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Master thesis

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STARTING RIGHT: PROJECT START-UPS AS INSTRUMENTS FOR COLLABORATION IN COMPLEX PROJECTS

A legal and practical approach to achieving actor goals in complex construction projects

Project start-ups as instruments for collaboration in complex projects

Exploring the (legal) role of project start-ups in achieving actor goals in complex construction projects

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ABSTRACT

Construction projects increasingly rely on legal and managerial instruments to improve collaboration between project actors. In the Dutch construction sector, project start-ups (PSUs) are frequently applied to foster collaborative behavior from the outset of complex projects. Despite their increasing use, there is limited understanding regarding how project start-ups can be practically and legally embedded to support the achievement of actor goals at the individual, team, project, and organizational levels. This thesis addresses the main research question: **How can project partners practically and legally design project start-ups to achieve actor goals in complex projects?** The study investigates how PSUs are designed in practice, the context in which they are applied, their legal embedding, the goals motivating their use, stakeholders' perceptions of PSU effectiveness, and potential design improvements. It follows a mixed-methods design based on a case study of three complex infrastructure projects using integrated contracts and partnering arrangements. The data collection included document analysis, semi-structured expert interviews, and Qsorting methodology to identify actor priorities and evaluate perceived PSU effectiveness. Subsequently, cross-case synthesis was used to develop practical design recommendations.

The findings demonstrate that PSUs are evolving from informal kick-off workshops into semi-formal collaborative governance instruments. Their effectiveness depends less on singular interventions and more on continuous reinforcements, organizational commitments, balanced actor participation, and adaptation throughout the project lifecycle. The study further identifies three interconnected PSU goal categories: relational & interpersonal goals, interorganizational alignment goals, and project control-related goals, refining the traditional hard-soft project management distinction.

This thesis contributes to project management and collaboration literature by reconceptualizing PSUs as governance mechanisms and by emphasizing the temporal and actor-level dependence of collaboration effectiveness. In addition, the study provides practical guidance and implications for the DPS framework, project owners, managers, facilitators, and legal professionals seeking to enhance the start-up process and to strengthen teamwork processes in complex construction projects.

KEYWORDS
Project start-ups – legal instruments – actor goals – teamwork – complex projects

RESEARCH SUMMARY

Introduction and problem

The Dutch construction sector is increasingly characterized by larger and more complex projects, together with a growing use of integrated project delivery methods. These developments change the way construction projects need to be organized and executed. While traditional delivery forms often allowed project actors to work in more fragmented ways, integrated projects require a higher degree of coordination, alignment, and joint responsibility. As a result, effective collaboration between project partners has become essential in achieving project goals and managing project complexity.

In response to these challenges, construction firms and legal institutions, like the *Instituut voor Bouwrecht* (IBR), are paying increasing attention to instruments that can support collaborative behavior and reduce adversarial relations. Collaboration is not only relevant for preventing inefficiencies, disputes, and opportunistic behavior but also for creating additional value, improving project performance, and strengthening long-term business relationships. Within this context, project start-ups (PSUs) and project follow-ups (PFUs) have gathered prominence as practical instruments for facilitating alignment, building trust and clarifying roles and expectations. These instruments can be understood at the intersection of project management, collaboration and the legal-administrative project organization.

Despite their increasing use and perceived value, academic knowledge about PSUs remains limited and fragmented. Existing literature does not uniformly define PSUs, and their form, duration, participants, content and objectives differ considerably across projects. Moreover, much of the available research originates from sectors other than construction, while the specific conditions of construction projects, such as fragmentation and temporary project organizations, remain underexplored. As a result, it is unclear what PSUs consist of in practice, how they are legally embedded, and which goals they are intended to achieve.

This lack of clarity is problematic because PSUs are often expected to enhance collaboration, while the specific objectives behind their use remain vague. If project partners do not have a shared understanding of what a project start-up should achieve, it becomes difficult to assess its effectiveness or design it in a way that responds to the actual needs of actors at the organizational, project, team, and individual levels. Therefore, this research investigates how PSUs are currently used, legally embedded, and perceived in complex construction projects, to develop more systematic guidance for their practical and legal design.

Research approach

The study adopted a mixed-methods multiple-case study approach, focusing on three complex construction projects in which PSUs were applied. Qualitative data were collected through the analysis of project documentation, contractual documents, and PSU and PFU materials, as well as interviews with actors involved in the design and facilitation of PSUs as the qualitative part of the study. The analysis combined within-case analysis with cross-case comparison to identify

both context-specific patterns and broader recurring themes. In addition, a quantitative element, the Qsorting analysis, was used to examine how actors prioritized different PSU objectives, thereby providing insight into how the purpose and perceived effectiveness of PSUs vary across roles and project contexts.

Main findings

Project start-ups as evolving collaborative governance instruments

Based on the instrument characterization in literature and the empirical cases, the analysis suggests that PSUs are evolving from informal start-up workshops into semi-formal collaborative governance mechanisms. While the PSUs in the studied cases differed only slightly in their characterization, for example, between being categorized as more preventive or curative, or stimulating and repressive, the contrast with the literature was more pronounced. In theory, PSUs are often described as client-driven, intangible, and principle-based instruments. In practice, however, the studied PSUs were increasingly connected to concrete, jointly defined actions regarding their planning and implementation. They were also more frequently contractually required. Nevertheless, their outcomes often remain loosely defined and largely dependent on best efforts, meaning that their effectiveness still relies strongly on actor commitment and follow-up actions. This places PSUs in a hybrid position between more formalized governance instruments and uncertain outcome obligations.

PSU goals exceed the traditional hard-soft distinction

A second finding is that the common distinction between hard and soft goals is insufficient to describe the purposes a PSU is intended to fulfil. Literature contrasts soft, relational goals, such as becoming familiar with each other, with hard, instrumental goals, such as organizing project processes. However, the interviews and Qsorting analysis indicate that PSU objectives are more differentiated. Three main viewpoints were identified: relational and interpersonal goals, project control-related goals, and interorganizational alignment goals. The first emphasized trust, respect, collaborative culture, and a positive working atmosphere, mainly at the team and interpersonal level. The second, less dominant but recurring, perspective sees PSUs as a means to improve project manageability by discussing uncertainties, bottlenecks and the project context. The third perspective focuses on interorganizational alignment, where parties jointly create a project direction, defining project success, shared goals, and common values. These findings show that PSU goals are not simply hard or soft but located on a spectrum between relational and instrumental purposes. Moreover, participants generally rejected highly technical, financial or contractual topics as central PSU goals. PSU effectiveness is therefore multi-dimensional and actor-dependent.

Multi-level effectiveness and the role of context

The literature analysis based on the DPS analysis framework suggested PSU activities may address all four actor-levels: individual, team, project, and organization. However, interviewees and Qsorting debrief participants emphasized the project and organizational level as most important. This partly contrasts with teamwork literature, which often assigns equal importance to all levels. A possible explanation may lie in the culture of the construction sector, which interviewees described as practical, action-oriented, and focused on making the project “faster, smoother, better” (Interviewee 1C). This may reduce the perceived priority of interpersonal and team-level aspects, even though these remain important in collaboration.

This finding suggests that sector culture both constrains collaborative interventions and increases their necessity. PSU effectiveness therefore depends not only on workshop design but also on the broader project and sector context in which the PSU is embedded.

Effectiveness is determined by continuity rather than a singular intervention

In line with collaboration and teamwork literature, the findings show that PSU effectiveness depends on continuity rather than a singular start-up intervention. Although participants generally considered the PSU a valuable starting point, they also reported that its effects fade over time. For PSUs to have a lasting impact, they must be connected to reinforcement and follow-up that sustain the principles, agreements, and relationships established during the start-up. Since trust and collaborative routines develop over time, PSU effectiveness depends on repeated joint actions throughout the project lifecycle. Follow-up activities and 'lightweight' reinforcement moments should therefore be considered integral parts of PSU design.

Preconditions for PSU effectiveness

The interviews also identified several preconditions that influence PSU effectiveness. First, collaborative leadership must be demonstrated collectively by all project partners rather than being driven only by the client. Collaborative principles also need to be supported throughout organizational hierarchies. Second, facilitation matters. Independent facilitators were generally valued because they influence the tone, structure, and perceived legitimacy of the intervention. Next, continuity of participants is important, as repeatedly introducing new actors into an existing culture weakened shared understanding and relational development. Furthermore, equality between parties is essential, as balanced representation and joint involvement in PSU design support genuine collaborative interaction. Finally, workload pressure can limit effectiveness, as high delivery pressure often leads actors to deprioritize collaboration-oriented activities. These preconditions show that PSU success depends not only on the intervention itself, but also on the broader organizational capacity to sustain collaboration during project execution.

Contributions and implications

These findings have implications for research, the DPS framework of the IBR, and practitioners. For researchers, the study contributes to reconceptualizing project start-ups as semi-formal governance instruments rather than temporary workshops or kick-off events. PSUs operate between formal contractual structures and informal relational coordination and connect multiple actor levels: individuals, teams, projects, and organizations. This character explains why PSUs are difficult to define uniformly and why their effectiveness should be assessed through differentiated actor perspectives. The study also refines existing understandings of PSU goals. Rather than relying only on the distinction between hard and soft outcomes, it distinguishes between relational interpersonal goals, interorganizational alignment goals, and project control-related goals. This is relevant because it demonstrates that the value of a PSU is evaluated differently by different actors. In addition, the findings emphasize that PSU effectiveness depends not only on the initial start-up moment, but also on continuity, follow-up and reinforcement throughout the project lifecycle.

For the DPS framework, the research confirms the usefulness of categorizing activities, circumstances and intended goals, while suggesting further refinement. The framework could

more explicitly consider reinforcement mechanisms, distinguish between different collaborative goals, and separate the use of an instrument from the outcomes it is expected to produce.

For practitioners, the findings show that PSUs should be designed as part of a continuous alignment process rather than as isolated events. Different goals require different formats: large sessions may support relationship-building, while smaller groups may be more suitable for defining working principles or addressing specific issues. Finally, effective PSUs require organizational commitment, leadership support, and practical formats that fit the action-oriented culture of the construction sector.

Conclusion

This research examined project start-ups as instruments for enhancing collaboration in complex construction projects. While existing literature describes PSUs in fragmented ways, the empirical findings show that they are more developed in practice than previously reflected. In the studied cases, PSUs have evolved from informal interventions into more structured governance mechanisms that support actor relations, project direction, and collaboration.

Two findings are particularly important. First, PSU effectiveness depends on its temporal dimension. A PSU should not be understood as a single starting event, but as part of an ongoing process in which principles and relationships are established, maintained and reinforced. Second, PSU objectives need to be defined more precisely. Distinguishing between relational, interorganizational strategic, and project control-oriented goals helps clarify what different actors value and why one intervention cannot address all goals equally.

Therefore, PSU should be designed as context-sensitive and goal-sensitive collaboration mechanisms. Their practical and legal design should be aligned with the ambitions of the involved actors, the targeted actor-levels, and the follow-up mechanisms needed to sustain collaboration beyond the initial start-up moment.

CONTENTS

LIST OF FIGURES & TABLES

FIGURES

TABLES

PREFACE

This research sheds light on how, here in the Netherlands, people recognize that we must do things together, collaboratively, and that this is not only helping in day-to-day interaction and well-being but also key for complex projects like the infrastructure projects investigated in this study. This is an attitude I want to uphold for working in this field.

As this investigation on collaboration and project work comprised a myriad of related themes - teamwork, governance, legal frameworks, psychology, behaviour, project control, research on institutions, to mention just a few, which all seemed to be equally important- I want to thank my supervisors for providing me guidance in staying focused on what is relevant. This thesis would not have been possible without Evelien Bruggeman's sharp comments and differentiated understanding of this topic and Jelle Koolwijk's dedication, not only in terms of methodological approaches, but also in always supporting me in staying consistent in the logic of my research.

I was happy to do my internship at Ballast Nedam and am grateful to have encountered so many friendly and helpful people along the way. I want to thank my supervisor, Evelien Veldhuizen, whom I deeply appreciate as a mentor, and the rest of the Ballast Nedam team, particularly Roy Hopmans and Stefan Rozeboom, as they have supported my endeavour immensely. I also want to thank Jeffrey van Beusekom and Malcolm Aalstein for their valuable support and for sparking many interesting thoughts in me regarding this topic.

I don't want to miss the opportunity to also express my gratitude to my family, my parents, Nuray and Stephan, and my brother Derin, who have created a home so solid that I have always dared to walk my path, even if it led me far from them. Thank you, Matteo, for always rooting for me. I am blessed to have you in my life. And my friends who made my time here in Delft so memorable.

I sincerely want to thank everyone who has participated in the creation of this thesis. I hope they learn as much from what I present in this study as I learned from them, enjoy reading.

1 INTRODUCTION

The current development of the Dutch construction sector is characterized by a steady increase in project scale and complexity (Pavez et al., 2022; Walker et al., 2017), accompanied by a growing preference for integrated project delivery methods (Lahdenperä, 2012). These trends fundamentally alter the requirements for project organization and execution, making close and effective collaboration between project actors more essential than ever before. Whereas traditional project delivery forms often allowed for more fragmented and sequential interactions, integrated construction projects demand a higher degree of coordination, alignment and joint responsibility among stakeholders (Osifo et al., 2025).

Construction companies also recognize the importance of collaboration, as it is seen as a necessary means to reach project goals and deliver complex projects (Chakkol et al., 2018). In response to the current challenges, firms are increasingly investing in collaborative approaches and in creating non-adversarial working cultures. The shift is largely motivated by the need to prevent inefficiencies, disputes, and opportunistic behavior that may jeopardize project outcomes and result in costly and time-consuming arbitration or litigation processes (Osifo et al., 2025). Beyond risk mitigation, however, effective collaboration is also recognized as a strategic asset that can generate additional value for all parties involved, enhancing both project performance and long-term business relationships (Chakkol et al., 2018).

This increasing attention to collaboration is also reflected in the legal and administrative development of the Dutch construction sector. Within the research initiative *Onderzoeksopzet Deelproject Samenwerking* (DPS; Eng. Research initiative subproject collaboration), the *Instituut voor Bouwrecht* (IBR; Eng. Institute for building law) seeks to systematically examine the functioning and effectiveness of so-called legally operationalized instruments for collaboration. These instruments are intended to support, structure, and safeguard collaboration-enhancing behavior in construction projects. However, despite the new approaches through said interventions and instruments, there is still limited systematic knowledge about how they are used in practice, under which conditions they are applied, how they are legally embedded, and what effects they aim to produce.

Among the instruments, *project start-ups* (PSU) and *follow-ups* (PFU) have gained prominence as practical instruments aimed at facilitating alignment, building trust, and establishing a shared project culture. PSUs are typically organized in the early stages of a project to define common goals, clarify roles and expectations, and set the foundation for working together (Gattringer & Wiener, 2020; Ono & Archibald, 1991). PFUs, in turn, serve as recurring reflection and alignment moments throughout the project lifecycle, allowing project teams to evaluate collaboration practices, address emerging issues, and reinforce non-adversarial behavior.

These functions of PSUs and PFUs are of great significance for project actors that aim to overcome the often-adversarial relationships between partners in the construction sector (Eriksson, 2008). Given that the temporary and project-based nature of construction partnerships additionally presents challenges for collaboration and at times interferes with trust-building between project actors (Davies and Hobday, 2005; Chakkol et al., 2018), mechanisms that support the creation and maintenance of positive relationships in this context can be considered invaluable.

In this sense, project start-ups and follow-ups can be placed at the intersection of project management, collaboration, and legal-administrative project organization. They are not only practical workshops or team building sessions, but may also be connected to contractual arrangements, procurement requirements, or broader governance structures. This makes them relevant both as managerial and as potential legal instruments for collaboration.

Research problem, purpose &questions

1.1 Research problem

Existing literature suggests that project start-ups are widely recognized across different sectors and industries, as project partners consider them a valuable means to promote alignment and teambuilding (Gattringer & Wiener, 2020; Ono & Archibald, 1991). They can have a variety of forms. Gareis (2000, p.8), for example, conceptualizes PSUs as “interactive communication form” ranging from single kick-off meetings to multiple-day workshops or continuous formats, often referred to as project follow-ups. Some studies suggest that PSUs are an effective means to facilitate collaboration, at least in the short-term (Burger et al., 2019). After a PSU, project actors understand the project context significantly better (Halman & Burger, 2002) and are more likely to achieve collective goals (Engel and Carlsson, 2002). This indicates that a significant beneficial effect on projects and project teams can be attributed to PSU application.

However, academic research on PSUs remains limited and fails to define them uniformly. Their form, duration, participants, content and objectives may differ substantially between projects. This variation makes it difficult to determine what project start-ups consist of in practice and which elements are essential for their effectiveness. Moreover, much of the available research about project start-ups originates from sectors other than construction, such as petroleum, technology innovation, telecommunications, and manufacturing (Ioan et al., 2023; Ono & Archibald, 1991; Halman & Burger, 2002). The construction sector – despite its high complexity, fragmentation, and temporary project organizations - remains comparatively underexplored.

Although project start-ups are increasingly used as instruments for collaboration, existing research indicates that they remain insufficiently utilized and, more importantly, insufficiently understood (Halman & Burger, 2002). Existing studies provide limited evidence on how PSUs should be structured and facilitated to achieve their intended outcomes (Gattringer & Wiener,

2020). It is also unclear whether their application in practice is driven by convention or by clearly defined objectives.

This lack of clarity is problematic because PSUs are expected to contribute to collaboration, while the goals they are supposed to achieve appear to be general and vague. Halman & Burger (2002) found that project managers and clients, for instance, frequently lack a shared understanding of key project aspects, such as priorities, purpose, and scope, even after participating in PSU workshops. This indicates that, while PSUs are widely accepted as a legitimate tool to enhance chances of project success, there is limited awareness among practitioners regarding the specific goals they are intended to achieve. Thus, if these objectives remain vague, it becomes difficult to assess the instrument's effectiveness. It also becomes difficult to design PSUs in a way that responds to the actual needs of project actors at organizational, project, team, and individual levels.

Furthermore, little is known about the legal embedding of project start-ups. While there is an increasing demand for more structured approaches to securing "collaborative competence" in construction projects recently (Chakkol et al., 2018, p. 15), it remains unclear whether PSUs are formally included in contracts, how they are specifically prescribed, and whether their legal embedding influences their practical use. This creates a gap between the increasing demand for structured collaboration on construction projects and the limited knowledge about how project start-ups as specific instruments for collaboration are actually used, designed, and evaluated.

Despite the growing use of project start-ups in construction projects, there is insufficient systematic knowledge about their practical content, legal embedding, and intended actor goals. Consequently, project partners lack clear guidance on how PSUs can be designed and implemented in a way that effectively supports collaboration and contributes to the achievement of project, organizational, team, and individual goals.

1.2 Research purpose

The purpose of this research is to examine how project start-ups are currently used, legally embedded, and perceived in complex construction projects. The study aims to identify what PSUs consist of in practice, which actor goals motivate their use, and to what extent they are perceived as effective in achieving these goals.

By linking the design of PSUs to actor goals, this thesis seeks to develop a more systematic understanding of their role as collaboration-enhancing instruments. The research also aims to contribute to the broader DPS framework of the *Instituut voor Bouwrecht* by providing insights into project start-ups as a specific legal and managerial instrument for collaboration. Ultimately, the study seeks to formulate practical recommendations for project partners, legal professionals, and advisors on how PSUs can be designed more effectively in integrated construction projects.

1.3 Research questions

Based on the research problem outlined above, the main research question and the addressed sub-questions are:

How can project partners practically and legally design project start-ups to achieve actor goals in complex projects?

***RQ1**. What do project start-ups consist of in practice?*
This question examines the practical content, structure, participants, and organization of project start-ups in the selected case studies. It aims to identify how PSUs are operationalized in real-world construction projects.

***RQ2**. In which context are PSUs currently used, and how are they legally embedded?*
This question investigates the project conditions under which PSUs are applied and examines whether, and how, they are included in contractual or legal-administrative arrangements.

***RQ3**. What are the actor goals that motivate the use of PSUs?*
This question focuses on the objectives that project actors associate with project start-ups. It examines whether these goals are explicit and shared and how they relate to organizational, project, team, and individual levels.

***RQ4**. Do collaboration partners perceive PSUs as effective in meeting those goals?*
This question explores how project actors evaluate the effectiveness of PSUs, or elements of it, in relation to the goals identified in RQ_3.

***RQ5**. How can PSUs be designed better to meet actor goals (effectiveness)?*
This question translates the findings into design recommendations for improving the practical and legal design of project start-ups.

Reading guide

This thesis is structured as follows: Chapter 2 presents the theoretical background of the research. It discusses project start-ups, collaboration in complex projects, as well as teamwork and actor goals. Chapter 3 explains the research methodology, including case study design, document analysis, interviews, and Qsorting approach. It also discusses research ethics and data management provisions. Chapter 4 presents the results by first providing the within-case findings of the selected construction cases. Then, cross-case findings are explained and compared with the literature. Furthermore, the chapter entails the analysis of the Qsorting results. Chapter 5 discusses the interpretation and implications of the findings for theory and practice and introduces the checklist for PSUs. Finally, Chapter 6 presents the conclusion.

2
THEORETICAL BACKGROUND
Literature study, DPS framework & instrument characterization

The theoretical background provides an overview of the main concepts of this study and the current state of research on project start-ups and actor goals in complex projects. It also addresses related themes, including collaboration, teamwork, and legal developments within the construction context. This is followed by an introduction to the DPS framework developed by the *Instituut voor Bouwrecht* and its application in this study. Finally, the PSU instrument is characterized according to this framework based on insights derived from the literature. This provides the theoretical foundation for the subsequent analysis of PSUs in practice.

2.0 Conceptual model

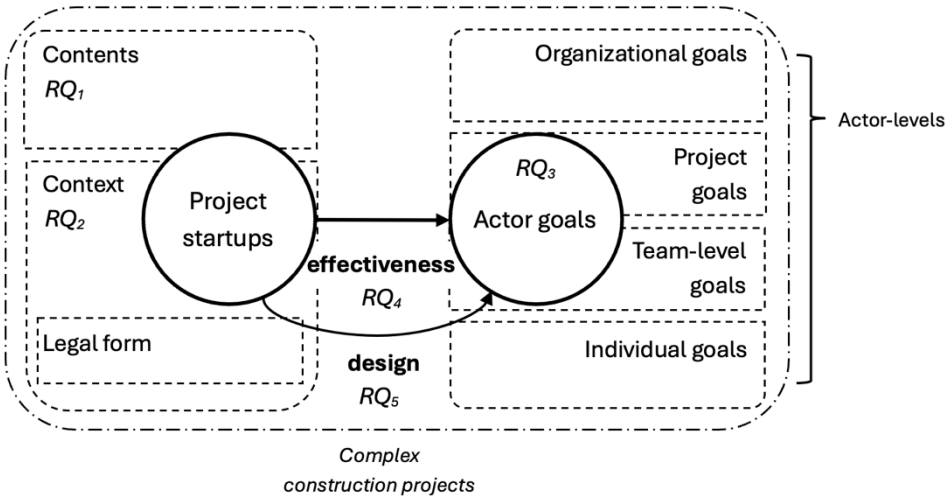


Figure 1 Conceptual model. Own work.

The literature review identifies two central concepts for this study: Project start-ups and actor goals. *Figure 1* illustrates the relationship between these concepts in the conceptual model. As the study aims to contribute to the development of the DPS framework, the conceptual model incorporates selected DPS elements. At the same time, it adapts the framework to the focus of this study, structuring the analysis around the contents, context of application, and legal form of the instrument, while deliberately narrowing the investigation of actor goals by excluding societal goals. This delimitation is justified by the observation that PSUs primarily exist as practice-based instruments and are only partially formalized. Consequently, a more detailed understanding of their practical application is necessary before extending the analysis to a wider systemic level. Complex projects require integrated forms of collaboration for project success. Within this context, PSUs are used as instruments to facilitate the development of collaborative actor behavior.

Literature study

2.1 Project start-up (PSU)

Contents and context

2.1.1 Definition and structure

Even though project start-ups have been studied in several sectors, such as the petroleum industry, telecommunication, technology innovation, and infrastructure (Ioan et al., 2023; Ono & Archibald, 1991; Gattringer & Wiener, 2020; Babaei et al., 2021), to this day, no universal definition for PSUs exists in the literature. While some researchers focus on the single pre-project or kick-off workshop (Ono and Archibald, 1991), other authors describe the PSU as a stage of a project, its launching process (Halman & Burger, 2002), or a phase within the project (Gattringer & Wiener, 2020), typically during the front-end. Gareis (2000) describes the project "pre-start" as a form of communication in contrast to kick-off meetings, which solely serve the aim of transferring information from the client to the other involved party or parties. While for most definitions of PSUs the focus irrefutably lies on the point in time they are performed, project start-up literature also describes the phenomenon through the specific activities and tools (the 'how') used to create a PSU and the purpose behind their initiation (the 'why').

In their study about evaluating effectiveness of project start-ups, Halman & Burger (2002) identify three stages of the PSU: The 'intake phase' (Halman & Burger, 2002; p.2) in which the scope and objectives of the phase are decided, a 'workshop' (Halman & Burger, 2002; p.2) with a possible duration of up to 3 days, where project details will be discussed among the participants and finally, a 'follow-up'(Halman & Burger, 2002; p.2) to give approval to or disapprove of the results from the discussion in the workshop. This structured overview illustrates the elements that can be part of the start-up process; however, the consistent adherence to these three stages was not confirmed by other empirical research on the topic. Nevertheless, there is a consensus that PSUs should ideally not be single events, but rather a sequence of activities in complex projects (Gareis, 2000; Burger et al., 2019). This is because the objectives of the PSU can likely not be achieved during one single session.

2.1.2 Activities

Next to project team meetings and interviews, workshops are the most frequently mentioned method used during project start-ups (Halman & Burger, 2002). Project start, kick-off, controlling, follow-up, and project close-down workshops (Ona & Archibald, 1991; Halman & Burger, 2002; Burger et al., 2019) are used as an instrument to establish grounds for communication in a project context. This is necessary since at the start of most projects, new (constellations of) project parties are introduced to each other who have not worked together before. They are therefore often lacking a coordinated communication structure. The workshops are usually held in person and include presentation moments, short assignments, brainstorming sessions, and discussion rounds (Ono & Archibald, 1991). During workshops, different sets of materials, tools, and arrangements are used to foster the social interaction of

actors (Burger et al., 2019). A part of the academic research for this field furthermore focuses on the 'communication channels' (Matthew, 2012) that can be used to start the thinking process, commonly used media are flipcharts and models visualizing ideas (Detienne, 2006). Burger et al. (2019) highlight how the mentioned in-person activities allow for feedback and, given the early stage of the process, open the conversation for innovative approaches. These activities and elements shape how meaning is created collectively during the front-end phase.

2.1.3 Moderating factors

Even though much of the start-up process is shaped by the initiating party, which is the project owner most of the time, Gattringer and Wiener (2020) highlight that all project parties participating in the PSU need to acknowledge the advantages of conducting a PSU for themselves for the process to have the desired effect. Other prerequisites for start-ups that the literature suggests are the skills of the professionals involved in the process and supportive tools and methods that help engage the participants (Burger et al., 2019). To this end, it is considered useful to bring in an outside consultant or project facilitator to manage, prepare, record, and moderate start-up workshops, besides taking on a motivating role (Gattringer and Wiener, 2020; Ono & Archibald, 1991).

Goals

2.1.4 Purpose and objectives

The reasons for conducting a PSU are manifold. PSU activities are entirely voluntary, so there is no legal necessity. Most of the time, they are initiated by the project owner or their project manager, which is why the conditions for the PSU and their objectives are primarily prescribed by these actors (Halman & Burger, 2002). The overarching goal for using PSUs is to make use of the planning flexibility still present in the front-end of the project (Aaltonen et al., 2016) by introducing systematic project planning and team organization structures (Halman & Burger, 2002) that ought to enhance performance throughout the rest of the project. The broad goals for project start-ups mentioned in the literature are to create a shared idea of the 'big picture' (Gareis, 2000; p.3) and the general project management approach for the project (Andersen, 2016). Within the literature, two main themes regarding the objectives could be identified: Objectives that seek to promote interpersonal interactions and establish a positive culture among the project group, and objectives that focus on the organization of processes and clarification of responsibilities (Andersen, 2016; Driskell et al., 2018).

For the first categories of objectives, Babei et al. (2021) highlight that establishing a structure that supports project stakeholders in working together is crucial for the initial stages. This is because setting grounds for a good interaction among project actors fosters communication, understanding, and learning among them, which can positively influence the project process (Burger et al., 2019). Early engagement can also reduce adversarial attitudes that project actors might bring to the partnership and therefore accelerate the team-building process (Ono & Archibald, 1991). In their research, Nugapitiya et al. (2009) describe how meaning is created during project start-up workshops and how this way of sensemaking helps align different actors on the priorities and the expectations for the project execution. Furthermore, PSUs also serve

symbolic purposes by establishing the project manager in their role and the general culture of management (Gareis, 2000; Ono & Archibald, 1991).

The other identified category of goals for planning and executing a PSU is the organizational one. Setting up communication structures for the project, exchanging information about documentation expectations, like project software used or deliverables, are part of this (Gareis, 2000; Ono & Archibald, 1991) and incorporated to create the basis for smoother processes after the start-up.

Effectiveness

2.1.5 Outcomes and effectiveness

Studies regarding the outcomes and effects of PSUs, especially workshops, which have been studied most elaborately in this area, confirm that PSU workshops support project actors in understanding the project scope and purpose significantly better (Halman & Burger, 2002). In their research about understanding front-end project workshops with Social Practice Theory, Burger et al. (2019) concluded that workshops have a lasting effect on the participants and improve their overall project experience. Additionally, workshops have proven to increase the possibility of collective goal achievement (Engel and Carlsson, 2002). Despite these convincing findings, researchers in the field stress the missed potential in project start-up utilization (Halman & Burger, 2002; Gattringer & Wiener, 2020; Babaei et al., 2021). Next to the insufficient recognition that project parties generally attribute to the PSU process, Halman & Burger (2002) found that while PSU workshops helped clarify overall, a third of Owner-Project Manager pairs observed in the study were divergent on factors like project priorities and purpose, scope clarity, costs, and availability of technology, even after the workshops. This is a surprisingly high number regarding the phase of the process and indicates problems with the design of the PSU. In the same study, project managers and owners also state that the most important aspects of the partnership for them had not been discussed to their satisfaction during the sessions. The issue of an unclear project context has also been identified in another study by Gattringer & Wiener (2020), where PSU participants remained uncertain about the details of the project. The study also acknowledges the importance of start-ups for a smooth process but points out the lack of knowledge about the design of a constructive collaborative work environment for the actors.

Design

2.1.6 Design and research gap

The literature study clearly illustrates the decisive role of the right design for project start-ups. However, there is still a gap in project start-up theory about the way start-up phases should ideally be designed and executed (Gattringer & Wiener, 2020). It is also evident that the literature is heavily focused on the activity of PSU workshops rather than the starting stage of the project, which contrasts with the prevailing definitions. While there is a consensus that the starting phase of the project strongly influences the success of a project, PSUs are all too often executed poorly (Babaei et al., 2021). One possible explanation for that is that PSU (workshops) are often seen as an outcome rather than a method to achieve project goals (Burger et al.,

2019). Additionally, the methods to investigate practices in project management are often premature and cannot fully capture the phenomena adequately (Burger et al., 2019).

Subsequently, this research is dedicated to capturing and examining the practice of PSUs utilizing a case study method. The aim is to address the gaps in the literature by investigating how project start-ups are better designed to serve the context in which they are applied and to clarify the goals underlying their initiation.

2.2 Collaboration in complex projects

The preceding paragraph provided insight into several aspects of project start-ups, including their content, the *how*, and underlying objectives, the *why*. It is important to recognize that project start-ups are embedded within the broader project context, as they are only conducted in relation to a concrete assignment and therefore fulfil instrumental aims (Driskell et al., 2018). Since PSUs are directed at shaping the way in which project actors work together, they are directly influenced by the broader approach to collaboration in the project. Accordingly, understanding PSUs, particularly the purpose of their use, requires situating them within the wider context of collaboration in complex projects.

In complex projects, particularly in the construction sector, interorganizational collaboration has become a central concept in both academic literature and professional practice. The increasing complexity of contemporary projects requires the involvement of numerous actors with differing responsibilities, expertise, and interests. In such environments, traditional control mechanisms based solely on contractual arrangements are often insufficient to organize project work effectively (Chakkol et al., 2018; Davies, 2004). As a result, collaborative practices have gained prominence as a means of managing interdependencies, uncertainty, and coordination across organizations. This development is also reflected in the juridical and contractual landscape. Where more collaborative and adaptive forms of project delivery have emerged in response to the limitations of conventional transactional contracts (Lahdenperä, 2012).

Despite its widespread use and being the subject of numerous studies, collaboration remains a fuzzy concept with multiple interpretations. Scholars, therefore attempted to distinguish collaboration from related concepts such as cooperation and coordination, or integration (Sandfort & Milward, 2008), primarily based on the degree of shared authority, resources, and commitment involved. Still, the use of the term ‘collaboration’ remains ambiguous. Sandfort & Milward (2008, p.12), for example, define collaboration as “a consensual relationship created to improve operations”, thereby emphasizing its operational character. The British Institute for Collaborative Working (2016) stresses the importance of commitment, mutual trust, openness, and shared goals between parties. These definitions highlight that collaboration is not merely about actors working alongside one another, but about aligning efforts toward common objectives and creating mechanisms for joint decision-making and problem-solving.

Importantly, collaboration is generally understood not as an end in itself, but as a process intended to achieve certain project outcomes (Sandfort & Milward, 2008; Pavez et al., 2022). This perspective is particularly relevant in complex projects, where project performance also depends on the quality of relationships and interactions between actors, not only on formal structures. Legal and contractual frameworks continue to provide the formal backbone of these relationships by defining responsibilities, allocating risks, and establishing procedures for dispute resolution (Khawaja and Mustapha, 2021; Latilo et al., 2024). At the same time, contracts increasingly seek to facilitate collaboration by incorporating relational principles and mechanisms, project start-ups, and follow-ups, for instance. This is intended to encourage joint decision-making, early stakeholder involvement, and shared commitment (Lahdenperä, 2012). Approaches such as integrated project delivery, project partnering, and alliancing exemplify this shift towards more collaborative forms of governance.

Nevertheless, even the most comprehensive contractual arrangements cannot anticipate all eventualities that arise in complex project environments. Those projects are characterized by evolving stakeholder interests, uncertainty, and changing technical and organizational conditions (Chakkol et al., 2018). Consequently, the effectiveness of collaboration cannot be assessed solely through formal contractual structures or predefined project outcomes. Instead, it becomes necessary to understand how actors interpret and pursue their objectives within the broader project setting. This is particularly relevant for PSUs, as these instruments are embedded within the interorganizational project network and operate in continuous interaction between actors. Investigating the effectiveness of PSUs, therefore, requires attention to not only their internal functioning, but also to the broader collaborative environment and contractual context in which they are situated. Examining the goals for collaboration, therefore, becomes essential for understanding the functioning and effectiveness of the PSU within the project environment.

The literature study shows that collaboration remains a fuzzy concept. Consequently, it is necessary to operationalize the term collaboration to be able to conduct this study in a practice-based context. Following the argumentation that collaboration is not an end in itself, this research therefore focuses on the underlying motivations and the goals that actors intend to achieve through collaboration.

2.3 Teamwork and actor goals

Research on teamwork and team performance can provide a conceptual foundation for examining collaboration and actor goals, particularly regarding assessing the effectiveness of interorganizational collaboration across different actor-levels. Project start-ups are typically organized when actors collaborate on construction projects for the first time, thereby necessitating the formation of a new project team. Project management literature consistently emphasizes that effective teamwork is essential to complete projects successfully (Lui & Cross,

2016). Work teams are characterized by their interdependence among members and by their embeddedness within broader organizational contexts (Mathieu et al., 2008).

Within the teamwork literature, teamwork is commonly conceptualized as the set of processes or activities through which team inputs are transformed into outputs (Driskell et al., 2018), reflecting the widely adopted input-process-outcome model (Mathieu et al., 2008). Mathieu et al., (2017), for example, describe teamwork as the integration of individuals' efforts (input) to pursue shared goals (output), while Salas et al. (2008) define teamwork in terms of the efforts undertaken to perform effectively. Central to these perspectives is the assumption that team effectiveness can be evaluated through the extent to which collective goals are accomplished.

From this perspective, PSUs can be understood as a mediating mechanism on the input side of teamwork processes, as they are intended to accelerate the relationship formation between project actors (Ono & Archibald, 1991). These relationships involve both interpersonal and instrumental dimensions that support the pursuit of shared objectives (Driskell, 2018). This distinction matches the broader differentiation between the *soft* and *hard* aspects of project management (Crawford & Pollack, 2004; Söderlund & Maylor, 2012). The *soft* dimension concerns values, relationships, culture, and meaning and is typically measured in qualitative terms and against often ambiguous objectives (Crawford & Pollack, 2004). In the context of PSUs, this may include interpersonal objectives such as trust development and psychological safety (Edmondson & Bransby, 2023). In contrast, the *hard* dimension, the PSU process side, focuses on technical performance, efficiency, monitoring, and control, and is associated with more clearly defined and measurable objectives (Crawford & Pollack, 2004). Existing research suggests that PSUs may simultaneously address both dimensions. However, it remains unclear which specific goals actors seek to achieve through project start-ups and follow-ups and where these goals are situated along the *soft-hard* spectrum (Gustavsson & Hallin, 2014).

The relationship between teamwork effectiveness and goal achievement is strongly reflected in the team performance literature, where successful teamwork is frequently assessed in terms of whether intended objectives are achieved (Driskell et al., 2018). Similarly, team performance measurement research examines whether team processes contribute to desired outcomes and evaluates the efficiency and effectiveness of teamwork accordingly (Rosen & Dietz, 2017).

Actor-levels

At the same time, the literature highlights that teamwork and performance operate across multiple levels. In their review on measuring team performance, Pavez et al. (2022) found that studies mostly commonly focus on the team, project, and organization level. This multilayered perspective is supported by Cohen & Bailey (1997), who conceptualize teams as nested and interconnected entities. This means that the organization, the project coalition, and sub-units within it may be understood as teams. It also means that teamwork goals are spread across different levels, which are defined as actor-levels for this study. Research demonstrates that

performance on one level can influence performance at another level, reinforcing the interdependent nature of work teams (Mathieu et al., 2008; Bjorvatn & Wald, 2018; Scheepers et al., 2022). Consequently, goals may be achieved at one actor-level, while remaining unfulfilled at another (Pavez et al., 2022). This highlights the importance of examining actor-level goals when assessing teamwork effectiveness and evaluating how PSUs contribute to interorganizational collaboration.

The literature review, therefore, revealed several important knowledge gaps regarding project start-ups and collaboration. Although PSUs are generally regarded as beneficial, little is known about their effective design and execution. Moreover, while construction management research increasingly emphasizes relational governance mechanisms, contractual stipulations concerning PSUs remain entirely missing from the discussion. In addition, the concept of collaboration itself remains conceptually broad and insufficiently operationalized for empirical analysis. To address this limitation, this study draws on the literature on teamwork and team performance, which provides a more established basis for assessing the effectiveness of interorganizational processes through the accomplishment of actor goals. On that account, the research will be concerned with the role of project start-up design in facilitating the accomplishment of actor goals, rather than collaboration as an abstract concept.

DPS framework

In the present chapter, the DPS framework is introduced and its principal elements outlined, as it forms the theoretical basis for analyzing PSUs as instrument. Building on these foundations, an analytical framework that combines the elements of the DPS framework with the research concepts is developed, in order to provide a structured approach for the systematic collection and analysis of knowledge on PSUs and, to an extent, PFUs. The chapter concludes by providing an instrument description of PSUs based on the existing literature about the topic.

2.4 Elements of the DPS framework

The theoretical foundation for analyzing project start-ups as a legally relevant instrument is provided by the *Onderzoeksprogramma Deelproject Samenwerking* (DPS), a framework developed by the Dutch *Instituut voor Bouwrecht* (Institute for Construction Law). The DPS framework is designed to investigate the functioning and effectiveness of legally operationalized instruments in the Dutch construction sector, which aim to promote collaborative behavior among actors. Its overarching objective is to contribute to the development of a future-proof procurement system and legal framework for the construction industry (IBR, 2025). To that end, the IBR, together with the *Vrije Universiteit Amsterdam*, has created a working paper presenting a framework on which grounds (legal) instruments currently applied in construction can be analyzed and their effectiveness compared in a systematic way (Aalstein et al., 2025).

Within this study, the DPS framework serves as a structuring aid for systematically organizing and analyzing data and knowledge on PSUs and PFUs, in theory, as they currently exist in practice and as they are further conceptualized throughout this research. The framework distinguishes three core elements for examining such instruments:

1. The instrument itself, its structure and content,
2. The goals different actors intend to achieve by applying the instrument, and
3. The circumstances that moderate the operationalization of the instrument.

The interrelations between these elements, as well as the factors associated with each, are illustrated in the DPS framework:

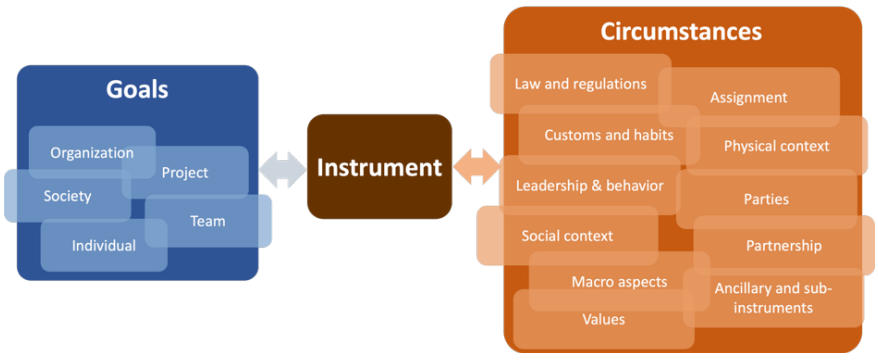
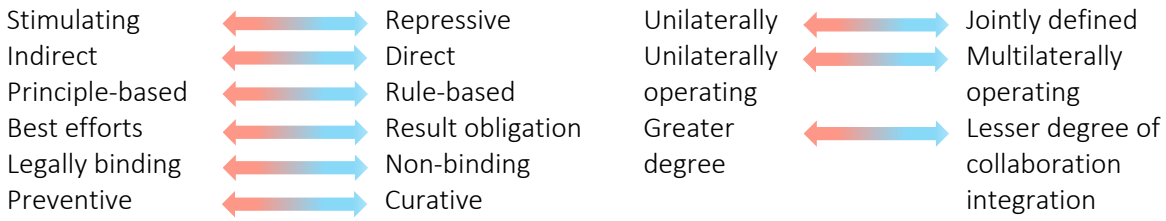


Figure 2 Framework (translated), based on Figure 3, DPS report. Aalstein et al., 2025. Original in Appendix 1.

2.4.1 Instrument

Within the DPS framework, the first element concerns the instrument itself, defined as "working methods, techniques, agreements and tools used to structure or facilitate the partnership and contribute to the achievement of actor goals" (Aalstein et al., 2025, p.10). Instruments thus serve to organize processes and shape interactions between actors within a project setting. In this research, the project start-up constitutes the instrument that will be under investigation. According to Aalstein et al. (2025), instruments vary in their mode of operation and degree of legal operationalization, particularly regarding their actor-level and domain of application. Moreover, they are practice-based phenomena and can evolve. To enable systematic characterization of instruments, the DPS framework introduces nine analytical spectra, which allow for examination of their features and functioning:



2.4.2 Goals

The second element of the DPS framework concerns the goals associated with the use of an instrument. These objectives are expected to guide both the selection and the design of the instrument (Aalstein et al., 2025) and may differ across actor-levels. The framework distinguishes goals at the societal, organizational, project, team, and individual levels. Importantly, the DPS framework assumes that the perceived effectiveness of an instrument depends upon the perspective of the actor evaluating it. The framework also puts forward the presumption that the actor's perspective could determine the extent to which the instrument is experienced as effective. Consequently, identifying these goals is a crucial step in assessing the effectiveness of PSUs, as goal achievement serves as a key indicator for evaluating instrument performance (Aalstein et al., 2025). However, in the case of PSUs, the underlying objectives are often not explicitly defined or systematically documented. This lack of clarity constitutes a central research gap. Therefore, this study first aimed to identify and structure the goals associated with PSUs and PFUs before evaluating the extent to which these instruments contribute to their achievement.

2.4.3 Circumstances

The third element of the DPS framework addresses the circumstances in which an instrument is applied. These refer to the contextual conditions that both influence the functioning of the instrument and are, in turn, affected by it (Aalstein et al., 2025). Depending on their nature, circumstances may either facilitate or hinder the achievement of actor goals. Examples of relevant circumstances include the nature and complexity of the task, the social and organizational context, the structure of the partnership, and applicable laws and regulations. The DPS framework conceptualizes the relationship between circumstances and the instrument in multiple ways: as input (influencing design and selection), as conditions (supporting or constraining its functioning), as consequences (emerging from the operation of

the instrument), and as integral components (embedded in its nature). This multi-dimensional perspective resembles the IPO/IMO models commonly used in teamwork literature (*chapter 2.3 Teamwork and actor goals*).

2.4.4 Application to this study

The three elements - instrument, goals, and circumstances - form the analytical foundation for examining project start-ups in this research. Together, they provide a structured approach for formalizing and systematizing knowledge about PSUs.

The analysis begins with a detailed examination of the instrument itself, focusing on how PSUs are designed and implemented in practice (RQ_1 & RQ_2). In line with the DPS framework, this step aims to describe the contents and operationalization of the PSU (the "how") as precisely as possible. This includes an investigation of the specific activities, methods, tools, and topics that constitute PSUs in practice. Insights are derived from both academic literature and empirical data collected through case studies, project documentation, and semi-structured interviews. Building on this, the study explores the underlying rationale for PSUs (the "why") by identifying the goals that actors associate with their implementation, as well as the intentions embedded in their design (RQ_3). This involves examining the motivations for initiating PSUs and understanding how their design is expected to contribute to the achievement of actor-level objectives. Distinguishing between the *how* and the *why* is essential for the analytic approach of this study. Only by linking the operational characteristics of the instrument to the objectives it is intended to achieve can meaningful conclusions be drawn about its effects and overall effectiveness. Finally, drawing on academic literature, the evaluation of instruments and goals is also structured along a distinction between *soft* and *hard* aspects, as they help characterize the nature of goals (*Figure 3*).

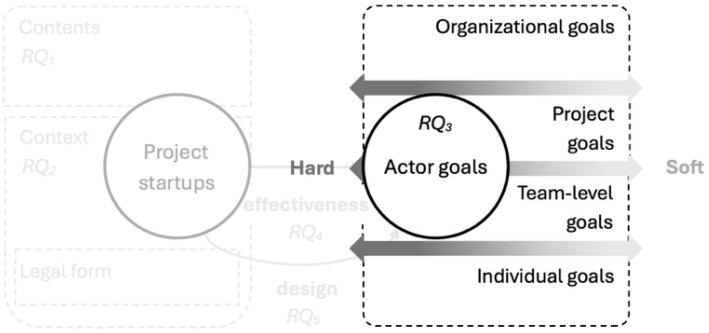
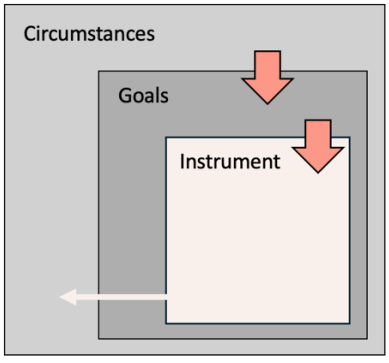


Figure 3 Allocation of hard and soft aspects within the conceptual framework. Own work.



The PSU is embedded within circumstances which shape the (nature of) the pursued goals, which in turn should influence the design of the instrument. The instrument is hoped to influence the circumstances positively.

Figure 4 Logic of the analysis structure

2.5 Analysis structure based on the DPS framework

The matrix summarizes and structures information about PSUs (and PFUs) that can be found in the academic literature:

PSU

How (instrument)	Why (goals)		Actor level
In-person workshops OR Kick-off		Soft	
	Foster trust and positive relationships [1], [2]		Individual, team, project
	Reduce adversarial attitudes [1]		Individual, team, project
Use of materials, tools and arrangements, i.e. models, flipcharts and visualizations	Accelerate team building process and relationship formation [1]		Team, project
	Encourage openness and psychological safety [6]		Individual, team, project
	Create a shared idea of the 'big picture'/vision [3]		Individual, team, project
Sensemaking activities [5]	Align expectations, meanings and project priorities [5]		Individual, team, project
Brainstorming sessions, discussions, assignments, presentations [1],[4]	Foster communication, understanding and mutual learning [4]		Individual, team, project
	Symbolic purposes to establish the PM [1], [3]		Individual, team, project
Create project names, logos, mission statements, project language [1]	Develop project identity and culture [3]		Individual, team, project
Informal interaction [6]	Create enthusiasm and motivation for collaboration [6]		Individual, team, project
Outside consultant/facilitator	Planning, moderating, motivating participants and evaluation of session [4]		Individual, team
In-take phase [7]	Clarify project scope and purpose [7]		Team, project, organizational
Planning sessions discussion phases, risks, activities and deliverables [7]	Define project objectives and execution approach [7]		Individual, team, project
	Clarify roles and responsibilities [1]		Individual, team, project, organizational
Communication about documentation, expectations, software and deliverables [1]	Support project processes after start-up [1]		Team, project, organizational
Interviews with participating organizations before workshop [6]	Identify knowledge gaps and starting conditions [6]		Team, project, organizational
Follow-up/PFU [7]	Formalize decisions and authorize project continuation [7]	Hard	Project, organizational

⇧

Circumstances

Project complexity and size [1], [3]
Timing, duration and frequency [1], [2], [3], [8]
Recognition of PSU value [6]
Project owner or PM commitment [7]
Skills of professionals involved [4]
Quality of preparation [1]

2.6 Instrument description

In the subsequent paragraphs, project start-ups will be characterized according to the DPS framework based on the available literature. The purpose of this is to evaluate to what extent the theory about the topic accurately represents what was found in the empirical case studies.

2.6.1 Instrument selection

Project start-ups and follow-ups (PSUs/PFUs) can be considered (legal) instruments which are widely used in construction projects. They are first and foremostly used to bring the project team and partners together and initiate occasions for discussions, communication and creating familiarity between the project actors (Burger et al., 2019) but can also help the structuring of project processes (Gareis, 2000; Ono & Archibald, 1991). In project management literature, PSUs have been studied to a limited extent, but the existing literature still covers various aspects of the start-up process, for instance, the initiators, objectives, activities, and a few studies about their outcomes. The empirical background of project start-ups is described extensively in the literature study of this document (*chapter 2.1 Project start-up (PSU)*). What is lesser known is the application and operationalization of PSUs in practice, which is the research gap and subject of this study.

The selection of the instrument "project start-up" has followed distinct criteria as laid out by the DPS framework (Aalstein et al., 2025) and is further explained in *Appendix 3*.

2.6.2 Instrument and term definition

As the literature study revealed, there is no universal definition of project start-ups, and several ideas about their sequence, duration, significance, and purpose exist at the same time. In the literature, PSUs are described as meetings, workshops, early stages or phases of projects, or their launching process (Ono and Archibald, 1991; Halman & Burger, 2002; Gattringer & Wiener, 2020; Gareis, 2000). As fuzzy as the temporal dimension of PSUs and PFUs are the ideas about the goals for utilizing the instrument, which are often separated into objectives focused on facilitating interpersonal interactions and project culture, which could be called the 'soft side', and, on the other hand, objectives that focus on the organization of processes and clarification of risks and responsibilities, potentially the 'hard side' (Andersen, 2016; Driskell et al., 2018). That is why a working definition of project start-ups, follow-ups, and actor goals, as well as the *soft* and *hard* sides, has been formulated for this research:

> A *project start-up (PSU)* is a phase or sequence of activities at the start of projects, through which a systematic project structure and team organization is set up between two or more parties.

This definition intentionally gives a broader delimitation of PSUs than the common focus on just one "kick-off meeting" (Ono and Archibald, 1991) since collaborative practices in construction were expected to be shaped and sustained by more than one curated interaction between the project actors (Gareis, 2000; Burger et al., 2019).

However, it is important to note that this definition deviates from what practitioners often consider a PSU, which is the kick-off workshop with a duration of up to three days, attended by

representatives from all involved parties, as described in the interview analysis (*chapter 4.6 Cross-case analysis documents and interviews*). Consequently, the Qsorting sessions and therefore PSU goals were ranked for the kick-off workshop and not for the starting phase.

Project follow-ups (PFUs) differ from regular progress meetings are used to revisit objectives established during the PSU. They provide a dedicated moment to discuss or renew working principles and reflect on the project experience.

Project management literature and the participants of this study often differentiated between *soft* and *hard* project goals and project management skills, which are relevant to understand for the investigation of objectives.

The *soft side* of projects facilitates interpersonal interactions and project culture. It emphasizes relationships, sensemaking and understanding and requires discussion and negotiation skills, as well as change management (Crawford and Pollack, 2004).

*The hard side of projects f*ocuses on the organization of processes and clarification of risks and responsibilities. It emphasizes technical performance and efficiency and includes monitoring and control skills, such as cost and scheduling.

The *actor levels* referenced in this research are based on the IBR's working paper which suggests that objectives can be experienced at different actor levels (Aalstein et al., 2025). The goals may therefore differ according to the levels which include the individual, team, project and organizational level in this thesis.

2.6.3 Current legal operationalization

Follows from within-case and cross-case comparison (*chapter 4*) because nothing concrete about the legal operationalization could be found in the literature.

2.6.4 Instrument characterization

The instrument can be characterized based on the nine pre-established categories described in the DPS framework (Aalstein et al., 2025). Since project follow-ups are barely specified in the literature, the characterization primarily concerns PSUs.

a) Stimulating vs. repressive:

Stimulating and repressive instruments share the common feature that they aim to promote behavior oriented toward collaboration (Aalstein et al., 2025), but the approach to it differs. PSUs can be defined as stimulating instruments that are used to formulate norms about how the project actors want to work together, but also decide on project goals and to establish a project culture (Gareis, 2000). They set up the structure and express the intention to work together symbolically and concretely (Andersen, 2016; Gareis, 2000). This is done using formal and informal interventions that ought to foster (mutual) understanding among the people involved in the project (Burger et al., 2019). These interventions, like short presentations and

small assignments or discussions, are specifically aimed at stimulating collaborative-oriented behavior (Ono & Archibald, 1991). The project follow-ups are barely described, but Halman & Burger (2002) consider them formal approval or disapproval moments, where the client normally decides that the project should be carried out, and project members can start working on execution plans. This is the case when the PSU and PFU are already done in the tender phase.

b) Indirect vs. direct:

Since the project start-up aims to shape the relationships between actors positively by contributing to aligning stakeholder focus and expectations (Babei et al., 2021) and attempting to break down barriers of communication or interaction (Burger et al., 2019), which could complicate the work on specific project objectives, their effect is mainly indirect. The idea is to accelerate team building, planning, learning, and processes (Ono & Archibald, 1991), which could include decisions and resolutions for these themes, and therefore also act directly as well. However, this is not specified in the literature.

c) Principle-based vs. rule-based:

The PSU is mainly a principle-based instrument that is intended to actively support the collaboration of partners and team members in a project. The start-up often focuses on broad objectives or the "big picture" (Gareis, 2000, p.3) and is to establish basic ideas about how the interaction between project actors should work. It enables the setting up of further principles for working together and additionally creates the occasion to discuss other principle- and rule-based arrangements for the project.

d) Best efforts vs. result obligation:

Only one study, by Halman & Burger (2002), was identified as addressing the non-mandatory character of PSUs. The authors state that project start-ups are not compulsory and are therefore typically initiated by the project parties, most often the client. Due to the limited supporting literature, it remains unclear whether the instrument is primarily based on participants' best efforts or whether there are cases in which concrete outcomes are required. The DPS characterization focuses only on the nature of the legally operationalized instrument, rather than the objectives or outcomes it achieves. For this research, however, it is more valuable to consider both aspects when categorizing PSUs, since the mere application provides limited insight into their actual effectiveness.

e) Legally binding vs. non-binding:

No explanation about the legal nature of PSU was found by studying the existing literature. Consequently, this needs to be investigated further. An important observation is that a substantial part of the literature on collaboration as a broader concept addresses the failure of collaborative measures. In this context, particular attention is given to contractual provisions concerning arbitration and litigation procedures (Osifo, 2025; Chakkol et al., 2018).

f) Preventive vs. curative:

For the most part, PSUs are preventive instruments. They are organized to ensure that all project actors know each other, have mutual expectations regarding the project organization, for example, communication tools or timeline requirements, and that they build a culture of productive discussion and exchange of perspectives and information (Andersen, 2016; Driskell et al., 2018). This supports the identification of gaps potentially jeopardizing project success (Ono & Archibald, 1991). Ono & Archibald (1991) also mention the possibility of quickly

resolving any adversarial attitudes that might exist at the beginning, which also reveals a curative dimension. A PFU can also have curative effects to a limited extent when certain techniques are used to set aside personal differences or neutralize topics of friction due to mediating mechanisms.

g) Unilaterally vs. jointly defined:

In the case of PSUs, the instrument is most of the time unilaterally imposed by the client and then jointly elaborated with other actors. Not only the initiative, but also the aims, conditions, agenda points, and participants are imposed by the client (Halman & Burger, 2002). Coaches or facilitators are often engaged to support the organization of the PSU (Ono & Archibald, 1991). However, as they are typically appointed by the client or responsible project manager, the PSU can still be characterized as a unilaterally defined instrument. At the same time, Ono & Archibald (1991) emphasize that the planning of PSUs should stay flexible and responsive to participants' needs, as this can enhance both involvement and acceptance.

h) Unilaterally vs. multilaterally operating:

PSUs are inherently multilaterally operating instruments since they aim to introduce and involve several project actors and influence their interactions positively. Therefore, they have a "structuring or behavior-regulating influence on multiple actors within the partnership" (Aalstein et al., 2025). Gareis (2000) distinguishes between kick-off meetings as a one-way communication of project information and project start workshops as an interactive form, in which the client, project team, and other representatives develop the project vision together. This means that, depending on the definition and approach, PSUs could be unilaterally or multilaterally operating.

i) Greater vs. lesser degree of collaboration integration:

PSUs and PFUs foster collaboration on varying intensity levels. It is important to highlight that PSUs are used to structure the desired collaboration to different degrees of integration rather than directly operating on a specific degree. A goal of the PSU/PFU process is that actors take joint decisions and work on certain principles and values together (Gareis, 2000), collaborating during the sessions and therefore creating something beyond their autonomy, which could be considered integration, though on a small scale and for a short time. However, in practice, it is difficult to certainly say that the PSU and PFU mechanisms transcend cooperation and collaboration as defined by Sandfort and Milward (2008).

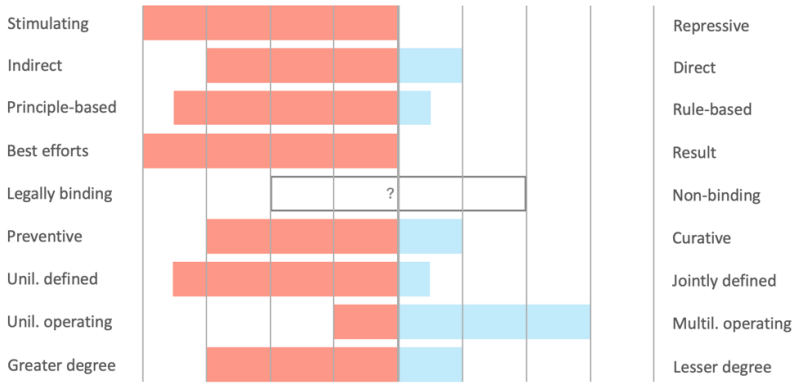


Figure 5 Visualization instrument characterization. Own image

3 RESEARCH METHODS RESEARCH ETHICS & DATA MANAGEMENT

This chapter outlines the methodological approach used to answer the research questions. It first discusses the research design and underlying research paradigm, followed by sections on data collection, data analysis, and sampling strategy. The chapter explains how the selected research design enables the generation of relevant empirical data and supports the development of insights relevant to understanding project start-ups as instruments for collaboration in complex projects. In addition, this chapter introduces the three case studies examined in this research and explains the rationale for their selection.

3.1 Research design

This study is positioned within the research paradigm of pragmatism and is, to a limited extent, interpretative, as it aims to generate practically relevant knowledge about how project start-ups are conceptualized, designed, and applied in construction projects (Creswell, 2009). To fully grasp these aspects, it is important to also understand the experience of actors who participate in PSUs. Rather than considering collaboration only a measurable outcome or a subjective experience, the study examines how PSUs are understood by project actors and how they could function as practical instruments for collaboration and actor goal achievement. This is why a mixed-method case study approach has been adopted.

The logic of inquiry is primarily exploratory and inductive, complemented by an explanatory step. This logic is operationalized through an embedded mixed-method research design, which is guided by a dominant qualitative approach supported by a quantitative method, the Qsorting methodology, to substantiate the findings (Crewell, 2009). The qualitative research approach forms the core of the research design, as the aim of the research is to develop an in-depth understanding of how project partners can practically and legally operationalize PSUs. Furthermore, only limited academic knowledge about PSUs and their influence on actor goal achievement exists, and a high degree of context dependency is associated with their application. Qualitative research is therefore particularly suitable for examining these experiences and perceptions (Blaikie & Priest, 2019). In this study, it is used to form a deeper understanding of the expectations that actors have of PSUs and their experiences with them in practice.

The qualitative component also serves to identify what actors intend to achieve through project start-ups and follow-ups, with the purpose of finding out what goals are considered important. These identified goals subsequently inform the quantitative component of the research design,

which is applied in relation to RQ_4. This quantitative step examines which of the identified goals are perceived as effective by a broader group of actors (Blaikie & Priest, 2019) and the implications for PSU design. Since these actors occupy different roles within the project organization, the findings make it possible to explore perceived differences in goal prioritization across actor roles and levels.

The combination of qualitative and quantitative methods strengthens the empirical basis of the study and enables triangulation of data (Bryman, 2008). This is necessary to answer the main research question, which requires an understanding of the contextual and experiential dimensions of project start-ups and an assessment of the relative importance of actor goals.

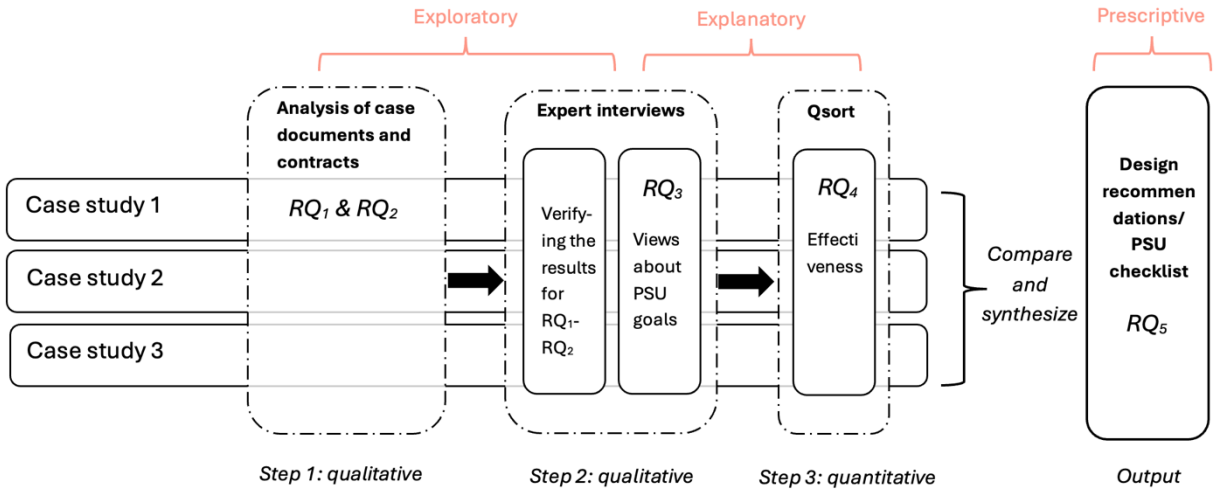


Figure 6 Research design. Own work.

3.1.1 Case study approach

Since this study seeks to explore how the design of project start-ups is related to project circumstances and actor goals, three case studies of complex construction projects in the Netherlands were selected. The case study approach provides a specific real-life context and enables an in-depth examination of the experiences of key actors involved in the PSU process (Crowe et al., 2011). A mixed-methods multiple-case study design was chosen because the research problem concerns a subject about which limited theoretical knowledge is available (Crowe et al., 2011). This limited knowledge is reflected, among other things, in the absence of a generally accepted definition of project start-ups. Furthermore, the knowledge required to understand PSUs and goals associated with them was expected to be found primarily in practice, where they are relatively commonly applied. The unit of analysis will be the relation between PSU design and goals, while the context in which the PSUs are embedded can be considered a moderating factor.

The selected cases were examined through analysis of a combination of process documents, contractual documents, PSU workshop materials and, if available, follow-up documentation. This combination of sources made it possible to investigate the formal arrangements

surrounding project start-ups and the practical ways in which they were designed and implemented.

3.1.2 Case selection criteria

The case studies were facilitated by Ballast Nedam (internship company), which provided access to two projects, and the Gemeente Amsterdam, which provided access to one project. The cases were selected through purposive sampling (Blaikie & Priest, 2019) according to the following criteria:

(1) Projects located in the Netherlands, subject to Dutch law. This criterion was chosen because the thesis applies and further develops the DPS framework within the Dutch legal and project governance context. To prioritize variation in project context over variation in contractual form, all selected cases were based on integrated contracts, specifically the UAV-GC 2005 or UAV-GCI 2019.

(2) Construction projects that can be considered complex. In this research, complexity refers to projects that are unique and highly complicated due to long time spans, substantial capital investments, and the need to coordinate multiple stakeholders (Brady et al., 2005; Lewis and Roehrich, 2009). Such projects require the bundling of equipment, resources, and expertise, and therefore involve networks of vertical and horizontal relationships (Davies and Brady, 2000). This creates a need for coordination among multiple organizations, often organized through consortia, alliances, or joint ventures (Davies and Brady, 2000).

(3) Include a formally planned project start-up phase or PSU workshop(s). This criterion was essential because the project start-up constitutes the central object of the study.

(4) Access to project documentation and key project participants had to be attainable within the scope of the thesis. This access was made possible through the researcher's internship at Ballast Nedam and through the support of the Municipality of Amsterdam.

The decision to include two projects from the same company and one project from another organization was made to support analytical comparison, constituting a limited comparative design (Crowe et al., 2011). The comparison between the two organizations enables the identification of contextual factors and goals that may be related to organizational setting, while the comparison between the two projects from the same company enables the identification of differences that may be related to project-specific characteristics. This sampling logic supports the identification of plausible patterns across cases, while not claiming to prove organizational effects.

3.2 Data collection

The research design consists of three sequential steps of collection methods is depicted in *Figure 6*. In the process, primary data, was collected through interviews and Qsorting sessions, and secondary data was collected through document analysis.

3.2.1 Document analysis

Document analysis constituted the first step of qualitative data collection. This is step 1 (*Figure 6*), focused on the systematic examination of project documents in order to explore and describe the actual design and formal embedding of project start-ups and follow-ups in practice. Together with the second qualitative step, this analysis contributes to answering RQ_1, RQ_2, and RQ_3. The collected data consisted primarily of textual material, which was later categorized through a combination of deductive and inductive coding (Blaikie & Priest, 2019).

The documents were provided by the internship host and the municipality of Amsterdam. Since no standardized set of project start-up documents exists in the construction sector, the available documentation differed across cases. The quality of documents was assessed through authorship and date (most current version). An overview of the examined documents per case is provided in *Appendix 4*. Recurring document types included the *Basisovereenkomste* (Eng. Basic Agreements), different *Eisen* (Eng. Requirement documents), and PSU agendas or preparatory materials. However, the volume, type, and completeness of the documentation varied considerably between cases. For example, in Case 2, no report or comparable documentation of the kick-off day was available.

The availability and nature of project start-up documentation appeared to depend strongly on the project context, client requirements, and the approach adopted by the project management team. Although this variation represents a methodological limitation, it also constitutes an empirical finding. It supported the expectation that project start-ups are not designed, documented, or implemented in a uniform manner across projects.

3.2.2 Semi-structured interviews

Semi-structured expert interviews were conducted as the second step of data collection. The interviews served two main purposes. First, they were used to validate the information gathered for RQ_1, RQ_2, and RQ_3, thereby reducing the risk of misinterpretation and researcher bias in the document. Second, the interviews were used to explore whether relevant knowledge about project start-ups existed outside the formal documentation and how key project actors involved in the design of the PSU formulated and prioritized their goals.

This research instrument was selected because it provides a balance between comparability and flexibility. Semi -structured interviews allow the researcher to vary the wording and order of questions while ensuring all relevant thematic areas are addressed across interviews (Schulz, 2012). This was important because the research required comparison between cases regarding the relationship between project context and the design, structure, and content of the PSUs. In addition, individual interviews allow for follow-up questions and probing (Schulz, 2012), which made it possible to gain a deeper understanding of the participants' perspectives (Creswell & Creswell, 2017). The interviews were designed to last approximately 60 minutes and were audio recorded. Questions were developed on the basis of the literature review and

themes identified through the document analysis. The interview guide covered five thematic areas. These themes linked to the relevant research questions are shown in *Table 1* below. The interviews were transcribed and pseudonymized for data analysis. Interview guides are included in *Appendix 5*.

Table 1 Themes for interview analysis

Topic	Area	Topic overview	Related RQs
A	Introduction and project context	Role, project characteristics, definition of PSU	RQ_1
B	PSU design in practice	Organization of case PSU, participants, topics and activities, tools and methods, design decision-making	RQ_1&RQ_2
C	Contractual/Legal embedding	Contract or voluntary, relation to legal framework, formal and informal outcomes	RQ_2
D	Actor goals	Objectives for organizing, addressed goals, actor goals, goal achievement	RQ_3 & RQ_4
E	PSU improvement	Reflection on PSU/PFU, elements that worked well or that did not	RQ_4 & RQ_5

3.2.3 Qsorting methodology

The third step of data collection consisted of the application of Qsorting methodology. This method was originally developed by Stephenson (1935) to enable the systematic study of viewpoints. It can be considered mixed-method, because it combines qualitative viewpoint interpretation with quantitative factor analysis. Rather than correlating variables across a population (R-Set), Qsorting methodology correlates persons based on the way they rank a set of statements, thereby identifying shared patterns of meaning among participants (Stephenson, 1935; Watts & Stenner, 2005). This methodology is particularly suitable for research contexts in which participants' subjective viewpoints on complex or socially contested topics are central (Watts & Stenner, 2005). In this study, it was used to investigate how project actors prioritize different goals associated with PSUs. The method therefore enables the identification of shared and diverging viewpoints regarding the motivations for using this instrument, by deploying a by-person factor analysis (Watts & Stenner, 2005).

In the Qsorting session, participants ranked a set of 41 statements, the Q-set, concerning goals of project start-up conduction. The statements were ranked along a scale according to the degree to which participants agreed with them. The ranking grid was shaped as an inverted pyramid, requiring participants to place fewer statements at the extreme ends of the distribution and more statements toward the neutral middle. This forced distribution requires participants to prioritize between statements and can therefore stimulate reflection and critical assessment (Watts & Stenner, 2005). The distribution used in this study (*Figure 7*) was designed to allow participants to identify not only the most and least relevant goals, but also to

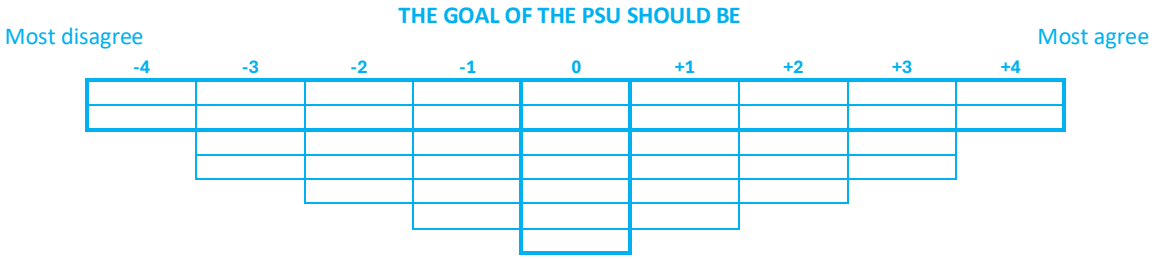


Figure 7 Qsorting grid. Based on Stephanson (1935) developed for this study by author.

differentiate between varying degrees of importance across the full set of statements. The grid therefore supports the identification of clear priorities while still accommodating the breadth of goals identified during the earlier phases of the research. The Q-set was developed based on the literature review, document analysis, and preparatory conversations with facilitators, change managers, and project managers involved in different construction projects in the Netherlands (*Figure 8*). This approach ensured that the statements reflected both theoretical insights and practice-based understandings of PSU goals. *Appendix 6* includes the 41 developed statements.

Using Qsorting allowed participants to consider a wide range of possible goals, rather than requiring them to generate goals spontaneously during an interview. This aimed to reduce the risk that relevant goals were overlooked due to recall limitations, situational bias, or differences in participants' ability to articulate goals spontaneously. Furthermore, the method makes it possible to examine what project actors consider important from the perspective of their specific roles. This enabled later comparison of whether goals are prioritized differently by different types of project actors, such as project managers, contract managers, or stakeholder managers. At the end of each sorting session, a 15-minute debrief interview was conducted in which the participants were asked to elaborate on their ranking. Attention was particularly paid to participants' explanations of statements at the extreme ends of the distribution, as these placements are most important for understanding the meaning of each viewpoint. The interviews were not audio recorded, but notes were taken and transcribed. This interview material was not used to construct factors, but to contextualize and refine their interpretation.

The measurement of subjective priorities is important for this research because actor goals constitute a central element of the study. In contrast to the document analysis, which focuses primarily on formal and tangible sources, the Qsorting exercise captures shared subjective viewpoints. Notably, the resulting factors represent interpretable patterns of viewpoint rather than conventional measurable variables.

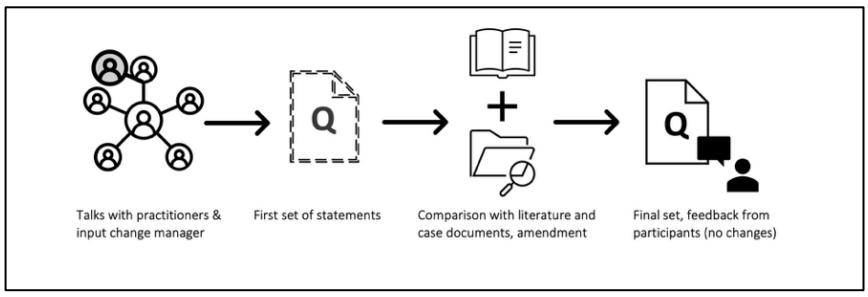


Figure 8 Development procedure of Qsorting statements

3.3 Sample

3.3.1 Document sample

The documentation used for the first step of analysis was provided by the contact person at the company or municipality for each case study. All accessible project documents were screened and categorized according to whether they contained arrangements related to project start-ups, project follow-ups or kick-off workshops. The search was later broadened to include documents containing provisions or references related to collaboration-enhancing aspects in order to better understand the broader project environment in which the PSUs and PFUs were embedded.

3.3.2 Interview sample

For the semi-structured interviews, participants were selected through purposive sampling (Blaikie & Priest, 2019). The sample focused on initiators and participants of the project start-up, particularly individuals who had influence over the design of the project start-up. The selection made it possible to investigate the reasoning behind the PSU design. For each case, three interviews were planned, resulting in 8 interviews in total, since no facilitator in Case 2 was available. The selected participants included the contractor's project manager, the client's project manager, and in two cases, the responsible facilitator. Preliminary conversations indicated that these actors were central to the organization and design of the project start-up. This sample size was considered appropriate, since this study does not aim to produce statistical generalization, but rather develop a deeper understanding of the relationship between specific project contexts and the legal instrument of project start-ups.

Table 2 Interview sample

	Case 1	Case 2	Case 3
Interviewees	3	2	3
Represented roles	PM contractor (1A), PM client (1B), facilitator (1C)	PM contractor (2A), PM client (2B)	PM contractor (3A), PM client (3B), facilitator (3C)

3.3.3 Qsorting methodology sample

The sample for the Qsorting methodology, was derived from the project organizations' management teams and organizational charts. Since participants in the kick-off meeting largely overlapped with managerial project roles, the sample focused on project actors occupying these positions. The sample included project managers, contract managers, technical managers, stakeholder managers, design managers and baseline managers, as these actors are typically invited to and actively involved in project start-ups. A key inclusion criterion was that participants had attended the PSU of the relevant case project. This was necessary in order to relate their goal prioritization to the intended goals of the PSU and to enable them to reflect on the perceived effectiveness of the PSU and subsequent PFU.

Per case, several project members in different roles within the project organizations participated in the Qsorting sessions, including representatives from both the client and contractor sides. The number of Q-sorts per case and the actor roles covered through the participants are presented in the table below.

Table 3 Qsorting sample

	Case 1	Case 2	Case 3
Q-sorts	9	10	3
Represented roles	1xPM, 2xCM, 4xTM, 2xSM,	6xPM, 2xCM, 1x SM, 1xDM	1xPM, 2x ChM

Abbreviations: PM = project manager, CM = contract manager, TM = technical manager, SM = stakeholder manager, DM = design manager, ChM = change manager

3.4 Data analysis

	RQ1	RQ2	RQ3	RQ4	RQ5
Research question	Design in practice	Context and legal embeddedness	Actor-level goals	(Perceived) Effectiveness	Improved design
Method of analysis	Comparison table, Analysis structure and coding	Comparison table, Analysis structure and coding	Analysis structure and coding	Factor analysis in PQMethod and debrief interview notes	Synthesis
Activities	Explore and describe	Explore and describe	Explore and interpret	Evaluate	Prescribe
Output	Characterization of PSU elements	Characterization of PSU elements	Categorization of goals and comparison between cases	Identification of success factors	Design principles for PSUs (checklist)

Table 4 Data analysis and output

The data analysis followed a two-stage approach, consisting of within-case analysis and cross-case analysis. In the first stage, each case was analyzed individually through thematic coding, combining deductive and inductive coding of project documents and interviews (Gibbs, 2007).

Atlas.ti was used to support the coding process and co-occurrence analysis. The *within-case analysis* aimed to develop a detailed understanding of the design of the first three research questions about PSUs within each specific project context. Data analysis was conducted in parallel with data collection. This enabled adaptations to the analytical focus as new themes emerged during the analysis process of the qualitative instruments. The same analytical procedure was applied to each case to ensure comparability across cases.

The second stage consisted of a *cross-case analysis*. This analysis was conducted to identify similarities and differences between the cases. Through the identification of recurring elements and code themes, relationships between PSU design elements, contextual factors, and perceived effectiveness in achieving actor goals were examined.

As described in the previous sections, the qualitative data generated were analyzed through coding techniques aimed at reducing, organizing, and interpreting data (Blaikie & Priest, 2019). The Qsorting sessions provided structured comparative data by adding a quantitative component and validated the findings from the qualitative steps, while simultaneously

specifying identified goal categories. Together, the within-case and cross-case analyses informed the development of PSU design principles. These analytically derived principles are intended to support project managers, clients, and legal/project advisors in designing and operationalizing project start-ups in comparable contexts.

3.4.1 Document analysis

The document analysis consisted of a qualitative examination of the documents available for each case (*Appendix 4*) and was first coded according to the developed coding table based on the literature study and then refined through the empirical material. The coding software used was Atlas.ti.

The documents were initially coded deductively (Blaikie & Priest, 2019) on the basis of the codebook, including themes derived from the literature review *Appendix 7*. During the reading of documents and the first round of coding in Atlas.ti, additional inductive open codes were developed when themes emerged from the material (*Appendix 8*). Subsequently, the codebook was refined and supplemented to develop the categories of information better (Gibbs, 2010b). A second round of coding was then conducted using the revised codes from the comparison. *Table 6* depicts a summary of the applied coding themes. Most codes appeared across all cases, except for some that were specific to individual projects. For example, the code "innovation" was only relevant in Case 3, demonstrating project context-specific focuses, such as learning and development of technology in Case 3. In addition to coding, the information was structured through a comparison table. The table categories and examples for the cases are depicted in *Table 5*, for the complete table, refer to *Appendix 13*. The structure of the table was developed in response to the types of information found in the documents and was used to facilitate comparison between the stipulations, descriptions, and arrangements identified in the different cases.

As discussed earlier, there was limited consistency in the types of documents available across the three cases. The level of detail, volume, and completeness of the accessible information also varied considerably. The results of the document analysis are summarized in the case-specific chapters 4.1 Case 1,
4.2 Case 2, and 4.3 Case 3.

Table 5 Case comparison table

Case data	Case 1	Case 2	Case 3
PSU done	Yes	Yes	Yes (September – 25)
PFU done	Yes 2/3 one organized for each milestone	Yes	Yes (March – 26) Thematic session for collaboration
Form of collaboration	Portfolio contract, 2-phased-contract	Two-Phased + 15-year maintenance	Innovation Partnership, based on portfolio and 2-phased contract. Consortium of 3 contractors.
Contract form	UAV-GC 2005 (D&B) + multi-year maintenance	UAV-GCI 2019 (D&B), joint venture	Framework '*Collaborationagreement*' (SOK)
More categories Appendix 13	Portfolio approach, timeline, phases, role and responsibilities of contractor (ON)/client (OG), ……		

Table 6 Summary coding themes and codes document analysis (complete table Appendix 7&8)

Coding themes	Sub-theme	Codes	References
Start-up phase	Stages	(Design of) PSU, Intake-phase, (Kick-off) workshop, PFU/Follow-up, Phase transition	Gattringer & Wiener, 2020, Halman & Burger, 2002; Ono & Archibald, 1991, Case1 - VP, Case2 - VSP
Actors and organizations		Client/Owner, initiating party, Facilitator/coach, project stakeholders, Equality between parties, Contractor, Partner organization, Social/Public, Learned lessons	Gattringer & Wiener, 2020, Halman & Burger, 2002; Ono & Archibald, 1991, Li et al., 2022, Diender & Keith, 2025, Case1 – VP + DKP DGF, Case2 A-B, Case3 - SD
Methods and activities		Instruments and tools, feedback, working methods, digital tools, (Regular) meetings, Reflection, Consulting, Team coaching, Co-location, Values	Burger et al., 2019; Matthew, 2012, Halman & Burger, 2002, Latilo et al., 2024, Case1 – VP + PMP + AVD, Case2 VSP + A, Case 3 - A5
Aims and ambitions	Values, Interpersonal dimension, Organization of processes, Outcomes and effects, Goals, Knowledge	Clarity & transparency, Innovation, Trust honesty & openness, Flexibility and freedom, Alignment of priorities, Shared idea/vision, commitment, (Mutual) expectations, Mutual understanding, Comm. structures, Motivations and interests, decision-making and authority, (Common) processes, Responsibilities, Information exchange, Goal achievement, project success, Good collaboration, Improving, Benefits, Shared goals, knowledge sharing, Learning, Respect, Knowing each other, Organizational goals	Halman & Burger, 2002; BICW, 2016; Lahdenperä, 2012, Burger et al., 2019, Schepker et al., 2014, Gareis, 2000; Nugapitiya et al., 2009, Sandfort & Milward, 2008; Chakkol et al., 2018, […],Case1 – AVD + PMP, Case2 A-B
Collaboration forms	Project delivery methods, Contractual, Relational	(Interorganizational) collaboration, Alliancing, Integrated project delivery, Partnering/Portfolio, Consortium, Joint venture, Collab. Arrangements/principles, Collaborative culture, Sustainable partnership, governance, jointly, Informal, Formal	Chakkol et al., 2018; Davies, 2004, Lahdenperä, 2012, Acha et al., 2004; Davies and Brady, 2000, Babei et al., 2021, Andersen, 2016, Diender & Keith, 2025, Case1 - VP, Case 2 A + VSP, Case3 - A5
Teamwork and performance	Outcomes and effects, Actor levels	(Team) performance/assessment, (Team) Satisfaction, Team level, Partnership, Organizational level, Individual level, Interdependence	Cohen & Bailey, 1997, Pavez et al., 2022; Aalstein et al., 2025; Chakkol et al., 2018, Burger et al., 2019, Mathieu et al., 2008, Halman & Burger, 2002
Legal/contract		Contractual agreements, Liability, (Contract) Standardization, Transactional vs. relational contract, UAV-GC contracts	Latilo et al., 2024, Osifo et al., 2025, Lahdenperä, 2012; Chakkol et al., 2018, Case1 - AVD, Case2 BO
Project areas and processes		Project context, Scope of work & tasks, Schedule, Costs & price, Quality management, Procurement/tender, Risk (management), Escalation procedures, Sustainability, Safety, Project management approach, Contract management, (Technical) requirements	Gattringer & Wiener, 2020, Latilo et al., 2024; Halman & Burger, 2002, Andersen, 2016
Challenges		Uncertainty, Trade-offs & bottlenecks, Complexity, Adversarial attitudes, Conflict/Problem	Chakkol et al., 2018, Osifo et al., 2025, Ono & Archibald, 1991

3.4.2 Semi-structured interviews

The semi-structured interviews were analyzed using the coding table in *Appendix 7&8*, developed during the document analysis, and themes from the interview guide (*Table 7*). The existing codes were first applied. Subsequently, emerging themes were incorporated when they appeared repeatedly across the interview material. This resulted in a second coding table (*Appendix 9*). Atlas.ti was used to conduct co-occurrence analysis in order to identify whether specific terms, themes, and concepts tended to appear together within individual cases and across the case interviews. In addition, an interpretive analysis of statements that showed relations to another was conducted to examine key statements that reflected the participants' views and interpretations of the PSU process and the relationships between identified concepts (Schulz, 2012).

Table 7 Main themes interview guide

Topic	Purpose	Theoretical background
A	Introduction and project context	2.1 Project start-up (PSU)
B	PSU design in practice	2.1 Project start-up (PSU)
C	Contractual/Legal embedding	2.2 Collaboration in complex projects
D	Actor goals	2.3 Teamwork and actor goals
E	PSU improvement	(2.3 Teamwork and actor goals)

The interview analysis served several purposes. First, it supported the verification of information derived from the project documentation. Second, it helped assess whether the PSU had been implemented in accordance with the formal documentation. Third, the reflective parts of the interviews provided insight into which elements of the project start-up were considered valuable, unnecessary, or potentially ineffective by participants. The analysis also aimed to identify shared and contrasting viewpoints among participants. Furthermore, it contributed to the development of action points for PSU design recommendations in the form of a checklist. These action points were grounded in aspects that were repeatedly mentioned by the interviewees or proved to be analytically relevant prerequisites, points of attention, or areas of improvement. As with the document analysis, both within-case and cross-case analyses were conducted.

3.4.3 Qsorting methodology

Qsorting methodology was selected because it enables the use of a structured ranking procedure while also generating insight into individual stakeholders' subjective judgements and a group's shared viewpoints (Stephenson, 1935; Rodrigues et al., 2022). This makes this method suitable for examining how different actors perceive and prioritize project start-up goals and how they were emphasized across the cases. The application of the Qsorting methodology produced factor arrays, as well as consensus and distinguishing statements. These outputs were used to identify which goals and PSU elements were perceived as useful, relevant, and supportive of actor goals and which were perceived as less relevant, unnecessary, or potentially obstructive. Factor loadings were also used to examine how viewpoints were distributed across participants, actor roles, and case projects.

Overall, 22 Q-sorts of 41 statements (*Appendix 6*) were collected and entered into the PQMethod software developed by Peter Schmolck (1994, latest version 2014). PQMethod supports the factor-analytic procedures required for Q-methodological interpretation and was therefore used to process and analyze the Q-sorts. The data were extracted through Principal Components Factor Analysis to identify how many factors, indicating shared viewpoints, should be retained for a meaningful analysis.

To decide on the number of factors, Eigenvalues, Explained Variance and the number of defining sorts were examined. Eigenvalues indicate how much of the total variation in the Q-sorts is accounted for by a factor or viewpoint (The SAGE Dictionary of Statistics, 2026). Following the Kaiser-Guttmann criterion (The SAGE Dictionary of Statistics, 2026), only principal components with an Eigenvalue greater than 1.0 were initially considered, as components below this threshold contain less information than the original variables and therefore are not significant enough to be retained (Jolliffe, 2002). At the same time, the percentage of the Explained Variance was considered to assess how much of the total variance is explained by each factor, or the first factors together as a cumulative percentage.

After identifying the factors with Eigenvalues above 1.0, a Varimax rotation of the selected factors was performed in PQMethod. The rotation produced a rotated factor matrix, which indicated which Q-sorts loaded significantly on each factor, therefore, which participants defined each viewpoint. For the cross-case Q-analysis, initially five factors with an Eigenvalue above 1.0 were selected for interpretation. Only factors with sufficient defining Q-sorts were retained. In this study, a factor was included when at least two Q-sorts clearly loaded on it. Based on this criterion, four defining factors were defined, but after further analysis, only 3 defining factors were included in the final interpretation. The final factor solution was therefore selected through a combination of statistical and interpretive criteria, including Eigenvalues, Explained Variance, the number of defining sorts, correlations between factors, the interpretability of factor arrays, and the extent to which factor meanings were supported by participants' debrief interview comments.

In the final stage of the Q-Analysis, factor arrays, factor scores for each statement, distinguishing and consensus statements, and correlations between factors were generated. These outputs formed the basis for identifying and characterizing the shared viewpoints among participant groups (Watts & Stenner, 2005). They also enabled the interpretation of which PSU goals and elements were commonly valued across case participants and which were specific to particular viewpoints.

Following the synthesis and comparison of the document analysis, interviews, and Qsorting results into case findings, the research output was used to develop PSU design recommendations in response to RQ_5. The methodology was designed to generate a detailed understanding of the contextual and motivational factors that shape the design and perceived effectiveness of project start-up processes. Although the findings cannot be statistically generalized, the research may contribute to analytical and abductive theory development by improving understanding of the PSUs as instruments for influencing collaborative behavior (Blaikie & Priest, 2019).

RESEARCH ETHICS & DATA MANAGEMENT

This section describes the measures taken to ensure methodological integrity and ethical compliance during the research. To that end, risks and mitigation mechanisms have been included. The external, as well as internal validity, will be discussed regarding ethical research requirements and participant protection. Furthermore, the data management plan will be briefly explained, and the adherence to FAIR guiding principles will be summarized.

3.5 Research ethics

This section is concerned with the ethics of this research, investigating the balance of its scientific contribution with the potential harm it could cause (Blaikie & Priest, 2019) and ensuring that those risks are not disproportionate to the benefits. A Human Research Ethics Committee (HREC) assessment has been conducted and approved to ensure that the research is methodologically and morally defensible.

To protect the *research subjects*, ethical research principles (Blaikie & Priest, 2019), like voluntary participation, informed consent, and right to privacy, and the regulations of the GDPR have been followed (Polonsky & Waller, 2018). The interviews and Qsorting sessions were strictly focused on the role of the interviewees and not on personal information. Still, the data has been pseudonymized for the duration of data collection and anonymized after analysis, since insights regarding the actors' roles and their individual, team, project, and organizational motivations were relevant to the research. This has been explained in the Informed Consent forms participants were asked to read and sign before any interview or Qsorting session (*Appendix 11*). Before processing the results, the researcher also scanned the transcript for any personally and company-sensitive data, which were modified or erased, if found. This was to prevent any potential harm to the organizations behind the participants and to the participants themselves. A draft of this thesis has furthermore been sent to the contact person of each case three weeks before it was finalized, so that they could give recommendations about what could be considered compromising data. Their comments were finally considered. Because of the use of case studies, the specific circumstances of each project are described in detail, which poses the risk of making actors traceable in their roles. That is why results as well as interview transcripts have been anonymized. The Qsorting method seeks to investigate actor-level goals and, therefore, also individual objectives. However, the results were summarized per case and as a cumulation for all cases or roles, so that the individual objectives are not traceable. Lists with personal identifiable information (PII) for administrative purposes and the interview audio recordings will be destroyed after the end of the research. No safety concern regarding the researcher has been identified. Further information can be found in the Data Management Plan in *Appendix 15*.

To ensure the ethical integrity and validity of *research itself,* the study design was grounded in a review of scientific literature and was continuously evaluated in relation to its capacity to address the formulated sub-questions. This iterative process was guided by key principles of research quality, including its relevance and worthiness of the study, the identification and mitigation of potential conflicts of interest, and the pursuit of high methodological standards

(Blaikie & Priest, 2019). To strengthen *internal validity* (Serra & Torrell, 2022), a mixed-method approach was adopted. This approach enables the cross-validation of data and provides a more robust basis for assessing evidence than that derived from individual research instruments (Bryman, 2008). For example, the first part of the planned expert interviews was used to verify with project actors whether the PSU context and content descriptions derived from the document analysis in the first step of the research design accurately reflect the actual project circumstances. In addition, the objectives included in the Qsorting methodology were identified not only from the literature but also from interviews with project actors. This ensures that the selected statements represent objectives that are practically relevant to the cases under investigation. Furthermore, information bias was mitigated by adapting the same analytical approach to all three case studies (Serra & Torrell, 2022). This consideration also informed the decision to use semi-structured interviews rather than open ones, as semi-structured interviews maintain a consistent structure across cases. Lastly, a possible researcher bias because of the internship at Ballast Nedam needs to be addressed. While the involvement in the project environments ensured an in-depth understanding of the two cases and could be considered a strength of the study, it may have influenced data access and participant openness. This was mitigated by the inclusion of the third case with another party and the application of the same analytical steps but still needs to be acknowledged.

The *external validity* of the study (Serra & Torrell, 2022) is partly limited by the case study approach and the number of participants (Crowe et al., 2011). Nevertheless, the comparative design, involving two case studies from the same company and one case study involving different organizations, was deliberately chosen to enhance the robustness of the research. The design helps distinguish between factors that may be specific to a particular organizational context and those that may be more broadly related to the use of PSUs. Given that the research involves real project cases, particular attention was paid to potential conflicts of interest and to the possibility that findings could affect the self-image or professional reputation of research participants (Gibbs, 2013). The potential threats to the validity and ethical integrity were communicated to the actors involved in the case studies.

Despite the use of appropriate methodological measures, this case study remains highly context-specific and explores a field that has received limited attention in existing literature. Consequently, several limitations remain as discussed in 5.3 Limitations.

3.6 Data management

To ensure that the risks associated with collecting, storing, analyzing, and sharing research data were carefully considered and mitigated, a Data Management Plan (see *Appendix 15*) was prepared. This plan was developed to support the fulfilment of the researcher's ethical obligations towards the participants, the scientific community, and society. Before *data collection*, consultations were held with Ballast Nedam, which also consulted their clients. Written informed consent forms were used to inform participants about the purpose of the research, their rights, and the intended processing, sharing, and use of their data. These forms also stated that participants could withdraw from the study or decline to answer specific questions at any point during the Qsorting sessions and interviews at any time (*Appendix 11*).

Regarding *data storage,* the research involved the collection of partly confidential data, such as participant contact details, but no sensitive personal data. Files were stored on the TU Delft

OneDrive, with an additional backup maintained in the dedicated ProjectData storage. After the expert interviews had been transcribed, the audio recordings were deleted from the primary device. All data collected through the Qsorting sessions and interviews were pseudonymized. Personally identifiable information (PII), as specified in the Research Management Plan, will be deleted after the analysis and presentation of the data. Given the risk of re-identification associated with the case study approach, a confidentiality agreement was established between the researcher and the internship company. For publication purposes, interview and Qsorting data were anonymized and edited into anonymous summaries. Access to the collected data is restricted to authorized members of the research team, namely the researcher and two supervisors. The data may be preserved for up to ten years in the project storage at TU Delft.

The research results and methodological approach, but not the raw collected data, will be publicly shared as part of the master's thesis and graduation presentation. The dissemination of the research is legally supported by the internship agreement between the researcher and Ballast Nedam. Further details about concrete measures taken to prevent data breaches and address other relevant data management risks are provided in the Data Management Plan.

FAIR Guiding Principles

Lastly, the FAIR Guiding Principles (Wilkinson et al., 2016) were considered in relation to the management and documentation of the research data. These principles aim to improve the findability, accessibility, interoperability, and reusability of digital research assets. In this study, however, the primary data cannot be made openly accessible, as the interview and case data contain sensitive information that required anonymization or pseudonymization to protect participants. In addition, access to the data is restricted due to agreements with the internship company and the involved project organizations. Therefore, while the raw data cannot be shared publicly, the research process, data sources, and analytical steps have been described as transparently as possible to support the findability, interpretability, and potential reusability of the research findings within the limits of confidentiality and data protection requirements.

4
RESULTS

The results chapter presents the qualitative and quantitative data analysis conducted for this mixed-methods research. It first reports the findings from the document analysis, introducing the case-study contexts and examining the role of collaboration, as well as the design and function of PSUs. This analysis informs the characterization of the PSU instrument in each case. The chapter then presents the findings from the qualitative single-case and cross-case interview analyses. Finally, it reports and interprets the results of the Qsorting methodology.

CASE STUDY
Document analysis

4.1 Case 1

Figure 9 Image Case 1. ANP/Siebe Swart (2020).

Figure 10 Project timeline. Own work based on project documentation (2026).

4.1.1 Project context

The project of case study 1 is a tunnel renovation project that is part of a large-scale infrastructure program in the Netherlands. The purpose of the case project is to update an existing tunnel to current safety standards, mitigate constructive corrosion, and maintain its functionality for the coming decades. The project was initiated by the owner of the tunnel system, who opted for a partnership where the partner not only performs the tunnel renovation but also takes on the responsibility of maintaining the tunnel system for at least 10 years. Furthermore, input from the contractor side was desired so that a holistic plan for the renovation and subsequent maintenance period could be developed together. The contractual setup reflects this strategic orientation and resulted in formalizing the collaboration as a design, build, and maintain (DBM) approach, which is legally based on an integrated contract, namely the UAV-GC 2005, for maintenance, design, replacement, and renovation for 5 to 6 years, followed by a multi-year maintenance. A particularity of the case is that the project is the first of a planned multi-project approach, called a *portfolio contract*, entailing two different portfolios with five tunnel renovations in total by the same client. This approach combines similar contracts into a single portfolio to maximize the knowledge and learning experiences gained during the construction (AVD). It is the first time that the client attempts to standardize the renovation of their tunnels, by first creating a portfolio of three tunnels which will be updated in a staggered way, to appoint (roughly) the same team and constellation for each project to allow for continuous improvement, rooting it in a well-acquainted and "sustainable project organization" (PMP, p. 16) and promote learning from one project to the next one. For this aim, the rules of the European public procurement law (Directive 2014/24/EU) have been adapted to enable a follow-up contract to the design & build assignment, which does not require repeating a public procurement procedure. Therefore, the project partnership is formed with the intention to commit to many years and several projects following one another. The main phases of the project are structured as described:

1. Commissioning of the contract
2. Realization phase (construction and maintenance activities)
3. Long-term maintenance period

However, a mechanism similar to a two-phased approach has been installed as well, which serves as a moment to control whether the contractual requirements between the parties can be fulfilled and whether the partnership can or should be continued based on the contract, specifically within the price limit, before the collaboration of the parties is continued. To this end, a specific phase, the *Doorgrondingsfase*, a comprehension phase, has been planned, constituting phase one of the two-phased approach. This phase of 15 months started after the contract had been awarded to the contractors and is to verify or reassess risks, price, and project conditions to end up with realistic results and evaluate whether the estimated price, given the risk and further project specifications, is feasible for both parties. Therefore, there could be a moment after the *Doorgrondingsfase* where the partnership is not continued when both parties cannot agree on the assignment terms, given the new information. However, the client and contractor strive for the continuation of the partnership. The roles and responsibilities of each party, apart from technical specifications, are described as follows:

The contractor operates with a high degree of autonomy within the integrated contract and is expected to execute the works in alignment with the mission and objectives of the client,

contribute through improvement proposals (but not investment decisions), ensure safety, availability, and reliability of the tunnel, and integrate maintenance and risk management for lifecycle optimization. He is also responsible for verifying information provided by the client and resolving discrepancies, contributing to knowledge and data transfer, and maintaining stakeholder relationships. This reflects a shift of the focus from prescriptive contracting towards performance-based and responsibility-driven project delivery. It is further reflected in the contractor's ability to determine how and when work is executed and, in his role, define processes and performance criteria himself.

The client, on the other side, is supposed to take on a strategic and systemic role with a focus on long-term planning. In the contract, it is described that he has the overall responsibility to manage the functioning and performance of the infrastructure and to update his maintenance strategies. Furthermore, he needs to plan the investment and prioritize risks and, respectively, risk mitigation measures. For this, the contractual agreement highlights that the client needs to provide complete, reliable, and up-to-date information and ensure transparency regarding short and long-term risks. This relationship and the division of responsibilities are explicitly defined in the contract and form the foundation for the collaboration (VO). While the contractor is responsible for execution and process design, the client focuses on strategic oversight and long-term planning. The requirement to engage in constructive collaboration is also anchored in the agreement as a cornerstone of the partnership.

4.1.2 Role of collaboration, design, and purpose of PSU/PFUs

Collaboration within the project is framed as a critical success factor and is approached both in a relational and process-oriented endeavor. According to the contract, the agreement is based on equality between the parties, and each party needs to respect mutual interests and objectives. It highlights the collaboration as a central pillar of the project governance with explicit attention to behavioral expectation and collaboration agreements. In the project documentation (AVD), collaboration is defined as:

> *A way of working in which mutual dependencies are jointly assessed, addressed, monitored and adjusted in a transparent manner, ensuring that all parties perceive their interests as being treated fairly. (AVD)*

Effective collaboration is understood to start with developing a strong mutual understanding between project partners, including insight into each other's motivations, beliefs, interests, and communication styles. This shared understanding is considered essential for enabling smooth coordination and effective decision-making processes. Furthermore, the project emphasizes continuous reflection and joint learning based on 'early collaboration experiences' (which might include PSUs, but they are not explicitly mentioned) as a means to strengthen long-term collaboration.

To support these relational aspects, the client initiates a range of activities with the contractor that partly stem from contractual process agreements. These activities include team coaching, team assessments, shared workspaces/co-location, and regular evaluations, all aimed at fostering trust, openness, and a collaborative culture (AVD). In this context, collaboration is not only defined by the achievement of shared objectives, but also by the manner in which these objectives are pursued (the "how"). Accordingly, significant attention is given to process-

related aspects, such as the structuring of communication and decision-making procedures. Well-organized processes are expected to ensure clarity and transparency, enabling all involved actors to understand their roles, responsibilities, and expectations, thereby reducing misunderstandings and strengthening trust. In addition to the relational and processual considerations, the project documentation highlights several important preconditions for successful collaboration, including a balanced pricing structure, an acceptable risk profile, and stable project requirements and execution conditions (AVD). These factors are seen as necessary to create a foundation on which collaborative behavior can effectively develop.

From a contractual perspective, collaboration is embedded distinctively through the inclusion of the *Doorgrondingsfase* (DGF; Eng. Comprehension phase), which starts immediately after contract award and forms an integral part of the design and construction phases rather than being considered a separate preliminary stage. Given the objectives of this phase, which are to explore risks, uncertainties, and their potential impact on the project, the documentation indicates that more intensive collaboration between the client and contractor is required than is typically the case in traditional UAV-GC contracts (AVD). Within 15 months after contract awarding, the DGF phase must result in an integrated design and an execution plan, forming the basis for agreeing on a fixed price for the realization phase.

Although the basic agreement itself does not explicitly mention project start-ups or project follow-ups, these instruments are contractually and procedurally embedded within the consultation and process structure governing the DGF. Specifically, within four weeks after contract award, the client and contractor are required to jointly organize a PSU for the DGF to align expectations regarding the execution phase (VSP, AVD). The outcomes of this PSU are to be subsequently formalized as part of the partial quality plan for the DGF (AVD). PFUs are also mentioned in the agreement and are to be done, if necessary, but not categorically (VSP).

The consultation structure for the project is designed to manage the DGF in a controlled and transparent manner, with a strong focus on timely and well-founded decision-making. It consists of three types of interactions (DKP DGF):

1. PSUs and PFUs,
2. Formal meetings, and
3. Informal meetings

Within this structure, PSUs and PFUs play a central role as dedicated moments for alignment, reflection, and adjustment. After initial *Vlieghoochte sessies* (Eng. flying start sessions), a PSU is organized in which both the process of the DGF and the interaction between client and contractor are discussed (DKP DGF). Additionally, before the PSU, a half-day session is held to review the client's existing collaboration roadmap and to develop a shared narrative on "good contractorship" (VSP, IN210, DKP DGF).

In the *Vraagspecificatie process* (VSP; Eng. process specifications), contractual provisions further structure the preparation of the PSU. Immediately after contract award, the contractor must conduct a team assessment with the core teams of both clients and contractor, the results of which serve as input for the PSU (IN211). Furthermore, both parties are required to jointly appoint a team coach, funded by the client, who facilitates the PSU and subsequent PFUs (IN213). The document states that collaboration agreements are treated as dynamic and must

be regularly discussed, evaluated, and operationalized at the management level within the PSUs, PFUs, and consultations (IN214). The contractor is responsible for documenting these agreements in the PMP, while both contractor and client must ensure their dissemination and implementation across all organizational levels to support a consistent and productive collaboration culture (IN215).

Throughout the project, the PSUs and PFUs are explicitly positioned as structured reflection moments (PMP). The PSU is designed as a comprehensive session of one and a half days, facilitated by a team coach (IN213), during which shared goals, values, and rules of engagement are established (PMP). These are documented in a collaboration manifesto that forms the foundation for desired collaborative behavior and is included in the project management plan (PMP). PFUs are organized at least every six months (IN212) and at every phase transition (VSP), preferably as one-day sessions, combining retrospective evaluation with forward-looking planning. These sessions also incorporate thematic discussions, joint identification of improvement areas, and the celebration of successes. Outcomes are documented and, where necessary, used to refine earlier agreements (IN214).

In addition to these formal reflection moments, the project promotes a continuous learning mindset and team development through “reflection in action” (PMP), supported by on-the-job training sessions and smaller “mini-PFUs” (VR08) at the management level to address necessary adjustments (VGR08). Complementary instruments such as weekly “soapbox” sessions, “view-of-the-week” newsletters, and periodic employee satisfaction measurements further reinforce this reflective and adaptive collaboration culture (PMP). Dedicated collaboration coaches provide ongoing feedback to both teams, supporting the development of desired attitudes, behaviors, and collaboration norms.

Overall, the project demonstrates a comprehensive and multi-layered approach to collaboration, in which relational, procedural, and contractual elements are closely intertwined. While PSUs and PFUs are not explicitly anchored in the basic agreement, they are systematically integrated into the project’s governance and process structures, serving as key instruments for alignment, reflection, and continuous improvement throughout the project lifecycle.

4.1.3 PSU/PFU details and instrument description

PSU

How (instrument)	Why (goals)		Actor level
Joint broad PSU of 1.5-2 days in hotel led by a team coach [a], [PMP]		Soft	
Relaxing, drinks and moving activities [a]	Getting to know each other personally [a]		Individual, team
Teaching a learning attitude for reflection in action during the PSU, PFU, and through short on-the-job training sessions [a]	Team building and development [a]		Team, project
Developing a learning mindset for reflection in action during PSU, PFUs, and on-the-job training sessions [PMP]; Theory about emotions - understanding or controlling them [a]	Developing leadership skills of individuals, interpretation of one's roles [a]		Individual
In the role pairs (i.e. CM-CM) talk about what triggers them and how they react [a]	Understanding each other better		Individual, team
Collaboration vision – language to use when conflict arises (leadership mind traps); Early warning signs - group work [a] *Backup:* Chris Argyris theory of the learning organization – defensive reflexes and strategies -> conflict theory [a]	Preventing and handling conflict better		Individual, team, project
Collaboration vision, setting up the collaboration structure per phase [a]; Setting up and planning moments, rhythm, and structure for collaboration and reflection in advance[a]	Jointly determine the way of working [a]		Team, project, (organizational)
Making collaborative behavior concrete in my context, individually filling the format and then sharing with the group [a]			Individual, team
In the role pairs (i.e. CM-CM) talk about what triggers them and how they react [a]	Understanding each other better		Individual, team
Communication model [a]			
Duo conversations – benefits & costs of rightness, simple stories, agreement and control [a]			Individual, team
Talking about shared success, write down individually, then discuss in group walk along the flipcharts [a]	Define success		Individual, team, project, organizational

Role constellation exercise [a]	Who sits at the table for what (roles): who works with who? What's your connection? [a]		Individual, team, project
Sharing interests and lessons learned [a]	Understanding of each other's organizations, interests [a]		Individual, team, organizational
Discussion contract and flexibility, walk through flipcharts [a]	Identify collective values [a]		Team, project, organizational
Activity "Success of the DGF", write interview for the CoBouw [a], (DKP)	Reflect on what success means for the DGF and discuss mutual expectations regarding the implementation of the phase (AVD)		Team, project, organization
Talk about urgent topics/processes, where to pay attention, clarity about each other's interests [a]	Clarity about project strategy, planning, top risks [a]		Project, organizational
Organizational structure [a]	Discuss processes and decision-making [a]		Project, organizational
Discussing purpose of contract, (pricing…) [a]			Project, organizational
Develop a narrative about Good Contractorship. (DKP)		Hard	Team, project, organizational

⇧

Circumstances

PSU for the DGF needs to be jointly organized within 4 weeks of the contract award (AVD)
Prior to the PSU (VSP), we review the client's roadmap for collaboration in a half-day session. (DKP)

Output

Establish arrangements of Collaboration Manifesto/rules of engagement: The shared goals, values, and collaboration rules (PMP)
Integration into PMP and quality plan: How do we foster collaboration [a]
Concrete (behavioral) agreements with actors you collaborate with 80% of your time [a]; Results of PSU should be part of the partial quality plan for the *Doorgrondingsfase* (AVD)
Some results/principles are shared on the screens in the project office
The shared goals, values, and collaboration rules are documented and collaborative behaviour arranged (PMP)

PFU

How (instrument)	Why (goals)	Soft / Hard	Actor level
		Soft	
Celebrate successes (PMP)	Pride, work satisfaction		Individual, team, project
End: Reflection on the day [a]			Individual, team
Learning in connection – how to communicate with each other [a]; Theory about the 'interpretation ladder' [a]	Improve communication. Understand what you know and what you don't (intentions/impressions), sharing opinions about each other [a]		Individual, team
Discussion questions in groups of 5-6 people "are we in the same movie? [a]	Check if everyone has the same experience/ is aligned [a]		Individual, team
Questions/Quiz about the project and the experience of the participants [a]			Individual, team, project
Establish arrangements of Collaboration /rules of engagement: (If necessary) Refine during PFUs, and record in the minutes of the PFUs (PMP).	Reflect on shared goals, values, and collaboration rules (PMP)		Individual, team, project
Looking ahead (group work) with flipchart [a]	Retrospective and forward-looking assessments are made, identify areas for improvement together (PMP)		Team, project
Taking along-session with Project Director [a]	Identify points of attention [a]		Team, project
Mini-PFUs are also held with PM/ CM/TM to organize adjustments (VGR08)	Organizing adjustments (VGR08)		Team, project
In addition, content-related themes are added to the program (PMP)		Hard	Team, project

⇧

Circumstances	PFU At least once every six months, preferably through a 24-hour meeting (PMP) and for every interim baseline (DKP) Continuously measuring collaboration satisfaction in an active way: What have you done to achieve this? [a] Did work satisfaction surveys about: trust, safety, atmosphere, cooperation, workload, space, clarity, and feasibility,

[a] PSU Documentation
(--) Reference to project documents, Appendix 3

4.1.4 Instrument characterization

"A PSU is a way to formulate a shared starting point, vision, and plan, in terms of content, relationships, and process. Goals, scope, and design are determined in consultation. Part of the PSU may involve making concrete, personal mutual agreements with each other using a peer interview. This forms the basis for openness and for helping and holding each other accountable

later in the process. The PFU (Project Follow Up) is a way for the client and contractor teams to pause and make structured time together to ask the question: So? How is our collaboration going? Where is it heading in the right direction? How can we strengthen this? Where is it lagging behind? What should we try out? This is particularly essential during phase transitions." (Menukart client)

a) Stimulating vs. repressive:

The PSU in Case 1 shows the same characteristic as identified in the literature study, being a stimulating rather than repressive instrument. This PSU was used to develop a shared idea of when the project is considered a success, to create collective values, and enable conversations with the direct counterparts, with whom the managers in their roles will work daily. There is no concrete sanction or drawback when the jointly defined principles are not implemented or upheld, therefore, no repressive mechanisms apply. Instead, the instrument PSU was used to establish grounds for conversations and exchange of information, also further in the project, and foster skills for (self-)reflection, such as the "theory about emotions - understanding or controlling them". The PFU was similarly used as a moment to spark conversations about whether the project actors experienced the project in the same way or if they had diverging impressions. In this case, the PSU and PFU are clearly used as stimulating instruments.

b) Indirectly acting vs. directly acting:

Here, the PSU had the role of guiding the attitude and behavior of the participants and bringing them into contact with each other. This also covered some organizational/governance aspects; however, it can be more considered a "soft guidance" (Aalstein et al., 2025) than steering the collaboration. By focusing on developing collaboration principles and writing out a collaboration manifesto and rules of engagement, the desired behavior was made more concrete, acting mainly indirectly. Still, some attention was also given to establish a structure of collaboration and reflection moments, next to the regularly held PFUs, i.e., the *Zeepkist XL* (Eng. Soap box XL) and the employee satisfaction surveys, which prompted the project team to continuously take time to talk about the processes and relationships. Therefore, it can be said that the application of a PSU and PFUs, bringing the project actors together deliberately, is a directly acting instrument, while the contents discussed and relationships fostered in the session usually have an indirect effect. Setting up a stable project partnership that can flexibly react to uncertainties and difficulties, but also fosters a good working atmosphere, is thought to make it more resilient if problems arise:

> *"Because it [PSU] forms the basis for future cooperation. It makes sure that if something goes wrong in the project or it starts to deviate, you have something that you can look back at and say: 'How did we end up here? What was our common goal?'" (1A)*

c) Principle-based vs. rule-based:

Similar to what is described in the preceding paragraph, having the PSU and PFUs in Case 1 was required by contract (process requirements, PVS). The PSU needed to be organized within four weeks of the contract award, while the PFUs should take place at least every 6 months and at each phase transition. The mere performance of the PSU/PFUs was rule-based. The way the instrument influences collaboration-oriented behavior is principle-based, on the other hand. By formulating conventions of working together and approaches to communication (see the communication model), the PSU is supporting the *hard* or detailed terms of, for example, document requirements that were before determined in the agreements between the parties.

This means not all eventualities that could arise while working together are accounted for, which would also render it too complex, but a guideline for how the interactions should be conducted and the strengthening of the group's skills of keeping an open-minded attitude towards another, proving the intent of the PSU to be principle-based.

d) Best efforts vs. Result obligation:

Next to conducting the PSU and PFUs, which is a result obligation embedded in the contract, the instrument has mainly a best-efforts character in this case. No repercussions or requirements for the contents or outcomes of the PSU were described ahead of the discussions between the facilitator and project managers who planned the PSU. The topics discussed in the PSU and contents (informally) agreed on are only reviewed in the PFU, as looking at how the process is going, i.e., "understand what you know and what you don't", but cannot be tied to a specific result. This attitude can be described as: "It should go as well as possible".

e) Legally binding vs. non-binding:

As described before, the mere performance of the PSU/PFUs was a legally binding stipulation. The project documentation also mentioned that details about the safety walks should be discussed in the PSU (VSP). There is furthermore no description of what can be expected or if any claims become effective if one party fails to attend the PSU. While PSUs/PFUs are more than declarations of intent since they aim to operationalize desired collaborative behavior explicitly, they have a non-binding character. This aspect came up during the interviews, as there are different opinions about whether PSU outputs should be recorded and whether they should contain binding and therefore concrete elements. Later in the Qsorting sessions, reservations about whether that would inhibit the effect of openness and vulnerability that are intended to be achieved through PSUs/PFUs were voiced as well.

> *"It's important to fix that or to write it down and to make sure that it's well documented, so you always have something to go back to." (1A)*
> *"That's [output] what the facilitator or the coach generally writes down and puts into a report. For me personally, it's more about the experience and the atmosphere and how the day is going to be." (1B)*

f) Preventive vs. curative:

The Case 1 PSU is a preventive instrument. Its point in time at the start of the project and its purpose to set up a well-working project team strongly characterize it as preventive. This is also demonstrated by the development of reflection skills and agreement on collaboration structures and rules that organize the principles of working together. In this case, a difference between the PSU and PFU exists, as the PFUs, next to their function to update everyone and take a moment to see how things are going interpersonally, can be used to address and potentially sort out arising tensions and hick-ups in the project team, such as the mini-PFU that was done between the CM, PM, and TM. Still, serious conflicts are handled in separate sessions.

g) Unilaterally vs. jointly defined:

While the client made PSUs a standard procedure for their infrastructure projects in the Netherlands, the decision to have a PSU was made by both parties. Both parties recognize the advantages of having a PSU.

> *"I think they're absolutely necessary" (1A); "It's always helpful (…) [otherwise] it takes more time to get to know each other (..) and to make the collaboration work." (1B)*

The relevant topics and agenda of the PSU were similarly discussed by the PM of the contractor and client as representatives for both organizations, in consultation with two facilitators, therefore jointly defining the instrument. A limitation to this joint definition exists as the project managers indicated that they did not explicitly let their teams participate in the decision of what should be included, trusting their knowledge of their organization's team members.

> *"Then I didn't really need to co-create because it was clear that the person knew the needs and desires of the team." (1C).*

PFUs tend to be designed more by the facilitators than the initial PSU.

h) Unilaterally vs. multilaterally operating:

As can be said at this stage of the project, the PSU and PFUs are multilaterally operating. They provide an opportunity for the actors of the partnering organization to interact more and therefore have a behavior-regulating influence on all parties (client and contractor). Since including a neutral facilitator reflects the idea that the partners should act as equals, the PSUs are also addressing everyone universally; there are no tasks for only the client or only the contractor. However, the extent to which certain elements of the operation of the instrument are valued might differ from person to person.

> *"What I see is that, because you have multiple goals, not everybody will enjoy all the goals." (1C)*

i) Greater vs. lesser degree of collaboration integration:

The intensity of collaboration that the PSU aims to accomplish is to push the collaboration towards integration. In this case, the PSU and PFUs support mutual adjustments, keep up interaction and alignment between actors. Based on Sandfort and Milward (2008), the PSU would still lie on the coordination side, aligning activities and shared plans, while working a bit towards collaboration through introducing common objectives and some joint decisions (on non-binding aspects), while keeping resources separate. Different opinions came forward about whether there should be more day-to-day interventions or whether increased meetings outside the formal work environment would be advantageous to the PSU/PFU design.

> *"My ideal would be to organize it in the work, at the workplace, running around here in the hallways." (1C); "It's [having a PSU] actually to pull people out of the business environment and put them into a more relaxed environment. That's when they start showing the real personality…" (1A).*

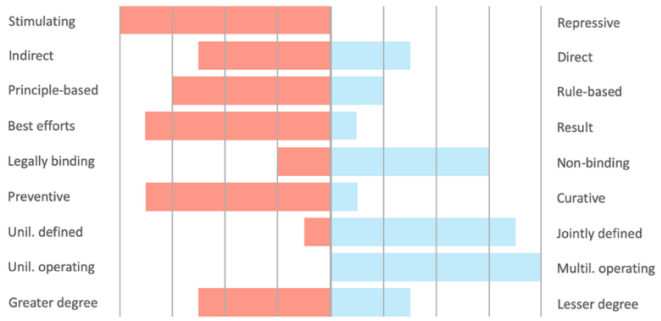


Figure 11 Case1 visualization instrument characterization. Own image.

4.2 Case 2

Figure 12 Image Case2. Ballast Nedam (2022).

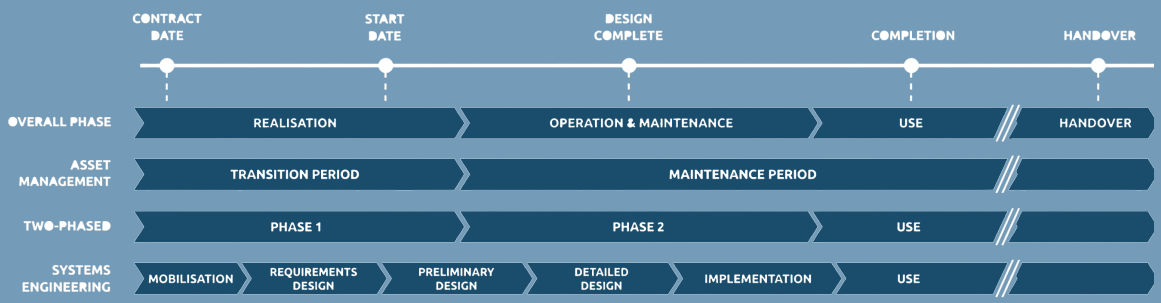


Figure 13 Case2 timeline. Own work based on project documentation (2026).

4.2.1 Project context

This project concerns the realization and maintenance of a key motorway section in the Dutch national road network. The existing infrastructure along this stretch has reached the end of its technical lifespan in several locations and is no longer capable of accommodating current and future traffic volumes. In recent years, this has resulted in frequent congestion. Anticipated increases in traffic demand are expected to further exacerbate these issues, making intervention necessary. The project therefore focuses on improving traffic flow and reducing congestion through a combination of infrastructure replacement, renovation and road widening measures, commissioned by the client.

The contractual framework of the project is the UAV-GCI 2019 and allows a two-phased approach. It comprises several sub-projects and is executed by a consortium, an integrated partnership between two contractors, which constitutes a long-lasting collaboration between the two organizations. The contractual structure distinguishes between multiple phases, including the design phase and the realization phase, which can be initiated per sub-project upon issuance of the “Two-phase certificate” by the client (BO). Another phase is the operational and maintenance phase, which starts after completion of the works and continues until final delivery. A central characteristic of the project is its integrated and process-oriented approach. Rather than prescribing a large number of detailed deliverables, the client places emphasis on the contractor’s processes and the functioning of its quality management system (VSP). The client adopts a mixed governance strategy consisting of interaction, verification, and, where necessary, intervention (VSP). This reflects a shift from traditional product-based control towards process-based assurance and requires a high level of transparency and coordination from the contractor.

Within this framework, the contractor bears significant responsibility for both design and execution, including the coordination of multiple subcontractors and interfaces across the sub-projects (A-VI). Design coordination includes identifying and managing interfaces, organizing the design planning, coordinating health and safety aspects, and ensuring the exchange of relevant information (A-VI). Furthermore, the contractor is required to carry out design activities in such a way that risks for subsequent project phases are minimized. This includes providing insight into potential risks, developing mitigation strategies and preparing detailed management plans to ensure the later phases can proceed in a predictable and controllable manner.

The client, in turn, plays an active but complementary role. They are responsible for collaborating with the contractor during the initial phase, assessing and accepting design baselines and associated quantities, and issuing Two-Phase certificates for individual project components once contractual requirements are met (A-XVII). Additionally, the client monitors whether design activities align with the intended project outcomes and intervenes when necessary.

4.2.2 Role of collaboration, design and purpose of PSU/PFUs

Collaboration within Case 2 is positioned as a central pillar for project success and is explicitly embedded in the project management plan (PMP) and the broader contractual and governance structure. In line with developments in the civil engineering sector, where integrated contracts and increasing project complexity demand closer cooperation, collaboration is no longer

treated as a *soft* aspect but as a critical necessity, as stated by the client. This perspective is reinforced by the Dutch market vision and the "Market in transition" program, of which the two-phased approach forms a key component. Within this context, both the client and the contractor are contractually expected to actively contribute to a transition towards a more collaborative and future-proof infrastructure sector (VSP). Accordingly, good collaboration is identified as one of the three main critical success factors of the project, alongside a decisive organization and a controlled project approach.

To operationalize collaboration, an arrangement of formal and informal instruments is applied. At the governance level, the advisory board is appointed at the start of the project, consisting of independent experts in large-scale infrastructure projects (A-VI). This board explicitly focuses on fostering effective collaboration, acting as a bridge-builder between parties and, where necessary, mediating in disputes. It may proactively address emerging issues, facilitate dialogue, and even issue (conditionally) binding advice. Complementing this, collaboration performance is systematically monitored through quarterly performance measurements that assess the quality of collaboration between the client and contractor rather than contractual performance (A-XVI). These measurements are followed by dedicated meetings to reflect on outcomes and, with agreed improvements formally documented in a report and a "score sheet" signed by both parties (A-XVI). This structured approach underlines the expectation that both parties act professionally and contribute to improved project outcomes through constructive collaboration (VSP).

Within this broader collaboration framework, PSUs and PFUs function as key instruments for alignment, reflection, and continuous improvement, strengthening the collaboration. Moreover, optimizing decision-making on the basis of trust is mentioned as a goal (VSP). The client and contractor are contractually required to jointly organize a PSU, and if necessary, PFUs (IN210, IN010, VSP) four weeks after contract awarding. These sessions are not limited to internal project alignment but are also extended to interactions with stakeholders. For instance, additional PSUs and PFUs are organized between the client and contractor teams responsible for stakeholder management. These sessions that are required to start two weeks after the project PSU focus on aligning objectives, strategies, stakeholder analyses, and collaboration agreements, as well as discussing stakeholder interests, issues, and expectations. Furthermore, (unfulfilled) team wishes may be discussed.

PSUs and PFUs are designed to create an open and reflective environment in which team interaction, behavior, and collaboration dynamics can be discussed explicitly. Instruments such as "collaboration tables", guided by a coach, enable open dialogue on team functioning, for example, based on Management Drives profiles. This is further supported by targeted training initiatives, where project managers receive in-depth training in giving and receiving feedback and in developing collaborative competencies. Through these efforts, PSUs and PFUs contribute to establishing shared principles, which provide direction to collaboration and ensure it is consistently understood and applied across all organizational levels (VSP). In addition, project start-ups and follow-ups play an important role in proactive risk management and stakeholder engagement. By addressing issues early, openly, and collectively, they enable the project actors to anticipate potential challenges, respond more effectively to emerging risks, and reduce the likelihood of contractual disputes. Regular follow-up mechanisms, such as bi-weekly stakeholder consultations and periodic PFUs (usually every 6 months), ensure that collaboration remains adaptive and responsive over time. Continuous feedback is further

supported through recurring surveys (every eight weeks) assessing collaboration quality across defined principles, reinforcing a culture of reflection and improvement.

Overall, PSUs and PFUs serve as central mechanisms through which collaboration is actively shaped, monitored, and enhanced throughout the project. In terms of content, only two aspects are mentioned in the project documentation, namely handing over safety documents formally and discussing the projected CO_2 footprint (VSP). Otherwise, the aim of the PSU is described more broadly as intending to translate the project's collaborative ambitions into concrete practices by facilitating alignment, fostering mutual understanding an enabling learning and adjustment. In doing so, they are intended to contribute not only to better collaboration between client and contractor but also to more effective stakeholder engagement and ultimately to the overall performance of the project.

4.2.3 PSU/PFU details and instrument description

PSU

How (instrument)	Why (goals)		Actor level
The Client and the Contractor jointly organize a Project Start-Up (PSU) (VSP)		Soft	
	Getting acquainted with stakeholders (A-B)		Team, project
	Share expectations with the Client (VSP)		Team, project, organization
Hold PSUs and PFUs specifically between [client] and [contractors] *Omgevingteams* (Eng. Stakeholder teams) (A-B)	Prepare for cooperation with stakeholders (A-B), ensure that cooperation with stakeholders starts on the right footing. (A-B)		Team, project
We discuss the interests, issues, and unfulfilled team wishes of stakeholders as far as known to [client]. (A-B)	Validating requirements and interests with stakeholders (A-B)		Team, project, organization
	Further elaborate on objectives, strategy, stakeholder analysis, and collaboration agreements.		Team, project, organization
Safety documents are formally handed over by the Client and overall safety risks and mitigation measures are discussed (VSP)			Project, organization
The CO2 footprint projected by the Contractor, its project target regarding quantitative CO2 reduction, and the measures planned to achieve it are discussed. (VSP)		Hard	Project, organization

Circumstances The Client will also invite the managers (VSP)
The officials of the Client and Contractor responsible for delivery and

	transfer, as well as those of the involved Stakeholders and future management organization(s), must participate in this. (VSP)

PFU

How (instrument)	Why (goals)		Actor level
The Client and the Contractor jointly organize, if necessary, Project Follow-Ups (PFUs). (VSP)		Soft	Organizational
We evaluate employee satisfaction survey every six months in an OT-deployment PFU. (A-B)	Measure employee happiness.	Hard	Team, project

Circumstances	Annually, or at least 1 year before the planned moment of transfer of the work, the Client and Contractor shall organize a follow-up meeting (VSP)

(--) Reference to the project document, Appendix 3

4.2.4 Instrument characterization

a) Stimulating vs. repressive:

In this project, the PSU serves as a stimulating instrument focused on creating familiarity, validating requirements, and sharing expectations according to the project documentation (VSP & A-B). Next to the project PSU, a separate PSU with the stakeholder management teams is to ensure that an ongoing exchange with third parties is possible. PFUs which are held semi-annually are furthermore planned for to establish occasions in time where the team can take a zoom out of the project and take a step back to talk about how things are going. Therefore, its utilization aims to stimulate open conversation and not to introduce repressive or impeding mechanisms.

> *"I think, the PSU and PFU are times to sit back a little, look at the big picture and not at the conflict." (2B)*

b) Indirectly acting vs. directly acting:

While the PSU and PFUs contain elements of arranging collaboration principles, deciding and writing down codes of conduct, and enabling the meeting and acquainting of project actors, a few concrete issues that should be handled through the PSU were settled in the project documentation. These issues are the handover of safety documents and discussions about safety measures and CO_2 emissions. They can be categorized as affecting the project organization more directly by stipulating what needs to be part of the contents. Still, the PSU and PFU are regarded and used mostly to color the actors' conduct (Aalstein et al., 2025) and not to introduce commands or prohibitions, which means they are still predominantly indirect.

c) Principle-based vs. rule-based:

Like the other case, a characterization between entirely principle and rule-based is not possible since one must distinguish between the organization of the PSU and its design. The project

organization was obliged to jointly conduct a PSU contractually within 4 weeks after project award and PFUs, if necessary. Regarding the design, the PSU is principle-based and described only through its purpose of discussing expectations between client and contractor (VSP). Notably, for the stakeholder-team PSU, terms about which topics to include, i.e., elaborating on objectives, discussing interests, or unfulfilled team wishes, have been specified in more detail. While the specification remains limited, it characterizes this PSU as a mix of rule and principle-based.

d) Best efforts vs. Result obligation:

Neither for the PSU nor the PFU were expected results required. A couple of topics to be included have been stipulated in the specification of requirements, as mentioned before; however, a concrete desired outcome could not be identified through the document analysis or interviews. With the main goal being "getting to know each other", as stated by an interviewee (2B), results cannot be measured reliably. Therefore, the PSU and PFU remain best-efforts instruments.

e) Legally binding vs. non-binding:

The PSU is generally non-binding, as only one aspect of it is defined in the contract, which is that it needs to be done at all, and that the client and contractor will organize it jointly. Moreover, it is not clear what would be the consequence if project actors failed to comply with this stipulation or if they did not talk about the few topics suggested for the PSUs and PFUs. This means that the PSU is non-binding. Still, it is not merely a "declaration of intent" as then suggested in Aalstein et al. (2025) but also becomes effective through the process of performing it. Talking about issues outside of the work environment and building a personal connection already happens (to an extent) by simply attending.

> *"The process is more important than if you look at the signed agreement eventually." (2B)*

f) Preventive vs. curative:

The PSU was mainly intended to have preventive effects in this case. By clarifying "who has to talk to whom" and lowering the inhibition threshold to reach out to another by introducing people to each other, tensions due to issues not being communicated were supposed to be avoided. As some conflicts arose after the PSU, the PFUs were also hoped to have curative effects. Sessions with the facilitator could be held when issues had to be sorted out. In the project documentation, no curative measures are mentioned, and PFUs are only required "if necessary" (VSP), which indicates that the operationalization of the PFU is left up to the project actors.

g) Unilaterally vs. jointly defined:

The design of the PSU has been jointly defined by the client and contractor, who were supported by two facilitators. The few topics that needed to be included were decided on by the client, who therefore had some more influence in it. Nevertheless, the joint design is embedded in the contract and appreciated by the project actors who found the design process of the PSU valuable:

> *"(…) I think that you design it yourself has to do with getting to know each other, knowing each other's interests, and how things are organized." (2B)*

Therefore, the initiative lies with both project partners. The extent to which it was jointly defined, however, cannot be specified since no PSU documentation was available.

h) Unilaterally vs. multilaterally operating:

PSUs and PFUs are multilaterally operating as they are equally addressed by the client and contractor. While the actual operationalization cannot be measured, the instrument is aimed at both actors and their teams. The behavior-regulating influence (Aalstein et al., 2025) is directed at both parties as they jointly plan and participate in the PSU and PFU.

i) Greater vs. lesser degree of collaboration integration:

The collaboration integration through the PSU can be characterized as between coordination and collaboration (Sandfort & Milward, 2008) as the project partners aimed to align their activities and avoid conflicts, while also understanding the other organization better. Still, risks and resources are only shared to a limited extent. Like in Case 1, co-location of both parties and the objective to set the grounds for joint-decision making during the PSU demonstrate that the collaboration integration is higher than simply coordinating activities. While the contract form introduced a new role for the client, the PSU and PFU were not greatly impacted by that change.

> *"And that's another role for the client – to share with us and sit at the table in the same meeting and make choices." (2A)*
> *"No, I think PSUs are actually not so different. I did it in very different contracts, and they're all somehow not so different." (2B)*

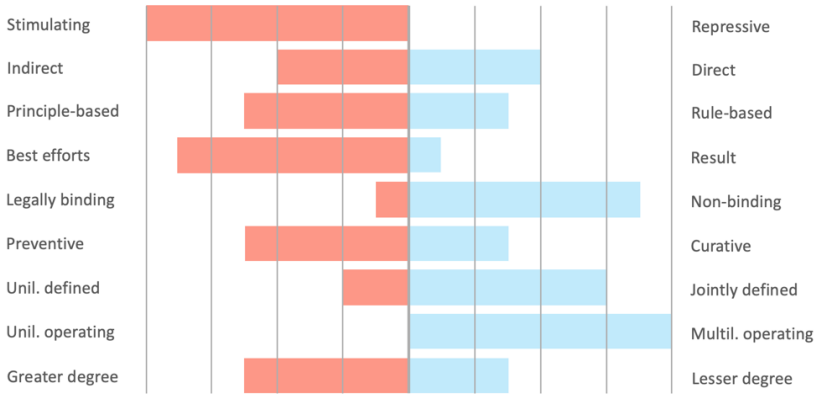


Figure 14 Case2 visualization instrument characterization. Own image.

4.3 Case 3

Figure 15 Image Case3. Sportvelden.info (2024).

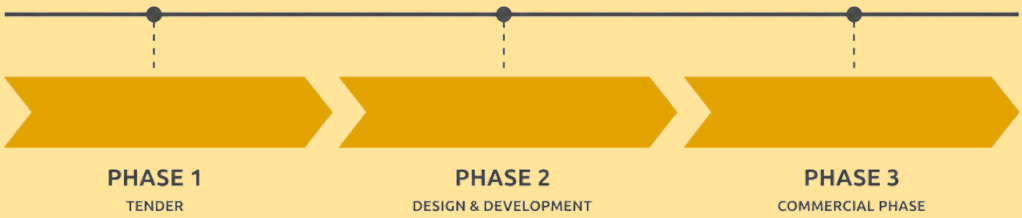


Figure 16 Case3 timeline. Own work based on project documentation (2026).

4.3.1 Project context

Case 3 originates from a joint initiative of two Dutch municipalities, which aim to fundamentally transform the development and lifecycle management of artificial sports fields. Through the

initiative, the municipalities challenge the market to deliver innovative solutions that significantly improve the sustainability performance of such fields over their entire lifespan. The project is positioned not only as a procurement exercise but as a long-term innovation trajectory in which public and private actors collaboratively develop, test, and refine new approaches.

At the core of the initiative lies an integrated sustainability ambition that extends beyond conventional environmental considerations. The municipalities define sustainability through four interrelated dimensions. First, “Smart & Clean” emphasizes efficient and responsible construction, maintenance, and use of sports fields. Second, “Circularity” focuses on minimizing the use of virgin and harmful materials while ensuring that components can be reused or recycled at the end of their lifecycle. Third, “Climate adaptation” addresses the role of sports fields in mitigating heat stress, improving water management, and handling extreme weather conditions. Finally, the “Energy” dimension promotes the generation, storage, and balancing of energy flows within and beyond the sports park. Together, these dimensions reflect a systemic approach in which sports infrastructure contributes to broader environmental and urban challenges.

A defining feature of the project is its scale and long-term perspective. The municipalities aim to realize a maximum of 270 future-proof artificial turf fields over a period of approximately ten years. The large-scale development is intended to provide sufficient continuity and market certainty to stimulate substantial investments in innovation. At the same time, the extended timeframe enables an iterative process in which solutions are not only implemented but also continuously evaluated, improved, and further developed in practice. To facilitate this “innovation partnership”, the project is supported by a European funding mechanism. This financial support allows the municipality to adopt an innovation partnership procedure, which differs from traditional procurement methods by explicitly integrating research, development, and implementation within a single contractual framework. As a result, the project creates conditions for close collaboration between public and private actors with a shared focus on experimentation, learning, and long-term value creation.

Overall, the initiative represents a forward-looking systemic approach to infrastructure development, in which sustainability, innovation, and collaboration are closely intertwined. By combining large-scale implementation with iterative learning and strong market engagement, the project seeks to establish new standards for the design and management of artificial turf fields and to contribute to a broader transition towards more sustainable urban infrastructure systems.

4.3.2 Role of collaboration, design and purpose of PSU/PFUs

Collaboration is a central element in achieving the innovation and sustainability ambitions of the initiative. Given the project’s experimental and long-term nature, collaboration between municipalities, contractors, and stakeholders is aimed not only at coordination but also at joint learning, continuous improvement, and the scaling of solutions. The project defines several overarching collaboration objectives, including fostering shared ownership, improving both technical performance and team processes, and strengthening knowledge exchange across organizational boundaries. These objectives are complemented by general guiding principles such as openness, proportionality, growth, autonomy, and loyalty.

At the same time, collaboration is intentionally left flexible and is expected to evolve during project execution. The documentation explicitly states that collaboration may be further discussed and adjusted after contract award. Reflecting the adaptive and iterative nature of the innovation partnership. In addition to this contractual description and openness regarding further implementation, a person within the project team has been appointed responsible for managing the collaborative approach. Together with the (collaboration) coach and in coordination with the consortium parties, this person directs the development of the collaboration and the implementation of sessions such as PFUs. In terms of instruments, various kick-off and start meetings, such as those at the beginning of sub-phases, are mentioned and can be interpreted as functional equivalents of project start-ups and project follow-ups.

After the PSU, based on the adjustment of the consultation structure, 'thematic sessions' were organized in consultation with the consortium parties that should take place four times a year in a core team setting, comprising a collaboration component and a content component (4-6 people). Additionally, a 'Scale Up Day' is planned as a follow-up with all project stakeholders (50-60 people) once a year.

4.3.3 PSU/PFU details and instrument description

PSU

How (instrument)	Why (goals)		Actor level
Kick-off meeting [a]		Soft	
Bingo; On a line: how long involved with the project? Coffee breaks, drinks and chatting [a]	Get acquainted with each other (A5)		Individual, team
Take a picture together [a]	Team building		Individual, team
Proposal for knowledge exchange, discussion of opportunities, worries and willingness to share [a]	Build trust and openness between consortium firms		Individual, project, organizational
Interview with the main managers [a]	Creating a (shared) project vision		Individual, team, project
Each consortium partner introduces themselves [a]	Clarifying interests and motivations to participate in the project [a]		Individual, team
Post-it of which term (innovation, collaboration, impact/results) appeals to one personally [a]	Identify shared interests and common goals [a]		Individual, team, project, organizational
Brainstorming on what makes collaboration enjoyable; joint fun assignments; marshmallow challenge [a]	Strengthen job satisfaction and enjoyment [a]		Individual, team
Subgroup work: Shared-goal and interests exercises [a]	Develop awareness and image-building around the four parties [a]		Team, project, organization
Communication discussion; Journal suggestion [a]	Improve internal and external communication and connection [a]		Individual, team, project, organization
Making concrete behavior and collaboration agreements [a], (A5)	Define the collaboration approach, objectives and principles about attitude and behavior [a]		
Carousel method [a]	Decide on collaboration topics [a]		Team, project, organization
	Thoroughly understand the task and objectives (A5)		Individual, team, project
Governance working agreements [a]	Make governance and meeting structure; clarify responsibilities [a]		Team, project
Joint assignment focused on innovation	Organize remaining work regarding innovations	Hard	Project, organizational

Circumstances

No people who only handled the tendering [a]
Approximately 8 people per consortium, with envisaged roles that play an active part in the project [a]; Key officials of the Parties must be present at the Kick-off (A5)
The Kick-off must be chaired by an independent process facilitator (A5)
After the assignment has been awarded, the Parties shall enter into consultation regarding the scheduling, organization, content, and attendees of the Kick-off (A5)

Outcomes	The agreements regarding communication will be incorporated into the communication plan [a] Kick-off report with some takeaways, key outcomes, follow-up actions [a] *Intention to*: make a 'poster/visual aid' in which the collaborative philosophy, shared goals, and principles are concretely set out; Joint 'collaboration calendar' featuring joint activities aimed at mutual bonding, job satisfaction, and celebrating milestones [a]

Not PFU but

How (instrument)	Why (goals)		Actor level
Follow-up collaboration session [a]		Soft	
Celebrating milestones and sharing learned lessons [a]		Hard	

Circumstances

[a] PSU Documentation
(--) Reference to project document Appendix 3

4.3.4 Instrument characterization

a) Stimulating vs. repressive:

In this case, the PSU is again an instrument that seeks to promote the project actor's behavior to work together more harmoniously and efficiently. The items on the kick-off agenda are directed at creating a feeling of being one entity, getting an impression of the partnering organizations/consortium members, and painting a vision for the project. Furthermore, discussing the tasks and objectives of the project together and making guidelines for the desired behavior in the project, plus concrete agreements, and deciding on follow-up actions. These activities focus on stimulating good collaboration. A lightly repressive action, which, however, focuses on collaboration, not PSUs/PFUs specifically, involves mutual performance measurements to assess the collaboration. These measurements were elaborated on in a PFU. Whether concrete sanctions, in case someone does not fulfil the common agreements or defies the rules of working together, can be expected is not clear.

b) Indirectly acting vs. directly acting:

The kick-off directly acts as a dedicated moment to help project actors get acquainted with each other. It does not immediately command the project actors to act a certain way but firmly steers their behavior and nudges them to mentally open to the project partnership by designing a whole day dedicated to the purpose of establishing a feeling of unity and a collaborative culture. A limitation to this is that merely planning this day does not guarantee that project actors truly internalize what is talked about and act accordingly. Sometimes PFUs can support this process:

> *"I think all the information about the 'harder' sides of the PSU, they follow them, and if we have a project follow-up, we always look back at: 'What did we decide on, in the PSU, and do I do that? How is it going?" I think the values sometimes end up in a drawer, if you know what I mean. So that part, the 'softer' side - that one is harder for them to follow." (3C)*

Additionally, collaboration is not an end in itself but serves the project's purpose.

> *"This also gives you many advantages, of course, because if you invest very well in good collaboration now, you know that the next projects will go better and better." (3B)*

The effect of the PSU is therefore hoped to positively influence the project, meaning it also acts indirectly to a high degree.

c) Principle-based vs. rule-based:

In Case 3, some distinct cornerstones for the PSU have been established in the contract. Some concrete topics that must be discussed, for example, the governance structure, are stipulated in the agreement. Therefore, having a PSU is rule-based, while the contents and purposes of the PSU are more directed at establishing working principles. Even though there is an attempt to describe those principles and arrangements as precisely as possible, the nature of what is discussed, i.e., "Which topics will we collaborate on as a group", is still not detailed and leaves much leeway for the interpretation and implementation of what should be done. From the perspective of what is handled, the PSU is still a predominantly principle-based instrument.

d) Best efforts vs. Result obligation:

While there is a bigger emphasis on the outcomes of the PSU in this case, compared to the two others, the requirements of the results are not defined further than mentioning that the key aspects should be recorded. Consequently, there is no result obligation, apart from performing the PSU. All descriptions of what needs to be included can be considered declarations of intent rather than obligations that need to be fulfilled. Actors in the project want to design and perform the PSU and PFUs to the best of their ability, and some indicators to assess the effectiveness of collaboration are in place, such as the mutual performance measurements and the regular "work pleasure" survey, which, however, focuses on the project actors' experience of their daily work in general and not in the PSU instrument itself. Similarly, the interviews showed that no result expectation was connected to the kick-off:

> *"I think most people who were present didn't really have an expectation and just went along with the flow. I don't think there were other goals." (3A)*

e) Legally binding vs. non-binding:

Only a few of the articles in the contract are concerned with the PSU, so that the legally binding characteristic is limited to the following aspects: The content of the PSU should include the collaboration approach, objectives, and principles, and a working agreement for the governance structure was to be established. Furthermore, the presence of an independent facilitator was mandatory, and the attendance of key individuals of each party in the PSU. In addition, the organization of the project start-up had to be done jointly in consultation with all project organizations. While these points describe the PSU more elaborately than in the other cases, the stipulations are still not extensive and do not cover the concrete details of the PSU and what is intended to be achieved, constituting a mix of binding and non-binding arrangements.

f) Preventive vs. curative:

The PSU in this case is primarily preventive, offering key takeaways and also planning moments for the first 6 months, while encouraging participants to open up to one another and form a bond. This is done with the intention of lowering communication barriers and clarifying responsibilities, which should facilitate the working processes later in the project.

> *"… on the level of the realization managers, they also know each other. So, if something is not going well on one of the regular projects from track two, they can also contact each other and ask each other for help. The bridges are built on different levels during the kick-off." (3A)*

The project start-up process (first 'thematic session') included the establishment of some curative elements to ensure that collaboration remains a focus on various levels. To that end, mechanisms to assess the collaboration quality were introduced based on mutual performance measurements that should indicate problems and could therefore lead to curative actions. Hence, this PSU can be characterized as a preventive instrument, with the first 'PFU' leading to potentially curative actions.

g) Unilaterally vs. jointly defined:

The project documentation clearly states that the parties must consult on the scheduling, organization, content, and participants of the kick-off together after contract award. This demonstrates a joint approach, leaving PSU design choices to be done in a common process so that representatives of all organizations can contribute their ideas and talk about their interests. In this case, the PSU is a jointly defined instrument.

h) Unilaterally vs. multilaterally operating:

Again, the PSU is a multilaterally operating instrument. Activities such as when each individual indicates when they joined the project on a physical (time)line introduce something about each member and help get an overview but also become more acquainted across organizations. Except for the distinction of who is invited and who is not, there are no interventions that only target a certain party. Moreover, the PSU is used to create a "project group", addressing all project actors, which means it is inherently multilaterally operating.

i) Greater vs. lesser degree of collaboration integration:

Based on the contractually embedded need to include all parties in the design of the PSU and the flexibility that was given in the contract by deciding that certain project-relevant aspects, like the collaboration values, would be defined together and added as an appendix to the agreement, the collaboration integration in the third case is slightly higher than in the cases before. While there was not enough time to complete the value definition in the kick-off, the approach to jointly deciding and formalizing principles regarding the project structure (i.e., governance structure or meeting scheduling) and collaboration, the PSU moves a bit more towards real collaboration as defined by Sandfort & Milward (2008).

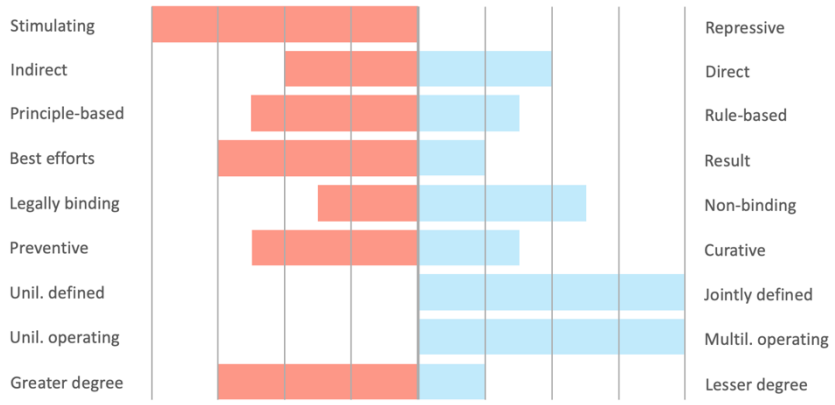


Figure 17 Case3 visualization instrument characterization. Own image.

Interviews

4.4 Interview analysis

In this step, the use of PSU in practice was investigated by exploring how actors experienced the PSU in the different cases. Furthermore, the legal and contextual factors, as well as the goals the interviewees intended to achieve through the PSU, were discussed. This served to answer the RQ_1, RQ_2, and RQ_3 and complement the findings of the document analysis in sub-chapters 4.1 Case 1,
4.2 Case 2 and 4.3 Case 3.

Across all three interviews, PSUs consistently consist of three intertwined elements:

1. Project-related alignment
2. Collaboration frameworks
3. Interpersonal relationship building

4.4.1 Case 1

RQ1: What do project start-ups consist of in practice?

The interviewees mentioned that clarifying project goals, scope, and phasing are the key elements that the PSU in Case 1 consisted of. They highlighted that shared understanding of the project context and addressing project-specific challenges and uniqueness are crucial to the design of a successful PSU. This was especially highlighted by the facilitator as the primary pillar of PSUs:

> *"You can really look at the context together and find alignment, like 'where are we?', 'what do we want to achieve in terms of mission and vision?' and then also, 'how do we want to go about that? What is our aim? What is the ambition level? Are we just building tunnels? Is there something extra that we want to put in this portfolio specifically?'" (1C)*

The collaboration framework was explained by the interviewees as establishing guiding principles and ways of working, defining how collaboration should take place, and not just what the goals are. Interviewee 1A emphasized that the 'how' of collaboration is often underdefined but crucial.

> *"These are the types of goals everybody agrees with. Nobody will be against them, saying: 'I don't want fair money'. But the goals that you derive from the main goals, those make the project so specific." (1A)*

Furthermore, the other participants believed the framework needs to be flexible but concrete, with the option to evolve to recalibrate according to needs and to what works and what does not. Next, getting to know each other as colleagues and as individuals is also usually part of the PSU. This is supposed to support actors in aligning expectations and reducing hierarchical barriers:

> *"It is important that everyone in the line of hierarchy is aligned with those goals" (1A)*

The recurring values for building trust, openness, and (to some extent) vulnerability have to be embodied through different actor-levels since they could otherwise counter what is desired or attempted at the project level. However, the participants all mentioned that this is difficult in large groups and that, therefore, smaller sessions or prior meetings may be required. Regarding the format and structure of the PSU, it became evident that there is no standardized form or framework and that the PSU content is tailored per project:

> *"…You discuss it [design of PSU]. There is no framework or anything." (1B)*
> *"So, you tailor the PSU to the project?" (Interviewer)*
> *"To the moment, project and the goals, and the people, yes." (1B)*

Still, PSUs are described as planned and structured interventions, not spontaneous events. They are typically conducted at project start and usually considered the kick-off meeting (but participants were also open to the idea of the approach that it could be a phase):

> *"Traditionally, what you see is that a PSU is a fixed moment in time, generally a day which is called the 'project start-up'." (1A)*
> *"When you talk about the PSU, it's always the kick-off. People consider it the kick-off of the project. But when you start a project with the contractor and the client, you have to work on collaboration. In the office and during meetings, you have to pay attention to the tone of voice, how you discuss issues – the way you're working together." (1B).*

Usually, they are preceded by smaller preparatory sessions and sometimes complemented with follow-up or informal interactions. As already seen in the project documentation, the methods or activities used can be characterized as discussions and workshops during the kick-off days. Two interviewees highlighted the value of experiential learning, so seeing each other "in action" instead of solely talking about collaboration.

> *"It is actually to pull people out of the business environment and put them in a more relaxed environment. That's when they start showing their real personality…" (1A)*

The key tensions mentioned were the high number of participants, which only allowed for more superficial discussions, keeping the balance between content and team building, and time constraints that limited the depth of the discussions. Additionally, the participants highlighted that the effect of the PSU fades over time, necessitating ongoing experiences and interventions to keep the principles alive:

> *"When you only have the PSU or kick-off, it's not enough because you have the attention during the PSU and then it fades away. We have to pay attention to it all the time. (…) It's an ongoing thing." (1B)*
> *"Because if you organize this - all the topics we discussed – in the work on the work floor, I would prefer that over going to a hotel." (1C)*

RQ2: In which context are PSUs used and how are they legally embedded?

PSUs are widely used and an expected practice, for example, not wanting to do a PSU or to at least talk about collaboration guidelines was considered absurd by interviewee 1B:

> *"It's not an option not to talk about collaboration (…) for me. I am thinking about what it would be like if I have a counterpart who says: 'PSU – no thanks', I cannot imagine that." (1B)*

However, they are not always implemented consistently. According to the interviews, PSUs seem to be particularly relevant in collaborative or complex projects, like this case, based on two-phase contracts or repeat or portfolio relationships. These projects require higher interdependence and the recognition that no party can work autonomously. Moreover, while interviewee 1A first saw the *Doorgrondingsfase* as a contractual mechanism not related to the way of working together in the project, they then concluded that it reduces uncertainty and therefore risk for them, and therefore encourages transparency and openness, which in turn creates conditions for deeper collaboration.

> *"We say: 'We are in this comprehension phase; this is the risk that we see now', and we can actually talk about it. Whereas if this were a fixed price contract, we would have sent the client a contract notification straightaway. (…) It's a completely different type of conversation that you then have." (1A)*

Especially in the construction sector, specific characteristics need to be considered because the actors are so fragmented and do not repeatedly work together most of the time. At times, this is assumed to constitute a reluctance toward expressing doubts or vulnerability, since it could be understood as a weakness. Moreover, the professionals generally have a technical background and hands-on attitude, which makes them less receptive to conceptual or abstract (theoretical) frameworks and topics:

> *"It's really about people working on construction projects. My experience is that if you do a management program for a bank (…), they see how they can use it to their advantage, in their work. Here, you always have to relate it to: 'How does it make the project run smoother, faster, better?'" (1C)*

Generally, it can be said that PSUs and PFUs are only formalized weakly. Participants mention that they are rarely clearly specified in the contracts, and some were not even sure they were contractually included, which confirms the low level of legal operationalization identified in the literature. Therefore, PSUs and PFUs depend largely on voluntary support, where success depends on both client and contractor and the attention given to it by leadership, especially the project manager.

> *"When you do a PSU and give attention to the part of people working together, you show the people in your team that you think it is important, so it is allowed to also focus your attention on collaboration. (…) You have to signal that that's a relevant part of the project as well." (1B)*

Consequently, PSUs and PFUs are considered a symbolic re-commitment beyond the contract. Additionally, participants shared the opinion that the influence of the contract or contract type was primarily on the 'hard' aspects like the risk, roles, and structure of the project organization, but only had a limited influence on the *soft* aspects of PSUs:

> *"Or are they [the PSU topics] not really related to the kind of contract you have?" (Interviewer)*
> *"They are related but more to the harder topics, the more tangible topics rather than the soft interpersonal topic." (1A).*

What was highlighted as an important contextual factor, as well as throughout the interviews, was that team composition and timing are critical. The execution team and not just the tender

team must be present since personnel changes weakened the collaboration over time in their experience. The portfolio approach also led to more participants being invited since important actors on the project and sub-project level were included, which did not allow for an extensive discussion of several points and therefore was seen as ineffective in that regard.

> *"Because the group was too big to really get to know each other and to get to the point of what we have to do together to achieve the results we want to achieve. I think a smaller group would be better next time." (1B)*

RQ3: What are the actor goals that motivate the use of PSUs?

Explicitly shared goals, which the interviewees widely agreed upon, were to define project success, create effective collaboration, ensure alignment on goals and expectations, and improve efficiency and communication. Some goals were not directly mentioned, but implicitly, for instance, risk reduction as uncertainties and the hope to spot misalignment or mitigate conflict situations early were discussed, which was also linked to the *Doorgrondingsfase* in this project. By creating a safe environment for communication transparency (especially about costs), the willingness to share concerns ought to be fostered, which is believed to build trust and openness in the project.

> *"We work in an open and transparent environment with [client], so we are very transparent about all our costs, we are very transparent about the risks that we see, and we are also very transparent about how much money we make." (1A)*

This was particularly relevant in this portfolio because the focus in this project here on long-term relationship building was stronger than in other projects. Apart from that, the participants recognized the importance of all involved actors understanding that they cannot work independently and there is a need for mutual reliance and equality (mirroring the other organization):

> *"We try to keep it on the same level. So, when it comes to the PSU, we invite both the core team and the counterparts of each core team, and we try to mirror each other's organization as much as possible. (…) to make sure that all the topics are handled on an equal basis." (1A)*

Regarding different actor-levels, the interviewees mentioned that individual motivations and particularities, and team dynamics could be relevant to discuss when having a PSU or PFU. However, these levels seem to be often underexplored due to the group size (too many) or time constraints. What is also important to mention is that there might be misalignment or hidden goals that are not revealed through the PSU. The formal project goals are clear or easy to identify; however, the way goals are interpreted and prioritized, or the secondary interests of the organizations and individuals, remain hidden. Addressing these could improve collaboration quality significantly:

> *"You want those interests as well – so you can actually have a proper conversation about it and understand another well. If you can accommodate those interests, the secondary interests, then you can actually enhance the collaboration." (1A)*

The PSU's effectiveness seems to be tied to whether actors see the value in it or not. It risks being seen as *soft* and therefore non-essential, like a routine or automated activity. For that reason, the role of project managers as drivers of collaboration is key:

> *"It's really the PM who sets a stage for this." (1C)*

They set the tone and are essential in maintaining momentum after the PSU.

4.4.2 Case 2

RQ1: What do project start-ups consist of in practice?

Across both interviews, project start-ups are described as structured but relatively flexible interventions aimed at preparing collaboration between client and contractor. They are not presented as a fixed standardized procedure, but as a combination of recurring elements:

1. Getting to know each other
2. Discussing collaboration principles
3. Clarifying roles and identifying counterparts
4. Identifying project goals
5. Reflecting on how to deal with conflict

A central practical element of PSUs is the creation of interpersonal familiarity. Both interviewees mention personal introductions, informal interaction, and activities outside the normal work setting.

> *"(…) normally it takes one, two or three days to get out of the environment of phone calls and operational things, and to say: 'How are we going to do this?" (2B)*

One participant (2B) describes the kick-off as including personal background stories, such as talking about parents, as well as physical or evening activities intended to support bonding. They emphasize that getting to know each other personally helps create a sense of team, increases commitment, and may make people stay involved longer in the project.

> *"You need time to learn about each other (…) other things than work-related things – because it helps create a team. And when you are a team, you can collaborate. But otherwise: 'It's five o'clock, I am going home and see you tomorrow'." (2A)*

Another recurring element is the discussion of expected behavior and collaboration norms. The interviewees refer to discussions about "Do's and Don'ts", priorities, and who communicates with whom. One interviewee (2A) notes that PSU and PFU sessions focused on the "happy flow" and the "helicopter view". In practice, PSUs therefore seem to function as moments where actors formulate shared intention about collaboration, often through declaration, posters, or agreed behavioral principles.

> *"You make a declaration, and you put a signature under it, and if you come here, you see one of the posters." (2B)*

However, both interviews also indicate that PSUs often remain too general or too focused on positive scenarios. 2A criticizes the PSU for concentrating mainly on the "happy flow" and not sufficiently preparing the parties for difficult situations. According to this interviewee, PSUs should explicitly address pain points, doubts, struggles, and foreseeable problems. This suggests a tension between PSU as a symbolic bonding exercise and PSU as a practical preparation for conflict, risk, and pressure.

> *"I think in PSUs you have to try to think about what's happening when there are bad conditions. It's always easy to talk about the 'happy flow' but you need each other when you have to have other conversations." (2A)*
> *"The soft skills are okay, but you have to try to find the pain. If you know the pain, you know what's happening." (2A)*

They also recognize that the PSUs tend to follow a repetitive format, with similar goals and declarations across projects. This creates the risk that participants see them as generic, unoriginal, and interchangeable. At the same time, Interviewee 2B stresses that design matters greatly: a PSU should be adaptable to the project context but also not become over-tailored so that it loses its general collaborative function. The role of the facilitator is important here. Both the content and the person guiding the process must "click" with participants.

> *"You think: 'You can change the name of the project, and it will be fit for 90% of our project'. So that's why some people think: 'All this is nonsense, let's just work together'." (2B)*
> *"No, I think PSUs are actually not so different. I did it in very different contracts, and they're all somehow not so different." (2B)*

Follow-ups are also described as part of the broader start-up logic. Both interviews argue that one moment is insufficient, especially because project teams change over time and because collaboration deteriorates under pressure. One participant said that PFUs should happen every three months and that new people joining the project need to be updated, which is necessary to maintain a collaborative culture.

> *"When you start a project without the PSU or PFU, everyone's doing what they are normally doing. (…) For that reason, it is necessary to have onboarding, but after that, you have to update it frequently." (2A)*

RQ2: In which context are PSUs used and how are they legally embedded?

Both interviewees connect the PSU to a project context in which risks, requirements, design decisions, and budgetary consequences were not fully settled at the outset. 2B explains that the reason for using a two-phased contract is to consider risks more carefully and arrive at a realistic budget. Importantly, they state that the contract did not necessarily lead to less conflict. This suggests that the collaborative 'promise' of two-phased contracting does not automatically materialize in practice.

Legally, the PSU appears to be weakly embedded. One interviewee states that the PSU was expected or assumed but not formally included in the contract.

> *"It's assumed, it's not in the contract that you have to do 'this' or 'that', but it is always wise to get to know each other." (2B)*

> *"(…) I think that you design it yourself has to do with getting to know each other, knowing each other's interests, and how things are organized." (2B)*

Both parties designed it together, which was seen as an important step in itself. This indicates that PSUs may operate in a semi-formal space, where they are not necessarily contractual obligations, but they are increasingly treated as expected components of the project delivery. At the same time, contractual and organizational structures strongly shape the effectiveness of PSUs. Both interviewees point to the influence of parent organizations. One aspect of this was limited autonomy because both sides had to report back for decisions to their parent organizations. One interviewee also refers to organizational imbalance, particularly that not everyone had a clear counterpart, which led to confusion.

> *"(…) and there was some imbalance between organizations, so somebody had two people from us, and somebody had none, so sometimes it doesn't fit well. (…) It's quite important if you want to have good collaboration (…)." (2B)*
> *"When you have a good way of working together in-house, it's okay. When you have to report to your head office, pressure is coming in. And pressure is not good for collaboration and not good for people, not at all." (2A)*

This shows that PSUs are not only embedded in contracts but also in broader organizational governance structures. Even if project-level actors build trust during a PSU, this trust can be weakened by hierarchical decision-making, budget pressure, reporting obligations, and mismatched organizational structures.

RQ3: What are the actor goals that motivate the use of PSUs?

The interviews identify several actor goals behind PSUs. These include preventing conflict, improving mutual understanding, creating a team feeling, clarifying roles, supporting risk discussion, and enabling better decision-making. For one participant (2B), the PSU should also support openness and trust, but their account is more focused on the failure of these goals in practice. They argue that when the relationship becomes bad, actors stop being transparent, avoid sharing bad news, and lack a culture of discussing difficulties.

> *"You are talking about open and transparent, but when you have to do it, it is very difficult if you have a bad relationship." (2A)*

In their view, the PSU should help create vulnerability and honesty, but this did not sufficiently happen. Therefore, the PSU is potentially useful for establishing a collaborative attitude, but only if it addresses real problems rather than remaining at the level of soft statements.

> *"… in the PSUs, you don't talk about specific project topics, but sometimes you have to find out what happens lower in the organization, the real struggle." (2A)*

Both interviewees also identify alignment as a key goal. Interviewee 2B noted that designing the PSU together can help both parties understand each other's interests, organizational structure, and role fit. The other interviewee similarly emphasizes the need to level people who come from different project backgrounds and have different expectations about "how to do things here" (2A). This suggests that PSUs are used to create a shared project culture across organizational boundaries.

Another important goal is managing pressure and conflict before they escalate. Both interviewees mentioned that PSUs or PFUs are especially needed when things are not going well. However, both also note that this is precisely when time and capacity are most limited. When the workload is too high, people do not have the capacity to reflect on collaboration.

> *"(…) There's a theory that if you have more things to worry about, you have to make more time, you have to make sure that you have a few more PFUs. Here, somehow it didn't actually work that way." (2A)*

This reveals a strong practical contradiction: PSUs/PFUs are most needed under pressure but least likely to be prioritized then. Finally, not all project actors like PSUs. Even participants who appreciate the sessions can feel like they lose valuable time or need to catch up with work afterwards, which could also contribute to their de-prioritization.

> *"When you have the PSU, people always think: 'Oh my god, I have so much work, and now I have to do things like that.' But after the days, you're always happy you did it." (2B)*
> *"Because they're busy and feeling: 'I will be here two whole days, that means my mails, my calculation (…) I am home, now I have to work an evening to get it done. So that's no good, nobody wants you to do that, but it's the feeling you have." (2B)*

This constitutes a dilemma when designing PSUs and requires dedicating some attention to clarifying the benefits of PSUs and PFUs to their participants.

4.4.3 Case 3

RQ1: What do project start-ups consist of in practice?

Across all three interviews, the PSU still consists of the three main elements already mentioned in chapter 4.4, but some additional nuances were discovered. The dominant focus of the PSU mentioned by the interviewees was to get to know each other, and for the three contractors forming the consortium to specifically get to know each other as partners, not competitors:

> *"Normally we compete for the same projects, and now we try to also help the others to make their projects more impactful." (3A)*

For that, trust, openness, and psychological safety were to be created through personal introductions, sharing motivations to participate in the project, and informal interactions, i.e., coffee, drinks, and breaks. There was a significant consensus among the interviewees that the informal moments are among the most valuable parts of PSUs.

The PSU also included defining roles, responsibilities, and planning to align ways of working and communication. In this case, adjustments in the governance structure and meeting schedule emerged from the PSU discussions as well (3A). Furthermore, the collaboration principles suggested by the client (i.e., reciprocity, loyalty…) were jointly interpreted in the PSU to define what principles should mean in daily work. This demonstrates that to the project actors, not the principles themselves but their shared interpretation and operationalization matter. The PSU was also used to communicate the "why" of the project with the goals to create enthusiasm and commitment to the project.

> *"He [board member client] gave a really cool kick-off speech for the day and had a nice story about how he will walk through the city in 2038 when this project has come to an end and how proud he will be by that time. Just to make everyone enthusiastic about this project." (3B).*

Two interviewees (3A and 3C) also agreed that the PSUs are increasingly seen as a process or phase, not just a session. They mention a preparation phase, usually in a small group with a facilitator, the main PSU/Kick-off meeting, and follow-up sessions, which are not always the official PFU. There is a strong emphasis, especially by the facilitator, that one-off PSUs are often not sufficient and that the collaboration-enhancing aspects can often only be realized when follow-up evaluations are possible.

> *"I think it is not that the PSU is not effective, it's more that a one-time meeting is not always effective." (3C); "If you're with a team for longer, we are going to help them, remind them of the assignment and the decisions they made." (3C)*

The preparation phase of the PSU can be considered critical since the facilitator first needs to understand the project and the team. Pre-meetings with smaller groups were used to co-design the agenda with the client. The activities used in the kick-off, such as discussions and break-out sessions, were not valued equally, and the last activity could have been replaced by more time for informal interaction, showing again that this was preferred by the participants.

> *"I think the informal moments were the most valuable. Then you also talk about: 'Do you have kids and where did you go on vacation?' and things like that – that creates more of a bond than collaboration principles." (3A).*

The tension that was addressed was that the PSU had too many participants to dive deep into the topics that were supposed to be addressed, allocating too little time in the breakout sessions as well.

> *"The kick-off was really large, and I think there were like 50 people or so, and now a smaller committee has made things more concrete." (3A)*
> *"I think before the PSU, we really thought that we could take big steps with these teams to get clarification about it. But some of the topics were just too challenging to do a big step within the half hour we had for it." (3B).*

RQ2: In which context are PSUs used and how are they legally embedded?

In the interviews, it was mentioned that PSUs are an increasingly standard practice and often already included in contracts by public clients. One interviewee also indicated that the practice shifted in the last few years from nice-to-have to must-have in complex projects (3C), hinting at a development toward more formalization. Now, sometimes the initiative is even taken by the contractors themselves.

> *"I once did not plan one [PSU], and then I was asked to do it by the market parties, because they also needed to get to know each other and develop an understanding about the milestones and what's going on in the project." (3B).*

Particularly, a consortium-based project like this one, with a focus on innovation, multiple stakeholders, and a lot of uncertainty, required the actors to pay more attention to how they want to work together. The interviewees had different opinions about when PSUs are valuable.

While one interviewee (3B) thought they were always valuable, another (3A) shared that PSUs should mostly be used if the project is contractually not highly specified, so when there is a design or integrated component. However, all interviewees saw that PSUs are especially valuable when the projects are large-scale, long-term, and multi-party.

> *"(...) would you say that all construction projects should have a PSU (…)?" (Interviewer)*
> *"If you have bigger projects, yes for sure. If you're going to collaborate for many years (…) and you're with a team – then yes." (3C).*

One specificity of the case and its PSU is that some aspects were intentionally *not* fixed in contracts to allow for flexibility, joint decision-making, and co-creation (3B). The collaboration principles were, for instance, suggested by the client but handled as adaptable appendix so that PSU participants could jointly discuss the needed principles and their interpretation of them.

> *"If you write something in the contract, of course, there's no freedom, so this is why we moved some contract text to the addendum. (…) We set up this contract text, but we will talk about it after the tender phase ends." (3B).*

Similar to the suggestion for collaboration principles, the client drove PSU initiation and shaped participation, for example, by asking the contractors to mirror the team they sent to the kick-off. Therefore, one interviewee pointed out that the project team should be critically aware of the risk of client dominance in the design of collaboration.

> *"For the municipality, if they really want to collaborate, they should have nothing. Then, you should think together with the contractors: 'How are we going to do things here?'" (3C)*

RQ3: What are the actor goals that motivate the use of PSUs?

In the interviews for this case, the explicitly mentioned goals for the PSU were building relationships and trust, with the most frequently mentioned objective of getting to know each other as a prerequisite to building trust, openness, and psychological safety.

> *"And to collaborate, you first have to get to know each other. I think that was the main focus of the entire kick-off and also what we wanted to get out of it." (3A).*
> *"So that you know a little bit about each other, because knowing each other is also the first step in collaboration, we always say." (3C).*

While an interviewee mentioned they also wanted to give an overview of the scheduling and finance, which was not possible due to the group size, with 50 to 60 people present. That's why the idea was more to create a shared understanding of the project vision, roles, and responsibilities of the people involved to ensure smooth coordination between multiple parties. Another goal was learning and improvement across the projects, enhancing practices over time.

> *"Because they [client] believe we can learn from each other, and if there was only one contractor which is given the opportunity to build a prototype in the pilot, there would be a very narrow market." (3A).*

Furthermore, the PSU was to create motivation and generate enthusiasm that should have strengthened the commitment to project goals. Still, the interviewees recognized constraints

affecting said motivation, because actors generally struggle to prioritize PSU activities and invest time alongside daily work (3C), which therefore indicates that PSUs might be seen as secondary or non-essential.

> *"For many things you have appointments in your agenda or on paper, when you execute, you see them every day. But you do not talk about your values every day, and you do not always ask your client: 'If I say to you, I'm very open and transparent, do you think that's true?'. They're not used to asking those questions." (3C)*

Also, here, the facilitator finds that the PSU should be a continuous process because it is often still treated as a one-time intervention. If values and agreements are not revisited, the PSU and their outcomes risk becoming merely symbolic (which is also valuable to an extent) rather than practical. In this case, participants recognized that the effectiveness of the start-up was also reduced due to too many participants and the diversity of actors who have been involved in the project for different time periods (3 years or newly), also unbalancing the process.

Cross-case comparison

4.5 Cross-case analysis of the PSU instrument

In this section, the three cases are compared based on the instrument characterizations derived from the available empirical data, in order to investigate whether a distinct characterization of project start-ups can be established and how these instruments are operationalized in practice. The findings from the case studies are furthermore compared with the characteristics attributed to PSUs in academic literature to assess the extent to which theoretical descriptions align with practice. It should be noted that the literature review also included studies on PSUs from sectors beyond construction.

Figure 20 illustrates the overlap in the visual characterization for PSU across the three cases, thereby reflecting the practical application of the instrument. On the right side, it compares the empirical findings with the data previously identified through the literature study. Overall, the cases demonstrate considerable similarities, despite some variation in implementation. At the same time, several notable differences emerge between the way PSUs are described in theory and the manner in which they are utilized in practice.

Figure 18 Instrument characterization based on literature (left) and Case1 (right)

Figure 19 Instrument characterization Case2 (left) and Case3 (right)

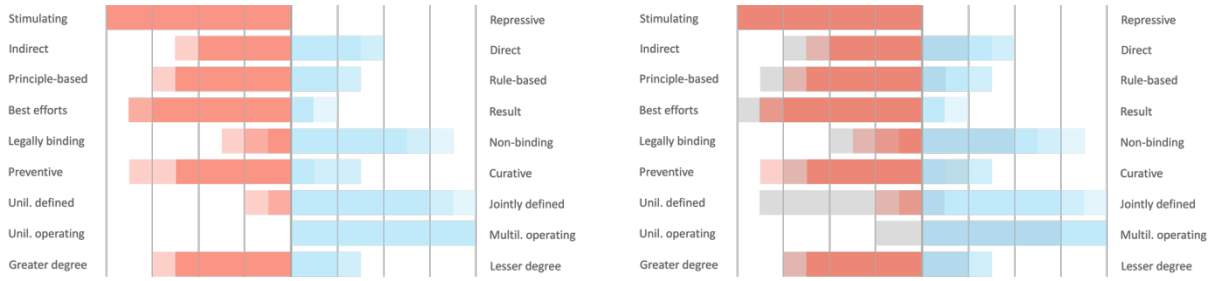


Figure 20 Instrument characterization practice (left) and comparison of literature and practice (right)

The only category in which all descriptions fully converge is that project start-ups function as (1) **stimulating instruments**. Their primary purpose is to encourage behavior that supports collaboration between project actors rather than to restrict or sanction undesired behavior. Although PSUs are sometimes used to 'set the rules of the collaboration', i.e., through collaboration agreements (all three cases), these rules are generally framed positively by emphasizing desired conduct, shared objectives, and expected attitudes, instead of prescribing prohibitions or penalties.

In the literature, PSUs are primarily described as (2) **indirectly** acting instruments, for example, by creating the conditions for more effective communication and interaction between project actors through early shared experiences (Burger et al., 2019). While this facilitating role was confirmed by the interviewees,

> *"But if you know each other better, if you think: 'He's not my friend, but I know him, and I like him' - then it's much easier to make a phone call. To say: '[Name], what happened yesterday?'" (2B)*
> *"When the prototype is ready (…) that's also a moment that our communication advisor is in contact with the communication advisor from the municipality, and it's much easier now that they also know each other because they have met during the kick-off already, so they can contact each other more easily, talk about it (…)." (3A)*

The cases portray the instrument as somewhat more **direct** in its operation than suggested in theory. Contractual stipulations in some cases prescribed some concrete themes or organizational issues that had to be addressed during the PSU (Case 2). Moreover, depending on the specificity of working arrangements established during the sessions, PSUs occasionally resulted in direct organizational consequences. In Case 3, for example, the PSU contributed to decisions regarding changes in the governance structure. So, although start-ups remain

predominantly indirect instruments overall, the empirical findings indicate a more formal and operational influence on the project organization than reflected in the literature.

A comparable difference emerges regarding the (3) principle-based or rule-based nature of PSUs. In practice, the cases range slightly but display a tendency towards a principle-based character, whereas the literature positions PSUs more strongly as the principle-based instruments. In this regard, however, a distinction must be made between the obligation to conduct a PSU and the nature of its outcomes. This distinction also constitutes one of the most significant differences between theory and practice. While the study by Halman & Burger (2002) describes PSUs as non-mandatory, all three case studies contractually required the PSU to be conducted within the first weeks after project award.

With respect to the outcomes and content of the start-up process, however, PSUs mainly remain (4) best-efforts instruments rather than mechanisms based on detailed and enforceable rules. The only explicit result obligation identified solely in practice is the requirement that the project start-up must take place. Although project documentation occasionally specified intended outputs, i.e., incorporation of results into project documents (Cases 1 and 2), it remained unclear whether any consequences would follow if these objectives were not achieved. This suggests that construction actors increasingly recognize the value of PSUs and therefore formally include them in contracts, while the operationalizability and enforceability of their outcomes remain insufficiently defined. Consequently, PSUs are characterized strongly by a best-efforts logic.

Regarding the (5) legally binding or non-binding character of PSUs, the literature provides only limited guidance beyond the example discussed by Halman & Burger (2002). The cases themselves differ in this respect as well. In Case 3, the PSU and its required contents were described in greater detail than in the other cases, including explicit requirements concerning the attendance of key representatives from all parties. In the remaining cases, the binding effect was limited to the obligation to organize the project start-up workshop itself, placing these instruments closer to the non-binding end of the spectrum. Furthermore, it remains questionable whether the project parties would seek juridical enforcement in the event of non-compliance, as legal escalation would likely undermine the collaborative intentions underlying the PSU process. The limited attention devoted to the legal nature of PSUs in the literature indicates that collaborative governance mechanisms remain an emerging, though increasingly relevant, field of research.

In terms of their core function, PSUs can clearly be characterized as (6) preventive instruments. This preventive role is also reflected in the literature. Ono & Archibald (1991), for example, argue that PSUs may reveal discrepancies or neglected issues in the project organization that could threaten project success. In the case study, the characterization differs per case, but they similarly show that PSUs primarily aim to prevent future problems. This is realized through the activities and goals of the PSU, with examples including the organization of the project team (Case 1), the addressing of communication expectations (Case 2), and the clarification of roles and responsibilities (Case 3). Collectively, these activities seek to align both the *hard* and soft dimensions of collaboration by supporting project actors in navigating technical, organizational, and interpersonal aspects of joint work. Although the literature occasionally attributes curative functions to PSUs, such as resolving adversarial attitudes (Ono & Archibald, 1991), the empirical findings indicate that this curative role is more commonly associated with project follow-ups.

In Case 1, for example, a PFU was explicitly held to resolve an emerging conflict. Similarly, facilitators in the other cases were often re-engaged when tensions developed within the project team. Overall, the findings suggest that the PSU primarily serves a preventive function, whereas PFUs combine preventive and curative functions when necessary.

The most significant divergence between theory and practice concerns the definition and design of the PSU process itself. In literature, the client is generally portrayed as the initiator and organizer of the project start-up. Although facilitators may support the process, the responsibility for the design and implementation of the instrument is described as resting predominantly with the client or the client's project manager, thereby framing PSUs as (7) unilaterally defined instruments. This contrasts with what was revealed through the case study. While the client indeed always initiated the PSU by contractually requiring it, the actual design was multilaterally defined with representatives of all involved organizations, most commonly the project managers. Interviewee 2B even emphasized that the collaborative process of defining the PSU agenda already contributed to achieving the intended objectives:

> *"(…) I think that you design it yourself has to do with getting to know each other, knowing each other's interests, and how things are organized." (2B)*

Interviewee 3B furthermore reported that in other projects, the contractor also took the initiative to do a PSU:

> *"I once didn't do it [the PSU] and then I was asked to do it by the market parties, because they also needed to get to know each other and to get an understanding about the milestones and what's going on in the project." (3B)*

While this practice is already well-established, the facilitator in Case 3 nevertheless argued that further improvement is still possible to achieve a genuinely co-created process:

> *"I think the [client] and the [project] team worked out everything a bit too much, and then they said: 'We think this is a good plan, what do you think, dear contractors?' and then [facilitator 2] and I said: 'Why are they not here? Why do you not have a session with them to look at collaboration and the values (…)? Why do you make a proposal and not think of it together?' I think that can be enhanced." (3C)*

All in all, the findings demonstrate that PSUs can no longer be understood as instruments designed unilaterally by the client. Instead, their development has become increasingly integrated.

Based on the data, PSUs can be described as (8) multilaterally operating. The sessions are jointly prepared and attended by all parties involved, who are expected to interact on relatively equal terms during the process (Case 1). The focus lies strongly on developing *shared* or *common* understandings and collective definitions of collaboration. The available project start-up documentation further suggests that the agenda and discussion topics are generally directed towards all participants rather than one specific party, although this could differ between projects. One example from literature shows that the operation also depends on the definition of a project start-up. The distinction made by Gareis (2000) between one-way, unilaterally operating information sessions and interactive workshops illustrates that the operational form of PSUs partly depends on how the concept itself is defined.

Finally, the (9) degree of collaboration integration achieved through project start-ups remains ambiguous. Both theory and practice suggest that PSUs are intended to foster more integrated forms of working by establishing common objectives and enabling joint decision-making regarding organizational arrangements. Still, PSUs are temporary interventions embedded within broader project environments characterized by separate organizational structures, divergent institutional logics, and possibly some conflicting interests. For example, clients usually seek cost minimization to spend as little as possible, and the contractor needs to make a profit. Therefore, real integration is not possible. Nevertheless, compared to other instruments, the PSU specifically creates a shared experience and promotes joint behavior, which is why it can, within its boundaries, be considered to influence collaboration integration to a notable degree.

In conclusion, the cross-case analysis demonstrates that project start-ups can be understood as a recognizable collaborative instrument within modern construction projects, despite variation in their exact operationalization. Across all three cases, PSUs consistently functioned as preventive and stimulating mechanisms aimed at supporting interorganizational collaboration during the early stages of the project. Their primary purpose was not to regulate behavior through sanctions or strict control, but rather to facilitate communication, align expectations, clarify roles and responsibilities, and establish a shared understanding of project objectives and ways of working. In this sense, PSUs occupy a position between formal project governance and relational collaboration practices.

The comparison furthermore shows that PSUs in practice are more formalized and integrated into project governance structures than currently reflected in the literature. While academic research generally portrays PSUs as relatively informal and principles-based facilitation instruments, the cases reveal that they are increasingly contractually embedded and jointly designed by the involved project parties. This suggests that PSUs are evolving from optional collaboration workshops into a semi-formal governance mechanism intended to support both the systemic and relational dimensions of project organization. Particularly notable is the shift from unilateral client-driven definitions towards more multilaterally developed processes, reflecting broader developments towards collaborative project delivery and integrated working practices in construction. At the same time, the findings confirm that PSUs remain strongly characterized by a best-efforts logic. Although contracts frequently prescribe that a PSU must take place, the concrete outcomes, behavioral expectations, and follow-up mechanisms remain loosely specified. This indicates that actors recognize the strategic value of PSUs for creating collaborative conditions, while simultaneously leaving substantial flexibility for adaptation to the project context. The preventive function of PSUs was especially evident across the cases, with the instruments primarily being used to avoid future misunderstandings or tensions rather than to resolve existing disputes.

Nevertheless, the comparison also reveals important areas of ambiguity regarding the nature and effectiveness of PSUs. The legal and organizational status of PSU outcomes is uncertain. While some aspects of the process are contractually prescribed, it is often unclear whether agreements or understandings reached during the sessions should be interpreted as a legally binding obligation or as informal relational commitments. This reflects a broader tension between the contractual logic of construction projects and the collaboration-oriented logic that PSUs attempt to stimulate. Finally, the comparison suggests that while PSUs in practice show similar characteristics, they are context-dependent instruments whose functioning is shaped

by the project conditions and actors involved and therefore show some range regarding their character.

4.6 Cross-case analysis documents and interviews

The cross-case analysis is based on themes that were consistently mentioned in two or all project cases. The analysis is structured along theme categories that were deductively derived from literature and used to create a structure for the semi-structured interviews, as well as inductive categories that were identified through the document analysis and the coding of the interviews in Atlas.ti. They have been aligned with the research questions intended to be investigated. The coding tables and co-occurrence tables are illustrated in *Appendices 10* and *16*.

Table 8 Cross-case themes (extension of table 1)

Topic	Research questions	Themes semi-structured interview	Cross-case categories
A	RQ_1 – Context	Introduction and project context	Organizations, Preconditions, Construction sector
B	RQ2 – Contents	PSU design in practice	Design
C	RQ2 – Legal embedding	Contractual/Legal embedding	Contractual
D	RQ3 – Actor goals	Actor goals	Purpose and values
E	RQ4 – Effectiveness	PSU improvement	Outcomes and improvement
		Emerging	Ambiguities and temporal dimension

A CONTEXT – Organizations, construction sector & preconditions

Organizations - The organizational category showed substantial cross-case similarities regarding the complexity of interorganizational collaboration and its influence on the project start-up. Across all three cases, interviewees highlighted that organizations in construction bring different routines, decision-making structures, and interests into the project. Such organizational misalignments can generate friction during project execution. Although these misalignments cannot necessarily be resolved within the PSU or even the project itself, several interviewees indicated that explicitly discussing organizational structures and working methods can facilitate collaboration. This form of alignment is also relevant on the individual and team level. For example, tools such as Management Drives were mentioned as a way to assess whether teams are compatible, ideally before the PSU and before definitive team formation.

A second recurring theme concerns the multi-level nature of collaborative practices. In Case 2, for instance, collaboration still appeared to function well at a higher, strategic organizational level between the parties, while significant tensions emerged at the more operational and specific level. Similarly, interviewee 1A emphasized that values need to be upheld throughout the entire chain of command, otherwise they risk losing their credibility or plausibility. In Case 1, this responsibility was attributed to the project managers, who were expected to act as role

models by embodying the desired collaborative culture. In Case 2, by contrast, this role was more strongly attributed to the board, setting behavioral examples. This suggests that agreements or principles established during the PSU can only become effective if they extend beyond the session and are consistently enacted across actor levels and hierarchies.

A third important theme, particularly highlighted in Cases 1 and 2, concerns the need to establish a certain equality between the organizations participating in the PSU. This relates not only to the number of attendees per party but to the match of roles. Several interviewees indicated participants should know who their counterparts are. If this is not done, uncertainty about responsibilities may arise, which can obstruct smooth collaboration processes.

Construction sector – Across the cases, interviewees referred to specific characteristics of the construction sector that shaped the functioning of PSUs. The industry was described as traditionally pragmatic, technically oriented, and often hesitant toward discussing emotions, interpersonal relations, or behavioral aspects. One interviewee noted that the PSUs might have been too 'soft' for the intended audience:

> *"Sometimes it's too soft in the eyes of engineers." (2B)*

In Cases 1 and 2, interviewees stressed that participants often prefer practical and action-oriented discussions. This may indicate that PSUs in construction require a different design approach than similar interventions in other industries. The adversarial nature of construction projects was also addressed. Particularly in Case 2 but also in Case 3, collaboration initiatives were described as attempts to counteract traditional client-contractor or contractor-contractor (Case 3) tensions and risk allocation conflicts.

Preconditions – One important precondition concerns the continuity of participation. Multiple interviewees argued that the effectiveness of PSUs decreases when project team composition changes over time. This was especially emphasized in Cases 1 and 2, where discontinuity between project phases undermined previously established trust and alignment.

The cases also consistently highlighted the importance of facilitation. Facilitators were described as actors who mirror tensions, stimulate reflection, and create safe discussion environments:

> *"They also see and hear things in the project which they give as feedback to us." (1A)*
> *The facilitators can give certain hinges or certain instructions to people on how they want them to connect. Because some people do it by nature, they're easy to connect with, and some people need a hand." (1A)*

However, the role and intensity of facilitation differed between cases. In Case 1, the facilitator accompanied the team for a longer period of time, whereas in Case 3, the facilitation initially focused more pragmatically on supporting group interaction. In Cases 2 and 3, facilitators were also consulted for conflict management.

All in all, the findings suggest that successful PSUs depend not only on workshop design, but also on organizational commitment, leadership and facilitation support, knowledge of the audience, and continuity in team composition.

B CONTENTS – Design in practice

The design category revealed several differences between the cases. While all cases involved facilitated workshops and interactive discussions, the timing, structure, scale, and continuity of interventions varied considerably. A recurring cross-case theme is that large kick-off sessions were often considered insufficient for addressing concrete issues:

> *"Because the group was too big to really get to know each other and really go to the point of what we have to do together, to achieve the results we want to achieve." (1B)*
> *"I think we were too ambitious about what we could achieve in one day, and especially with a bigger group like this. (3B)*

Multiple interviewees argued that smaller group formats allow for deeper discussion, reflection, and participation.

Another recurring finding concerns the importance of tailoring PSU design to the project context. Interviewees repeatedly emphasized that there is no universal PSU format. Instead, the workshop structure should reflect the project phasing and the involved teams. In this sense, the contractual setting appears to influence the PSU design only indirectly, by shaping the broader project context in which they take place. While some interviewees identified standard elements that are often included, such as identifying counterparts and formulating declarations (Case 2), or the intake session (Case 3), others argued that more original and creative PSUs increase participants' motivation to actively contribute:

> *"And some people don't like a PSU because it's always the same thing. They are not very original..." (2B)*

Opinions about concrete PSU activities varied across the cases. Interviewees from Cases 1 and 2 referred positively to (light) physical activities, suggesting that such exercises support engagement. In Case 3, by contrast, informal moments were considered most valuable for relationship-building and for shaping the collaborative culture. Interviewees emphasized that sufficient time needs to be allocated for such interactions. In Case 2, several interviewees argued that the PSU should have included more tangible and solution-oriented elements:

> *"When you have a difficult time, you need each other. And that is not always the mindset of PSUs - it's easy for everyone to talk about the 'happy flow' (…). When the project is easy, you can start to work and do your job easily, but most of the time (…) after the first problem comes the next…" (2A)*

This view is not necessarily shared by interviewees in other cases, indicating that project-specific expectations and needs play an important role in effective PSU design.

These insights suggest that PSU effectiveness depends less on the existence of a workshop and more on its continuity, contextual fit, and project-specific activities.

C LEGAL EMBEDDING – Contractual

The interviews showed that several interviewees across all three cases were not fully aware of whether, or how, the PSU was legally embedded in the contract. Although the degree of formalization was generally limited, this indicates that PSUs are still often perceived as informal activities rather than formal instruments. In Case 3, greater attention was given to the joint

development of collaborative principles. Some contractual flexibility was deliberately maintained so that contract terms concerning collaboration could be complemented after they had been discussed collectively during the PSU. This illustrates a recurring tension across cases between balancing contractual specification and flexibility. Several interviewees argued that not every aspect of collaboration should be formalized, because effective collaboration also requires adaptability, trust, and informal interaction:

> *"Everyone had the possibility to collaborate on the six major themes for us. These afternoon sessions were really important for us, and we really wanted to bring them further; we didn't want to set everything in the contract. (…) It makes more sense just to talk about it and create them together." (3B)*

At the same time, the interviews suggest that construction actors increasingly recognize PSUs as standard practices in complex projects.

> *"I think we both decided that there's no way to do the big projects at [client] without the PSU. So, every project I know has one." (2B)*

This recognition may contribute to the legitimization of PSU activities and help secure time and resources for them. It might also indicate an emerging institutionalization of collaborative practices within the construction sector. PSUs, therefore, occupy an ambiguous position between formal governance and informal social processes.

D ACTOR GOALS – Purpose and values

The purpose category showed the strongest overlap across cases. Across the interviews, PSUs were primarily understood as mechanisms for improving the quality of collaboration by aligning expectations, increasing mutual understanding, and creating shared project orientation. Several recurring actor goals were identified and categorized along the soft-hard scale, as done in the document analysis:

Table 9 Identified goal categories interviews

Soft ⟶ Hard		
Relational goals	**Interorganizational goals**	**Project goals**
• Building trust and psychological safety • Getting to know partners personally • Increasing openness and empathy • Improving communication quality • Developing mutual understanding and respect	• Aligning interest and expectations • Clarifying roles and responsibilities • Creating shared project values and norms • Improving collaborative behavior between organizations • Reducing future conflicts	• Improving project performance indirectly through collaboration • Increasing efficiency of work processes • Supporting problem-solving • Facilitating integrated decision-making

Across the cases, interviewees consistently emphasized that relational goals are a precondition of technical or project-related collaboration and precede it. Multiple interviewees argued that actors first need to understand each other as people before effective project coordination becomes possible:

> *"So that you know a little bit about each other because knowing each other is also the first step in collaboration, we always say." (3C)*

The main differences between the cases concerned emphasis rather than fundamentally different understandings of PSU goals. Case 1 focused strongly on the need to accommodate secondary interests and improve understanding. Case 2 placed greater emphasis on preparation for future conflicts and establishing shared principles before problems arise. Case 3 highlighted long-term collaboration quality more strongly, particularly the need to sustain teamwork throughout the project lifecycle.

Values – the values most strongly represented in the interviews were trust, openness, and transparency. Across the cases, PSUs were perceived as contributing to these values by creating opportunities for actors to engage in more open and reflective interaction. Interviewees repeatedly linked successful collaboration to the willingness of actors to discuss uncomfortable topics, show vulnerability, and express concerns. Familiarity and vulnerability were mentioned as two important preconditions for trust. Across the cases, trust was therefore framed not as an immediate outcome of the PSU, but as something that requires time and must be actively developed through interaction. This also implies that the PSU alone cannot fully achieve this goal, but can provide an initial basis.

The cases differed in how transparency was interpreted. In Cases 1 and 3, transparency was primarily associated with openness about costs and profits:

> *"But here we do it differently, here we really want to be transparent about the finance, give insight to the client about the costs and be honest about the chances we see…" (3A)*
> *"But we work in an open and transparent environment with [client], so we are very transparent about all our costs, (..)the risks that we see, and (…) how much money we make" (1A)*

In case 3, transparency was also linked to the need to prevent dominant actors from controlling discussions. This suggests that PSUs should not merely be understood as kick-off meetings, but also as social mechanisms.

E EFFECTIVENESS – Outcomes and improvement

Outcomes – A recurring notion is that the effects of project start-ups either evolve or diminish over time. Case 1 particularly emphasized that "getting to know each other" is not a one-time achievement, but a process that develops throughout project execution. It functions as an anchor point to which actors may refer to later to 'measure collaborative performance'. Case 3 expressed skepticism, suggesting the impact of the PSU may diminish unless collaborative principles are continuously revisited. This case also highlighted the importance of transferring PSU outputs to actors who did not attend. Case 2, by contrast, emphasized that understanding another organization's perspective can increase patience and consideration in later interactions.

Another frequently mentioned outcome concerns improved decision-making and conflict management. Several interviewees argued that early discussions about organizational principles and expectations can reduce misunderstandings. However, the cases also revealed uncertainty regarding how PSU effectiveness can be evaluated. Interviewees struggled to identify measurable indicators and often referred to intangible outcomes such as atmosphere, trust, or interpersonal familiarity:

> *"And some actions were written down, so really concrete points of action, but I think the largest part was just getting to know each other. I think that's also the most valuable part, to get to know each other and lower the 'wall' between the companies." (3A)*
> *"If you know that [how processes in the other company work], you know, it looks like a simple question, but for them it's very difficult. So, it's more about that." (2B)*

This finding suggests that PSUs are mainly valued for indirect relational and behavioral effects rather than direct outcomes. Consequently, PSU effectiveness should not only be assessed in terms of immediate workshop outputs, but also in relation to whether collaborative principles are maintained and developed over time.

Improvement – A notable finding across all cases is that interviewees were often dissatisfied with the number of participants invited to the PSU. Large group sizes were perceived as limiting the possibility of discussing concrete issues or getting to know all relevant actors in a meaningful way. Some interviewees, therefore, suggested multiple meetings with different purposes and participant groups.

EMERGING – Ambiguities and temporal dimension

Ambiguities – This category highlights the conceptual uncertainty surrounding PSUs. Most interviewees associated the PSU primarily with the kick-off meeting and appreciated that it temporarily removes them from their everyday work environment. However, the interviews also suggest that the project start-up is expected to fulfil broader functions than a conventional kick-off, including relationship building, reflection, and the development of collaboration principles.

A further ambiguity concerns the tension between the operational pressure of daily project work and the reflective function of the PSU. Several interviewees argued that actors often deprioritize PSU or PFU activities because of workload and time constraints, despite acknowledging their value. Consequently, this suggests that PSUs are not always perceived as an essential part of project work. Instead, project execution and team building may still be understood as separate processes. Even though some interviewees recognize that collaboration requires even greater attention when problems arise, they also acknowledge that it is difficult to maintain this focus under project pressure.

> *"Somehow doing your work, doing your job, taking your responsibility (…), if they execute outside, that's more important. And it's more logical because that's what you do every day." (3C)*
> *"Because when there's pressure on the people, everyone is doing work and shutting this [reflection] out. Everyone is focusing on their own thing." (2A)*

Another notable tension concerns the perceived necessity of PSUs. While many interviewees considered PSUs useful in principle for all projects, others argued that only certain types of

projects benefit from them. This indicates that, even where PSUs are contractually formalized, the decision to organize and prioritize them remains partly managerial and context dependent.

Temporal dimension – There was considerable agreement across interviews that project start-ups may initiate collaborative development, but they are insufficient if not followed by continued attention to collaboration during the project. The timing of PSUs, on the other hand, creates a dilemma: The interviews suggest that PSUs need to take place early enough to influence expectations, roles, and working relationships before patterns become fixed. At the same time, participants need to have sufficient project knowledge, and ideally, the final execution team should be established, to address concrete and relevant issues.

Table 10 Summary of the cross-case analysis key themes

Topic	Cross-case categories	Key themes
A	Organizations, Preconditions, Construction sector	• Team and organizational alignment • Embodiment throughout actor levels • Equality between parties • Characteristics of the construction sector • Team composition • Facilitation
B	Design	• Group size • Contextual fit • Project-specific activities
C	Contractual	• Perception of formalization • Tension between specification and flexibility • Emerging institutionalization
D	Purpose and values	• Relational goals • Interorganizational goals • Project goals • Relational goals as basis for collaboration • Trust-building • Financial transparency
E	Outcomes, Improvement	• Continuous processes • Uncertainty about measuring effectiveness
Emerging	Ambiguities, Temporal dimension	• Conceptual uncertainty • (De-)Prioritization next to project work • Necessity • Frequency and timing

Qsorting analysis

4.7 Qsorting analysis

4.7.1 Analytical purpose and procedure

This chapter presents the results of the Qsorting analysis. The analysis aimed to identify shared viewpoints regarding the goals and expected functions of project start-ups, thereby providing insights about what elements are perceived as effective by practitioners. The Qsorting results show that practitioners do not understand the purpose of PSUs in one consistent way. Instead, three goal orientations can be distinguished: Relational & interpersonal goals, project (control)-related, and interorganizational & alignment goals. The case-level analyses show that these orientations are not equally present in every project but might be shaped by the specific project context.

Since the cross-case dataset includes the largest number of Qsorts, it is used first to identify overarching patterns across the three cases. The case-level analyses are then used to examine how these patterns appear within specific project contexts. For each analysis, the results are presented in 2 steps. First, the factor solution is described. Second, the selected factors are interpreted as distinct perspectives on the purpose of the PSU.

The methodology in Chapter *3.4.3 Qsorting methodology* describes how the analysis was conducted for the three cases, as well as the cross-case analysis. As not all tables and values are shown in this chapter, please refer to *Appendix 12* for the analysis output from the PQMethod software.

4.7.2 Cross-case factor solution

For the cross-case analysis, a three-factor solution was selected after analyzing the Eigenvalues and factor loadings of the first 6 factors, accounting for 79% of Cumulative Explained Variance. In the first round, 5 factors were selected as they exceeded the Eigenvalue of 1.0, and as *factor 6* already showed significantly less variation. Remarkably, *factor 1* has a very high Eigenvalue which can be interpreted as a representation of a largely shared view throughout the sorts.

Table 11 Cross-case results Principal Components Factor Analysis

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Eigenvalues	10.7802	2.2639	1.4119	1.1860	1.0061	0.8093
% expl. Var	49	10	6	5	5	4
cum% expl. Var	49	59	66	71	76	79

After the first rotation, only one Q-sort loaded on *factor 5*, which is why it was not considered in the further process, as one participant cannot represent a shared viewpoint. To ensure for robustness, a rotation with the four remaining factors, as well as a three-factor solution, was tested.

The 4-factor solution reflects 71% percent of the variance in total, with *factor 1* explaining 21%, *factor 2* explaining 10%, *factor 3* describing 21%, and *factor 4* explaining 19% of variance. *Factors 1* and *4*, and *3* and *4* are almost equally strong, while only two Qsorts load on *factor 2*

(10%). By examining the factor scores of the Qsorting statements, the following themes included in the 4 factors were developed.

Table 12 Cross-case results Varimax rotation – four factors

	Factor 1	Factor 2	Factor 3	Factor 4
Main themes	Success, shared goals, key actor alignment	Risks, context, conflict management, milestones	Trust, collaboration culture and principles, informal	Success, shared and project goals, trust, binding agreements, jointly reviewing contract
Number loading Q-sorts	4	2	3	4
% expl.Var	21	10	21	19

The 3-factor solution reflects 66% percent of the total variance. In this case, *factor 1* explains 29%, *factor 2* still describes 10%, and *factor 3* now explains 27% of the variance. *Factors 1* and *3* now explain almost the same percentage, while *factor 2* remains weaker and should be treated more cautiously. By looking at the factor scores of the Qsorting statements again, the following themes included in the 3 factors were developed.

Table 13 Cross-case results Varimax rotation – three factors

	Factor 1	Factor 2	Factor 3
Summary	Relational and interpersonal goals	Project (control)-related goals	Interorganizational and (strategic) alignment goals
Main themes	Trust, collaboration culture and principles, informal	Risks, context, conflict management, milestones	Success, shared goals, project goals, key actor alignment
Number loading Q-sorts	9	3	8
% expl. Var	29	10	27

The comparison of the 4-factor and the 3-factor solution demonstrates that *factors 1,2* and *3* are clearly established within the set. The dataset shows that *factor 3* and *factor 4* have a high positive correlation (> 0.63, *Appendix 12-1*) and that *factor 1* almost equally correlates with these two factors (ca. > 0.60). In contrast, *factor 2* shows much weaker correlations, the highest relating to *factor 3* with a value of 0.32. This indicates that *factor 2* represents a different and distinct viewpoint, while the other factors are more similar. *Factor 4* correlates strongly with both *factor 1* and *factor 3* (*Appendix 12-1*), focusing on success and shared goals, as well as trust and collaboration, but it additionally adds a nuance regarding binding or contract-related aspects. Although this 4-factor solution explains more variance, the fourth factor does not introduce a clearly distinct viewpoint since it largely combines elements already present in *factor 1* and *factor 3*. The 3-factor solution was therefore selected because it offered a more unequivocal and interpretable representation of the main viewpoints.

4.7.3 Cross-case factor interpretation

The interpretation of each factor is based on factor arrays and the highest and lowest ranked statements, the Z-scores, which are a statistical indication of where a statement stands within

a factor. They show the relative degree of agreement (positive score) or disagreement (negative score) within each statement for the viewpoint represented by that factor. Particular attention was paid to statements placed at the extremes of the distribution and distinguishing statements, as these indicate what is most characteristic of each viewpoint.

The (numbers) in the next paragraphs relate to the statement numbers in Appendix 6.
The (P + numbers) relate to the participants. To protect their identity, the key to the numbers is not disclosed.

4.7.3.1 Factor 1: Relational and interpersonal goals

This factor represents a viewpoint of participants that sees PSUs primarily as an instrument to create a trusting and respectful relationship between project actors, establish a culture of collaboration and good working atmosphere, as well as talk about shared principles. This viewpoint prioritizes informal interactions and a shared understanding among project actors. It places the focus on collaboration styles and personality traits (15) relatively high (Z-score 0.912) and therefore can be considered to support relational and interpersonal goals.

The most important positive statements are numbers 33, 26, and 28 (*Appendix 12-2*), which are to "set the grounds for a culture of collaboration and a good working climate", to "contribute to building trust and respect between the organizations", and to "jointly discuss and further develop collaboration principles", which clearly focus on interpersonal mechanisms. This factor rejects more process-related and concrete statements, such as the ones about technical details or the contract, as evident from the statements with the lowest Z-scores for this factor: To "design how pricing, accountability and invoicing and final settlement will be handled" (11), to "specify or complement the contract terms" (9) and to "talk about technical details and the relevant specifications" (39).

Both to „set the grounds for a culture of collaboration and a good working climate" (33) and to „organize the 'soft side' of the project" (7) rank significantly higher for *factor 1* than for the two other factors. It is especially relevant for distinguishing between *factors 1* and *3* and supports the perspective that *factor 1* puts a bigger emphasis on objectives of the PSU that are related to the 'people' and their experience. For statement 33, the Z-Score is, for instance, 2.11, while for *factor 3* it is 1.23.

The debrief interviews support this interpretation. Participants loading on this factor described the PSU as the basis or "backbone" (P6) of the project. They emphasize trust as the foundation of shared values (P17), informal interactions (P9), and understanding each other's motivations (P21). Several participants argue that the *hard* project side becomes easier to handle once the relational foundation is in place (P17). For example, one participant says the technical or operational part is the "least of worries when the soft doesn't work" (P6), while others describe trust, fun, and personal connection as ways to improve communication (P11) and problem-solving (P6). A second theme in this viewpoint group is that PSUs should focus on global and universal topics, not on detailed technical content (P9, P14, P17, P21). As also indicated by the Z-scores, this group often places detailed specifications, contract terms, and technical discussions lower because they are too specific and consequently not relevant to all participants. Some, but not all, participants of this group still want the PSU outcomes to have "weight" (P9), not necessarily in contract terms, but as shared principles or reference points that can be revisited in PFUs (P9, P11, P13). This is important because it shows that *factor 1* is not only *soft* but also contains a concern that collaboration should be made usable in practice.

Regarding the actor level, this factor addresses team, project, and organizational levels by prioritizing the creation of a culture and conditions for collaboration. Some *factor 1* participants value getting to know people personally (P13, P14), while others say that personal and own-team matters should be arranged before or outside the PSU (P11). Hence, there are different opinions about the importance of the individual actor level; however, the level may indirectly play a role in trust-building, as a participant pointed out: "Trust develops on the personal level while the PSU focuses on trust in the organization" (P13). Overall, this factor describes the purpose of the PSU to create a collaborative foundation and build actor relationships.

4.7.3.2 Factor 2: Project (control)-related goals

Factor 2 represents a more instrumental and project management or control-related understanding of the PSU purpose. In this view, the PSU is effective when it helps make the project manageable by clarifying risks, the context, conflict, and escalation mechanisms. This viewpoint also introduces project planning and scheduling as an important goal, positioning the effectiveness of PSUs on the more operational side.

Statements that most strongly agree with this factor are to "talk about concrete anticipated risks or bottlenecks" (27), to "develop binding agreements to specify the project plan further" (25), and to "jointly further design conflict management and escalation mechanisms" (23). Talking about technical details (Z-score -0.659) is still ranked low; however, understanding the context and how it could be influenced by risks or conflict is strongly valued by this factor. At the same time, it strongly rejects the more personal and *soft* side of the project organization. The most disagreed with statements were to "reflect on the personal interests and goals of the key individuals" (1) and to "encourage the key individuals (...) to get to know each other on a personal level" (8). As well as the equally low-ranked purposes to "create the opportunity for me to voice what I expect from my team" (36) and to "organize the 'soft side' of the project" (7). The participants with this perspective, therefore, do not think that personal topics should be a big part of PSUs.

The aforementioned statements about risks and bottlenecks (27), conflict management (23), and schedules (34) are also important distinguishing statements for *factor 2*. While the other two factors show disagreement or neutrality regarding these PSU aspects (Z-scores between -0.48 and 0.19), Qsorts that load on this factor strongly agree (Z-scores 1.48 and 1.71). The development of binding agreements (25) is also significant (Z-scores 1.58). On the other hand, *factor 1* and *factor 3* value informal and fun moments (32), which is strongly rejected by this factor (Z-score -1.64). This establishes *factor 2* as a distinctly different view of PSUs, which is less focused on interpersonal interactions.

The *factor 2* debrief interviews are much more focused on project context, risks, tasks, and responsibilities. They argue that risks and bottlenecks are directly connected to project success, can become a threat to it, and should be discussed transparently (P2, P5). One participant explicitly connects the PSU to understanding each other's roles and responsibilities and says concrete actions should follow from the session (P2). A recurring theme is that the *soft* side is not necessarily denied, but it is treated as secondary or something that happens naturally. *Factor 2* participants tend to argue that business success is not primarily dependent on knowing each other personally. Participant 2, for instance, had a contrasting view to most other Qsorts as they stated that the "soft side does not need to be explicitly discussed but rather works out when the other topics are in place". In addition, participants mention that problems are often

not technical, but related to uncertainties in the context, i.e., stakeholders or organizational processes of the partner (P5). This strongly supports interpreting *factor 2* as a project-context and risk-management viewpoint rather than simply a *hard* viewpoint.

This factor rejects the role of the individual and team level in PSUs and mainly emphasizes the project and the organizational level. Because this factor only has three defining Qsorts and low positive correlations to the others, it can be considered a meaningful but minority perspective. It sees the PSUs as a project management instrument, understanding collaboration through a lens of clarity, predictability, and project control.

4.7.3.3 Factor 3: Interorganizational and alignment goals

The last factor strongly relates to a shared understanding of success and goals, specifying project objectives and involving or familiarizing key individuals from the client and contractor. This factor strongly positively correlates with *factor 1*, as participants similarly appreciate collaboration principles and trust, but is more focused on a shared direction, success, and commitment from key actors rather than on the relational culture itself.

This is supported by statements 13, 6, and 21, which emphasize that the PSU's purpose should be to "define what success means for this project", to "work on defining shared goals", and to "jointly discuss and further specify the project goals and values", indicating the relevance of *soft* but still strategic objectives. The rejected statements entail the purposes to "talk about technical details and specifications" (39), to "jointly further design how pricing, accountability, invoicing, and final settlement will be handled" (11), and finally, to "create an opportunity for me to develop myself professionally" (10). The last statement, which is the least agreed with, characterizes this perspective as focused on common and shared activities.

This perspective can be distinguished by the statement 13, 8, and 21, to "define what success means for this project" (13), to "encourage key individuals of the client and the contractor to get to know each other on a personal level" (8), and to "further specify the project goals and values" (21). These are ranked significantly lower for the other factors but have a Z-score of 1.79 (13), 1.59 (8), and 1.91 (21) for *factor 3*. Moreover, this factor does not significantly reject statements that the other two factors support, which may be an indication that this factor may lie 'between' the other two, as it combines certain viewpoint aspects.

Participants in the debrief interviews strongly emphasized shared goals, shared success, and alignment between key actors as well. Several comments suggest that collaboration is impossible if actors work towards different goals (P1, P3, P12, P18). The PSU is therefore seen as a moment to make sure that the project goals are interpreted in the same way and that people are committed to a shared direction (P12, P15). A second recurring theme is the importance of people behind organizations. Participants repeatedly argue that organizations do not collaborate abstractly, but that people carry organizational strategies, motivations, and tensions (P3, P12, P20). This is why it is important to know who you are dealing with and what their motivations and management styles are (P8, P19, P15), as was also indicated by the distinguishing statements. A third theme is that *hard* aspects are important but often not central to the PSU session. Some *factor 3* participants say contract terms, technical topics, or hard project elements should be discussed before the PSU or in "spin-off meetings" (P12). The PSU should instead focus on high-level (P8), holistic, overarching (P15), or broad (P12) goals that create the conditions for the more concrete topics to be handled later. An interesting variation between the participants of this factor is their opinion about whether PSU activities

should be documented or formalized. Some participants argue that values and principles should be written down so people can be reminded or held accountable (P4). Others warn that recording outcomes as “golden rules” (P8) may make them less applicable or may reduce psychological safety (P10, P12).

Factor 3 rejects the individual level as this is seen as important in project teams in general, but not central to the project success or PSU design. This viewpoint is primarily associated with the project and organizational level, although it can be argued that team processes also play a part in defining shared success and goals (Lui & Cross, 2016). All in all, *factor 3* defines the purpose of the PSU as achieving shared strategic alignment by having a common idea of success and by focusing key actors and their motivations.

4.7.4 Cross-factor comparison

The distinguishing statements confirm the conceptual separation between the three factors. *Factor 1* is mainly distinguished by its emphasis on a collaborative culture (33) and addressing the *soft* side (7) of the project, while *factor 2* is distinguished by its prioritization of risks, bottlenecks (27), and escalation mechanisms (23). *Factor 3* is distinguished by its focus on defining project success (13) and aligning key actors (8, 12). While *factors 1* and *3* are conceptually related because both emphasize collaborative and trust-building interventions, *factor 2* represents a more distinct minority position.

At the same time, the consensus statements show that all factors give importance to defining common goals. To “work on defining shared goals” (6) and to “jointly discuss and further specify the project goals and values” (21) are consistently agreed with throughout the Qsorts with Z-scores from 0.98 to 1.89. This means that discussing and aligning goals is a central PSU objective regardless of whether participants prioritize relational, project-related, or strategic alignment goals. The debrief interviews support this interpretation. They strongly emphasize a joint approach and not merely an exchange of views, but a shared understanding of what the project is trying to achieve. If goals cannot be integrated, at least a decision to prioritize the same goals should be made (P16). One participant summarized this, stating: “If you collaborate and work on different goals, you are basically not collaborating” (P3). Another participant (P12) emphasized that joint processes are particularly important because client and contractor organizations often work through separate procedures (P11), making the PSU one of the few moments in which they can create a shared experience (P3).

A second, cross-case theme concerns the importance of “getting to know each other” (P14). Across the debrief interviews, participants repeatedly argued that being familiar with the people involved helps actors understand “who you are dealing with” (P10), including their responsibilities. This was often linked to smoother coordination (P14) and trust-building (P1, P9, P13, P19). However, the meaning of “getting to know each other” differed across factors. For *factor 1*, it is mainly part of building a collaborative culture. For *factor 2*, it is less central and often seen as something that happens naturally once project-related topics are clarified. For *factor 3*, it is connected to aligning key individuals and understanding the people behind the organizations.

The low-ranked elements provide insight into what participants do not see as the central purpose of the PSU. Those were statements concerning individual professional development (1) or own-team learning (17). The debrief interviews suggest that this does not mean that

these activities are irrelevant, but rather that they are considered more appropriate for other settings (P1, P6, P8, P10, P12, P19), ideally before the PSU. Similarly, technical specifications and detailed contractual issues were consistently ranked low. Participants explained that these topics are often too specific, too expert-oriented (P17), or only relevant to a limited number of project actors (P4, P9, P14, P17, P21). So, while these issues are generally considered important, participants seem to differentiate between what belongs in the PSU session and what belongs in the broader start-up phase or later follow-up activities. The PSU is therefore not perceived as the moment when all project issues should be solved. Instead, it is mainly understood as a collective starting point for creating shared direction, relational conditions, and a basis for future coordination.

4.7.5 Case-level comparison

The case-level comparison should not be considered a full analysis; instead, it serves to investigate how the cases confirm, nuance, or differ from the cross-case pattern identified and if a connection to the case project context can be made.

4.7.5.1 Case 1

1. Factor solution

Case 1 included 9 Qsorting sessions. *Table 14* shows that fewer factors exceed the benchmark of an Eigenvalue above 1.0, compared to the cross-case set. As *factor 3* with an Eigenvalue of 0.9231 ranks relatively close to 1.0, the factor was also considered in a first round of analysis.

Table 14 Case1 results Principal Components Factor Analysis

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Eigenvalues	3.8333	1.5338	0.9231	0.8606	0.6656	0.4860
% expl.Var	43	17	10	10	7	5
cum% expl.Var	43	60	70	80	87	92

The Varimax rotation showed that *factor 1,* with 5 factor loadings, is the defining factor in this set, while the other two are only weakly developed. The dataset suggested similar viewpoints as in the cross-case analysis (*Table 13*). As *factors 1* and *3* show a moderate positive correlation of 0.4744 (*Appendix 12-3*), a 2-factor solution (*Table 15*) was also tested to verify whether *factor 3* was rightly included or not. This version indicated a stronger characterization of two 'poles', the collaboration-oriented and the concrete or planning purposes of the PSU and strengthened emphasis on *factor 1*. However, this alternative mainly consolidates *factors 1* and *3* of the 3-factor solution and, at the same time, does not significantly change *factor 2*. That is why the 3-factor solution finally seems more eligible to describe the viewpoints present in Case 1 and was interpreted further.

Table 15 Case1 results Varimax rotation – three & two factors

	Factor 1	Factor 2	Factor 3
Main themes	Trust, collaboration culture and principles	Risks, context, conflict management,	Project goals, Success, shared goals, key actor alignment
Number loading Q-sorts	5	2	2
% expl.Var	33	17	20

Factor 1	Factor 2
Collaboration culture and principles, shared goals, success, trust	Risks, context, milestones, shared and project goals
6	3
41	19

2. Factor interpretation

Factor 1: Relational and interpersonal goals

Based on the Z-score, the statements characterizing this viewpoint about the purpose of PSUs are almost identical to *factor 1* in the cross-case analysis. It emphasizes good collaboration and the development of principles for working together. This factor similarly rejects the PSU objectives to "specify or complement the contract terms" (9) and to "talk about technical details and the relevant specifications" (39). Again, this factor addresses several levels, namely the team, project, and organizational levels.

Factor 2: Project (control)-related

The second factor can be interpreted as a project control and expectation management view of the PSU. In contrast to the relational and strategic alignment factors, this viewpoint emphasizes the need to clarify risk, project context, and the conditions under which the project can be delivered. Since the Qsorts loading on this factor are more concentrated in Case 1, the viewpoint appears to be particularly relevant in this project. A plausible explanation is the presence of the *Doorgrondingsfase*, which may have oriented participants towards understanding the assignments and identifying uncertainties. From this perspective, the PSU is not only a collaborative start-up moment, but also part of a broader process of making projects more manageable. Nevertheless, this interpretation should not be overstated, as the factor may also reflect the presence of more technical roles among the participants of the Qsorting session or even personal preferences. The factor primarily addresses the project-level and, to some extent, the organizational level, while individual and team-development goals remain secondary.

Factor 3: Interorganizational and alignment goals

In the cross-case analysis, this factor expresses the aim to develop a definition of success and shared and project goals. This is mostly reflected in this factor as well, with the minor difference that in Case 1, shared and project goals seem to be considered slightly more important than defining what success means. Another deviation concerns the development of binding agreements, which is more strongly and positively represented (Z-score 1.129) than in the analysis of the whole Qsorting-set (Z-score - 0.957), where this statement is generally more rejected for this factor. This may reflect the generally more formalized nature of collaborative

activities in this project, as it is in the case, in which regular assessments, PFUs, and weekly updates are most strongly integrated into the workdays and *Doorgrondingsfase*.

This can also be observed for the statements that are not supported by this viewpoint. Although they are similar to the cross-case scenario, participants in this case ranked technical details and contractual arrangements not as negatively but primarily rejected the objectives to "create an opportunity for me to develop myself professionally" (10) and to "create the opportunity for my team to learn from other project members" (17). This viewpoint, therefore, strongly focuses on shared processes across organizations and within the project, and openness for more concrete action points.

4.7.5.2 Case 2

1. Factor solution

Case 2 included 10 Qsorting sessions, with the first factor alone explaining 54% of the variance (*Table 16*). This suggests that many participants sorted the statements similarly. As in Case 1, a 3-factor and a 2-factor solution have been considered. *Factor 3* with an Eigenvalue of 0.9073 must be seen critically, since the factor falls below the Kaiser-Guttman criterion by almost 0.1.

Table 16 Case2 results Principal Components Factor Analysis

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Eigenvalues	5.4100	1.0851	0.9073	0.6117	0.5313	0.4809
% expl.Var	54	11	9	6	5	5
cum% expl.Var	54	65	74	80	85	90

After rotation, it was evident that all factors are strongly positively correlated with each other: *Factor 1* and *2* correlate at 0.63, *Factor 2* and *3* at 0.60, and *Factor 1* and *3* at 0.48. This again indicates that Case 2 does not present three opposing viewpoints, but rather three variations within a shared understanding of the PSU. When attempting to identify the characterizing themes of each factor, many overlaps became evident (*Table 17*). The correlation largely reflects participants' appreciation of the same goals; merely the statements in the fourth or fifth position, according to the Z-scores, brought some nuance. Given the broad overlap, a 2-factor solution has finally been selected in order to better identify the differences between factors. With this alternative, each factor has 5 defining sorts, making the characteristics much stronger.

Table 17 Case2 results Varimax rotation – three & two factors

	Factor 1	Factor 2	Factor 3
Main themes	Collaboration culture, success, trust, *binding agreements*	Shared goals, success, trust, knowing personally, *context*	Knowing personally, success, shared goals, *soft side*

Factor 1	Factor 2
Collaboration culture, success, trust, project goals, binding agreements	Shared goals, knowing each other, collaboration, trust, informal

Number loading Q-sorts	4	4	2	5	5
% expl.Var	28	27	19	35	30

2. Factor interpretation

Factor 1:

Factor 1 is predominantly associated with the PSU in shaping collaboration. It values setting the grounds for a culture of collaboration and trust, as well as defining success and project goals.

Dominant statements for this perspective are to "set the grounds for a culture of collaboration" (33), to "define what success means for this project" (13), and to "contribute to building trust and respect between the organizations" (26). Nevertheless, a distinct nuance of this factor is that it emphasizes not only *soft* aspects but also entails statements like "develop binding agreements to specify the project plan" (25) and to "clarify what the partner organization expects from my team" (31). This combines collaboration with formalization and mutual expectations. Statement 25 is also a significant distinguishing statement between *factor 1* (Z-score 1.24) and *factor 2* (Z-score -1.56), with the latter strongly rejecting a binding function of the PSU contents. *Factor 1* rejects the same statements as in the cross-case analysis. Therefore, this viewpoint still emphasizes the *soft* side but aims for concrete agreements and expectation clarification. The associated actor levels are the team, project, and organizational levels.

Factor 2:

Factor 2 also values shared goals, success, trust, and collaboration, but is less interested in binding agreements. It places more emphasis on key individuals, collaboration principles, informal moments, and understanding collaboration styles.

This shared viewpoint is characterized by the objectives to "define what success means for this project" (13), to „work on defining shared goals" (6), and to „encourage key individuals of the client and contractor to get to know each other on a personal level" (8). Specifying statements are to "create the opportunity for informal and fun moments that contribute to team building" and to "better understand the collaboration styles and personality traits of the key individuals in both organizations" (15).

This factor strongly rejects the role of PSUs to "specify or complement contract terms" (9), and similarly "to develop binding agreements to specify the project plan further" (25). It therefore places more emphasis on the team level, while also valuing organizational and project level items, but represents the view that these elements do not necessarily have to be formalized.

A third factor

A third factor, such as *factor 2* in the cross-case analysis, focused on instrumental or project management goals, is not indicated by the dataset. The factors in Case 2 represent more of a combination of *factor 1* and *factor 3* of the overall Qsorts, without distinguishing as much

between the collaboration principles and the success and goals of the project. This is supported by the consensus statements as well.

The more articulated difference between viewpoints for this case is the notion of whether binding or mandatory outcomes should follow from the PSU session or not. As the factor loadings show, half of the participants agree, and half of them have doubts about a formalization of PSUs. This was discussed in the debrief interviews, where some participants mentioned that PSUs outcomes should be made "harder" (P4), meaning more concrete and written down to operationalize the *soft* aspects. The motivation for that is so that principles can be revisited (P4, P9) and that they can be distributed to the rest of the team not attending (P11). Others think that distribution is not necessary since people who did not attend might struggle with understanding the outcomes (P13) or do not benefit because the value of the session is attributed to the process and shared experience and not to the output (P3, P14). A proposed mid-way solution is to formulate concrete action points (P2, P14, P16) that can be understood by everyone in the project.

The difference in the characterization of viewpoint between Case 2 and the cross-case factors could partly be explained by the composition and context of the case. The central tension in Case 2 concerns how relational and strategic alignment should be operationalized, whether through concrete, revisitable agreements or through the experiential value of the PSU process itself. The interviews revealed that some tensions arose during the partnership, which might have led participants to wish for more concrete PSU outcomes to come back to. However, this was not explicitly described by participants, so the interpretation should be treated cautiously. Regarding the project control-oriented factor, which was not a shared viewpoint in Case 2, the assumption can be made that this case more strongly represented the roles that emphasize leadership, contractual coordination, and strategic alignment (*Appendix 10*), whereas cross-case *factor 2* is mainly associated with technical managers and one contract manager. As a result, PSU goals, such as risks, context, and escalation mechanisms, do not disappear, but they do not form an interdependent viewpoint.

4.7.5.3 Case 3 – Descriptive comparison

Due to the limited number of Qsorts in Case 3, no robust factor interpretation can be made. The case is therefore not used to identify shared viewpoints, but only to explore whether the individual sorts reflect patterns found in the cross-case analysis.

1. Factor solution

In Case 3, only 3 Qsorting sessions could be realized. *Table 18* shows that within this set, only one factor exceeded the threshold of an Eigenvalue greater than 1.0. In total, only three principal components were generated. This indicates that one shared viewpoint among the participants exists; however, it only has limited explanatory power as the group is small. A Varimax rotation was attempted, leading to equal factor loadings on three different factors. In the thematic analysis, however, these three factors broadly covered the same statements. As an indicative value, the factors on which the participants loaded in the cross-case analysis were added to *Table 19*.

Table 18 Case3 results Principal Components Factor Analysis

	Factor 1	Factor 2	Factor 3
Eigenvalues	2.0782	0.5752	0.3456
% expl.Var	69	19	12
cum% expl.Var	69	88	100

The summary of the five highest-ranked statements per factor demonstrated many overlapping themes. This is also reflected in the strong positive correlation between *factor 1* and *factor 3*, which is 0.61, and between *factor 2* and *factor 3*, with a value of 0.57.

Table 19 Case3 results Varimax rotation

	Factor 1	Factor 2	Factor 3
Main themes	Trust, culture of collaboration, success, *collaboration style & personality*, project goals	Success, project goals and values, shared goals, *align business processes, project context*	Shared goals, success, project goals, trust, *collaboration principles*, culture of collaboration
Number loading Q-sorts	1	1	1
% expl.Var	34	34	32
Participant's factor-loading in cross-case analysis	Factor 1	Factor 3	Factor 3

2. Factor interpretation

For this Qsorting, differing viewpoints cannot be identified. However, what can be said is how the broad consensus among the participants is characterized. Statements 6 and 13, to "work on defining shared goals" (6) and to „define what success means for this project" (13) were, for instance, agreed on to a large extent (Z-Values 0.92-1.85). Another statement with high consensus was number 21, to "jointly discuss and further specify the project goals and values".

On the other hand, to „talk about technical details and the relevant specifications" (39) and to „create an opportunity for me to develop myself professionally" (10) were almost equally rejected.

A remarkable insight from the dataset is that almost no distinguishing statements were identified, potentially also representing agreement or simply statistical insignificance. Therefore for *factor 2*, to "discuss and align the business processes of the partners" (19) was positively highlighted, while for *factor 1*, to "encourage the key individuals of the client and the contractor to get to know each other on a personal level" (8) was significantly rejected and for factor 3, to "design the joint organization further (such as meetings)" (4) was more positively ranked while the other two participants rejected it. While this has limited information value, it can be said that overall, the same views as in the cross-case analysis, such as technical and individual-oriented aspects, are rejected, while the shared goals and values and success are strongly shared, which is similar to the overall cross-case sort. The cross-case *factor 2* is not represented in this set.

4.7.6 Conclusion: What the Qsorting analysis shows about PSU effectiveness

The Q-sorting analysis aimed to clarify which elements of project start-ups are valued by participants and how these preferences shape understandings of PSU effectiveness. The cross-case analysis identified three main goal orientations represented by cross-case *factors 1, 2,* and *3*. The relational & interpersonal and interorganizational alignment goals were most widely shared, suggesting that PSUs are primarily understood as instruments for positioning actors within the project and around shared objectives. The case analyses showed that this overall understanding remained relatively stable across project contexts, although precise prioritization varies. This is most visible in *factor 2*, which emphasized project control and was most clearly represented in Case 1. It suggests that contextual conditions, such as project phasing, the complexity of the assignment, or the specific actors involved, can influence which PSU goals become salient.

To further examine this, a complementary actor-role analysis was conducted and included in *Appendix 10*. This analysis explored whether participants' professional roles shaped their expectations of the PSU. The findings indicate that role does not strongly determine whether participants prioritize relational interpersonal or strategic alignment, as *factor 1* and *factor 3* were present across almost all role groups. The distinction between these two orientations, therefore, appears to be shaped more by project experience, personal preference, or case-specific conditions than by formal role. However, the project control-related perspective was mostly associated with technical managers and one contract manager, which might indicate that actors directly involved in technical execution may have a stronger expectation that PSUs should address project context, risk, and escalation mechanisms. Although *factor 2* represents a minority viewpoint in the overall Qsort solution, its recurrence across several role groups as a secondary concern supports its inclusion in the analysis.

Overall, the findings show that PSUs should not be understood solely as *soft* collaboration interventions. While relational and interorganizational alignment are central, PSUs can also support project manageability when project context or actor responsibilities make this relevant. The analysis further shows that PSUs primarily address the project and (inter-) organizational levels, while statements related to individual or own-team level were generally rejected or ranked lower. However, the debrief interviews indicate that individual and team-level dynamics still matter indirectly, providing behavioral direction, motivation, or shaping communication styles and psychological safety. The perceived effectiveness of project start-ups is therefore contingent on the interaction between the project context, actor-roles, and actor-levels addressed.

5 DISCUSSION

The discussion chapter interprets the findings of this study and examines their theoretical and practical implications for the use of project start-ups (PSUs) in complex construction projects. Although PSUs are increasingly applied and formally embedded within collaborative project environments, both academic literature and practice still provide limited clarity regarding how these interventions can be operationalized best across different actor levels, such as the individual, team, project, and organizational level. Existing research frequently conceptualizes PSUs as relatively isolated workshops, while only offering limited insight into how they function within complex project settings, how their effectiveness can be evaluated, and how collaborative objectives differ between actors involved in the project. As a result, practitioners often lack systematic guidance on how PSUs can contribute meaningfully to collaboration and project performance.

This study addresses that gap by investigating PSUs within the context of integrated Dutch construction projects, where increasing complexity, collaborative contracting approaches, and interorganizational dependency have amplified the importance of structured collaboration (Lahdenperä, 2012). The findings suggest that PSUs are evolving beyond informal kick-off sessions into semi-formal governance instruments aimed at supporting relational, interorganizational, and project-related alignment between project actors. At the same time, the study demonstrates that the effectiveness of PSUs strongly depends on continuity, contextual fit, and sustained reinforcement of collaborative principles throughout project execution.

A central contribution of this research lies in the identification of three distinct but interconnected categories of PSU goals: Relational and interpersonal goals, project and control-oriented goals, and interorganizational and strategic alignment goals. While prior literature commonly distinguishes between *soft* and *hard* objectives, the findings indicate that interorganizational alignment objectives constitute a separate dimension that plays a critical role in integrated construction projects. Furthermore, the study shows that project actors prioritize these goal categories differently, resulting in multiple perspectives on what constitutes an effective project start-up.

To support this analysis, the study further developed and applied an analytical framework based on the DPS framework, structuring PSUs according to their activities (the *how*), implementation conditions (the *circumstances*), and underlying goals (the *why*). In doing so, the research contributes to the conceptual clarification of PSUs and provides a foundation for analysing how collaborative interventions address both *soft* and *hard* objectives across different actor levels. The findings additionally reveal a stronger degree of formalization and contractual embedding of PSUs than previously reflected in the literature, while simultaneously

highlighting that their practical impact remains highly dependent on managerial commitment, facilitation, and follow-ups.

5.1 Interpretation and contribution

Project start-ups appear to be evolving from relatively informal collaborative workshops into semi-formal governance instruments that aim to align actors relationally, strategically, and operationally throughout increasingly integrated construction projects. Despite their increasing formalization and contractual embedding, however, their effectiveness remains highly context dependent and relies on continuity over time rather than the mere existence of a PSU session.

5.1.1 Project start-ups as evolving collaborative governance instruments

The findings from the instrument characterization and qualitative research instruments demonstrate that project start-ups have shifted from primarily unilateral and client-driven interventions toward multilaterally designed and operating collaboration mechanisms. Across all cases, PSUs were jointly designed by clients, contractors, and facilitators, reflecting a more balanced and integrated governance approach than commonly described in existing PSU literature. Equality between project partners was not only reflected in the co-design of the PSU itself, but also in the selection of participants and organizational representation during the sessions. Interviewees repeatedly emphasized the importance of balanced counterpart representation and participation to establish fairness and a perception of shared ownership.

This development reflects a broader transformation within collaborative contracting und integrated project delivery approaches in the Dutch construction sector. The investigated projects incorporated collaborative governance arrangements such as two-phased contracts, portfolio approaches, innovation partnerships and integrated delivery models. These arrangements acknowledge the increasing interdependency between actors in complex infrastructure projects and corresponding need for collaboration-enhancing mechanisms. Similar developments have been identified within collaboration and governance literature, which increasingly recognizes that contractual mechanisms alone are insufficient for managing interorganizational complexity and actor relations (Chakkol et al., 2018; Davies, 2004).

The cases further demonstrate that PSUs are no longer entirely voluntary interventions dependent solely on client initiative, as suggested earlier in the literature (Halman & Burger, 2002). While contracts may prescribe the organization of PSUs, collaboration itself remains difficult to enforce legally and behaviorally. Relational practices are therefore not dictated by the contract but rather enabled through a collaborative environment within which actors interact and work, which aligns with findings by Chakkol et al. (2018). The findings consequently position PSUs in a hybrid space between formal embedding and voluntary or best-efforts practice.

This tension is particularly visible in the role of managerial and organizational commitment. Although collaborative principles are frequently discussed during PSUs, interview participants stressed that these principles often lose significance when they are not embodied consistently throughout organizational hierarchies. Counteracting behavior from higher management levels or conflicting organizational interests may undermine relational efforts established at the project level. The findings, therefore, suggest that PSU effectiveness extends beyond workshop

design and depends strongly on the organizational environment in which collaboration is embedded. This contributes to existing governance literature, demonstrating that collaborative interventions require alignment not only at the project level but also across boarder organizational structures (Sandfort & Milward, 2008).

5.1.2 PSU goals exceed the traditional hard-soft distinction

The findings further demonstrate that PSU goals cannot sufficiently be understood through the traditional distinction between *hard* and *soft* project management. Existing literature generally categorizes PSUs either as instrumental and project-oriented, or relational and collaboration-oriented (Crawford & Pollack, 2004; Söderlund & Maylor, 2012; Liu et al., 2011). However, the empirical findings reveal the existence of more nuanced motivations, consisting of three interconnected goal categories:

1. Relational and interpersonal goals
2. Interorganizational and strategic alignment goals
3. Project and control-related goals

The identification of a distinction between relational and interorganizational alignment goals represents an important conceptual contribution. Interorganizational goals occupy an intermediate position between what is generally considered *soft* or *hard*, because they are neither purely relational nor purely performance-oriented. Instead, they concern the alignment of organizational expectations, working principles, and strategic interests between project partners and the definition of success. The findings, therefore, suggest that existing literature may oversimplify PSU objectives by reducing them to a dualistic hard-soft distinction, while practice demonstrates that this is more nuanced in integrated project environments. This aligns with Gustavsson & Hallin's (2014) argumentation that simplistic categorizations of hard and soft project management provide limited explanatory value and should instead be understood along a continuum.

The cases and Qsorting findings in chapter 4.7 further indicate that actors prioritize these goal categories differently. While a dominant perspective emphasized relational and interpersonal goals, another focused primarily on interorganizational alignment and shared project structures, whereas a minority perspective prioritizes project control-related themes such as risk management and scheduling. At the same time, strongly technical and contractual topics were consistently deprioritized as PSU themes. A second, less distinct but still meaningful prioritization difference is that project actors shared different opinions about whether PSU outcomes should be formalized and binding to make PSU effects more concrete, or whether producing 'harder' outcomes jeopardizes psychological safety. Moreover, participants clearly differentiated between subjects appropriate for PSUs and subjects perceived as belonging to later project execution phases.

These findings demonstrate that PSU effectiveness cannot be assessed through a singular universal criterion because actors evaluate effectiveness according to different forms of value creation. The findings, therefore, contribute to collaboration and teamwork research by illustrating that collaboration effectiveness is inherently actor-dependent and multi-dimensional (Pavez et al., 2022).

5.1.3 Multi-level effectiveness and the role of context

The findings demonstrate that PSU effectiveness operates across multiple actor levels. Although documentation suggested that project start-ups address individual, team, project, and organizational levels simultaneously, the Qsorting results showed that project and organizational levels were perceived as substantially more important than individual development objectives. This contrasts with teamwork and organizational learning literature, which often emphasizes the importance of individual reflection and development for team effectiveness (Mathieu et al., 2008; Bjorvatn & Wald, 2018; Scheepers et al., 2022).

A possible explanation is the strong action-oriented and technical culture of the construction sector. Participants frequently framed PSUs primarily as mechanisms for collective coordination rather than personal learning or self-development. Reflection and individual growth were often perceived as belonging to one's own organization rather than to interorganizational project collaboration. The preference for practical and experiential activities over abstract theory identified through the interviews further supports this interpretation.

The findings, therefore, suggest that sector culture simultaneously constrains and necessitates collaborative interventions. The same characteristics that complicate reflection-oriented collaboration activities, such as action-orientation and pressure for project delivery, also increase the need for structural alignment mechanisms. Consequently, PSU effectiveness appears strongly influenced by contextual and cultural conditions rather than by workshop design alone. The cases additionally reveal that project context strongly shapes PSU goals and implementation. While personal and interorganizational dimensions remained relatively stable across projects, project-related goals varied depending on the project delivery method, complexity, and anticipated risk. PSU effectiveness should therefore not be understood as universally transferable but rather as highly contingent upon project conditions.

5.1.4 Effectiveness is determined by continuity rather than a singular intervention

One of the most important findings of the study concerns the temporal dimension of PSU effectiveness. Across interviews and Qsorting sessions, PSUs were consistently described as valuable starting points for collaboration. Yet, participants also emphasized the fading effect of PSU interventions over time. Although project start-ups are frequently organized as isolated kick-off events, collaboration development was generally perceived as a continuous process requiring repeated alignment and reinforcement.

The findings therefore suggest that PSU effectiveness depends less on the existence of the workshop itself and more on whether decided principles are continuously revisited and operationalized throughout the project lifecycle. This challenges the conceptualization of PSUs as singular interventions and instead positions them as part of an ongoing process. Similar observations can be found within broader collaboration literature, where relational governance is understood as requiring ongoing maintenance rather than one-time establishment (Sandfort & Milward, 2008; Shelbourn et al., 2007).

At the same time, a paradox emerges regarding continuity. Although participants recognized the importance of follow-up interventions such as PFUs for maintaining alignment and resolving

tensions, these activities were often deprioritized due to workload pressure and perceived interference with the 'actual' project work. This demonstrated that collaboration-oriented activities are still not fully perceived as essential components of project execution, despite their increasing acknowledgement. These tensions also appear in participants' differing perceptions of whether PSUs constitute a singular session or a broader project phase. While most actors primarily associated PSUs with kick-off workshops, others viewed them as transitional processes facilitating the movement from tendering toward execution. The findings, therefore, indicate that PSUs may be better conceptualized as temporal governance mechanisms supporting phase transitions and long-term alignment rather than isolated events alone (*Figure 21*).

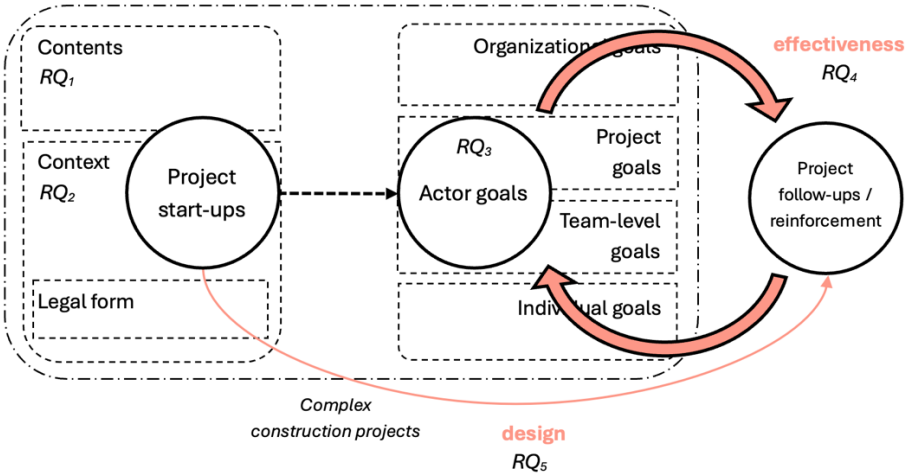


Figure 21 Adapted conceptual model. Own work.

5.1.5 Preconditions for PSU effectiveness

The findings further reveal that PSU effectiveness depends strongly on moderating organizational and contextual factors. Existing literature already identifies timing, facilitation, preparation quality, and managerial support as relevant preconditions for effective PSUs (Ono & Archibald, 1991; Babei et al., 2021; Gareis, 2000; Gattringer & Wiener, 2020). The empirical findings confirm these aspects but additionally expand the understanding of effectiveness conditions.

Leadership emerged as a central condition for effective collaboration. However, unlike existing literature, which frequently emphasizes client leadership specifically, the findings indicate that collaborative leadership must be demonstrated collectively across all project partners. Collaborative principles additionally require embodiment throughout organizational hierarchies rather than solely during the PSU or project team itself.

Facilitation was similarly identified as an important moderating factor. While independent facilitators were generally valued, participants also emphasized that facilitators strongly influence the tone and perceived legitimacy of collaboration-oriented interventions. Poor facilitation experiences reduce willingness to participate in future PFUs and weaken long-term engagement.

Several additional moderating conditions emerged that received little attention within existing literature. First, continuity of participants proved highly important. Frequent personnel changes disrupted shared understanding, relational continuity, and trust development. Participants stressed the difficulty of continuously introducing new actors into existing collaboration cultures and project-specific work approaches. The findings, therefore, suggest that relational continuity itself constitutes a significant challenge in construction projects with long durations.

Second, equality between parties emerged as a critical condition for perceived collaboration quality. Balanced representation and equal involvement in PSU design were considered essential for establishing genuine collaborative interaction.

Third, workload pressure consistently contributes to the de-prioritization of collaborative interventions. Even though actors acknowledge the usefulness of reflection and alignment activities, project pressure often reduces the willingness to invest time in follow-up mechanisms. This finding demonstrates that the effectiveness of PSUs depends not only on intervention quality but also on the broader capacity of the involved organizations to prioritize collaboration within project delivery workflows.

5.1.6 Implications for PSU design

The findings indicate that no singular PSU format can effectively address all collaborative needs simultaneously. Large project-wide sessions may support relational alignment and group orientation, whereas issue-specific goals and operational alignment appear more suitable for smaller and more focused groups. PSU design, therefore, could benefit from a clearer distinction between relational, organizational, and project-related objectives.

Furthermore, the reinforcement mechanism should play a larger role within PSU design. While PSUs themselves are becoming increasingly structured and formalized, follow-up mechanisms remain weakly embedded and highly dependent on managerial initiative. Less 'preparation-intensive' follow-up mechanisms, such as the *Zeepkist* (Eng. Soapbox) in Case 1 or recurring reflection moments or short check-ins, may therefore provide support for long-term alignment next to singular day(s)-long interventions.

Finally, the findings propose that practical and experiential collaboration approaches may fit the construction sector more effectively than abstract communication-oriented sessions. Activities involving movement, spatial arrangements, or practical interaction were generally perceived positively and considered more memorable than theory-based discussions. PSU effectiveness, therefore, appears stronger when collaboration is operationalized through shared experience and interaction rather than discussed solely on the abstract level.

Ultimately, this study suggests that the effectiveness of PSUs lies less in the formal existence of collaborative workshops and more in their ability to sustain alignment and trust throughout the entire project lifecycle.

PSU effectiveness cannot be assessed through a single universal criterion because project partners prioritize different forms of value creation. The Qsorting factors reflected three

different understandings of PSU success: a relational, a project, and an alignment perspective. This makes it difficult to assess whether PSU goals are effectively met if actors prioritize different things. While PSUs currently try to speak to different types of people and goals, this insight might suggest that a combination of all three factors in the PSU might not be valued equally, which creates the risk of actors seeing interventions as unnecessary or not fulfilling their purpose effectively. One solution could be to split the PSU into dedicated sequences, addressing these three goal viewpoints separately.

5.2 Implications

5.2.1 Implications for researchers

- This study contributes to project start-up literature by reconceptualizing PSUs as semi-formal collaborative governance instruments rather than merely temporary workshops or kick-off events. The findings demonstrate that PSUs increasingly are at the intersection of formal contractual and informal relational coordination. This contributes to a more precise and state-of-the-art characterization of project start-ups as a collaborative instrument. Furthermore, PSUs operate as an actor-level spanning instrument that aims to align individuals psychologically, teams behaviorally, projects operationally, and organizations strategically. This means that PSUs do not belong on only one governance level but act more as a connecting point, which may be why they are difficult to define.

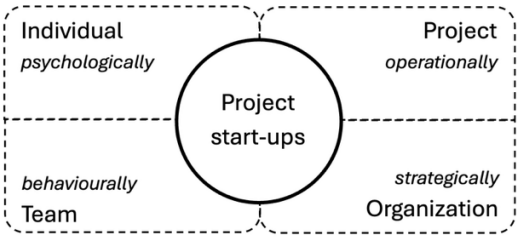


Figure 22 Project start-up connecting actor-levels

- The research contributes methodologically by linking PSU effectiveness to actor goals and organizational levels, thereby providing a more operationalizable perspective on assessing collaboration effectiveness in projects. Furthermore, the study expands the existing understanding of PSU goals beyond the traditional *hard-soft* distinction.

- Furthermore, existing literature mostly distinguishes between *hard* project outcomes and *soft* outcomes. This research refines this categorization, however, highlighting the importance of differentiation between the identified relational goals, interorganizational alignment, and project (control)-related goals. For PSUs, especially relational and interorganizational goals are important. Those objectives represent two distinct categories that cannot fully be reduced to either relational or instrumental goals (Gustavsson & Hallin, 2014). Furthermore, project control-related goals are not automatically *hard*, but must be seen relative to the other objectives.

- The study additionally contributes to collaboration and teamwork research by demonstrating that PSU effectiveness is inherently multi-level and actor-dependent. Different actor groups hold different viewpoints on what is considered an effective PSU design, which complicates effectiveness assessments. The findings, therefore, suggest that collaboration-oriented interventions should be evaluated through differentiated actor perspectives and not in their entirety.

- Another important contribution concerns the temporal dimension of PSU effectiveness. Findings indicate that continuity and follow-ups throughout the project lifecycle are relevant determinants of perceived effectiveness. The study, therefore, contributes to emerging perspectives conceptualizing collaboration as ongoing processes that require continuous maintenance.

5.2.2 Implications for the DPS framework

The findings demonstrate that the DPS framework provides a useful structure for categorizing PSU dimensions and objectives, particularly regarding the relationship between activities, circumstances, and intended goals. However, the study also suggests several opportunities for further development of the framework.

- First, the DPS framework might benefit from incorporating reinforcement mechanisms more explicitly. The findings indicate that project start-up effectiveness depends strongly on repeated alignment throughout the project lifecycle rather than only on initial interventions. Consequently, this factor might also influence the operationalizability of other instruments for collaboration.

- Next, the framework could integrate a more differentiated categorization of PSU goals by explicitly distinguishing between relational, interorganizational, and project-related objectives. This may support a more nuanced understanding of collaboration-oriented interventions in construction projects.

- In the PSU instrument descriptions, it proved useful to differentiate within the characterization categories between the pure use or application of the instrument and the outcomes or effects that are to be achieved through the instrument. For instance, the result-based character for the conduction of a PSU was unambiguous, while the outcomes largely remained best efforts. This demarcation might contribute to a more precise analysis of other instruments as well.

5.2.3 Implications for practitioners

First, some broader implications derived from the findings are presented. Subsequently, a checklist that focuses on more concrete recommendations stemming from insights obtained throughout the research is provided.

- For practitioners, the findings suggest that PSUs should be treated as elements of continuous alignment activities throughout project execution. Organizations should

therefore invest more explicitly in ‘lightweight’ reinforcement mechanisms and not only structured follow-up interventions.

- Additionally, the results indicate that different collaborative goals require different PSU formats. Large-scale sessions may support relationship building and collective orientation, while deciding on working principles, shared values, or topic-specific alignment appears more effective in smaller groups with carefully selected participants.

- The study further demonstrates that organizational commitment and leadership are essential conditions for effective collaboration. Collaborative principles discussed during the PSU also require support throughout organizational hierarchies. Without broader managerial embodiment and organizational support, collaborative interventions risk remaining symbolic rather than operational.

- Moreover, practical and experiential approaches might align more effectively with the technical and action-oriented culture of the construction sector. Practitioners may therefore benefit from designing PSUs around shared activities, simulations, and practical interaction rather than relying mainly on abstract communication-oriented exercises.

Next to the developed framework in chapter **2.5 Analysis structure based on the DPS framework,** which can support PSU designers to more clearly connect activities, characterize goals based on the softness-hardness and actor level, a practical checklist was developed to facilitate the thought process for practitioners.

Checklist

This checklist should not be understood as a comprehensive list of requirements but rather suggests points to consider for making more intentional design choices while planning/ executing a project start-up. Check whether you thought about or discussed the following items:

Checks	Recommendation/ questions	Actionable suggestions	What goal(s) do you target?	What actor level do you target?
Project preconditions		*In the two right columns (except for the grey fields) note which goal categories and actor levels you specifically want to target:*	RC, IS, PC	I, T, P, O
☐	Start with team assessments before project award	- Team-fit between and within organizations should be checked before the project team is completed - Let the facilitator get to know the team before		
☐	Reflect on the general role of collaboration in the project	- How does your contract influence the relationship between client and contractor in this project? - How does your cost structure and risk have an influence? - What does that concretely mean for the collaboration?		
Pre-PSU (format)				
☐	Reflect critically on the timing of PSUs	- Is the (final) project composition decided? - Can key stakeholders that are relevant for execution (not tender) attend? - Several sessions joint with tender teams (R-C) and execution-only should be considered (I-S & P-C)		
☐	Narrow down the participant list	- Be very critical and selective, if R-C is not the goal, small groups are more effective - Try a cascaded approach: start small then expand or the other way around		
☐	Understand the duration of involvement in the project and experience of participants	- Check before who is involved for how long because their project knowledge might differ		

☐	How embedded should the interventions be?	- Do you want to take people out of the normal working environment, if yes, why? - Do you have mechanisms in place that are integrated into the daily work environment?		
PSU contents				
☐	How active/experiential should the session be? What role should theory play?	- An upfront survey can reveal what participants expect/want from the session - If personality insights, i.e. management drives, are available this might be helpful to decide		
☐	Do you a prepare for tensions and conflict?	- As session are often designed only to boost motivation, reflect on whether you also have meaningful principles in place for when tensions or conflict arise		
☐	Is your goal for project actors to get to know each other and motivate them?	- Bigger sessions with a celebration character and games/fun interactions are suitable - Plan enough “free time” and breaks and don’t overschedule	RC	
☐	Do you target the identification of shared values, working principles and decide on a project direction (priorities)?	- Smaller sessions (approximately max. 10-12 people) with a workshop character are suitable	IS	
☐	Is the goal to understand the project context better, discuss relevant risks, challenges and milestones	- Smaller sessions (approximately max. 10-12 people) with a workshop character are suitable	PC	
After PSU				
☐	Discuss the (decided) values within the broader organization	- Use a moment to discuss PSU outcomes on higher organizational levels, i.e. Director PSU reflection together or separate		

RC = Relational-collaboration goals; IS = Interorganizational strategic goals; PC = Project and control-related goals
I = Individual level; T = Team level; P = Project level; O = Organizational level

5.3 Limitations

While the study adopted a mixed-method approach, combining document analysis, case studies, interviews, and Qsorting methodology to strengthen its validity, several limitations must be acknowledged:

First, the study is based on three cases, 8 interviews, and 22 Qsorting participants. This was sufficient for an in-depth qualitative analysis, but it limits its statistical generalizability. The findings should therefore be understood as analytically generalizable insights into integrated Dutch construction projects rather than universally applicable conclusions. Furthermore, the findings are shaped by the specific context of Dutch infrastructure projects, using integrated contracts and partnering-focused delivery structures, for example, the portfolio approach. Therefore, they might be less applicable to traditional project delivery models, less complex projects, or broader national or sectoral contexts. To a considerable amount, this study relied on qualitative interpretation and retrospective accounts. This potentially created respondent bias and could be influenced by selective memory, as some participants reflected on PSUs that had taken place several months or more than a year earlier, which may have affected the completeness and accuracy of their recollections. In addition, documentation was not equally available across cases. For instance, in Case 2, no PSU kick-off report or comparable documentation could be accessed. In addition, some facilitators and original PSU participants were no longer involved in the projects. This limited triangulation but also reflected an important empirical issue, as personnel discontinuity can undermine collaboration continuity in long-term construction projects.

Finally, the concept of PSU itself remained ambiguous. In literature and practice, project start-ups were described as workshops, phases, transition moments, internal team interventions, or celebrations. This complicated comparison across cases and with the literature. Moreover, part of the literature concerned other sectors and older studies, meaning that the difference between literature and practice may partly reflect sectoral and temporal developments. Overall, this research aimed to systematically structure knowledge about project start-ups and contribute to an extension of the existing theory, while further research is needed to consolidate and verify the findings.

5.4 Future research

This study shows that PSU effectiveness depends strongly on continuity and reinforcement over time. Consequently, it could be rewarding to investigate PSUs in the long-term. Research focusing only on individual workshops is therefore insufficient to understand how collaborative principles evolve during project execution. Second, future studies should examine the governance context of PSUs more explicitly, as PSUs cannot be understood separately from contractual agreements, procurement, and organizational structures. These could be studied more extensively. Furthermore, future research should further develop ways to operationalize and measure collaboration effectiveness. The goal categories and actor levels identified in this study may provide a basis for a more systematic evaluation. However, an explicit measurement of effectiveness is still not possible, which limits the provision of concrete action points that could be implemented by practitioners. That is why other mixed-method or quantitative studies could test relationships between PSU design, contextual conditions, and project outcomes more elaborately. Lastly, more research is needed on PSU design and facilitation. The findings suggest that experiential and practice-oriented approaches may fit the technical and action-

oriented construction sector better than high-level interventions. Future studies could therefore compare different PSU designs, follow-up formats, and facilitation strategies.

Overall, future research should move beyond treating PSUs as isolated kick-off workshops and instead examine them as evolving governance mechanisms that support ongoing alignment, trust, and interorganizational partnering in complex construction projects.

6
CONCLUSION

Through exploring project start-ups as an instrument to enhance collaboration, this research aimed to contribute insights into how collaboration-oriented practices in construction projects are operationalized and under which conditions they become effective and meaningful. At the start of this study, limited knowledge about PSUs was available, and the concept itself appeared fuzzy, being described in different ways as kick-off, workshop, phase, or transition moment. The empirical findings, however, suggest that practices aimed at shaping partnerships between construction organizations are more developed and structured in practice than reflected in existing research. In the studied cases, PSUs appear to have evolved from relatively informal interventions into more structured governance mechanisms to support actor alignment and project direction.

Besides systematically capturing this practice-based knowledge, this study aimed to expand the understanding of project start-ups by examining how they can contribute to actor goal achievement. Two findings are particularly important. The first is that PSU effectiveness depends strongly on its temporal dimension. Rather than being understood as a single starting moment, the PSU should be approached as part of an ongoing process in which principles, agreements, and relationships are established, maintained, and further developed. Second, PSU objectives need to be understood more accurately. The distinction between relational, interorganizational strategic, and project control-oriented goals helps clarify what different participants value in a PSU and why one intervention proves insufficient to satisfy all goals at once. An important implication for practice is therefore that practitioners may benefit from explicitly identifying which goal categories and actor levels are most relevant for a specific intervention. The analysis framework and recommendation checklist developed support this process by providing workable guidance for PSU design. Effectiveness should not be assessed only at the level of the project start-up as a whole, but in relation to the specific goal category or actor-level that is targeted.

Consequently, in response to the research question “How can project partners legally and practically design project start-ups to achieve actor goals in complex projects?”, it can be concluded that PSUs should be designed as context-sensitive and goal-oriented collaboration mechanisms. Their legal and practical design should be aligned with the ambitions of the involved actors and the mechanisms needed to continue collaboration beyond the initial start-up moment. A PSU can support actor goal achievement, but only when its purpose, scope, and follow-up are made explicit. Finally, collaboration cannot simply be ‘started up’ but must be continuously organized and renewed.

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Image Case 1, *Figure 9*:
ANP/Siebe Swart (2020). *Noordtunnel*. Infrasite.nl. URL:
https://www.infrasite.nl/wp-content/uploads/2024/02/aanbesteding-renovatie-noordtunnel.jpg

Image Case 2, *Figure 12*:
Ballast Nedam (2022). *Project A27 Everdingen-Hooipolder*. Ballast-nedam.com. URL:
https://www.ballast-nedam.com/media/ghmor4lp/web-luchtfoto-baak-sept-2023-1.jpg?width=640&height=640&v=1da5c23d691a190

Image Case 3, *Figure 15:*
No author (2024). *Scale-up Haarlem krijgt vorm*. Sportvelden.info. URL:
https://sportvelden.info/scale-up-haarlem-krijgt-vorm/

AI-Declaration:

~~☐ Not used generative AI.~~
~~☐ Used generative AI to generate (parts of) the content of the text. Where applicable, I have acknowledged this in a footnote and/or with a literature reference.~~
☐ Used generative AI (for inspiration) to structure the text.
☐ Used generative AI to improve the grammar, style, and/or spelling of the text.

I have used AI as a tool to improve the spelling and sometimes the academic style of my texts. Furthermore, I have sometimes used it to improve reading flow by asking for recommendations on how to restructure paragraphs better. The only thing explicitly created by AI is the three project timelines that were based on the available project documentation and the cover image, which is a modification of the image included in the bibliography, all generated with ChatGPT in May 2026.

APPENDICES in a separate document

REFLECTION

Motivation

My personal goals and motivation to investigate this topic stemmed from my interest in collaboration, which I consider one of the most exciting areas within the built environment. During our studies, we learned a lot about project management plans, KPIs, valuation methods, and circularity. We also learned about participation, stakeholders, and the more human side of projects. However, reading about and studying these topics is very different from applying and embodying what has been learned – this draws a nice parallel to the findings of this research. I have always been interested in broadening my experience in how to work with people, testing and developing skills that cannot simply be taught, but need to be practiced through interaction. This is why the topic of collaboration immediately spoke to me. On another note, I understand the desire to embed mechanisms that address collaborative work more directly in construction projects. As this research has shown me, project actors need to, and want to, work together better. Therefore, finding a more systematic approach to collaboration and understanding how this could play a role in the more formal governance sphere could be very valuable. The actors in the cases showed considerable interest in this topic, which may point to a real pain point or at least to an issue that deserves further attention.

Personal goals

My personal goals from the beginning were to deliver an academically and scientifically sound research, while at the same time developing skills I did not possess, such as conducting interviews. I also wanted to make the most of the internship by speaking to as many people in the sector as possible and seeing this as inspiration or guidance for my next steps after university. Indeed, it was a guiding experience, although less in terms of what exactly I want to pursue after studying, and more in terms of how I want to speak and work with people. Finally, I wanted to create research that I can proudly present and that hopefully contributes positively to the DPS framework that is being developed. As mentioned in the implications for the framework, two main findings could be presented. The differentiation between the instrument itself and the outcomes it creates, and the consideration of a time or reinforcement component. Therefore, this goal has been worked towards, even though there are certainly many facets of this topic that need to be investigated further, over a longer period and with more data from different contexts. At the same time, the project start-up is only one of many instruments that are relevant to the success of complex construction projects, which is why this field would benefit from further research.

The thesis process

Working on the thesis for several months required a lot of strength and focus. On one hand, I was enthusiastic about the research and enjoyed reading about the theoretical background and what is known about the topic. Interestingly, not a lot of research has been done on project start-ups, which proved to be a challenge and an opportunity. Many of the findings, therefore, seemed new at first. However, throughout the process, I discovered how closely they are related to other concepts, such as teamwork or governance. As a result, the scope of my understanding kept broadening. On the other hand, I sometimes felt that some findings were obvious, especially because I first had to take stock of what is already “out there” regarding the

issue, which did not always feel revolutionary. However, based on this, I tried to conceptualize project start-ups more clearly, hoping to provide a more meaningful contribution. As I discovered more, I also became more critical of the findings. In some respects, I would have liked to dive deeper, especially because I noticed this topic is relevant to many people in the sector. Many participants shared interesting opinions about it, with different nuances and perspectives on how project start-ups and collaboration within projects can be understood.

What challenged me throughout the thesis was finding the right language to describe the concepts related to PSUs and collaboration. While there is some high-level literature on the topic, such as the book 'Contracting in the new economy' by David Frydlinger et al. (2021), which already captures many of the associated terms and explains them very accurately, some aspects seem to be part of "human experience" and can easily get lost in translation when trying to write them down. I was prepared for the possibility that language could be a challenge, as English is neither my native language nor that of the participants. However, this turned out to be the bigger challenge. This is also the reason why the thesis became a bit lengthy. However, I accepted this for the sake of describing the topics precisely. Since collaboration is already a rather fuzzy concept, this was very important to me. One example was the need to unpack what is meant by "getting to know each other", which was one of the most frequently mentioned aspects of PSUs. In the end, I tried to break this concept down into what it actually means in this context, one aspect being "having a first shared experience" that can later lower hesitation towards communication. These details made up a large part of the thinking process behind the thesis. While they might seem small, they matter.

The Master

With this thesis, I am concluding my master's in management in the Built Environment, for which I decided to slightly change direction after studying Architecture during my Bachelor's. To this day, I am very happy about this choice as I believe that important issues such as resource scarcity, housing affordability, and energy security cannot be solved by design alone. They also require approaches that may stretch the boundaries of our economy and social systems while still working within them to enable implementation and innovation. What I have learned more than anything else in this programme is that complex problems can be solved and that there are solutions that create value for several people at the same time. However, this requires unconventional approaches and people who dedicate their minds and hours to them. I think there are many of these people at TU Delft, and I am happy to have been part of this environment, even if only for a short time.


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