Graduation Thesis: The effect of the Spiegel on construction projects and construction managers
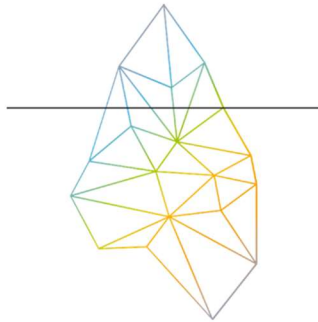
A study into the Spiegel method which aims to facilitate reflection, learning, and knowledge exchange

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The effect of the Spiegel on construction projects and project managers
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Preface

This research was all about learning within the construction industry and this graduation project was a learning experience for me as well. This research gave me a unique opportunity to have a look behind the scenes of public project teams and construction projects. In this, it was very interesting to see that most of the hard project elements, such as engineering work, are managed very well but that most difficulties in projects arise in the soft elements of projects, such as communication and collaboration. Furthermore, I also gradually learned how to set-up and organize a scientific research and that it is not all about reviewing literature and stating the results. Scientific research is all about structurally studying a clearly defined subject and daring to make statements based on the knowledge obtained through the research, as you have become the expert on the subject.

This research would not have been possible without the supervision of my graduation committee and I would like to thank them for their time. I valued the constructive and friendly attitude you all had during the joint committee meetings which gave me the confidence to continue and challenged me to raise the level of my report and research. Marcel, thank you for your clear guidance during the committee meetings and assuring that the feedback that was given was understood by me. Marian, I really appreciated the individual feedback you gave me on my draft documents, your clear answers on all my questions, and the fact that you aligned the feedback during the committee meetings. Bauke, looking back I am very glad that I asked you and you wanted to take place in my committee; your view and critical questions forced me to think about what I wanted to say and whether I was able to say this based on the research. Maarten, first of all, thank you for the opportunity that you and Neerlands diep gave me for conducting my graduation research. Secondly, for helping me gathering interview respondents and letting me participate in a Spiegel. Furthermore, I would like to thank you for keeping me focussed and the subject of research and challenging me to structure my research and relating everything to my research question. Although she wasn't in my committee I would also like to thank Sandra for helping me plan my committee meetings, answering all my practical questions, and facilitating a nice work place and environment.

Special thanks go to the interviewees and participants of my observation study. I was pleasantly surprised that everybody was so willingly to participate in an interview and I valued the open attitude and honest answers that were given. I would like to thank the project managers and corresponding project team for allowing me to participate in their Spiegel. Furthermore, I would like to thank all participants for their responses on my survey.

Last but not least I would like to thank my family, all my friends, fellow graduates, fellow students, housemates and especially my girlfriend for their support, sparring sessions, tips and tricks on graduation and writing a thesis, feedback, and welcome distractions during the evenings and weekends

Thomas Hustinx

The Hague, 8 September 2017

Summary

The project management practice of large construction and infrastructure projects needs to be improved to fulfil the ambitions set for these projects. However, the knowledge on project management that is currently available does not provide the means to improve the project management of those projects. More and better learning and knowledge management could be beneficial to achieve improvement. This can be done by making use of the experiences and insights from other projects. However, capturing and transferring experiences and insights is difficult because it is dependent on tacit knowledge which is difficult to explicitly define. Also, the nature of the industry makes it difficult because every project within the sector is different.

This thesis presents research related to reflection, learning, and knowledge sharing within public project organisations to improve projects. This research was performed by focussing on the so-called Spiegel and its participants. The Spiegel is an interactive team reflection method that is developed and facilitated by Neerlands diep, the academy for public construction and infrastructural projects. This method uses the tacit knowledge of people for reflection, learning, and knowledge sharing within and between large infrastructure projects.

This research project was initiated by Neerlands diep, which is a network organisation that aims to improve project performance of public construction and infrastructural projects by stimulating and facilitating the professional development of public project managers and their teams.

The Spiegel is a method that uses interactive team meetings to facilitate reflection, learning and knowledge sharing for public project team members and peers from other projects and organisations. Several different Spiegels exists but the main ones are the project management Spiegel and the evaluation Spiegels. The project management Spiegel focusses on improving project management of a project and is applied during the project. The evaluation Spiegel focusses on improving project management of other projects and is applied at the end of a project. Both methods use self-reflection, peer-reflection, and a dialogue based on the two reflections as core elements. The exchange of views and experiences are used as input for discussions to improve projects and exchange knowledge.

The aim of this research is to assess the effectiveness of the Spiegel to understand the influence the Spiegel has on the project management and project managers of public construction and infrastructure projects. The effectiveness of the Spiegel will be evaluated by researching the effect of the Spiegel on members from the public project teams and their projects.

To achieve the above-mentioned research objective, this research aims to answer the following research question:

> **What is the effect of the Spiegel on participants and their projects?**

The research can be seen as explorative and uses an inductive approach based on qualitative data. The data is gathered from a multiple case study using a mixed method approach based on three primary data sources. A document analysis was performed on the reports of 14 cases. Case-interviews were conducted on two cases, each with four respondents. Also, an observational study and a survey were

held in one case. In addition, a literature study was done on elements of the Spiegel and an interview was conducted with the developer of the Spiegel.

The document analysis has shown that construction and infrastructures projects and public project teams on which a Spiegel has been applied can all improve by focusing on improving communication, interaction or the relation with external and internal stakeholders. The result suggests that project managers should put more emphasis on the integral aspects of projects which affect stakeholders, sub-projects or other projects.

Case interviews showed the effect of the Spiegel on different projects and participants. There was concluded that the effect of the Spiegel is very dependent on the project that is assessed, the type of Spiegel, as well as the role and the function of a participant. It was noted that when the Spiegel was applied to ongoing projects it most of the times resulted in structural changes in the project organization which positively affected the project performance. When the Spiegel was applied to ending projects, it did not result in any explicit effect on projects. So, when the Spiegel is aimed to be used to increase project performance it should be used on ongoing projects. The interviews respondents also suggested that the effectiveness of the Spiegel could be increased by giving it a more structural follow-up.

The effect the Spiegel has on participants, in general, is that it gives new, valuable and interesting insights which can be used for improving the functioning of individuals, the project team, and the project as a whole. The Spiegel also brings people from different projects and organisations together which is useful for gathering knowledge in the future. For project team members, the Spiegel generates a shared view on the project, it gives them insight into the work of their direct colleagues, it gives a different view on their project, and it provides lessons learned to improve the functioning of the project team. Peers mainly gather new knowledge through participating in the Spiegel, they learned how other projects are managed and organized.

Through the observation of a Spiegel process and a survey among the participants of that Spiegel, it was seen that the Spiegel provides a way to reflect on projects and to gain new insights for participants. The main lessons that resulted from the observed Spiegel focussed on defining core values for the team and their project, making things in the project more explicit, and looking at the relation between the project and the interests and intention of the client. The observational study and survey also pointed out the weak spots of the Spiegel, which made the Spiegel less effective. By improving those elements which are the scoring, the perspectives used in the Spiegel, the (delivery of the) interim report, the aspects and the focus of the Spiegel the effectiveness of the Spiegel would be enlarged. The findings of this research can be used as input and starting point to critically assess the Spiegel and make alterations.

Given the set-up and boundaries of this research, there can be concluded that the Spiegels has an effect on participants and their projects. Where the effect of the Spiegel is larger on participants than on projects. Between the different participant's groups, the Spiegel has more effect on participants from the project team then persons participating as a peer. It is also noted that the Spiegel has far more effect on ongoing projects than on ending projects.

This research has shown that public project teams in the construction and infrastructure sector can benefit from using reflection and knowledge sharing. Therefore, it is advised to organize reflection on

a regular basis within projects and project teams. Also, knowledge exchange should be more embedded within organizations and should happen more between different organizations

This research aimed to study the effectiveness of the Spiegel, by studying the effect of the Spiegel. The chosen perspective, the focus on the Spiegel, and focus on the standard Spiegel process could have affected the outcome. Further research is advised to give a complete answer to the research question. Therefore, it is advised researching the effectiveness of the Spiegel from a social science perspective, researching the effect of the Spiegel within the other methods used, and researching effect of the Spiegel when the contractor participates

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1   Introduction

'Knowledge is of no value unless you put it into practice.'

Anton Chekhov, Russian physician and playwright (1860-1904)

The project management practice of large construction and infrastructure projects needs to be improved to fulfil the ambitions set for these projects. This results from the fact that project management has a large effect on project delivery (Munns & Bjeirmi, 1996; PMI, 2010; J. Thomas & Mullaly, 2008) and the delivery of large construction and infrastructure projects is often disappointing because of cost overruns, time delays and/or a dissatisfaction of involved stakeholders (Hertogh & Westerveld, 2010).

Despite the availability of literature on how to manage projects, project management practices could still be improved. Thanks to globalisation and digitalization, information is widely available. When looking at the subject of project management, in particular, a lot of literature is available on project management, for example, the PMBOK Guide (Project Management Institute, 2013) or "Effective project management" (Wysocki, 2012). There exist nonetheless a gap is between what is known from recent project management literature and what project managers can structurally help in improving the effectiveness of their work (Heintz, Lousberg, & Wamelink, 2016). The literature on project management that is currently available does not provide all the requisite knowledge to improve project performance.

Increased and improved learning and knowledge management could be beneficial to further improve project management. In the current project management practice of the construction and infrastructure industry much effort has already been made to improve project performance. In spite of improvements in the project management practices, research shows that the delivery and performance of projects often still remains disappointing (Anantatmula, 2010).

While both practitioners and scientists have noted that the use of experiences and insights from previous and other projects is very useful, there remains considerable room for improvement given that there is a general trend of failing to learn from such projects (Duffield & Whitty, 2015). The reason for this could be that project organisations are often not adequately predisposed to learning from current practices in order to improve (future) projects (Bartsch, Ebers, & Maurer, 2013; Gieskes & Broeke, 2000). This kind of learning in such organisations faces gives rise to substantial challenges due to the unique nature of projects often being unique, which creates boundaries that hinder the transfer and use of valuable knowledge gained for use within subsequent projects and/or the project-based organisation (Dave & Koskela, 2009; Gann & Salter, 2000; Prencipe & Tell, 2001). These boundaries have to be crossed, and so that the use of experiences and insights from previous and other projects should can be more embedded in the organisation. Also, the way in which these experiences and insights are currently managed should be improved, especially with in terms of the format, process, and eventual use of the lessons learned (Schindler & Eppler, 2003).

In the construction industry, knowledge management is essential for improving project management and projects. Significant efforts have already been made on capturing and reusing explicit project knowledge. However, there has been a lack of management of the tacit knowledge (Lin, Wang, &

Tserng, 2006; Newell, Bresnen, Edelman, Scarbrough, & Swan, 2006). Tacit knowledge is the "knowledge that you do not get from being taught, or from books, etc. but get from personal experience, for example when working in a particular organisation" (Cambridge Dictionary, 2016). The nature of tacit knowledge makes it difficult to capture and transfer this knowledge. Management of tacit knowledge is important for the construction industry, due to the fact that each construction project is unique, generates a significant amount of knowledge during its execution and the fragmented nature of the industry (Dave & Koskela, 2009). Much of the knowledge relating to projects and project management within the construction industry is tacit knowledge retained by people. This knowledge can be very useful for improving projects and project management. However, capturing and transferring this tacit knowledge is difficult due to the very nature of it.

The experiences of people, which are stored as tacit knowledge, are essential for learning from past projects to improve future projects. However, the sharing of tacit knowledge mostly relies on personal communication (Buttler, Lukosch, & Verbraeck, 2011). It is, therefore, more difficult to make this knowledge available for others. Buttler, Lukosch, and Verbraeck (2011) presented an approach to support the sharing of knowledge and processing of stories and experiences of project managers. However, this method has its limitations, such as that it is not as well suited to capture the experiences of scientist and engineers, and that the process itself is very time-consuming. In general, the best method for sharing tacit knowledge is offering a rich social experience where knowledge exchange is happening in an open and informal way (Dave & Koskela, 2009). It is acknowledged that learning and knowledge sharing can generate more effective project management (Buttler et al., 2011; Dave & Koskela, 2009). However, in the context of the construction, it is very difficult to come up with one single method that is perfectly suited for all different projects and project managers within the sector. So, different methods are needed and which is dependable on the situation.

Public project organisations and their project managers are an important part of the construction sector, as they have a significant influence on the project performance of large construction and infrastructure projects. Mainly because they are the clients in such projects (Eisma & Volker, 2014). A study of existing scientific literature on public construction clients by Eisma & Volker (2014) showed that despite the numerous publications on the topic, the public construction client is still under-acknowledged in the field of construction management. In the Netherlands, the role of the public construction client in large construction and infrastructure projects is mostly performed by project organisations set-up by the public commissioning organisations. Project organisations are the defined temporary structures of project tasks, responsibilities, and authority levels (NEN-ISO 21500, 2012). In literature, these organisations are also referred to as public sector construction clients (Eisma & Volker, 2014) or public project delivery organisations (Koops, Bosch-Rekveldt, Bakker, & Hertogh, 2017). As these public project organisations fulfil a crucial role in large construction and infrastructure projects, improving their project management proactively could lead to increased project performance.

This thesis presents research into reflection, learning, and knowledge sharing within public project organisations to improve project management. This research has been performed by focussing on the so-called Spiegel, a method developed and facilitated by Neerlands diep. This method uses the views and experiences of people to facilitate reflection, learning, and knowledge sharing within and between large Dutch infrastructure projects and project managers.

1.1   Neerlands diep

This research was commissioned by Neerlands diep. Neerlands diep is a network organisation that aims to improve project performance of public construction and infrastructural projects by stimulating and facilitating the professional development of public project managers and their teams. Neerlands diep evolved by bundling "Kennis in het groot" (KING) and the "Rijksprojectacademie" (RPA), which were initiated in 2008 by Rijkswaterstaat, ProRail, Rijksvastgoedbedrijf and the four large Dutch municipalities to raise the level of project management within public construction and infrastructure projects. Neerlands diep is a learning network of project managers and their teams of the semi-government organisations mentioned above. Besides their permanent partners, Neerlands diep cooperates with other (semi-) public organisations, companies in the private sector and research institutes such as universities. Neerlands diep aims to improve project performance by stimulating and facilitating learning and development in practice. Their focus lies on learning and sharing knowledge on project management in large construction and infrastructure projects (Neerlands diep, n.d.). In the Netherlands, the approach of Neerlands diep is quite unique because of their connection to large-scale construction and infrastructure projects and organisations.

Neerlands diep facilitates meetings, research, and workshops to exchange knowledge between projects and organisations. Additionally, they use several methods to promote and encourage lifelong learning of project professionals in the field, including methods for both individual professionals and for complete project teams. Each method has a different focus and approach to aid in the exchange of knowledge, and more personalised methods or programs are also able to be developed. One of the methods used is the Spiegel, which is the focus of this research.

1.2   The Spiegel

The Neerlands diep "projectmanagementspiegel" or in short, the Spiegel, is one of the interactive team reflection methods facilitated by Neerlands diep for Dutch public project teams. The working language of the Spiegel is Dutch; in Appendix I a vocabulary is given of all terms related to the Spiegel in Dutch and English. The essence of the Spiegel is to create multiple perspectives on how a project is managed and controlled. The Spiegel consists of several steps with (peer) meetings where a project management team evaluates themselves (self-reflection) and is also evaluated by a team of peers from the Neerlands diep network (peer- reflection). All members of the project team indicually and the peers collectively score the project team on ten management aspects, which each have five sub-aspects. The scores and views of both groups are captured in an interim report which serves as a basis for a discussion on the differences in views and to formulate points of improvement for the project. In the process, the exchange of perceptions and experiences leads to insights on how improvements can be achieved. At the end, the main outcomes of the Spiegel are reported in a final report.

Project management of construction and infrastructure projects is largely based on knowledge and experience of project organisations and its teams and members. The Spiegel aims to facilitate mutual learning for both the project team and the peers and to transfer this knowledge among those members, teams and organisations. However, the extent to which this is successfully and effectively done is unclear.

The Spiegel has been developed around 2011 by a professional of KING based on his own knowledge and on the knowledge of a professional project manager who was one of the founders of KING and

used a comparable method for evaluating school boards. The development of the Spiegel was initiated by a question from a large infrastructure project to evaluate the project and to use this evaluation for promotional purposes. Because Neerlands diep was not aiming to evaluate projects, the question was changed to "what can be improved in the project management of the project team?" This process developed into the Spiegel. The ten management aspects are formulated based on the ten knowledge domains in which KING originally was divided.

The Spiegel is considered to be a unique method because it combines reflection and evaluation of projects to learn and exchange knowledge. There are other methods to evaluate projects although these methods mostly use this method to form a judgment about the project. The alternative methods all have a more audit-like approach, where the Spiegel aims to focus on learning.

1.3   Problem formulation

Learning could support in improving the project management practice of project organisations in the construction and infrastructure sector. Even though this is acknowledged by literature, still little focus is set on learning in the construction and infrastructure industry. Neerlands diep aims to stimulate learning and facilitates this by methods such as the Spiegel. The overall opinion of project organisations is that the Spiegel provides valuable insights and helps to improve the project performance, although this has never been validated. Moreover, the Spiegel was developed from practical knowledge and it has not been changed or critically assessed since it was introduced in 2011.

The fact that the extent to which the Spiegel is effective in transferring knowledge is unknown and the fact the method has not been changed or assessed since its introduction has brought about the need to evaluate the Spiegel and research its effectiveness.

1.4   Research objectives and research questions

The aim of this research is to assess the effectiveness of the Spiegel to understand the influence the Spiegel has on the project management and project managers of public construction and infrastructure projects. The effectiveness of the Spiegel will be evaluated by researching the effect of the Spiegel on members from the public project teams and their projects.

To achieve the above-mentioned research objective, this research aims to answer the following research question:

> **What is the effect of the Spiegel on participants and their projects?**

The main research questions will be answered with the help of five sub-questions, which will be answered in this thesis.

A. *What is the Spiegel and how did it originate?*

It is important to first understand what the method is, as well as how and why it was developed. This sub-question will be answered by analysing information on the Spiegel and by conducting an interview with the developer of the Spiegel.

B. What is the theoretical effect of elements of the Spiegel?

The Spiegel was derived from practice and it has not been assessed in detail before, though scientific research has been done on elements which are also present in the Spiegel. Therefore, a literature study will be performed to investigate the potential effect of the Spiegel based on scientific literature available which relates to these elements

C. What is the potential effect of the Spiegel based on Spiegel reports?

The Spiegel has been applied on several projects and each of these projects has an interim report and a final report. By analysing these reports, the potential effect of the Spiegel will be determined.

D. What is the effect of the Spiegel according to Spiegel participants?

As people play a vital role in the Spiegel, their impressions and views on how the Spiegel affected them and their projects can aid in answering the main question. To answer this sub-question interviews with Spiegel participants will be conducted.

E. What effects can be observed during the Spiegel?

The Spiegel consists of several meetings between the project team and/or peers. Effects of the Spiegel can, therefore, be observed during those meetings. An observational study will be conducted to answer this sub-question.

1.5 Reading guide

This section presents the reading guide for this thesis, a schematic overview of which can be seen in Figure 1.

Chapter 1 - Introduction
The report starts with an introduction of the research context, an introduction to the organisation which commissions this research and an introduction of the focus of this research (the Spiegel). Moreover, the problem statement is formulated, the research objectives are stated and the main research questions (including its sub-questions) is presented.

Chapter 2 - Research design
The research scope, approach and process are explained. This chapter also elaborates on the methods that are used in this research for data collection and analysis, the criteria for the case study and selection of respondents, and the interview and observational study protocol.

Chapter 3 - Results of the Spiegel analysis
This chapter presents an analysis of the Spiegel based on written documents on the Spiegel and the outcomes of an interview with the developer. This information will be used to answer sub-question A, describing the Spiegel and how it has been developed.

Chapter 4 - Results of the literature study
This chapter elaborates on the findings from a literature study into certain elements of the Spiegel to give an answer to sub-question B.

Chapter 5 - Results of the document analysis

The findings of a quantitative document analysis and a qualitative document analysis on the Spiegel reports are discussed in this chapter. These results will be used to state what the potential effect of the Spiegel is and thus answer sub-question C.

Chapter 6 - Case-interviews results

The results of the case interviews on two cases with each 4 respondents are described and discussed in this chapter to aid in answering sub-question D.

Chapter 7 - Results of the observational study and survey

To answer sub-question E, the findings of an observational study to a Spiegel and the result of a survey are presented in this chapter.

Chapter 8 - Discussion

This chapter covers a discussion on the outcomes of the research by discussing the findings and results of the research, the implications of this research and the limitations of this research.

Chapter 9 - Conclusions

The sub-questions provide useful guidance in answering the main research question. This chapter reiterates the answers to the sub-questions, in order to provide an answer to the main research question. Furthermore, recommendations for further research and practice are also formulated.
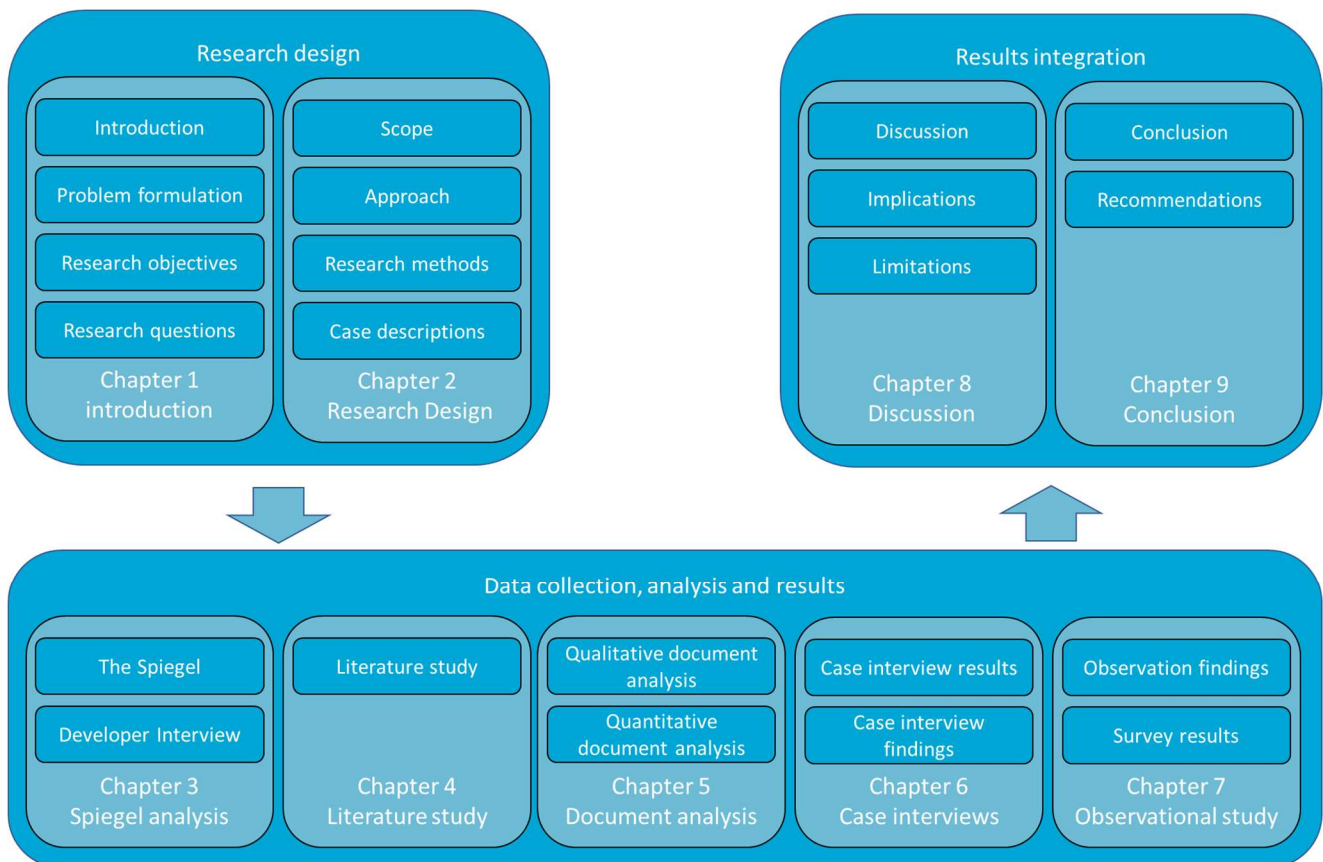
Figure 1: Report overview

2   Research design

This chapter presents the design of this research. The scope and focus of this research are discussed in section 2.1. Furthermore, the research approach will be elaborated on in section 2.2. In the last section (section 2.3) the applied research methods are elaborated on.

2.1   Scope of research

The Spiegel is the central object and subject of this research. Several different forms of the Spiegel exist. This research looked at the original Spiegel, the project management Spiegel and the one that uses the same methodology with a different focus, the evaluation Spiegel. There are 15 projects for which either a project management Spiegel or evaluation Spiegel has been or is being applied. These Spiegels and the persons who participated in those Spiegels were the focus of this research.

The Spiegel has only been applied in Dutch large construction and infrastructure projects. Therefore, this research only looks at these kinds of projects and the geographic scope of this research will be the Netherlands. The Spiegel is primarily focussed on the public project teams of these projects. The members of those public project teams are the main participants of a Spiegel. The focus of this research is the application of the Spiegel in the context of public project teams in large Dutch infrastructure construction projects (see Figure 2).
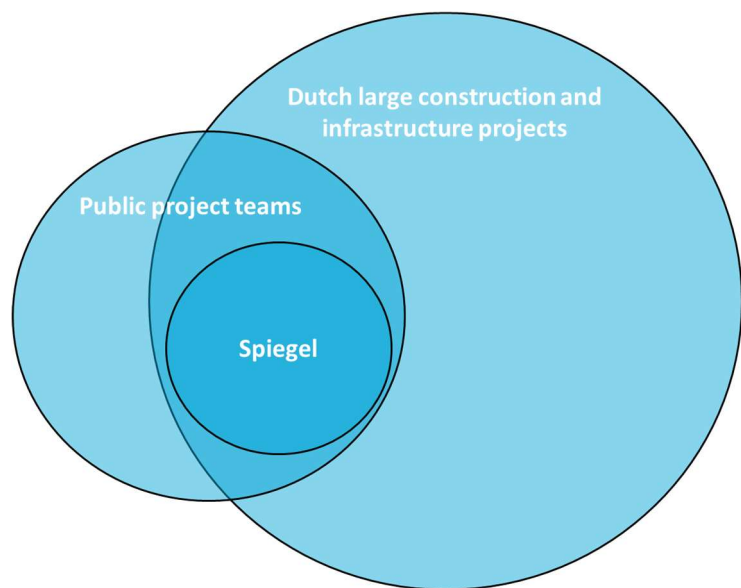
Figure 2: focus and subject of research

2.2   Research approach

In this research, it is chosen to take the Spiegel as the central object of research. The Spiegel has not yet been studied before, therefore the nature of this study is explorative. Exploratory research is often conducted because a problem is not clearly defined. Exploratory research helps to determine the best research design, data collection methods and selection of subjects (Ben Baarda, 2010).

Figure 3: Research approach

The Spiegel was researched from practice and from theory, where there is chosen to look at theory and practice with the Spiegel as starting point. This choice has been made because the Spiegel is yet

unstudied in scientific literature. Therefore, literature was used to reflect on the Spiegel elements. Empirical evidence on the Spiegel in practice was used to analyse the Spiegel in its totality (see Figure 3).

This research made use of a qualitative approach. Since, qualitative research enables researchers to carry out an investigation where other methods are either not practicable, to investigate situations where little is known about what is going on, to explore complexities that are beyond the scope of more 'controlled' approaches and to view the case from the perspective of those involved (Bill Gillham, 2000, p. 10). Qualitative methods focus primarily on the kind of evidence (what people tell and what they do) that will enable researchers to understand the meaning of what is going on (Bill Gillham, 2000, p. 9)

Case study is one of the methods used in qualitative research. This research used case studies because a case study research can be conducted on a subject without extracting it from its context (Yin, 2003). Within this case study research, different sub-methods can be used. In general, possible methods are; documentation and records, interviews, direct observation, participant observation and physical artefacts (Bill Gillham, 2000; Yin, 2003). Case studies do not need to be limited to one single source of evidence. Most of the better case studies rely on a variety of sources (Yin, 2003, p. 93). Based on the first principle "use multiple sources of evidence " for case studies defined by Yin (2003, p. 97), this research made use of a mixed method approach. The methods that have been used are described in section 2.3.

For analysing the data an inductive approach was used because this allows researchers to developed an understanding of learning practices in the workplace (Billett, 1996). The primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies (D. Thomas, 2006).
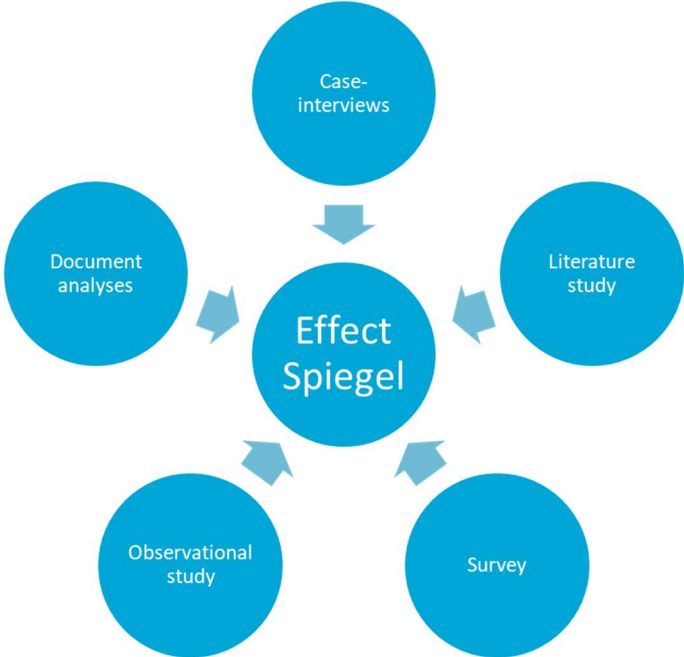
Figure 4: Triangulation

For designing and performing a research of good quality, Yin (2003) stresses the importance of validation of the research. This research used triangulation to validate the research results. Triangulation is the process where at least three sources contribute to an outcome (Guion, Diehl, & Mcdonald, 2002). Triangulation ensures the validity of the research, reduce the bias, improve the accuracy of the judgements and inspires confidence in the results. This research used document analyses, case-interviews, an observational study, a survey and a literature study to reflect on and assess the effect of the Spiegel and to validate the outcomes (see Figure 4).

2.3 Research methods

To answer the research question (section 0), several research methods were used. The results and findings of a single research method are used to give an answer to each sub-question. An overview of the research questions and methods used can be seen in Figure 5. This section will provide a description per used method.

A. What is the Spiegel and how did it originate?	Written information + interview with developer
B. What is the theoretical effect of elements of the Spiegel?	Literature study
C. What is the potential effect of the Spiegel based on Spiegel reports?	Document analysis
D. What is the effect of the Spiegel according to Spiegel participants?	Case-interviews
E. What effects can be observed during the Spiegel?	Observational study + survey

Figure 5: Overview of used sources per research question

2.3.1 Interview with developer and facilitator

To answer sub-question A and get better understandings of the Spiegel process, get insight into the method and results, get insight into how the Spiegel has been developed and get the perceptions of the developer on the Spiegel, an interview with the developer of the Spiegel was conducted. The developer was also the coordinator and facilitator of most Spiegels performed until now.

A semi-structured interview has been conducted because it is not yet known which specific information can be obtained from the interview. In a semi-structured-interview the person interviewed has a certain degree of freedom in the information he provides, also it is a very flexible technique for small-scale research and case studies (Drever, 1995).

To give direction to the interview an interview protocol has been developed with the help of Baarda and de Goede (2012). This protocol can be seen in Appendix II.

2.3.2 Literature study

An exploratory literature research was performed to define the set-up of the research. To aid in answering sub-question B a more in-depth literature study was performed. The possible size of the literature study could be enormous when not defining a scope and focus point in this study. Because of the choices made in the used research approach, this literature study did not elaborate on all literature available. The main elements of the Spiegel were defined and those elements were elaborated with the available literature from management and engineering studies. These elements were defined based on exploratory research to the Spiegel.

2.3.3 Document analysis

Since the Spiegel was created, the project management (PM) Spiegel or evaluation Spiegel has been applied in 14 projects. An overview of these projects can be seen in Table 1. From each project, a final report is (publicly) available and an interim report is available which is only meant for participants of those Spiegels. To give an answer to sub-question C the interim and final reports were analysed.

Number	Project type	Organisation	Year	Kind of Spiegel
1	Rail	A	2011	PM
2	Inner-city multimodal hub	B	2012	PM
3	Train station	A	2012	PM
4	Highway	C	2013	PM
5	High water protection	C	2013	PM
6	Train station	A	2013	PM
7	Train trace	A	2013	PM
8	Lock complex renovation	C	2013	Evaluation
9	Highway tunnel	C	2014	Evaluation
10	Highway	C	2014	Evaluation
11	Urban re-development	B	2015	PM
12	Dike reinforcement	D	2015	Evaluation
13	Train trace	A	2015	Evaluation
14	Highway	C	2016	Evaluation

Table 1: Spiegel project overview

The reports were studied with a qualitative analysis and a quantitative analysis. A qualitative analysis was held on the overall appearance, format and content of the reports. This was done by mapping the way in which the results are presented and scanning all reports. A quantitative analysis was done on aspect scores. The scores were compared with each other on the different aspects, sub-aspects, organisations and participant groups.

2.3.4 Case interviews

To find out how the Spiegel influenced projects, the projects should be looked closer. Therefore, interviews were held with people who participated in the Spiegel sessions of selected projects. This section will describe how projects were selected as a case for this research, how respondents were selected per case and how the interviews were conducted.

2.3.4.1 Selection cases

As described in section 2.2 an inductive research approach was used. Inductive research is largely based on a framework that consists of a sample of cases chosen for their diversity where the study can explore multiple practices and describe the diversity of practice (Yin, 2012). Because of diversity, the selection of cases (and respondent) was aimed to be as broad and diverse as possible, where different kinds of Spiegels are used and different organisations participated in the process.

The case selection is restricted to the 14 projects where the Spiegel has been applied (Table 1). From these projects, projects were selected for this case research. For a project to be suitable as a case it should meet the following case selection criteria:

- The project should have recently performed a Spiegel (in the past 3 years). Otherwise, people cannot remember anything about the Spiegel.
- The project should have used the standard Spiegel process
- The project must be a large project, as the Spiegel is intended for such projects

Besides this the total selection of cases should meet the following criteria;

- The case selection should contain at least one case where a project management Spiegel is applied and one where Evaluation Spiegel is applied
- The case selection should contain projects from different organisations and different kind of projects, to obtain a broad and diverse view.

The first case selection criteria only left four projects (11, 12, 23 and 14) within the criteria. Project 12 was quite a small project which made it less suitable. Project 13 used an adapted form of the Spiegel which made it less suitable for a case. The two projects left (11 and 14) complied with all case selection criteria and criteria for the total selection of cases, which led to the selection of project 11 as case A and project 14 as case B. A brief description of each case is given in Figure 6 and Figure 7.

Case A - Urban re-development project

Kind of Spiegel: Project management Spiegel

Participants: 17 project team members and 8 peers from different public organisations

Project description: The project consists of the redevelopment of a city centre, above ground of a subway trace in a large Dutch city. Constructing takes place in a busy city centre where the effect on the surroundings must be minimalized. The project is subjected to a complex political field, with the involvement of two aldermen, different municipal managers and the city council.

Cost: (approximately) 100 million euro

Construction time: (around) 5 years

Figure 6: Case description case A

Case B - Highway project

Kind of Spiegel: Evaluation Spiegel

Participants: 9 project team members and 9 peers from other projects (of which 7 from the same parent organisation)

Project description: The project consists of an expansion of a Highway with extra lanes, renovation of viaducts and two tunnels and new engineering structures, including a large Vertical-lift bridge which must be used by both road and rail traffic. This project was (one of) the first Design, Build, Finance & Maintain (DBFM)-contracts of the client. During the project, there were several disputes with the contractor. For the client, the project was delivered on time and within budget.

Cost: (approximately) 1/2 billion euro

Construction time: (around) 4 years

Figure 7: Case description case B

2.3.4.2   Selection respondents per case

For each case, a respondent selection took place. For a diverse as possible respondent group, respondents were selected based on the following criteria;

- The project manager of each case needs to be interviewed, for the overall view
- Minimum of one project team member per case
- Minimum of two peers per case for a project management Spiegel
- Minimum of three peers per case for an evaluation Spiegel
- Respondents from different organisations need to be present
- Respondents with several functions need to be present
- Preference for respondents who participated in more Spiegel sessions

This led to the selection of 8 respondents as presented in Table 2. These respondents were all approached via an e-mail, first by Neerlands diep, secondly by the author of this research. In this email, they were asked if they were willing to cooperate with the research by conducting an interview.

Case	*Spiegel role*	*Organisation*	*Project*	*Function*
A	Project team	A	Urban re-development	Project manager/director
	Project team	A	Urban re-development	Functional manager
	Peer	B	Station	Functional manager
	Peer	C	Highway	Functional manager
B	Project team	C	Highway	Project manager/director
	Peer	C	Highway	Project manager/director
	Peer	C	Multi modal hub	Project manager/director
	Peer	B	Station	Functional manager

Table 2: Respondent overview

2.3.4.3   Interviews

For the same reason as mentioned in section 2.3.1, a semi-structured interview was held with the case respondents. For these interviews, a protocol has been created to give direction to the interviews. This protocol is based on the findings from the exploratory study and the Spiegel analysis in chapter 3. The protocol which is used in every interview can be found in Appendix II.b.

Each respondent was asked to cooperate in an interview via email, making use of the contact details obtained via Neerlands diep. For the interviews, an hour was scheduled with every respondent. The interviews were recorded and summarised based on the interview protocol. The interviews were transcribed as literally and chronological as possible, but for readability and structural reasons, adjustments have been made. Each interview was validated by the respondents, adjustments were made when needed.

2.3.5   Observational study + mini-survey

Observational evidence is often useful in providing extra information on the studied subject especially in the case of new technologies (Yin, 2003, p. 92/93). Because the Spiegel is an unstudied subject using an observational study can be very beneficial. Gillham (2000, p. 46) and Mack et al. (2005) give strength and weaknesses of using observations for research purposes. According to these researchers, observations can provide information that cannot be obtained through other methods and give insight into the context of the assessed case and the behaviour of people. The negative aspect of using observation is that it is very time-consuming, subjective and dependent on the observer. This research uses a direct, open, unstructured and human form of observation and the observation was performed by one person.

2.3.5.1   Case selection

The selection of a case for observation has been primarily done based on two criteria, it should be an actual project and the project should be a representative project for the projects where the Spiegel has been applied to. Based on these two criteria a project has been selected, a description of the case is given in Figure 8.

Case C - Urban re-development project

Kind of Spiegel: Project management Spiegel

Participants: 15 project team members and 6 peers from different public organisations

Project description: The main purpose of the project is to renovate a public space in a commercial active area in a large Dutch city. This project consists of several sub-projects including an underground bicycle garage and a renovation of a protected historical bridge. The project has a large amount of and diverse internal and external stakeholders which desire that the nuisance to them is kept to a minimum. The Spiegel is applied while two sub projects are almost finished and while two others are in the beginning of the construction phase.

Cost: (approximately) 60 million euro

Construction time: (around) 5 years

Figure 8: Case description case C

2.3.5.2 Observation

In literature, no studies can be found which performed observation on learning methods which are comparable to the Spiegel. A result of this is that there are no formats for observation protocols for this kind of observation. In general, there is stated for by Mack et al (2005), that in observations focus should be on appearance, verbal behaviour and interactions, physical behaviour and gestures, personal space, human traffic and people who stand out. For specific information on observations, there can be looked at observation from other fields of study. For example, in education observations are widely used to analyse the extent of learning within classes of or programs. Observations are also widely used within the court to assess the behaviours of people and the consequence of their behaviour. Also, an observation study has been performed to knowledge networking in the public sector by (Pardo, Cresswell, Thompson, & Zhang, 2006). This study shows similarities such as that it used observation to assess knowledge sharing meeting between public parties.

Examples from education, in-court and knowledge networking observations, respectively "Reformed Teaching Observation Protocol" (Piburn, Sawada, & Turley, 2000), in- court observation protocols" (Smith & Tull, n.d.) and the "General guide for observations in knowledge networking in the public sector" (Pardo et al., 2006), are used as guideline and inspiration for setting up the observation protocol for this research as can be seen 0 . This protocol was used to observe the steps of the Spiegel process of case C.

2.3.5.3 Mini-survey

In addition to the observation, a mini-survey was conducted. The aim of the mini-survey was to gain additional information on the views of Spiegel participants. By asking the participants only five questions, the participation time of the survey is reduced to an only few minutes, increasing willingness to respond. This approach is inspired by course evaluations from the TU Delft. Because of the quantitative nature of this research, the choice has been made to primarily ask open questions. Open questions provide freedom to the respondents which are useful when the possible answers are not yet known. An example of the question asked can be found in Appendix III. To get honest answers and get as many responses as possible, the choice has been made to let the survey be filled in anonymously and send a maximum of two surveys per participant. To analyse differences between the groups each different participant group was separately approached. The survey was sent by email in which respondents could click a link to fill in the survey online.

3 Results of the Spiegel analysis

This chapter elaborates on what the Spiegel is and how it originated to aid in answering sub-question A. The Spiegel is described in detail (section 3.1), the findings from an interview with the developer of the Spiegel are presented (section 3.2) and a conclusion is given (section 3.3).

3.1 The Spiegel

Different variants of the Spiegel exist, as said this research only focusses on the Evaluation Spiegel and the project management Spiegel. The process of these methods is the same only the focus and the moment when it is applied to projects differs. The project management Spiegel is performed during the project and focusses on learning for the project team where the evaluation Spiegel is performed at the end or after completion of the project and focusses on the learning of the peers, although the Spiegel facilitates learning for both parties.

The Spiegel aims to provide the means to easily raise the project management to a higher level. This is done by letting a project team reflect on their own doings and by peers who reflect on the doings of the project team. The Spiegel focusses on 10 management aspects which are as follows;

- *Politics & government* – Everything related to the connection with and the relation to politics and the governmental client
- *Organisation & control* – The way in which the organisation is organized and structured and how this is managed
- *Culture* – The sense of culture and the effect it has on the project
- *Area/stakeholder management* – Everything concerned with the influence of and on the direct surrounding of the project
- *Communication* – The organisation of the communication of the project
- *Innovation* – Innovation within the project
- *Project control* – The way in which the project is controlled and managed
- *System integration* – The integration of all sub projects and process within the whole project
- *Contracting* – Everything concerned with contracts and the cooperation with contractors
- *Conditioning* – Everything concerned with the preparation of the construction site

Each management aspect has 5 sub aspects. These are the *base, functioning, risks, people* and a *management aspect specific subject.* Each sub-aspect per management aspect is explained by a central question and several underlying questions. During the Spiegel process, the project on which is reflected is discussed based on these aspects, where the project team members individually and the team of peers jointly score the project on these aspects.

In this process, new insights and ideas come up which could be useful for members of the project organisation and the reflecting peers. The Spiegel results in a final report with lessons learned and improvements for the assessed project. But the focus of the Spiegel is on learning during the process.

To provide a better understanding of this process the formal procedure will be explained hereafter.

The process starts by contact between the facilitator and the project manager, where the project manager is responsible for setting up the project team that will participate in the Spiegel and he/she

can suggest peers. The facilitator is responsible for inviting peers to participate in the Spiegel process. Then the process consists of 6 steps. These steps are explained in Table 3. The participants do not attend all steps of the process, the project team members only attend step one, three, four and six and the peers only should attend step two, four, five and six. A schematic representation of this whole Spiegel process is given in Figure 9.

Step 1 – Inform project team	A first meeting with the project team is organised where the process and procedures are explained and to clear any unclarities about this. This meeting is also meant to get acquainted with each other and create the setting for the next steps. During the meeting, the team members are asked to individually assess their project organisation and score their project on the management aspects and corresponding sub aspects at home. This has to be done based on the checklist and these scores have to be sent to the Spiegel coordinator before step 3.
Step 2 – Inform Spiegel team	This meeting is a webinar in which the peers are informed on the process and procedures and in which they get the opportunity to ask questions. After this step, the peers will be given a set of documents, with information about the project.
Step 3 – Self-reflection	In this meeting, the scoring of the individual team members is discussed and the considerations and arguments are exchanged and discussed with the whole team. All considerations, arguments and scores are noted by a scribe.
Step 4 – Interviews	The peers interview the members of the project organisation during the meeting to get a complete view of the project organisation and to be able to assess the project organisation with the checklist. These interviews are done in three groups during three rounds, where each group focusses on different aspects per round. The group division is made by the Spiegel coordinator based on the preference and expertise of the participants. Each group is guided by a facilitator from Neerlands diep.
Step 5 – Peer-reflection	The peers assess and score the project organisation on the management aspects and corresponding sub-aspects with the checklists by exchanging findings and considerations with each other. All considerations, arguments and scores are noted by a scribe.
	After this step, the scoring and arguments of both the project team and the peers will be used to make and confidential interim report, which will be sent to the project team members and peers before step 6.
Step 6 –Dialogue	The findings and scores of both the project organisation and the peers are compared and discussed in in-depth conversations. Together conclusion and recommendations are formulated on relevant themes. These findings will be written down in a final report which will be made publicly available after permission of the project manager

Table 3: Stepwise overview of Spiegel method
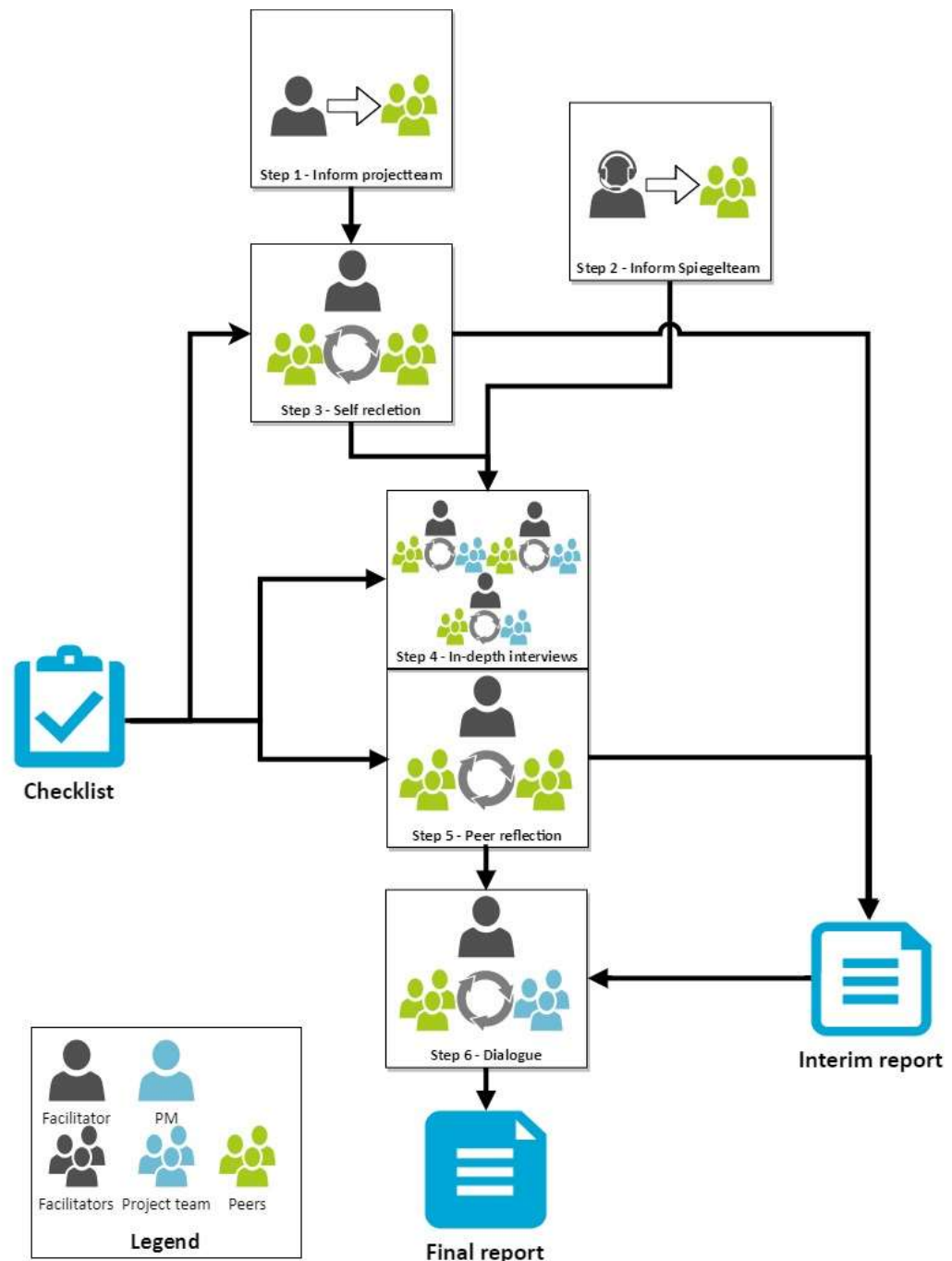
Figure 9: Schematic representation of Spiegel

3.2 Results of the interview with the Spiegel developer

As described in section 2.3.1 an interview with the developer of the Spiegel has been conducted to understand why and how the Spiegel has been developed. An objective of this interview is to get the view from the developer on the Spiegel process. The interview has been conducted with the help of an interview protocol which can be found in Appendix II. Based on this protocol, the findings from the interview will be discussed in this section on the following topics; *development of the Spiegel, the Spiegel process, Spiegel documentation* and *perception*. The full summary of the interview can be found in Appendix V.a.

The interview was held with the developer of the Spiegel, this person was also involved as the coordinator of all project management Spiegels and evaluation Spiegels conducted until 2017.

Development of the Spiegel

The Spiegel has been developed in 2011 as a reaction to a question from a large Dutch infrastructure project to KING to evaluate and judge the project. Only the intention of the project was to use the outcome for promotional purposes but this was not in line with the intentions of KING. They were not an organisation which only assesses projects, KING focussed more on learning of projects. So, the question was changed to a learning question instead of a judgement. This eventually led to the development of the Spiegel.

The Spiegel has been developed based on a so-called "bestuursspiegel" used to evaluate school boards and from ten knowledge domains which were used within KING. Those domains were transformed to the management aspects of the Spiegel. The Spiegel is primarily developed based on the knowledge of the developer and one of the founders of KING. The method was first used in 2011 and the structure of the method has not been changed since. The checklist used within the Spiegel to discuss and score the project has been drafted within a half day by members of KING and not changed since. No changes had been made to the checklist because it was seen that is was usable.

The Spiegel process

In the Spiegel, scores are used to discuss the management aspects. No value should be attached to these scores, they only should be used as input for a discussion and to stress the aspects where improvement can be made. In some Spiegels, not all aspects are scored and this is not seen as problematic because in the eyes of the developer the conversation and discussion is more important than the scores.

The aim of the Spiegel is that both the project team members and the peers learn during the process. The general view is that both groups learn but the extent to which they learned is unclear. A condition for effective learning is that the Spiegel process is open and transparent and that all participants have an open attitude and that they enjoy participating in the Spiegel. The facilitator can have a big influence on creating this setting.

Spiegel documentation

The original intention was to compare the projects with each other based on the documentation resulting from the process. This seemed to be harder than imagined because the set-up of the process differs a bit per Spiegel and the relevance of topics changed since the introduction of the Spiegel. Also, the scores of the Spiegels cannot be compared because these are subjective and relative to other scores.

The resulting documentation which contains the knowledge gained in the Spiegel process is not actively spread. But the knowledge is shared by people going from one project to another.

Perception

The developer experience the relative scores, the fact that it concerns the current situation and the leading role of the participants as strong aspects of the Spiegel. The time needed and the fact that it is a snap shot are seen as disadvantages of the method.

The developer's view on the used aspects is that they cover all relevant aspects in projects. But during all those Spiegels he has noticed that several participants commented on the way some questions in the questionnaire are formulated. He himself mainly questions the aspect "Innovation"; maybe this aspect should be more focused on technology.

Conclusion interview with developer

The Spiegel has been developed to facilitate learning for projects. The Spiegel has been developed based on the knowledge of a limited number of people. The aim of the Spiegel process is to facilitate learning for both the project team members and the peers, it is seen that people learn but the extent in which this is done is unclear.

The conversation and discussion about the management aspects are seen as the strength of the Spiegel method, for this an open and transparent setting is crucial. The facilitator has a crucial role in facilitating and creating this.

Overall, the method is considered to be an effective method by the developer. Although some points are seen on which the method could be improved; the checklist could be revised and the time needed for applying and conducting the Spiegel could be reconsidered.

3.3 Conclusion Spiegel analysis

The Spiegel is an overarching concept for a method that facilitates learning and knowledge sharing by using six distinct steps of which self-reflection, peer reflection and the dialogue are the main building blocks. The Spiegel is an interactive method in which project team members from large public construction and infrastructure projects participate. Next, to them, peers from the field participate in the Spiegel. In the process, the participants play a crucial role. The views and experiences of the participants are the main input of the Spiegel.

From an interview with the developer of the Spiegel can be concluded that the Spiegel has been developed to facilitate learning for public project teams working on construction and infrastructure projects. The Spiegel has been developed based on the (practical) knowledge of a limited number of project management professionals. The Spiegel aims to facilitate learning for both the project team members and the peer to improve project performance. It is seen that people learn but the extent in which this is done is unclear.

The Spiegel is a unique method because it combines several elements within the learning process to facilitate maximum learning and knowledge sharing. One of these elements is the learning environment, in the Spiegel, there is aimed to facilitate an open and transparent environment. For this, there is made use of an external facilitator. Another element is that the Spiegel focusses on learning from experiences of different persons. The use of peer-reflection is also a distinct element of the Spiegel. The timing of the Spiegel can also be seen as an element as this results in different forms of the Spiegel. Eventually, the Spiegels results in an end report which is the most tangible element of the Spiegel.

4 Results of the literature study

This chapter presents the results of a literature study to elements of the Spiegel to aid in answering sub-question B. The Spiegel elements are derived from the conclusion of chapter 3. These elements are the learning environment, learning from experiences, peer-reflection, the facilitator, the timing of the method and the deliverables. A brief literature study has been performed to these elements on (effective) learning and learnings methods, as mentioned in section 2.3.2. In section 4.1, the findings from the literature study will be discussed per element and in section 4.2 a conclusion on the literature study will be drawn.

4.1 Literature study on Spiegel elements

Learning environment

The Spiegel is intended for the whole project team to learn; therefore, it is aimed to have the complete project team present during the Spiegel sessions. During the Spiegel sessions, it is tried to create an open, interactive and informal environment, where everybody is allowed and dares to speak out and asks questions.

In their research to proven methods to record experiences from projects, Schindler & Eppler (2003) conclude that collective and interactive evaluation is a key success factor to gain valuable insights during such methods. Other studies to knowledge sharing and learning, acknowledges that an effective learning environment is dependent on social networks and informal dialogue (Milton, 2010; Newell et al., 2006). To create an effective learning environment, learning should be interactive and happen via informal dialogue.

The attitude of the people participating in learning methods is very much related to how effective the method is. People should have an open, transparent and respectful attitude towards each other. This because the ability to be able to speak freely is seen as crucial in learning (Walsham, 2002). An environment in which people have such attitudes can only be created if the people who are engaged in learning and knowledge sharing trust each other. A high level of trust is needed for successful learning and knowledge sharing (Dawes, Cresswell, & Pardo, 2009; Pardo et al., 2006). But achieving this is does not happen naturally.

Learning from experiences

The Spiegel focuses on learning from experiences of both the project team and the peers. The intention of the Spiegel is that both parties can learn from each other's experiences during the process.

In several studies to organisational learning and knowledge sharing (like; Garvin, 2014; Levitt & March, 1988; Love, Li, Irani, & Faniran, 2000; Schindler & Eppler, 2003) it is concluded that learning from direct experience and from experience from others is very beneficial for effective learning. This due to the way that people learn, people often learn by trial and error in search for the most effective way for working. In this process, experiences from other people are needed to broaden the view of individuals. Different persons use different ways of working which could be beneficial for other individuals.

The Spiegels aims to provide valuable insights for all people who are participating. In the research to participants engagement in knowledge sharing by Sedighi, Lukosch, Splunter, Brazier, & Beers (2016). It is shown that knowledge management system who emphasized on both the supply as demand sides,

such as knowledge networks and markets are better in engagement individuals than single emphasized systems.

Peer-reflection
The Spiegel makes use of peers from the same and other organisations to reflect on the project.

In their study to project based learning Ayas and Zeniuk (2001) noticed that the use of reflective practitioners from outside the project reflected on, can aid in letting the project shift from focusing an action to focusing on reflection for a moment. The use of insider/outsider collaboration can also create innovative ways to reflect. It is shown that the use of reflective practitioners by academics could aid projects.

The use of peers from other organisations may be difficult because there could be boundaries due to differences in organisation, culture and procedures between the organisations (Dawes et al., 2009)

Facilitator
The sessions of the Spiegel steps are facilitated and guided by one or three facilitators (depending on which step) from another organisation than the participants. They aim to facilitate the process in a neutral way.

An external and neutral facilitator is a key success factor to facilitate learning (APQC, 2010; Collison & Parcell, 2004; Schindler & Eppler, 2003). Because an external facilitator is not biased or influenced by any personal relation or possible gain. Also, an external person is more such likely to ask critical questions to get the "full story" out of people.

Deliverables
The tangible deliverable of the Spiegel is a final report that gives the main lessons and findings of the Spiegel process. This report only shows the specific insights and lessons from the process, where the context and considerations are mostly left out. The final report is made publicly available on the internet for everyone to access.

Sharing knowledge broadly and making it easily accessible creates the most impact (APQC, 2010; Garvin, 2014). So, making it available for everyone to easily access is crucial, next to this it must be actively spread broadly to create maximum impact. Now, this is not done with the Spiegel.

The form in which the final report is presented can be questioned, a written document is not the most effective. This because as mentioned earlier, a social dialogue would be more effective than spreading it through written documentation (Milton, 2010; Newell et al., 2006).

The final report would be the most useful if people could use the insights and lessons for their own project. But not always is the context of the lessons clearly given. An unclear or misunderstood context can create difficulties for persons which want to apply lessons to their own projects (APQC, 2010; Dawes et al., 2009)

Timing
The Spiegel is applied during a project (PM Spiegel) or at the end of a project (evaluation Spiegel) but there does not seem to be a strict procedure on when it should be applied. While the timing of such reviews seems to be critical. (Newell et al., 2006) When it is performed too late, the team can be

disbanded or focussed on something else, which makes them less motivated to participate. It could also be performed too early before the team could really determine what could have been improved.

4.2 Conclusion literature study

From the literature study, it can be concluded that an open, interactive and informal environment is most effective for learning. A high level of trust and respect is needed to achieve this and create the most effective setting, this does not happen automatically. An (external and) neutral person who facilitates this learning process could play a role in achieving this. The way lessons are learned during the Spiegel process, by experiences (from others), is theoretically a very effective way for learning in construction projects.

The Spiegels makes use of peers to reflect on projects, literature acknowledges the fact that this can be very beneficial. But it is also noted that making use of peers from other organisations may be difficult because they are not familiar with the context of the project and/or organisation. Another aspect that is mentioned to be useful and which is not done in the Spiegel is the use of academics as reflective peers.

The form and way the final report is presented are not very effective when looking at literature. The final report could be more actively spread, more context could be given and it should be reconsidered whether the findings could be presented in another way than in a written document.

Based on the literature study it is not possible to name explicit effects of the studied Spiegel elements. But the literature study has given insights into the function of the Spiegel elements. Based on literature the conclusion can be drawn on how effective the elements are for learning and knowledge exchange. It can be noted that the learning environment that is tried to achieve during the Spiegel process, is theoretical an effective way to learn. The positive effect of using peers is also acknowledged in literature, although literature points out that the effectiveness of peers could be minimal due to differences in organisation, culture and procedures between them and the project organisation. Also, when comparing the final deliverables to literature it is noted that it could be more effective when it would be more actively spread, more context of the process and project would be presented and if it would be spread by in an interactive verbal way.

5   Results of the document analysis

This chapter presents the results of the document analysis that is performed on the reports of all Spiegels conducted until 2017 as described in section 2.3.3. The aim of this analysis is to provide information for answering sub-question C of this research.

For this analysis, the interim and final reports of 14 Spiegels have been analysed, an overview of the projects connected to these reports can be seen in Table 1 on page 10. All reports have been analysed with a qualitative analysis and a quantitative analysis. The qualitative analysis focussed on the overall appearance, format and content of the reports and was performed by one person. The qualitative analysis was executed by scanning and reading all reports and focussing on overall appearance, format, the acquired insights and the formulated lessons. A quantitative analysis was conducted on the aspect scores from 12 of the 14 reports because 2 reports did not use the same method for scoring the aspects. Also, some scores were missing which resulted in the fact that the used averages are sometimes based on less than 12 scores. The aspect scores were analysed by putting all scores into data processing software and comparing the average and relative scores of the various aspects, sub-aspects, organisations and participant groups on significant differences. The results of both analyses will be described in the following sections.

5.1   Results of the qualitative document analysis

By scanning all the reports, it is seen that different formats are used for the reports. The way in which the insights and lessons are presented is different. Also, some reports present the scoring of the aspects in different ways, where sometimes beside the average score the maximum, minimum, standard deviation and spread of scores is giving. In two of the 14 reports (project 9 and 13), no average scores are presented because a different way of scoring was used, due to the choice to make use of an altered Spiegel method. In these Spiegels the contractor also participated in the Spiegel.

All Spiegels have been applied at large infrastructural projects except for one (project 12). The size and context of this project are different compared to the other projects.

From reading the reports it can be concluded that some of the management aspects are interpreted differently per Spiegel. Also, the main insights and lessons are related to more than one of the aspects. It can also be seen that the interpretation and output are linked to the context of the project, which differs quite per project.

When looking at the lessons and insights written in the Spiegel reports a few things stand out. Although all lessons are related to specific projects they all mainly focus on soft factors of a project. The lessons mostly focus on aspects related to communication, interaction or the relation to the internal stakeholders, the external stakeholders, the internal organisation, the contractor(s) or the surroundings.

Also, similarities are seen between the recommendations in each report. Most projects are advised to make things more explicit, which mainly focusses on project organisation, project control and culture. From the reports, it can be concluded that in past projects these aspects are very implicit organized or written down. Although this does not lead to many failures due to actions of people, in most reports it is advised to improve this.

The other recommendations that are written in the reports also show similarities. In more than one report it is mentioned that it would be valuable to reflect more on the project and look more ahead instead of mostly focussing on actions that are taken in the present. Another returning recommendation is that the integration of sub-system, sub processes and sub projects could be improved. Also mentioned a few times is that the quality control system of the project could be improved and more effectively used for project control.

5.2 Results of the quantitative document analysis

The quantitative analysis does not show many significant differences in the scoring. A visual representation of the most interesting and significant differences can be seen in Appendix IV. Down below these will be described.

Overall it is noticed that the peers score the aspects lower that the project team. This is seen when looking at the scores by grouping them on management aspects, sub aspects, organisations and projects. When looking at the outcomes which are grouped per sub aspects it can be seen that the *human* sub aspects are scored slightly higher than the other sub aspects.

Looking at the scores on aspects, differences per organisation are seen. Only these differences are not conclusive and dependable on the selection made to look at the scores. The outcomes differ when looking at the scores of the peers or project team and when looking at management aspects or sub aspects. The only significant difference that can be seen is when looking at the *base* sub aspect per organisations, one organisation scores a bit higher than the others.

Looking at the relative scores it is difficult to see any relation between how the project team values themselves and how the peers value the projects team. Only *System integration* is scored relatively low by both the projects teams and the peers and *contract management* is valued quite high by both the peers and the project team. *Area/stakeholders management* shows the biggest difference in perception between the peers and the project teams, the project teams value it very high, while the peers value it very low.

5.3 Conclusions of the document analysis

The qualitative analysis showed that the different Spiegels and their corresponding reports differ in set-up and used format. This together with the different context of the projects make it difficult to compare the Spiegels with each other. Despite this, it can be concluded that the lessons and insights show similarities and much can be gained on the soft factors of projects, integration of systems, processes and sub-projects and the explicitness of structures and culture.

Overall the quantitative analysis of the scores does not show any significant differences in scores on which any conclusions can be drawn. It can only be concluded that the project team scores themselves higher than the peers and that slight differences can be noted between the scores of projects and organisations.

From the document analysis, can be concluded that the Spiegel provides insight and lessons, which show similarities with those of other Spiegels. Also, the conclusion can be drawn that the various Spiegels are difficult to compare; a more standardize process and format for the reports could improve this. Although this could influence the flexibility of the method. Another thing that could be looked at,

is the way the scores are used or presented because when no significant differences between projects and organisations exist, the usefulness of the scores can be questioned.

Based on the document analysis it can be concluded that the effect of the Spiegel could be that it provides useful insights and lessons to improve projects. Based on the lessons from the reports, an effect the Spiegel could be that structural changes are made to the projects. Most lessons focus on aspects related to communication, interaction or the relation to the internal stakeholders, the external stakeholders, the internal organisation, the contractor(s) or the surroundings. Also, projects would make structures, culture and project control more explicit after applying the Spiegel. Another effect of the Spiegel could be that projects notice the added value of reflection and knowledge sharing which could lead to more of this in the continuation of the project or future projects. Based on the Spiegel reports several changes could have been the effect of the Spiegel but no conclusions can be drawn on what the effect is in reality.

6 Case-interviews results

This chapter presents the results of the case-interviews to aid in answering sub-question D. First, the results of the interviews will be discussed based on the set-up of the interviews (section 6.1). Secondly, these results will be used to discuss the impact and the effect of the Spiegel (section 6.2). At the end of this chapter, a conclusion will be given on the results of the case-interviews (section 6.3).

As explained in section 2.3.4, the interviews were conducted on two cases with four persons per case. For case A, four persons who participated in a project management Spiegel were interviewed, two persons of the project team and two peers. For case B, four persons who participated in an evolution Spiegel were interviewed, one person from the project team and 3 peers. An overview of all case-respondents can be seen in Table 2 on page 12.

Each respondent was interviewed based on an interview protocol as can be seen in Appendix II.b. The direction of the interviews is formulated based on the aim of the research and prior knowledge gained in this research. The aim of the interviews is to research the effect of the Spiegel based on the perception of participants, for this the protocol focus on what they think about the Spiegel, what they learned from it and how it affected them and their project(s).

All interviews were recorded and from these recordings, each interview was summarized. Summaries of all interviews can be found in Appendix V.

6.1   Results

This section will discuss the results of the interviews with eight respondents based on the topics as mentioned in the interview protocol (Appendix II.b), which are *Experience, Reflection, evaluation and knowledge sharing in general, Perception on the Spiegel, Extend of learning* and *Effect of the Spiegel.*

6.1.1   Experience

All persons interviewed were currently employed at a Dutch public commission organisation and they were all involved in large infrastructure projects. Also, all interviewees had several years of experience in the construction industry and in working at a public commission party.

All interviewees except one were familiar with either the Spiegel or Neerlands diep before participating in a Spiegel selected as a case in this research. Two respondents participated in a Spiegel with their own project and project team and four of the respondents had participated in other Spiegels as peers of which two participated in a project management Spiegel, one participated in a project management Spiegel and an evaluation Spiegel and one participated in another kind of Spiegel.

6.1.2   Reflection, evaluation and knowledge sharing in general

Six of the eight respondents mentioned that not enough reflection and knowledge sharing is taking place in Dutch construction projects. Every respondent mentioned that most projects use some kind of method to assess and evaluate the project during its lifetime, were five of them mentioned that not enough opportunities are created to critically reflect on what is done and what can be learned from this. For example, two respondents mentioned that a plan is made and when it is implemented it is put aside and the focus goes to the daily activities. No reflection took place on what has been done and whether this was according to the original plan. This could be a result of the fact, as mentioned by

two respondents, that it is seen in projects that people have a very narrow view. This, because people are mainly focussed on the current period and not on the next or the previous ones. These respondents mentioned that more regular reflection could be beneficial to broaden the view.

Three of the interviewees suggest that reflection could be made more effective by doing reflection based on multiple perspectives of the project. This means that reflection should take place a process where as many different views on the project are taken into consideration. As mentioned by two interviewees, the view of the contractor is one of these views which could be beneficial. Provided that no critical issues with the contractor are present at that moment.

The interviews show that most of the times knowledge that is needed is available somewhere but it is not known where that knowledge is available or that and how it can be accessed. In most public commissioning organisations, it is seen that most of the knowledge flow happens through people working on different projects by sharing and taking their knowledge and experience with them. Besides this most of the knowledge exchange between projects happen thought workgroups with people of comparable functions. If knowledge exchange is actively promoted it is mainly done within the organisation and not in collaboration with other organisations; this is seen as a missed opportunity.

6.1.3 Perception on the Spiegel

All interviewees have the perception that the Spiegel is useful and that participating in it can give added value. All of them would participate in or apply the Spiegel in hindsight. Where three of the respondents made the side note that the Spiegel should be used in addition to other methods, that are used in projects and not as the only method

The element of the Spiegel that is most valued by the interviewees is the reflection based on multiple perspectives as five of the eight respondents mentioned this. Reasons are given for this in the interviews, one person does not know all about the project and that individual views are subjective. Also, two respondents mentioned that by discussing a project based on the perspectives of the project team members and those of the peers, it is noticed that tunnel vision and ingrained methods and behaviour are broken down. The use of those multiple perspectives is a distinctive element of the Spiegel, although two interviewees mentioned that in the researched Spiegels not all perspectives are addressed. For example, the perspective of the contractor, which did participate in the Spiegels of one respondent. This respondent noted that letting the contractor take part is difficult when there are conflicts in the project. But without his view, a perspective would be missed. Despite that multiple perspectives are seen as valuable, one interview respondents mention that the use of too many too many perspectives could also form a risk. Because with too many perspectives it would be very difficult to get a collective view.

The Spiegel is considered to be a good method for learning by all respondents, five respondents mentioned that this was mainly because the Spiegel lets a project team stand still for a moment to reflect on the project from the individual perspectives and that normally this time is not taken during a project. Half of the respondents noticed that most of the learning happens during the conversations with colleagues or peers and that interaction is crucial for this. Because participants learn in the interaction between people, one respondent made the remark that already in the first steps of the Spiegel lessons are learned, which is was seen as very useful. A risk that is seen by a two of the

interviewees is that because of the dependence on interaction, individual learning is minimalized when the number of participations is very high.

The Spiegel focusses on the project team and its individuals, this is seen a good aspect by three of the interviewees because change is created by those persons and they should change their behaviour. Two of the interviewees concluded that the Spiegel can be effective in creating change because during the process no judging happens. The fact that experiences from different people are shared to benefit each other without giving a judgement on the approach of others is seen as a strength of the Spiegel by two of the respondents.

All interviewees mentioned that the Spiegel is very dependent on the project team and their input. Therefore, the project team must have a very open attitude towards the peers and the process. It was noted by half of the interviewees that this can only be created when all Spiegel participants have a professional, positive and respectful attitude towards each other and that the role of the facilitator can be crucial in facilitating this.

In the interviews, several risks of the Spiegel which focus on the peers are mentioned. Four of the interviewees mentioned that the quality of the Spiegel depends on the quality and diversity of the peers. For example, it was noted that the background and interest of peers can cause them to focus too much on specific aspects and that a diverse group can minimize this negative effect. Another risk that was mentioned by a respondent was that it is difficult for peers to reflect on a project of which they are not familiar with the culture and working methods, especially when other peers are familiar with these.

All interviewees were asked to their perception of the time needed for participating in a Spiegel. They mentioned that the process was intensive but that this time is needed to discuss the project and to gain a certain depth in the conversations during the process. Although it was also mentioned by two persons that after a long day participating in the process not everybody was very focused. All respondents did not think that the process took too much time, this was among other things because people only had to attend the meetings and the rest was (well) organized and facilitated by Neerlands diep.

The focus on the whole width of the project is seen as a strong element of the Spiegel by three respondents. They mentioned that by focussing on the whole project, the interfaces between aspects become clear. However as two respondents noted the choice to focus on the whole project causes the discussion to take place at a high level, most of the persons appreciated this but some mist in-depth conversations on specific topics.

The checklist is considered to be the backbone of the Spiegel by a respondent and four other respondents mentioned that the checklist provides a mutual way to reflect on the whole project by the project team and the peers. They also noted that the checklist forces participants to look from different angles and that it ensures that everybody is talking about the same. Although, during some Spiegel steps there still was some discussion about the formulation of aspects in the checklist as mentioned by two respondents. All interviewees mentioned that the checklist could be improved. Also, a suggestion was to make the checklist online available to be filled in.

The Spiegel uses scores to discuss aspects which could be improved on a project. These scores led in some Spiegels to commotion because people felt offended by the scores and did not understand what

they meant. It was seen that the scoring was a sensitive element of the method, two of the interviewees found that this scoring is unnecessary while two others found it very beneficial.

All respondents made comments about some of the aspects used in the Spiegel. Most comments on focused on the aspects, system integration, conditioning and innovation and on the overlap between aspects and sub aspects. Two respondents mentioned that aspects were not clear or open to interpretation which led to discussions about the meaning of the aspects instead of focussing on the project. A respondent mentioned that conditioning and system integration are terms that are not used within his organisation and another interviewee mentioned that these two aspects are not isolated aspects but are linked and part of all other aspects. Besides overlap between the aspects, it was also mentioned by three persons that the aspects are related to each other. For example, that conditioning and area/stakeholder management cover the same aspects in projects and when project control isn't working that this will affect politics and governance. A person suggested that if these relations could be made clearer it would be easier to understand the bigger picture.

The nature of the innovation aspect is seen as very different than the nature of the other aspects by six interviewees. For example, they mentioned that innovation can be looked at very broad, the way it is looked at upon depends on the perception and that it is difficult to indicate what innovation is. Besides these two persons named that engineering aspects were supposed to be discussed at the innovation aspect but in their opinion that there was not enough room to talk about engineering and technical management at the innovation aspect.

6.1.4   Extend of learning

The interviewees all mentioned that lessons were learned during the Spiegel process but only four of them could name specific lessons that are learned through the Spiegel when this was asked. The Spiegel learned the respondents from the project teams that they had blind spots. Seven of the respondent noted that participants of the Spiegel also learned that there are significant differences in culture and approach between different public commissioning organisations. Another interesting lesson that was named by an interviewee was that from the Spiegel they learned how other people see their project, which differed from their own view. None of the peer respondents could name specifics things they learned, but three of them mentioned that they took home the insights from the Spiegel and combined it with insights from other sources. Two respondents explicitly mentioned that also they learned from the experiences of other peers. Also, one peer respondent mentioned that the Spiegel was very valued to determine his own level compared to others.

Three respondents mentioned that probably persons with persons with more specific functions (like risk managers, controllers, designers, etc) seemed to learn less than people with more general functions (such as project directors, project managers and members of the project management team). But they all mentioned that the presence of those e persons during the Spiegel sessions was seen as crucial, as they provided very useful views and because they are needed for implementing change

In the evaluation Spiegel case, the project team interviewees mentioned that most of the lessons that resulted from the Spiegel were already known and were only confirmed by the Spiegel. These lessons were also already spread within the organisation as confirmed by one of the peer respondents.

The Spiegels results in an end report with lessons learned and participants possibly picked up new insights and lessons. Despite this, none of the persons interviewed has actively spread the knowledge gained from the Spiegel.

6.1.5 *Effect of the Spiegel*

The persons from the project team of case A that were interviewed mentioned that 9 out of 10 of the lessons that resulted from the Spiegel were directly implemented in the project(organisation). As mentioned by the project team respondents of case B, the Spiegel did not seem to have a direct impact on the project as changes were already made before applying the Spiegel. They mentioned that the Spiegel only confirmed the current view and the lessons from the project that were already obtained through other ways. But the insights from the Spiegel were taken into account in the continuation of the project and the corresponding plans.

None of the peer respondents could name direct effects of the Spiegel on their projects. Although they all mentioned that they valued the insights obtained via the Spiegel. Three peers also mentioned that the insights from the Spiegel where used together with insights obtained via other channels to formulate their personal idea on how to manage projects.

All respondents who had participated in a Spiegel with a project team noticed that through the Spiegel, aspects of a project are made more explicit. It was also mentioned in two interviews that the Spiegel was used as a reason to start a conversation with a colleague about some mutual frustration.

6.2 Interviews findings

The original aim of the case-interviews was to focus on what was learned from the Spiegel and what the effect and impact were by focussing on the topics *Extend of learning* and *Effect of the Spiegel.* After conducting the interviews, it is concluded that the original set-up was not sufficient to directly draw conclusions on. To be able to elaborate on the effect of the Spiegel, the results as described in the previous section have to be discussed in a different way than only on the topics from the interview protocol.

As can be read in section 6.1.5, the explicit effect of the Spiegel has only been minimally discussed during the interviews compared to the other topics. This does not directly mean that the Spiegel did not have any effect. Effects of the Spiegel have been discussed at other topics and when reading the interview summaries, effects are mentioned but most of these effects are less explicit.

The interview summaries and results need to be read and analysed from a different perspective to draw conclusions on the effect of the Spiegel. When focussing on the effect of the Spiegel it was seen that the effect could not be generalized for all interviews. Because of this is a new way of classifying the results was conceived based on the knowledge and perception of the author of this thesis.

When classifying the individual interviews results based on g*eneral findings*, *case Findings, kind of Spiegel, role in the Spiegel process* and *function in the project,* interesting effects were mentioned during the interviews. For this, the interviews were re-classified as can be seen in Table 4. Based on these different classifications and by focussing on the effect of the Spiegel the interviews summaries (Appendix V) were reanalysed. The findings from this are presented in this section.

Interview	Case	Spiegel	Role	Function	Additional Spiegel experience
1	A	PM	Project team	General function	Peer in another kind of Spiegel
2	A	PM	Project team	Specific function	
3	A	PM	Peer	Specific function	
4	A	PM	Peer	Specific function	PM Spiegel with own project team
5	B	Evaluation	Project team	General function	Peer in one other PM Spiegel
6	B	Evaluation	Peer	General function	Peer in another PM and evaluation Spiegel
7	B	Evaluation	Peer	General function	Peer in one other PM Spiegel
8	B	Evaluation	Peer	Specific function	PM Spiegel with own project team

Table 4: Respondent overview with classification

6.2.1   General findings

the Spiegel provides participants with new and interesting insights and how to manage construction projects as all interviewed persons named this. Individual respondents mentioned that these insights are already obtained during the process, starting from the first interactive sessions and that valuable insights and lessons are mostly gained during the process which causes the final report to have a minimum effect. Another effect that was noted in two interviews is that people contact each other after participating in the Spiegel, to discuss personal issues or to talk further about certain specific aspects which were only briefly discussed during the Spiegel process.

Three respondents mentioned that the effectiveness of the Spiegel is affected by the input and attitude of the project team and four respondents stressed the need for diverse and professional peers for the Spiegel to be most effective.

In three interviews, it was mentioned that the Spiegel has the most effect on large complex projects which stand in front of a new phase in the project or for a team that faces challenges or difficulties.

6.2.2   Findings per case

In **case A** (project management Spiegel), The Spiegel had a substantial impact on the project. As mentioned by the respondents from the project team, the Spiegel was considered to be very useful for the project team. The project team respondents mentioned that they noticed that they had several blind spots, which they did not see before. The interviews show that the Spiegel resulted in several changes in the organisation and structure of the project. From the lessons, as formulated in the final report, 9 out of 10 were completely executed. Spiegel did affect other projects of the same organisation only on a minimal level, the outflow of the findings only happened through people also working on other projects. An explicit effect that the Spiegel had to another project was mentioned in the interviews was that a project also applied for the Spiegel because the Spiegel was recommended to them. The interviewed peers in case A mentioned that the Spiegel only provided some interesting insights into the other project(organisation) than their own. They also perceived that the effect of the first Spiegel sessions was reduced because the attitude of some project team members was in the beginning not very receptive because they had a defensive attitude and because the project team stressed the uniqueness of the culture and environment of their project and organisation.

In **case B** (evaluation Spiegel), the interviews show that the Spiegel gave more confirmation of already obtained lessons and insights than that new insights and lessons were generated. The project team

respondent mentioned that the Spiegel added some nuances to the already obtained insights and that the project team was strengthened in the way they were working due to the confirmation gained by the Spiegel. Also, the insights from the Spiegel were used in the project plan and gate review of the project. Respondents from the organisation of the project mentioned that during the lifetime of the project, there have been significant changes due to new insights and that the Spiegel has confirmed that these choices were the right ones. For the project team respondent, the biggest new insight from the Spiegel was that the view peers had about their project was completely different from how they viewed the project. The interviewed peers, in this case, did not name any large newly obtained insights through the Spiegel. Two respondents mentioned that an evaluation Spiegel should not be the only way in which a project of such kind should be evaluated.

6.2.3   Kind of Spiegel

As can be seen in the last column of Table 4 several respondents also participated in other Spiegels, they all elaborated on this in the interviews. This gave a more extensive view on the effect and view on the different Spiegel types (and roles). Through this additional comments can be made besides the ones made in the section above on the findings per case.

When looking at the effect of the different kinds of Spiegels it is seen that the impact of the project management Spiegel on projects is larger than that of the evaluation Spiegel. It is seen that the **project management Spiegel** can have a steering effect on a project and that structural changes have occurred after the Spiegel had been applied as this was the case in all project management Spiegels were respondents participated in. All respondent who participated in an **evaluation Spiegel** mentioned that the effect of this on a project is very small. Respondents mentioned that this was mainly because the Spiegel takes place at the end of a project and that the major lessons from a project have already been gathered at the end of a project, which makes that the Spiegel only confirmed those lessons. The effect of the evaluation Spiegel on other projects is also minimal because lessons cannot be directly copied to other projects as respondent who participated a peer in an evaluation Spiegel noted. A respondent mentioned that this is because projects are not only changed based on things that went wrong in other projects. Although the evaluation Spiegel does not have a direct effect on projects, all respondent mentioned that the insights from it combined with other insights are used to steer other projects and formulated your own way of working

6.2.4   Participant role in the Spiegel process

Two distinct groups participate in a Spiegel, project team members and peers. The effect it has on the individual members belonging to these groups differs.

The process of participating in a Spiegel lets **project team members** take the time to stand still, get out the work environment and reflect on and think about what they are doing. Several effects were named by the respondent who participated in a Spiegel as a member of the project team. For example, that persons look at the bigger picture instead of incidents and that it makes them reflect on the project and the initial plans instead of focussing on the current workload. Another effect that was named was that the Spiegel gives insight into the work of your direct colleagues and their view on your own function. A respondent also mentioned that an effect of the Spiegel is that project insights are shared with the whole project team instead of only in functional groups. A negative effect that was mentioned

in an interview is that the Spiegel could offend people when the aspects related to their functions were scored low.

The effect that the Spiegels has on **peers**, seems to be less specific than the effect for project team members as no peer could name an effect in the interviews. They mentioned that their view is broadened because of the insights from the project reflected on and the experiences of the other peers. These insights are taken home but they did not directly affect their own projects. It was mentioned by two peers that the number of useful insights obtained as peer appears to be dependable on the extent to which their own projects or problems show similarities with those of the Spiegel project.

6.2.5 Function in the project

Based on the interviews it can be seen that the effect of the Spiegel is not the same for people that perform different functions on a project. The Spiegels appears to be more useful for people with a **general function** than for people with a more **specific function**. The insights of people with a more specific function are needed to form a complete picture of the project. Also, both types of persons are needed to implement changes based on the lessons and insights of the Spiegel. So, it is useful for the project that people with more specific functions are present.

6.3   Conclusions case-interviews

Eight interviews have been conducted with persons who participated in two Spiegels, all respondents had years of experiences working in a public commission organisations on construction projects. The aim of the interviews was to gain information on what the effect of the Spiegel was. Therefore, the interviews were conducted based on an interview protocol. It can be concluded that the original set-up of the interview was not the most effective way to directly be able to describe findings on the effect of the Spiegel. Extra classifications had to be added to the interviews and the interview results had to be analysed from another perspective.

From the interviews can be concluded that there is currently too little reflection, learning and knowledge sharing within public (project) organisations of construction and infrastructure projects. Methods and procedures are used for more evaluative and review purposes and most of the knowledge sharing happens through people moving to and from projects.

The interviewees consider the Spiegels as a good and effective method for learning in construction projects. Although, learning from the Spiegel is limited to the persons who participated in it. Because most of the times the lessons and insights from the Spiegel are not actively spread. The fact that respondents value the Spiegel and find it an effective method for reflection and learning contradicts with the fact that they have difficulties with naming explicit lessons, insights and effects.

When looking at the two cases analysed, it can be concluded that the effect of the Spiegel on case A was quite extensive where the impact of the Spiegel on case B was minimal. In case A, the Spiegel resulted in several practical lessons and recommendations which were almost directly implemented in the project. In case B, the Spiegel mainly gave confirmation of the already gained insights and lessons. The difference between those case could lie in the difference in Spiegel types used in the case. In case A, a project management Spiegel was applied and from the interviews can be concluded that a project management Spiegel can have as an effect that structural changes are made in the project

(organisation). An evaluation Spiegel does not have structural changes to the project (organisation) as an effect, it mainly provides useful insights. This is related to the fact that an evaluation Spiegel is applied at the end of the project where almost nothing can be changed.

Differences in the effect of the Spiegel on the different participant's groups are seen. Project team members gain more insights than peers; this is because the whole discussion is related to their project context. Through the Spiegel, they get insights into the work and views of their direct colleagues and a shared view on the project is created. Peer got their view broadened by the Spiegel and gained insights into other projects. Also, when dividing the participants based on their function differences are seen in the effect of the Spiegel. Participants with more general functions (such as project directors, project managers and members of the project management team) find the insights more useful than people with more specific functions (like risk managers, controllers, designers, etc). People with more specific functions would like to gain more in-depth and detailed insights. Despite this, their presence during the Spiegel sessions was seen as crucial.

Overall can be concluded that the Spiegel provides valuable and interesting insights for participants on how to manage and organize construction projects, which can be used in their daily work. Another effect the Spiegels has that the project is made more explicit, by discussing the whole project aspects and elements of the project are made clear and explicit. The other effects are very dependent on the type of Spiegel, role in the Spiegel and role in the project. Effects that are seen in this research are that alterations are made to projects and the project organisations after applying a Spiegel. Also, it was seen that people contact each other after participating in the Spiegel, to discuss personal issues or to talk further about certain specific aspects which were only briefly discussed during the Spiegel process. The Spiegel also made participants acknowledge the need for more and regular reflection and feedback.

7 Results of the observational study and survey

This chapter presents the results of the observational study on a Spiegel process (section 7.1) and a corresponding survey (section 7.2). The observational study and survey are performed to gain extra insight into the Spiegel and its process, to aid in answering sub-question E.

For this observational study, the process of one Spiegel has been observed, this Spiegel was selected because it was conducted in the same period as this research. The Spiegel was a project management Spiegel as described in Case C in section 2.3.5 on page 13. To acquire information on the views of persons who participate in this Spiegel process, surveys were sent after several steps of the Spiegel method. An overview of the steps, when they took place and when a survey was sent and to which participant group can be seen in Table 5. In Table 6 an overview is given of the people that attended each Spiegel step.

Step	Meeting	Date	Survey send to (#responses/#target group)
1	Inform project team	10-May-17	-
2	Inform Spiegel team	29-May-17	-
3	Self-reflection	1-Jun-17	Project team (11/13)
4	In-depth interviews	28-Jun-17	Peers (7/8)
5	Peer-reflection	28-Jun-17	
6	Dialogue	12-Jul-17	Project team (12/15), peers (7/8) and facilitators (2/2)

Table 5: Dates of the Spiegel steps of the observation case

#participants	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Coordinator	1		1	1	1	1
Facilitator	-		-	2	2	2
Observer	1		1	1	1	1
Scribe	-	Webinar	1	1	1	1
Project team members	14		13	11	-	15
Peers	-		-	6	6	6
External participants	-		1	2	2	2
Total people attending	16		17	24	13	28

Table 6: Overview of people attending per Spiegel step

7.1 Findings from the observation

An observational study is performed on each of the six steps of a Spiegel as described in Section 2.3.5. For each observation, the same observation protocol, which can be found in 0, was used. The results of the observation can be found in Appendix VI. These results have been analysed per step and topic. Analysing the results in this way does not appear to provide any interesting and presentable results, this analysis can be seen in Appendix VIII. Because of this, the results have been analysed in a different way, each step has been severalty analysed by focussing on the aim, general overview and particularities per step, the findings on this will be given down below.

7.1.1 Step 1 - Inform project team

The aim of the session is to provide information on the Spiegel process and to answer any question about it. Despite the informative aim of the session, it is quite interactive. The facilitator tries to create an open setting by using a personal and flexible approach and stressing anonymity and the importance of the input of the project team members. The participants seem to have a proactive attitude and they seemed to enjoy the session.

Not all aspects were clear to the participants and comments are made about them. It is acknowledged by the facilitator that maybe the aspects should be critically reviewed. The participants suggested that maybe implementation (In Dutch: uitvoering) or financial project control should be an aspect. Beforehand the participants made comments that the process is going to be time-consuming.

7.1.2 Step 2 - Inform Spiegel team

The goal of the session was to explain and provide information on the Spiegel process to the peers. The session was done via a webinar, which could be watched live or watched later. In the webinar, the facilitator provided information on the Spiegel process and it was possible to ask questions via a chat function. The session could be watched by peers, observers and the facilitators.

A minimal number of persons (max 4) were watching the sessions live and only one question was raised during the live feed. This made the session not very interactive. Still, the session provided the necessary and relevant information for the peers. During the session, there were some technical difficulties with the feed and the chat function and also some of the sheets used were not readable.

7.1.3 Step 3 - Self-reflection

The aim of the session is to facilitate the exchange of views and give the total view of the project team on the management aspects and sub aspects. During the meeting, participants get to know things they did not know about other people's function and work. During breaks, people engage in more in-depth conversations about the Spiegel aspects. It is also seen that people ask information and contacts from colleagues because they heard something interesting during the group discussions.

It is noticed that the interest of induvial participants depends on the subject discussed. When looking at the scoring it can be seen that the scores are influenced by the persons who are handling those aspects in the project. Some of the differences in scores occur because of different insights caused by differences in background, function and time worked on the project. It is noticed that the scores of the project manager show the least deviation.

Aspects are interpreted differently by different participants and the definition and meaning of the aspects system integration and conditioning are unclear for most participants. Participants also notice overlap between management aspects and sub aspects. During most of the discussion on specific sub aspects, several topics related to other sub aspects of that management aspect are discussed.

7.1.4 Step 4 - In-depth interviews

This session is supposed to provide insight into the project(team) on the Spiegel aspects. The project team drafts a picture of the project, in which they focus on the positive sides of the project. The questions from the peers are focussed on gaining information, they are not very critical. During the interview rounds, it is observed that some persons talk far more than others, this is especially when

their function is closely related to the discussed aspect. Some individual participants which have less affection for a subject show less interest during a round which focusses on that subject. Besides this, sometimes questions could not be answered because the persons with the right knowledge were not attending the session.

The interviews are guided by facilitators from Neerlands diep, which can be different per Spiegel. In this Spiegel was observed that the facilitators all used a slightly another form for facilitating the interviews. One was more actively engaged in the interview were the others were using a more a steering approach. Also, it was noticed one facilitator followed the checklist less strict than the others. The facilitators also used different seating positions, one of the facilitators placed the peer and project team members at opposite side of the table while the others mixed them. It was also noticed that one of the facilitators had difficulties with the checklist, this mainly on the meaning of aspects. Participants also found some of the aspects, such as condition, difficult to understand and communication and stakeholder/surrounding management were difficult to look at separately.

7.1.5   Step 5 - Peer-reflection

The aim of the meeting was to exchange findings from the interview rounds and form a collective view on all management aspects. Every peer only attended 3 of the 9 rounds, this had as an effect that the exchange of findings and discussions primarily takes place between the persons who were in the interview round linked to the management aspect discussed. Also, people were less engaged during the discussion of aspects of which they did not attend the interview round.

Two peers belonged to the same parent organisation as the project team. One of them provided useful information on the political and organisational context of projects performed within this organisation which added to the discussion.

The creation of the scores seemed a bit random because they were not that well substantiated and only based on the perceptions of one-third of the group. The aspects innovation is experienced as difficult to discuss and score because there was no room for innovation in the project assignment. Besides this, discussions took place about the meaning of managements aspects and what is related to which sub aspects. Also, overlap and causal relations are noted between the sub aspects.

7.1.6   Step 6 - Dialogue

The aim of the meeting was to discuss the findings of both the project team and peers and to discuss how the project management can be raised to a higher level. The interim report with the scores and views of the project team and the peers served as input for the discussions. This report was sent a week before the meeting to all participants. The group of people attending step 6 was very large which made people less focused and less engaged.

The agenda of the meeting was determined by a small session where the group was divided into three groups (project management team, peers and project team members), each group had to determine what they wanted to focus on during the meeting. The views from the separate groups were quite aligned, they all wanted to focus on the same aspects. the meeting was steered to end an hour too early, due to a mistake by the facilitator. After discovering this fact, the remaining time was used to discuss some extra topics.

Not everyone has spoken during the meeting and a few people were speaking far more than others. During the meeting, much interaction took place between the 3 project directors/managers of three projects of the same parent organisation. The conversations and discussions mostly took place on a high aggregation level. During the meeting, it was offered to discuss some interesting specific off-topics at a later moment.

The interim report has caused some disturbance in the project team. The members of the project team did not agree with all things that were written down in the interim report on their functioning. This caused some members of the project team to have a defensive attitude towards the findings of the peers. Also, some were a bit offended by the interim report.

At the end of the meeting the participants reflected on the Spiegel process, the main comments that were made were focussed on the interim report. It was sent without a notice and without a clear explanation of the aim of the interim report. Also, the way things were written down in the interim report affected people personally. Comments were also made about the group composition of the interviews; some people did not feel linked to the aspects of which they attend the interview round. Besides this, the absence of some crucial functions (only one person of the project management team was present during the interviews) during those rounds was experienced as a pity. Overall the Spiegel was valued by both the project team members and the peers.

7.2   Findings from survey

To gain insight into the views of people who participated in the Spiegel from Case C, a survey was conducted as described in section 2.3.5.3. In total 5 surveys were sent, in Table 6 an overview is given on when the survey was sent and to who. In every survey 5 questions were asked, one question in which they had to rate to which extent they agreed with a statement on the extent of learning, an open question asking to new insights, an open question asking which Spiegels elements were appreciated, one question asking what changes could be made to improve the Spiegel and a question where respondents could give other comments or suggestions. In this section, the results of the surveys will be discussed per survey. All survey responses can be seen in Appendix VII.

7.2.1   Survey self-reflection

The survey was sent to project team members after the self-reflection session, of the 13 people who attended the session 11 people filled in the survey. The respondent were asked to which extent they agreed with the statement "I learned much from the self-reflection session" on a scale from 1 to 7. On average, it was rated with a 5,6. Six persons rated it with a 5, two persons rated it with a 6 and the remaining respondents rated it with a 2, 4 and 7.

The survey results show that most new insights are about gaining insight in the work of colleagues. It is noted by the respondents that they learned that people have different interpretations and views on project related subjects. Lessons that were learned during this session focussed on more regular and explicit feedback during the project on the functioning of persons, the team and the project.

The elements of the self-reflection session that were valued the most, were the discussions and conversations about different views, the fact that a moment is taken to reflect on the project and the setting of the session. Six respondents noted that they valued the openness, the freedom and ability

to speak and that everybody was heard. People valued that the session facilitates a way to speak colleagues in a different setting and that it was good for team building.

All respondents except two made remarks about the management aspects and sub aspects in the Spiegel. They were not all clear to everyone, they were interpreted differently by individuals and they could be more focused on the specific project. A clearer explanation of the aspects in the checklist and during the instruction would be valued. The ambiguity of the aspects also influenced the scores, a better guide on how to score would be appreciated. Three respondents also mentioned that the sessions were a bit too short, which affected the ability to have more in-depth conversations about certain aspects.

Two respondents suggested giving other actors such as contractors, clients or other stakeholders a place in the Spiegel. It was also suggested that the score of persons without or with little knowledge about a certain aspect was valued less than that of an expert on this subject.

7.2.2   Survey in-depth interviews + peer-reflection

The survey was sent to the peers after the in-depth interviews and the peer-reflection; of the 8 persons who the survey was sent to 7 people filled it in. The peers rated to which extent they agreed with the statement "I learned much from the in-depth interviews and the peer-reflection" on average with 5.625 out of 7, four persons scored it with a 5, four with a 6 and one with a 7.

The interviews gave the peers insight in the project and its political and governmental situation. The peers all mentioned different new insight they gained. These insights focused on the organisation of the project, the different views of persons and how to ask questions during the interviews.

In the interviews, the openness of the project team was valued by the peers. In the peer-reflection, the diverse views of peers and the discussion on those views were valued. The way both the interviews and the peer-reflection were organized and facilitated was also valued by some peers.

Two respondents noted that the duration of the combined session was quite long. It was also advised that the information provided beforehand would be more fitting to the discussed subjects. One of the peers mentioned that the number of aspects discussed was too much.

A peer appreciated that through the sessions you also met with peers from other organisations and heard about how they did projects. A suggestion that was made by the peers was to determine beforehand in collaboration with the project team on which aspects to focus during the sessions.

7.2.3   Survey dialogue

After the dialogue, a survey was sent to the project team members and one was sent to the peers.

7.2.3.1   Project team

The survey focussed on the dialogue but gave room to make comments about the in-depth interviews and the Spiegel process as a whole. The survey was sent to 15 persons of which 12 responded. The respondent were asked to which extent they agreed with the statement "I learned much from the dialogue sessions" on a scale from 1 to 7. On average, it was rated with a 5,25. Five persons rated it with a 5, four persons rated it with a 6 and the remaining respondents rated it with a 3, 4 and 7.

Three main insights are mentioned in the responses of the project team members. The mentioned that through the process they saw that they should define their core values for their team and for their project, this could be done through a core value session. They also noted that they should make the way things are done and organized in the project more explicit. They also have seen that they should make the relation between the project scope and the interest of the client clearer and reflect on both in relation to each other and not only separate.

The experiences, insights and views of the peers were well valued by the project team. Mainly because it gave an interesting and different view of their project, as this was mentioned in two responses. The form in which the exchanges of findings was done, was also appreciated because this gave the ability to people to explain and discuss findings. This also resulted in a very nuanced view of the project, which was valued.

In the survey responses, several comments on the Spiegel and suggestions for improving the Spiegel were made. These responses mostly focused on the interim report, the group size during the dialogue and the group division during the in-depth interviews. For example, it was mentioned that the interim report had created resistance because the things that were written down in the report were not correct or correctly formulated according to many project team members. It was mentioned that parts of this were related to the absence of certain persons during the interviews rounds. This together with the feeling that the preferences for the interviews round were not completely taking in to account resulted in comments on the division of groups in the in-depth interviews. Also, three respondents commented on the number of people participating in the dialogue because of this not everyone spoke during the discussions. They suggested looking at the opportunity to let the discussion take place in smaller groups. One person made a remark about the active participation of the person who was representing the public client in the project, while he did not attend the other sessions. A less-active role for such a person would be a possibility. Other comments and suggestions were all primarily positive reactions to the process and remarks and suggestions on the interim report. It was advised to have a look at how this was done during this process. One respondent also suggested incorporating a check in the Spiegel to see after a certain period what has been done with the insights and lessons of the Spiegel.

7.2.3.2   Peers

The survey was sent to 8 peers of which 7 responded. The survey questions focused on the dialogue but room was given to make comments about the complete process. The peers scored the statement "I have learned much from the dialogue session" on average of 5.7 of 7, to show to which extent they agreed with the statement. Four of them scored it with a five, one person scored it with 6 and two persons scored it with a 7.

The survey responses show that the peers learned during the dialogue, that people have different views on the same situation and that people interpret things differently. Three respondents mentioned that the dialogue was necessary to discuss the different views (as stated in the interim report) and add some nuance if necessary. Specific lessons that were learned by individual peers were the importance of a scan of the local surrounding, the importance of controlling the scope, a good view on external factors, the importance of delivering a functioning system instead of delivering a physical object and making the culture more explicit.

The peers valued that the dialogue focussed on what could be learned from each other and on the openness of the conversation. The sharing of different views and experiences to discuss points of improvements was also appreciated by the peers.

The peers noted that the most room for improvement was in the interim report and set-up of the dialogue. Changes could be made to how things were written down in the interim report and when and how the report was delivered to all participants. In the dialogue, the discussions were done plenary with all participants. Three peers mentioned that they found it difficult to conduct discussions with so many people at the same time.

A peer Also suggested bundling some of the management aspects because in the current situation too many aspects are discussed.

7.2.4   Survey facilitators

A survey was sent to the two facilitators who were not coordinating the Spiegel and attended the in-depth interviews, the peer-reflection and the dialogue. Both facilitators responded. The survey was aimed to get their view on the Spiegel and the steps they attended.

One of the facilitators found it striking that the scores of the project team and the peers were almost similar. It was also noticed that the Spiegel could be seen as a judgement. In this Spiegel, resistance was observed because the feeling existed that persons were personally attacked in the interim report.

Recommendations were given by the facilitators to improve the steps they attended. The in-depth interviews rounds could be longer and the group division could be improved. The peer-reflection could be revised so that everybody is engaged and not only the persons who attended a certain round. The dialogue could maybe be done in smaller groups, to have a better discussion. Considering the entire process remarks were made on the subjects of discussion, this could be more focused on the project. Also, it was mentioned that many aspects are used in the Spiegel.

One facilitator raised the possibility to increase the learning experience of the peers. This could be done by making it more explicit and asking them beforehand what they want to learn and ask what they have learned afterwards.

7.3   Conclusions observational study and survey

For this research, all steps of a Spiegel have been observed by one person. The aim of this observation was to get a first-hand external view on a Spiegel process. Additionally, the participants of this Spiegel were asked to fill in several mini-surveys during the process. This was done to gather the views of participants on the Spiegel. The aim of these analyses was to use the results of the observational study and the survey to observe the effects during a Spiegel. The observational study and survey provided a rich view on the Spiegel and its effect. To formulate and structure these conclusions, conclusions are drawn on the Spiegel steps and on a general level.

7.3.1   Conclusions per step

After step 1, it seemed that the process and management aspects were clear to the project team. Later, it could be seen that it was not clear what the function of the interim report was, how to score the aspects and how the aspects should be interpreted.

The form of step 2, a webinar, made it more efficient but this also had as an effect that people were less engaged, only a few people watched it live and asked questions. Due to this fact, questions arose in a later stage of the process. Despite this, the session did provide the necessary and relevant information.

Before step 3, the project team members needed to score their projects and send in their scores. This was quite time-consuming and done in an unwieldy way. During the meeting could be observed that scores were subjective and that the meaning of the scores was interpreted differently by participants. Nevertheless, it was a good conversation starter. The discussions and conversations on the aspects were well valued by the project team members. Step 3 provided insight in the work and views of colleagues. Project team members also said that they learned that they needed to organize more regular and explicit feedback on the functioning of persons, the team and the project.

In the interviews in step 4, the attitude of the participants towards each other was very friendly and positive and not many real critical questions were asked by the peers. The interviews gave the peers an interesting insight into the project and its context. In some interviews rounds, people were less engaged because they were not interested or related to the aspects discussed. Some people with functions which were related to some of the aspects were not present during the interviews, such as persons from the project management team. Also, the group division wasn't perfect mainly because persons attended interview rounds of aspects they were not related to and/or interested in. For example, one person gave three preferences and did not attend any of these interviews rounds.

In step 5, a collaborative view from the peers was formulated on the management aspects. Not all peers attended the interview round of every aspect. The discussion on the aspects was primarily between the people who attended the corresponding round. A score was given to each aspect based on the three scores of the people who attended the corresponding round. The scoring seemed also a bit random. The peers had to base their view of the project on the interviews and on some written project information provided beforehand. This information was not linked to all aspects. Step 5 took place on the same day and directly after step 4 which made it quite a long day for the peers and had an effect on their focus at the end of the day.

In step 6, the participants got the opportunity to determine which themes to discuss during the meeting in three groups. The groups were aligned on what they wanted to discuss. 28 people attended step 6. Because of the size of the group not everyone took the same amount of speaking time and people were less focused and engaged. Some people did not say anything at all. Because of the group size, it was not possible to conduct discussions with all participants. Also, the conversations and discussions mostly took place on a high aggregation level which was not interesting for everyone. The interim report in which the scores and views of step 3 (self-reflection) and 5 (peer-reflection) were written down caused some disturbance in the project team. People did not agree with everything that was written down in the report and some felt personally offended and attacked by passages from the report. This had as consequences that people had a defensive attitude during step 6.

7.3.2   General conclusions

The Spiegels process resulted in three main insights for the project team, they should define core values for their team and their project, they should make things in the project more explicit and they should have a closer look at the relation between the project and the interests and intention of the

client. The project team valued the input given by the peers because it gave a different look on the project. The Spiegel gave the peers a good impression on how the project was conducted and organized. Also, the peers learned which elements are important for such a project.

The survey shows that both the peers and the project team members say that they learned from participating in the Spiegel. When looking at the ratings on to what extent they learned from the Spiegel (steps) it is interesting to see that the average scores show that peers learned more (See Table 7). However, the answers to the survey questions show that the project team learned far more from applying a Spiegel.

Survey	Scored by	Average	Min	Max
Survey self-reflection	Project team	5	2	7
Survey in-depth interviews + peer-reflection	Peer	5,625	5	7
Survey dialogue (project team)	Project team	5,25	3	7
Survey dialogue (peers)	Peer	5,714	5	7

Table 7: Survey ratings on the extent of learning

When looking at the scores as presented in Table 7, it can be seen that the scores of both the project team and the peers were higher at the end of the Spiegel process than in an earlier stage. In the observation, it was also seen that the most lessons were formulated in the last step of the Spiegel. Based on this it can be concluded that there is learned during the whole Spiegel process but the most learning happens during the last step.

One element of the Spiegel came back in the observation results of all steps and the results of the surveys, namely the aspects used in the Spiegel to reflect on the project. Many aspects were used to reflect on the project (50) and their interpretation was not clear to everyone. During the meetings, this led to discussions about the interpretation of the aspects which took time from the rest of the meeting. Besides the difference in interpretation, the aspects overlapped with each other and were related to each other which made it difficult to look at them separately and to know where to discuss what. Also, not all aspects were equally relevant to the project discussed.

From the observational study and the survey can be concluded that the Spiegel was valued by the participants and that they gained interesting insights from it. Several imperfections in the Spiegel were observed and noticed.

8 Discussion

Chapters 3 to 7 have given the findings and results of the different analyses that have been conducted in this research. This chapter elaborates on the related findings and results from the different chapters on overarching concepts and elements (section 8.1), on the implications that they have (section 8.2) and on the limitations of this research (section 8.3).

8.1   Discussion on findings and results

This research has given insight into the Spiegel and the effects of this method on participants and their projects. The Spiegel has been researched using triangulation where the Spiegel and its effect is analysed using several research methods. The findings and results of those methods show similarities and contradictions, this section elaborates on those.

Effect of the Spiegel on projects

The aim of the Spiegel is to raise the project performance and management of projects to a higher level. The document analysis shows the Spiegel delivers explicit suggestions for changes to the projects. The survey and observation also show that the Spiegel delivers recommendations to improve the project. The case-interviews show that alterations were made to projects and project organisations after applying a Spiegel. However, the size of the effect of the Spiegel on project differs per Spiegel.

The interviews show that the kind of Spiegel has an influence on the effect it has, a project management Spiegel most of the times lead to structural changes in the project. An evaluation Spiegel mainly gives interesting insights or confirmation of already obtained insights. This is related to the fact that an evaluation Spiegel is applied at the end of a project where no structural changes can be implemented anymore.

The findings from the interviews show that the Spiegel does not lead to changes in projects of peers, the insights obtained are used to reflect on how those projects were organized. Other projects within the organisation of the project where the Spiegel was applied were only minimally affected because insights were only spread via persons working on different projects.

The result of this research suggests that a Spiegel only has minimal effect on projects, it is seen that the Spiegel has an effect on participants (those effects are elaborated on down below). These participants all work on projects and their level of experience and knowledge are raised by the Spiegel. Consequently, this could have an effect on projects.

Effect of the Spiegel on participants

The aim of the Spiegel is that all participants learn during the process. For this to happen effectively the literate study shows that an open and transparent environment is needed and that the participants need to have an open attitude. Therefore, trust is needed and people need to be able to speak freely. In the last session of the observed Spiegel, it was observed that this was difficult due to the size of the group. The observation, surveys and case-interviews also showed that the effect depends on the engagement of participants which was closely linked to their interest in certain topics. People who were not interested or related to a topic were less engaged.

The case-interviews suggest that the Spiegel primarily has effects on the participants. The interviews and surveys show that effects of the Spiegel are that it broadens the views of participants, it gives

insights into the work and views of others and it facilitates the meeting of new people. The Spiegels also lets participants learn how other organisations manage projects and how others look at their work and projects.

The case-interviews and surveys show that the project team members gained far more useful lessons and insights from the Spiegel then the peers did. However, one of the survey questions showed that the peers said that they learned more. The case interviews also showed that the learning effect was bigger for people with more general functions (such as project directors, project managers and members of the project management team) than for people with more specific functions (risk managers, controllers, designers, etc). Still, people with more specific function are needed to increase the learning effect for the group as a whole.

Application of the Spiegel

The Spiegel has been applied on 15 construction and infrastructure projects, 9 times during the project as project management Spiegel and 6 times at the end of the project as evaluation Spiegel. The timing of applying Spiegel such as methods is crucial because when it is done too early, experience or knowledge on the project is not yet available and when it is done too late people are less engaged and important aspects can be forgotten(Newell et al., 2006). Also in an interview with a participant of an evaluation Spiegel was mentioned that it was quite difficult to reflect on the whole project as it started more than seven years ago. These findings suggest that an applying a Spiegel at the end of a long-term project for evaluative purposes can be difficult. The results of the different analyses show that the moment when the Spiegel is applied during a project is related to how effective it can be.

The Spiegel is used as a standalone tool with no follow up as was mentioned in the case-interviews and interview with the developer. The different analyses show that more regular use of reflection and evaluation methods within projects is seen as beneficial. In the interviews, it was also mentioned that it could be placed and planned alongside other methods which were used for reviewing, such as gate reviews, so that it would be more a continuous process than a snap shot.

Scoring of aspects

In the Spiegel, aspects are scored by the project team members. These scores are used to start the conversation with the team during the self-reflection. The peers score the project collaboratively based on their impressions from the provided information and in-depth interviews. The scores of both are presented in an interim report and send to all participants. The developer of the Spiegel mentioned that no value should be attached to these scores and that they should only be used to discuss the different views on the aspects. The interviews showed that this was not always the case, during some Spiegels people felt personally offended by scores that were given to their function. This lead to a discussion on the scores instead of a discussion on the content.

The observational study showed that the way participants scored were not aligned, people had different interpretations on how to score. Differences in scoring were also observed because of differences in knowledge and experience between participants. The observational study also showed that the scoring during the peer-reflection sometimes looked quite random. These points acknowledge the findings from the case interviews, that the scores are not representative for the real-life functioning of the projects on the aspects. This would also mean that scores of different projects cannot be compared. The document analysis showed that even when the scores are compared, no significant differences are noted. Except for the fact that peers score the project on average lower than

the project team. This could be because people are more critical to a project that is not their own. The scores only seem to be useful as a conversation starter but using scores can have negative side effects such as the fact that some people feel offended by the scores.

Spiegels aspects

The Spiegel uses 10 aspects with each 5 sub aspects to reflect on the project (in total 50 aspects). The results from the interviews, the observation and the survey show that the aspects could be improved although the checklist is very useful to discuss projects because it makes participants talk about the same subjects. The different analyses show that the aspects used, cover the whole width of a project. Only not all aspects were understood by every participant, it was not clear how they should be interpreted, overlap was experienced between aspects and it was experienced that aspects were related. In the observational study, it was noticed that because of this significant time was spent on discussing the aspects instead of discussing the content. The survey results and case-interviews also pointed out that not all aspects were equally relevant for the discussed project. The most comments were made about the aspects innovation, conditioning and system integration.

Time needed

Participating in the Spiegel takes approximately 16 working hours divided over several moments. From the interview with the developer, it is noted that he considers that the process is maybe too time-consuming and that there should be looked at whether it can be done in less time. The interview results show that participants find the process intensive and quite long but that the time is needed to come to the core of the project. Some individual steps took quite long which made people less focussed at the end of the day. During the observation, it was experienced that by combining step 4 and 5 on 1 day, the peers were less focussed at the end of the day. This was also mentioned in the surveys. The results of the interviews also show that participants would like to take more time for step 4 to get more in-depth conversations.

The different analyses show contradictions on the time that is needed for participating in the Spiegel. Some people mention that the Spiegel takes too much time, while others mention that this time is needed to discuss everything. Another thing that stood out was the fact the participants commented on the time that the Spiegel would take during step 1 but that this was not seen back in the later stages of the observational study.

Multiple perspectives

The Spiegel makes use of the perspectives of different members of the project team to create a full view of the project. Besides this, the project is reflected by peers from different organisations which also have their own perspective. Literature (for example Ayas & Zeniuk(2001)) shows that peers can aid in reflection on the project because of their different view on the project, they broaden the view of project team members. A risk of using peers is that they have difficulties understanding everything due to organisational and cultural differences between their organisations. It was also mentioned that using academics as peers could benefit reflection methods. In the observation, it was seen that peers from the same organisation could provide extra information on the context of the project, which was helpful during the peer-reflection. In one of the case-interviews, a person mentioned that he could not really aid in the Spiegel because he was the only peer which was not familiar with the organisational culture of the addressed project and critical questions on this topic were not really accepted.

In the case-interviews and the survey, it was mentioned that not all perspectives are included in the Spiegel process. One interview respondent mentioned that the perspective from the contractor was missing for a complete view of the project. Survey respondents proposed to include the contractor, the client and other stakeholders in the Spiegel.

The use of peers is very beneficial for effective reflection. But the groups of peers should be diverse to be the most effective, which means peers from different organisations, with different functions and different backgrounds. Although it could be difficult for people from different organisations to reflect on other organisations because of boundaries due to differences in culture, procedures and organisations (Dawes et al., 2009). However, the observation and interviews show that persons from other organisations are needed to be able to critically reflect on a project (organisation) but including some persons from the same organisation is useful to provide context when needed.

8.2 Implications

This research is interesting for Neerlands diep, academics which focus on project management within the construction sector and for people working in (public) project teams within the construction sector. For this, several implications result from this research for Neerlands diep (section 8.2.1), theory (section 8.2.2) and practice (section 8.2.3).

8.2.1 Implications for Neerlands diep

This research contributed to an increased understanding of the Spiegel and the effect of the Spiegel. This can aid Neerlands diep in assisting their partners in raising their level of project management. From this research, it can be concluded that a project management Spiegel can be best applied during large complex projects when they face challenges or before a complicated new phase of the project.

This research made the views of participants of a Spiegel explicit. These findings can be used to adapt the services of Neerlands diep to the wishes of members of their network. This research shows that there is a need for more reflection in projects. It also shows that people value the exchange of knowledge between projects and organisations but that this is currently only done minimally. Neerlands diep can be the link between the different public organisations.

The findings can be used to improve and increase the effectiveness of the Spiegel. The results of this research show that there is most room for improvement on the following elements; the scoring, the perspectives used in the Spiegel, the interim report, the aspects, the focus of the Spiegel, and follow-up on the Spiegel. Neerlands diep should critically look at the Spiegel with the help of this research, this research suggests the following changes to the Spiegel process:

- Let the project team fill in the scores via an online tool
- Make the project information package that is provided to the peers contain information on and related to all management aspects.
- Ensure that crucial project team members (for example members of the project management team) are present during the Spiegel and ensure that project team members attend every step.
- Change the set-up of the peer reflection (step 5), to engage everyone.
- Limit the maximum number of participants or change the set-up of the dialogue when much people participate.

- Ask peer participants what they want to learn beforehand and ask what they learned afterwards
- After a (half) year, check what is done with the Spiegel outcomes
- Clearly communicate what the intention of the interim report is and when it will be sent to the participants.

The aspects used in the Spiegel are needed as support to discuss a project. However, it is advised to Neerlands diep to critically review them and consider changes. The aspects should be defined more clearly so that there is no discussion on the meaning of the aspects. Also, the relations and overlap between the aspects should be mapped and it should be considered to combine related and overlapping aspects. Furthermore, it could be interesting to see if it is possible to make a choice at the beginning of a Spiegel to focus on some aspects which could benefit the project the most. This could create the opportunity to have more in-depth discussions, a risk of this could be that aspects which are relevant but are not seen as relevant are not discussed.

The observation study has shown that the interim report can cause a disturbance in the project team. To prevent this in the future. It is advised to look at how the interim report is delivered and how things can be written down in the interim report to give an accurate view on the views of the peers and the project team without causing people to feel offended.

It could be beneficial to critically look at the function of the scores and whether they are really needed in the Spiegel or that the same goal can be reached in a different way. Based on this research it is suggested to consider the following options;

- Use the same scoring as before, but clearly explain the intention and interpretation of the scores.
- Don't use any scores but highlight important findings
- Use more qualitative scores such as + and -, where a + could mean to continue as before, +/- should be a focus point and – could mean that changes are needed.

The fact that the project is viewed from multiple perspectives is very good but maybe perspectives could be added for a full view of the project, for example, the contractor, the client or other stakeholders. The contractor has been part of two of the Spiegels. Inviting the contractor could influence the whole setting and the attitudes of participants. However, Kool (2013) has shown that when correctly managed different perceptions can aid in raising the project performance. When selecting the peers, it could also be useful to invite peers from other fields. Ayas and Zeniuk (2001) suggested that it could be useful invite academics as peers.

8.2.2 Implications for theory

Little literature was found on learning methods which primarily focus on improving the project management of projects and sharing knowledge between project managers. This research provides the first insights into the effects of such methods. The results of this research show reflection and knowledge sharing can be very beneficial for construction projects and persons working in the construction industry. As the industry is based on tacit knowledge and experiences of people, the findings of this research suggest that interactive methods are more useful to the industry than when it is only done in a one directional way. This research also shows that context is very important when exchanging experiences and knowledge and that lessons from one project aren't directly transferable

to other projects. This suggests that writing down lessons from one project to benefit others would not be very useful (without any context).

Learning methods in the construction and infrastructure sector have not yet been studied in the way as has been done in this research. This study can be used as starting point for setting up comparable studies. The observational study as performed in this study appears to be unique. Despite the similarities, it appeared to have with other fields of study it could be seen that protocol from those fields were not useful for studying the Spiegel. Future studies could make a protocol which focusses more on what people say besides the attitudes of and interaction between people

8.2.3 Implications for practice

This research shows that projects and employees from public project organisations can benefit from participating in a Spiegel. The Spiegel provides valuable insights for projects and participants and it can lead to positive changes to a project and in project organisations.

The findings of this study show that more reflection and evaluation is needed in construction projects. Currently, there is much focus on the daily routine in public project teams, taking a moment to stand still look back and ahead could benefit projects. Project plans should be regularly reviewed and updated to the needs of the project. This can be achieved by organizing more regular and explicit reflection and feedback in and between public project teams of construction and infrastructure projects.

The findings suggest that knowledge exchange between project and project organisations can benefit the (public) construction projects. Currently, people are focussed on their own project and organisations while looking at other projects and using their knowledge could benefit. Despite that projects are seen as unique and one of a kind, people working on those projects can help each other.

The Spiegel outcomes show that the assessed projects have on a general level similar points that can be improved. The assessed projects are representative for large projects of public commissioning organisation so it is likely that these lessons will be usefully for them too. In those projects, there should be focused on improving communication, interaction or the relation with all stakeholders. This research suggests that project managers should put more emphasis on the integral aspects of projects which affect stakeholders or other projects. Also, projects could make structures, culture and project control more explicit so that there are common grounds on which to prioritize and organize the project.

8.3 Limitations of this research

The research has limitations due to the nature of the research and choices that were made. This section will point out the main limitations of this research. This study is dependent on the different methods that were used for the analysis, the main limitations of these methods will be discussed next to the general limitations of the research.

8.3.1 General limitations

The main limitation of this research is that it is unknown which effects would have been seen on projects and on project team members if the Spiegel was not applied. Because this research is lacking a zero measurement it is very difficult to give a substantiated conclusion on the effect of the Spiegel

with full certainty. All effects that are observed could maybe be related to other causes than to the use of the Spiegel. Due to the nature of construction projects it is not possible to compare projects were the Spiegel has been applied and where it has not. This makes it therefore impossible to answer the main research question with full certainty. However, this is resolved by using triangulation. By researching the effect from different angles and comparing those results it is possible to give a substantiated conclusion on the effect of the Spiegel.

A limitation of the research is the explorative, qualitative and global nature of the research and therefore the inconclusiveness of the results. Based on the results it is not yet possible to give an explicit conclusion on what the direct effect of the Spiegel is. However, this research has shown that the effect depends on many factors and that the effects differ per project, so it is even questionable if there is one general specific effect the Spiegels has. This research has shown the general effect of the Spiegel and specific effects it could have.

8.3.2   Limitations of the literature study

The literature study only looked at what scientific literature says about specific elements of the Spiegel. For this, mainly management and engineering publications were researched in this study. This causes the literature study to be focused and narrow. While other fields of study are as much related to the studied topic. As the Spiegel is very depended on persons and their interactions it would very beneficial to look at the Spiegel from the social science perspectives. The study should focus on what theoretically the best way is to learn and transfer knowledge in a Spiegel such as setting.

8.3.3   Limitations of the document analysis

The qualitative document analysis was done by reading and scanning the reports and focussing on a few selected elements. Coding could have been used to draw more substantiated conclusions. Besides this, a quantitative analyse was done on the scores that are presented in the reports, but the findings of the research point out the scores of one Spiegel cannot be compared, let alone from different Spiegels. So, it is not possible to attach much value to these results.

8.3.4   Limitations of the case-interviews

A limitation of the case-study is that the two cases cannot be directly compared because a different kind of Spiegel was used. Also, the fact that the respondents were selected to be as diverse as possible made it more difficult to compare and relate the different interview findings. Based on the selected cases and respondents no conclusions can be drawn on what the explicit effect is, but still the results give a very extensive view on the Spiegel. Also, the view of project team members in case B is limited as only one person from the project team was interviewed. This because one project team member of case B could not participate in an interview and there was no replacement due to understaffing in the project. More cases and respondents could give a more substantiated answer on the research questions. Also, more data could add to the diversity of the answers.

8.3.5   Limitations of the observational study

For the observational study, only one case was analysed, which makes it impossible to compare the results directly to other cases. Also, the case for the observation has been chosen because it was the only Spiegel applied during the period of this research. When comparing the observation results with

the results from the other methods similarities are seen and the nature of the project is similar to other projects where the Spiegel has been applied. The results can be seen as representative because of this.

An observational study of this kind has not been performed until now, so no guide was available on how to set-up and perform the study. In the research, the conclusion is drawn that the observation protocol was not perfect, future studies should revise this protocol. Despite this, the used protocol was useful for focussing on the same aspects during observation of the different steps of the Spiegel. Also, the observation was performed by one person, extra observers would increase the reliability of the study (Yin, 2003, p. 93).

8.3.6   Limitations of the Survey

The survey consisted of, five questions of which one was a closed question and five were open questions. If more questions were asked more and more in-depth data could be gathered. Also, in a survey, it is not possible to clarify the responses given. Interviews would be more suitable for this, but conducting interviews with all respondents was too time-consuming for this study. Although the survey was filled in anonymously, it is still possible that the respondent's answers are biased.

9 Conclusions

This chapter will provide an answer to the main research question by answering each of the sub-questions (section 9.1) and will outline on recommendations following from this research (section 9.2).

This research sought to investigate the effectiveness of the Spiegel to understand the influence the Spiegel has on the project management and project managers of public construction and infrastructure projects. This was done by researching the Spiegel and the effect it has on members from public project teams and their projects from different angles using different methods to answer the main research question.

The main research question was defined as followed:

> **What is the effect of the Spiegel on participants and their projects?**

This research question may be answered by analysing the effect of the Spiegel from different perspectives.

9.1   Conclusion

In this section, the sub-questions of this research will be answered separately. Each of these answers will together provide the answer to the main research question, which will be presented at the end of this section.

A.   What is the Spiegel and how did it originate?

The Spiegel is a method that uses interactive team meetings to facilitate reflection, learning and knowledge sharing for project team members and peers from other projects and organisations. Several different Spiegels exists but the main ones are the project management Spiegel and the evaluation Spiegel. The project management Spiegel focusses on improving the management of a project and is applied during the project and the evaluation Spiegel focusses on improving project management of other projects and is applied at the end of a project. Both methods use six distinct steps of which self-reflection, peer-reflection and a dialogue based on the two reflections are the most important. In these steps, the exchange of views and experiences are used as input for discussions to improve project performance and exchange knowledge. The Spiegel has been developed to reflect on construction and infrastructure projects for learning and knowledge sharing purposes within public project teams. Furthermore, the Spiegel has been primarily based on practical knowledge of a limited number of project management professionals from KING, later known as Neerlands diep.

B.   What is the theoretical effect of elements of the Spiegel?

Both consideration of the intended learning environment (open and transparent) and experiential learning are crucial factors in effective learning. Also, the use of peers is acknowledged in literature to be effective for reflection, although the effectiveness of using peers could be limited due to differences in organisation, culture and procedures. A neutral facilitator, such as the one present in the Spiegel, is very beneficial for amplifying the learning effect of interactive meetings. The theoretical effect of the deliverables from the Spiegel is minimal because these deliverables and the outcomes are not actively spread to other projects managers and organizations. The separate Spiegel elements are theoretically effective for learning and knowledge sharing. However, based on literature it is not possible to link the

elements to explicit effects. It can, therefore, be concluded that the effect of the Spiegel cannot be determined based on literature, despite the fact that such literature shows that the Spiegel elements are theoretically effective for learning and knowledge sharing.

C. What is the potential effect of the Spiegel based on Spiegel reports?

The final Spiegel reports contain lessons and recommendations obtained in the Spiegel process which could improve project performance and would lead to structural changes when applied. Most lessons focus on aspects related to communication, interaction or the relation with internal and external stakeholders. Another lesson that participants learnt through the Spiegel was the added value of reflection and knowledge sharing, which could, in turn, encourage them to engage in reflection and knowledge sharing on a more regular basis. Based on the recommendations in the Spiegel reports, the projects would likely make explicit and deliberate adjustments to structures, culture and project control methods after having applied the Spiegel.

D. What is the effect of the Spiegel according to Spiegel participants?

Interviews with Spiegel participants demonstrate that they value the Spiegel and find it an effective method for reflection and knowledge sharing. On a general level, it is evident that the Spiegel gives new insights on how to manage projects, puts people in contact with each other and brings them together, as well as that it allows the project team to come to a shared view on the project. In one case, the Spiegel resulted in several practical lessons and recommendations which were almost directly implemented in the project. By contrast, in the other case, the Spiegel resulted in a few new insights and in confirmation of the insights and lessons that had already been gained during the project.

Two types of Spiegels have been analysed in this research. It can be concluded that an effect of the project management Spiegel is that structural changes are made in the project organisation, whereas the effect of an evaluation Spiegel is that it mainly provides useful insights for that participants.

As mentioned above, the Spiegel provides valuable and interesting insights for participants. These insights mostly focus on communication, collaboration, and integration with and between sub-projects as well as internal and external stakeholders. The number of useful insights obtained from the Spiegel differs per participant group. Project team members generally gain more useful insights than peers. For example, project team members obtain insights in the work of their direct colleagues.

The Spiegel has an effect on projects and Spiegel participants, but this effect differs per Spiegel. It can thus be concluded that the effect is very dependent on the project assessed, the input of the participants and the type of Spiegel. Further, the role that participants perform in the Spiegel and the function they have in a project influences the effect a Spiegel has on them.

E. What effects can be observed during the Spiegel?

It is observed that the main effect of the Spiegel is that it provides a way to reflect on projects and for participants to gain new insights. It has been noted that the effect of the Spiegel is different per participant group. Project team members gained insight into the work and views of colleagues and learnt about the aspects through which they could improve the project and the functioning of the project team. An additional effect of the Spiegel is also that project team members get a different view on their project and the functioning of the project team. The peers had an extended impression of how another project than their own was conducted and organised and also learnt which elements are important for such a project. The survey showed that both the peers and the project team members

learnt from participating in the Spiegel, but also that the extent of learning differs per individual. From the Spiegel, practical lessons were distilled, which could benefit the project and project team. The main lessons arising from the observed Spiegel focussed on defining core values for the team and their project, making details in the project more explicit, and looking at the relationship between both the project and the client's interests and intention.

What is the effect of the Spiegel on participants and their projects?
The results of this research show that the Spiegels have an effect on participants and their projects. The effect a Spiegel has on participants has been shown to differ between persons who participate as project team member and persons who participate as a peer. Also, the effect of the Spiegel on projects differs when the Spiegel is applied as a project management Spiegel on ongoing projects, as opposed to as an evaluation Spiegel on ending projects that are ending. The effect of the Spiegel can be best described by discussing the effect it has on project team(s), peers, ongoing projects and projects that are ending, an illustration of which is given in Figure 10.
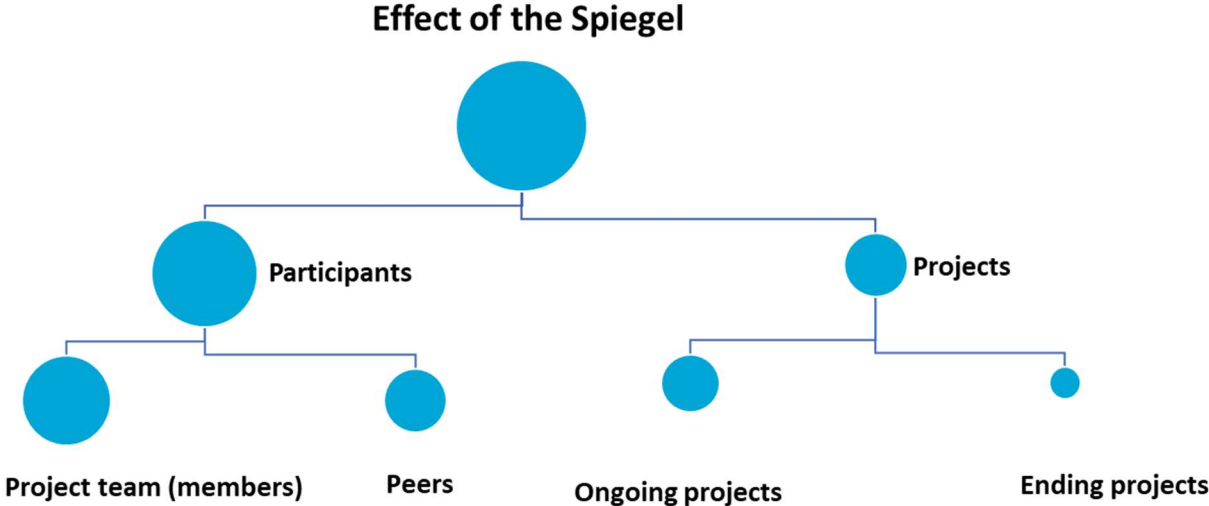

Figure 10: Effect of the Spiegel

It can be concluded that the effect a Spiegel has on participants is that it gives different views and insights on how construction projects are organised and managed. These insights can be used for improving the functioning of individuals, project teams, and projects. The Spiegel also puts people from different projects and organisations in contact with each other, which is useful for gathering knowledge in the future.

For project team members who participate in the Spiegel, the Spiegel has the effect of generating a shared view on the project, giving them insight into the work of their direct colleagues, offering a different view on their project, and providing lessons to improve the functioning of the project team. For project teams, it is one of the few moments in which they are able to stand still and take the time to reflect on what they are doing, purely because participating in a Spiegels actually forces them to do so.

Peers who participated in the Spiegel mainly learnt how the assessed project is conducted and organised, and how this should be done. Besides this, the Spiegel allows them to learn on how other peers manage projects. All insights and newly acquired knowledge did not have a direct effect, yet

despite this, it increased the knowledge of peers, which could, in turn, be beneficial for their current or future projects.

The effect of the Spiegel on projects differed very much per project, because of differences in nature of the project, culture of the project organisation, surroundings and stakeholders. The findings of the research show that a Spiegel has the most impact on project performance when applied on an ongoing, large, complex infrastructure project that faces challenges or is moving to a next phase.

The Spiegel is applied to ongoing projects as a project management Spiegel. This research has shown that when a Spiegel is applied to ongoing projects, it results in several suggestions to alter the project or project organisation to increase the performance of the project. Consequently, it has been observed that these suggestions are implemented and the structural changes are made to the projects and project organisations. It can be concluded that these changes had a positive effect on project performance, therefore that the Spiegel itself has a positive effect on the project performance when applied to ongoing projects.

In the context of projects that are ending, an evaluation Spiegels is applied, the intention is to evaluate projects with the Spiegel and to learn from it, in order to improve other projects. However, a Spiegel does not result in any explicit effects on other projects, this is due to differences between projects. It can be concluded that a Spiegel applied to projects that are ending does not directly affect other projects.

Given the set-up and boundaries of this research, it can be concluded that the Spiegels have an effect on participants and their projects but that the effect of the Spiegel is larger on participants than on projects. Between the different participant's groups, the Spiegel has more effect on participants from the project team then persons participating as a peer. In the effect of the Spiegel on projects, differences can also be observed, as the Spiegel has far more effect on ongoing projects than on ending projects that are ending.

9.2 Recommendations

This research provided interesting insights and new knowledge on the effect and effectiveness of the Spiegel. It also gave a view on reflecting, learning, and knowledge sharing within the construction industry. Based on these results, the below recommendations have been formulated for Neerlands diep (section 9.2.1) and for practice (section 9.2.2). In addition to this, further research is also recommended (section 0).

9.2.1 Recommendations for Neerlands diep

Two main recommendations for Neerlands diep resulted from this research; *revise the Spiegel* and *structurally evaluate each Spiegel*. This research has shown that the Spiegel can be improved on many points. The findings of this research can be used as input and a starting point from which to critically assess the Spiegel and make alterations. Recommendations and suggestions for alterations are presented in chapter 8.2.1 on page 52.

Currently, the Spiegel is a snapshot of which the effects are not clear. The Spiegels should be structurally evaluated with the participants by asking them afterwards what could have been done differently. This could increase the effectiveness of the Spiegel. Besides this, the Spiegel should have a structural follow-up which checks what has been done with the Spiegel outcomes, as this would make

the effect of the Spiegel more explicit. It would also make the Spiegel a more continuous process, which is very beneficial for the participating projects

9.2.2 Recommendations for practice

This research has shown that public project teams in the construction and infrastructure sector can benefit from using reflection and knowledge sharing. It is advised to organise reflection on a regular basis within projects and project teams. Peers from other projects and organisations can contribute to these processes to create new insights and gather external knowledge. More knowledge exchange between different public commissioning organisations could benefit the industry.

The findings of this research suggest that most construction and infrastructures projects and public project teams can improve by focussing on improving communication, interaction, or the relationship with stakeholders. This research suggests that project managers should put more emphasis on the integral aspects of projects which affect stakeholders or other projects. Also, projects could make structures, culture, and project control more explicit so that there is common ground upon which to prioritise and organise the project.

9.2.3 Recommendations for further research

This research aimed to study the effectiveness of the Spiegel by studying the effect of the Spiegel. The chosen perspective, focus on the Spiegel, and focus on the standard Spiegel process each could have affected the outcome. Therefore, three research directions are advised to give a complete answer to the main research question.

9.2.3.1 Researching the effectiveness of the Spiegel from a social science perspective

For this research, the decision was taken to examine at the Spiegel from an engineering and management perspective. This is due to the fact the Spiegel is applied in an engineering and management context. But this research has shown that the Spiegel is very dependent on social interactions and that the attitude of participants influences the effect the Spiegel has. Therefore, it is advised to look at the Spiegel and its effect from a social science perspective. In any such research, the focus should be on the influence of people and their social interactions on the ultimate effectiveness of the Spiegel, as well as how this effect can be increased by using the knowledge available in social science.

9.2.3.2 Researching the effect of the Spiegel within the other methods used

This research has only looked at the effect of the Spiegel as a stand-alone method. However, the interviews showed that not all insights gained and alterations that were made could be attributed to the Spiegel. This was because projects and the participants also used other methods for reflection and evaluation (such as gate reviews) and knowledge was also shared via functional groups and meetings within the organisation. Future research should investigate what the effect of the Spiegel is within the overall context of the whole suite of methods used and how the effect of these other methods and processes relates to the effect of the Spiegel. This research could lead to a framework on what the effect of each method is, how they can amplify each other's effectiveness, as well as how and when each method should be applied in construction projects and organisations.

9.2.3.3 Researching effect of the Spiegel when the contractor participates

The findings of this research suggest that adding more perspectives to the Spiegel would enlarge the effect of the Spiegel. For example, inviting the contractor to participate in the Spiegel was mentioned by several interview and survey respondents. In the past, the contractor has taken part in two Spiegels and it would be very interesting to see what the differences were between those Spiegels and how this affected the Spiegel. For this, it could also be possible to use a future Spiegel in which the contractor participated. In this case, it would be advisable to use an observational study similar to the study performed in this research.

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Appendix I.   Vocabulary list

Dutch terms	translation/explanation
Projectmanagement Spiegel	Project management Spiegel
Evaluatie Spiegel	Evaluation Spiegel
collega-spiegelteam	peers
Scorelijst/gespreksagenda	checklist
Eindrapportage	Interim report
Tussenrapportage	Final report
Zelfspiegel	Self-reflection
Collega Spiegel	Peer-reflection
Slot dialoog	Dialogue
Politiek & Bestuur	Politics & government
Organisatie en besturing	Organisation & control
Cultuur	Culture
Omgevingsmanagement	Area/stakeholder management
Communicatie	Communication
Innovatie	Innovation
Projectbeheersing	Project control
Systeemintegratie	System integration
Contractering	Contracting
Conditionering	Conditioning
Basis	base
werking	functioning
risico's	risks
De mens	People
Specifiek aspect/onderwerp	Specific subject
Rijkswaterstaat	Dutch highway and water agency
ProRail	Dutch rail agency
Rijksvastgoedbedrijf	Dutch real estate agency
Scribent/analist	Scribe

Table 8: Vocabulary list

Appendix II.   Interview & observation protocols

This appendix presents the protocols used for the interview with the developer (Appendix II.a), the case-interviews (Appendix II.b) and for the observational study(0). The interview protocols are based on Baarda and de Goede (2012).

a. Interview protocol developer

Meenemen naar interview

- Opname apparatuur
- Interview protocol
- Notitieblok
- Pen

Interviewer

Creëer een open en vriendelijke sfeer, vraag door, wees kritisch, vraag om voorbeelden en verhelderingen, hou focus op onderwerpen die nuttig zijn voor het onderzoek en houd de tijd in de gaten. Schrijf tijdens of na het interview algemene observaties op of ideeën naar aanleiding van het interview.

Introductie onderzoek en interview

- Bedanken voor de medewerking
- Afstudeeronderzoek naar leren en kennisdelen in projecten en projectorganisaties op basis van de Spiegel methode.
- Onderzoek in samenwerking met Neerlands diep en de TU Delft.
- Antwoorden worden anoniemen verwerkt en vertrouwelijk mee omgegaan.
- Toestemming vragen voor opnemen interview om het naderhand te kunnen verwerken.
- Vragen of respondent bereid is om feedback te geven op de samenvatting van het interview en deze te valideren.
- Benadruk de waarde van het interview voor het onderzoek.
- Het onderzoek richt zich op percepties dus er zijn geen foute antwoorden.

Vragenlijst

1. Ontstaan/ontwikkeling spiegel
   a. Wat was de aanleiding voor het ontwikkelen van de Spiegel?
   b. Waar is de spiegel op gebaseerd?
   c. Met welk doel is de spiegel opgesteld? *(Leren van de deelnemers of van de organisaties?)*
   d. Zijn er andere methodes die hetzelfde effect proberen te bereiken? Heb je hier inspiratie uit gehaald
2. Spiegel proces
   a. Hoe worden de collega's geselecteerd?
   b. Hoe scoren de deelnemers? / Hoe ziet de vragenlijst eruit?
   c. Hoe scoren de collega's collectief of individueel?
   d. Waarom scoren de collega's niet altijd (volledig)?
   e. Wat heeft de prioritering voor invloed op het proces?
   f. Wat is de rol van de facilitator in het proces?
   g. Wie leert er meer de individuen of de organisatie?

3. Spiegel documentatie
    a. Waarom zijn niet alle projecten gescoord op dezelfde manier?
    b. Hoe wordt de relatieve score bepaald?
    c. Wat wordt er met de rapporten gedaan? worden deze actief verspreid?
4. Perceptie ontwikkelaar/facilitator
    a. Wat zijn de voordelen/sterkte punten van de Spiegel?
    b. Wat zijn de nadelen/tekortkomingen van de Spiegel?
    c. Heeft de Spiegel het gewenste resultaat?
    d. Is 4 dagdelen genoeg tijd om de Spiegel in zijn huidige vorm uit te voeren?
5. Feedback onderzoek/algemeen
    a. Wat zou jouw focus zijn in het onderzoek?
    b. Welke vraag ben ik vergeten te stellen?
    c. Heeft u zelf nog vragen/tips?

Afsluiting

- Bedankt voor de medewerking
- Samenvatting van het interview stuur ik zo snel mogelijk op voor feedback en validatie

b. Interview protocol case-respondents

Voorafgaand aan het interview

- Spiegel rapporten betreffende de casus doorlezen.
- Respondenten een mail sturen met het doel van het onderzoek en het Spiegel eindrapport.
- Noteer naam en functie ten tijde van het Spiegel proces

Meenemen naar interview

- Opname apparatuur
- Interview protocol
- Notitieblok
- Pen
- Spiegel rapporten betreffende de casus

Interviewer

Creëer een open en vriendelijke sfeer, vraag door, wees kritisch, vraag om voorbeelden en verhelderingen, hou focus op onderwerpen die nuttig zijn voor het onderzoek en houd de tijd in de gaten. Schrijf tijdens of na het interview algemene observaties op of ideeën naar aanleiding van het interview.

Introductie onderzoek en interview (5 Min)

- Bedanken voor de medewerking
- Afstudeeronderzoek naar leren en kennisdelen in projecten en projectorganisaties op basis van de Spiegel methode.
- Onderzoek in samenwerking met Neerlands diep en de TU Delft.
- Antwoorden worden anoniemen verwerkt en vertrouwelijk mee omgegaan.
- Toestemming vragen voor opnemen interview om het naderhand te kunnen verwerken.
- Vragen of respondent bereid is om feedback te geven op de samenvatting van het interview en deze te valideren.

- Benadruk de waarde van het interview voor het onderzoek.
- Het onderzoek richt zich op percepties dus er zijn geen foute antwoorden.

Vragenlijst (50 min)

1. Ervaring (5 min)
   a. Welke projecten ben u in het verleden betrokken bij geweest en in welke functie?
   b. Wat is uw ervaring met de Spiegel methode?
2. Reflectie, evaluatie en kennis delen in het algemeen (10 min)
   a. Hoe wordt er gereflecteerd uw huidig project/ in de organisatie?
   b. Hoe wordt er geleerd binnen en tussen projecten?
   c. In welke mate zou er gereflecteerd en geleerd moeten worden in projecten?
   d. Hoe kan reflecteren bij dragen tot betere projecten?
   e. Op welke manier zou er geleerd/reflecteert moeten worden?
3. Perceptie spiegel (10 min)
   a. Wat heeft u als nuttig bevonden aan het Spiegel proces? (en wat vond het team nuttig?)
   b. Wat zou er veranderd kunnen worden aan de Spiegel methode?
   c. Welke management aspecten vindt u het meest relevant?
   d. Welke aspecten mist u in de Spiegel methode?
   e. Zou u de spiegel in een volgend/huidig project weer willen toepassen?
   f. Wanneer zou de Spiegel toegepast moeten worden in een project?
   g. *Wat vond u van de rol van de facilitator, had deze iets anders kunnen doen?*
   h. *Wat vindt u van de tijd die benodigd is voor het spiegel proces?*
4. Mate van leren (10 min)
   a. Wat heeft u geleerd van de Spiegel? Geef voorbeelden
   b. Wat heeft u/uw organisatie gedaan met de opgedane lessen en inzichten?
   c. Heb je de eindrapportage nog weleens teruggekeken?
   d. Wat hebben de collega's geleerd van u?
5. Effect van de Spiegel op project en projectorganisatie (10 min)
   a. Wat hebben de geleerde lessen voor invloed gehad op het project/de organisatie? Geef voorbeelden?
   b. Wat is er concreet gedaan met de lessen uit het Spiegel proces?
   c. Hoe heeft u lessen geleerd in het Spiegel proces doorgegeven?
   d. Wat neem je mee uit de Spiegel naar een volgend project?
6. Tot slot (5 Min)
   a. Welke vraag ben ik vergeten te stellen?
   b. Heeft u nog vragen?

Afsluiting (5 min)

- Bedankt voor de medewerking
- Samenvatting van het interview stuur ik zo snel mogelijk op voor feedback en validatie

c. Observation protocol

This section presents the observation protocol used for the observational study. This observation protocol is based on the "General guide for observations in knowledge networking in the public sector" (Pardo et al., 2006) and "Reformed Teaching Observation Protocol" (Piburn et al., 2000) and "in- court observation protocols" (Smith & Tull, n.d.).

Meenemen naar observatie

- Observatie protocol
- Notitieblok
- Pen

Observator

Blijf zo veel mogelijk op de achtergrond om het proces niet te verstoren maar wees wel benaderbaar. Blijf om je heen kijken en focus je niet op een persoon, probeer een zo goed mogelijk totaalbeeld te kirgjen. Indien mogelijk, stel vragen die verhelderend zijn voor het onderzoek op "dode" momenten. Schrijf tijdens of na het interview algemene observaties op of ideeën naar aanleiding van het interview.

Observatielijst

1. Algemeen
    a. Doel van de meeting?
    b. Hoeveel deelnemers zijn er?
2. Context
    a. Wat is de locatie van de Spiegel-sessie?
    b. Wat is de opstelling?
    c. Hoe zijn de deelnemers en facilitators gepositioneerd?
3. Sociale interacties
    a. Hoe spreken de aanwezige elkaar aan gedurende de sessie?
    b. Hoe spreken de aanwezige elkaar aan buiten de sessie om?
    c. Hoe is de non-verbale communicatie tijdens de sessie?
4. Houding
    a. Word er door elkaar heen gepraat?
    b. Heeft iedereen een actieve houding?
    c. Word de persoon aan het wordt aangekeken?
    d. Wat is de houding van de deelnemers?
    e. Hoe wordt er gereageerd op andermans uitspraken? (Bevestigend?)
5. Facilitator
    a. Wat is de houding van de facilitator?
    b. Word alles duidelijke uitgelegd?
    c. Wat is de toon van de facilitator?
6. Openheid
    a. Komt iedereen (evenveel) aan het woord?
    b. Worden mensen beperkt in hun uitspraken?
7. Tijd
    a. Was iedereen op tijd?
    b. Hoeveel spreektijd heeft iedereen?
8. Aanvullende bevindingen
    a. Wat valt er nog meer?
    b. Worden er op- of aanmerking gemaakt op het Spiegel proces?

Appendix III.   Mini-survey

In this appendix, the mini-survey that was to participants of the Spiegel used in the observational study. The Survey was created using "google forms", the survey questions are inspired by questions from course evaluation from the TU Delft. In total 5 surveys were sent to the Spiegels participants, each individual participant was asked to fill in a maximum of two surveys. For each survey, the same set-up was used, 5 questions asking the same questions on different parts of the Spiegels, in Figure 11 the general set-up of the survey questions can be seen. In Table 9 an overview is given of the five surveys, when they were sent, who they were sent to and which words were filled in in the blanks in the general interview set-up. A link for filling in the surveys was sent via mail to the target participants, a week later a reminder was sent to them. In Figure 12 a snapshot is given of the first survey as an example.

---

1.   Ik heb veel geleerd van de ……

Volledig mee oneens   1   2   3   4   5   6   7   *volledig mee eens*

2.   Welke nieuwe inzichten heeft u gekregen tijdens de (…..)?

Antwoord

3.   Welke aspecten van de (…..) kon u erg waarderen?

Antwoord

4.   Zijn er aspecten van de (…..) die naar uw mening anders hadden gekund? Zo ja, welke?

Antwoord

5.   Heeft u nog overige opmerkingen of suggesties met betrekking tot (…..)?

Antwoord

Figure 11: General set-up of the survey questions

Survey	Send after	Send to	…….
1	Step 3	Project team members	Zelfspiegel
2	Step 4&5	Peers	Diepte-interviews en de Collega Spiegel
3	Step 6	Project team members	(Diepte intervieuws) en slotdialoog
4	Step 6	Peers	Slotdialoog
5	Step 6	facilitators	Spiegel

Table 9: Survey overview

Figure 12: Snapshot of mini Survey step 3

Appendix IV.   Quantitative results document analysis

This appendix gives graphical illustrations of the main (significant) results of the quantitative analysis on the aspects scores of the Spiegel reports.
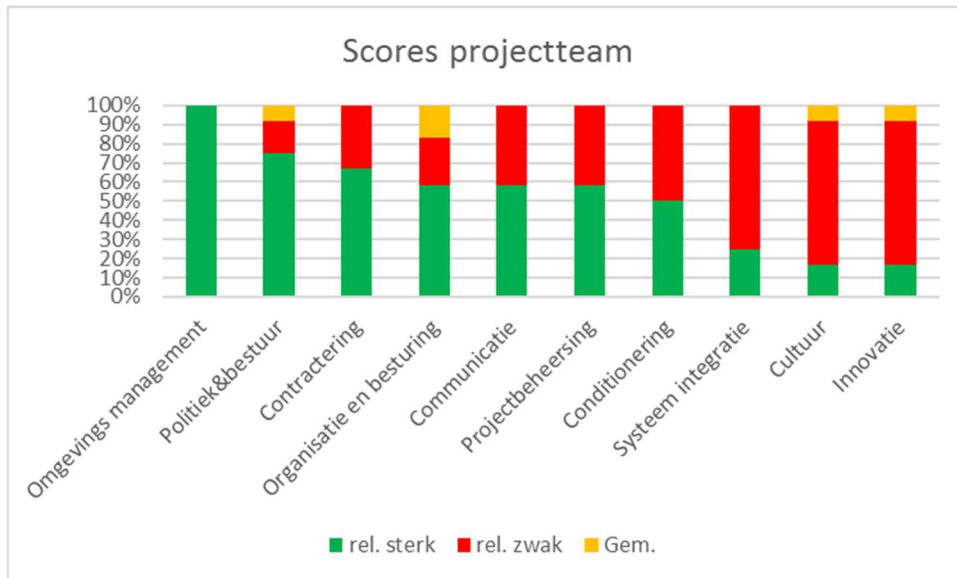

Figure 13: Relative scores of the project team from all reports
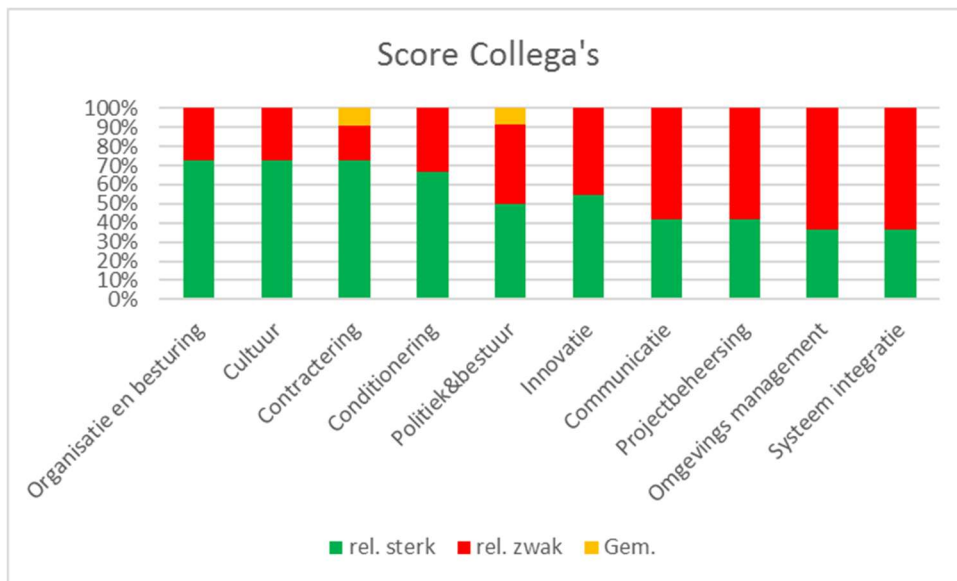

Figure 14: Relative scores of the peers from all reports
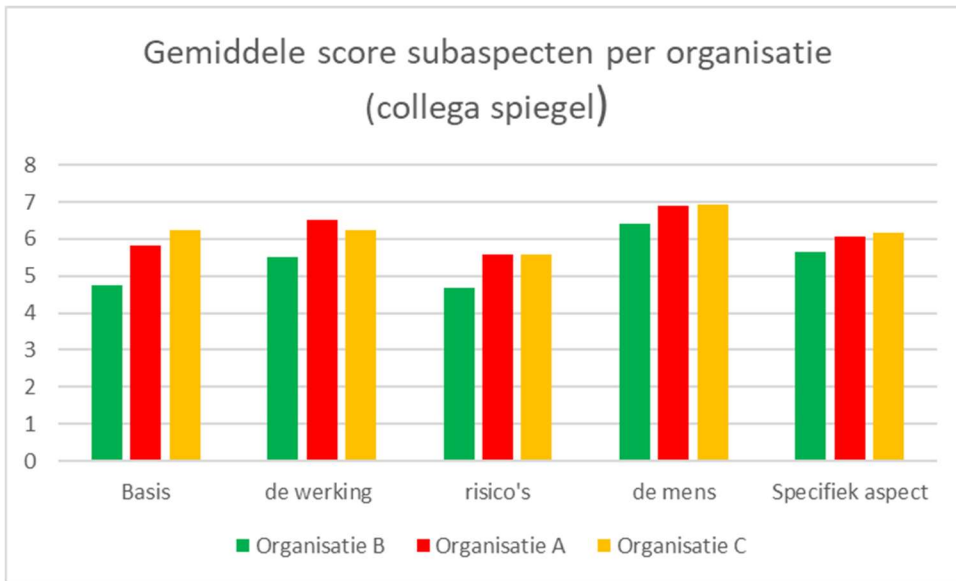
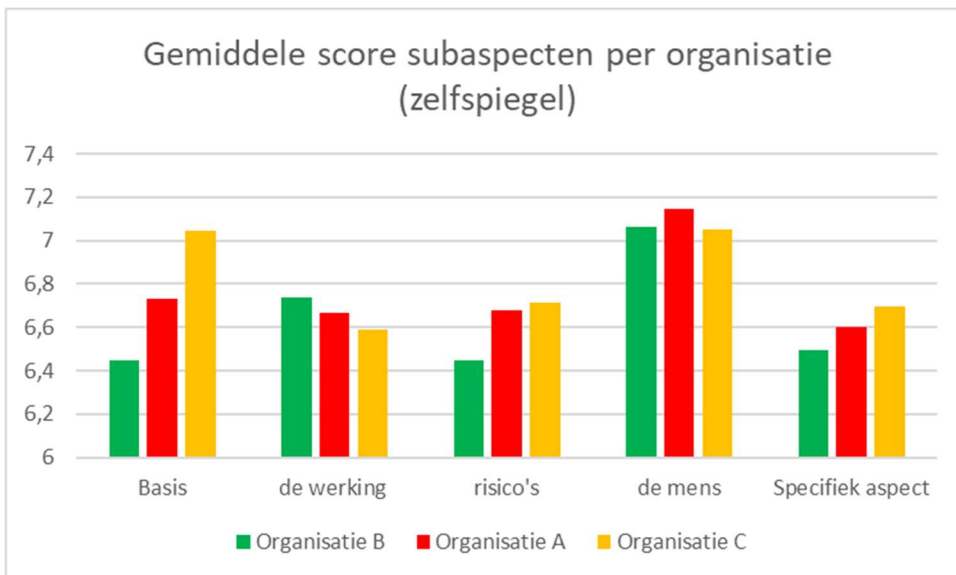*Figure 15: Average project team scores on sub aspects per organisation*

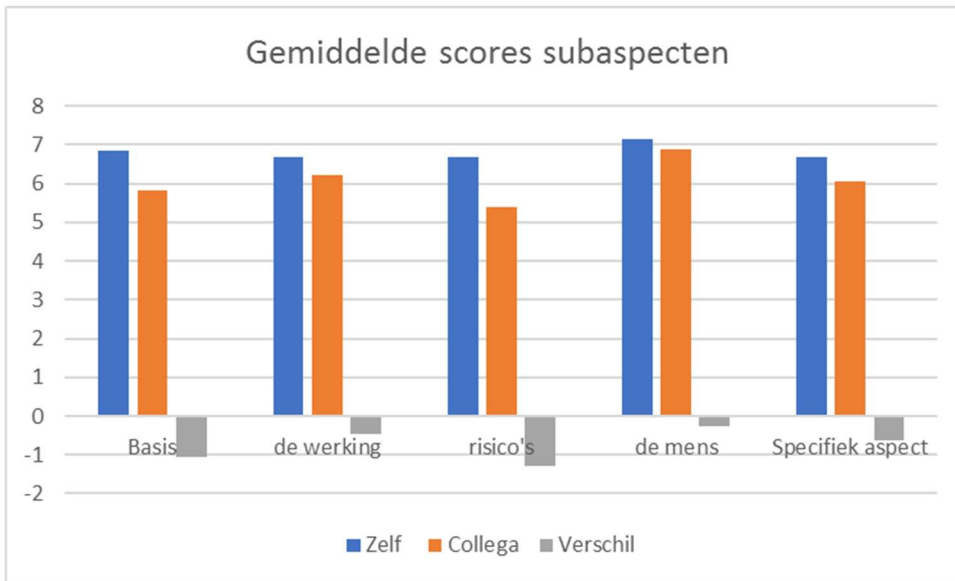*Figure 16: Average peer scores on sub aspects per organisation*

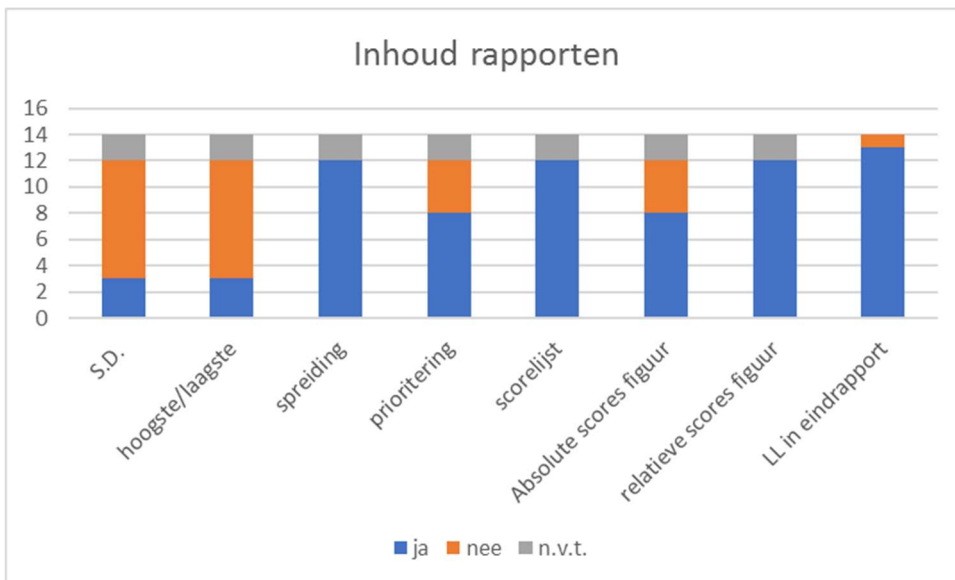*Figure 17: Average scores on sub aspects*

Figure 18: Content reports

Appendix V.   Interview summaries

This appendix contains the interview summaries from the interviews with the developer and the case-interviews.

a. Facilitator/developer

Dhr. Verkade was bij alle projectmanagement en evaluatie Spiegels betrokken als facilitator en coördinator. De facilitator heeft als functie om het Spiegel proces in goed banen te leiden dus ook om ervoor te zorgen dat dominante persoonlijkheden niet de overhand krijgen tijdens het Spiegel proces en andere juist hun stem laten horen. Het is de taak van de facilitator om onderliggende problemen boven tafel te krijgen door indien nodig door te vragen.

Ontwikkeling spiegel

De Spiegel methode is niet van uit de theorie ontwikkeld maar vanuit de praktijk en creativiteit op basis van de kennis van Jaap Verkade en Han van Gelder. Han van Gelder is een van de grondleggers van KING. Hij gebruikte al een zogenoemde "bestuursspiegel" voor het beoordelen van schoolbesturen. Bij deze methode werden een aantal domeinen gebruikt waarop schoolbesturen beoordeeld werden door deskundigen in een soort audit achtige vorm.

De Spiegel methode is ontstaan toen iemand van de Noord-Zuidlijn naar KING kwam met de vraag of KING, nu het weer goed ging met het project, het project kon beoordelen om vervolgens aan de buitenwereld te kunnen vertellen hoe goed het gaat. KING wilde dit niet in deze vorm doen mede omdat zij niet het bureau zijn dat audits uitvoert en projecten "goedkeurt". Toen ontstond het idee om het beoordelen weg te halen en er een leervraag van te maken; Wat kan er verbeterd worden aan het projectmanagement van het projectteam? Dit heeft zich naderhand ontwikkeld in de Spiegel methode.

De Spiegel methode is ontwikkeld vanuit de 10 kennisdomeinen waarin KING oorspronkelijk in was opgedeeld en de "bestuursspiegel" met daarbij een focus op het leerproces. De 10 kennisdomeinen zijn omgezet in de 10 management aspecten zoals deze nu in de Spiegel terugkomen.

De Spiegel heeft 2 pijlers, een gericht op de 10 aspecten en bijbehorende sub-aspecten en een gericht op de manier van bespreken van de bevindingen oftewel het procesdeel. De tweede pijler wordt minstens net zo belangrijk gevonden als de eerste door dhr. Verkade. Het uiteindelijke leren ontstaat namelijk juist in het proces gedeelte.

Oorspronkelijk was het idee om de verschillende Spiegel projecten te vergelijken dit bleek toch moeilijker dan gedacht. Dit kom doordat de invulling van elk Spiegel proces net anders is, de projecten erg verschillend zijn en er veel veranderd is sinds de uitvoering van de eerste Spiegel 6 jaar geleden.

Het unieke aan de Spiegel is de combinatie tussen het evalueren en het leren van projecten. Er zijn andere methodes die projecten te evalueren en beoordelen zoals de "Projectspiegel" van Palladio maar deze hebben meer een audit achtige insteek ipv van een focus op leren. Ook is er de "IPAT" methode die naar Europese projecten kijkt, maar ook deze wordt gebruikt om projecten te beoordelen.

Een sterk punt van de Spiegel is, is dat het gaat over de praktijk van het hier en nu en dat de deelnemers centraal staan vanwege de puur faciliterende rol van ND.

Scores & vragenlijst

In het Spiegel proces worden scores gebruikt om de management aspecten te bespreken. Aan deze scores moet niet te veel waarde gehecht worden omdat deze vooral dienen als input voor de dialoog. De scores zijn ook niet direct met elkaar te vergelijken, soms gaven personen een 1 om een extreem signaal af te geven en soms een 6 omdat ze geen onvoldoende wilden geven. Deze scores zijn daarom ook relatief gemaakt waardoor er gefocust wordt op wat er relatief goed en slecht is en waar relatief grote verbeteringen kunnen plaatsvinden. Het relatief maken van de scores wordt als een sterk punt gezien door dhr. Verkade.

Projectteamleden scoren de management aspecten individueel en de collega's doen dit gezamenlijk tijdens een van de Spiegel sessie. Dit wordt bij beide gedaan aan de hand van een standaard vragenlijst. In sommige projecten heeft het collega Spiegel team niet alle aspecten gescoord omdat ze hier het nut niet van inzagen of niet een specifiek genoeg oordeel over konden geven. Dit is niet problematisch gevonden door Dhr. Verkade omdat het gesprek belangrijker is dan de scores. Dit is wel een persoonlijk voorkeur van Dhr. Verkade, Han van Gelder was bijvoorbeeld meer van het "meten is weten".

De vragenlijst van de Spiegel methode is in een dagdeel opgesteld door medewerkers van KING en daarna nooit aangepast, dit omdat er is gebleken dat deelnemers er mee uit de voeten konden en het geen invloed heeft gehad op het eindresultaat. Desalniettemin was er soms commentaar van uit de deelnemers dat vragen anders geformuleerd hadden kunnen worden.

Selectie Spiegel team

Het collega Spiegel team wordt samengesteld en geselecteerd door KING/ND, in overleg met de projectmanager van het project. Hierbij wordt gelet op diversiteit in organisaties en rollen. Leden van het collega Spiegel team komen voornamelijk uit het ND-netwerk of het netwerk van de projectorganisatie. Dhr. Verkade heeft niet de indruk dat er in de uitgevoerd Spiegels bepaalde expertises misten of dat het Spiegel team van een hoger niveau had kunnen zijn. Dit kwam mede door de voorwaarde dat de leden van het Spiegel team kennis van zaken moeten hebben.

Prioritering

Bij sommige Spiegel projecten is er een prioritering gegeven aan de management aspecten, dit werd alleen gedaan als extra inzicht. Dit had geen invloed op het Spiegel proces. Innovatie wordt vaak aan lage prioriteit gegeven, dit kom doordat teams het gevoel hebben dat ze hier niks aan doen. Dit kan komen doordat dit wordt beperkt door de opdrachtgever en/of teams bij innovatie vooral denken aan techniek innovaties en niet aan proces innovaties. De prioritering geeft alleen een beeld van wat het projectteam de belangrijkste aspecten vindt voor hun project. Op basis hiervan zijn geen conclusies te trekken behalve dat het interessante inzichten geeft in de verschillen tussen wat individuen belangrijker vinden.

Leren & kennisdelen

Het doel van de Spiegel is dat zowel het projectteam als het collega team leert, het beeld is dat beide teams sowieso leren maar de mate waarin er geleerd wordt, wie en of er iemand meer leert is onduidelijk. Tot nu toe zijn er achteraf wel positieve geluiden te horen over de bruikbaarheid van de Spiegel methode.

De Spiegel bevindingen van alle projecten zijn niet actief verspreid. Ze worden alleen online beschikbaar gemaakt en binnen de ND-organisatie en het ND-netwerk wijzen personen elkaar op bevindingen uit Spiegels die nuttig zouden zijn voor elkaar. Dhr. Verkade heeft twijfels bij het nut van de Spiegel rapportage voor kennisoverdracht, de overdracht via personen is volgens hem veel nuttiger. Actieve verspreidingen van Spiegel bevindingen zou nuttig kunnen zijn maar dan moet dit wel op de juiste manier gebracht worden dus niet via geschreven woord maar door het verbaal over te brengen.

Potentiele verbeter punten

Dhr. Verkade heeft, na al die jaren, niet het gevoel dat er aspecten zijn die niet ondervangen worden door de 10 management aspecten, alles wat belangrijk is voor het management van projecten valt naar zijn mening wel onder een van de aspecten. Het enige punt van kritiek is dat het aspect "techniek en innovatie" zich voornamelijk focust op innovatie en het aspect techniek hier en in de andere aspecten eigenlijk niet ondervangen wordt. Het besluit om niet te focussen op de techniek is ooit gemaakt om mensen uit de inhoud weg te halen en te focussen op het management van het project. Echter zou het nuttig kunnen zijn om techniek meer mee te nemen in het Spiegel proces, dit zou interessant zijn om te onderzoeken bij de deelnemers. Hierbij moet wel goed gekeken worden dat de focus op techniek niet gedaan wordt vanuit een persoonlijk voorkeur voor techniek van de leden van een projectteam.

Een nadeel van de Spiegel methode is dat het veel tijd kost, echter hoe minder gesprekstijd, hoe minder er geleerd wordt. De efficiëntie van de Spiegel zou eventueel verbeterd kunnen worden door de benodigde tijd te

verkorten, het is echter onduidelijk of je met minder tijd hetzelfde kan bereiken. Omwille van efficiëntie is afgelopen jaar het informeren van het collega Spiegel team verandert van vorm, eerst was dit via een bijeenkomst tegenwoordig wordt dit gedaan via een webinar. Hierbij zie je wel dat de kennismaking moeizamer is en hier dus aandacht aan besteed moet worden. Deze verandering van vorm is zeker een verbetering. Een ander nadeel van de Spiegel methode is dat het een momentopname is, de leercirkel wordt niet afgemaakt. In het ideale geval zou het Spiegel proces later in een project herhaald worden.

Vervolgonderzoek

Het is interessant om te kijken welke veranderingen en nieuwe inzichten de Spiegel te weeg heeft gebracht. Om dit te achterhalen moet je wel de juiste onderzoeksmethode gebruiken, met een recht toe recht aan vragenlijst achterhaal je dit waarschijnlijk niet.

Ook kan er onderzocht worden of deelnemers noodzaak zien in het toevoegen van techniek als managementaspect. In dit onderzoek moet dan wel onderzocht worden waarom deelnemers dit zouden willen en welke meerwaarde dit in hun ogen kan creëren.

Randvoorwaarden

De Spiegel gaat en staat met de mate waarin deelnemers een open houding hebben, tot nu toe is dit goed gelukt. Dit komt mede door de sfeer die gecreëerd wordt door de facilitator(s), hiervoor is het benadrukken van anonimiteit en commentaar gericht op het project en niet op personen belangrijk. De vertrouwelijkheid is belangrijk om een open sfeer te krijgen en alles bespreekbaar te maken. Daarnaast komt het Spiegel proces alleen opgang als de mensen het leuk vinden om het te doen. In de ogen van dhr. Verkade ervaren de deelnemers, de Spiegel als leuk. Al kan dit namelijk ook een incorrecte perceptie zijn door de sociaal wenselijk instelling van de deelnemers.

Algemene bevindingen

Dhr. Verkade is van mening dat er te weinig wordt gereflecteerd bij projecten in de praktijk als dit niet wordt gefaciliteerd. Dit doordat projecten zo erg gericht zijn op prestatie waardoor er geen tijd gemaakt wordt voor reflectie. Dit terwijl projecten niet zijn vastgelopen doordat er reflectie heeft plaats gevonden.

Dhr. Verkade heeft het gevoel dat er verschillen kunnen zijn tussen het projectmanagement van verschillende organisaties. Dit zou kunnen zijn omdat de ene organisatie professioneler/volwassener is dan de andere, dit kan echter ook een vooroordeel zijn.

Het dijkversterkingsproject was een relatief eenvoudig en klein project en zelf reflectie in deze vorm was vrij nieuw voor het projectteam. Het project is mede een succes geworden doordat er een ervaren projectmanager was die problemen zelf oploste. Dit kon mede door de grootte van het project. Lessen die uit dit project getrokken worden zijn niet direct toepasbaar op andere projecten vanwege de grote verschillen met andere projecten.

Dhr. Verkade heeft het gevoel dat de basis over het algemeen minder geregeld is binnen projecten en daardoor ook lager werd gescoord, Rijkswaterstaat heeft dit nog het best geregeld. Echter heeft dit meestal geen grote consequenties voor de projecten doordat dit gecompenseerd wordt door het menselijke aspect ofwel de capabiliteit van het projectteam. De teams zijn dus heel professioneel en in staat om probleem te ondervangen en op te lossen. "Projecten worden dus echt door mensen gemaakt"

De Spiegel is toegepast op "grote" projecten hierbij zie je dus ook dat ervaren professionals in het projectteam zitten. Veelal zijn dit zelfs ingehuurde professionals een voordeel hiervan is dat deze professionals van project naar project gaan en hun kennis dus ook meenemen naar deze projecten.

b. Respondent 1

Case A   *Spiegel: projectmanagement Spiegel*

Datum: 13-6-2017   *Spiegel rol: Projectteam*

Ervaring

Dubbelrol binnen het huidige project en hiervoor werkzaam geweest binnen dezelfde organisatie op verschillende projecten.

Bekend met Neerlands diep, het kernprogramma doorlopen van de voorloper van Neerlandsdiep RPA. Daarnaast ook deelgenomen aan een opdrachtgevers Spiegel als collega.

Reflectie, evaluatie en kennis delen in het algemeen

Elke contract dat op de markt gezet wordt momenteel intern geëvalueerd met de aannemer, hieruit worden leerpunten geformuleerd die intern gedeeld worden met het team. Het doel van deze evaluaties is om er zelf beter van te worden maar er wordt ook geprobeerd om deze te delen met anderen binnen de organisatie. Dit is alleen wel lastig om te doen omdat hier niet direct podia voor zijn.

Op de lange termijn worden leerpunten binnen de organisatie vooral verspreid doordat personen ook in andere projecten werkzaam zijn geweest. Binnen het huidige project vindt kennisuitwisseling voornamelijk plaats doordat personen op meerdere projecten zitten binnen de organisatie. Al is deze wijze van kennis delen wel anders dan als je het doet op basis van een reflectie.

Er mag actiever kennis gedeeld worden binnen de organisatie. Hiervoor is nog geen duidelijke structuur om dit te doen binnen de organisatie. Dit belemmerd individuen niet om zelf het podium te pakken, al worden dit nog bijna niet gedaan. Je ziet ook dat kennisuitwisseling moelijker is als de organisatie groter wordt of is.

Binnen het project wordt momenteel 2 keer per jaar geëvalueerd, 1 keer een sessie waarin gekeken wordt naar het team. In de andere sessie wordt gekeken naar wat er komend(e) (twee) jaar op de planning staat en voor welke opgave het team staat en hoe je het project daarop moet inrichten en organiseren. Dit is heel erg gericht op de planning waarbij er vooral vooruit wordt gekeken. Evaluatie op gedane zaken wordt niet gedaan in deze sessies, dit wordt niet gezien als tekortkoming. Er wordt genoeg stil gestaan bij wat beter en anders kan.Tijdens deze sessies wordt er wel kritisch naar de organisatie gekeken om te kijken hoe de organisatie aangepast moet worden om voorbereid te zijn op de komende periode.

Er wordt te weinig samen gewerkt/kennis gedeeld tussen verschillende organisaties. Vooral Neerlands diep is hier een belangrijke partij in.

Perceptie Spiegel

De dialoog met peers/gelijkgestemde wordt als heel waardevol gezien. Mensen van buiten de organisatie kijken heel anders naar de organisatie. Dit is nuttig omdat je als team op een geven moment een beeld creëert dat je als waarheid ziet.

Projecten ontwikkelen gedurende de looptijd van het projecten en de Spiegel helpt om hierop te reflecteren. De timing van de Spiegel kon niet beter, het was op dat moment nodig.

Het nogmaals toepassen van de Spiegel is voor dit project niet nodig maar bij deelprojecten zou het nuttig kunnen zijn. Al moet je de Spiegel wel toepassen op projecten die enige omvang hebben en dit zijn niet alle deelprojecten. Eventueel zou een afgeslankte versie van de Spiegel nuttig zijn.

Een evaluatie van dit project als input voor een volgend project zou heel nuttig kunnen zijn, dit zou in de vorm van een evaluatie Spiegel kunnen. Dit zou ook een hele mooie afsluiting zijn van het project.

De moeilijkheid bij evalueren en reflecteren zit hem in het team, het team moet ontwikkelen in zijn gedrag en organisatie zodat het goed is voor het project. Je moet stilstaan bij de huidige vorm van de organisatie, een Spiegel is een goed middel hiervoor.

De Spiegel is niet voor iedereen, hij is alleen voor aangesloten partijen. Het zou nuttig zijn om de Spiegel ook toe te passen op andere project en organisaties. Echter, een kracht momenteel is dat mensen momenteel uit eigen initiatief en gratis deelnemen, hierdoor zijn mensen gemotiveerd om intensief deel te nemen. Het kan misschien wel interessant zijn om de Spiegel open testellen voor projecten buiten het Neerlands diep netwerk, dit zodat de mensen binnen het netwerk van deze projecten kunnen leren.

Het proces van het hebben van een Spiegel en dat er wordt gereflecteerd op het dagelijks werk is al goed, dit omdat je even stil staat en reflecteert. Het is ook goed dat je met je team even uit de werksetting bent en er zelf over nadenkt en vervolgens ook over bevraagd word door collega's.

Spiegel aspecten

Het merendeel van de aspecten wordt herkend alleen sommige woorden waren een beetje vreemd. Zo wordt conditionering als een beetje vreemd gezien en als een term die bij veel mensen binnen deze organisatie niet spreekt. Dit kan komende doordat die niet binnen deze organisatie gebruikt wordt maar vooral binnen andere organisaties. Hetzelfde geld voor systeemintegratie.

Tijdens de Spiegel sessie was er discussie omtrent de terminologie van de aspecten en dit leidde af van het doel van de sessie.

De aspecten worden als volledig gezien, alle ipm rollen komen erin terug. De meeste aspecten werden herkend alleen systeemintegratie en conditionering waren twee termen waar het team niet van wist wat ze inhouden, dit leidde af. Mensen snappen niet wat ze er mee moesten. Daarnaast is er wel wat overlap tussen aspecten. Cultuur werd gezien als een aspect dat op een heel andere niveau zit als de andere aspecten, echter wordt er wel gevonden dat er zoiets in de Spiegel moet zitten. Technische management komt alleen niet terug, hierdoor komt techniek niet echt terug in de spiegel. Innovatie is er niet alleen op techniek.

Het totaal aan aspecten lijkt heel veel maar hier had het team niet heel veel moeite mee behalve dat een paar hoofdaspecten onduidelijk waren. Hierdoor ga je het over de formulering van de aspecten hebben en kom je niet tot een zinnige reflectie.

De vorm was goed maar mag zeker een keer onder het vergrootglas liggen.

De vragen zijn zeer concreet, als je deze leest moet je gaan nadenken en dit nadenken is ook een deel van het proces. Dit wordt sterk gevonden.

Mate van leren

In het managementteam is het rapport er nog een keer bij gepakt en is er gekeken wat er nou mee gedaan is.

Er is geen beeld of de collega Spiegelaars iets geleerd hebben maar ze hebben wel een goed kijkje in de keuken van de organisatie gekregen. De organisatie doet projecten echt heel anders dan anders organisaties.

Lessen zijn niet actief verspreid. Lessen worden meegenomen naar volgende projecten als is dit wel lastig omdat "lessons learned" een bepaalde houdbaarheid hebben. Dit komt omdat ze vaak als standaard gezien worden na een tijdje, lessen worden geïntegreerd in de organisatie dus daarna zijn er weer nieuwe dingen te leren.

Effect spiegel

De Spiegel heeft vooral intern in het team effect gehad. Op basis van de aanbevelingen uit het spiegelrapport zijn er concrete verandering doorgevoerd. Zo zijn bijna alle lessen uit het eindrapport concreet doorgevoerd, ongeveer 9 van de 10 lessen zijn exact overgenomen.

c. Respondent 2

Case A   *Spiegel: projectmanagement Spiegel*

Datum: 13-6-2017   *Spiegel rol: Projectteam*

Ervaring

Momenteel actief bij twee projecten binnen de organisatie. Hiervoor vooral betrokken geweest bij gebiedsontwikkelingsprojecten. Laatste jaren vooral actief binnen generalistische rollen.

Niet eerder betrokken geweest bij de andere Spiegels

Reflectie, evaluatie en kennis delen in het algemeen

Evaluatie en reflectie vindt momenteel in verschillende vormen plaats bijvoorbeeld door een kopje koffie, evaluaties zowel intern als extern uitvoeren of het project laten "challengen"

Sinds 2010 is er binnen de organisatie een programma gericht op leren door middel van peer reviews, hierin worden 3 typen instrument gebruikt die gebruik maken van peers vanuit zowel binnen als buiten de organisatie. Gebruik van deze instrumenten is op vrijwillige basis, waardoor mensen gemotiveerd zijn om er ook iets uit te halen.

Er wordt nooit genoeg gereflecteerd en geëvalueerd, het kan altijd beter en het wordt momenteel nog niet in alle lagen van de organisatie kritisch gedaan. Je moet jezelf altijd af vragen, doen we wat we willen op de goede manier en doen we het goede. Niet iedereen is bereid deze vragen te stellen en als dit wel gebeurd ervaren sommige dit als bedreigend. "Nooit genoeg", gaat niet om het aantal uur dat er ingestopt wordt maar de houding tegenover leren/evalueren, dit kan nooit genoeg zijn.

Vaste evaluatie momenten inlassen kan heel nuttig zijn omdat het bevordert dat reflecteren als normaal wordt gezien. Aan de andere kant is er dan een risico dat het dan een vinkje wordt. Als deze reflectie behoefte vanuit een team zou komen, zou dat heel mooi zijn.

Het uitdragen van lessen naar andere organisaties gebeurt momenteel niet heel veel, dit wordt gezien als een gemiste kans.

Je leert het beste op basis van je eigen ervaringen en projecten en dat je dan ook nog op het juiste moment het juist hoort. De Spiegel en soortgelijke instrumenten zijn geweldig om het leren op basis van je eigen projecten en ervaring te faciliteren.

Collega's leren natuurlijk ook tijdens een Spiegel. Dit zorgt er ook voor dat mensen bereid zijn om als collega deel te nemen aan de Spiegel.

Perceptie Spiegel

Het grote onderscheidene aan de Spiegel is dat het echt op het team gericht is. Bij dit soort vormen van reflectie wil je dat reflectie leidt tot verandering van gedrag. Het team moet verandering in het project doorvoeren, zij moeten dus veranderen om een verandering in het project te weeg te brengen. Dan is het wel prettig dat het team deelneemt aan de spiegel. Als je de Spiegel met zijn allen doet kan je elkaar ook aanspreken aan de hand van de Spiegel.

Er kan een lange tijd zitten tussen de aanvraag van de Spiegel en de slotdialoog, dit is niet heel problematisch omdat je vanaf de eerste bijeenkomst al leert. De verandering begin al bij de zelf spiegel, hier ontstaat de dialoog tussen projectteam leden. Je wordt ook tijdens de interviews door de vragen en manier van vragen al bewust van een aantal zaken. Een nadeel van andere methodes is dat je er pas wat mee kan als je het rapport krijgt, bij de Spiegel heb je dit niet. Hierbij haal je al oogst uit de eerste bijeenkomsten.

Een belangrijk aspect van de Spiegel is: dat wat je er instop, krijg je eruit. De input van het projectteam is dus heel belangrijk. Bij een gate review krijg je meer een afstandelijk oordeel dus daar is de input minder belangrijk.

Daarnaast bepaalt de kwaliteit van het collega-team in belangrijke mate de kwaliteit van het advies van de Spiegelaars. Dat is minder het geval bij een gateway review.

Als je meer een oordeel wilt van externe kan je beter andere methodes gebruiken. Hierbij kan een gate review confronterend zijn en soms is dit helemaal niet nodig. Een Spiegel is prettiger en organische en doordat de scores relatief zijn aan elkaar is het heel veilig. De methode is in die zin wat liever in zachter en waarschijnlijk effectiever als je het team wilt veranderen. Maar het is niet effectiever als je behoefte hebt aan een scherper oordeel over hoe het project scoort ten opzichte van andere projecten.

De tijd die er voor de Spiegel stond was voldoende al was er wel een grote groep die deelnam aan de Spiegel. Er was genoeg tijd om over meningsverschillen door te praten.

De Spiegel zou terugkijkend op het project eerder toegepast worden.

Het gehele team zag het belang in van de spiegel.

Spiegel aspecten

Bij het betreffende project zijn alle relevante issues boven tafel gekomen door middel van de besproken aspecten. Hierbij dekken de aspecten de lading om het gesprek te voeren. Er wordt wel afgevraagd of conditionering apart besproken moet worden of dat dit overal doorheen zit. Daarnaast kan je je afvragen: Wat is innovatie? Dit is altijd een discussies omdat het ligt aan de perceptie van innovatie en vanuit welke organisatie je kijkt.

Mate van leren

Niet iedereen haalt evenveel uit de spiegel, zeker mensen met bepaalde specifiek functies die in minder mate terugkomen in de Spiegel. Omwille van het team is het toch goed dat ze erbij zitten. Uiteindelijk moet je met het hele team namelijk verandering doorzetten, dan is het handig dat je er wel bij was.

Effect Spiegel

De lessen zijn bijna direct overgenomen, hiervan is ook na een jaar nog een overzicht gemaakt. Het was goed om een jaar na de Spiegel het verslag nog eens door te lezen omdat er lessen waren die vergeten waren. Op basis hiervan is een notitie gemaakt met wat er gedaan is met elke les. (Deze notitie is nagestuurd)

De lessen zijn niet echt direct uit gedragen binnen de overkoepelende organisatie. Al wordt het ook niet nuttig gezien om dit rapport naar ander projecten te sturen. Lessen zijn wel door werknemers vertaalt naar andere projecten.

De lessen die uit de Spiegel zijn gekomen zijn vooral nuttig voor het project geweest. Maar er worden ook lessen uit de Spiegel meegenomen naar volgende projecten.

De Spiegel is aangeraden aan andere projecten en zou ook weer toepast worden in volgende projecten. Dit zou dan wel gedaan worden als de projectorganisatie staat en het project een bepaalde omvang heeft. De Spiegel kan dan ook toegepast worden op andersoortige projecten. De vorm van de Spiegel kan heel breed toegepast worden. Als je de Spiegel als evaluatie wilt gebruiken moet je wel echt een drive hebben om deze te gebruiken en er wat uit te halen voor een ander. Het kost namelijk veel tijd en energie en mensen zijn al vaak half met andere projecten bezig. Het zou wel een mooie vorm van afsluiten van het project zijn.

De mix van achtergronden en kennis bij de collega Spiegelaars wordt als waardevol en bijna noodzakelijk bevonden. De mix zorg er ook voor dat collega's niet alleen maar hun stokpaardjes gaan verkondigen.

d. Respondent 3

Ervaring

Werkzaam geweest bij verschillende projecten binnen een publieke opdrachtgever. Geen ervaring met andere Spiegels, wel bekend met Neerlands diep. Zelf woonachtig in de omgeving van het project.

Reflectie, evaluatie en kennis delen in het algemeen

De huidige projectorganisatie bevat geen vaste reflectie en evaluatie momenten, dit omdat het gevoel heerste dat het goed gedaan wordt. Op organisatieniveau wordt dit natuurlijk wel gedaan maar op project niveau niet heel veel. Verbeteringen en andere methodes vanuit de organisatie worden dus wel doorgevoerd in het project. Op projectniveau wordt er wel intern geëvalueerd en wordt er gekeken naar wat er gedaan is, dit is vooral door zelf stil te staan en naar projectonderdelen te kijken. Daarnaast worden er ook interne audits gedaan, door collegiale toetsing. Ook vinden er gate reviews plaats maar er wordt niet op het project gereflecteerd door mensen van buiten de organisatie. Over het algemeen wordt er relatief weinig gedaan aan zelfreflectie maar dit wordt ook niet heel nodig bevonden omdat het een zeer ervaren team betreft. Binnen de organisatie wordt er aan de voorkant heel goed gekeken naar wat voor soort personen er in een projectteam gezet worden.

Er mag meer gekeken worden naar de interne samenwerking en hoe iedereen zijn rol oppakt. Er mag afgevraagd worden of je het met elkaar goed doet als team.

Perceptie Spiegel

De vragenlijst wordt heel goed bevonden, het gaf heel veel houvast om na te denken waar je allemaal tegenaan kunt lopen in een project. De vragenlijst moet erin, het geeft heel veel structuur om een team langs een meetlat te kunnen leggen. Hoe beter de vragenlijst is, hoe beter het effect van de Spiegel is. Misschien zou er wel wat verbeterd kunnen worden maar hij was heel handig en waardevol om vanuit alle invalshoeken naar een project te kijken.

De houding van het projectteam is ook heel erg bijgebleven. In het begin was er een soort van weerstand maar tegen het einde werd deze omgebogen naar een soort van wij gevoel. Het team had er in het begin moeite mee dat er vreemde mensen kwamen vertellen dat het beter kan, hierdoor was er in het begin een verdedigende houding en werden vragen als kritiek ervaren. Maar bij de laatste sessies was er wel vertrouwen en waren ze ook echt aan de slag gegaan met de opmerkingen, ze hadden echt nieuwe inzichten gekregen tijdens het Spiegel proces.

Het creëren van een open houdingen en het wegnemen van blokkades is heel belangrijk voor een goed Spiegel proces. Hierin zag je wel dat er verschillen waren tussen de projectleden, de een was vanuit zichzelf openen dan de andere.

Als collega Spiegelaars heb je een bepaalde vooringenomenheid, hier is het een risico dat je het antwoord krijgt waar je op stuurt. Onbewust ga je op zoek naar bevestiging van een bepaald beeld dat je vooraf had. De vragenlijst is dan ook een goede houvast om juist objectief te blijven. Als collega-Spiegelaar kijk je vooral vanuit je eigen rol en organisatie naar een project en vergelijk je dat met hoe jij het doet.

Als collega Spiegelaar heb je een bepaalde rol, je zit door omdat je een bepaalde kennis en ervaring hebt. Hier ga je ook wel een beetje naar acteren. Dit zorgt ervoor dat je daar als professioneel zit en heel objectief gaat kijken wat goed en wat slecht is.

De kracht van een goede Spiegel is dat de collega Spiegelaars vanuit hun ervaring je bevragen en reageren zonder daarbij te oordelen. Tijdens de eerste sessie hebben de collega-Spiegelaars geleerd dat ze dus geen oordelende rol hadden.

Bij het scoren probeer je te kijken naar hoe het project het doet binnen hun eigen context. Dit doe je aan de hand van de vragenlijst en de vragenlijst wordt hier sterk in bevonden. De vragenlijst biedt echt houvast om de focus te houden en ervoor te zorgen dat je je niet op je stokpaardjes focust, het brengt de objectiviteit erin. Daarnaast heeft de facilitator ook een belangrijke rol om iedereen bij de les te houden.

Door de mix van verschillende mensen ontstond er een objectieve groep. Het succes van de Spiegel wordt bepaald door de samenstelling van het Spiegel team, je hebt hier mensen nodig die over de grenzen heen kunnen kijken.

Het gesprek is nodig om inzichten te krijgen, je moet goed naar elkaar luisteren, vragen stellen en durven om in te haken op interessante punten. Er moet onderling elkaar de ruimte gegund worden om vragen te kunnen stellen.

Het proces is heel intensief maar dit is het zeker waard. De setting zelf bepaalt het succes, deze vorm wordt heel goed bevonden. Het is kort maar krachtig.

De Spiegel vond plaats op eigen initiatief, hierdoor stond het team open voor het proces. De Spiegel is wel vrijwillig maar niet vrijblijvend.

Een Spiegel moet je inzetten als je met je team al een tijdje op gang bent en voornamelijk als je voor een kanteling in het project staat. De Spiegel is voor nuttig in bestuurlijk zware projecten en voor teams in transitie. Al wordt dit laatste ook wel met gate-reviews gedaan. Een Spiegel zou heel nuttig zijn als je van de planfase naar de realisatiefase gaat, hierin zou een Spiegel een soort van nazorg kunnen zijn nadat je door de gate bent gegaan. Een Spiegel zou bijvoorbeeld in plaats van een nazorgplan bij oranje licht kunnen ingezet worden.

Een Spiegel kan heel goed dienen om een team op gang te helpen of bij een team dat vastloopt. Een team dat goed loopt hoef je niet te spiegelen, daar kan je beter een ander middel inzetten. Een Spiegel is niet voor elk project geschikt, je moet het wel echt gebruiken als je voor een bepaald vraagstuk staat of verandering in het project staat. Het team moet al even bekend met elkaar zijn.

Mate van leren

Gedurende de Spiegel sessies werd het duidelijk voor het projectteam dat zij blinde vlekken hadden, aan het begin zagen ze dit nog niet. Daarnaast werden er duidelijke cultuur verschillen gezien tussen de cultuur van het gespiegelde project en die van de eigen organisatie.

Door deel te nemen aan een Spiegel leer je zelf ook, al kunnen er geen concrete lessen genoemd worden. Het werd wel heel inspirerend bevonden. Door naar andere projecten te kijken ga je ook anders naar je eigen project kijken.

Als collega Spiegelaar leer je niet alleen van het projectteam maar ook van je mede collega Spiegelaars. Hierdoor kan je ook goed bepalen wat je eigen niveau is.

De kracht van een goede Spiegel is dat de collega Spiegelaars vanuit hun ervaring je bevragen en reageren zonder daarbij te oordelen. Tijdens de eerste sessie hebben de collega-Spiegelaars geleerd dat ze dus geen oordelende rol hadden. Als collega Spiegelaar moet je je realiseren dat het project wat er gespiegelde wordt een heel ander project is dan je eigen project. Het kost tijd om goed door te hebben hoe het project in elkaar zit. De vragenlijst draagt bij aan dat je kan begrijpen wat er gebeurt zonder dat je een oordeel vormt.

De algemene beleving is dat de college-Spiegelaars nut gehad hebben voor het project(team) dat gespiegeld is. En voor jezelf een klein beetje

Effect Spiegel

Het team wilde een stap maken en de collega Spiegelaars hebben bijgedragen om deze stap te maken. Al waren er wel echt verschillende beelden binnen het team.

Uiteindelijk stond het Spiegel team heel erg open voor de input van collega Spiegelaars en zijn ze op basis van de Spiegel ook echt verandering gaan doorvoeren in het project. Op basis van de Spiegel zijn er verandering in de organisatie van het Spiegel team doorgevoerd.

De Spiegel had uiteindelijk geen directe impact voor de geïnterviewde maar het is wel een steentje in de rivier, en een hoop stenen veranderen uiteindelijk de koers van de rivier.

Je neemt uiteindelijk wel echt iets mee terug naar je eigen project maar wat dit is kan niet genoemd worden. Wat je meeneemt is waarschijnlijk ook heel erg afhankelijk van het project waar jezelf op zit en hoeveel gelijkenissen dat toont met het gespiegelde project.

e. Respondent 4

Case A *Spiegel: projectmanagement Spiegel*

Datum: 15-6-2017 *Spiegel rol: Collega-Spiegelaar (andere organisatie)*

Ervaring
Bekleedt momenteel een combinatie functie bij publieke opdrachtgever daarvoor bij een andere publieke opdrachtgever werkzaam geweest.

Als collega Spiegelaar deelgenomen aan de Spiegel en zelf een keer deelgenomen met het project aan een Spiegel.

Reflectie, evaluatie en kennis delen in het algemeen
Een Spiegel is hartstikke goed omdat je toch in een team zit waar automatisme ingesleten is. Je maakt en plan en als dat goed bevonden word legt je dat weg en ga je aan de gang er is niemand die zich halverwege afvraagt of je goed bezig bent. Je het altijd issues waar je tegenaan loopt en of dat incidenten zijn of aan de aanpakt ligt wordt niet afgevraagd. De aanpak werd nooit te discussie gesteld, issues werden wel besproken maar daarbij werd niet naar de aanpak gekeken. Bij een Spiegel wordt deze link juist wel gelegd.

Er wordt lering getrokken uit projecten om andere projecten anders aan het pakken.

Bij het huidige project is er te weinig kritisch gereflecteerd en geëvalueerd, dit is iets wat ook gezien wordt bij andere teams binnen de organisatie. Mensen maken een plan en voeren het uit, en er word geen tijd genomen om terug te kijken naar of de aanpak nog wel klopt.

In een langjarig project zou het goed zijn om elk jaar stil te staan bij het project en te reflecteren op hoe het gaat en of het loopt zoals het bedacht is.

Opgedane lessen worden ook overgedragen aan collega's, dit gebeurt wel vooral binnen functiegroepen binnen de organisatie. Kennisdelen met collega's van andere organisatie gebeurt niet maar zou wel nuttig zijn.

Perceptie Spiegel
Als gespiegelde zijn de interviews zijn heel confronterend ook al weet je dat iedereen hier positief en professioneel in zit. Dit werd wel als heel nuttig bevonden doordat zij de vinger op de zere plek konden leggen. Ook al wist je dit zelf wel, de Spiegel zorgde ervoor dat er wel echt iets moest gebeuren.

Het wordt nuttig bevonden dat bij een Spiegel, het team in zijn volle breedte geëvalueerd wordt. Dit omdat er veel raakvlakken zijn tussen de functies en het ook goed kijk naar hoe het team functioneert. Hierdoor komen er dus naast inhoudelijke punten ook persoonlijke punten uit naar voren. De Spiegel is dan een aanleiding om een persoonlijk gesprek hierover te voeren met een collega of het team. Het is heel goed dat er in de Spiegel gekeken wordt naar hoe een team werkt, dus of ze elkaar versterken of dat er ergens problemen zitten.

De bevraging tijdens de interviewronde werd als nuttig bevonden maar dat er vervolgens cijfers werden gegeven was wel gevoelig. De cijfers die bij jou persoonlijke functie horen trek je je aan, waardoor en geen gesprek meer over de inhoud wordt gevoerd maar waarom je een bepaald cijfer krijgt. Dit was onnodig, hierdoor ontstond er een soort van competitie. De cijfers zorgen ervoor dat je je heel erg richt op de cijfers i.p.v. op de inhoud, een laag cijfer daar baal je van. Kritische bevindingen zijn heel nuttig maar de cijfers niet.

De scores binnen het projectteam worden medebepaald door subjectieve factoren, hierdoor zijn ze niet echt representatief. Een cijfer geven alleen op de inhoud is heel moeilijk omdat er ook allemaal sociale relaties en verhoudingen binnen het team mee spelen.

Alles waar je tegenaan kan lopen in het project wordt ondervangen door de aspecten. Al wordt de vragenlijst wel als veel gedoe gezien. Op een gegeven moment ga je bij die vragenlijst ook maar gewoon wat dingen invullen.

Vooral het kritische gesprek met de collega-Spiegelaars is heel erg bij gebleven. Dit had echt een meerwaarde. Het scoren werd als minder goed ervaren. De vragenlijst was heel uitgebreid en er wordt afgevraagd of dit nodig is en of het meerwaarde heeft gehad. Uiteindelijk heeft de Spiegel absoluut meerwaarde gehad maar of alle onderdelen nuttig waren wordt afgevraagd.

Tijdens deelname als collega Spiegelaar aan een Spiegel, voelde sommige teamleden zich heel erg aangevallen op hun professionaliteit. Deze persoon ging zich heel erg verdedigen tijdens de interviewronde, de cultuur van de projectomgeving werd gebruikt als verdediging voor de werkwijze. Hierdoor werd het interview minder effectief.

De houding van het Spiegel team tijdens de interviewrondes was heel anders dan toen de geïnterviewde zelf in deze positie zat. Dit kan te wijten zijn aan de setting, waar in dit geval het team veel groter was en er naast de hoofdverantwoordelijken, ook mensen zaten die onder deze personen vielen. De setting van een kleiner projectteam met alleen de hoofdverantwoordelijken die deelnemen wordt beter bevonden dan een Spiegel met een heel groot team. Maar dit kan ook liggen aan de specifieke personen die er nu bij waren.

Als collega Spiegelaar kan je ook lessen overdragen die je zelf het opgedaan tijdens een eigen Spiegel proces.

De Spiegel zou weer toegepast worden in een volgend project, de tijd die in een Spiegel zit wordt het wel waard bevonden. Al mag er wel goed gekeken worden naar of de invullijsten en de cijfers zo efficiënt zijn. De input en aanwezigheid van externe collega Spiegelaars wordt wel heel erg waardevol bevonden. Dit doordat zij met een externe en frisse blik naar jouw project kunnen kijken.

Mate van leren

Er zijn niet echt lessen blijven hangen die opgedaan zijn als collega Spiegelaar. Al wordt het wel interessant bevonden om te zien hoe anderen een project aanpakken. Door verschillende omgevingen en actoren spelen er verschillende aspecten bij andere projecten en moet je de aanpak daar ook op afstellen. Als een volgend project meer op het gespiegelde project lijkt kan er misschien gebruikt worden gemaakt van de opgedane inzichten hierover.

Er zijn als collega Spiegelaar geen concrete lessen mee terug genomen, dit kan liggen aan dat het gespiegelde team focus legde op de uniekheid van de cultuur en de omgeving van het project.

Er heerste ten tijde van de Spiegel het gevoel dat het Spiegel team niet direct iets ging doen met alle lessen.

Effect Spiegel

De Spiegel was een aanleiding om een gesprek met een collega aan te gaan over hoe er met elkaar gecommuniceerd werd. Zonder aanleiding doe je dit toch niet zo snel.

Op basis van de Spiegel is er organisatorisch een groot verandering doorgevoerd in het project. De Spiegel heeft hierin een bijsturend effect gehad. Deze inzichten zijn ook gedeeld met andere binnen de organisatie.

f. Respondent 5

Case B   *Spiegel: evaluatie Spiegel*

Datum: 12-6-2017   *Spiegel rol: Projectteam*

Ervaring

Werkzaam geweest op verschillende functies binnen een publieke opdrachtgever.

Als collega-Spiegelaar ook betrokken geweest bij een andere Spiegel. Positief over deelname als collega, je ziet en leert in een korte tijd veel van een ander project.

Reflectie, evaluatie en kennis delen in het algemeen

De reflectie binnen projecten van de betreffende overkoepelende organisatie is toegenomen in vergelijking met 10 jaar geleden. Hierbij zie je dat er veel meer landelijk georiënteerde reflectie en kennisdeling is, dit gebeurt vooral binnen bepaalde werkgroepen. Hier zie je dat leer ervaringen meer worden gedeeld. Desondanks is kennisdeling erg afhankelijk van de motivatie van personen. Als je zelf niet actief op zoek gaat naar nieuwe inzichten vind je die ook niet.

Het is niet zo dat er te weinig platforms aangeboden worden waar kennis gedeeld kan worden maar meer dat het overzicht onduidelijk is. Er is niet duidelijk waar wat makkelijk te vinden is. Er is meer dan genoeg informatie en kennis voor handen maar mensen weten dit niet te vinden.

Binnen organisaties kan het een risico zijn dat kennis alleen gedeeld wordt binnen bepaalde werkgroepen terwijl het ook buiten deze werkgroepen nuttig kan zijn. Een andere risico voor het behoud van kennis binnen je organisatie is het werken met inhuur, hierdoor blijft de kennis niet binnen de organisatie behouden.

Reflecteren draagt bij tot betere projecten, de vorm waarin dit gebeurd is alleen wel heel erg belangrijk. Een interactieve manier van reflecteren is effectiever dan een geschreven vorm. Hierom moeten de juiste collega's uitgekozen worden bij een Spiegel, zodat die personen uitgenodigd worden die er het meeste aan hebben.

Perceptie Spiegel

De Spiegel methode is een snelle methode om de hoofd evaluatie punten boven tafel te krijgen. Ook is het een momentopname waar je op dat moment iets van leert en direct ook iets mee kunt. De Spiegel is heel nuttig als direct leermoment. De Spiegel moet echter niet als enige tool gebruik worden om een meerjarig project te evalueren.

Meerdere Spiegel momenten tijdens een project zou nuttig zijn maar dit kan niet iedere week omdat het zo tijdsintensief is. Een leertraject inrichten voor de gehele levensduur van een project waarin de Spiegel een onderdeel is zou een toevoeging zijn.

De Spiegel zou zo weer toegepast worden in een volgend project, dan zou er aangeraden worden om zowel een projectmanagement als evaluatie Spiegel te doen. Dit moet dan wel goed gepland worden in het totale instrumentarium (van evaluatie tools) zodat er niet dingen dubbel gedaan worden.

Het is goed dat je tijdens de Spiegel een keer vanuit een individueel gevoel kan praten over je project en op basis daarvan het gesprek aan te gaan. Dit is ook wel weer een valkuil als mensen een sociaal wenselijk antwoord geven of de pijnlijke punten niet durven te noemen. Er moet voor gezorgd worden dat kritische mensen deelnemen aan een Spiegel en dat er goed doorgevraagd wordt door mede-deelnemers of de facilitator.

De rol van de facilitator wordt als heel belangrijk gezien. De begeleiding vanuit Neerlands diep was heel faciliterend. Er kan niet aangegeven worden of de mate van doorvragen door de facilitators voldoende of onvoldoende was. Maar er heerst wel het gevoel dat alles besproken is. Echter werd dit gevoel niet gedeeld door alle deelnemers, er waren deelnemers die van mening waren dat nog niet alles besproken was. Dit kan komen omdat zij vanuit hun specifieke functie punten onbesproken zagen. De perceptie of de Spiegel alles bereikt heeft wat het trachtte te bereiken verschilt dus heel per persoon.

De evaluatie Spiegel is geëvalueerd binnen het deelnemende team, ongeveer de helft was van mening dat alle hoofdthema's wel besproken waren en de andere helft miste wel wat zaken.

De collega-Spiegelaars stelden de vragen vanuit hun eigen belevingswereld, de functie en voorkeur van deze personen is daardoor heel erg van invloed op wat er gevraagd en besproken wordt. Sommige collega's waren zeer kritisch tijdens de interviewronde, dit werd niet even prettig gevonden door alle deelnemers van het projectteam.

Het waren wel twee heel intensieve dagen waar je je kan afvragen of je aan het eind nog zo effectief bent. Het zou eventueel iets korter kunnen.

Mensen zijn heel open tijdens de Spiegel, dit komt mede doordat er geen harde gevolgen aan zitten en je niet iemand hoeft te overtuigen van het project.

De vorm van de Spiegel wordt op een paar kleine punten na wel goed gevonden en de tijd die er ingestopt wordt, word wel de moeite waard gevonden.

Spiegel aspecten

De gespreksagenda bevat veel score velden, misschien zou het nuttig zijn om te focussen op een paar aspecten die belangrijk gevonden worden. Al ligt hier wel het gevaar in dat aspecten die niet als belangrijke gezien worden onbesproken blijven terwijl hier wel veel op te winnen is. Ook is er veel overlap tussen de sub aspecten, dit mede doordat deze heel verschillend geïnterpreteerd kunnen worden door deelnemers. Al faciliteert dit wel het gesprek, wat het belangrijkste is.

Het is niet erg dat de perceptie van aspecten verschilt omdat dit bijdraagt aan samen een beeld vormen.

Een situatie kan bij verschillende aspecten ter sprake komen.

Tijdens de zelf Spiegel was het goed om alle aspecten te doorlopen maar in de gesprekken met het Spiegel team was het moeilijk om alle aspecten aan de orde te laten komen. Dit kwam mede doordat de collega's af en toe te veel focusten op hun eigen interessegebieden. Hier zou beter op gestuurd kun worden.

De lijst met aspecten is goed maar wel veel en er is veel overlap. Dit zou verbetert kunnen worden.

- Innovatie - was heel moeilijk te duiden binnen het project, dit kon komen omdat het een evaluatie Spiegel betrof
- Systeemintegratie - de vragen waren erg vaag, waardoor er onduidelijk was wat er mee bedoeld werd. Dit werd in het gesprek ook niet duidelijk. Eventueel zou je hier meer kunnen focussen op IA (industriële automatisering), al heeft dit dan ook weer raakvlakken met innovatie
- Conditionering en omgevingsmanagement zitten eigenlijk bij elkaar

Mate van leren

De lessen uit het Spiegel proces gelden nog steeds. Er zijn niet echt nieuwe punten uit de Spiegel gekomen maar het was wel fijn om gezamenlijk te reflecteren met het team en met anderen. De Spiegel heeft voornamelijk de lessen bevestigd die er eigenlijk al getrokken waren en het bracht nuances aan in deze lessen. Maar de Spiegel heeft wel een meerwaarde gehad doordat er met het team en collega's op het project gereflecteerd wordt. Hierdoor word je gesterkt in wat je al aan het doen was.

De grootste les was dat collega's van buiten het project een negatief beeld hadden van het project terwijl het projectteam dit totaal niet had. Het was dus heel goed om dit te delen tijdens de Spiegel. Er mocht over het project duidelijker gecommuniceerd worden naar de rest van de organisatie.

Het teruglezen van het rapport wordt niet als directe meerwaarde gezien omdat de punten uit het eindrapport zijn meegenomen in het projectplan en gate review.

Binnen het projectteam zijn verschillende meningen over of er genoeg lessen overgedragen zijn aan de collega's maar dit kan ook komen omdat de een in zijn andere werkzaamheden meer deelt dan de andere of door de expertises van mensen.

Er zijn vooral lessen uit het project die bevestigd zijn door de Spiegel en doorgegeven worden. De lessen komen dus niet direct door de Spiegel methode. Behalve het inzicht over het imago van het project binnen de organisatie, dit was wel een belangrijke les.

Effect Spiegel
De punten uit het eindrapport zijn meegenomen in het projectplan en gate review.

De visie van de organisatie is wel veranderd door het project maar dit komt niet specifiek door de Spiegel. Er zijn op basis van het project ook specifiek kennis team opgericht, maar dit is ook niet direct aan de Spiegel te wijten. Ook de werkwijze in het vervolg van het project is op een onderdeel aangepast op basis van iets wat het projectteam al wist maar de Spiegel bevestigde. Stakeholders worden nu anders betrokken bij het project dan voorheen maar er kan niet geduid worden of dit door de Spiegel komt.

De Spiegel wordt heel nuttig bevonden maar er kunnen geen concrete voorbeelden geven worden van nieuwe inzichten en de invloed hiervan. Het was vooral heel nuttig dat het beeld wat er al was bevestigd werd door zowel het team als de collega's.

Het opnieuw doorlezen van het Spiegel rapport zou nuttig kunnen zijn maar andere evaluaties worden als interessanter gezien om op dit moment te bekijken. Het proces heeft veel meer opgeleverd dan het uiteindelijke rapport. Rapporten worden sowieso weinig gelezen na afloop, de meeste kennis wordt gedeeld via personen.

De context mist misschien nog een beetje in het eindrapport waardoor het publiek toegankelijk maken van het rapport meer negatieve aspecten met zich mee kan brengen dan positieve aspecten.

Heel veel lessen die opgedaan zijn in het Spiegel proces zoals samenwerking, niet het contract te allen tijde leidend te laten zijn, luisteren naar je opdrachtnemer en imago van het project binnen de organisatie zullen meegenomen worden naar volgende projecten.

De Spiegel was heel erg nuttig en Spiegel zou in een volgend project zo toepast worden, ondanks dat er niet direct iets concreets uitgehaald is. Achteraf vooral blij met het proces, wat je er zelf van geleerd hebt en het gesprek wat erover gevoerd is i.p.v. hele hard lessen die eruit zijn gekomen.

g. Respondent 6

Case B   *Spiegel: evaluatie Spiegel*

Datum: 15-6-2017   *Spiegel rol: Collega-Spiegelaar (zelfde*
                                                      organisatie)

Ervaring
Momenteel actief in een project namens meerdere organisaties, daarvoor werkzaam geweest in verschillende functies bij verschillende publieke en private organisaties.

Als collega Spiegelaar deelgenomen aan 3 Spiegels waaronder een opdrachtgever Spiegel.

Reflectie, evaluatie en kennis delen in het algemeen
Meervoudige perspectieven ter reflectie op een project is cruciaal, de Spiegel is daar een methode voor. Meervoudige perspectieven zijn nodig om het project te verrijken met de verschillende perspectieven en te voorkomen dat er bepaalde dogma's gaan ontstaan. Het maakt niet uit of je dit met een Spiegel doet of op een andere manier. In het huidige project gebeurt dit onder andere doordat er personen actief zijn uit drie verschillende moederorganisaties.

Naast de reguliere momenten (gate reviews, tunnelaudits en KAD reviews) zijn vaste momenten waarop er geëvalueerd/gereflecteerd wordt, dit omdat het dan een instrument wordt. In de huidige organisatie is evaluatie en reflectie een permanent onderdeel van het werk omdat er alleen maar besluiten genomen kunnen worden als alle betrokken organisaties unaniem instemmen. Hierdoor moet je permanent meervoudige perspectieven toelaten in je besluitvorming. Dit is niet alleen noodzakelijk maar maak het proces ook veel gemakkelijker.

Er wordt genoeg gereflecteerd binnen het huidige project. Dit mede omdat het permanent onderdeel van het werk is. Dit komt door de structuur van het project maar ook omdat het projectteam gelooft in continue reflectie om risico's te voorkomen. Doordat je tijdig verschillende perspectieven toe laat, kan je nog acteren naar deze perspectieven. Hierdoor wordt het project naar een hoger niveau getild.

De belangrijkste manier van kennisdeling is dat medewerkers van een project naar andere projecten toe gaan en hun kennis daarnaartoe meenemen. Dit geld andersom ook, personen die bij een project komen brengen weer kennis mee die cruciaal is voor het project. Het is cruciaal dat je mensen met kennis in je project hebt. Je kan het wel ophalen maar je moet het ook kunnen begrijpen en ervaren.

Perceptie Spiegel

De Spiegel is op zich een heel goed instrument omdat het zorgt voor andere beelden op het project en het is een goede manier van kennisdelen. Je kan wel alleen maar evaluatief spiegelen omdat je niet samen vooruit kan kijken. Je kan je alleen maar afvragen: Klopt het waar ik mee bezig ben en wat ik gedaan heb, zijn er andere beelden bij en hoe zou ik het anders kunnen doen.

De Spiegel is een goed instrument maar dat geld voor elke vorm van "checks en balances" en het organiseren van weerstand.

De openheid van het project was nuttig maar ook cruciaal.

Bij een Spiegel was het heel nuttig dat hier ook de aannemer bij zat, dit geeft meervoudige perspectieven op het project. Het wordt aangeraden om de aannemer te betrekken in het Spiegel proces, dit wordt als interessanter gezien omdat je dan het volledige project kan bespreken. Een belemmering hierin is wel dat je dit dan meestal pas kan doen aan het eind van de rit als echte afsluiting. Echter, is dit wel een gevoelde beperking, deze zou er niet hoeven te zijn. Als je de aannemer erbij betrekt mag er geen discussie meer zijn, zolang er een claim ligt wordt het lastig. Maar zolang er geen claim ligt is er geen belemmering, toch wordt deze wel gevoelt. Als je alleen de opdrachtgever in de Spiegel betrekt krijg je maar een beeld van het project, zo krijg je nooit een tweezijdig beeld van de werkelijk. Hiervoor moet je de aannemer erbij betrekken. Het wordt als minder zinvol gezien om conflicten met maar een partij te bespreken omdat je dan altijd een gekleurd beeld krijgt. Je kan dit echt alleen maar doen als alle discussies afgerond zijn. Het niet betrekken van de aannemer wordt dus echt als grote tekortkoming gezien. Dit betekent niet dat het niet nuttig is om het alleen met de opdrachtgever te bespreken maar je krijgt wel alleen maar een beeld van een deel van de werkelijkheid. Als je echt kennis wilt delen moeten alle partijen aan tafel zitten en als je ervaring op wilt doen omtrent lopende discussies tussen partijen kan je het beter alleen met de opdrachtgever doen. Het Spiegelen samen met de aannemer vraagt wel veel van mensen die deelnemen aan de spiegel.

Het cruciale aan een Spiegel is dat de anonimiteit gewaarborgd blijft zodat iedereen open kan praten. Hierin wordt het ook niet als meerwaarde gezien om een Spiegel rapport publiek te delen omdat je niet het volledige verhaal meekrijgt maar alleen wat algemeenheden.

De gate review is ook een soort van collegiale spiegel. Sommige mensen zien dit meer als vinkje maar dit vinkje is helemaal niet relevant. Het gaat om de verschillende perspectieven die je eruit krijgt.

De Spiegel zit in een toolbox van instrumenten je moet het instrument kiezen wat nuttig is voor het project.

Je hebt tijd nodig om project goed te bespreken, de benodigde tijd die nu voor de Spiegel staat is goed genoeg. Meer tijd ervoor uittrekken zou lastig worden.

Het voordeel van een Spiegel is dat je het gedurende die dagen concreet kan maken en ook even wat meer de diepte in gaat. Hierdoor maak je het ook expliciter omdat je er meer aandacht aan besteed. De Spiegel kan ervoor zorgen dat bepaalde denkbeelden kantelen of bevestigt worden.

Soms is het interessanter in een de Spiegel om te zien wat collega's ervan vinden wat hun ervaringen zijn dan wat het project ervan vindt. De kracht van de Spiegel is namelijk dat je het met meerdere teams doet en meteen kennis van meerdere projecten bij elkaar brengt. Hierdoor krijg je heel goed een meervoudige perspectief. Hierbij is het dus ook belangrijk dat je verschillende functies hebt die aan de Spiegel deelnemen. Je moet hier wel oppassen dat je niet te veel verschillende functies en projecten hebt omdat de effectiviteit dan afneemt. Beide worden wel als nuttig bevonden. Heel veel perspectieven is niet effectief.

De interactie staat centraal in de Spiegel hierbij moet je dus opletten dat een groep niet te groot wordt omdat je met een te grote groep niet meer interactie hebt tussen alle deelnemers. Echter met een te klein groep heb je te weinig perspectieven. Hier moet je dus een balans tussen vinden.

Spiegel aspecten

Er is vervlechting tussen aspecten maar dit wordt niet als problematisch gezien.

De volgorde die momenteel gehanteerd wordt in het spinnenweb zou anders kunnen. Dit zodat aspecten die dicht bij elkaar liggen ook in het spinnenweb bij elkaar staan, dit is visueel heel belangrijk. Projectbeheersing, politiek en bestuur en communicatie liggen heel dicht bij elkaar maar staan nu ver uit elkaar. Hierom zou je ze bij elkaar moeten zetten in het spinnenweb zodat je visueel een beter beeld krijgt. Hiervoor moet je de aspecten clusteren.

Er is een causaal verband tussen aspecten, bijvoorbeeld als de projectbeheersing niet op orde is gaat het politiek bestuurlijk altijd fout. Hierom zou je dus ook aspecten eventueel meer samen kunnen bespreken.

De aspecten worden niet allemaal als even belangrijk gezien, maar ze pakken wel alle fases van een project wat opzicht goed is.

Innovatie wordt gezien als een vreemde eend in de bijt tussen de andere aspecten. Innovatie is alleen onderdeel van de projectopdracht als het ook expliciet in de opdracht staat. Over het algemeen zit innovatie niet in de projectopdracht. Innovatie zou eigenlijk geen te scoren onderdeel in de Spiegel moeten zijn.

Mate van leren

Er zijn geen concrete lessen uit de Spiegels meegenomen. Maar de bevindingen van de Spiegel worden samen met bevindingen uit andere bronnen gebruikt om ideeën te laten groeien, bekrachtigen en/of aan te passen. Een Spiegel wordt gezien als een incident en op een incident ga je niet acteren maar op een patroon wel.

Een evaluatie Spiegel vindt laat plaats in het proces van een project, tussentijds ben je al vaak van andere projecten aan het leren. Je hoort natuurlijk niet alles en hier kan een Spiegel een toevoeging zijn.

Doordat je met twee mensen van je project bij een evaluatie Spiegel zit kan je dat daarna bespreken en met bepaalde sleutelfiguren binnen het projecten bespreken.

Het rapport is meer ter verificatie van wat er staat dan als naslagwerk. De kennis wordt vooral vergaart op basis van de gesprekken en de sessies.

Effect Spiegel

Het huidige project is wel anders aangepakt door lessen uit andere projecten maar dit komt niet specifiek uit een Spiegel.

h. Respondent 7

Case B   *Spiegel: evaluatie Spiegel*

Datum: 21-6-2017   *Spiegel rol: Collega-Spiegelaar (zelfde organisatie)*

Ervaring

Verschillende functies en rollen gehad binnen een publieke opdrachtgever.

Deelgenomen aan 3 Spiegels als collega Spiegelaar.

Reflectie, evaluatie en kennis delen in het algemeen

Heel breed gekeken wordt er veel geëvalueerd, maar er wordt afgevraagd of er nou op een paar algemene lessen na echt van geleerd wordt. De evaluaties zijn op zo'n abstractieniveau geschreven dat je er eigenlijk niks meer mee kan.

Je leert pas echt als je de kennis nodig heb en als je het in een direct gesprek kan overnemen.

Als je kijkt naar spiegelachtige methodes, dan kunnen die de schijnwerpers zetten op stukken waarvan het project wel wist dat er iets mee moest maar eigenlijk vergeten was er wat mee te doen.

Het huidige project is anders aangepakt doormiddel van een gesprek met collega's van een ander project.

Er zijn heel veel dingen die er nog geleerd kunnen worden maar misschien is het wel het belangrijkste om te leren van de eigen ervaringen en die van de collega's. Iedereen project is namelijk wel uniek maar bestaat voor 80/90% uit vergelijkbare componenten. De kunst is om de unieke componenten te onderscheiden en bij de rest gebruik te maken van datgene wat andere al bedacht, geëvalueerd en verbeterd hebben.

Er is geen ideale manier om kennis te delen en je hebt ook niet de mankracht om alles over te nemen van andere projecten. Op een gegeven moment haal je ook niet meer de meerwaarde eruit, hierom moet je dus keuzes maken wat je wel en niet doet.

De vorm die je moet gebruiken is mens afhankelijk, sommige lezen graag rapporten door en andere doen het liever interactief. Daarnaast moet er goed gekeken worden naar de leerbehoefte om te bepalen wat voor methode je wilt toepassen.

In de huidige organisatie zijn er veel verplichte toetsen in de voorbereidingsfase maar daarna is er niks meer. Dit moet meer ingevuld worden, dit kan met een Spiegel of een ander instrument, afhankelijk van de behoefte.

In de uitvoeringsfase moet je bij reflectie ook de aannemer erbij betrekken omdat je elkaar nodig hebt. In dit proces is openheid wel een must.

Interactief contact wordt gezien als de meest effectieve manier van leren.

Er wordt veel geleerd binnen projecten onderling maar dit komt niet bij de lijnorganisatie, terwijl die er ook van zouden kunnen leren. Dit wordt gezien als een gemiste kans.

Perceptie Spiegel

Omdat je bij een evaluatie Spiegel problemen bespreekt die het gevolg zijn van keuzes die jaren daarvoor gemaakt zijn en waarvan de leerervaring al doorgedrongen zijn in andere projecten is het lastig om alsnog de ervaring te vertalen naar huidige projecten.

De Spiegel is een manier van kennis delen en halen waardoor je door er bij aanwezig te zijn, je er toch wel enkele dingen uit pikt die interessant zijn voor je eigen project. Dit gaat misschien niet heel bewust maar het gebeurt wel.

Het mooie aan de Spiegel is dat je met behoorlijk ervaren collega's over een onderwerp/project praat, waardoor er heel veel kennis bij elkaar zit en je vanuit verschillende ervaring en invalshoeken over een project kan praten. Dit wordt heel leerzaam bevonden, een persoon weet namelijk niet alles.

Een risico van de Spiegel is dat mensen zich gaan focussen op hun stokpaardje. Hier moet je bewust van zijn en ervoor zorgen dat de diversiteit van de groep goed is zodat dit niet van invloed is. De samenstelling van de groep is dus heel belangrijk.

Er wordt goed nagedacht of bij elk project de standaard Spiegel moet worden toegepast of een aangepaste vorm. Binnen de gegeven tijd is de Spiegel een redelijk uitgebalanceerd proces.

Over de aspecten kun je discussiëren maar er zit genoeg diversiteit om alles aan bod te laten komen. De invalshoek van de Spiegel is voldoende breed om het project te bekijken. De aspecten kun je ter discussie stellen maar ze zijn goed en breed genoeg om het gesprek over het project te starten.

Per definitie kan je niet alles van een project bespreken. Daarnaast is enige standaardisatie is nodig zodat de verschillende partijen over hetzelfde spreken bij bepaalde termen.

Er is een bepaalde diepgang nodig om tot goede conclusies te komen en iets te kunnen leren, daarom kan je de Spiegel niet heel veel korter doen. Als je het veel langer gaat doen neemt de effectiviteit waarschijnlijk af.

De meervoudige blik onderscheid de Spiegel van andere methodes.

De gate review is beter onderbouw omdat het daar gaat om de documenten en het gesprek, bij de Spiegel gaat het voornamelijk om het gesprek. Hierdoor ben je in de Spiegel afhankelijk van de openheid en kwetsbaarheid van een projectteam. Hierom moet er dus wel een drive vanuit het projectteam zijn om aan de Spiegel deel te nemen.

Je bent in een Spiegel heel erg afhankelijk van de drive van een projectteam over wat ze eruit willen halen en van het niveau van collega's om de juiste vragen te kunnen stellen. Hierin heb je een bepaalde kennis ervaring en niveau bij de Spiegelaars nodig. Maar hier mag ook een bepaalde breedte in zitten.

De ervaring die opgedaan worden in de Spiegel zijn niet breed verankerd in de organisatie. Momenteel is het heel sterk afhankelijk van het team dat de Spiegel heeft uitgevoerd en de collega's die hieraan deelnamen. Er wordt afgevraagd of de Spiegel een kick start kan bieden aan nieuwe collega's, hier zou over nagedacht kunnen worden. Hetzelfde geldt voor mensen die weinig in aanraking komen met dit soort methodes.

Mate van leren

Er is weinig concreet geleerd van de evaluatie Spiegel omdat die in eigenlijk te laat was, de meeste lessen van het project waren al uitgevloeid via andere wegen.

Er is wel van het project geleerd en de Spiegel was een bevestiging van deze lessen.

Het wordt als nuttig gezien om het eindrapport nog een keer door te lezen. Al wordt er niet verwacht dat er iets instaat wat nog niet is toegepast. Maar als er al 1 ding uitgehaald wordt of een idee kan prikkelen kan het al nuttig zijn

Effect Spiegel

Er is een ding concreet uitgehaald alleen er is onduidelijk of dat uit de Spiegel komt of uit een gate review die rond diezelfde tijd plaatsvond. Door de evaluatie is er ingezien dat het niet te doen om meerdere jaren terug te kijken, zeker niet als het hele projectteam ook nog gewisseld is. In een volgend project wordt een overdrachtsdocument jaarlijks geüpdatet in plaats van achteraf.

Er is geen beeld of iedereen evenveel leert maar de Spiegel heeft wel als effect dat het leidt tot een vervolggesprek voor specifiek zaken die niet aan bod kwamen in de Spiegel. Dit gebeurt ook naar aanleiding van andere methodes en contact momenten.

Case B   *Spiegel: evaluatie Spiegel*

Datum: 23-6-2017   *Spiegel rol: Collega-Spiegelaar (andere organisatie)*

Ervaring

Actief geweest bij verschillende projecten bij verschillende opdrachtgevers, laatste paar jaren actief bij een publieke opdrachtgever. Momenteel actief op programma niveau.

Als collega Spiegelaar deelgenomen aan de Spiegel en een keer met het projectteam aan een Spiegel deelgenomen.

Reflectie, evaluatie en kennis delen in het algemeen

Momenteel wordt er collegiaal en integraal gereflecteerd op plannen daarnaast zijn er momenteel verbetertrajecten bezig op basis van audits door het ministerie. Hierop wordt vooral met het programmateam gereflecteerd. Omdat het programma vrij groot is en uit meerdere projectteams bestaat kan er ook goed gereflecteerd worden met vergelijkbare functies. Dus de reflectie is vooral collegiaal en gericht op gaan we dit gebruiken en kunnen we dit gebruiken. Hier zit niet echt een objectieve waarneming van buitenaf in. Echter doordat de poel van mensen zo groot is door de grootte van het programma, haal je heel veel ervaringen binnen.

Met functie genoten binnen het programma is er vooral ad hoc contact en daarnaast ongeveer een keer per maand. Dit contact is meer gericht om de projecten op elkaar af te stemmen dan dat het gebruik wordt om leerervaringen te delen.

De kennisborging kan wel een stuk beter maar het blijft wel mensen werk en heel erg afhankelijk van de situatie. Zeker grote projecten en programma's hebben unieke karaktereigenschappen die vragen om een specifieke oplossing voor bepaalde vraagstukken. Hier kan je heel goed mensen bij betrekken alleen kan je het niet op dezelfde manier doen als bij andere projecten. De mensen die je erbij betrekt hebben dus wel een bepaald denkniveau nodig.

Programma's zijn echt heel anders dan een projecten. Hierdoor is het ook moeilijker om nuttige kennis bij anderen te vergaren. Dit komt vooral omdat programma's een stuk dynamischer zijn, fases lopen meer door elkaar heen dan bij projecten. Dit maak de sturing op programma niveau lastig.

Perceptie Spiegel

Bij de Spiegel van het eigen project werd het heel goed bevonden dat je in de zelf Spiegel even stilstond bij je eigen project. De interne reflectie was heel waardevol omdat je stilstond en ook keek naar de andere vakgebieden binnen het project. Vooral de bevindingen van direct collega's werden heel nuttige bevonden omdat je hierin ook ziet hoe andere naar elkaars functie kijken. De input van collega's werd waardevoller bevonden dan de input van collega Spiegelaars. De bevindingen van mensen van buiten je project zijn meestal bevestigingen van wat je zelf al weet. Dit doordat je eigenlijk terugkrijgt wat je zelf zegt.

Als collega Spiegelaar was het lastig om feedback te geven op het project terwijl je niet bekend was met de werkwijze van de overkoepelende organisatie. Dit werd gezien als een beperking. Dit had ook te maken met dat de meeste andere collega-Spiegelaars van dezelfde organisatie waren of bekend waren met de werkwijze. Hierdoor werd soms het argument gebruikt "maar zo werkt dat nou eenmaal binnen onze organisatie". Hierdoor verlies je een bepaalde objectiviteit. Het zou goed zijn om van tevoren een betere afweging te maken of je de Spiegel wil laten plaatsvinden binnen de cultuur van de organisatie of juist met de cultuur van andere organisaties, dit zou tot andere inzichten kunnen leiden. De Spiegel had nuttiger kunnen zijn als je meer bekend was met de cultuur en werkwijze van de organisatie of er in de Spiegel meer openheid was voor inzichten van andere organisaties.

Het proces van de Spiegel wordt een slim proces bevonden. De inspanning van de de deelnemers is beperkt doordat Neerlands diep heel faciliterend optreedt, Dit maakt het heel prettig. Het is een kracht dat je er alleen maar bij hoeft te zijn en voor de rest niks hoeft te doen.

Een risico van de Spiegel kan wel zijn dan het als window dressing gebruikt wordt om te bewijzen dat er aan reflectie gedaan wordt. Terwijl er ondertussen niks veranderd wordt aan de hand van de Spiegel en andere methodes. Er wordt te weinig een gestructureerde follow up aan gegeven. Je zou op basis van de uitkomsten van zulke reflectie/evaluatie momenten een concreet plan kunnen maken, maar dit gebeurt nog te weinig. Dit kan komen omdat je teveel in de waan van de dag leeft, je bent veel meer bezig met short term deadlines dan met verandering doorvoeren op de lange termijn. Ook kan meespelen, dat als je het gevoel hebt dat je in control bent dat je niet de noodzaak voelt om dingen te veranderen. Als er niks echt slecht gaat is er ook niet echt de aanleiding om interventies te plegen.

Er wordt opgemerkt dat er binnen de organisatie vaste patronen zitten in hoe er gewerkt wordt, er zou meer autonomie van de projecten moeten komen. Er word te veel vanuit de lijn aangegeven wat je moet doen. Als externe kun je makkelijker commentaar geven op de werkwijze van de organisatie.

Als je externe binnen je project haalt dan behoud je minder goed de opgedane kennis. Echter kan je niet altijd eigen mensen op projecten zetten als je niet structureel zulke projecten doet. Daarnaast haal je met externen ook veel kennis binnenshuis die er eerst niet was.

De vragenlijst is nodig om de gedachte scherp en op gang te krijgen daarnaast heb je het nodig om ervoor te zorgen dat je een gemeenschappelijk beeld hebt waar je over praat. Je hebt de vragenlijst nodig om een gezamenlijke focus te hebben en allemaal over hetzelfde te praten.

Het is goed dat je in de Spiegel met collega's van dezelfde functie gaat praten om verdieping in het gesprek te krijgen.

De zelf Spiegel wordt als meeste waardevol onderdeel bevonden maar er is vervolgens wel een soort borging nodig met een blik van buitenaf. Eventueel kan zelfs de zelf Spiegel uitgebreid worden en dan in de vervolgstappen meer te reflecteren op de eigen constateringen van het spiegelteam i.p.v. weer eigen bevindingen gaan formuleren.

Een evaluatie Spiegel is meer gericht op de borging van de kennis. Er wordt afgevraagd of dit doel nou bereikt wordt.

Omdat de groep deelnemers aan de Spiegel van een bepaalde organisatie zo groot was kon je als enkeling van een andere organisatie weinig toevoeging in de plenaire gesprekken. In de diepte gesprekken was dit anders.

De Spiegel zou in een volgend project wel toegepast worden maar dan wel als je merkt dat het je merkt dat de ontwikkeling van een project vertraagd en dat je een extra zetje nodig hebt om het project naar een hoger niveau te tillen. Reflecteren kan hier heel goed bij helpen.

Als je de Spiegel als evaluatietool wilt gebruiken moet je heel duidelijk hebben wat je ambitie is, doe je het om andere projecten te helpen of doe je het om met de organisatie te kijken hoe je je projecten aanpakt.

Je zou eventueel de methode van de Spiegel iets slimmer kunnen inrichten door gebruikt te maken van een online omgeving voor de vragenlijst en het scoren.

De rol van de facilitator zou eventueel scherper kunnen door vooraf duidelijk vast te stellen wat het doel is en daar ook de gesprekken op te sturen.

Spiegel Aspecten

De aspecten van de Spiegel werden wel herkend. Innovatie wordt een beetje ondergewaardeerd, mensen zien niet echt innovatieve aspecten in een project. Er zou wat breder naar innovatie gekeken kunnen worden, in een project sneeuwt die snel onder. Een lage score op innovatie op projecten kan een aanleiding zijn om op een hoger abstractieniveau te gaan kijken hoe je ervoor kan zorgen dat hier meer mee wordt gedaan. Als uit

meerdere spiegels blijkt dat er op projectniveau weinig aan innovatie gedaan wordt dan kan dit aanleiding zijn om hier op een hoger niveau over te praten. Hetzelfde zou misschien kunnen gelden voor systeemintegratie.

Mate van leren

Als collega Spiegelaar is er minder uit de Spiegel gehaald en toegevoegd doordat die niet bekend was met de organisatie en de andere collega Spiegelaars wel. Er zou vooraf een expliciet keuze gemaakt moeten worden of je vanuit je eigen organisatie naar het project gaat kijken of vanuit een andere omgeving. Dit is wel afhankelijk van het doel wat je hebt dus dit moet je vooraf goed vaststellen, het kan allebei heel waardevol zijn.

Er is in de Spiegel van het eigen project weinig nieuws geleerd omdat de meeste dingen die je terugkrijg je zelf al weet. De Spiegel heeft misschien wel dingen bevestigd maar de meeste dingen weet je ook al wel. Dit kan ook liggen aan dat je op basis van je functie vooral naar specifieke punten kijken en niet naar de generieke project aspecten. De vorm van de spiegel, het bespreken van alle 10 aspecten, zorgt ervoor dat je op een generalistisch niveau blijft hangen.

De evaluatie Spiegel leek vooral iets van een bepaalde organisatie daardoor was het als buitenstaander van een andere organisatie moeilijk om hier echt veel aan toe te voegen en uit te halen.

De informatiedichtheid van de meeste rapporten is meestal laag omdat het zelfstandig te lezen moet zijn. Hierdoor wordt er heel veel context gegeven. Dit is ook een reden waarom het eindrapport niet volledig gelezen is na afloop van de Spiegel.

Het wordt wel nuttig bevonden om deel genomen te hebben aan een Spiegel omdat je een kijkje kon nemen in een ander project maar er is weinig expliciet geleerd. Bij een ander project had dit wel kunnen gebeuren.

Appendix VI.   Observations

This appendix presents the results of the observation analysis per Spiegel step.

a. Step 1

General
- Took place on 10-5-2017
- 14 participants, 10 men and 4 women, performing different roles in the projects and belonging to different sub groups. 1 facilitator. 1 observer.
- Meeting is supposed to provide information on the Spiegel process and answer any question about it

Setting
- The meeting takes place at the office of the project team, the setup of the room can be seen in Figure 19. Behind the facilitator are two (hand drawn) flip-over sheets against the wall. The room was very light, this because the facilitator opened all the window blinds.
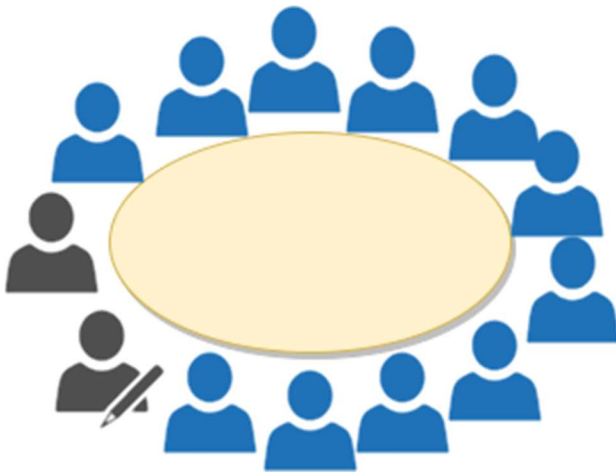- Booklets with additional information are placed at the table near every seat.

Figure 19: Room setup step 1

Social interactions
- Everybody greets each other and introduces themselves if necessary. When waiting for the meeting informal conversations are made.
- People are laughing during the meeting
- People are reacting on each other
- After the meeting ended, people stayed in the room for some informal and work conversations.

Attitude
- Everybody is engaged and interested: Questions are asked, Pro-active postures, People are making notes and people are reading the provided information when these explained.
- Some participants have their mobile phones on the tables, some of these phones buzz during the meetings. Also, some participants look at / use their mobile phones during the meeting.
- When the question is raised, continue and finish early or a small coffee break, one person directly reacts with "continue" without leaving room for others to give their preference.
- People murmur about the time needed for the Spiegel process especially for the questionnaire/checklist

Facilitator
- Stresses the anonymity multiple times
- Leaves room for questions
- Clearly explains the process, goals and set-up. Uses examples, quotes and questions in his explanations
- Stresses that the participants make or break these meetings
- The facilitator has written down all the names of the participants to be able to address them personally.

Openness
- People dare to ask questions and make remarks
- Everybody can say something
- The order in which people say things is determined by the participants
- There are no discussions
- Participants can give input for the focus of the Spiegel process

Time
- Meeting was scheduled from 10:00-12:00
- Meeting started a bit late at 10:08 because people were delayed. Meeting ended early

Side observations
- Comments are made about the aspects; the facilitator acknowledges that maybe the aspects should be critically reviewed. Maybe implementation (uitvoering in dutch) or financial project control should be an aspect.

b. Step 2

General
- Took place on 29-5-2017
- This session was held via a webinar, so it would be less time-consuming for participants.
- The goal of the sessions was to explain and provide information on the Spiegel process to the peers.
- The Checklist was sent on beforehand, additional information on the project that will be central in this Spiegel will be provided after the session.
- The session could watch by peers, observers and workers from Neerlands diep
- 4 to 6 persons were watching the webinar live

Setting
- The session was held via a webinar which could be watched live or watched later.
- In the webinar, the facilitator was providing information on the Spiegel process and there was the possibility to ask questions via a chat function.
- In the webinar, slides which explain the Spiegel process are showed

Social interactions
- No social interactions because of the online set-up of the session

Attitude
- The people who are watching are engaged by letting know they are watching via the chat function. 4 persons including an observer and a worker from Neerlands respond.
- One person asks question during the live feed

Facilitator
- The facilitator is open and transparent, by mentioning the weaknesses of the session and emphasizing the opportunity to ask questions and post comments via the chat function.

- Stresses the anonymity and the dependence on the participants for a successful Spiegel process
- Clearly explains the role of the peers
- Stresses the benefits for all participants
- Apologies for the messiness of the webinar due to technical failures

Openness
- Possibility to ask questions live via de chat function or at a later time via email.
- People react on the chat function and there are questions asked

Time
- The Webinar was scheduled from 11:00 to at latest 12:00
- The live feed opens at 11:00, and starts at 11:01
- The webinar ends at 11:30

Side observations
- Not all slides are readable
- At a certain moment, there were more than 6 views for a few seconds
- The webinar is not working as it was planned, the facilitator was not able to see the questions raised by participants so a colleague had to read them to him.

c. Step 3

General
- Took place on 1-6-2017
- 13 participants, 10 men and 3 women, performing different roles in the projects and belonging to different sub groups. 1 facilitator, 1 scribe, 1 observing guest and 1 observer
- The meeting is supposed to facilitate the exchange of views and give the total view of the project team.

Setting
- The meeting took place at one of the buildings of the parent organisations of the project team
- Seats were placed in a half circle facing a wall, on the wall, there are some schemes and tables. The facilitator sits in the middle of the circle near the wall.
- During the meeting, people changed from a sitting position to a standing position.
- Everybody got handed card with the numbers one to ten and a personal overview of their scores
- The room was the meeting took place was quite warm
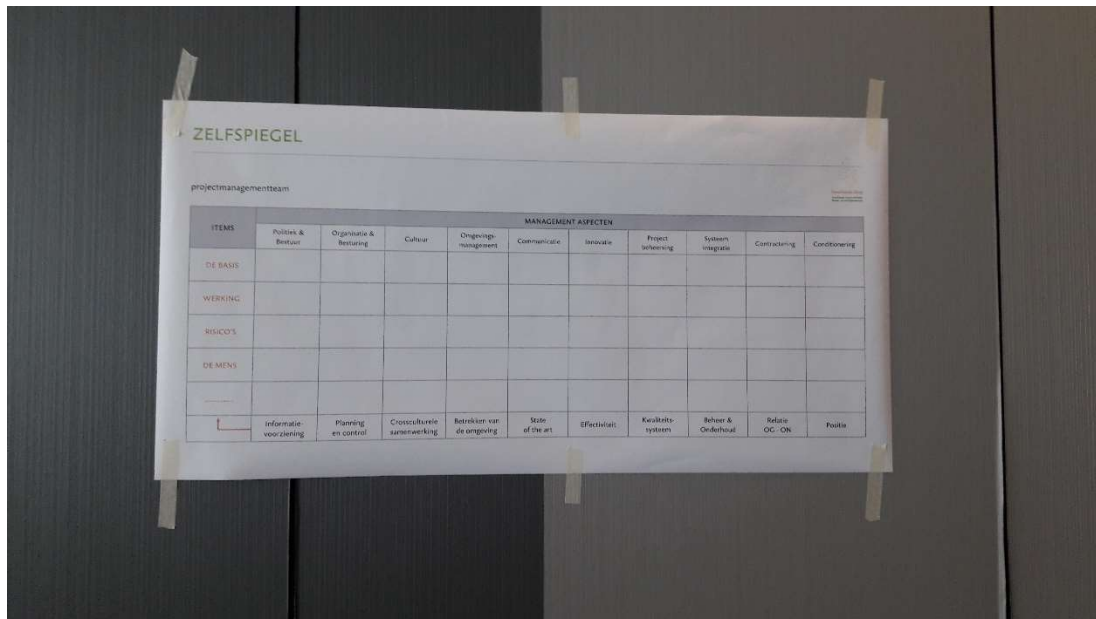

Figure 20: Room setup step 3

Figure 21: Photo of the score sheet used during the self-reflection session

Social interactions
- Everybody greets each other and makes informal conversations before the meetings start.
- During the meeting, there are no personal attacks on somebody's opinion
- During breaks, people use the time to discuss work related topics, chit chat and exchange information and contacts.
- At a few moments, there could be noticed on the base of the body language that people did not agree but they did not make this verbally clear.

Attitude
- The interest of induvial participants depended on the subject.
- During the meeting participants sometimes looked at their phone.
- Most of the times people looked at the person speaking at that moment.
- At the beginning of the meeting, not everybody was seriously engaged.
- People asked questions when there are unclarity's

Facilitator
- The facilitator kept people active by switching between sitting and standing positions for the participants during the meeting
- The facilitator asked clarifying and critical questions
- The facilitator summarized what is said
- The facilitator kept an eye on the time
- The facilitator tried to trigger people to make bold statements
- The facilitator coordinated who can speak so that everybody is able to speak

Openness
- It seemed that all participants were and felt free to substantiated their scores and react on others
- Participants dared to comment on each other
- Everybody could make comments on aspects
- Everybody got the opportunity to express their views.

Time
- Meeting was scheduled from 11:00 till 15:00 including a lunch

- Meeting started at 11:10
- Not all aspects were discussed as extensively because of time reasons

Side observations
- Aspects
  - Aspects were interpreted differently by different participant
  - Participants noticed overlap between aspects for instance between Politiek en bestuur en organisatie en besturing
  - The discussions on sub aspects mostly covered several sub aspects, this due to the overlap and difference in interpretation
  - The definition and meaning of "Systeem integratie" en "conditionering" was unclear for most participants
  - The discussion on Innovation focussed on technical innovations
- Scores
  - Score was influenced by the persons who are handling those aspects in the project.
  - Scores differed because of different insights into differences in background, functions and time worked on the project
  - The scores of the project manager were very nuanced
- Through this meeting participants also got insight into the activities of their colleagues

d. Step 4

General
- Took place on 28-6-2017
- There were 11 members of the project team, from the people who attended the "zelf Spiegel" 3 people were missing but instead of one of them another person which was closely linked to that person attended this meeting.
- There were 6 colleagues, 2 from the same organisation as the project team. Also, 2 people from another organisation and observer (the author of this research) joined in the interviews. (fewer colleagues as planned attend the sessions)
- There were 3 facilitators from Neerlands diep of which one also was the coordinator.
- The interviews are supposed to provide insight into the project(team) on the Spiegel aspects.

Setting
- The meeting took place at an external location
- There were 3 separate rooms in which interviews took place with 3/4 project team members, 3 peers and 1 facilitator.
- During the interviews, people were seated around a small table.
- There were 3 interviews rounds with each 3 groups, each round and in each group a different management aspect of the Spiegel was discussed.
- The peers were given a notebook to write down all their findings, they also were provided with a schema for the day and score lists belonging to the subjects they attended

Social interactions
- Everybody greets or introduce themselves upon entry
- During the interview rounds, some persons talk for more than others, this is especially when their function is closely related to the discussed aspect.
- During the interviews, everybody is engaged.
- Everybody is heard during the interviews.

Attitude
- The interest of induvial participants depends on the subject.

- The peers and facilitators asked the question they want to.
- People listen to the person speaking.
- The project team is very positive about colleagues

Facilitator
- Facilitators hold to focus on aspects
- The role of the facilitator is filled in differently by the different facilitator, some are more present in the interview than others.
- A facilitator has difficulties with the checklist
- A facilitator places the peer and project team at opposing side of the table, were in the other rooms everybody could choose places.

Openness
- all participants dare to ask and answer questions but in every session there always is one person of the project team who is the dominant speaker, this could because on his functional link to the subject or a hierarchical position.

Time
- Meeting started at 9:00 with an introduction and small interactive start
- Then there are three rounds which take approximately 55 minutes each, with a small break between them.
- During the interviews, there is most of the time spoken by a member of the project team.

Side observations
- Project team puts emphasis on positive aspects
- The questions are focussed on gaining information, they are not very critical.
- Sometimes a question cannot be answered because the persons with the right knowledge are not attending the session.
- The checklist is seen as good support
- Sometimes the aspects are difficult to understand and to be seen apart from other aspects.

e. Step 5

General
- Took place on 28-6-2017, it took place after step 5.
- 13 people attended this session. There were 6 colleagues, 2 from the same organisation as the project team. Also, 2 people from another organisation and observer (the author of this research) joined in the interviews. There were 3 facilitators from Neerlands diep of which one also was the coordinator. There was also a scribe present who wrote down everything that was said. (fewer colleagues as planned attended the sessions)
- The aim of the meeting was to exchange findings from the interview and form a view on all management aspects.

Setting
- The meeting took place at an external location
- The group was sitting in a half circle around a checklist
- The session was guided by the Spiegel coordinator
- The management aspects are discussed per sub aspect
- The colleagues got score sheets of the interview rounds they attended.

Social interactions
- The exchange of findings and discussions primarily takes place between the persons who were in the interview round linked to the management aspect discussed.

- There is laughed and jokes are made during the session

Attitude
- The colleagues have a respectful, friendly but critical attitude towards the project team
- People have an assertive attitude during the meeting, only people are not engaged during aspects of which they did not attend the interview round.

Facilitator
- The facilitator and scribe ask good question to clarify the findings of persons

Openness
- Everybody could speak but because they did not attend the interviews on all management aspects and did not have the scores sheets of all aspects, they had only a little input when an aspect of which they did not attend the interview was discussed

Time
- The meeting takes place from 13:30 to 16:30, at the end people are less focused

Side observations
- The colleague from the same organisations as the project teams can provide information on the political and organisational context of projects performed within this organisation.
- The creation of the scores sometimes seems a bit random
- People use different meanings for managements aspects, there is a discussion about what is related to which sub aspects. There is overlap and causal relations noted between the sub aspects.
- The aspects "innovatie" is seen as difficult to discuss and score because there was no room for innovation in the project assignment.
- The is overlap noticed between communication and omgevingsmanagement.

f. Step 6

General
- Took place on 14-7-2017
- In total, there were 28 persons attending the meeting. There were 15 persons from the project team, including the person who fills in the role of the client of the project. There were 6 colleagues, 2 from the same organisation as the project team. Also, 2 people from another organisation and observer (the author of this research) joined in the interviews. There were 3 facilitators from Neerlands diep of which one also was the coordinator.
- The aim of the meeting was to discuss the findings of the both the project team and colleagues and to discuss how the project management can be raised to a higher level.
- A week before the meeting the interim report with the scores and views of the project team and the colleagues was sent to all participants.

Setting
- The meeting took place at an external location
- The group was sitting in a half circle.
- The session was guided by the Spiegel coordinator
- The meeting starts with an interactive energizer to explain the intention of the meeting, which is; exchange views, focus on dialogue and respect for each other's views.
- The agenda is determined by the input of a small session where the group is divided into three groups (Project management team, Colleagues and project team members)
- After the meeting, there was a joint lunch with all participants.

Social interactions

- When a member of the project team is explaining something, some team members are nodding.
- During the meeting, there is much interaction between the 3 project directors/managers of three projects of the same organisation.
- People greet each other at the beginning and end of the meeting
- Most people are looking at the person speaking at that moment, some are looking around.
- People engage each other very respectful and complimented each other during the meeting.

Attitude

- Some members of the project team have a defensive attitude towards the findings of the colleagues.
- The project team try to support each other when there is the feeling that something that is said is not correct.
- The project team seem to have an open and critical attitude towards themselves, although they do not agree with all points made by the colleague's

Facilitator

- The coordinator/facilitator opens the meeting by stressing the 5 core values for learning: appreciation, openness, wonder, curiosity and relativization.
- The focus of the meeting is explained very clearly
- the meeting is steered by the facilitator without rudely interrupting people
- The is tried to summarize the views and comments from persons when possible
- The continuation is very clearly explained at the end of the meeting

Openness

- It was always the possible to ask questions or give your opinion
- People provide insights based on their own experiences.
- People from the different groups speak out during the session
- Not everyone has spoken during the meeting and a few people were speaking far more than others.

Time

- The meeting took place from 09:00 to 12:30. Due to a mistake by the facilitator, the meeting was steered to end at 11:30. After discovering this fact the remaining time was used to discuss some extra topics.
- A few people were a bit delayed and joined the meeting a bit later

Side observations

- The views from the separate groups in the agenda determining session where quite aligned, they all wanted to focus on the same aspects.
- During the meeting, there is offered to discuss some interesting off-topics at a later moment
- The conversations mostly take place on a high aggregation level
- The interim report has caused some disturbance in the project team

Feedback on the Spiegel process

- During the meeting and at the end of the meeting there was reflected on the Spiegel process, the main comments that were made where:
- The interim report was sent without a notice and without a clear explanation of the aim of the interim report. It causes a disturbance because people started to discuss the report and some of the scores and comments offended people personally.
- The group composition of the interviews could be improved, the preferences of some people were not met which led to people sitting in rounds in which they had no relation or affection with the subject of that round.

- The functions linked to the aspects need to be presented during the interviews (and the Spiegel process)
- The interviews are seen as very useful because there was the possibility to have in depth conversation about some topics.
- There are many aspects and there is much overlap between aspects, maybe a number of aspects could be decreased.
- The timing and tone of the interim report could be changed, this time it affected people personally. Conversations about the report started at the workplace instead during the Spiegel meetings
- The diversity of the colleagues is seen as a very strong aspect
- The way the comments in the interim report are written does not do justice to the colleagues. In the conversations, they are very positive and nuanced, which is not shown in the report.
- The group of people attending the last step was very large which made people lose focus.
- Possible improvements to change the effect of the interim report:
  - Do not send it to any of the participants
  - Only send the spider web with the relative scores
  - Let someone from the project team check the document.
  - Do not send the report, but hand out at the beginning of the meeting and give people some time to read it.
  - Change the name and lay out of the document, it sounds and looks very official.

Appendix VII.   Results mini-surveys

In this appendix, the responses on the five surveys conducted after the Spiegel sessions are shown. The responses are the directly and exactly copied from the responses from the Spiegel participants, any spelling mistakes in their responses are not corrected.

a.   Results mini survey self-reflection (project team)

Doelgroep: Projectteam (13 personen)

Aantal reacties: 11

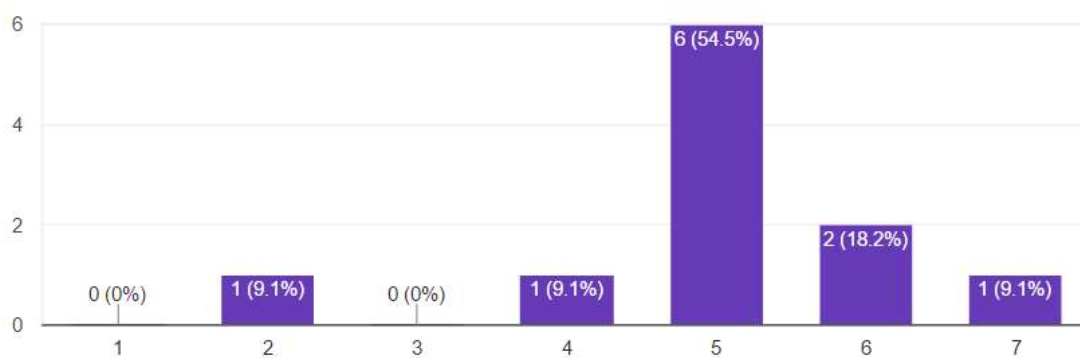## Ik heb veel geleerd van de Zelf Spiegel
11 responses

Figure 22: Overview of the responses on the first question from the survey 1

Welke nieuwe inzichten heeft u gekregen tijdens de Zelf Spiegel?

- Bewustwording dat binnen het team op verschillende manieren tegen zaken wordt aangekeken. Dit kan snel leiden tot wederzijds onbegrip. Wees hierop alert
- Dat verschil van interpretatie van de vraag ook leidt tot behoorlijk verschillende antwoorden
- Goed om eens met het gehele team stil te staan bij de 10 onderwerpen en elkaars mening te horen. Ik heb niet het idee dat ik echt nieuwe inzichten heb, behalve dat ik eruit heb gehaald dat we meer/regulier feedback op elkaar moeten geven.
- Voor mijn eigen werk heb ik gezien dat er vraag is naar meer expliciete terugkoppeling.
- Blinde vlekken worden zichtbaar. Nuttig om beelden van collega's terug te krijgen
- Ik heb inzicht gekregen in hoe binnen het project bepaalde zaken georganiseerd/ geregeld zijn, met name dan de zaken waar ik zelf dagelijks niet mee te maken heb.
- Hoe anderen de aspecten van het werk waar ik een bijdrage aan lever beoordelen.
- Ik heb vooral inzicht gekregen in de gang van zaken en aanpak van de overige deelprojecten.
- Lastig te beantwoorden. Wij zitten er nog middenin. Het is een groot project(en) en ik merk dat andere binnen het project met dezelfde issues te maken hebben als ik. Dit is met name op het gebied van delen van projectinformatie. Dit zie je terug in de waarderingen
- De spiegel heeft niet tot nieuwe inzichten geleid. De scores waren naar mijn verwachting. De dingen die laag scoorden verraste me niet. Het gaf wel een bewustwording hiervan. En de meerwaarde was dit met elkaar te delen, op een open en constructieve manier.
- Het belang om aan de voorkant van een project concrete afspraken te maken over cultuuraspecten. Hoe opvallend het is dat teamleden uitlopende onderwerpen zo verschillend scoren/beleven.

Welke aspecten van de Zelf Spiegel kon u erg waarderen?

- Naar aanleiding van de spiegel wordt over volle breedte project beschouwd.
- Dat je de mensen van het team op een andere manier spreekt en verschil van inzicht plenair bespreekt.
- De onderwerpen waren goed uitgesplitst. En het toekennen van punten met de mogelijkheid om deze in de sessie nog aan te passen.
- Discussie over de uitersten in de scores en het waarom van de scores.
- Afwisseling in werkvorm, en tempo zat er voldoende in
- Juist dit inzicht in andere projectonderdelen (ook al is het vluchtig) vond ik interessant.
- De discussie die plaats vond over de individuele beoordelingen, en de mogelijkheid om bij nader inzicht deze bij te stellen.
- Ik vond de vrijheid om te spreken erg aangenaam, er heerste een hele open sfeer waarin iedereen zijn zegje kon doen. Verder vond ik het zelfkritisch zijn erg positief. Collega's waren over het algemeen positiever over de gang van zaken of het niveau dan degene welke verantwoordelijk zijn voor dat betreffende onderdeel. Verder was de wisselende aanpak tussen de onderdelen waarin veel ruimte voor gesprek was, de onderdelen welke op schaal van 1 tot 10 d.m.v. gaan staan in de ruimte en de door de organisatie ingevulde scores een goede aanpak en versnelling.
- Dit gaat in tegen mijn volgende antwoord. Maar het feit dat wij niets aan bijvoorbeeld cultuur doen is opvallend om eens bij stil te staan. Zeker omdat wij net (of altijd net) een reorganisatie hebben gehad waarbij dit soort verschillen aan de orde komen (dit kan ik dus waarderen)
- "Het gesprek over de managementaspecten in algemene zin. Ondanks dat er geen verrassingen waren, was het goed over deze onderwerpen van gedachte te wisselen, met elkaar te benoemen waar we goed en waar we minder goed op scoren, en verschillende invalshoeken te benoemen. Dit leidde tot een gezamenlijk inzicht, een gemeenschappelijke deler.
Ik vond het goed dat iedereen aan bod kwam. En dat er verschillende manier van het voeren van het gesprek werden gebruikt. Staand, zittend, opstellen in de ruimte.
- De sessie van de zelfspiegel is op zich al een vorm van teambuilding/cultuur. De openheid dat iedereen wordt meegenomen in elkaars score.

Zijn er aspecten van de Zelf Spiegel die naar uw mening anders hadden gekund? Zo ja, welke?:

- De 10 onderwerpen meer richten op project in uitvoering: geen conditionering, wel relatie Opdracht Gever/ Opdracht Nemer e/o relatie mede opdrachtegevers (GVB, Liander, Brugbeheerder)
- De vraagstelling duidelijker formuleren (Jip en Janneke taal)
- Ik heb gemerkt dat de interpretatie van sommige onderwerpen verschillend werden opgevat. Wellicht goed om een definitielijst toe te voegen.
- Wellicht een betere uitleg van de begrippen en aspecten. Daar was op sommige momenten wat onduidelijkheid over, bijv. over conditionering. Dat ging wellicht te snel bij de eerste bijeenkomst voorafgaand aan het invullen van de Zelfspiegel. Sommigen hadden een onvoldoende gegeven als ze de vraag niet begrepen of als ze geen mening hadden over dat aspect. Deze cijfers zouden moeten worden gecorrigeerd/weggelaten.
- Een aantal categorieen bleken bij veel mensen niet duidelijk. Misschien naast de mondeling toelichting bij de eerste bijeenkomst misschien deze uitleg ook op een andere manier nog beschikbaar maken.
- Daarnaast merkte je dat voor sommige onderwerpen de interpretatie van wat er mee werd bedoeld erg verschillend kon zijn. Ben je dan niet een beetje appels met peren aan het vergelijken? Zeker als het spiegelteam straks misschien ook weer andere interpretaties heeft?"
- Het aspect conditionering bracht nogal wat verwarring omdat dit als integraal onderdeel binnen projecten in Amsterdam is opgenomen. Het zou beter zijn om hierin vanuit Neerlands Diep wat meer Maatwerk te leveren.
- De term conditionering werd door meerdere (waaronder ikzelf) niet begrepen. bij andere onderdelen waren de ondersteunende vragen zeer verhelderend bij dit onderdeel niet, dat zou kunnen worden aangepast.

- Misschien de 10 thema's iets meer toegespitst op het soort project. Wellicht kan je meer thema's verzinnen en samen met de aanvrager van de spiegel een paar weglaten. Dan heb je er net zoveel te behandelen alleen beter aansluitend bij het project(fase)
- Wat mij betreft had de sessie een uurtje langer mogen duren, waardoor je misschien iets meer de diepte in kan duiken op sommige onderwerpen. Het ging nu soms wat snel. Of ik dat echt nodig vind kan ik echter nu nog niet helemaal beoordelen, omdat er nog sessies moeten komen natuurlijk.
- Wellicht is de tijdsduur van ca 4 uur die de sessie in beslag nam iets te kort. Komt veel ter sprake en risico is dat je onderwerpen niet genoeg beetpakt of aan het einde afraffelt.
  het gemak waarmee individuele scores worden aangepast. Van een 7 naar een 5 of andersom. Logica ontbreekt zo nu en dan.
  Sommige deelnemers geven lage cijfers om het moment dat ze antwoord niet weten of vraag niet begrijpen. Lijkt mij niet juist. Ontstaat vertekend beeld. Volgens mij moet in dat geval geen cijfer worden gegeven. Mogelijk een aanpassing in de instructie.

Heeft u nog overige opmerkingen of suggesties met betrekking tot de Zelf Spiegel?:
- Misschien een rol geven aan ON, omgeving of opdrachtgevers/ toekomstig beheerders, zonder dat we in de sfeer van Audit komen (wellicht daarom moeilijk te realiseren)
- De toekenning van score met grotere tussen ruimte laten. Het viel me op dat er veel 5, 6, 7 wordt gegeven. Het lijkt me beter dat dit voldoende, gemiddeld, onvoldoende wordt gescoord. Of een range van bijvoorbeeld 10, 7, 4, 1
- Aspecten die geen prioriteit hebben, niet of nauwelijks behandelen, behalve als in de scores blijkt dat er grote verschillen zijn.
- Benieuwd naar het vervolg!
- Het is best een lange zit om alle onderdelen te bespreken. Vond het een goede zet om sommige onderwerpen staand te doen in de ruimte!
- Iedere stem heeft op dit moment evenveel waarde. Tijdens de projecten welke we uitvoeren vragen we vaak advies van specialisten, aan hun oordeel/advies hechten wij veel waarde. Wellicht is het voor sommige onderdelen waarvoor iemand of een groep collega's verantwoordelijk is realistischer om hun oordeel zwaarder te wegen dan dat van iemand met minder verstand op dat onderdeel. Ik heb nu cijfers gegeven op het gebied van omgang met politiek, terwijl ik daar eigenlijk maar heel weinig ervaring binnen dit project heb gehad, terwijl dat voor andere hun dagelijkse bezigheid is. Ik hecht meer waarde aan hun cijfer dan aan mijn cijfer in deze zelfkritische groep.
- Conditionering vond (vind) ik een raar begrip. Uiteindelijk heb ik het geïnterpreteerd als functievrijmaken. Is prima alleen waarom dan niet gewoon Uitvoering als thema.
- Het is handig als deelnemers hun eigen score meenemen. De ondersteunende vragen hielpen mij om de aspecten te beoordelen, de hoofdvraag was lang niet altijd voldoende hiervoor. De ondersteunenden vragen had ik nu niet meer paraat.

Doelgroep: Collega Spiegelaars (8 personen)

Aantal reacties: 7

Ik heb veel geleerd van de Diepte interviews en de Collega Spiegel?
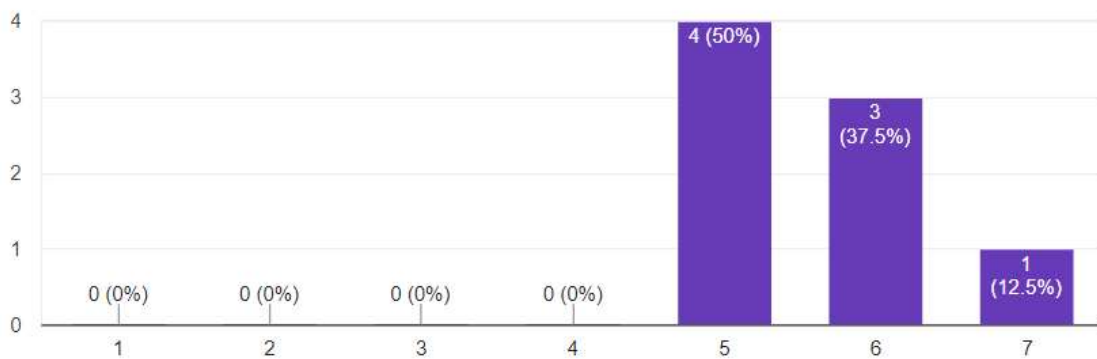
8 responses

Figure 23: Overview of the responses on the first question from the survey 2

Welke nieuwe inzichten heeft u gekregen tijdens de Diepte-interviews en de Collega Spiegel?

- Tracht beter in te zetten om de vraag achter de vraag te stellen en het eerste oppervlakkige antwoord niet voor lief te nemen.
- Het belang/de waarde van goed omgevingsmanagement en communicatie. Zeer bepalend voor een goed en gedragen projectresultaat.
- Er bestaan heel veel belevingen en kijkrichtingen
- Omgevingsmanagement contractueel bij opdrachtgever leggen.
- Hoe de verschillende deelprojecten geïnformeerd worden. Overal beeld van het hele project is duidelijker geworden.
- Inzichten in de politieke bestuurlijke situatie in amsterdam en het effect op de contractuele en inkoop keuzes. Tevens de (niet) incorporatie van innovatie binnen een project/organisatie

Welke aspecten van de Diepte-interviews en de Collega Spiegel kon u erg waarderen?

- De diverse kijk op de beoordeling en het gesprek daarover met de collega spiegelaars. Het verslag dat daaruit komt is volgens mij waardevoller dan de cijfers die we geven.
- Ik kon de strakke structuur van de interviews erg waarderen. Het spoorboekje, de 5 invalshoeken per onderwerp, de eindtabel etc. Dat werkt erg prettig en zorgt voor een compleet beeld.
- Het uitwisselen over eigen belevingen en kijkrichtingen
- Leerzaam en interessant om een kijkje in de keuken van een ander project mogen nemen, goede begeleiding bij de interviews en voorbereidende vragen.
- Zowel de deelsessies als plenaire behandeling zijn waardevol en geven gezamenlijk een goed beeld van het project
- Openheid van de collega's. Gedrevenheid om er iets moois van te maken. Kritische houding.
- Openheid

Welke aspecten van de Diepte-interviews en de Collega Spiegel hadden naar uw mening anders hadden gekund?

- Ik vind het aantal aspecten en categorieën (vijftig scores totaal) te veel en het suggereert een diepgang die we naar mijn mening niet kunnen waarmaken

- Iets meer zorg aan het infopakket vooraf. Ik had veel te lezen, maar desondanks niet over alle drie de onderwerpen waarbij ik was ingedeeld.
- Het was vrij lang. Mijn concentratieboog was op het einde wel een beetje op.
- Het middagprogramma was vrij lang.
- Soms wordt niet goed gekeken naar de onderliggende aspecten waardoor in de groep een verschillend beeld ontstaat over het voorliggende onderwerp en de inhoud daarvan

Heeft u nog overige opmerkingen of suggesties met betrekking tot de Diepte-interviews en de Collega Spiegel?
- Ik zou meer een toegespitste vraagstelling vanuit het projectteam waarderen: op welke aspecten wil je zelf met name worden gespiegeld? Dus kom je van buitenaf, dan is het minder een zoekplaatje waar je moet beginnen.
- Erg goed dat collega's elkaar spiegelen. Leuke bijvangst is om collega's van andere organisaties te ontmoeten en de verschillende werkwijzen te horen, maar vooral ook de overeenkomsten.
- Locatie meer centraal in het land, goed te bereiken met OV
- Vooraf goed kijken of alle onderwerpen een invulling kennen binnen het project. Anders is het wellicht een optie om een onderwerp niet te behandelen.

c. Results mini survey dialogue (project team)

Doelgroep: Projectteam (15 personen)

Aantal reacties: 12

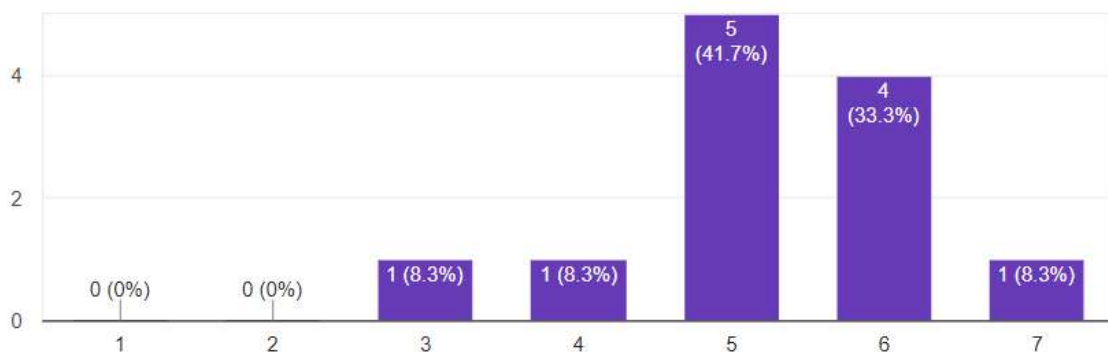## Ik heb veel geleerd van de Slotdialoog

12 responses

Figure 24: Overview of the responses on the first question from the survey 3

Welke nieuwe inzichten heeft u gekregen tijdens de Slotdialoog?
- Houden van een kernwaardensessie, dat ons (meer) focus en houvast moet geven bij het nemen van besluiten/beslissingen.
- Expliciet maken wanneer we als project klaar zijn en de verwachtingen ook met de stakeholders afstemmen.
- Bij gebrek aan tactisch kader tussen strategie en projectpraktijk in de gemeente, deze laag zelf als project organiseren/initiëren.
- Kernwaarden definiëren als project. Het gaat nu al langer goed, maar als het stormachtig is, kan dat van pas komen.
- Dat het een vage grens is tussen werken in het belang van de stad Amsterdam en het blijven bij je opdracht zonder alles binnen je scope te trekken. Het lijkt me nuttig om de scope van een project vast

te stellen en deze geregeld tegen het licht te houden en te wijzigen. Bij het wijzigen dient dat de gevlogen voor tijd en geld inzichtelijk gemaakt te worden

- Dat opdrachtgever een bredere visie heeft op de projectopdracht dan waar volgens projectplan op wordt gestuurd. Er behoefte is aan een kernwaarden sessie. En dat we in de gesprekken een onvoldoende duidelijk beeld hebben kunnen geven over waar we buij financien een verminderde controle over hebben.
- Ik vond de discussie over de waarden die we als team expliciter kunnen maken heel waardevol. Daar kunnen we concreet mee aan de slag.
- EXplicitiet versus impliciet en meer buiten scope van project kijken
- Discussiepunten (overdracht naar beheer, cultuur, integrale projectbeheersing)
- Dat we de complexe opgave behoorlijk goed georganiseerd hebben
- Het inzicht dat veel in het project impliciet blijft. Sommige zaken kunnen expliciter worden gemaakt. Bij wijze van spreken ook om successen zichtbaar te maken.
- Belang van vasthouden van focus; Wat is precies de opdracht ('werkend' systeem)
- Inzichten: de verandering van opgave voor het project. DIt gebeurt gedurende de looptijd van het project. Ben ik mij wel bewust van maar goed om het expliciet te maken. De verandering is die, van het opleveren van een fysiek plein en een ondergrondse fietsenstalling naar een werkend systeem met daarin een plein en een fietsenstalling en gebruikers en een omgeving etc... De vraag die wij als project moeten stellen, wat brengt kans ons werkende systeem blokkeren. Wat kan daar aan gedaan worden en wie (binnen of buiten het project) is daar voor verantwoordelijk.
- Ik vond vooral de discussie interessant over hoe je omgaat met bredere thema's/ problematieken in de stad die raken aan je project maar je niet in je project kunt oplossen. De uitspraak (ook van de Ambtelijk opdrachtgever) dat een project er ook voor moet staan dat straks het nieuwe gebied (of hetgeen je realiseert) goed wordt gebruikt vond ik een duidelijke koers. Hierover hebben we nog wel eens discussie.

Welke aspecten van (de Diepte interviews en) de Slotdialoog kon u erg waarderen?
- We doen het in principe goed als project, echter moeten bepaalde zaken meer expliciet worden gemaakt.
- Openheid van een ieder en inzichten van bepaalde collega-spiegelaars.
- De openheid van het PT en de spiegel om et elkaar te communiceren. Vooral wanneer er uit de sfeer van metaforen gestapt werd en de zaken concreter besproken werden
- De tijd die je krijgt om naast de documenten vanuit de mens het project en werkwijze toe te kunnen lichten. De mogelijkheid die het spiegelteam kan benutten om vanuit andere specialisaties en achtergronden onbevoordeeld en met een frisse blik naar het project kan kijken.
- De feedback van de collega spiegelaars op een aantal door onszelf belangijk gevonden aspecten.
- aanhoren van mening collega spiegelaars
- Locaties waren leuk. Met verschillende brillen, zowel intern als extern project beschouwen.
- Reflectie vanuit de spiegelaars
- Bij de slotdialoog kon ik het erg waarderen dat de nuance ook gezocht werd itt de tussenrapportage waar volgens mij onnodig veel te ongenuanceerd is opgeschreven.
- Het gaat ook over je eigen functioneren en is dus gevoelig. Maar door opzet is het toch mogelijk daar goede gesprekken over te voeren. Goed om aan het einde niet te blijven hangen in de scores, maar daar bovenuit te stijgen en leerpunten te benoemen.
- Het aan bod komen van juist de positieve punten waarvan wij ook kunnen leren
- Enthousiasme en nieuwsgierigheid van de collega spiegelaars. Goede voorzitter hierbij belangrijk.

Welke aspecten van (de Diepte interviews en) de Slotdialoog hadden naar uw mening anders hadden gekund?
- Verwoorden van de reflectie in tussentijdse rapportage.
- Wellicht opdelen slotdialoog in kleinere groepjes.

- Beter uitgebalanceerde verdeling van de projectteamleden over de diepte interviews. Hierdoor is mogelijk op sommige punten een verkeerd beeld ontstaan bij de collega spiegelaars. Dat is zonde.
- In de tussenrapportage sloeg het spiegelteam op teveel punten de plank volledig mis, om serieus te kunnen nemen. OMA (Oordeel, Mening, Aanname) kwamen zonder enkele nuance op papier. Dit leidde tot onnodige spanningen. Als voorbeelden de bijna persoonlijke aanvallen op de IPM-er en het vermelden van projectbeheersing bij omgevingsmanagement. "OM is goed geregeld, i.t.t. PB". Dit is lachwekkend pesterig en verre van professioneel. WEGHALEN in de definitieve rapportage! Ik ga verder niet in op de punten en de inhoudelijke feedback, slechts de vorm.
- Wellicht is het nuttig om te kijken bij een groep van deze afmeting of alles in de slotdialoog plenair moet. Het is een grote groep vaak komen dan dezelfde mensen aan het woord en kiezen andere ervoor om iets meer op de achtergrond te treden. Dit voorkom je wanneer kleinere groepen worden gevormd.
- Een zorgvuldigere planning van de deelnemers van de sessies. De laatste dag waren er heel veel mensen. Meer dan ik de andere sessies heb gezien. Een groepsdiscussie van deze omvang heeft niet mijn voorkeur. Ik vond het ook speciaal dat de opdrachtgever actief participeerde terwijl die aan de rest van het proces geen deel heeft genomen. Ik kan me voorstellen dat in dat geval het beter is om de ruimte te geven voor feed back in de afsluiting als toeschouwer van het proces ipv net doen alsof je onderdeel bent van de spiegelaars of gespiegelden.
- Ik vond de slotdialoog voor een deel te oppervlakkig. Het is enerzijds waardevol om alles met iedereen te bespreken, maar daardoor miste ik diepgang.
- Teveel groepsdiscussie, energie ebt dan weg en niet iedereen doet zijn/ haar zegje
- Bundelen van thema's tot de al vooraf ingeschatte belangrijkste thema's. op deze nmanier meer tijd hiervoor.

- Het ongefilterd doorzetten van input van spiegelaars, die naderhand ook niet volledig gedragen bleek bij de verschillende spiegelaars. Daar zou veel beter naar gekeken moeten worden, of met nuance vanuit verschillende spiegelaars.
- Mogelijk in toekomst, bij zo'n groot projectteam zoals Leidseplein had opgegeven, nog eens goed kijken naar samenstelling van diepte-interviews. Bepaalde beelden in tussenrapportage ook ontstaan door onevenwichtige samenstelling in interviews.
- Mogelijk in toekomst, bij zo'n groot projectteam zoals Leidseplein had opgegeven, nog eens goed kijken naar samenstelling van diepte-interviews. Bepaalde beelden in tussenrapportage ook ontstaan door onevenwichtige samenstelling in interviews.
- Ik vond het gezelschap om een gesprek in te voeren erg groot. Maar bij een kleiner projectteam speelt dit probleem minder vermoed ik.

Heeft u nog overige opmerkingen of suggesties met betrekking tot de Diepte interviews, de Slotdialoog of de tussenrapportage?
- Voor mezelf kwamen er niet echt hele verrassende resultaten uit. Wel erg goed om als project een dergelijk onderzoek (reflectie) te houden, hier eens bewust bij stil te staan en er vervolgens ook verbeteracties aan te koppelen.
- Ter verbetering van volgende spiegels en stok achter de deur voor projecten lijkt het mij goed als Neerlands Diep ook evaluatiemomenten inbouwt om in een later stadium na te gaan welke leermomenten wel/niet zijn opgepakt (en waarom).
- Voorzichtiger omgaan met de tussenrapportage en bij heftige conclusies letten op timing en communicatie.
- Ik vond de tussenrapportage erg op de man gespeeld. De man in dit geval de projectmanager.
- In de tussenrapportage is zoals aangekondigd nogal redelijk rauw de opmerkingen van het spiegelteam overgenomen. Dit valt bij veel mensen niet goed. Helemaal niet omdat het redelijk breed

wordt verspreid. Dus graag ook de tussenrapportage kuisen op gevoelige uitspraken richting individuen.

- Ik zou de werkvorm van de slotdialoog anders doen om meer diepgang te kunnen bereiken, zonder het beoogde effect om iedereen deelgenoot te maken.
- Prima, scherp en discussie oproepend.
- Met name het product tussenrapportage zou ik nog eens goed naar kijken. Formuleringen waren onzorgvuldig, product kwam onverwachts, in ieder geval projectmanager voorbereiden op toon en moment van verzending, timing ook aandachtspunt. Door het een week voor slotdialoog te versturen ontstaat er al een gesprek in de wandelgangen op basis van beelden dat onrust veroorzaakt.
- Nuttig en leuk
- Is reeds benoemd maar de verslaglegging die best wel expliciet (en voor een goede lezer of iemand die er bij aanwezig was) op de man en confronterend was later, vlak voor de laatste dag pas terugkoppelen. Zodat het geen tijd krijgt zijn eigen leven te gaan leiden.
- Ik merkte bij mijn teamleden her en der wel wat weerstand op de tussenrapportage. Ik vond dit opvallend. Overall was beoordeling van collega spiegelteam heel goed. In slotdialoog voor de voorzitter dus een (moeilijke) taak om ook tijdens het gesprek te proberen om een open houding op te wekken, dit te blijven benadrukken. Waarom hebben collega spiegelaars een bepaalde indruk gekregen?

d.   Results mini survey dialogue (peers)

Doelgroep: Collega Spiegelaars (8 personen)

Aantal reacties: 7

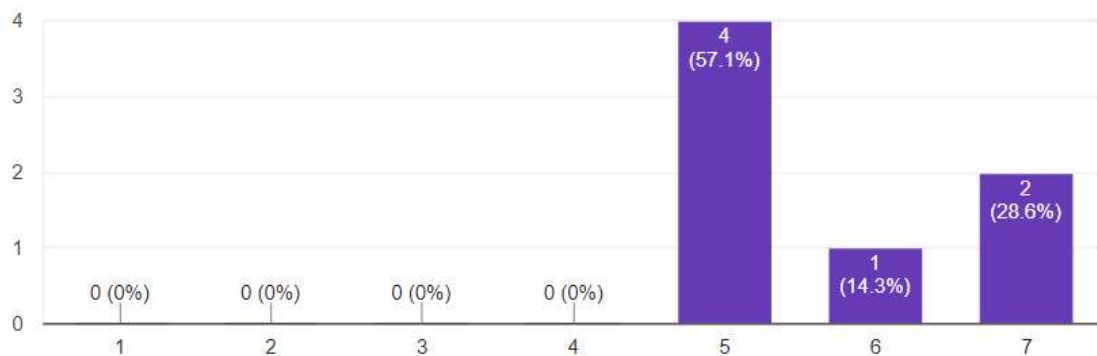## Ik heb veel geleerd van de Slotdialoog

7 responses

Figure 25: Overview of the responses on the first question from the survey 4

Welke nieuwe inzichten heeft u gekregen tijdens de Slotdialoog?
- Verschillende werelden komen samen. Er hoort geen wij zij verhaal te komen, maar een inzicht hoe kan het beter. Maar ook er gaan veel dingen goed.
- De slotdialoog was belangrijk om de resultaten van de interviews en de tussenrapportage te kunnen nuanceren. De meerwaarde zit wat mij betreft in de dialoog tussen de spiegelaars en het team. Al pratende komt men tot meer inhoud. De begeleiding en vragen van Maarten zijn fijn om te verduidelijken en het proces te bewaken.
- Een paar inhoudelijke inzichten: Het belang van een goede omgevingsscan. Scopebewaking is belangrijk, maar een goed zicht op externe zaken die jouw project kunnen beinvloeden is minstens

even relevant. Daarna kan je daar mogelijk op ingrijpen of in ieder geval (beter) anticiperen.
Verder het belang van een goed functionerend systeem i.p.v. het opleveren van een stuk fysiek werk.

- Belang/voordelen van het expliciet maken van een cultuur (normen en waarden)
- Er kunnen vele verschillende individulele belevingen zijn van éénzelfde situatie
- Beter eerst slot dialoog en dan rapportage? echter is het scherp krijgen ook handig
- Verschil in interpretatie van antwoorden

Welke aspecten van de Slotdialoog kon u erg waarderen?

- Het gaat om leren! Dat is belangrijk om ook voor aanvang van de slotdialoog weer uit te spreken. Wat gaan we met dit cadeautje doen!
- Het delen van inzichten en nadenken over leerpunten en praktische invulling daarvan vond ik heel leerzaam.
- Het plenair kunnen nuanceren/toelichten, van de ietwat boude tussenrapportage.
- Open gesprek
- Het gesprek over de verschillende individuele belevingen van éénzelfde situatie
- Samen zoeken naar werkende voorbeelden van verbeterprocessen
- Openheid

Welke aspecten van de Slotdialoog hadden naar uw mening anders hadden gekund?

- Het in gesprek zijn meteen grote groep is wel lastig. De tussenrapp. ter plekke uitreiken en een korte leespauze inlassen. Er kan meteen geregeerd worden en er hoeft geen ruis te ontstaan over de uitkomsten. Maar scherp mag het wel om duidelijkheid te geven.
- De tekst uit de tussenrapportage (hoewel goed verwoord) was minder genuanceerd dan de gesprekken daaraan voorafgaand. De boodschap die dan zwart op wit bij het team binnenkomt kan behoorlijk hard zijn terwijl het verhaal eromheen minder hard was. Het is de vraag of de tussenrapportage vooraf per e-mail verstrekt moet worden. Je zou het document ook in de groep kunnen aanbieden met leestijd en daarna een plenaire sessie, zodat de scherpe kantjes eraf gaan.
- Ik vond de start nogal warrig. De verschillende management aspecten liepen door elkaar en daardoor had ik het idee dat mensen nogal langs elkaar heen spraken in het begin.
- Hebben het reeds gehad over de timing/positie van de tussenrapportage
- Geen toevoegingen
- Iets te lang, de vrolijke wandelsessie vooraf..... niet echt nodig
- Grootte van de groep. Te groot voor plenaire discussie

Heeft u nog overige opmerkingen of suggesties met betrekking tot de Slotdialoog of de tussenrapportage?

- Ik vind het aantal managementaspecten dat in totaal wordt behandeld, te veel. Misschien kunnen er in de spiegel systematiek er een paar worden gebundeld.

e. Results mini survey Spiegel (facilitators)

Doelgroep: Facilitators exclusief coördinator (2 personen)

Aantal reacties: 2

Welke nieuwe inzichten heeft u gekregen tijdens de Spiegel?

- Inhoudelijk heb ik die uiteraard niet. Wel het inzicht dat als je bij een team defensieve reacties opmerkt dat het heel rijk zou kunnen zijn om daar de tijd, ruimte en veiligheid bij te hebben om daar dieper op in te mogen gaan. Dan kun je dus pas echt over de cultuur praten.
- De Spiegel is een mooi middel om een team te laten reflecteren op hoe dingen zijn geregeld en hoe dingen in de praktijk uitpakken. Opvallend was de overeenkomst tussen de scores van het team zelf en de collega-spiegelaars. Dat betekent dat de collega-spiegelaars en het team zelf de onderwerpen

hebben kunnen vinden waar het team zich verder kan verbeteren. Een ander inzicht is dat een Spiegel door (delen van) het team kan worden gezien als een be/ver-oordeling. Dat is jammer, want het is bedoeld als een kans om te groeien en te ontwikkelen. In deze Spiegel ontstond weerstand omdat het gevoel ontstond dat de projectleider werd aangevallen.

Welke aspecten van de Spiegel kon u erg waarderen?
- Dieptegeprekken en collegaspiegel en slotdialoog.
- Bijzonder vond ik het gesprek van de collega-spiegelaars. Daar werd met een nieuwsgierige, professionele manier gezocht naar wat er aan de hand is en hoe we dat het beste kunnen teruggeven aan het team.

Welke aspecten van de Spiegel hadden naar uw mening anders hadden gekund?
- Dieptegesprekken: beter letten op de samenstelling en meer tijd! Slotdialoog: kan dat ook in kleine groepjes met plenaire terugmelding? Bespreking collegaspiegel: Kan dat anders zodat nietb steeds de ene helft praat en de andere helft niet meedoet. Maw is er meer interactie denkbaar?
- De Spiegel is een standaardproduct dat is ontwikkeld voor grote projecten en zich deels richt op de samenwerking tussen opdrachtgever en opdrachtnemer. Daar lag hier niet de kern van de zaak. Het zou mooi zijn als de aandachtsgebieden beter op het project zijn afgestemd. Verder wordt er naar heel veel aspecten gekeken. De Spiegel kan aan kracht winnen wanneer er minder categorieën nodig zijn. In de terugkoppeling is de groep te groot om een goed gesprek te voeren en echt een laagje dieper te komen met elkaar. Voor de kern van de zaak (die altijd gevoelig ligt) is een kleiner gezelschap geschikter.

Heeft u nog overige opmerkingen of suggesties met betrekking tot de Spiegel?
- Alles al gezegd, behalve dat in beide ruimtes de akoestiek niet denderend was.
- De begeleiding en voorbereiding door Maarten was zeer professioneel, zorgvuldig en nauwkeurig. Dat maakt dat deelnemers zich "in goede handen" voelen en daardoor voluit kunnen participeren in de Spiegel. Collega-spiegelaars vinden het leuk en interessant om mee te werken aan een Spiegel, niet in de laatste plaats omdat ze er zelf ook van leren. Mogelijk kan die leerervaring explicieter worden gemaakt door hen vooraf en achteraf te vragen naar wat ze willen leren en wat ze hebben geleerd.

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Setting - *Location*	Office of the project team	Online	Office of the project team	External location	External location	External location
Setting - *Room set-up*	Sitting around a (large) oval table	n.a.	Sitting/standing in a half circle facing the facilitator	in 3 groups, sitting around a (small) table	sitting in a half circle around a big score sheet	sitting in a (large) half circle
Setting - *Material provided*	Spiegel information booklets	project documents	score cards	interview scheme and notebooks		
Social interactions - *verbal communication*	People positively react and respond to each other	n.a.	there are no personal attacks		communication is primarily between people who attend the interview round of a discussed aspect	people engage each other respectful and very positive
Social interactions - *body language*		n.a.	it looked like people did not agree with some statements but this was not made clear verbally	Everybody is actively engaged		not everyone is actively engaged
Attitude	everybody is engaged and interested	n.a.	the interest of individuals depends on the subject	the interest of individuals depends on the subject	peers have a respectful but critical attitude towards the project team	Some project team members have a defensive attitude towards the findings of the peers.
Facilitator	Clearly, explains the process, stresses the important aspects of the method and addresses people personally	Positions himself open, transparent and vulnerable and clearly explains the process	he keeps people engaged and tries to trigger people.	the facilitators hold the focus on the aspects. The different facilitators have different ways of organizing the sessions.	the facilitator tries to clarify uncertainties	the focus and intention of the meeting is explained very clear. The meeting is guided by the facilitator without rudely interrupting people
Openness	participants can decide on the structure of the meeting. Participants (can) ask questions, there no discussions	People (can) ask questions	People dare to comment on each other. everybody got the opportunity to express their views	People dare to ask and answer questions but in every session, there was seen that one person was talking more than others	People could not provide input at aspects of which they did not attend the interview	People got the opportunity to speak but not everyone said something and a few people talked far more than others.
Time - *duration*	2 hours	30 minutes	4 hours (including lunch)	3,5 hours	3 hours	3,5 hours
Time - *(speaking)time-related*	Half of the time there is spoken by the facilitator	All speaking is done by the facilitator	Not all aspects are extensively discussed because a lack of time	Most of the speaking time is taking by the members of the project team	Because of the long duration of the day (3,5+5 hours) there is less focus at the end	The speaking time was not equally divided, some spoke quite a lot, some did not say anything.

Table 10: Overview of observation findings based on the observation protocol