at answering three sub-questions. Firstly, insights were gained into infrastructural alliance PPP-projects and their characteristics.

1. What are infrastructural alliance PPP-projects, how are these projects defined, what are their characteristics and critical success factors?

The alliance project delivery method is characterized by parties that work jointly together, with joint responsibilities in a joint organization, based on principles of mutual trust, commitment and communication, as presented in paragraph 3.1, the definition of (Lahdenperä, 2009) and the study of (Mistry & Davis, 2009). Success factors for alliances that were frequently mentioned in literature, are trust, commitment, equality, and common objectives. Especially mutual trust is frequently discussed in theory, as success factor for alliance projects (e.g. Vrieling, 2008; Mistry, 2009; Beach, 2005).

Furthermore, some characteristics of alliance PPP-projects are: joint decision-making with public and private parties, connecting ambitions and goals, focused on process management principles, and an extensive co-production during the whole process (Klijn & van Twist, 2007). Additionally, alliances are often established for projects with a certain degree of complexity, as shown by the criteria of the decision support tool of Rijkswaterstaat32 (de Bruijne, 2014). The assumption is that the risks in these complex projects can only be addressed by working closely together, for example in an alliance. For complex tasks, means and skills from, and collaboration between public and private parties might be required. Therefore, risks can be addressed jointly within the alliance domain33.

Furthermore, it has to be remarked that alliances are positively discussed in literature, but of limited use in practice. Although the experience from the five cases used in this research (Waardse Alliantie, Bataafse Alliantie, A2

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32 As discussed in paragraph 3.3
33 As discussed in paragraphs 3.2 and 3.3
Hoogegelegen, N201, and OV SAAL) is evaluated by many respondents as successful (Interview Round 1, 2015), there are no concrete plans for new projects in this form. Two possible reasons for the fact that the alliance form is not more frequently used (Interview Round 1, 2015):

- **The work and time to establish an alliance:** especially because an alliance requires many personnel from public and private parties. In practice it is hard for the public party (client) to staff an alliance. Furthermore, it takes time to select people and to establish an alliance in a formal manner (Interview Round 1, 2015).
- **Limited widespread promotion for the alliance form in the parent organization:** the alliance form is not spread widely by employees in parent organizations. One of the reasons is, that it is often hard to staff an alliance with people from parent organizations, often many external employees are hired. This results in a **limited learning-effect for the parent organizations**, because there are too little internal employees that can share the ‘success stories’ of alliances within the parent organizations. Furthermore, the link between the parent organization and the alliance might not always be so strong, and the lobby for an alliance within the parent organizations is limited. Finally, some (public) parent organizations steer in their policy towards other contract forms (e.g. Rijkswaterstaat is stimulating uniform contracts, in contrast with alliance contracts that often require a custom made component).

Given the statement that the alliance form is a mean and not a goal on itself (Interview Round 1, 2015), it should be questioned if it is desired to force towards more alliances, even though in theory the form is discussed in a positive manner. Furthermore, the possible drawbacks of an alliance should always be considered and compared to the expected benefits. An alliance can come with high transaction costs and could lead to a bureaucratic culture.

Additionally, by means of a literature review the concept of trust was investigated more in-depth, in order to answer the second sub-question:

**2. How can trust in a project-context be defined, what is the role of trust in project success, and how can trust be operationalized?**

Trust is characterized by its two-sidedness, and is about the expectation that people (e.g. the trustee: alliance partner) will not fail the trustor (e.g. an individual in the alliance), even if there is a possibility for opportunistic behaviour. Trust in alliances is interesting, because trust might be even more important when the issue at stake is more complex, and alliances are often formed for complex challenges. Furthermore, trust is concretized based on the available literature. This results in five elements that influence trust:

- **Affection:** is a very ‘soft element’ and is about personal relationships, connecting culture and skills, a staff with ‘interpersonal skills’ and the impression parties have from each other
- **Intention:** is also a very ‘soft element’, and is about the assumption that your alliance partner has good intentions, being aware of each other’s intentions, giving each other the benefit of the doubt, and act in the interest of the project (best for project perspective)
- **Organization:** this related to more practical organizational elements, such as clearly defined goals, support from the top management, (contractual) arrangements, and good management
- **Interaction:** is about open, transparent and frequent communication, making arrangements, and keeping to these arrangements. A previous or expected future interaction can influence this

34 As discussed in paragraph 8.2
Compliance: is about keeping to appointments, take responsibilities as agreed upon and act in the interest of the jointly defined goals.

Regarding trust it is remarked that the literature addresses some elements influencing trust, but that theory might not be complete. Respondents argue that “Many elements are recognized” and “We basically have discussed everything already”, when these elements are presented after having a conversation about trust in an alliance project (Interview Round 1, 2015). It is notable that many of the elements mentioned in literature are quite ‘soft’ and abstract compared to the empirical discussion on this topic. This means that the concepts from literature are still relatively abstract, broad and vague (e.g. intentions, compliance, affection). From the empirical data, on the other hand, more concrete and practical actions were derived (e.g. team selection, appointing alliance-ambassadors, organizing mandate, celebrate project success) (Interview Round 1, 2015).

Finally, it is remarkable that although these elements are known, presented in literature, and identified as being important, there is still no application to monitor these elements in practice or to give them a central role in construction projects.

The third question discussed in the literature review is about performance measurement:

3. What is performance measurement and monitoring, what are strengths and weaknesses of performance measurement, how can be dealt with these weaknesses, and how can PM be applied in infrastructural alliance PPP-projects?

According to literature performance measurement might be more than only the efficiency of actions, but is also about satisfaction of involved stakeholders and about identifying success. Performance measurement in PPP-projects should include more than only measuring traditional indicators (e.g. time and budget), but should provide a multiple stakeholder perspective, be focussed on a life-cycle and process-based approached. Real-time monitoring is suited to adjust the performance during the dynamic project. In the practice from alliance projects this approach is not always chosen. Two of the five alliance projects (Bataafse Alliantie and N201) only work with the traditional indicators. The other three projects include aspects like the surrounding area and satisfaction of stakeholders, safety, and image. However, it could be questioned if these broader elements (more than time and budget) should be remarked as KPI. From the experience of the Bataafse Alliantie and N201 it seems that stakeholders from the surrounding area were involved, while it was no KPI.

Although performance measurement can lead to increased performance, one should be aware of the possible perverse effects that can occur as a result from performance measurement. Literature provides several strategies to prevent the possible occurrence of these effects. It is remarkable that the literature discusses performance measurement in a quite abstract manner. Where respondents provide concrete advices to organize performance measurement, the literature nearly only provides more abstract principles. For example, in literature it is mentioned that ‘a strategic selection of KPIs’ is required, and from empirical data specific KPIs were mentioned, such as time, budget and the surrounding area. Finally, in practice there were limited examples mentioned of experience with the occurrence of perverse effects when measuring performance.

13.2 Conclusions: answering the empirical sub-questions

After the literature review, an empirical research is conducted based on exploratory interviews with people involved in five Dutch infrastructural alliance PPP-project. Four of these projects are already realised and provide insights in past

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35 As shown in figure 35 in paragraph 12.1
experience and an evaluation. One project (OV SAAL) is currently running, and provides a perspective on the more practical side of monitoring trust.

In this phase was aimed to answer the following sub-question:

4. What are, based on practical experience, functional requirements for a performance measurement system suited for alliance PPP-projects?

When measuring performance in an alliance project, one should consider in general the following elements: the KPIs (e.g. the type and number of KPIs), the way to obtain information, communication about the results, and the process beforehand and during the monitoring. Often the general performance measurement is reported in quarterly reports.

When a project is willing to measure and monitor also the soft elements, they should carefully consider: the frequency of measurement, the parties to involve, the type of information and the way to obtain this information, and the communication of outcomes.

It could be remarked that performance measurement of ‘hard and measurable’ indicators seems to be quite different than measuring soft elements. The most remarkable conclusions regarding this difference, are (Interview Round 1, 2015):

- **The way to obtain information:** it was often mentioned that information about the soft elements of a project should be obtained by interviews or conversations (e.g. based on questionnaires). For other KPIs (e.g. time, budget, quality, safety) such methods were not mentioned.
- **Pay extra attention towards a milestone:** discussing the soft elements of a project might be necessary at moments when a project is heading towards a milestone. For ‘hard’ KPIs this is not specifically necessary.

Many argue that it is important to have grip on the ‘soft elements’ like trust, and to force friction (e.g. by monitoring and discussing soft elements) in an early stage before issues get out of hand. However, the experience with monitoring these elements and suggestions to monitor this are very limited. Possible reasons can be:

- **Too much focus on project realization:** especially when KPIs as time and budget are central to project success, the focus might be more on the direct performance on these KPIs than on more indirect indicators, such as trust
- **A quick and chaotic project start:** establishing the alliance can be a chaotic process. During this process there might be too little time to organize and implement the monitoring of a soft element as trust

Furthermore, for both measuring the ‘harder’ as well as the ‘softer’ indicators, it seems important to pay attention to performance measurement in an early stage. Especially formulation the KPIs and checking these KPIs on certain requirements, might be a step that needs time and attention.

Finally, a completely different method, which was only mentioned by one of the respondents, is action research. This relatively unstructured and flexible way of monitoring, might had a positive (indirect) effect on the one project in which it was used (Bataafse Alliance). However, because this was only shortly mentioned only by one of the respondents, and nothing was said about the direct effect of action research, further research on this subject might be required.

In the empirical stage another question was addressed, namely:

5. By which means can the critical success factor trust be measured and monitored, and included in a performance measurement system, which is suited for alliance PPP-projects?
According to respondents trust can be operationalized by eleven elements. An operationalisation of the concept of trust seemed to be necessary, before this abstract term could be measured or monitored. The eleven central elements of influence on trust are: people, communication, relation to parent organizations, working principles, organizational, collectivity, dealing with conflicts, compliance, culture, project progress, and division of roles. The meaning of these elements is discussed more in-depth in chapter 11.

These elements can be influenced by different means. Some of these means can be organized upfront, before the start of the project. Other means require actions during the project. It is remarkable that nearly half of the proposed methods to influence trust, should be organized upfront. According to many respondents a good project start in which for example agreements and roles are defined and a good team (with mandate) is selected, is crucial to project success.

Although all eleven elements were remarked as important, three elements were mentioned by nearly all respondent and seem to be of crucial importance for success of an alliance:

- **People**: according to many the people are a leading factor for a trusting relationship in an alliance. People with the right skills, mind-set and attitude can make or break an alliance project. This could be influenced upfront by the selection of the team (e.g. assessments, select over organization boundaries, pay attention to team as a whole) and by having attention for the project start-up (e.g. both formal and informal). During the project feedback and evaluation moments should be organized (e.g. monitoring people and their ambitions, organize teambuilding), a certain HR-policy should be applied (e.g. change people on wrong positions), and the attitude of team members is crucial (e.g. non-traditional behaviour, an alliance-attitude).

- **Communication**: communication between people in the alliance might be of crucial influence on a trusting relationship between alliance partners. This could be influenced upfront by establishing communication procedures (e.g. about motivation for decisions) and by organize counterpart communication (between alliance and client, and between alliance and contractor). During the project attention should be paid to: openness and transparency (e.g. about decisions, goals and interests), frequent and direct communication (both formal and informal), the way of decision making (e.g. substantiate, summarize and ask control questions), and the attitude of people (e.g. proactive).

- **Relation to parent organization**: the relation between the alliance and the parent organizations is mentioned by many as of influence on the trust in an alliance project. Upfront the mandate and commitment should be organized well (e.g. enough mandate in alliance and with boundary spanning persons) and ambassadors of the alliance could be appointed (people who carry out the alliance within a parent organization). During the project attention should be paid to: the attitude of parent organizations (e.g. work with different mandate and escalation structures), arranging a relation on board level (e.g. by informal contact), and by the attitude of alliance team members (who are aware of the new roles and the balance between alliance and parent organization).

Furthermore it is remarkable that the last of these three elements (relation to parent organization), was not frequently mentioned in literature, but seems to be of great importance according to respondents. Other elements that might be additional to what was mentioned in literature, are:

- **Organizational elements** (e.g. working on the same location) and elements regarding the **agreement on working principles and roles**: which are mainly organized upfront, and should be complied with during the project.

- **Dealing with conflicts**: and especially the importance of the first conflict, which could be a leading example and which could create trust.
Project progress: celebrating successes and carry this out with pride

It is noteworthy that some of the more organizational elements were not mentioned in literature, but were mentioned in empirical research. The more ‘soft’ and affection-based elements were mentioned more clearly in literature.

Finally, although a concretization of the concept of trust was provided, it still seemed very hard to provide more insight into the actual monitoring of trust. One of the reasons is that so many should be organized upfront, that establishing this in a right manner almost seems at least even important than monitoring during the project. Furthermore, the monitoring of a soft element like trust can also be ‘checked’ or monitored by management. This suggestion is especially mentioned for the more soft elements of trust, such as culture, compliance, and working principles. For example, it could be a task of the Alliance Management Team (AMT) to make culture topic of discussion, to check whether employees comply with rules and if they act in line with working principles.

13.3 Overall conclusions

Finally, now the conclusions from theory and from practice are discussed, this paragraph will elaborate on merging this information in order to answer sub-question six.

6. In which way, based on literature and empirical research, can findings from this study be translated to a performance measurement instrument, which includes the factor trust and is suited for infrastructural alliance PPP-projects?

Firstly, as a result from literature and empirical research it became clear that the focus of a performance measurement instrument should be on the process (as discussed e.g. by Laan, 2009; Liu, 2014; Interview Round 1, 2015; Interview Round 2, 2015). Therefore, the answer to the part of the question above, “in which way”, is: in the way of a process instrument, which was presented in chapter 12.

Based on theory and practice, a distinction can be made in the moment in time: between upfront measures and actions during the project, and in the type of actions: basic and additional actions. An overview of these actions is presented in Table 17 below. The upfront measures should be undertaken before or in an early stage of the project. The actions during the project could deserve attention during the whole lead time of the project, however a focus on these actions might be valuable when heading towards a milestone. The basic actions are measures that could stimulate a trusting relationship, according to both theory and practice. Although all obtained information in this exploratory research needs further validation, the additional actions were only mentioned in empirics and therefore might need extra validation.

Table 17: Overview of basic and additional actions, upfront as well as during the project

<table>
<thead>
<tr>
<th>Basic actions</th>
<th>Additional actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of the team (people)</td>
<td>Organize counterpart communication (communication)</td>
</tr>
<tr>
<td>Attention for project start-up (people)</td>
<td>Appoint ambassador of the alliance (relation to parent organizations)</td>
</tr>
<tr>
<td>Establish communication procedures (communication)</td>
<td>Working together physically (organizational)</td>
</tr>
<tr>
<td>Organize mandate and commitment (relation to parent organizations)</td>
<td>Arrange a platform for help (dealing with conflicts)</td>
</tr>
<tr>
<td>Define working principles jointly (working principles)</td>
<td>Getting to know each other in an early stage (dealing with conflicts)</td>
</tr>
<tr>
<td>Define process agreements (organizational)</td>
<td>Make agreements in an early stage (compliance)</td>
</tr>
<tr>
<td>Contractual agreements (organizational)</td>
<td>Divide roles not too strictly (division of roles)</td>
</tr>
<tr>
<td>Establish joint goals (collectivity)</td>
<td>-</td>
</tr>
<tr>
<td>Discuss interests (collectivity)</td>
<td>-</td>
</tr>
<tr>
<td>Discuss issues from the past (culture)</td>
<td>-</td>
</tr>
<tr>
<td>Establish an own identity (culture)</td>
<td>-</td>
</tr>
<tr>
<td>Discuss responsibilities in an early stage (division of roles)</td>
<td>-</td>
</tr>
</tbody>
</table>
- Attitude of team members \( (people) \)
- Openness and transparency \( (communication) \)
- Frequent and direct communication \( (communication) \)
- Discuss working principles \( (working principles) \)
- Working jointly on tasks \( (collectivity) \)
- Discuss conflicts \( (dealing with conflicts) \)
- Dealing with the first conflict \( (dealing with conflicts) \)
- Consistent compliance with agreements \( (compliance) \)
- Pay attention to and discuss culture \( (culture) \)
- Feedback and evaluation moments \( (people) \)
- Human resource policy \( (people) \)
- Way of decision making \( (communication) \)
- Proactive attitude of people \( (communication) \)
- Arrange relation at board level \( (relation to parent organizations) \)
- Attitude of parent organizations \( (relation to parent organizations) \)
- Attitude of team members \( (relation to parent organizations) \)
- Organize events and sessions \( (organizational) \)
- Attitude focused on collaboration \( (collectivity) \)
- Sessions for goal revision and recalibration \( (collectivity) \)
- Substantiate decisions with argumentation \( (dealing with conflicts) \)
- Joint pride when achieving milestones \( (project progress) \)
- Make uncertainties clear \( (division of roles) \)
- Monitor role consistency \( (division of roles) \)

The most remarkable elements from this table, are:

- The **basic actions** that are for a large part related to: **people, communication, collectivity and culture**
- **Additional elements**, which mainly include actions regarding the **relation to parent organizations, division of roles and dealing with conflicts**

When seeking for an instrument to monitor these elements, in order to influence trust in an alliance project, the following can be concluded:

- A **process instrument** could provide some guidance in checking and considering the actions mentioned above on certain moments in time (upfront, during the project, or especially towards a milestone)
- These actions could work **hand-in-hand** with a **performance measurement instrument** for the **soft elements**, in which the involved parties, the frequency, the type of information and way to obtain information, and the communication of results should be considered

From this analysis it can be concluded that it is very hard to actually combine performance measurement and monitoring with stimulating trust. Due to the operationalization of the concept of trust many actions became clear to influence a trusting relationship, however only a limited number of these actions are suited to combine with actual performance measurement. Some actions should be organized upfront, and other actions should be monitored by management.

Finally, the input from these six sub-questions can provide an answer to the central research question of the study, which was:

By which means can the effects of the **critical success factor trust** on the performance of **infrastructural alliance PPP-projects** be monitored, as part of a broader **performance measurement system**?

A process instrument in which the eleven elements of trust are included, as presented in chapter 12, could be a suitable mean to monitor the concept of trust during infrastructural alliance PPP-projects. The eleven elements of trust provide an operationalization, which can be used as guidance (e.g. for project managers) during the alliance project. Furthermore, the monitoring of this concept is about the interplay between good management on the one hand and the application of measurement instruments on the other hand. One of the main goals of management and measurement instruments regarding trust, is to notify friction and developing issues in an early stage, before these small problems can become major trust issues. The early recognition of possible future risks on the relational level is important in maintaining a trusting relationship. If a project manager has a ‘sense’ for noticing developing friction, and if the manager is able to
solve trust-related issues in an early stage, this manager might not need many measurement instruments. However, it could be expected that not every manager is able to recognize and detect all small and developing conflicts (especially in large project organizations), and therefore measurement instruments can provide support to the management. In this context, a measurement instrument can function as an ‘opener’ for conversations about trust, and about possible developing issues regarding trust. Additionally, a measurement instrument can provide not only support to the management, but also to the employees: an instrument can help in evaluating and preparing for a conversation about trust.

Within a discussion or conversation participants should seek for the reasoning behind survey-answers. A measurement system aims at reflecting the actual situation or performance: this system could provide insights, but presents no hard and objective facts. Therefore it is important to seek for the causes of and reasoning behind certain results of measurement: in this context the result of a measurement instrument should not be seen as final outcome, but as starting point for discussion and further improvements. More important than organizing the right measurement instrument, is having the right conversation with the right people about these outcomes. In addition, these ‘right people’ could reach beyond the alliance members and should also focus on boundary spanning persons beyond the borders of the alliance (e.g. in parent organizations). Furthermore, when measurement instruments (e.g. in the form of a survey or questionnaire) for trust are applied, special attention should be paid to individual and extreme values, instead of generalized group averages. Finally, in order to secure the quality of the process of monitoring trust, several upfront measures were identified, such as the selection of the team, organizing mandate, attention for the start-up and discussing interests, goals, intentions, communication procedures, working principles, roles and other elements (presented in table 17 above).

Although this research aimed at embedding trust in a performance measurement system, it can be concluded that this is not necessarily required or possible in the form of a measurement instrument. The concept of trust is not easily captured in a performance measurement system. Therefore, it can be concluded that opportunities for further development are mainly related to the process, the management approach, and possible discussions regarding trust, instead of further development of a specific measurement instrument or tool. The reason is that the function of a measurement instrument as ‘conversation-opener’ (e.g. a discussion about trust issues) might be more useful than the specific outcomes (e.g. ‘the average score of trust is 7.5’) of the instrument.

Finally, it has to be remarked that these conclusions are derived from an exploratory study based on a limited number of cases in a very specific and narrow domain (Dutch infrastructural alliance PPP-projects). Therefore these conclusions require further validation and testing. Additionally, no conclusive statements can be made about the application of these conclusions for other (PPP-) projects, other sectors and other countries.

Furthermore, in a broader context the following lessons can be learned from this research:

1. The relation with the parent organizations and the role of boundary spanning people is crucial to a trusting relationship in alliance PPP-projects.

Although the literature mentions the important role of boundary spanning people, this seemed to be ignored in the practice of Dutch alliance projects, because of the issues between the alliance and parent organizations, especially on the side of the client. For example, the as alliance tendered A2 Hooggelegen project paid attention to the selection of people and worked closely together according to working principles. This resulted in an alliance that became so close, that the connection with the parent organizations became less. The focus on boundary spanning persons and the relation with parent organizations was limited. A result of a less strong
relation between client and alliance, and contractor and alliance, is that a traditional relationship starts to exist: the client sees the alliance as ‘contractor’, and the contractor will start to see the alliance as ‘client’. Furthermore, it is not uncommon that people in the parent organizations do not understand the working of an alliance. Additionally, a parent organization often positions its most ‘collaboration-focused’ people in the alliance, which can result in a situation in which not the most collaborating people act on the boundary of the alliance and the parent organization, while these boundary spanning people should be aimed at cooperation. Furthermore, a limited connection between parent organizations and the alliance will reduce the ‘oil slick effect’ of alliance, partly due to the limited learning effect of parent organizations. Another cause for this can be the limited number of people from parent organizations within the alliance: often external employees are hired, and therefore knowledge will not stay within parent organizations. Possible suggestions to improve this in the future are to organize mandate and commitment in an early stage, and to make sure the attitude of parent organizations will adapt (e.g. client gives more mandate than used to). Furthermore the team members should balance between their role as alliance-member and as employee of their parent organizations, and ‘ambassadors’ of the alliance within the parent organizations can be appointed. Finally, a good relation on board level can strongly influence a trusting relationship between alliance and client, and alliance and contractor.

2. Influencing a trusting relationship in alliance PPP-projects is a combination between organizing upfront and steering by good management, possibly with support from performance instruments.

Alliance PPP-projects are characterized by an organizational component (joint contract, joint responsibilities) and by a more ‘affection-related’ component: based on principles of mutual trust and commitment. This dichotomy can be seen in practice as well. It is noticed that to influence the ‘eleven elements of trust’ (presented in chapter 11 and 12), nearly half of the actions can be organized upfront or in an early stage of the project. These actions can relate to: organizational measures, division of roles, agreements on communication, roles, mandate, conflicts, working principles, contract, goals, interests and several other actions. Furthermore, it is noticed that people involved in alliance projects often know that trust and measuring ‘soft elements’ can contribute to project success, but this is often ignored or paid insufficient attention to. A quick and chaotic start or a strong focus on direct project success in terms of time and budget, can lead to too limited time and attentions for the valuable upfront measures. The other actions that relate to ‘affection’ and can be undertaken to stimulate a trusting relationship are mainly related to actions regarding: people, culture, comply with agreements (e.g. roles, communication procedures, goals and interests), non-traditional attitude, and a proactive alliance-attitude. Although upfront agreements on how to interact with each other are necessary to act in a certain way during the project, addressing people if they do not comply or do not act in line with these agreements is at least as important. However, the ‘soft elements’ like attitudes of people, culture, working principles and compliance might be monitored best by good management, for example by frequently informal contact between the AMT and the employees. A good example of steering by management is the approach in the project of the Bataafse Alliantie. The barrier between the AMT and the employees was very low, the contact between them frequent and informal, and the management was characterized by ‘steering on purpose in an unconscious manner’. However, possibly not each project manager is able to steer in this manner, or the size or complexity of the organization makes management more difficult. Therefore, a performance instrument, in the form of e.g. a survey or questionnaire, can be supportive for the management. Such an instrument can help to identify the ‘weak spots’, possible developing trust issues or conflicts. After this identification, in which attention should be paid to the individual and extreme values, the management can use this as basis for a discussion or conversation about trust. In the development of such an instrument it is important to consider the parties one should involve in monitoring trust. Taking into account the first concluding ‘lesson’ discussed
above, it might be valuable to include boundary spanning individuals in this monitoring. Furthermore, when is decided on the frequency of monitoring, it should be taken into account that trust might be under pressure when the project is heading towards a milestone. Given the two-sidedness of trust, it might be interesting to obtain information that includes an evaluation of each other, for example about behaviour and attitudes of others'. Regarding the way to obtain information, it could be considered to work with questionnaires combined with conversations. Finally, the outcomes should be communicated and discussed publicly, with a focus on trends and extreme values, instead of averages and absolute values.

With this conclusion and these lessons in mind, it can be stated that monitoring trust and influencing a trusting relationship in alliance projects is complex, and needs further testing, experience and validation. Chapter 15 will elaborate on this.

13.4 Scientific contribution

This research aimed at contributing to science, by elaborating on questions from previous studies, such as Liu (2014) and Hodge & Greve (2007). With the conclusions from this research in mind, this study contributed to science in two manners:

- This study does not provide a clear-cut answer to the need of Hodge & Greve (2007) for a PMS for PPP-projects, mainly because each PPP-project is a different one and requires a customized approach. Therefore a suggestion if presented for a process to go through, which includes the steps that should be considered in designing a PMS for an alliance PPP-project that includes the factor trust. This process instrument was not only developed by a description and analysis of past and current experience, but by an interpretation of this information and a translation into a design as well.

- This study presents a new operationalization of the concept of trust, based on the experience from infrastructural alliance PPP-projects. In addition to what was mentioned in literature, adjustments and additions were made. For example regarding the important relation with parent organizations, celebrating project progress, organizational actions, division of roles, working principles and how to deal with conflicts. Moreover, the research provided some more concrete and practical actions to stimulate trust, than what was mentioned in literature, as discussed in paragraph 13.1.

Furthermore, some questions emerged as a result from this research, which can be input for further research, namely:

- It was remarkable that so many people knew about the importance of trust and argue that ‘soft’ or sociological elements in a project should be measured, but that the experience with embedding these factors in a PMS is so little. On many indicators that were remarked important (e.g. time and budget, as mentioned in Interview Round 1, 2015 and Interview Round 2, 2015), performance measurement instruments were developed. On the other hand, trust was remarked important, but the experience with monitoring trust is rather limited in alliances. Therefore, a question that is the result from this research, is: why is so much known about trust, or other sociological elements and performance measurement, but is valuable knowledge often ignored or not implemented in construction projects?

36 Under sub-question 2 on page 135-136
37 As presented in the case descriptions in chapter 8
38 As discussed in chapter 3 and 4
39 As presented in chapter 8: only A2 Hooggelegen used the Performability Scan. Some methods that aimed to monitor sociological elements (no alliances and not specifically about trust) were discussed in paragraph 10.1.6
- The five alliance projects included in this research were evaluated (moderately) positive. Nevertheless, there all still no plans or policy aiming at more alliance projects. Therefore, the question of Eversdijk & Korsten (2008) can still be raised: why the alliance form is favoured in literature\(^{40}\) (Eversdijk, 2009), but so limited used in practice, even while the experience from practice is positive? The two possible explanations for this difference, which were mentioned in paragraph 13.1 (work and time to establish an alliance, and the limited widespread promotion for alliances within parent organizations), could therefore be investigated more in-depth.

In the context of the reflection on this research, chapter 15 will provide other insights and suggestions for further research into specific topics.

13.5 Practical contribution

In addition to a scientific contribution, this research aimed at contributing to the daily practice of performance measurement and monitoring of trust in infrastructural alliance projects, especially because of the expected increase of Dutch PPP-projects in the coming years. This study contributed to practice in the following way:

- By providing an overview of process steps (in the form of the outline for a process instrument\(^{41}\)) that could be walked through when a new infrastructural alliance PPP-project starts, for example as a guidance for the alliance manager. Furthermore, these process steps might also be valuable for other (PPP) projects, but this requires further testing and validation.
- The provided insights in the concept of trust and the operationalization of trust, might provide both clients as well as contractors more guidance in steering towards trusting relationships. Some concrete actions were proposed (as presented in table 17 of paragraph 13.3), in order to stimulate a trusting relationship between project partners.
- This research report can help KPMG Public Sector in their understanding of the issues that come with monitoring trust in infrastructural alliance PPP-projects. By providing more insight into the concept of trust (e.g. by means of the list of actions in table 17) and by providing a stepwise process (the process instrument from paragraph 12.3), KPMG might better be able to support their clients or possible future clients. Furthermore, this report can contribute to the broader vision of KPMG on PPP-projects.

Although the process steps, the operationalization of trust and the report can provide clients, contractors, KPMG Public Sector and other stakeholders with insights, the conclusion from this research is no ‘ready to use’ manual. The practical recommendations are still relatively broad and vague (because it proposes a process instrument, and no strict manual). A possible reason it that the concept of trust might be too complex and abstract to capture completely in one comprehensive PMS that would be applicable for every project. Therefore, chapter 15 will reflect on this observation, and aims to further elaborate on practical recommendations based on a reflection on the research. Furthermore, the conclusions of this research should not be assumed as truth and implemented without a critical reflection and validation. This research has several limitations, on which is elaborated in chapter 15 as well. Therefore, this reflection should be kept in mind when the process steps or actions to stimulate trust are used or implemented.

\(^{40}\) As discussed in paragraph 1.1
\(^{41}\) As presented in paragraph 12.3
Recommendations

With the conclusions in mind, this chapter provides a short overview of the recommendations following from this research. These recommendations relate partly to further research that is necessary to come to the development of a more mature and validated PMS that includes the component trust. Furthermore, recommendations relate to how the findings from this study should be interpreted.

This research proposes a first outline for a process instrument to monitor trust during infrastructural alliance PPP-projects. Before the recommendations can be interpreted, the context of this study should be kept in mind. This exploratory research only focused on Dutch infrastructural alliance PPP-projects. The experience with these kinds of projects is limited to a number of five projects, which makes the scope of the research narrow. Only with these starting points in mind, the outcomes can be interpreted.

Firstly, it is recommended to gain **practical experience with the application of the process instrument**. Given the exploratory character of the research, the limited number of researched cases, the selection of the interviewees, the effect of context factors, personal opinions and exceptions might influence the outcomes. Therefore, it might be interesting to **further test and validate the process instrument**. Due to the reason that the instrument outline is not validated yet, it is recommended to apply the steps of the instrument not too strict: no conclusive statements are made about the possible success of a specific step. Therefore, use the instrument is an iterative process: test certain elements, learn, improve, and test again. Additionally, it is recommended to consider using the operationalization of the concept of trust. When for example the AMT aims at stimulating the trusting relationship between alliance partners or employees, the list of eleven elements could be consulted. Also in the use of this list of actions, it should be kept in mind that this list is not validated, and therefore probably not complete. A flexible and experimental use of this list of actions is therefore required. Furthermore, it is recommended to include opinions of experts in the application and development of the instrument. Also a more in-depth analysis of previous learning experiences from organizations such as Rijkswaterstaat, ProRail, Neerlands Diep, Regieraad Bouw, and Heijmans, could be valuable input for further development of the instrument. Additionally, it recommended to obtain experience with the implementation of the instrument. According to the results from this research, it seemed that the instrument should be used and applied by the (Alliance) Management Team. However, not much conclusive statements about the practical implementation can be made, because the experience (best practices) with these kinds of instruments in the five alliance projects was rather limited. In line with the practical implementation, it might also be interesting to test the instrument in slightly different contexts. Should more attention be paid to certain elements of trust, when the context of the project is different? Each alliance project is different and requires custom-made elements, so it is expected that some specific elements need more or less attention in a certain project. On the other hand, the instrument is developed as a process, and should therefore possibly be suitable for a wide range of (alliance PPP) projects. Finally, because of the narrow scope of the research, the study does not make any conclusive statements about the application of outcomes for (PPP) projects in other sectors,
with other contract forms or in other countries and another context. Therefore, it might also be interesting to investigate the application of a process instrument for complete other types of projects: could this instrument also be used in other contract-forms (D&C, DBFM), and is the information applicable in other sectors or other countries? In the chapter 15 these topics are discussed more elaborate.

Secondly, as a result of this research some **recommendations can be made regarding stimulating a trusting relationship in alliance projects** in general. In this broader context, the following is recommended:

- It seems valuable to take enough time in an early stage and to pay attention to the start of the project. Several upfront actions are formulated that could contribute to a trusting relationship during the project. More concrete, these actions for example related to the selection of the team; agreements about goals, (communication) procedures, working principles, conflicts, and processes; organizing mandate; and organizing a joint location. These actions are presented in the upper part of table 17 in paragraph 13.3.

- It could be assumed that attention to trust, and to other sociological aspects, during the project should not be limited to only the alliance domain internally. Boundary spanning persons beyond the borders of the alliance-organization can play a crucial role and should therefore be involved in monitoring of sociological elements. More concrete could this mean that the selection of these persons upfront would be valuable, as discussed in paragraph 11.1.1: the importance of selection of key figures. Furthermore, this could also mean that the right circumstances to work in have to be created for the boundary spanners, as discussed in paragraph 11.1.3: the mandate and commitment of key figures.

- It seems that the quality of the management team plays a crucial role in monitoring trust. However, an instrument can have a supporting role for the management in monitoring trust during a project, e.g. by functioning as ‘opener’ for conversations. More concrete does this mean that the management could use the process instrument possibly best in a not too strict or rigid manner, but in a more flexible way as support tool.

Finally, as a result of this research some new questions for **further research** emerged. Related to the improvement of the process instrument, the following recommendations regarding further research can be made:

- The actions of trust that resulted from the eleven elements are included in the process instrument. These actions are to a certain extent in line with the operationalization of trust from literature, however there are also some differences. It might be interesting to investigate the operationalization of trust in (infrastructural alliance) construction projects even more in-depth. A research could validate, reject, and add certain elements of trust, in order to strive towards a clear operationalization of the concept of trust in the context of construction projects.

- A more in-depth study into the further implementation of the link between trust and performance measurement. If trust is monitored during a project by means of a questionnaire or conversation, which questions should be asked to the employees in order to sketch a correct representation of the actual trust in the project? The concrete implementation of this specific questionnaire, app, or conversation outline, needs to be investigated further.

- The process instrument focuses on embedding trust in a PMS: how could this ‘soft factor’ be monitored during a construction project? When trust (or another factor) is measured, this results in a certain outcome (e.g. ‘trust is good’, ‘trust is 7.6’, ‘trust scores green’ et cetera). However, as defined in chapter 5, monitoring is about adjusting the performance during a project: so undertake actions to influence this outcome in a
positive manner. This research mainly focused on how to monitor trust, and does not present many insights on what a certain outcome means and which next steps should be undertaken as a result of a certain outcome. It might be interesting to elaborate on this research and to seek for actions that match with a certain outcome of the monitoring. In other words, a research into what typical actions are to undertake when trust is under pressure, and what are typical actions to undertake when there is a strong, trusting relationship between parties?

- In the process instrument a decision moment is included to decide whether or not trust will be embedded as a factor to monitor actively. However, what are the criteria to decide if trust should be included in monitoring or if stimulating trust is needed in a project? As mentioned in chapter 3 Rijkswaterstaat uses a decision support tool to decide if a project is suited for alliancing. A comparable list of criteria or requirements could be used in deciding about embedding trust in monitoring or not. Or in other words, for what kind of project is such a process instrument valuable?

- Finally, the method ‘action research’ was shortly discussed in paragraph 8.2.3, and might be interesting to look into. It was remarkable that the project that was unanimous evaluated in a very positive manner (especially the sociological aspects), used action research. However, nothing was said about the direct effect of action research, and this method was nog (publicly) evaluated. Therefore, it might be interesting to further investigate the method of action research, in order to monitor sociological aspects in a flexible or relatively unstructured manner.
15

Discussion and reflection

As discussed in the overall conclusion in paragraph 13.3\(^\text{42}\), this study aimed at embedding trust in a performance measurement system, but it became clear during the research that developing a comprehensive measurement instrument to monitor trust, is not that easy. Therefore, the main question in this chapter is:

“Why is it so hard to find a comprehensive instrument to monitor trust: can trust actually be embedded in a PMS at all?”

Given the position of this chapter in the report, this reflection does not aim at providing a clear answer to this question, but aims at addressing some interesting subjects and perspectives that relate to this question. Reasons for the fact that developing a PMS that includes the factor trust is difficult are:

- The complexity of the concept of trust: the fact that individual perspectives on trust differ, that its dynamics is complex, that trust can have different functions, and that it can be an issue on interfaces
- The fact that context does matter: different projects might ask for different approaches

These complexities will be discussed in paragraph 15.1. Although these difficulties were remarked during the research, it was also mentioned that trust is an important success factor for PPP-projects, and for that reason it was desired to capture and monitor this factor trust in a PMS\(^\text{43}\). Therefore, it was tried (by means of the process instrument\(^\text{44}\)) to propose an outline for how trust could be embedded in a PMS, but this instrument is still relatively broad, and is no ‘ready to use’ manual for monitoring trust. Given the difficulties mentioned above, this more ‘all-round’ tool was developed, but can be criticized because it is not that concrete. Therefore, paragraph 15.2 will address the practical use of the instrument, and proposes some suggestions for the use.

Furthermore, during this research personal opinions of respondents about the alliance form were shared and information about this topic was obtained. Therefore, paragraph 15.3 will also shortly reflect on the alliance form. Additionally, in paragraph 15.4 will present a perspective beyond the scope of the research and the applicability of the instrument in other sectors, countries or with other contract forms. Finally, a reflection on the methodology will be presented in paragraph 15.6.

15.1 The difficulties of embedding trust in a PMS

In this paragraph several difficulties will be discussed, which make it hard to embed trust in a PMS. Firstly, some characteristics and complexities of the concept trust might make it hard to embed trust in a PMS. Secondly, the context

\(^{42}\) In the grey box on page 140-141and in the second ‘lesson learned’ on page 142-143
\(^{43}\) As presented in chapter 3 and 4
\(^{44}\) As presented in paragraph 12.3
in which a PMS is applied differs and might require a different approach, which therefore makes it hard to develop a comprehensive ‘ready to use’ manual for embedding trust in a PMS.

15.1.1 The different functions of trust

It was argued by Mistry (2009), Ngowi (2005), Klijn (2010), Laan (2009), and others, that trust is a critical success factor for PPP-projects. When it is assumed that it is desired to influence critical success factors, it could be questioned if trust can be influenced at all. Theorists and researchers have explained the concept of trust as a dependent variable (effect), and as an independent variable (cause) as well (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 396). The researchers in favour of trust as an independent variable, argue that trust is a potential cause in choice scenarios and social dilemmas. Trust can lead to openness for collaboration, for example: high trust can stimulate a party to choose to ‘cooperate’ in a Prisoner’s Dilemma (Axelrod, 1984; Miller, 1992; Rousseau, Sitkin, Burt, & Camerer, 1998). In this context, the parties in an alliance can be seen as the parties in a prisoner’s dilemma, who can choose to cooperate (and work jointly on a project, based on principles of mutual trust) or who can choose to defect (and act in a traditional manner during the alliance project). Additionally, these proponents of trust as an independent variable (cause) argue that high trust might be based on previous experiences with a partner in a repeated game (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 396). This statement can be recognized in PPP-projects as well. A limited number of Dutch clients (e.g. ProRail, Rijkswaterstaat, provinces) collaborates with a limited number of contractors (e.g. VolkerWessels, BAM, Ballast Nedam, Heijmans) in many different projects and in different compositions. These different projects can therefore be seen as ‘repeated games’, ‘rounds’ or ‘games’ in different ‘arenas’, as described by Rousseau (1998), Klijn (2000) and de Bruijn (2002). Due to this characteristic of PPP-projects, public and private parties seem to be mutual dependent over the borders of their projects. When this is related to trust as an independent variable (cause), and when it is argued that ‘high trust might be based on previous experiences with a partner in a repeated game’ (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 396), it could be questioned if this previous experience is not part of the overall process. According to Verbart (2004) in policy-making the ‘rounds’ in different arenas are part of an overall process. When it is assumed that this statement (from policy-making literature) is also applicable to PPP-projects, trust might not be an independent cause that cannot be influenced (Verbart, 2004). On the contrary, it was also mentioned by several respondents that changing and rotating people and functions is not uncommon in construction projects (Interview Round 1, 2015). If the people in these projects vary strongly, the above sketched theory about repeated games and mutual dependency might not be applicable. On the other hand, it was noticed that for alliances this might work different. Some respondents mentioned, for example “I was asked to be involved in this alliance, because I was earlier involved in the first alliance: Waardse Alliantie” (Interview Round 1, 2015). Due to the fact that the alliance-form is not frequently used, it might be possible that the same people are active in different alliance projects or ‘rounds’. However, this is just an observation and no validated fact. Therefore, construction projects as ‘repeated games’, and possible differences between alliances and other contract forms, might be an interesting subject to investigate further.

Authors who argue that trust is a dependent variable (effect), mention that trust can be the result of an institutional arrangement (Zucker, 1986; Rousseau, Sitkin, Burt, & Camerer, 1998). Some respondents in the research argued that ‘an alliance arrangement can contribute to a positive, basic attitude of parties regarding a trusting relationship and the collaboration’ (Interview Round 1, 2015), which might be in line with the statement of Zucker (1986) that trust can be the result of an institutional arrangement. Furthermore, proponents of trust as dependent variable (effect) argue that third-party relations might influence trust. In a social structure someone’s’ reputation can be based on a third party who tells stories that relates to one’s trustworthiness (Rousseau, Sitkin, Burt, & Camerer, 1998). In the interviews of this research (Interview Round 1, 2015) it was mentioned that the basic attitude of a party regarding trust (as being the ‘trustor’; Laan, 2009), depends on the reputation of the alliance-partner (as being the ‘trustee’). This reputation is not only influenced by previous collaboration between the two parties (as argued by proponents of trust as cause), but might
also be influenced by third parties. Additionally, it is mentioned that trust can be the result of attributes of the other party, such as the party’s competence, concern, openness and reliability (Mishra, 1996; Rousseau, Sitkin, Burt, & Camerer, 1998, p. 397).

When both perspectives (trust as dependent and as independent variable) from literature are related to the information obtained in interviews, it seems that statements of respondents relate more to trust as dependent variable than to trust as independent variable. This is substantiated by the examples discussed in the previous section: that an alliance arrangement can contribute to a positive attitude towards a trusting relationship, and that the initial trust might also be influenced by the reputation of a project partner (Interview Round 1, 2015). These examples present that some respondents had the opinion that trust can be influenced. So, when it is assumed that trust can be influenced and is a dependent variable, a second difficulty comes forward: can trust be a goal or is it a mean? When a project organization strives to influence its critical success factors in a positive manner, in order to ultimately influence the project success, appointing this critical success factor (trust) as a goal might seem logical. In the interviews some respondents argued that trust should be a KPI, and hence: a goal in itself (Interview Round 1, 2015). The arguments in favour of ‘trust as a goal’ seemed to relate strongly to the ultimate effect of trust on project success, and were therefore less well-founded. In other words, although some respondents mentioned that trust should be a goal (or KPI), it became clear in their argumentation that they not strived for ‘more trust in itself’, but that these respondents aimed at the possible contribution of a trusting relationship on the project success (e.g. in terms of project progress, satisfaction of stakeholders). For example, a respondent mentioned that monitoring trust can help the project organization to realize a project within time and budget (hence: no goal in itself, but a mean to realize a project in time and in budget). One of the respondents provides an interesting perspective on this subject: although trust might not be a goal in itself, monitoring trust can still be important and can provide insights in the project success or future project progress. More concrete does this mean: maybe there are currently no trust-related problems, but it can be expected that there are developing (small) issues that can become problems in a later stage. When this is not included in monitoring, attention can be distracted from this subject, and issues might be recognized when it is already too late (e.g. the trusting relation is already harmed). This perspective is comparable with, for example, the balanced scorecard approach in which measures that drive performance are monitored (Interview Round 1, 2015). This functions as a supporting tool for the managers to keep track of the activities and to control and monitor possible consequences from actions (2GC Balances Scorecard Usage Survey, 2015).

In addition, a valuable question to ask to discuss the function of trust as goal or as mean, is if an organization or person should always strive for more trust, and if trust in itself is always positive (Interview round 1, 2015). Instinctively many might say ‘yes’ to this question, because trust is often associated in a positive manner. A comparison with the financial sector might provide a different perspective. As a result of the credit crisis trust seems to be a popular topic in the financial sector, and many organizations strive for increased trust as a goal in itself (de Jong-Tenneres, 2009; Hutten, 2012). A consumer (as ‘trustor’) gives its trust to a bank (as ‘trustee’) when he or she asks the bank to manage his or her budget. Increasing this trust is currently a goal in itself for many organizations. However, when a bank manages the accounts and budgets in an inaccurate and incorrect manner (financial malpractices) the trust given by the consumer is not positive at all, and can result in negative consequences for the consumer. This example shows that trust in itself is not necessarily positive (and therefore not a goal), because it depends if the person or organizations that is trusted (‘trustee’) should be trusted at all (Interview Round 1, 2015).

Finally, this section showed that there are several perspectives on the function of trust, and that trust can be applied in different ways (dependent, independent, goal or mean). Because there are still some uncertainties regarding these functions, it might be interesting to further investigate how the different functions of trust can be deployed. For
example, an analysis of the current application of trust (in which trust is identified as goal in itself) in the financial sector might provide insights (de Jong-Tennekes, 2009; Hutten, 2012).

15.1.2 Trust on interfaces

As discussed in paragraph 3.2 and 4.2 problems with less trust especially exist on interfaces between organizations. It was remarked during the interviews, that issues regarding trust on interfaces were especially mentioned by respondents from private organizations (as discussed more elaborate in paragraph 15.1.4) (Interview Round 1, 2015; Interview Round 2, 2015). However, when trust on interfaces was discussed, it seemed that more problems exist on the interface between the alliance and the public party, than between the alliance and the contractor. These problems were related to, among others: mandate structures, internal stakeholders within public parties, and limited personnel (Interview Round 1, 2015; Interview Round 2, 2015). Furthermore it was remarked during the interviews that the interfaces with other organizations, such as subcontractors, were barely addressed.

When reflecting on these findings, two questions can be asked:

- Why is the topic of trust on interfaces mostly addressed by respondents from private parties, but does it seem that problems with trust on interfaces exist mainly between client and alliance, according to respondents?
- Why are interfaces between client, alliance and contractor central themes in alliance projects, and are other interfaces barely addressed?

Regarding the first question, two perspectives can be chosen: why do problems with trust occur on the interface between client and alliance? But on the other hand, why does it seem that less problems with trust occur on the interface between alliance and contractor. For the first perspective (problems on client – alliance interface), some answers were provided in the interviews and discussed above. These issues (e.g. mandate, internal stakeholders) in public organizations are not new, and were already addressed by several other authors (Desmidt & Henee, 2005; Bovens, ‘t Hart, & Van Twist, 2007). Additionally, as already discussed by respondents from Interview Round 1 (2015) and Laan (2009) it is no surprise that issues can occur on interfaces between organizations. Therefore, it might even be more interesting to question why issues on the interface between alliance and contractor were so limited addressed? Regarding this question, it might be interesting to zoom in on the background of the relation between contractors and other organizations (e.g. clients), because it is argued that experiences from the past might influence someone’s attitude regarding sociological aspects, such as trust. Around the millennium the construction industry gained public attention in the Netherlands, because of emerged issues and cases of fraud in this sector during the ’90s. Because of this situation, a Parliamentary Committee investigated the construction industry around the year 2002. The result of this investigation was one of the reasons for change in the sector: there was searched how trust between parties could be recovered (Rijkswaterstaat/Trajectum Novum, 2011; de Rooij & Kuipers, 2011; van Marrewijk & Verkade, 2012). Additionally, the Dutch Competition Authority (NMa) implemented disciplinary measures. This was the right moment for the construction industry to show that they were willing to cooperate more closely in innovative and experimental relations (RWS/Trajectum Novum, 2011). As part of Covenant A2 (which was discussed in paragraph 8.3), the alliance A2 Hooggelegen was established. With this context in mind, it might not come as a surprise that the attitude of construction companies was slightly different than the decades before: they had to recover the image of the construction industry and they had to win back the trust of public parties. Could this be one of the reasons that so little issues regarding trust occurred on the alliance – contractor interface, according to respondents?

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45 This will be discussed more elaborate in paragraph 15.1.3
Secondly, an interesting observation regarding trust on interfaces, was that relations with subcontractors and other parties than only client and contractor were barely discussed by respondents. In order to discuss this subject, an addition to the figure used in paragraph 3.2 (figure 6) was made, and is presented below.

![Figure 44: Trust on interfaces](image)

In the figure above two interfaces were added. Based on the research from Rahat (2014) the ‘external political influences’ (e.g. in the form of the Dutch house of representatives (Tweede Kamer) and the cabinet) are identified as one of the barriers for adoption of project alliancing in the Netherlands. For example, the perspective of the Tweede Kamer and cabinet on DBFM(O) contracts and procurement methods, could have its influence on the relation with a client in an alliance project (Rahat, 2014). Taking into account the aim of the Dutch Government to realize the same (or more) with less government subsidies and means (Rijkswaterstaat, 2015) it could be argued that the alliance is no suitable arrangement. An alliance requires personnel from public and private parties to participate in the alliance organization. When less budget is available, it is less likely that clients (such as Rijkswaterstaat and ProRail) are able to provide enough manpower that is required for an alliance. Although the interface between the client and the political institutions (e.g. Tweede Kamer and cabinet) were barely discussed, the influence of the collaboration on this interface might be interesting to investigate.

The second interface (between contractor and subcontractor) was barely mentioned by respondents. However, this interface could be problematic in (traditional) construction projects, as discussed for example by Enhassi (2012) (Enhassi, Arain, & Tayeh, 2012). Therefore, this interface will shortly be discussed. For a perspective on the contractor – subcontractor interface the study of Vilasini (2012) provides some insights. According to Vilasini (2012) alliancing connotes integration, but in practices this arrangement fails in creating a true alliance, because only a part of the value chain (owner, designer, main contractor) is considered for integration. Consequently subcontractors are very often left out of the key alliance (Vilasini, 2012, p.1). From the research of Vilasini can be concluded that involving subcontractors and integrating them in an early stage of the process, can lead to benefits for the project (Vilasini, 2012). A study of Miles (1998) shows that in alliances where subcontractors were integrated, good project performances were recorded (Miles, 1998; Vilasini, Neitzert, Rotimi, & Windapo, 2012). Given this statement, it might be interesting to investigate the interface between contractor and subcontractor in alliances further.

As shown in this section, there are still some uncertainties and questions regarding the interfaces. Future challenges regarding this subject might be on the alliance-contractor interface, and the effect of the experience in the ‘90s on the current relationship. Another challenge might relate to the interface between contractor and subcontractor (as a continuation on the study of Vilasini, 2012), and between the client and political organizations (in line with the barrier for adoption of alliancing defined by Rahat, 2014).
15.1.3 Perceiving trust and its dynamics

As already mentioned in the definition of trust from Nooteboom (2002, p.45), trust is about perception. Given the characteristic of trust being an individual-level phenomenon (as described in paragraph 4.2), trust logically depends on the perception of this individual. As a result from interviews, a question regarding this subject came forward. When respondents spoke about trust, they frequently mentioned how they perceived and dealt with trust. Two perspectives were mentioned:

- You (as trustor) trust someone (as trustee) at the start, and he or she can lose this
- Someone (as trustee) has to earn your trust (as trustor) over time

These perspectives seem to be very personal, and depend on someone’s individual opinion. Can this basic attitude be influenced?

According to neuroscientist Davidson, one of the most interesting developments in neuroscience in the last decades is that some parts of the brain can change, as a response to a changing environment. He argues that this so-called ‘neural plasticity’ can be the reason that people raised in a loving and caring environment, are better able to control their emotions in a later stage (Voortman, 2012; Goleman, 2003). When it is assumed that this theory could work in the same manner for trust, the perspective of trust as an independent variable (cause, by Rousseau, 1998) does not seem illogical.

In this context trust might be strongly related to a basic attitude of people, and can only be influenced by previous experiences of these people (Rousseau, 1998). Other authors (Laan, 2009; Vlaar, Van den Bosch, & Volberda, 2007; Meyerson, Weick, & Kramer, 1996) argue that the starting conditions of a relationship have strong imprints on the development of trust, so therefore specific attention has to be given to the initial trust building process. However, when the argumentation of neuroscientist Davidson (Voortman, 2012) and the perspective of trust as independent variable (Rousseau, 1998) is followed this might even be too late, because the attitude regarding trust of a person, was already influenced by his or her previous experiences (although Davidson does not make any statements about the type of experience: e.g. personal experience or professional experience). On the other hand, when parties do not have any previous experience with each other, a first meeting (the first experience) might be of influence on trust in a later stage.

In addition, Nooteboom (2002) mentions that this first phase of a relationship, people therefore will actively search for sources of trustworthiness in their partners (Laan, 2009, p.34). It was mentioned by respondents that a project start-up meeting could be a moment to seek for the trustworthiness of colleagues and project partners. Additionally, this moment could even be used to express if you trust your partner or not. One of the respondents mentioned that team members of project A2 Hooggelegen expressed this during the start-up of the project (Interview Round 1, 2015). Furthermore, some other authors state that trust develops over time, especially as a result of interaction (Rousseau, 1998; Laan, 2009, p.34; Zucker, 1986). According to Currall and Inkpen (2006), the development of trust might be slow during the early stages of a project, after which it develops and follows an incremental pattern (Laan, 2009; Currall & Inkpen, 2006). This perspective on the dynamics of trust is in line with a Dutch statement mentioned by many respondents, namely ‘vertrouwen komt te voet en gaat te paard’ (Interview Round 1, 2015; Interview Round 2, 2015), which means that it takes time to develop trust at first, but that trust can decrease very quickly at a later moment. This statement and the opinion of Currall and Inkpen (2006) regarding the dynamics of trust, supports the findings that the start of the project is important, and time and attention should be paid to this first phase, as discussed in chapter 13.346 and as shown in the upper part of table 17.

In this section it became clear that giving trust is a personal matter, and depends upon the perspective of the individual (giving trust directly at the start versus let someone earn trust). There are still uncertainties about these different

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46 In overall conclusions, as second lesson learned from this research (page 142-143)
perspectives and about the dynamics of trust, and how a project organization should cope with the dynamics. However, from both literature as from empirics it seems that the starting phase might be an important moment in the trust-building process. In order to obtain more information about the uncertainties, future challenges might relate to the individual attitude regarding trust (giving trust directly, or trustees have to earn trust slowly). When individuals have the basic attitude that a trustee should earn trust, this might mean that trust is lacking in the first stage. However, it could also mean that the trustor has a feeling of distrust towards the trustee. This difference was remarked during the interviews (Interview Round 1, 2015), and could be an interesting subject for further research. What is the difference between lacking trust and distrust, and does a basic attitude in which trust should be earned means that an individual has distrust, or only lacking trust? Another challenges regarding this subject, relates to the difference between perceived and objective outcomes. Klijn (2010) addresses this subject, but it can be questioned to what extent objective outcomes differ from perceived outcomes. As mentioned by many respondents: project success can be anything what you (and your project partner) have defined upfront as being success (Interview Round 1, 2015; Interview Round 2, 2015).

Finally, this section discussed the complexity of perceiving trust and the dynamics of trust. These complexities might be one of the reasons that it is difficult to capture the concept of trust in a comprehensive performance measurement system. Additionally, there are still many uncertainties regarding this subject, and challenges for the future.

15.1.4 Context matters
In addition to the complexities regarding the concept of trust, there are more difficulties in developing one clear and comprehensive PMS that includes trust, namely the fact that context does matter. Every project is different, and therefore might require a different approach.

As discussed by Engwall (2003) no project is an island: a project is influenced by its historical and organizational context (Engwall, 2003, p. 1). Therefore, it is no surprise that answers to questions in this research differ between respondents from different projects (Interview Round 1, 2015). These observations from both theory and practice, is reason to assume that the context of a project does matter. Therefore, the instrument is designed as a process tool, which makes it suitable for different kinds of projects, in various contexts. In order to provide some insights in the (effect of) context of the investigated cases, the table below presents the main differences between the projects.

<table>
<thead>
<tr>
<th>Casus</th>
<th>Tender</th>
<th>Type</th>
<th>Budget size</th>
<th>New or adjustment</th>
<th>Length of time</th>
<th>Money saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waardse Alliantie</td>
<td>D&amp;C</td>
<td>Rail</td>
<td>240 mln</td>
<td>New construction</td>
<td>2y and 11m</td>
<td>25 mln</td>
</tr>
<tr>
<td>Bataafse Alliantie</td>
<td>D&amp;C</td>
<td>Rail</td>
<td>38 mln</td>
<td>Adjustment</td>
<td>3y and 10m</td>
<td>2.5 mln</td>
</tr>
<tr>
<td>N201</td>
<td>D&amp;C</td>
<td>Road</td>
<td>85 mln</td>
<td>Adjustment</td>
<td>6y and 10m</td>
<td>3.2 mln</td>
</tr>
<tr>
<td>A2 Hooggelegen</td>
<td>Alliance</td>
<td>Road</td>
<td>125 mln</td>
<td>Adjustment</td>
<td>2y and 10m</td>
<td>-</td>
</tr>
<tr>
<td>OV SAAL</td>
<td>Alliance</td>
<td>Rail</td>
<td>300 mln</td>
<td>Adjustment</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In addition to these differences in types of projects, there were also regarding the interviewee: from a private, public, or independent organization. As a result from the interviews, some differences in the answers were noticed. The most remarkable were:

- Although issues with mandate were discussed as being an issue on the client side, the importance of organizing enough mandate was mentioned mostly by respondents from private parties. This might be the effect of the
The fact that it is often easier to criticize behavior of others, than reflecting on your own behavior (Van den Berge, 2005).

- The importance of the element people was mentioned frequently. However, it could be remarked that respondents involved in the project with the longest lead time (N201, due to some issues during the project), mentions the importance of a good selection of people upfront much more than respondents from other projects. Could the element ‘people’ be even more important in projects which face issues during the project process?

- The role of the AMT and the Board of Directors is frequently mentioned as of importance, however, this is almost only mentioned by respondents from private parties. This is a remarkable finding, because on the other hand it was argued by respondents that public parties are in general more hierarchical (Interview Round 1, 2015; Interview Round 2, 2015).

- People involved in de Waardse Alliantie mention the importance of involving the surrounding area as KPI in the project, much less than respondents from other projects. Waardse Alliantie is the only new construction project, so this observation is therefore not surprisingly.

- People from public parties mention the importance of KPIs that relate to a long-term perspective more frequent that people from private and independent organizations. This might be the result of the core business of public and private organizations. Public parties often have a societal function, which might ask for a more long-term perspective.

- Although almost all respondents evaluated the projects rather positive, the respondents in project N201 seem to be a bit less positive. A difference between project N201 and the other project, relates to the length of time, which was for project N201 significantly longer than for the other projects.

A more elaborate overview of differences between projects and respondents can be found in appendix A.9. These observations might influence the use of the project instrument: some projects might ask for a different focus than other projects.

In addition to the differences presented in the table above, the history can influence a project as well, as argued by Engwall (2003). The process towards the project, the tendering phase, or previous collaboration between parties might ask for a different approach and a different PMS. To illustrate this statement, a current project can function as an example. Recently, the City Council of the municipality of Amsterdam agreed to the execution of a major project (ZuidasDok, almost 2 billion euros) in the area of train station ‘Zuid’ and the A10 in Amsterdam (Het Parool, 2015). However, in the trajectory towards this decision many involved stakeholders in the surrounding area expressed their dissatisfaction with the project (Het Parool, 2015). When the project history is characterized by discontent of the stakeholders, and by considerable media attention, it might be necessary to pay extra attention to the surroundings in a later stage of the project. For example, in the process instrument it is mentioned to involve external stakeholders in the monitoring of sociological aspects, which could be very valuable to do when a project has a problematic history with these external parties. Furthermore, the process instrument also proposes to appoint ‘ambassadors’ of the project in parent organizations: but would it not be useful to appoint ambassadors among other external stakeholders as well? Finally, regarding the process tool, it might be a logic step to include the surrounding area as a KPI in the PMS of a project like this.

This is an example of how context (history) can be a reason to focus extra on a specific element of the process instrument. Because this research did not specifically focus on these contextual factors, the subject might be interesting for further research.
15.1.5 Reflection on measuring trust

Given the statement that trust could be used as a mean (as discussed in paragraph 15.1.1), there can be reflected on measuring and monitoring this mean. In this research it is attempted to operationalize trust and to seek for manners to monitor trust in alliance projects. However, some authors argue that trust between organizations cannot be measured at all (e.g. Laan, 2009; Wong, 2008). As mentioned by Laan (2009), because a certain trustor trusts a certain trustee, on certain grounds, in certain aspects, and under certain conditions, it can be assumed that it is impossible to measure the level of trust between parties (e.g. between client and contractor) in a way that fully corresponds with what organizations perceive as relevant with regard to the trust they hold towards project partners (Laan, 2009, p. 138). This relates to the characteristic of trust being an individual-level phenomenon, as described in paragraph 4.2. Because trust perceived by all different individuals in an organization strongly depends on the context, it is hard to derive general, organization-wide statements from this individual trust. As mentioned by respondents in Interview Round 1 (2015), trust should not be expressed as an average value (e.g. ‘the average level of trust is a 7.5’), but attention should be paid to specific values, trends, and extreme (low) values (Interview Round 1, 2015). Wong (2008) even states that building trust can be considered as impossibility due to the divergent interests of the contracting parties. According to Wong (2008) this statement is also the reason that implementing trust in construction contracting has gained limited progress (2008).

Although this criticism on monitoring trust is expressed, measurement systems for trust are used in daily practice (Van de Walle, Kampen, Bouckaert, & Maddens, 2003; Hendriks, Delnoij, & Groenevegen, 2007; Dekker, Maas-de Waal, & Van der Meer, 2004). In several sectors (e.g. legal, health insurance, national government) is experience with measuring the level of trust among clients, consumers or the population in general. A typical conclusion from one of these studies is that ‘29.7% of the public trusts the national government’ (Van de Walle, Kampen, Bouckaert, & Maddens, 2003, p. 91). The same report concludes that the perspective on the national government is complex, and that some trends seem to be conflicting. This leads to the conclusion that no definite statements can be derived from this research (Van de Walle, Kampen, Bouckaert, & Maddens, 2003). In addition, in the study of Laan (2009) two different approaches were used: an in-depth case study analysis and a survey. Laan (2009) remarks that the survey had certain limitations, for example regarding insight in causes of problems, which factors lead to levels of trust, and explanations of how measures work and influence levels of trust (Laan, 2009, p.138). A survey seemed not able to capture these complexities, just as concluded in the report of Van de Walle (2003). In addition to the survey, Laan (2009) also used a case study, which contributed to a more in-depth perspective on the complex concept of trust. Comparing this to the outcomes from Interview Round 1 and 2 (2015), a more nuanced perspective is sketched. Although respondents remark the importance of focussing on individual outcomes (especially the low or extreme values), it is argued by some that a survey can function as ‘opener’ for conversations. Additionally, a survey or questionnaire can help team members to reflect on trust and behaviour upfront, before they have a joint conversation about this topic (Interview Round 1, 2015). Reflecting on the use of surveys or questionnaires for measuring trust, it can be remarked that being aware of the weaknesses is important. One of the weaknesses of measuring trust with a survey namely is that it generalized outcomes and does not represent the complexity of trust. On the other hand, a survey might be a valuable starting point for a conversation, if the users of the survey focus on individual values and have a conversation about the reasoning behind outcomes. Although there are still uncertainties regarding the use of surveys, it is most important that the users are aware of these uncertainties and weaknesses, and take these into account when a survey is applied.

It became clear that there are still questions and uncertainties about measuring trust. Although almost all respondents remarked the importance of soft or sociological elements (such as trust) for project success, these same respondents also mentioned that in their (alliance) projects, soft controls were applied very limited (Interview Round 1, 2015; Interview Round 2, 2015). Why are so many people in the construction industry aware of the importance of soft controls, but is it so limited developed and applied?
Recap of paragraph 15.1
This paragraph (15.1) focused on the question why it is so hard to find a comprehensive instrument to monitor trust, and if it is actually possible to embed trust in a PMS at all. Although it is desired to get grip on the vague and abstract concept of trust, which is an important factor for project success, it seems hard to capture the concept in a clear instrument. Reasons for the fact that capturing trust in a PMS is difficult, might relate to the complexity of trust: it can have different functions (dependent, independent, goal or mean), it is a personal matter that is perceived different by various individuals (trust someone from the start versus someone that has to earn trust), the uncertainties regarding the dynamics of trust, and the fact that trust does not work in exactly the same way on each interface. In addition, even if it was possible to capture trust, it is still a challenge to translate this into one clear ‘ready to use’ comprehensive instrument, because project context can be of influence. Therefore, the developed process instrument is more an ‘all-round’ tool that includes process steps, which could be run through for various projects and by various project managers, instead of a strict all-embracing manual. Furthermore, given the complexities of trust that were sketched above, it might not be possible to develop a strict all-embracing ‘ready to use’ manual, because trust might be different for each individual, on every different interface, and on each moment in time.

15.2 Further steps towards practical use
The previous paragraph made clear that trust might be too complex to capture in one clear instrument that can be applied strictly. However, now a more all-round process instrument (as presented in chapter 12) is developed, criticism on this instrument might be that it is not concrete enough. Chapter 14 already tried to make the application of the process instrument more concrete, by presenting several recommendations regarding the use of the process instrument and its development. However, there is no ready to use practical plan on how and by whom this instrument should be used. Although the research was not specifically aimed at providing detailed instructions about how trust should be monitored in infrastructural alliance projects, this paragraphs will discuss some more practical elements of the application of the instrument and aims at working towards a more concrete ‘manual’ for the use of the process instrument. The information presented in this paragraph is not necessarily based on specific literature or frequently mentioned comments of respondents, but is based on an overall interpretation of the obtained information.

15.2.1 The process instrument: a guidance for the management
As discussed by some of the respondents, it seems most likely that a process instrument should be used by the management (AMT). In the five case studies, the management was responsible for the (quarterly) reports in which a projects’ performance, based on KPI’s, was presented. It might therefore be likely that monitoring on the more sociological aspects, as trust, would also be a responsibility of the management. Additionally, as discussed in chapter 13, a certain management approach can be valuable in monitoring trust as well. The reasons for this statement, is that one of the projects that was evaluated very positively by respondents on sociological aspects (Bataafse Alliantie), used no monitoring system, but a management approach that was very effectively (Interview Round 1, 2015). It was stated by a respondent that ‘measurement would not be necessary in an ideal project’, because good management should cover this and recognize issues and risks in an early stage. However, it seems that projects are not able to realize this, and therefore supporting tools (as a PMS or monitoring method) could be useful (Interview Round 1, 2015). The developed process instrument will therefore mainly function as a supporting tool that needs to be combined with management.

If a manager aims at monitoring trust in a project he or she will probably face a complex challenge. The following steps could possibly help a manager in using the process instrument and monitoring trust:

1. Firstly, it will be valuable for the manager to start with obtaining information about what this vague and abstract concept of trust in alliance projects actually is. If there is no knowledge about trust, it will be hard to monitor
this during the project. The operationalization of trust in eleven elements (presented in this research), and also the studies from Laan (2009), Klijn (2010), Wong (2008) and Mistry (2009) could be a valuable start to gain more understanding of this vague term. Furthermore, the function of trust needs to be taken into account: as discussed, trust is a mean to achieve project goals. However, in order to stimulate trust it might even be valuable to apply it as a goal on its own (as discussed and currently applied in the financial sector). The manager should also be aware of the dynamics of trust and the fact that it can be perceived different by various individuals. The importance of understanding trust could be explained by means of an example from the Bataafse Alliantie. During this project there was a researcher involved in the project who investigated the concept of trust. He discussed this subject with the alliance manager, who understood the complexity and mechanism of trust, and who then was able to explain this mechanism to the employees and to make issues regarding trust topic of discussion, which was a valuable contribution to the development of a trusting relationship and finally a successful project (Interview Round 1, 2015).

2 Secondly, it is important when designing a performance measurement system (that includes trust) to do this in dialogue with involved stakeholders (e.g. employees). As mentioned by some respondents, support and acceptance can be important for the success of the PMS. Additionally, because trust is perceived different by various individuals, it might be valuable to involve different people (with different perspectives). So, the manager should involve people in the process, and jointly go through the process steps. However, as already mentioned: these steps and advices should not be followed-up point-to-point. A critical reflection and improvements will be necessary. It needs to be taken into account that this is no all-embracing, unquestionable roadmap to success. The instrument would possibly function best if it is not applied too strictly: a critical reflection on the possible success of certain process steps, testing and improving, could contribute to further development. Additionally, the actual implementation of a questionnaire or conversation needs to be developed further. How can the management, by e.g. asking the right questions, obtain a correct representation of a trusting relationship?

3 Thirdly, as already mentioned, a monitoring instrument for trust is only a starting point for discussion. After the instrument is applied and results are obtained, there is a complex challenge for the management. What do these outcomes mean, how should information be interpreted, and how can the employees be involved in an active and open discussion about trust?

4 Fourthly, the exemplary role of the AMT was mentioned by many respondents, which might be important during the complete project process. So, when it comes to monitoring trust it is assumed that being trustworthy (as a trustee), might be one of the most important assets of a manager. When a manager aims at monitoring trust, he or she has to have an open and reliable attitude in order to make sure that team members will discuss their trust-related issues with the management. Key to monitoring trust might be recognizing developing problems in an early stage, before these issues escalate: and which employee (trustor) will come with his or her trust-related issue, to an untrustworthy manager (trustee)?

As shown in the steps above, the management has an important role in the use of the process instrument. However, not each manager is the same and also for these people the perspectives on trust and their experiences (as a manager) will differ. It could therefore be assumed that it might be possible that different managers could apply the process instrument in various way. As discussed above, the project manager from the Bataafse Alliantie applied the information

47 As discussed in paragraph 8.2.3
from the researcher in a certain manner, but it might be likely that not each manager has the capabilities to do this. Therefore, an experienced manager might apply the process instrument in a different manner than a less experienced manager. For example, the experienced manager could use the instrument only as a check-list or as background information, and the unexperienced manager might prefer to follow the instrument-steps more strictly. These differences in personal preferences of the manager, should be taken into account when using the tool.

Finally, a balance between on the one hand a certain degree of concreteness and guidance and on the other hand the flexibility of applying the tool in various contexts and with different individuals, needs to be taken into account when the process instrument is applied in practice. However, there are some uncertainties addressed (e.g. about the personal preferences of managers), which might be interesting future challenges.

15.2.2 Further steps for instrument development

The previous section aimed to propose more concrete guidance for the use of the instrument. Although it became clear that one clear all-embracing instrument might not be the best manner to monitor trust, it can be questioned if some broad suggestions included in the instrument can be stated with more certainty. For example, the additional and basic actions of trust48 need further validation and might then be applied in a stricter manner, because the effect of the actions might then be more certain (and validated). This chapter will elaborate on these kinds of improvements, and proposes some first steps in further development of the process instrument.

Firstly, due to limitations in time and budget this research did not include an expert-review on the process instrument. It might be valuable to reflect on the developed instrument together with experts. Furthermore, it might also be a useful next step to discuss the outcome of this research (e.g. process instrument) with the involved respondents. Because these 29 respondents provided input for the development of the instrument, it might be interesting to discuss (e.g. in a group-session) with them how their provided information in interpreted and translated into an instrument.

Given the exploratory character of this research, processing the obtained information from interviews, e.g. in theoretical clusters, was done by the interviewer in a step-wise process. As shown in figure 45 and discussed in appendix A.4.

![Figure 45: Stepwise process for theoretical clustering](image)

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48 As discussed in paragraphs 12.3.2 and 12.3.3
Although the data was processed in this relatively structured manner, for a more substantiated clustering and to come to a validated instrument, a second reviewer should guarantee the reliability of the clustering. This can be done by a coding scheme, with themes and sub-themes. An example of how a coding scheme should look like, is shown in the table below. Then, the quotes and statements of respondents could be coded. For example, when a respondent tells that an alliance can be defined by sharing risks and that is a collaboration between public and private parties, this could be coded as 1: C and D. To guarantee the reliability, a second researcher will review the quotes and statements of respondents as well, which is called the inter-rater reliability (Cohen, 1960). A certain percentages of respondents’ quotes are coded by a second (independent) reviewer, and based on this review the Cohen’s Kappa is defined. A high score will indicate similarity between the reviewers, which makes the choices for clusters and final conclusions more substantiated (Cohen, 1960). This more structured approach, might be a valuable first step towards a more substantiated and validated process instrument.

Table 19: Example of how a coding scheme could look like

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-theme</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Definition of alliances</td>
<td>a. Criteria for starting an alliance</td>
<td>In size, budget, complexity</td>
</tr>
<tr>
<td></td>
<td>b. Collectivity in goals and interests</td>
<td>Understand interests and define mutual goal</td>
</tr>
<tr>
<td></td>
<td>c. Sharing risks and opportunities</td>
<td>Sharing tasks, financially, responsibilities</td>
</tr>
<tr>
<td></td>
<td>d. Collaboration between two parties</td>
<td>Equality between parties, solution for both</td>
</tr>
<tr>
<td></td>
<td>e. Attitude</td>
<td>Pro-active, open, based on trust</td>
</tr>
<tr>
<td></td>
<td>f. Organizational requirements</td>
<td>Short lines, mandate, staff, early involvement</td>
</tr>
<tr>
<td>2. Elements of trust</td>
<td>a. People</td>
<td>Selection of the team, attitude of people</td>
</tr>
<tr>
<td></td>
<td>b. Communication</td>
<td>Open and transparent, procedures</td>
</tr>
<tr>
<td></td>
<td>c. Relation to parent organizations</td>
<td>Mandate, commitment, relation on board level… etc.</td>
</tr>
</tbody>
</table>

As already discussed, this research does not provide a clear manual about which questions should be asked (e.g. via a questionnaire) to obtain a representative view on trust and possible issues with trust within a project. It is likely that these questions should be formulated jointly and depend on the specific project and type of collaboration, because no project is exactly the same and the importance of the process was remarked earlier (Interview Round 1, 2015; Liu, 2014). The existing methods (e.g. questionnaires from Regieraad Bouw, RWS, ProRail) could function as example. However, it can be questioned if these developed surveys are the right mean to obtain a representative overview of a trusting relationship. According to a study of Bovenberg (2003) some researchers have a sceptical attitude towards the reliability of questionnaires about trust (Bovenberg, 2003). It was argued that respondents might give socially desirable answers in surveys: a possible perverse effect of monitoring a sociological aspect. Therefore, a study of Bellemare and Kröger (2003) compared the answers to questionnaires about trust, with their actual behaviour in practice. From this study, it seemed that the answers to questionnaires strongly correlated to the choices in the trust-experiment (Bellemare & Kröger, 2003). Given the findings from the study of Bellemare and Kröger, it can be argued that the developed surveys and questionnaires might be a good starting point for further development of the questionnaire, survey or experiment, as part of a monitoring instrument.

Recap of paragraph 15.2

There are several reasons mentioned above why a rough process instrument is developed, instead of a concrete and ‘ready to use’ manual. However, some guidance might be valuable for the practical application of the process instrument. The application of the instrument is about finding a balance between one hand a certain degree of concreteness and guidance and on the other hand the flexibility of applying the tool in a certain context and with certain individuals. However, it is suggested that the project management would be the user of the instrument. Firstly, by obtaining
knowledge and understanding about the concept of trust. Secondly, by involving other stakeholders in the development of a monitoring system for trust. Thirdly, by letting the instrument only function as starting point for discussion, and not as tool to come to factual information. Fourthly, by having an exemplary role as trustworthy person. However, the individual preferences of managers should be taken into account in running through these steps and in applying the instrument. Furthermore, in order to come to a more concrete instrument, several first steps were proposed to develop the instrument for future use.

15.3 Reflection on the alliance arrangement
As presented already in the introduction of this report, alliances are favoured in literature but not commonly used in Dutch practice (Eversdijk & Korsten, 2008). In chapter 8 the context of the five investigated cases was discussed, from which it could be concluded that according to a large majority of the respondents, the alliance arrangement was evaluated positive. According to the respondents, no new alliance projects in Dutch infrastructure are currently planned (Interview Round 1, 2015). In addition, no recent statements in news and media can be found about a possible new infrastructural alliance project. Therefore, it still can be questioned why alliances are not used in practice more common, as was already discussed in paragraph 1.1 (Eversdijk & Korsten, 2009). The research of Rahat (2014) presents three root barriers for the adoption of project alliancing within the Dutch Rijkswaterstaat, namely: no clear policy towards alliancing, external (political) influences, and a shortage of personnel (Rahat, 2014, p. 6). From results of Interview Round 1 (2015) and Interview Round 2 (2015) it became clear that especially the shortage of personnel seemed to be a barrier. An alliance organization requires personnel from the public and private parent organizations. As discussed in chapter 8 and mentioned by some respondents, project N201 for example worked with many external employees. The reason was that the Province of North-Holland (as client) did not have enough available manpower to staff the project (Interview Round 1, 2015). When there is a limited number of people from a certain parent organization involved in the alliance, the learning experience for the parent organization might be limited as well (Interview Round 1, 2015). For example, if ProRail as an organization would like to learn how to manage alliances, it would be valuable to staff an alliance project with people from ProRail (instead of external employees from independent organizations). The other barrier mentioned by Rahat (2014), no clear policy towards alliances, seemed to have gained some attention, especially of public organizations. Clients do have a perspective on when a project is suitable to be executed as an alliance, as presented in the decision support tool for Rijkswaterstaat (de Bruijne, 2014). However, because there are still no other alliances planned in the near future, there seem to be other barriers as well.

15.3.1 Institutional differences between alliance partners
Although a review of the Australian practice does not provide clear insights in why the alliance form is used so limited in Dutch practice, a reflection on the information obtained in interviews might do. The respondents discussed frequently the different mandate structures and organizational differences between client and contractor (Interview Round 1, 2015; Interview Round 2, 2015). Institutional differences between the public and private parties in PPP-projects were also addressed in literature, for example by Saz-Carranza & Longo (2010). Saz-Carranza & Longo (2010) have researched the different characteristics of public and private parties, and identified three crucial differences that could lead to tension in a PPP-project:

1. The basic strategy: public and private parties have a different strategy as a basis. Public parties mainly focus on improving the public values and common goods. In contrast, private parties will have efficiency and growth commonly as central factors (Saz-Carranza & Longo, 2012). In practice this might lead to situation in which public and private parties collaborate in a joint project, within a joint goal and with conflicting interests, as often observed by respondents (Interview Round 1, 2015).
2. Formal control mechanisms: the formal control mechanisms of public and private parties differ. Public parties have control by means of legislation, but private parties have control by means of board or management authority. These different control mechanisms can result in tension in the collaboration (Saz-Carranza & Longo, 2012). An example from practice is the control regarding lead times. Within public parties lead times for certain procedures (e.g. permits and licences) are fixed. Often, these lead times are used and fully exploited. A private organization controls to a lesser extent by means of such fixed rules. In an alliance or PPP collaboration, this can result in friction regarding the control of lead times (Interview Round 1, 2015).

3. Organization form: public and private parties are organized in a different way. The form influences the political and technical priorities of organizations, and finally the strategy and choices made by parties (Saz-Carranza & Longo, 2012). In practice this can be seen in the mandate an employee of an organization has within a PPP-project. In public organizations it is more common to ask for permission, and if necessary budget, before a certain choice is made. Within private organizations employees have more mandate to make decisions, and should explain these decisions afterwards if necessary. Such a difference can result in friction within a PPP-project.

Taking these main differences into account, and with the earlier presented argumentation of Wong (2008) in mind (that building trust is impossible, due to divergent interests of parties, paragraph 15.1.1), there are some reasons to have a critical attitude towards such close collaboration between public and private parties in general. In line with this argumentation it can even be questioned if the form (e.g. PPP, alliance) in which a project is executed is of great importance to project success. It was mentioned by a very few respondents that the form in which a project is executed (e.g. an alliance) might not be of crucial influence to project success, but that the working principles (on which basis people work) are crucial to success. It was mentioned by a respondent that the contract should only be a document to fall back on, and that a successful collaboration between parties is in fact more about the process and intentions than about the contract (Interview Round 1, 2015).

However, when this line of reasoning is followed, the contract could as well be a Design & Construct or even a Dutch ‘RAW-bestek’ arrangement, because it would only be used to fall back on (and is not the basis for project success, because that is the process and the intentions). On the other hand, it can be argued that the form of an alliance enforces people to have a basic (collaboration-focused) attitude towards the project and their project partner (Interview Round 1, 2015). More concrete, because an alliance might pay more attention to the selection of the team (people with an alliance-attitude), to the establishment of working principles (define social norms), and to a discussion about interests and (joint) goals. For example project A2 Hooggelegen, addressed these subjects in an early stage and conducted for example selection assessments to select the key figures for the alliance organization (Interview Round 1, 2015). Finally, this discussion makes clear that there are still some uncertainties regarding the form or arrangement of the project and its effect on the project. It can be questioned to what extent the contract form is of influence on the project success, and to what extent the use of certain working principles (e.g. openness, mutual trust, respect) is of influence on project success? This might be an interesting challenge for future developments in the construction industry.

15.3.2 Cohesion between other elements than project partners
As already mentioned briefly in this paragraph, there is not one specific alliance form. Alliances seem to be ‘custom made’ and can also be applied only for a domain of a project (Interview Round 1, 2015). As discussed in Plantinga (2013) the size of this collaborate domain can differ, for example between a pure and a hybrid alliance, as mentioned by Koolwijk (2010) (Plantinga & Dorée, Project alliances: an investigation into the logic behind the range of a Dutch public sector client’s initiatives, 2013). In this context, the extent to which private and parties collaborate can be seen as a variable: the domain can be very large (e.g. a pure alliance), there can be a smaller domain (e.g. hybrid alliance), or risks
and responsibilities can be allocated between partners (e.g. a concession PPP). However, the extent of collaboration between client and contractor is not the only variable on which projects can vary, as mentioned by a respondent. Figure 43 below presents different variables on which a construction project can differ (Interview Round 2, 2015). In the figure 3 axis are presented: the cohesion between project partners, the cohesion between different disciplines and cohesion between project phases. This research only focused on the y-axis: a strong link between client and contractor, in the form of an alliance. The x-axis shows the variation in project phases: it might be interesting to seek for forms that strongly connect different phases of a construction project, such as the design and the construction. Examples in which this connection is made are D&C and DBFM(O) contracts, but according to some respondents a stronger link between project stages is desired (Interview Round 2, 2015). Furthermore, the z-axis represents the different disciplines in a construction project. It could be argued that the different constructions (e.g. excavation work, concrete, superstructure), as part of a larger building project, should work more closely together in order to adjust work and activities to each other in an optimal manner (Interview Round 2, 2015).

**Figure 46:** Different variables on which can be collaborated in construction projects

These perspectives were not included in this research study, however it might be interesting to investigate this topic more elaborate. Especially because positive experiences with for example small alliance domains on certain disciplines, in other projects were evaluated in a positive manner (Interview Round 1, 2015). An interesting future challenge is to search for an ideal degree of cohesion on these three variables, which leads to successful projects.

**Recap of paragraph 15.3**

The alliance arrangement is an interesting form that leads to many questions. The main observation, as already mentioned in paragraph 1.1, is that the arrangement was so positively discussed in literature, but so limited used in practice. Some reasons for the limited use in practice that were discussed, are: external influences, the shortage of personnel (from parent organisations), and the institutional differences between public and private parties. Although the application of alliances was limited in the Netherlands, the projects are evaluated positively. However, it can be questioned if the alliance arrangement is the cause of these successful evaluations. Does the contract form actually influences the project success at all, or are for example the working principles and the individual attitude of people of greater influence to project success? Furthermore, within contract forms there cannot only be varied on the cohesion between project partners (e.g. client and contractor), but can also be varied between project phases and disciplines. These questions are interesting future challenges.
15.4 Beyond the borders of the scope

As presented in paragraph 2.3 the scope of the research was limited to Dutch infrastructural alliance PPP-projects. However, is can be questioned if the topics addressed in and the findings from this study can be valuable in other contexts as well. Firstly, this paragraph will discuss the application of the instrument beyond borders of the scope. Secondly, the alliance arrangement (on which was reflected in the previous paragraph) outside the Netherlands is discussed as well.

15.4.1 Application of the instrument beyond borders of the scope

Now it was argued that context does matter (Engwall, 2003), it can be questioned to what extent the process instrument is feasible for other projects: in other countries, other sectors, or other contract forms. As starting point for this reflection, the study of Sui Pheng (2002) can provide insights into the geographical scope of the research. According to Sui Pheng (2002) all social behaviour is embedded in a particular context and is connected to other deeply held values and beliefs (Sui Pheng & Yuquan, 2002, p. 1). Additionally, several studies showed that societal norms and values influence the trust-building process (Doney, Cannon, & Mullen, Understanding the influence of national culture on the development of trust, 1998) (Jarvenpaa, Tractinsky, & Saarinen, 1999). These statements might indicate that the process instrument (in which the social factor trust plays an important role) might not be directly applicable in other countries, with other norms and values. However, it would therefore be likely that the process instrument might be more suitable to apply in a country that has societal norms and values comparable to Dutch norms and values.

Regarding the application of the instrument in other sectors, less is investigated about the differences process of trust-building in various sectors. Voortman (2012) remarks the issues regarding trust in the financial sector, and shortly mentions a difference in values between the energy sector and the commercial sector. Also the Dutch housing associations cope with trust issues (Aedes, 2013), and according to others also the educational sector, youth care, general practitioners, insurance companies and even soccer clubs cope with trust-related issues (Nientied, 2012). Although this research provides no insights into the applicability of the process instrument in other sectors, it could be possible that the elements of trust can be useful in these other sectors. Especially the more general elements, such as open and transparent communication and the selection of the team, might apply to various sectors. The more specific actions of trust, such as appointing an ambassador of the alliance, cannot directly be applied to another sector. Nevertheless, the idea of an ambassador can be translated, for example an ambassador of the regulator within banks in the financial sector.

Regarding the applicability of the process instrument in other sectors, no conclusive statements can be made. Although, due to the generalizability of some elements of trust (open communication, selection of team), there might be some opportunities to apply the process instrument in other sectors. It might be a logical first step that the instrument is tested in a sector that is comparable with infrastructural construction, such as spatial development construction. In this sector the alliance form is quite common (Eversdijk & Korsten, 2008).

As mentioned by one of the respondents ‘the contract is only to fall back on, but the actual collaboration is about the process and the intentions’. Additionally, it was mentioned by some other respondents that trust (and monitoring trust) is not only important in alliances, but in other contract forms as well (Interview Round 1, 2015). Furthermore, some examples of monitoring sociological aspects were presented in paragraph 10.1.6. These methods were not applied in alliances, but in other contract forms. Given the statements of respondents and the fact that these methods, tools and instruments were developed for other project arrangements as well, it seems likely that (some elements of) the process instrument might be useful for projects in other contract forms. It might be likely that also for other contract forms the more general elements (e.g. transparent communication, selection of team, attitude of team members) could contribute to the development of trust. On the other hand, elements as the relation to parent organizations and formulating joint goals, might be less important in traditional projects than in alliances, because no joint organization is established.
However, it is argued by some that these elements are of importance for the success of other types of projects (DBFM etc.) as well (Kleijn, Dols, Hoepel, & Talstra, 2014). So although this research only provides an instrument for alliance projects, the process instrument might (to a certain extent) also be useful in projects with another contract form.

### 15.4.2 Alliances beyond national borders

During the literature review of this research, many studies and experiments from other countries were used. It was remarked that some countries have more experience with alliances than others: Australia for example. The first Australian alliance projects started in the late ‘90s and around 2007 a real breakthrough in the use of project alliance had occurred. The number of experiences was significant: hundreds of projects have already been implemented by the project alliancing system (Lahdenpera, 2011, p. 3). These success stories resulted in the use of alliances as project delivery method in, among others, New Zealand, Finland, and the Netherlands (Che Ibrahim, Constello, & Wilkinson, 2013). However, the question arises why the alliance form is more commonly used in Australia than in the Netherlands. A first remark regarding this question is about the definition. Although many authors discuss the success of alliances in Australia (e.g. Mistry, 2009; She, 2013; Che Ibrahim, 2013), it can be questioned to what extent the Australian alliances are completely in line with the definition as defined in chapter 3 of this research. A quote from the study of Koolwijk (2010) provides a perspective on this subject: “In the Australian practice these are called hybrid alliances. One of the variations in hybrid alliances is allocating certain risks rather than sharing all risks” (Koolwijk, 2010). The allocation of risks, instead of sharing risks, seems more in line with how Eversdijk & Korsten (2008) defined the concession model, instead of the alliance model. Therefore, if the Australian practice would be compared with the Dutch practice, a first step is to make sure that the same alliance form is discussed: are Dutch alliances pure or hybrid, and what are the Australian alliances? However as mentioned by respondents, an alliance can also be organized only for a certain domain of a project (Interview Round 1, 2015; Interview Round 2, 2015). This characteristic of an alliance makes it even harder to define in a clear manner what the arrangement actually is in practice. Furthermore, when the used literature that discussed Australia (Mistry & Davis, 2009; Che Ibrahim, Constello, & Wilkinson, 2013; She, 2013; Koolwijk, 2010) is investigated, no conclusive remarks regarding the success of alliance in practice in Australia (compared to other countries) are presented. In addition, when in databases (TU Delft Library, Google Scholar) is searched for information regarding this subject (e.g. key words: comparison, project alliance, Netherlands, Australia), no researchers were found. Therefore this it might be an interesting to investigate what the Dutch could and should learn from the Australian practice?

**Recap of paragraph 15.4**

The scope of the research was narrow and included only Dutch infrastructural alliance PPP-projects. Therefore this paragraph provided a perspective beyond the borders of this scope. Firstly, by discussing the applicability of the process instrument in other countries, sectors or in projects with other contract forms. Regarding the geographical scope, it might be hard to apply the instrument in a country with different norms and values, because social behaviour is strongly connected to (national) values and beliefs. Also for related sectors (e.g. spatial development) and other contract forms, the process instrument might be valuable. However, these differences should be taken into account when applying the instrument. Furthermore, it was remarked during the research that other countries have more experience with alliances than the Netherlands. Therefore, it might be interesting to find out what can be learned from other countries, such as Australia.

### 15.5 Reflection on the methodology

As presented in chapter 2, in this research a certain methodology was chosen. However, some critical remarks can be placed by this method. This paragraph will provide some insights into the considerations for and possible weaknesses of the chosen methodology.

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**Challenge the future**
15.5.1 Reflection on the literature review

In phase 2 (chapter 3 up to and including 7) a literature review was conducted. The first principles for the rest of the research were obtained in this stage and some fundamental decisions were made. One of these decisions is the focus on the factor trust. In Table 5 in paragraph 3.4 the success factors of public-private partnerships were presented. Although trust was a main success factor according to the consulted literature, several other factors were mentioned, namely having common objectives, commitment and equality. Firstly, a critical note regarding the sources needs to be remarked. For the information in Table 5 only a selected number of authors and articles were used. It is likely, when an overview is made by using all available literature on this topic, that other success factors could be at least as important as trust. Secondly, it needs to be remarked that the number of times a factor is mentioned in literature as critical success factor, is no guarantee for selecting the right success factor. Furthermore, the most frequently mentioned factor (which was trust in this research), does not have to be the factor that influences project success most. In addition, as mentioned Wong (2008, p. 1) argues that trust in construction projects is considered as impossibility due to divergent interests of contracting parties. Firstly, this might be one of the reasons that there is limited progress in realising a central role for trust in constructing contracting. Secondly, the statement of Wong leads to the question if it than is possible in the first place to create trust in a project in which the goals and interests are not fully aligned? If this would not be possible, the statement that trust is a critical success factor can be questioned as well.

Another point of reflection is the fact that this project focusses on alliance PPP-projects. This decision was based on the high expectations from literature for the alliance form, and because of the expected increase of PPP-projects in the Netherlands. However, although the investigated alliance projects were all evaluated positively, there are no new plans for future alliance projects. From a reflection on the choice to focus on alliance projects, follows that other contract would have been interesting as well. According to reasons mentioned earlier (e.g. limited learning effect for parent organizations, limited lobby for alliance in parent organizations, other policy goals Rijkswaterstaat etc.), it could be assumed that the alliance form will not directly become popular and will not be used frequently in the coming years. In addition, other new contract forms were established and gain popularity (e.g. Best Value Procurement). Therefore, another focus than specifically alliance projects, would have been valuable as well and maybe even more valuable.

Finally, in phase 2 certain perspectives on infrastructural alliance PPP-projects, PM, and trust is chosen. However, these perspectives are not all-embracing, and match with the aim of this research. If a different perspective on (one of) these concepts was chosen, this could have led to different outcomes.

15.5.2 Reflection on the empirical research

The chosen methodology in this study is a qualitative comparative analysis of several cases. The information from these cases was obtained by exploratory interviews. Due to the limited available information on this topic in literature, an exploratory research was most suited for answering the research question. Further substantiation for this choice is presented in paragraph 2.4.

Reflecting on this research method, the following remarks can be made:

- Conclusions and outcomes (e.g. the operationalization of trust and the process instrument) might strongly be influenced by context-specific elements (as mentioned in paragraph 15.1) and personal opinions, because of the small number of cases (5) and limited number of respondents (29). Although it was tried to interview boundary spanning and key persons in the projects, because of time constraints and busy agendas this was not succeeded for every case. Furthermore it was remarked that not for every case the same information was known. It was observed that some projects were evaluated elaborate (e.g. the books published after A2
Hooggelegen and Waardse Alliantie), and other project were not (publicly) evaluated at all (e.g. Bataafse Alliantie and N201).

- Exploratory research may strongly depend on the interpretation of the researcher. Due to the relative open and flexible conversation between interviewer and interviewee, interpreting what the respondent means can be influenced by the perspective and knowledge of the interviewer. This problem could be addressed by a coding scheme, which is checked by a second researcher. Due to constraints in time and budget, and because of the exploratory character of this research, this second opinion about the interpretation was not conducted.

- In this research was chosen to work in two rounds: first a perspective from the four past and realized projects, and with this background in mind an interview round with involved persons in a currently running project. This led to a more in-depth and practical-oriented step in the second interview round. However, the weakness of this approach is that the conversations in interview round 2 were already steered strongly by the insights provided in the first interview round. The perspective on embedding trust in a PMS might have been even broader when all five cases were approached in the same manner. However, an advantage of the chosen approach is the additional, more in-depth step.

The remarks above are results of choices made earlier in this research. Although these choices might not make the outcomes and conclusions of the research directly unlikely, it is important to be aware of these shortcomings of the study. These weaknesses should be taken into account when the outcomes are interpreted, but might also function as new starting points for further research.

15.5.3 Reflection on the learning process

The starting points for this research were related to alliances, performance measurement and trust. When a first literature review about PPP-projects was conducted, it became clear that these three to subjects were topics of discussion, because:

- Alliances were favoured in literature, but not commonly applied in Dutch practice (Eversdijk & Korsten, 2008)
- A performance measurement tool for PPP-projects was lacking (Hodge & Greve, 2007)
- Trust is a critical success factor for PPP-projects and alliances (Mistry & Davis, 2009)

These three observations have led to the central research question, in which all three of the topics came forward. The aim was to seek for a manner to get ‘grip’ on the vague and abstract concept of trust in alliances, by monitoring this factor as part of a broader PMS.

During the study it became clear that trust and performance measurement are not easy to combine. Many respondents have an opinion on trust in (alliance) construction projects, and can contribute to an operationalization of this concept. Also, respondents shared their opinion on performance measurement. However, it seemed that their opinion on this topic was more steered by the current paradigm and status quo: many respondents evaluated current PMSs relatively positive and only had small suggestions for improvement and adjustment (Interview Round 1, 2015; Interview Round 2, 2015). When respondents were asked about measuring or monitoring trust, the importance was definitely remarked, however innovative suggestions were rather limited. Reflecting on these outcomes and the process towards these outcomes, it could be stated that the contribution of this research is mainly about the operationalization of trust. However, it might be possible that because the topic of trust was discussed in the context of performance measurement, respondents were able to be more concrete in defining and operationalizing trust and come up with specific situations and examples. Since performance measurement is a known, used and discussed subject in the construction industry, it was possibly easier to discuss a topic as trust (which might be discussed not that frequent in the construction industry)
in the context of performance measurement. So, although there were not that many innovative conclusions regarding performance measurement, discussing this topic with respondents might have contributed to a more concrete operationalization on the concept of trust.

To conclude, where the initial aim of this research was to find a mean to measure and monitor trust, it occurred that trust and performance measurement do not fit seamlessly together, possibly due to the complexity of the concept of trust. Because of this observation, and because it was remarked that context does matter\(^{49}\), the process instrument is relatively broad and does not include a strict ‘ready to use’ manual. So, although it seems that instruments are not able to precisely measure trust and draw direct conclusions, measuring trust might function as a ‘conversation-opener’. Outcomes of a questionnaire or survey can form the basis for a conversation between colleagues or project partners, and can steer the discussion towards the most critical topics (from which possible friction can occur in a later stage, if these topics are not discussed). Furthermore, a survey or questionnaire can provide employees of team members with a moment to reflect on the collaboration, trust, and behaviour, instead of discussing this topic directly and out of the blue.

**Recap of paragraph 15.5**

When the information in this research is interpreted, the methodology and its weaknesses should be taken into account. Firstly, in the literature review some choices regarding the scope (e.g. alliances and the focus on trust) and the definitions of relevant subjects were made. When slightly different choices were made in this stage of the research, the outcomes could have been different as well. Secondly, a certain approach was chosen to collect the empirical data. For the interpretation of this data, it should be taken into account that: the context of projects does matter, that the research was exploratory, and that the case OV-SAAL was investigated in a different manner than the other four cases. Finally, in a reflection on the learning process it became clear that it was hard to develop one clear ‘ready to use’ instrument that monitors trust. However, an instrument might have the function as ‘conversation-opener’, instead of striving for exact or factual outcomes.

\(^{49}\) As discussed in paragraph 15.1
Bibliography


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Appendix

Appendices

Background information
Appendix: Trust according to literature explained

In chapter 3 a first operationalization of the concept of trust is presented. This operationalization is based on several scientific papers, namely from: (Klijn, Edelenbos, & Steijn, 2010; She, 2013; Wong, Cheung, Yiu, & Pang, 2008), and some additions from: (Ngowi & Pienaar, 2005; Laan, 2009; van Garsse & Verhoest, 2007).

In order to develop the operationalization, is started with the five concepts of Klijn (2010), namely:

- **Agreement trust** – the parties in this project generally live up to agreements made with each other
- **Benefit of the doubt** – the parties in this project give one another the benefit of the doubt
- **Reliability** – the parties in this project keep in mind the intentions of the other parties
- **Absence of opportunistic behaviour** – parties do not use the contributions of other actors for their own advantage
- **Goodwill trust** – parties in this project can assume that the intentions of other parties are good in principle

Firstly, these concepts were visualized as figure (causal diagram), and the operationalization of Wong (2008) and She (2013) was added to the figure. Because Wong (2008) and She (2013) make a rough distinction between three types of trust, but concretize these types of trust very extensive. Wong (2008) and She (2013) use the following distinction:

- **System based trust** (formalized and procedural arrangements, no personal issues)
- **Cognition based trust** (develops from the confidence built upon knowledge that reveals the cognitive bearings of an individual or organization)
- **Affect based trust** (describes an emotional bond that ties individuals to invest in personal attachment and be thoughtful to each other)

In addition to these three more broad concepts, table 2 of (Wong, Cheung, Yiu, & Pang, 2008, p. 825) provides a very clear operationalization, in which the three broader concepts are concretized into 23 elements. Together with the operationalization of (Klijn, Edelenbos, & Steijn, 2010) this formed the basis for the operationalization in the figure below.
Figure 47: First step in operationalization of trust
Although the diagram of the figure above covers largely the operationalization of Klijn (2010), Wong (2008), and She (2013), some concepts might be still too broad or some concepts partly overlap each other. Furthermore, other perspectives, such as Ngowi (2005), Laan (2009), and van Garsse (2007), can be added as well. Furthermore, it is strived to make a readable and understandable figure. Therefore the aim was to work with clear and short terms for the operationalization.

In contrast with Klijn (2010), the operationalization of Ngowi (2005), She (2013), Wong (2008), Laan (2009) and Van Garsse (2007) are partly in line with Klijn or on the same abstraction level, but others have a different focus. Finally, the perspective of Laan (2009) is interesting to look into, because the concept of trust he describes is applied on several Dutch infrastructural alliance PPP projects (Laan, 2009). Where Wong (2008) focuses on development of trust via the three trust types, Laan (2009) chooses a broader perspective that focuses on the dynamics of trust development between organizations. According to Laan (2009) inter-organizational trust develops over time and is related to risk, control and performance.

Merging these concepts and by an own interpretation (in the form of clustering and a translation to clear and understandable concepts), the figure below is formed:

Figure 48: Operationalization of trust according to literature
Appendix: Interview protocols and interpretation of data

In order to obtain the data that is needed to answer sub-questions 4, 5 and 6, two interview rounds were conducted with involved people from five infrastructural alliance PPP-projects in the Netherlands. The information obtained in these interviews is used in chapter 8, 9, 10, 11 and 12. This appendix provides insight into the questions that were asked to the respondents (interview protocols), and how this information is interpreted and analysed.

The basis for the interview protocols were articles from: (van Thiel, 2007; Rubin & Rubin, 2005; Flick, 2006), which was explained in chapter 2. The outline proposed by these authors and the advices regarding the interviews, were a very useful basis. Furthermore, the aim to answer the research questions was input for these interviews. The questions were:

4. What are, based on practical experience, functional requirements for a performance measurement system suited for alliance PPP-projects?

5. By which means can the critical success factor trust be measured and monitored, and included in a performance measurement system, which is suited for alliance PPP-projects?

6. In which way, based on literature and empirical research, can findings from this study be translated to a performance measurement instrument, which includes the factor trust and is suited for infrastructural alliance PPP-projects?

Given these questions, the following units of analysis could be distinguished: performance measurement, trust, and monitoring trust. In both interviews, these units of analysis came across as topics of discussions. The interview protocols will now be presented. Then, more insight into the interpretation and analysis of information will be presented.

Protocol interview round 1

<table>
<thead>
<tr>
<th>Onderwerp</th>
<th>Aanvullende vragen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introductie</td>
</tr>
<tr>
<td>1.1</td>
<td>Persoonlijke introductie</td>
</tr>
<tr>
<td>1.2</td>
<td>Project introductie</td>
</tr>
<tr>
<td></td>
<td>- Inhoud project</td>
</tr>
<tr>
<td></td>
<td>- Opnemen? Anonimiseren, generiek gebruiken en vragen bij quotes</td>
</tr>
<tr>
<td>1.3</td>
<td>Introductie geïnterviewde</td>
</tr>
<tr>
<td></td>
<td>- Achtergrond</td>
</tr>
<tr>
<td></td>
<td>- Rol binnen project</td>
</tr>
<tr>
<td></td>
<td>- Bekend met onderwerp</td>
</tr>
<tr>
<td>1.4</td>
<td>Wat versta je onder alliantie PPS? Kenmerkend?</td>
</tr>
<tr>
<td></td>
<td>- Gezamenlijke verantwoordelijkheid, contract</td>
</tr>
<tr>
<td></td>
<td>- Samenwerking, soft skills</td>
</tr>
<tr>
<td></td>
<td>- Win-win situatie, pain-gain sharing, best for project</td>
</tr>
<tr>
<td></td>
<td>- Eerst partner, dan planontwikkeling</td>
</tr>
</tbody>
</table>
Met de meerwaarde van samenwerking / alliantie?

Wanneer projectsucces, doelen behaald?
- Harde factoren
  - Prestatie (tijd, budget, kwaliteit, veiligheid)
  - Proces
- Zachte factoren (vertrouwen, communicatie, openheid, eerlijkheid, samenwerking)
- Welke KPIs hebben bijgedragen aan projectsucces?

Hoe zijn prestaties binnen project gemeten en gemonitord?
- Welke indicatoren (meer dan alleen tijd en budget)?
  - Focus op korte en lange termijn, focus op organisatie- en project level
  - Focus op strategisch, tactisch en operationele doelen?
  - Vanuit welk perspectief was de PMS ontwikkeld?
  - Multiple-stakeholder perspectief?
  - Process-based en life-cycle benadering i.p.v. product benadering?
  - Dynamische tool?
  - Bruikbaar voor real-time monitoring?
  - Frequentie van meting?
  - Hoe was de gebruiksoorienterendheid van het PMS?
  - Waar in werden prestaties uitgedrukt?
  - Ordinaal, nominaal?
  - Hoe interpreteer je dit en hoe beïnvloedt het je werk?
  - Overige belangrijke aspecten?

Hoe evalueer je deze manier van prestatiemeting?
- Positieve aspecten?
- Negatieve aspecten?

Hoe zou je prestatiemeting ideaal invullen?
- Waarop zou jij monitoren? En met welk verwacht succes in gedachte?

Vertrouwen
- Specifieke momenten van groot vertrouwen en momenten van wantrouwen?
  - Welke factoren waren hierop van invloed (positief en negatief)?
  - Waartoe leidde dit ver- of wantrouwen?
  - Veranderde het vertrouwen tijdens het project?
  - Houd rekening met persoonlijk vs. organisatorisch vertrouwen?

Als je denkt aan vertrouwen in project:
zou je 3 aspecten kunnen noemen die het vertrouwen sterker beïnvloeden?
- Aandachtspunt in positieve of negatieve zin?
  - Waar kwam dat door? (oorzaak)
  - Hoe is daarmee om gegaan? (gemanaged)
  - Hoe had er beter mee om gegaan kunnen worden? Hoe was het probleem eerder boven tafel gekomen?
  - Is het op een manier gemonitord of veranderde dit over tijd?

Wat zijn de belangrijkste aspecten die vertrouwen beïnvloeden?

Denk je dat deze aspecten te meten zijn in een PMS?
- Waarom wel, waarom niet?

Zou je nogmaals deze samenwerking aangaan, als je in charge was?

Als jij mocht bepalen: hoe zou je prestatiemeting inrichten binnen een alliantieproject?
- Welke factoren zouden hier in zitten?
- Hoe zou je het gebruiken?

Gebruik eventueel zelfde aspecten als bij vraag 2.2

Afronding
- Wat nog niet besproken is?
- Wat nog niet besproken is?

Heeft u nog vragen of opmerkingen?
- Suggesties voor betrokken personen bij project?
- Suggesties voor documenten?

Afstemmen vervolg
- Business card, notulen, bespreken resultaten

Danken en afsluiten

During these conversations the respondents were asked to substantiate their answers with practical experience from the alliance project they participated in.
## Protocol interview round 2

<table>
<thead>
<tr>
<th>Onderwerp</th>
<th>Aanvullende vragen en/of toelichting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Monitoring: indicatoren en KPIs algemeen</td>
<td></td>
</tr>
<tr>
<td>1.1 Persoonlijke introductie</td>
<td></td>
</tr>
<tr>
<td><strong>1.2 Welke factoren zouden in uw ogen mee moeten worden genomen in een PMS?</strong></td>
<td>Type antwoord: traditionele factoren (tijd, geld, kwaliteit, scope), zachte factoren (samenwerking, houding en gedrag, imago) en overige factoren (lange termijn perspectief, omgeving, veiligheid, innovatie en duurzaamheid).</td>
</tr>
<tr>
<td>1.3 Wat is in uw ogen een <em>werkbaar aantal KPIs</em>?</td>
<td>Type antwoord: een aantal KPIs (1-3, 4-6, &gt;6)</td>
</tr>
<tr>
<td><strong>1.4 Als u denkt aan de procesmatige kant van het opstellen van KPIs, zijn er dan nog bijzonderheden waarmee men rekening dient te houden?</strong></td>
<td>Type antwoord: sluit aan bij vooraf opgestelde doelen, KPIs behouden waarde over tijd, elke discipline draagt er aan bij, zijn SMART, nulmeting meenemen</td>
</tr>
<tr>
<td><strong>2</strong> Monitoren van ‘zachte elementen’</td>
<td></td>
</tr>
<tr>
<td>2.1 Met welke frequentie is het in uw ogen wenselijk en haalbaar om de zachte KPIs te monitoren?</td>
<td>Type antwoord: dagelijks, wekelijks, maandelijks, per kwartaal of (half)jaar, richting mijlpaalmomenten, alleen wanneer zich iets voordoet</td>
</tr>
<tr>
<td><strong>2.2 Welke partijen zouden betrokken moeten worden bij de monitoring van zachte KPIs?</strong></td>
<td>Type antwoord: binnen de alliantie, ook tussen de alliantie en moederorganisatie, ook tussen alliantie en omgeving</td>
</tr>
<tr>
<td><strong>2.3 Welke wijze is in uw ogen wenselijk, om de informatie als input voor monitoring op zachte factoren te verkrijgen?</strong></td>
<td>Type antwoord: via formele gesprekken, informele gesprekken, vragenlijst (schriftelijk, mail, excel, app), vragenlijst openbaar in de kantine</td>
</tr>
<tr>
<td><strong>2.4 Welke type informatie is in uw ogen relevant om te verkrijgen, als input voor monitoring op zachte factoren?</strong></td>
<td>Type antwoord: beoordeling op werkprincipes, beoordeling van jezelf en elkaar, persoonlijkheidsanalyses, beoordeling van prestaties (taakbeheersing, relaties, motivatie, werkdruk), evalueren van conflict situaties</td>
</tr>
<tr>
<td><strong>2.5 Wat is een voor u prettige en werkbare manier om de uitkomsten van monitoring op zachte KPIs te communiceren?</strong></td>
<td>Type antwoord: formele rapportages, een mondeling update, groepsgesprek, een dashboard in de kantine voor de medewerkers</td>
</tr>
<tr>
<td><strong>2.6 Wat is in uw ogen het juiste detailniveau om de uitkomsten van monitoring op zachte KPIs te communiceren?</strong></td>
<td>Type antwoord: specifieke cijfers, percentages en scorebalkjes, kleuren of smiley’s</td>
</tr>
<tr>
<td><strong>2.7 Welke procesmatige aspecten zouden voorafgaand aan prestatie meting ingericht moeten worden, om de monitoring optimaal te laten verlopen?</strong></td>
<td>Type antwoord: selectie van samenwerkingsgerichte mensen, duidelijke rolverdeling, redundantie, draagvlak en mandaat van moederorganisaties, relatie tussen partijen in aanbestedingsfase, vooraf bespreken van intenties</td>
</tr>
<tr>
<td><strong>2.8 Welke procesmatige aspecten zouden tijdens het project en de prestatie meting ingericht moeten worden, om de monitoring optimaal te laten verlopen?</strong></td>
<td>Type antwoord: stabiliteit en continuïteit van het team, een leer cultuur, vertrouwen vanuit de moederorganisaties, begrip tonen, transparant open en eerlijk zijn, continu alle belangen meenemen</td>
</tr>
<tr>
<td><strong>3 Vertrouwen</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3.1 Mensen: wat zou er voorafgaand aan het project en gedurende het project aan gedaan kunnen worden om het onderlinge vertrouwen (via de mensen) te stimuleren?</strong></td>
<td>Type antwoord: selectie van mensen m.b.v. assessments (divers team, bepaalde kwaliteiten), selectie van sleutelfiguren (AMT, RvB, sleutelfiguren aan de rand), teambuilding bij aanvang (PSU, inhoudelijk, informeel) Type antwoord: evaluaties medewerkers (PFU, persoonlijk ontwikkeltraject, feedback), evaluaties met externen, houding en gedrag van mensen beïnvloeden (alliantiegedachte, wederzijds respect, geen traditionele houding, verantwoordelijkheid nemen)</td>
</tr>
</tbody>
</table>
### 3.2 Communicatie:

Wat zou er in uw ogen ingericht moeten worden, om te realiseren dat vertrouwen positief wordt gestimuleerd via de wijze van communiceren?

*Type antwoord:* regelmatig (formele, informele) gesprekken, onderbouwing van keuzes, openheid en transparantie (open begroting, informatie toegankelijk), problemen vroeg aankaarten, voorbeeldfunctie van het management, communicatie met omgeving.

### 3.3 Verhouding tot moederorganisaties:

Wat zou er voorafgaand aan en gedurende het project aan gedaan kunnen worden om het onderlinge vertrouwen te stimuleren?

*Type antwoord:* bewust zijn van elkaars belangen (belangen uitspreken, begrip hebben voor belangen en verschillen), mandaat goed regelen (van AMT en van sleutelfiguren binnen de moederorganisaties), dekking vanuit lijndirecteuren.

### 3.4 Werkprincipes:

Welke werkprincipes zouden er dan in uw ogen ingericht moeten worden, om te realiseren dat vertrouwen positief wordt gestimuleerd via deze principes?

*Type antwoord:* geen traditionele houding (problemen uit verleden bespreekbaar maken), geen misbruik van elkaar maken, werken in de geest van het contract, acepteit van fouten, unanimiteit, open boek, delen, uit gaan van goede intenties.

### 3.5 Cultuur:

Wat zou er gedaan moeten worden, om te realiseren dat vertrouwen positief wordt beïnvloed door de cultuur?

*Type antwoord:* alliantie met eigen identiteit, aansluitende culturen, oog hebben voor culturen, issues en vooroordelen uit het verleden bespreekbaar maken, PSU en PFU.

### 3.6 Organisatorisch:

Wat zou er praktisch georganiseerd moeten worden, om te realiseren dat vertrouwen positief wordt gestimuleerd via de organisatorische aspecten?

*Type antwoord:* fysiek samen zitten (in één keet, elkaar tegen komen), contractueel niet dichttimmeren.

### 3.7 Problemen en frictie:

Wat zou er in probleemsituaties gedaan kunnen worden, om te realiseren dat vertrouwen positief kan worden opgebouwd tijdens en na probleemsituaties?

*Type antwoord:* problemen niet afschuiven, omgang met het eerste conflict, incidentenanalyse, onafhankelijke voorzitter, bespreken op AMT niveau.

### Doelen en belangen:

Wat zou de projectorganisatie dan moeten doen om te realiseren dat vertrouwen positief wordt gestimuleerd door doelen en belangen?

*Type antwoord:* voorafgaand gezamenlijk heldere alliantiedoelen formuleren, inzicht in elkaars belangen (ook tegengestelde belangen), gedurende checken of de doelen nog worden nageleefd, eventueel bijstellen.

### Naleving:

Wat zou de projectorganisatie dan moeten doen om te realiseren dat vertrouwen positief wordt gestimuleerd door naleving?

*Type antwoord:* stimuleren dat iedereen afspraken nakomen, elkaar op aanspreken als dit niet gebeurt.

### Projectvoortgang:

Wat zou de projectorganisatie dan moeten doen om te realiseren dat vertrouwen positief wordt gestimuleerd door projectvoortgang?

*Type antwoord:* mijlpalen behalen, focus op wat goed gaat, medewerkers het project (trots) laten uitdragen, mijlpalen met elkaar vieren.

### Rolverdeling:

Wat zou de projectorganisatie dan moeten doen om te realiseren dat vertrouwen positief wordt gestimuleerd door rolverdeling?

*Type antwoord:* heldere en duidelijke rolverdeling, flexibiliteit in rollen, redundantie, niet te strakke taakverdeling.

During these conversations the respondents were asked to substantiate their answers with practical experience from the OV SAAL project. For the questions about trust, respondents were asked to concretize their answer as much as possible and to come up with suggestions for monitoring trust.
Given the exploratory character of this research and the semi-structured interviews, the interpretation of the interviewer strongly influences the outcome of the research. Therefore, this appendix aims at providing some insights into this interpretation. Furthermore, it is important to keep chapter 1 up to and including chapter 7 into account, as background information of the interviewer.

In order to give some insight in the interpretation, an example is presented:

**Example 1**
Below a phrase from an interview is presented. These answers were given, when the respondent was asked how he would organize an ideal PMS for infrastructural alliance PPP-projects.

**Prestatiemeting ideaal**
- De indicatoren hangen af van welke uitdaging je hebt, verschilt per project
  - Hierin alle belangen meenemen
- Over het algemeen positief terugkijken op KPIs van A2:
  - Er was gezamenlijkheid in het behalen van KPIs, maakte niet meer uit of je van OG of ON was
  - Tijd en verkeershinder waren zwaar belast met bonus-malus en deze hebben goed gewerkt
  - Kwaliteit, imago en veiligheid waren heel klein (misschien 10%)
    - Veiligheid niet met bonus-malus. Wel een aandachtspunt
    - Kwaliteit: was gericht op volgen van processen, maar ambitie lag te hoog
- **Ideaal PMS:**
  - Goed dat de selectie op samenwerking op voorhand was gedaan (zoals AMT daarop geselecteerd), assessments etc.
  - Wel iets te ver doorgedreven: die binding was zo sterk, ze moesten gaan afbouwen
  - Project specifieke succesfactoren formuleren
  - Meetsystemen moeten een hoge acceptatiegraad hebben: mensen moeten begrijpen waar je het voor doet
    - Moet tastbaar en begrijpelijk zijn. Sturen op mijlpalen.
    - Personen erop zetten die als informant fungeert (bijv. iemand op planning en tijd die mensen informeert hier over en informatie bij mensen ophaalt)
  - Wel veel overnemen vanuit A2: past nu veel toe bij andere projecten

As a first step after the interview description, the most important indicators were ‘filtered’ out of a phrase (as sort of conclusion), as a result from each topic discussed in the interview. The conclusion of this phrase is presented below in the grey box:

- De [indicatoren die je mee neemt hangen af van uitdaging] en verschillen dus per project; belangrijk om hierin [alle belangen mee te nemen]
- Kijk [positief terug op KPIs van A2]; dit creëert een [gezamenlijkheid]; met name [tijd] en [verkeershinder] hebben goed gewerkt
- [veiligheid en kwaliteit hebben minder goed gewerkt]
- Zorg dat je op voorhand [selecteert o.a. op basis van samenwerking]
- Formuleer [project specifieke succesfactoren] die een [hoge acceptatiegraad] hebben en dus [tastbaar en begrijpelijk] zijn
- Gebruik hiervoor [informanten om de werkvloer te informeren]

These conclusions were used as basis for the ‘rough datasheet’ with answers. In excel, an overview of these conclusions per respondent and per question was provided. The table below provides an overview of a part of the datasheet, in
which the respondents are columns (and the colours relate to the projects in which they were involved). Each row presents a question, and in the cells the main answers to the questions (per respondent) are shown.

<table>
<thead>
<tr>
<th>Waardse Alliantie</th>
<th>Houten</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interview</strong></td>
<td></td>
</tr>
<tr>
<td>Persoon</td>
<td>(naam respondent)</td>
</tr>
<tr>
<td>Organisatie</td>
<td>RHDHV / ProRail</td>
</tr>
<tr>
<td>Organisatiecode</td>
<td>Publiek</td>
</tr>
<tr>
<td>Casus</td>
<td>WA</td>
</tr>
<tr>
<td>Alliantie PPS en kenmerken</td>
<td>Deskundigheid met elkaar delen</td>
</tr>
<tr>
<td></td>
<td>Harde én zachte factoren Pain-gain sharing Spanning op raakvlakken Onderlinge relatie en vertrouwen</td>
</tr>
<tr>
<td>Projectsucces</td>
<td>Als een hecht team er uit komen Projectdoel (lange termijn) bereiken i.p.v. alleen projectresultaat</td>
</tr>
</tbody>
</table>

For the phrase and the conclusion presented above, the following table was added to the rough datasheet:

| Ideaal meten en monitoren | Indicatoren die je meeneemt hangen af van project, de uitdaging Hiervoor moet je wel alle belangen meenemen Positief over KPIs van A2 (met name tijd en hinder hebben goed gewerkt) KPIs creeren gezamenlijkheid Selecteer mensen op voorhand op samenwerking Meetsysteem moet hoge acceptatiegraad hebben, tastbaar en begrijpelijk zijn Formuleer projectspecifieke doelen Gebruik informanten om werkvloer over KPIs te informeren |

After the rough datasheet was developed, a datasheet was constructed for each subject (e.g. the unit of analysis ‘performance measurement’ and ‘trust’). For the topic performance measurement, this sheet looks like the column below:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Casus</th>
<th>P/P/O</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aantal KPIs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niet meer dan 5 indicatoren</td>
<td>WA/A2</td>
<td>Publiek</td>
</tr>
<tr>
<td>6 KPIs is voldoende</td>
<td>WA/A2</td>
<td>Onafhankelijk</td>
</tr>
<tr>
<td>Dan focus op knelpunten (2 tot 3 KPIs is al voldoende)</td>
<td>A2</td>
<td>Publiek</td>
</tr>
<tr>
<td>Niet wenselijk om alles te meten: ideaal zou zijn om géén KPIs te hebben, maar dat je vanuit best voor project continu met elkaar in gesprek bent om te zoeken naar hoe je dit kunt bereiken</td>
<td>A2</td>
<td>Onafhankelijk</td>
</tr>
<tr>
<td><strong>KPIs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lange termijn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lange termijn projectdoel hierin opnemen, meten en verrekenen</td>
<td>WA</td>
<td>Publiek</td>
</tr>
<tr>
<td>Lange termijnproject in vroeg stadium er in opnemen</td>
<td>WA</td>
<td>Publiek</td>
</tr>
<tr>
<td>Meer op outcome dan output</td>
<td>A2</td>
<td>Publiek</td>
</tr>
<tr>
<td><strong>Traditionele factoren</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditionele zaken (tijd en geld, maar niet hard hanteren)</td>
<td>A2</td>
<td>Publiek</td>
</tr>
<tr>
<td>Daarna ook harde factoren meten (tijd, geld)</td>
<td>N201</td>
<td>Onafhankelijk</td>
</tr>
<tr>
<td><strong>Zachte factoren</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Houding en gedrag meenemen (Opdrachtgever en opdrachtnemer beoordelen elkaar hier op)</td>
<td>N201/WA</td>
<td>Privaat</td>
</tr>
<tr>
<td>Samenwerking met name op grensvlakken monitoren</td>
<td>WA</td>
<td>Onafhankelijk</td>
</tr>
<tr>
<td>Harde kant meer laten gaan</td>
<td>N201</td>
<td>Onafhankelijk</td>
</tr>
</tbody>
</table>

...
This sheet also provides information about the person who mentioned a certain subject: the distinction is made between the types of project (A2, WA, N201, H4) and the organization type of the person (public, private, independent). To make the actual clustering of subject, some key words used by respondents were useful. For example, respondents made a distinction between ‘traditional’ or ‘hard’ factors (e.g. time, budget, quality) as KPIs, and ‘soft factors’ (e.g. collaboration). This distinction could also be made in the datasheet. Furthermore, a reflection on the answers of respondents was necessary. Some respondents mention a certain topic when a different question is answered. An example from the phrase presented in this appendix is the quote: “Zorg dat je op voorhand [selecteert o.a. op basis van samenwerking]”. A selection of people upfront (based on collaboration), is probably not directly related to the requirements of a PMS, but relates more to processes regarding PMS. Therefore, in such a situation, it is chosen to cluster this answer in another sub-topic. Finally, the aim was to cluster quite detailed in order to prevent that certain subjects were overlooked.

This resulted in the following clustering for performance measurement:

- Number of KPIs
- Content of KPIs
  - Long term
  - Traditional factors
  - ‘Soft’ factors
  - Experience from previous projects
  - Surrounding area
  - Safety
  - Extra indicators
- KPIs depending on goals
- KPIs others
- Way of monitoring
  - Frequency
  - Obtaining information
  - Clear KPIs that are expressed
  - Bonus structure
  - Use of outcomes
  - Milestones
- Process upfront
  - People and collaboration
  - Division of roles
  - Support and parent organizations
  - Others
- Process during
- Other
Appendix: Explanation of alliance definition and alliance success

The results presented in chapter 8 and chapter 9, were obtained by the interviews from interview round 1 (2015) with respondents from: Waardse Alliantie, Bataafse Alliantie, A2 Hooggel and N201. The information is obtained by analysing the answers of respondents to the following questions:

- What is, in your opinion, an alliance PPP? What are characteristics of alliance PPP-projects, and what is the added value of an alliance?
- What is, in your opinion, project success of an alliance PPP-project? When are goals realized and which KPIs contributed to realizing these goals?

The answers were processed and analysed as described in appendix A.2: after processing interviews, concluding answers to questions were formulated and added to the rough datasheet. Finally, a datasheet for the definition of alliance PPP and a sheet for project success of alliances was formed.

For the definition of alliance PPP-projects, a first clustering was made. An example of an interview phrase is:

**Definitie alliantie**

- Samenwerking publiek-privaat, waarbij je beide best-for-project voor ogen hebt en gezamenlijk doel wil realiseren
  - Hoef geen juridische vorm te zijn, kan wel
  - Gaat om combinatie van harde en zachte kant
- Alliantie wil je de risico’s delen en niet verdelen

This phrase resulted in the following concluding indicators:

- [samenwerking publiek-privaat]; [combinatie van harde en zachte kant]; [best for project]; [realiseren van gezamenlijk doel]; [hoeft niet in juridische vorm]
- Alliantie is een instrument

Finally, these elements were included in the datasheet for the definition of an alliance and clustered. In this clustering the quote ‘hoeft niet in juridische vorm’ can best be seen as an organizational elements, and ‘samenwerking publiek-privaat’ relates to a collaboration between two parties. Based on the answers, a first clustering was made, namely:

1. Sharing risks and opportunities
2 Collaboration between two parties
3 Sharing and collectivity
4 Goals and interests
5 Attitude
6 Organizational requirements
7 Criteria to form an alliance

However, after further analysis it seemed that the first three elements were partly overlapping. Therefore it was chosen to split up the term ‘sharing and collectivity’, because the sharing was mainly about risks and opportunities (the first element), and the collectivity was mainly about the collaboration between public and private parties (element 2). Therefore, the final six elements are: Sharing risks and opportunities, Collaboration between two parties, Goals and interests, Attitude, Organizational requirements, and Criteria to form an alliance. It has to be remarked that the final element was mentioned by respondents as upfront element: a project has to meet (some of) these requirements, before it will be suitable to execute in the form of an alliance.

Regarding project success of alliance PPP-projects the approach was roughly the same: the interviews, the concluding elements and indicators, the rough datasheet and finally the ‘project success’ sheet with a clustering. For this clustering the remark of many respondents about ‘traditional’ or ‘hard’ indicators (regarding project progress) was a direct cluster: because respondents appointed some indicators in the same way (e.g. time, budget and quality were remarked ‘traditional’ or ‘hard’ and contributing to project progress). This cluster was adopted as well. Furthermore, the total clustering is:

- Project progress (e.g. time, budget, quality)
- Surrounding area
- Jointly formulated and satisfaction with own goals
- Long term
- Collaboration

In addition to these five elements, there were some answers that could not be clustered. These element scan relate to project-specific examples, or were included as general remarks.
Appendix: Explanation of PMS

This appendix supports chapter 10 and provides insight in how information presented in this chapter was obtained. Firstly, appendix A.1 presents an example of how answers from respondents are interpreted and translated into a clustered datasheet. For chapter 10 the main questions in interview round 1 were:

- How was performance in the project (Waardse Alliantie, Bataafse Alliantie, A2 Hooggelegen, and N201) measured and monitored?
- How do you evaluate this way of performance measurement, e.g. positive and negative elements?
- How would you organize performance measurement in an ideal manner? On which factors would you monitor and in which way?

In interview round 2, the questions were more in-depth, namely:

- About general PM and KPIs:
  - Which factors should be included in PMS?
  - What is a practicable number of KPIs?
  - Which processes should be taken into account when KPIs are formulated?
- About measuring ‘soft elements’:
  - With which frequency it is desired and feasible to measure ‘soft elements’?
  - Which parties should be included in this monitoring?
  - In which way information should be collected?
  - What kind of information is desired to collect as input?
  - What should be done with the results and outcomes?
  - In which way outcomes and results should be presented?
  - Which processes (upfront and during) should be kept into account during the monitoring?

Appendix A.1 shows the process of how the answers in interview round 1 were processed. For interview round 2 the steps were comparable: interviews were written out and concluding remarks per question were formulated. Then, these conclusions were summarized in a rough, large datasheet, which was later translated to a more specific sheet for performance measurement and ‘soft elements’ in PMS. When the information was clustered, it helped that there already was a certain clustering in interview round 1. The clusters used in this first interview round, were a useful starting point for the second interview round. The table below presents an overview of how the answers were processed in an excel overview.
For monitoring in general, the clustering was the following:

<table>
<thead>
<tr>
<th>Cluster or question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors and KPIs</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Budget</td>
</tr>
<tr>
<td></td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td>Surrounding and hindrance</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
</tr>
<tr>
<td></td>
<td>Quality</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
<tr>
<td></td>
<td>- OV SAAL specific remarks</td>
</tr>
<tr>
<td>Number of KPIs</td>
<td>Limited number (max. 5)</td>
</tr>
<tr>
<td>Others</td>
<td>Link KPIs and goals</td>
</tr>
<tr>
<td></td>
<td>Measurement system</td>
</tr>
<tr>
<td></td>
<td>Process</td>
</tr>
<tr>
<td></td>
<td>KPIs others</td>
</tr>
<tr>
<td></td>
<td>Bonus</td>
</tr>
<tr>
<td></td>
<td>Collaboration and team</td>
</tr>
<tr>
<td></td>
<td>Attitude</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
</tbody>
</table>

As shown, a lot of answers could not be clustered specific and are therefore in the group ‘others’, in order to make sure that no remarks are overlooked during the analysis. Furthermore, because the questions in the second interview round were more focused and relatively detailed, the answers were quite in line with each other. This made the clustering easier.

For monitoring of soft elements, the clustering was the following:

<table>
<thead>
<tr>
<th>Cluster or question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Approximately every quarter</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
<tr>
<td>Involved parties</td>
<td>More than key figures</td>
</tr>
<tr>
<td></td>
<td>Key figures</td>
</tr>
<tr>
<td></td>
<td>Parent organizations</td>
</tr>
</tbody>
</table>
For the clustering the starting point are the questions: answers are clustered within one question or cluster. Then, the answers that are mentioned frequently, quickly form a cluster. Then, a check is done if the answers that were mentioned less frequent, can be categorized within an existing cluster. If this is not possible, a new cluster will be established if two or more answers can fall within this ‘new cluster’. If this is not possible, the answer will fall within the cluster ‘others’.

This stepwise process is visualized by the figure below, and was used to cluster concepts in each of the datasheets.

**Figure 49: Stepwise process clustering**
Appendix: Methods to monitor soft elements in construction projects

During the first interview round, the focus was on obtaining information about trust and performance measurement. However, some respondents had an opinion on monitoring of trust, and shared their experiences. During these interviews, several methods were mentioned. These methods were not necessarily applied in alliance projects, but were used in other construction projects. The methods that were discussed, differed on several elements, which are discussed in paragraph 10.1.6. These elements are, among others:

- The content of the information obtained (e.g. statements, principles, evaluations)
- The way of obtaining information (e.g. questionnaires, conversations)
- The frequency of monitoring
- The communication and use of the outcomes

In this appendix the methods that were mentioned and discussed, will shortly be presented.

Teammonitor Regieraad Bouw

The teammonitor is developed by the Regieraad Bouw and is used to monitor the team effectiveness. The method is suitable for measuring the collaboration and make this topic of discussion in a neutral manner. The monitor should not be seen as absolute truth, but is subjective measurement based on the opinions of the participants (Regieraad Bouw & PSIBouw, 2008).

This monitor exists of a questionnaire and a score form, which is filled in by every participant of the team. The questionnaire exists of 15 statements and is scored on a scale of three (‘often’, ‘sometimes’, ‘rarely’). Team members give a score based on the extent to which a certain statement is applicable, according to them. These statements relate mainly to other team members and the team in total. The results of these questionnaires are developed into a ‘spider web’ diagram, as shown in the figure below. In this figure the scores on different indicators are presented. Furthermore, the different scores of involved parties can be seen: the contractor, the client, and the architect.

Based on these outcomes, a joint conversation about high and low outcomes between the involved parties should be organized. What is the cause for these outcomes, and why have different parties different perspectives on the team collaboration? Then, specific actions can jointly be formulated to reduce frustration of team members.
In addition to this team monitor, the construction company Heijmans developed an app (HAPPi). They embedded the questions of the Regieraad Bouw questionnaire in an app, to make filling in this questionnaire easy, quick and accessible. Furthermore Heijmans adjusted the presentation of the outcomes to positively formulated outcomes. For example, Regieraad Bouw uses ‘lack of trust’ and Heijmans works with ‘trust’ (Interview Round 1, 2015).

**Meetlat Rijkswaterstaat**

The Dutch Rijkswaterstaat also developed a method to monitor team-related elements. This method is called ‘Meetlat’ and is used after meetings. The team members who attended a meeting will evaluate their own behaviour and the behaviour of others in the meeting. After the meeting, a questionnaire with 17 statements is filled in by the team members. These statements mainly relate to someone’s’ attitude and behaviour during the meeting. The statements are scored on a scale of 3 (1 – improve conditionally; 5 – right way, but could be better; 10 – more than sufficient). Team members score themselves on these statements, but also their colleagues who attended the meeting. In the discussion about the outcomes, it is most interesting to focus on the differences between someone’s’ score about their own behaviour and how he or she is scored by other colleagues. The figure below presents the ‘meetlat’ of Rijkswaterstaat (Interview Round 1, 2015).
Working principles ‘Ruimte voor de Waal’

An individual respondent worked in a different construction project (‘Ruimte voor de Waal’ in Nijmegen) with a method were working principles were evaluated by individuals in the project. The project organization defined 10 working principles, and each team member scored to what extent these working principles were applicable to the project team and if they were satisfied with the execution of a working principle. These principles were scored on a scale of 3 (red, orange and green). In contrast with other methods, this evaluation of principles was publicly for everyone. A sheet, on which each individual filled in their score, was hanging in the office of the project manager. The figure below presents how such a sheet looked like. Especially the ‘red scores’ can be topic of discussion in an evaluation afterwards (Interview Round 1, 2015).

Performability scan (Ben Kuipers)

Furthermore, the performability scan of Ben Kuipers was used in project A2 Hooggelegen, and is discussed in paragraph 8.3. This scan was very elaborate and used a questionnaire with 84 questions, which were scored by the team members involved in project A2 Hooggelegen. The scan was used once every six months during the project. Furthermore, the scan was conducted by an external researcher, instead of by one of the project managers. This resulted in a report (twice a year), in which average scores were presented about: internal and external relations, project progress, leadership, motivation, and workload. A more elaborate presentation of this scan is shown in paragraph 8.3 (Interview Round 1, 2015; Kuipers, 2005).

Zelfspiegel Neerlands Diep

In project OV SAAL the organization Neerlands Diep is currently conducting a monitoring on the team-components, this monitor is called ‘Zelfspiegel’ and exists of 45 statements and 15 open questions. These questions and statements relate to: choosing, questioning, organizing, staffing, and collaborating. The statements are scored on a scale of 5 (complete agree to complete disagree). These statements mainly relate to an evaluation of the extent to which a certain statement is applicable to project OV SAAL. This monitoring tool is currently filled in by participants, so there is no example of the outcomes or communication of the outcomes known (Interview Round 2, 2015).
Appendix: Explanation of trust in practice

Information about trust, as presented in chapter 11, is obtained and clustered in the same manner as performance measurement, project success, and the definition of alliances. This method is explained in the previous appendices, for example by Figure 49 in appendix A.4. However, this appendix will give more insight in the process specifically for trust, by means of an example and further explanation.

The respondents in interview round 1 were questioned about trust in a few ways, namely:

1. A general conversation about trust in the specific project (e.g. ‘Can you tell something about trust between people and parties in project N201?’)
   - The respondents were asked to come up with specific moments of trust and moments when trust was lacking. Answers were substantiated with examples
   - Respondents were asked to mention measures a project organization can undertake in a situation when trust is lacking, and measures that stimulated trust when the relation was good

2. Respondents were asked to mention 3 main aspects that influence trust (e.g. ‘If you think about trust in a project, could you mention 3 elements that influence trust? And how could these elements be influenced, measured or monitored?’)
   - Elements were discussed in the same manner as under the previous topic

3. The respondents were asked to react on the operationalization of trust (Figure 11 in chapter 6). It was asked if they were missing certain elements or if they want to discuss one of the elements more elaborate (as point of focus).

Just as explained in appendix A.4, the conversations were translated into interview reports that included short summaries per question. Then, the answers were clustered and data was interpreted. An example is sketched below. The information shared by the respondent (as answer to one of the trust-related questions) is shown below, and summarized in the grey box below.

Belangrijke aspecten vertrouwen

1. Transparantie:
   a. N201 was goede transparantie bij afstemming met omgeving (bijv. hinder), de alliantie was dan altijd beschikbaar en bereid
Dit was ook heel erg nodig, want hetgeen hier over werd afgesproken was erg moeilijk te realiseren (bijv. beperken hinder ‘s nachts)

Aan de ene kant: betrouwbaar omdat je meedenkt en meepraat

Maar onbetrouwbaar, want: wat je afspeelt gebeurt niet altijd. Hiervoor heb je mensen nodig met mandaat

2. **Juiste mensen**: die echt de partijen die de alliantie zijn aangegaan kunnen vertegenwoordigen
   a. Dit was in N201 lastig, omdat er veel externen waren (die niet de ‘kleur’ van de organisatie hebben)
      i. Waren in 2011 in de alliantie alleen nog een paar mensen van het ingenieursbureau (Witteveen+Bos) en slechts één van Heijmans (op 15) en van de provincie niemand.
      ii. Vanuit de provincie was dat al continu zo: de provincie heeft niet de mankracht om daar in te zetten
   b. Wel erg moeilijk te vinden, met name voor opdrachtgevers zijn allianties vaak ‘once in a lifetime’ projecten, daarom wordt veel ingehuurd.
      i. Inhoudelijke kennis is hier ook erg belangrijk bij: volwaardige counterpart
   c. Bij opdrachtnemers speelt een rol om maximaal resultaat te halen bij hun moederorganisatie, maar ook te denken in alliantievorm
   d. Op voorhand inrichten kan wel helpen.

3. **Doelstellingen** van de alliantie bepalen - belangrijk om op voorhand te benoemen:
   a. Wat beweegredenen voor alliantie zijn (waarom is de alliantievorm de meest geschikte voor deze opgave)
      i. Welke vrijheid en beperking heb je? Er moet geen standaardformat voor een alliantie zijn (bijv. Spoorzone Delft heeft alleen een alliantiedomein)
   b. Scherp de doelstelling voor alliantie bepalen (niet uit het oog verliezen en waar nodig bijsturen)

- [transparantie]; [meedenken en meepraten]; [doen wat je afspeelt]; [mensen met voldoende mandaat]
- Juiste mensen: [vertegenwoordigen een van de partijen]; [beperkt aantal externen]; [inhoudelijke kennis – volwaardige counterpart]; [denken in alliantievorm]
- Doelstellingen van de alliantie: [heldere beweegredenen voor alliantievorm]; [scherpe doelstellingen van de alliantie]

This information was first translated to the rough datasheet, as mentioned already in appendix A.2. This is shown in the table below.

<table>
<thead>
<tr>
<th>Interview</th>
<th>Nummer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persoon</td>
<td>Naam respondent</td>
</tr>
<tr>
<td>Organisatie</td>
<td>-</td>
</tr>
<tr>
<td>Organisatiecode</td>
<td>Onafhankelijk/publiek/privaat</td>
</tr>
<tr>
<td>Casus</td>
<td>N201</td>
</tr>
<tr>
<td>Vertrouwen belangrijk</td>
<td>Transparantie (meedenken en praten, doen wat je afspeelt)</td>
</tr>
<tr>
<td></td>
<td>Juiste mensen (met mandaat, beperkt aantal externen, denken in alliantievorm, volwaardige counterpart)</td>
</tr>
<tr>
<td></td>
<td>Doelstellingen van alliantie (heldere reden voor alliantie, scherpe doelen)</td>
</tr>
</tbody>
</table>

Although the information was first processed per question (trust in general, three most important elements of trust, reflection on the trust-figure) in the rough datasheet, all information was finally merged together in one sheet about trust. The main reason for this merged ‘trust-sheet’, was to make sure no information would be lost. Furthermore, some respondents discussed during the first question (general conversation about trust) already the most important elements of trust, or they gave good examples. On the other hand, some other respondents were less chatty in the first question, and started talking about trust and examples during the second (three influential elements of trust) or third question.
(based on the trust-figure). Given these different ways of answering by respondents, it was chosen to merge all trust-related information together in one sheet.

The clustering was done in the same manner as discussed in figure 49 in appendix A.4. However, for trust there were clusters in themes and subthemes. The information was clustered as shown in the table below. For the subject ‘people’, the following sub-themes were distinguished, as a result from the clustering (with steps from figures 48):

- General
- Upfront
- Role of AMT, Board of Directors, and key figures
- During project
- Attitude and behaviour
- Traditional attitude
- Exemplary role

<table>
<thead>
<tr>
<th>Themes</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mensen</td>
<td>Algemeen</td>
</tr>
<tr>
<td>Mensen</td>
<td>WA/H4</td>
</tr>
<tr>
<td>Mensen</td>
<td>N201</td>
</tr>
<tr>
<td>De mens centraal</td>
<td>A2</td>
</tr>
<tr>
<td>Voorafgaand</td>
<td></td>
</tr>
<tr>
<td>Teamvorming (teambuilding en samenstelling)</td>
<td>WA</td>
</tr>
<tr>
<td>Juiste mensen (met mandaat, beperkt aantal externen, denken in alliantievorm, volwaardige counterpart)</td>
<td>N201</td>
</tr>
<tr>
<td>Personen (vooraf screenen: divers, communicatief, brede blik)</td>
<td>N201</td>
</tr>
<tr>
<td>Personen (diversiteit)</td>
<td>N201</td>
</tr>
<tr>
<td>Mensen (samenwerkingsgericht door assessments/selectie en op gesprek bij RvB, tijdens: PSU, PFU, informeel lunch, en evt. mensen wisselen)</td>
<td>A2</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

Also for the other ten themes, these sub-themes were divided and clustered in the same manner. Finally, this led to a clear perspective on trust, existing of eleven elements, as presented and discussed in chapter eleven of this report.
Appendix: Explanation of merging information from theory and practice

In order to come to conclusions, the information from theory and empirical data was merged, and finally was presented in chapter 12. As shown in figure 35 of chapter 12, the aim was to derive conclusions from theoretical information (based on the literature review), and empirical data (based on the respondent interviews and contextual information about the case studies). This information was clustered in a datasheet, which is presented in the table below. In this table an example is given about a sub-theme of performance measurement (KPIs) and one example about trust is presented (people – in which the blue text is interview round 2 and the black text interview round 1). Because the information obtained in the empirical rounds was more concrete, and the information from literature more abstract, it was chosen to work with the empirical data as starting point. Then, the information from literature and empirics was clustered and matched. This clustering and matching process, functioned in a comparable manner as the stepwise process (as visualized in figure 49). It was firstly checked if the theoretical information was in line with empirical data. If no match could be found, it was necessary to establish a new cluster or (sub) theme.

Table 20: Matching information from theory and empirics

<table>
<thead>
<tr>
<th>Subject</th>
<th>Literature</th>
<th>Empirical rounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KPIs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type KPIs</td>
<td>Broader than only efficiency of actions, it is also about identifying success and satisfaction level of stakeholders, and about if expected outcomes were met Indicators that reach beyond traditional measures Strategic selection of products</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Budget</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Surroundings and hindrance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collaboration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Image</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transfer to rail maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sustainability, long-term, responsible construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible addition of soft elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible addition of surroundings and satisfaction</td>
</tr>
<tr>
<td>Number of KPIs</td>
<td>Approximately 5</td>
<td>A limited number to stay focused (2 to 6)</td>
</tr>
<tr>
<td>KPI requirements</td>
<td>Process-based life cycle approach</td>
<td>KPIs should be clear and SMART</td>
</tr>
<tr>
<td></td>
<td>Multiple stakeholder perspective</td>
<td>KPIs should have a responsible person, ‘owner’ or guardian</td>
</tr>
<tr>
<td></td>
<td>Focus on both organizational and project level in long term context</td>
<td>KPIs should match with goals and complexity of alliance project</td>
</tr>
<tr>
<td></td>
<td>Incorporate variety and redundancy in KPIs</td>
<td>KPIs result from jointly formulated goals</td>
</tr>
</tbody>
</table>
Organize **dynamics** on the level of products  
Include ‘product’ and ‘process’ approach  
Tolerance for a variety of definitions  
Be open to changing KPIs over time  
Make sure the (many) indicators cover the total performance

KPI should keep its value over time  
KPIs and the PMS should be understandable for everybody, and each discipline can contribute to the KPI

<table>
<thead>
<tr>
<th><strong>Trust</strong></th>
<th><strong>People</strong></th>
</tr>
</thead>
</table>
| **Selection of team** | Affection: staff with interpersonal skills  
Affection: good personal relationships  
Affection: connecting cultures and skills  
Organization: good management | Diverse team  
People focused on cooperation  
Open, communicative people with alliance attitude  
People with mandate and expertise who take initiative  
Sufficient number of people from parent organizations (limited number external)  
Special focus on key players (AMT, RvB, alliance manager)  
Also selection of people within parent organizations  
Take enough time to select the team  
Keep some cooperation-focused people in client- and contractor organizations  
Selection interviews and assessments  
Equality between people  
**Compose team over borders of organizations**  
**Pay attention to the team in total (and the match between people)** |
| **Attention for project start-up** | Affection: good personal relationships | Organize project start-up  
Invite not only the alliance, but also key players in parent organizations  
Involve external people in an early stage  
Informal teambuilding activities  
Formal teambuilding activities (personality analysis, formulate joint goals)  
**Organize teambuilding events at the start** |
| **Feedback and evaluation moments** | Informal feedback moments  
Formal evaluations (e.g. PFU and Bouwreflectie)  
Teambuilding (formal, informal, drinks, dinner etc.)  
Give each other compliments  
Informal frequent communication (at coffee machine, lunch etc.)  
Cause friction before tension becomes too high  
**Openly discuss trust**  
**Use an instrument to monitor**  
**Organize teambuilding events, especially during phase transitions** |
| **Human resource policy** | Change personnel if necessary (e.g. when a person has a traditional, non-alliance, attitude)  
Watch out for too many changes of teams, because people have to earn trust  
Stimulate and facilitate personal development trajectories |
| **Attitude of team members** | Intention: good intentions  
Affection: good personal relationships | Role-model attitude, especially of AMT and RvB  
Mutual respect, by discussing interests and dilemmas, by explain considerations and be transparent about decision criteria  
Professional attitude  
Alliance-attitude  
Non-traditional behaviour (e.g. discuss prejudices, do not focus only on efficiency)  
**Attitude of people: open, joint responsibility, with respect**  
**Especially important for key figures** |
For performance measurement, this overview led to a framework in which the information was clustered and presented (as shown in figure 36 of chapter 12). Due to the relatively abstract information from literature and the more concrete information presented by respondents in interviews, it was chosen to start with the empirical data as a starting point. Therefore, figure 19 of chapter 10 functioned as a starting point. The information from the literature, as obtained in chapter 5, was added to the figure, which finally resulted in figure 36 (chapter 12).

For trust figure 34 of chapter 11 functioned as starting point. However, it first need to be substantiated how this figure was established. First the information from interview round 2 was added to the information from interview round 1. This is shown in the figure below, in which information about the blue (upfront) and grey (during project) elements was obtained in Interview Round 1 (2015) and information presented in the orange blocks was gained in Interview Round 2 (2015).

However, because some of the information might be too detailed, it was chosen to use the subthemes as level of aggregation to discuss in the report.
When the information from the two interview rounds was merged, this could be related to the information from theory, as presented in the table 20 above. In order to visualize this information, firstly the eleven elements of trust from empirics and the five elements of trust from theory, were mapped in one figure. This is shown in the figure below.

This rough overview helps as first step towards the clustering and matching process. If one of the eleven elements of trust could be matched to one of the five elements from literature, overlap is shown in the figure. Some of the elements from empirics matched with more than one element from theory, such as culture, people and collectivity. Additionally to this overview, a same matching and clustering process was conducted on another aggregation level. This is shown in the figure below.

For this figure, again the basis was the information from empirics. After the causal network diagram of the eleven elements of trust and their sub-themes the information from theory was placed in this figure. Just as the broader perspective (presented in the figure above), some actions and elements had overlap with more than one element from theory.

As discussed earlier, the elements and actions mentioned both in literature as well as by respondents, can be seen as the more ‘basic’ actions to stimulate trust. These elements are no clear facts and do need further validation, but because they came forward in two different sources (theory and empirics), it might be likely that these elements do influence trust in some way. The other elements can be seen as additional actions to influence trust, because these actions were only mentioned by respondents and came not clearly forward in literature. Therefore, it might be stated that these additional actions need more validation, before it can be stated if they actually do influence trust in alliance projects.
In order to make the position of this figure clear, the figures below present a more detailed overview of the actions and elements of trust on a different level of aggregation. The concrete suggestions to influence the actions, elements, and finally trust itself, are presented in these figures as an example to make clear where these concrete actions need to be placed in the figure (and therefore only of two elements: people and communication).
**People**

- Diverse team
- People focused on cooperation
- Open, communicative people with alliance attitude
- People with mandate and expertise who take initiative
- Sufficient number of people from parent organizations (limited number external)
- Special focus on key players (AMT, RvB, alliance manager)
- Also selection of people within parent organizations
- Take enough time to select the team
- Keep some cooperation-focused people in client- and contractor organizations
- Selection interviews and assessments
- Equality between people
- Compose team over borders of organizations
- Pay attention to the team in total (and the match between people)
- Staff with interpersonal skills
- Good personal relationships
- Connecting cultures and skills
- Good management

- Role-model attitude, especially of AMT and RvB
- Mutual respect, by discussing interests and dilemmas, by explain considerations and be transparent about decision criteria
- Professional attitude
- Alliance-attitude
- Non-traditional behavior (e.g. discuss prejudices, do not focus only on efficiency)
- Attitude of people: open, joint responsibility, with respect
- Especially important for key figures
- Good intentions
- Good personal relationships

**Communication**

- Set up procedures for open communications (e.g. motivations for a decision)
- Revise before phase transition
- Making arrangements and keeping to appointments related to communication procedures

- Be transparent about your decision criteria (e.g. by using a trade-off matrix)
- Show all your arguments in the discussion
- Give a clear reason and motivation for your decision
- Involve the other party early in the decision making process
- Do not forget to involve any stakeholder in the process
- Get the right people (with mandate) around the table
- Make sure that files are not too long in the pipeline (e.g. max. 1 week)
- Have understanding for and be open to each others’ opinions and arguments
- Summarize what the other said, ask control questions

- Be open, honest and transparent about your success, issues and actions
- Make sure information is accessible to all
- Work with open budgets
- Key players (e.g. AMT, RvB) should carry out and mention that the process is open
- Give insight in your actions
- Be informed about each others’ activities
- Have a vulnerable attitude
- Open and transparent communication

- Communicate more than you are used to in traditional projects
- Be continuously in conversation and listen
- Ask for others’ opinion
- Have discussions and be constructively critical
- Mention issues early (e.g. by discussing weekly a multidisciplinary issue list)
- Keep each other up to date about ongoing business
- Communicate often informal (e.g. by coffee machine and lunch)
- Both informal as well as formal communication
- Frequent communication and interaction
Appendix: Explanation of process figure

As a result from this study, chapter 12 presents an outline for a process instrument, which can be helpful in the design of a performance measurement system in which the factor trust is embedded. This appendix aims at providing an overview on how this process instrument is composed.

The first step in the process instrument is shown in figure 41 of chapter 12. This step is the result from information of theory and practice. Many respondents mentioned the importance of the criteria for starting an alliance ('not every project is suitable to execute as an alliance', Interview Round 1, 2015). Additionally, Rijkswaterstaat has developed a decision support tool (de Bruijne, 2014) in which the criteria for starting an alliance are included. Because, as mentioned in chapter 15, no statement can be made about the application of the process instrument in other projects, this is included as first step in the process instrument. Furthermore, because respondents had various opinions about including sociological elements (e.g. collaboration, trust, attitude) in performance measurement, and because the theory does not provide a conclusive answer as well, this is included as one of the first choices or step in the process instrument. There is no specific information obtained about the criteria or considerations that might influence this decision, however elements as the complexity of the project, the types of project partners (organizations and companies) or individual preferences might influence this decision.

When this first (upfront) step is made, the process instrument provides information about the design of a PMS (figure 42) and about trust (figure 43). For the development of a PMS figure 36 of chapter 12 functions as input (which includes theoretical information and empirical data). Firstly, there were some upfront measures defined by respondents. Because these actions were remarked as ‘upfront measures’ during the interviews, this can logically be seen as first step (under the heading ‘process beforehand’ in figure 36 of chapter 12). Furthermore, information about formulating KPIs was discussed both in literature as well as in empirics (and presented in figure 36 as ‘type of KPIs’ and ‘number of KPIs’).

The process instrument provides only some suggestions of indicators to include. However, as mentioned, each project is different and KPIs should be in line with project goals. Therefore no clear list of KPIs that should be used, is presented. The project partners and other involved stakeholders have to decide upon these KPIs. Given the fact that in literature as well as in empirics requirements for the formulation of KPIs were mentioned, this is included as a step in the process. Although it is not mentioned in literature or by respondents how these requirements should be used, it seems a logical step to ‘check’ the KPIs on these requirements after they were formulated, but before these KPIs are used in practice. The information of the requirements is clearly presented in figure 36 of chapter 12 under the heading ‘other requirements’. When the process of monitoring starts, some process-related remarks should be taken into account. This information was presented in figure 36 as ‘process during the project’, and is included in the process instrument as a step during the project execution. However, project partners could discuss these process-related elements earlier than the start of the project execution.
If the project partners decide to include a sociological factor, such as trust, into their PMS, some other steps have to be undertaken. These steps are also shown in figure 42. This information is for a large part obtained by the conversations in Interview Round 2 (2015), and supplemented with information from theory and Interview Round 1 (2015). The information from these steps is also presented in figure 36 under the heading ‘monitor soft elements in a PMS’. Five different steps can be distinguished. Although the process instrument shows a sequence in the steps to undertake, there was no conclusive statement made in literature or empirics, that a certain order or sequence is required. However, it seems logical to first determine which stakeholders are included in the process of monitoring, so that these same stakeholders can be included in the design of the PMS. Regarding the other steps in the design of a sociological (trust) monitoring system, there are no recommendations. These five steps should be completed before the start of the execution of the project. Furthermore, when the parties decide upon the type of information they would like to obtain with the monitoring system, a link with the process regarding trust can be made. On this link is further elaborated, after the process regarding trust is discussed.

In figure 43 an overview is presented of the process that project parties can go through, in order to stimulate and monitor trust. Based on the information presented in figure 38 a distinction is made between the basic and the additional actions of trust, which were presented in table 17 of chapter 13 as well. This is visualized in figure 53 below, and categorized per element. The bold text are the upfront actions and the other text shows the actions that can be undertaken during the project.

<table>
<thead>
<tr>
<th>People</th>
<th>Basics trust-stimulating actions</th>
<th>Additional trust-stimulating actions</th>
<th>Collectivity</th>
<th>Basics trust-stimulating actions</th>
<th>Additional trust-stimulating actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Selection of the team</td>
<td>Feedback and evaluation moments</td>
<td></td>
<td>Establish joint goals</td>
<td>Attitude focused on collaboration</td>
</tr>
<tr>
<td></td>
<td>Attention for project start-up</td>
<td>Human resource policy</td>
<td></td>
<td>Discuss interests</td>
<td>Sessions for goal revision and recalibration</td>
</tr>
<tr>
<td></td>
<td>Attitude of team members</td>
<td></td>
<td></td>
<td>Working jointly on tasks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establish communication procedures</td>
<td>Organize counterpart communication</td>
<td></td>
<td>Discuss conflicts</td>
<td>Arrange a platform for help</td>
</tr>
<tr>
<td></td>
<td>Openness and transparency</td>
<td>Way of decision making</td>
<td></td>
<td>Dealing with the first conflict</td>
<td>Getting to know each other in an early stage</td>
</tr>
<tr>
<td></td>
<td>Frequent and direct communication</td>
<td>Proactive attitude of people</td>
<td></td>
<td></td>
<td>Substantiate decisions with argumentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organize mandate and commitment</td>
<td>Arrange relation at board level</td>
<td></td>
<td>Consistent compliance with agreements</td>
<td>Make agreements in an early stage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appoint ambassadors of the alliance</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Attitude of parent organizations</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Attitude of alliance team members</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Define working principles jointly</td>
<td>Discuss working principles</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Discuss working principles</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Define process agreements</td>
<td>Working together physically</td>
<td></td>
<td>Discuss issues from the past</td>
<td>Joint pride when achieving milestones</td>
</tr>
<tr>
<td></td>
<td>Contractual agreements</td>
<td>Organize events and sessions</td>
<td></td>
<td>Establish an own identity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pay attention to and discuss culture</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Organizational</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Division of roles</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Figure 53: Basic and additional actions of trust**
As discussed in appendix A.7 the basic actions of trust were found in theory and in empirical data. The additional actions were only mentioned by respondents in the empirical part of this study. This difference is distinguished in the process instrument as well. As shown in figure 43, the basic upfront actions were suggested to conduct as first, before the start of the execution of the project. These actions of trust are the result from theory, Interview Round 1 (2015) and additions from Interview Round 2 (2015), which was presented in chapter 6 and 11, and in paragraph 12.2. If these actions were performed, the project parties (e.g. in the form of the AMT) could decide to undertake some additional actions. These additional upfront actions were formulated based on information from Interview Round 1 (2015) and Interview Round 2 (2015), and should be implemented before the start of the execution of the project. For the actions that should be conducted during the project, the same distinction between ‘basic actions’ (based on theory and empirics) and ‘additional actions’ (based only on empirical data), can be made, and therefore does not need any further explanation. However, it should be remarked that these actions ‘during the project’ might need extra attention when a project is working towards a milestone, as already discussed in paragraph 10.2.

Furthermore, as remarked earlier in this appendix, there is a link between the ‘type of information’ that is monitored (about sociological factors) in a PMS (figure 42) and the operationalization of trust (figure 43). For example, the monitoring instrument could include questions about: the attitude of people; frequency, openness and transparency in communication; the working principles; culture; conflicts; compliance; (uncertainties) in roles; et cetera. All these actions of trust, could be included in for example a questionnaire that would be designed in the step ‘decide the type of information to collect’ presented in figure 42. Finally, the colours shown in figure 39 and figure 43 relate to the element of trust, to which the action relates. For example, the ‘selection of the team’ was an upfront action mentioned in the context of the element ‘people’, that could influence a trusting relationship in a positive manner.
Appendix: Substantiation of context elements

As mentioned in chapter 15, it is likely that context matters and that it can influence a trusting relationship between parties involved in a project. In order to substantiate the presented first information regarding contextual elements in chapter 15, this appendix will give insights into how the projects and their context factors were analysed.

In the table below an overview of the projects and the differences between characteristics of the projects are presented.

<table>
<thead>
<tr>
<th>Tender</th>
<th>Type</th>
<th>Budget size</th>
<th>New or adjustment</th>
<th>Length of time</th>
<th>Money saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waardse Alliantie</td>
<td>D&amp;C</td>
<td>Rail</td>
<td>240 mln</td>
<td>New construction</td>
<td>2y and 11m</td>
</tr>
<tr>
<td>Bataafse Alliantie</td>
<td>D&amp;C</td>
<td>Rail</td>
<td>38 mln</td>
<td>Adjustment</td>
<td>3y and 10m</td>
</tr>
<tr>
<td>N201</td>
<td>D&amp;C</td>
<td>Road</td>
<td>85 mln</td>
<td>Adjustment</td>
<td>6y and 10m</td>
</tr>
<tr>
<td>A2 Hooggelegen</td>
<td>Alliance</td>
<td>Road</td>
<td>125 mln</td>
<td>Adjustment</td>
<td>2y and 10m</td>
</tr>
<tr>
<td>OV SAAL</td>
<td>Alliance</td>
<td>Rail</td>
<td>300 mln</td>
<td>Adjustment</td>
<td>-</td>
</tr>
</tbody>
</table>

These differences between projects could be taken into account when seeking for contextual factors that might be of influence. However, the composition of the group of respondents has to be taken into account when seeking for the influential context factors. Therefore, the table below presents an overview of the number of respondents per case and per parent organization (public, private or independent). When this information is interpreted, it needs to be taken into account that some respondents were involved in more than one project. Therefore, a difference between the number of interviewed respondents (29) and the number of ‘respondents’ in table 21 below (35) can be observed.

Table 21: Ratio between respondents from different cases and types of parent organizations

<table>
<thead>
<tr>
<th></th>
<th>Public</th>
<th>Private</th>
<th>Independent</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waardse Alliantie</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>20,0%</td>
</tr>
<tr>
<td>Bataafse Alliantie</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>14,3%</td>
</tr>
<tr>
<td>N201</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>20,0%</td>
</tr>
<tr>
<td>A2 Hooggelegen</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>25,7%</td>
</tr>
<tr>
<td>OV SAAL</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>20,0%</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>12</td>
<td>10</td>
<td>35</td>
<td>100%</td>
</tr>
<tr>
<td>Percentage</td>
<td>37,1%</td>
<td>34,3%</td>
<td>28,6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Both tables above were starting points for the analysis of data. Each datasheet that was established in the previous phase (e.g. about the definition of alliances, performance measurement, and trust) was analysed. As shown in the table below, the answers of respondents were categorized by casus and by type of parent organization (public, private, and independent). As shown in the example of the table below, some respondents were involved in more than one project. For example, ‘H4/WA’ means that a respondent was involved both in project Houten 4-sporig (Bataafse Alliantie) as well as in the Waardse Alliantie.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Casus</th>
<th>P/P/O</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H4/WA</td>
<td>Publiek</td>
</tr>
<tr>
<td></td>
<td>N201/WA</td>
<td>Privaat</td>
</tr>
<tr>
<td></td>
<td>N201</td>
<td>Onafh.</td>
</tr>
<tr>
<td></td>
<td>A2/H4</td>
<td>Privaat</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Then, the number of answers per group of respondents (by case or by type of parent organization) were counted and expressed in a percentage of the total amount of answers. If this percentage differed clearly from the ratio presented in table 21 above, it was remarked as a possible interesting contextual element. Only some (the most interesting) of these differences were discussed in chapter 15. The following differences (per topic) were found as a result from this analysis:

**Datasheet trust**

- Many respondents from project N201 remark the importance of selecting a team upfront (50% of the answers are from N201-respondents, although the percentage is only 20%)
- The role of the AMT, key figures and the Board of Directors is almost only mentioned by respondents from private parties (and they mention that this issue is mainly a problem in public organizations)
  - Respondents from project Houten mention this subject less frequently
- Steering the behaviour of people during the project (e.g. by means of evaluation, feedback, change personnel) is almost only mentioned by respondents from independent organizations
  - Respondents from project Waardse Alliantie mention this less frequently
- When mandate is discussed, respondents from public parties are underrepresented, and respondents from private parties are slightly overrepresented
- People involved in project A2 Hooggelegen mention the importance of a relation with the parent organizations slightly more than other respondents
- The effect of cultural differences was mentioned only by respondents from public and private parties
- Respondents from independent organizations are underrepresented in mentioning organizational aspects
- The importance of celebrating project progress is almost only mentioned by respondents involved in a smaller project (N201 and Bataafse Alliantie)
- The importance of division of roles is mainly mentioned by respondents involved in road projects (A2 and N201)
Datasheet performance measurement

- Respondents from Waardse Alliantie are underrepresented in including the surrounding area (probably because interfaces with the surrounding area was limited, because it was a new construction project)
- Several people involved in project A2 Hooggelegen mention that safety should not be included as KPI
- Road construction projects seem underrepresented when it comes to the more process-related elements of monitoring
- Respondents involved in smaller projects (N201 and Bataafse Alliantie) had both a PMS focused on only time and budget, instead of other factors

Datasheet project success

- It seems that respondents involved in road projects mentioned the importance of the surrounding area (for project success) less frequent

Datasheet definition of alliances

- Respondents from project N201 mention sharing risks and opportunities more frequent than respondents from other projects, in defining alliances

Others

- For several elements (project success, trust, PM) is seems that people from public parties are overrepresented when it comes to including long-term goals. Private parties seem to be underrepresented when it comes to this subject
- When respondents were asked about forming the same (alliance) collaboration again, nearly all respondents (from all cases and all types of parent organizations) were unanimously positive
  - Only the respondents of project N201 seemed to be slightly less positive than other respondents