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Institutionalization of a collaborative governance model to deliver large, inter-organizational projects

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Abstract

Purpose – In this study, we develop further understanding of how institutional change is created within a mature and local industry. In this pursuit, we examine how a collaborative large project governance model was institutionalized at an industrial sector-level through both industry-level activities and “institutional projects”.

Design/methodology/approach – This study builds on the foundations of institutional fields and institutional change, suggesting that projects are not only shaped by their contexts but also produce institutional change themselves. We conducted extensive fieldwork on the institutionalization of a collaborative project governance model in Finland.

Findings – The findings illustrate how institutional change in governance of large and complex inter-organizational projects is created at the institutional field level. The institutionalized collaborative project governance model includes aspects of both relational and contractual governance. The change was facilitated by temporal links between the institutional projects as well as vertical links between the institutional projects and the field-level development programs.

Originality/value – This is one of the first studies to address how a collaborative large project governance model becomes the norm at the institutional field level beyond the boundaries of an individual project or organization.

Keywords Governance, Large projects, Project alliancing, Case study, Institutional theory

Paper type Research paper

Introduction

Characteristic to project-based industries is that new ideas, knowledge, practices and routines tend to be created, developed, and practiced *within* the boundaries of temporary multiparty project organizations due to, for example, the temporary, unique and localized nature of project operations and organizational relationships, as well as the lack of long-term co-operation in organizational networks (Bygballe and Swärd, 2019; Clegg *et al.*, 2002; Holweg and Maylor, 2018). The challenge then becomes how the managerial practices developed within a project can be brought into practice in other projects, especially beyond the operations of a firm, in the industry sector (Brady and Davies, 2004; Sydow *et al.*, 2004)? This is especially challenging in mature and local industry sectors, such as the infrastructure and construction sectors,



characterized by institutionalized practices, values, local actors and local regulations. How do new project management practices become institutionalized and the legitimate norm at the sectoral level, beyond the boundaries of single projects and organizations?

We address this practical challenge by studying how institutional change is created and addressing the following research question: How can projects and industry-level activities facilitate the institutionalization of a collaborative governance model for large inter-organizational projects at a sector-level? Large projects represent a significant governance challenge (Chakkol *et al.*, 2018; Ruuska *et al.*, 2011). In particular, we study the institutionalization of a collaborative project governance model (Ahola, 2018; Chakkol *et al.*, 2018; Ruuska *et al.*, 2011) called *project alliancing* [1]. In recent years, project alliancing has become a widely used model to govern, for example, public infrastructure projects in different countries (Suprpto *et al.*, 2016). Project alliancing is a collaborative project governance model that relies on relational governance practices as well as on a multi-party contract, which incentivizes the parties to work for the best of the project in an atmosphere of trust (Walker and Lloyd-Walker, 2015). This involves forming a temporary alliance organization and requires a fundamental shift in mindset from competition-based models and values, which emphasize maximizing the performance of the individual actors (Aaltonen and Turkulainen, 2018). Consequently, the work required to institutionalize project alliancing as a governance model to manage large projects is likely to be complex as the model cannot directly draw on established regulative and normative frameworks and taken-for-granted practices in the industry.

To investigate the institutionalization of a collaborative governance model, we elaborate on the foundations of institutional fields (e.g. Wu and Fu, 2018) and institutional change (e.g. Hardy and Maguire, 2010; Tukiainen and Granqvist, 2016; Winch and Maytorena-Sanchez, 2020). Industry sectors, composed of key actors, such as suppliers, resource and product consumers and regulatory agencies with relationships and established ways of working together form institutional fields (Hardy and Maguire, 2010; Winch and Maytorena-Sanchez, 2020). According to the institutional change perspective, projects are not only shaped by their contexts (Engwall, 2003; Grabher, 2002; Manning, 2008) but “institutional projects” produce institutional change at the field-level (Tukiainen and Granqvist, 2016; Winch and Maytorena-Sanchez, 2020). We take an active agency perspective on institutional change, referred to as “institutional work” through which new institutions, such as new governance forms are created and legitimized; there are focal actors in institutional projects and at the field-level engaged in collective institutional work by actively facilitating institutional change (Greenwood and Suddaby, 2006; Hardy and Maguire, 2017; Lawrence and Suddaby, 2006). We engaged in extensive fieldwork on the institutionalization of the project alliancing collaborative governance model through multiple institutional projects and field-level programs in the infrastructure sector of Finland. The mature infrastructure sector was previously characterized by competitive bidding, adversarial culture and lack of collaboration between the industry actors due to lump-sum project governance arrangements. Thus, the collaborative project alliancing governance model indicates a significant change in the contractual and relational governance structures through which the industry sector’s large projects are governed.

The study provides the following contributions. First, the study provides further understanding of the management of large, inter-organizational projects and institutionalization of their governance solutions (Aaltonen and Turkulainen, 2018; Ahola, 2018; Artto and Turkulainen, 2018; Chakkol *et al.*, 2018; Geraldi *et al.*, 2011; Holweg and Maylor, 2018; Lewis and Roehrich, 2009; Maylor and Turner, 2017; Roehrich and Lewis, 2014). In particular, we complement existing research on governance of inter-organizational projects by developing understanding of the institutionalization of a specific type of collaborative governance structure in the context of Finland’s infrastructure sector. Our study shifts the focus from single project’s collaborative governance solutions towards the role of institutional projects and institutional work in facilitating sector-level change.

Explaining how collaborative project governance models, requiring significant changes in regulative, normative and cultural-cognitive systems, become institutionalized in a sector is highly relevant for the effective management of large inter-organizational projects. In this way, the study also provides contextualized understanding of project alliancing (Walker and Lloyd-Walker, 2015) and alliance management capability (Schilke and Goertzen, 2010). We also respond to the call for more OSCM research on challenges in managing public projects and programs (Mishra and Browning, 2020). Second, by analyzing the institutionalization of the governance model in the mature infrastructure sector, the study provides further understanding of how institutional change can be actively facilitated (Greenwood and Suddaby, 2006; Hardy and Maguire, 2010; Maguire *et al.*, 2004; Tukiainen and Granqvist, 2016; Winch and Maytorena-Sanchez, 2020). In particular, we develop further understanding of how institutional change is facilitated and a governance model institutionalized through institutional work, aiming to change the established contractual and relational practices. As the findings indicate, collective institutional work at both project and field-level is required to legitimize the governance model. This way we also extend the notion of “vanguard project” (Brady and Davies, 2004; Frederiksen and Davies, 2008; Laurila and Ahola, 2021) as well as learning through projects (Argote *et al.*, 2021; Grabher and Thiel, 2015) to the context of large inter-organizational projects and institutional field level.

Literature review

Inter-organizational project governance

The origins of research on inter-organizational relationships (IORs) and governance dates back to the work on transaction cost economics by Williamson (1979), who introduced markets and hierarchies as two ends of a continuum on economic transactions. This early work has served as the basis for substantial body of research on managing IORs, such as various forms of arms-length and collaborative relationships, for example, in supply chain management and outsourcing (e.g. Ellram *et al.*, 2008; Gulati *et al.*, 2005; Liu *et al.*, 2009; McIvor, 2009). Research has also addressed governance of projects, which refers to the governance of individual projects (for an extensive literature review, see Ahola *et al.*, 2014). We approach project governance as areas of corporate governance related to project activities (Ruuska *et al.*, 2011).

Large inter-organizational projects present a significant governance challenge. Such projects are essentially represented by a dynamic network of both vertical and horizontal relationships (Chakkol *et al.*, 2018). This is fundamentally different from more permanent operations that typically involve long-term, vertical IORs (Cao and Lumineau, 2015; Gulati *et al.*, 2005). In large projects, the organizations are working towards a shared goal, but each actor also has its own, often implicit and sometimes conflicting, objectives and expectations (Ruuska *et al.*, 2011). Hence, managers need to facilitate the development of common goals among the complex network of project actors, representing different organizations and having diverse skills, backgrounds and limited previous co-operation (Aaltonen and Turkulainen, 2018; Chakkol *et al.*, 2018; Gann and Salter, 2000; Geraldi *et al.*, 2011; Lewis and Roehrich, 2009).

Focal for management of IORs are both contractual and relational governance mechanisms (Cao and Lumineau, 2015; Chakkol *et al.*, 2018; Lewis and Roehrich, 2009; Liu *et al.*, 2009; Roehrich and Lewis, 2014; Wacker *et al.*, 2016). Contractual governance refers to explicit and formal agreements that are usually done in written format. These contracts are legally binding for the parties. Relational governance, however, is the basis of voluntary collaboration, emerging from values and commonly agreed processes. In contrast to contractual governance, relational governance incorporates trust and commitment, relational capital, information sharing routines and informal exchange. Governance of complex projects

requires both contractual and relational aspects (Caldwell and Howard, 2014; Chakkol *et al.*, 2018; Roehrich and Lewis, 2014).

Within the context of projects, empirical research has, for example, assessed governance practices and the overall governance model of large projects (Ruuska *et al.*, 2011). Furthermore, research has assessed the management of relational and contractual governance, for example, in the context of procuring complex performance (PCP) (Lewis and Roehrich, 2009; Roehrich and Lewis, 2014) or governance in project-based operations (Chakkol *et al.*, 2018). Research concludes that governance practices work to facilitate the management of complexity; although contractual governance and relational governance have their limitations when used separately, they complement each other to manage complexity (Roehrich and Lewis, 2014). In complex projects, a governance model can facilitate formalization of informal collaborative practices and help transfer learnings across projects (Chakkol *et al.*, 2018). Recent empirical evidence puts forth the overall benefits of collaborative project governance models, facilitating relational capital and trust-based social norms; examples of landmark projects using collaborative governance models include Sutter Health's projects, Heathrow Terminal 5 and Crossrail (Ballard, 2008; Davies *et al.*, 2009; Dodgson *et al.*, 2015). In the infrastructure and construction sectors, researchers have reported that many dominant and counterproductive governance logics affect the poor performance of projects in the field (Bygballe and Swärd, 2019; Chakkol *et al.*, 2018); an extensive number of studies and reports in different countries discuss the adversarial and short-term culture of the field with traditional lump-sum contracts, calling for collaboration, long-term co-operation and building of trust (Egan, 1998; Gadde and Dubois, 2010; HM Government, 2020).

Project alliancing—a collaborative inter-organizational project governance model

Project alliancing represents a collaborative project governance model to manage IORs in a large project (Aaltonen and Turkulainen, 2018; Walker and Lloyd-Walker, 2015). It has its roots in the North Sea oil projects in early 1990s and to date, has most extensively been applied within the Australian infrastructure and construction sectors. In project alliancing, the parties form a joint project and work under a joint multi-party contract (Aaltonen and Turkulainen, 2018; Lahdenperä, 2012). Alliance participants work together as an integrated, collaborative team that acts with integrity, shares positive and negative risks related to the project and assumes joint responsibility for the design and construction of the project in a joint organization (Lahdenperä, 2012). In order to succeed, project alliances require timely and fast development of trust, respect and interaction among the organizational members that often have no shared history of co-operation and collaboration (Hietajärvi and Aaltonen, 2018; Walker and Lloyd-Walker, 2015).

In general, project alliancing can be understood as a contracting arrangement and a form of organizing between two or more entities that undertake the work cooperatively to achieve agreed-upon outcomes (Jefferies *et al.*, 2014; Love *et al.*, 2011; Walker and Lloyd-Walker, 2015), hence, having characteristics of both contract and hierarchy (Gerwin, 2004). Project alliancing also requires significant behavioral and cultural-cognitive changes. The principles of good faith and trust as well as an open-book approach, commitment to “no disputes,” best-for-the-project unanimous decision-making processes, a no fault–no blame culture and a joint management structure are its essential features (Walker and Lloyd-Walker, 2015). In project alliancing, governance practices, such as jointly shared key performance tied to bonuses and sanctions, are used to support the collaboration of the project participants in a manner best characterized as “we all sink or swim together” (Walker and Lloyd-Walker, 2015). Consequently, both contractual and relational governance practices that differ significantly from more conventional project delivery forms with fixed-price contracts are required for successful project alliancing. Thus, project alliancing requires a substantial shift in the regulative, normative and cultural-cognitive elements of institutions (Scott, 2008) and

Facilitating institutionalization through institutional work

Research on institutional change and institutionalization has roots in institutional theory, for example, in the work on how organizations become to use the same managerial practices, such as TQM (e.g. DiMaggio and Powell, 1983; Westphal *et al.*, 1997). Scholars have investigated institutionalization and institutional change extensively as well as the processes associated with it at the institutional field level, defined as sets of organizations that together form a recognized area of life, including key suppliers, consumers, regulatory agencies and other organizations that produce similar services or products (DiMaggio and Powell, 1983; Maguire *et al.*, 2004; Wu and Fu, 2018).

Recently, the focus of research on institutional change has shifted to the interaction of institutional change processes at multiple levels of analysis. In particular, the idea of projects as drivers of institutional change at the field-level has received increasing attention (Tukiainen and Granqvist, 2016; Winch and Maytorena-Sanchez, 2020). This research stream suggests that while projects and their organizing are being shaped by their institutional contexts (Engwall, 2003; Grabher, 2002; Manning, 2008), these temporary organizations can also shape the foundations of the institutions, such as the regulative, normative and cultural-cognitive elements of institutions (Scott, 2008) and, hence, produce institutional change themselves (Liefstink *et al.*, 2019; Matinheikki *et al.*, 2019). Following this line of thought, a project (Maoret *et al.*, 2011) or a series of projects (Grabher and Thiel, 2015; Manning and Hagen, 2010; Perkmann and Spicer, 2007) can be considered as producers of institutional change at the field-level. Through the process of institutionalization new forms of organizing become legitimate within a field (Suchman, 1995). For example, Maoret *et al.* (2011) suggest that individual projects can act as field-configuring events and serve as structuring mechanisms for field-level change, while Manning and Hagen (2010) highlight the value of inter-project links in ensuring the continuity of institutional change. Tukiainen and Granqvist (2016) developed the notion of “institutional projects,” defining them as projects that drive institutional change. They showed how regulatory change in the university sector was produced through intertwined micro-level activities in one project that led to recreating the field and pointing to the central role of boundary objects, such as project plans between consecutive projects in securing the institutional change. These institutional projects have characteristics similar to those of “vanguard projects,” which are ground-breaking projects that lead the way, for example, to a new business area or technology (Brady and Davies, 2004; Frederiksen and Davies, 2008; Laurila and Ahola, 2021).

The perspective on projects as drivers of institutional change highlights human agency and institutional work of the actors. A particular stream of institutional research adopts the perspective of active agency and deals with processes through which actors who have an interest in particular institutional arrangements create, construct and legitimize new or strategically shape existing institutional structures, such as organizational forms, through their institutional work (Greenwood and Suddaby, 2006; Hardy and Maguire, 2017; Lawrence and Suddaby, 2006; Maguire and Hardy, 2006; Maguire *et al.*, 2004). Previous research on institutional work has shown that individuals' agentic behavior plays a crucial role in changing practices and interactions in institutions (Liefstink *et al.*, 2019; Matinheikki *et al.*, 2019). In mature fields, such as the infrastructure and construction industry, the role of centrally located field actors has shown to be particularly effective in driving change projects because of their power positions instead of peripheral players (Greenwood *et al.*, 2002).

Institutional work may take various forms, aiming to create, maintain or disrupt existing regulative, normative and cognitive institutions that guide individual and organizational

behavior to gain legitimacy (Lawrence and Suddaby, 2006). Consequently, the institutionalization of a collaborative governance form requires purposeful actions to create, sustain and legitimize new regulative, normative and cognitive elements that govern project participants' behaviors in projects. Institutionalization of new constructs typically progresses in phases including problematization, theorization and legitimation (Greenwood and Suddaby, 2006; Lawrence and Suddaby, 2006). For example, development of inter-organizational connections through which practices may become normatively sanctioned and associating new practices with existing institutionalized practices, illustrate institutional work that aims at shaping normative and cultural-cognitive institutions (Lehmann *et al.*, 2019). Currently, however, we have limited understanding of the progress and diverse forms of institutional work needed to institutionalize a collaborative project governance model, where both the contractual and relational governance elements differ significantly from the conventional project delivery forms.

In the context of project-based industries, the majority of the economic and operations activities take place in single, temporary inter-organizational projects, tying a network of organizations together for a specific time to work toward a common goal (Arto and Turkulainen, 2018; Gerald *et al.*, 2011; Hellgren and Stjernberg, 1995; Sydow, 2022). These temporary inter-organizational settings can be considered as arenas for engaging in institutional work and developing new institutions, i.e. giving rise to new rules, beliefs and practices and for developing novel ways of organizing, such as new governance models that may become shared more widely and institutionalized at the field-level. However, the structural features of project-based industries, including complex networks of diverse actors with many changing task interdependencies and interfaces, hinder innovations and long-term development and institutionalization (Bygballe and Ingemansson, 2014; Bygballe and Swärd, 2019; Levering *et al.*, 2013). Similarly, the nature of projects as temporary organizations hinders organizational learning (e.g. Argote *et al.*, 2021; Brady and Davies, 2004) [2]; while the organization learns during the project, the organization is dissolved after the project closure. Hence, creation of institutional change and institutionalizing new practices at the field-level is even more challenging than in a traditional organizational context.

Data and methods

We take a theory elaborative research approach (Ketokivi and Choi, 2014) and aim to elaborate understanding of how institutional change is produced in the context of governance of inter-organizational projects. In particular, we focus on institutional work through which a collaborative governance model becomes institutionalized. We collected data with a longitudinal single embedded case study method (Yin, 2009) and conducted extensive fieldwork on the institutionalization of a collaborative project governance model, project alliancing, in the infrastructure sector of Finland. Hence, the specific infrastructure sector in Finland serves as the case. Our choice was guided by two criteria. First, Finland was among the first countries in northern Europe to pilot the project alliancing model in public infrastructure projects. When the project alliancing model was introduced in the first project in 2010, Finland was characterized by lack of collaboration between the industry actors but by 2020 the model was acknowledged as an institutionalized project governance model within the industry sector. Second, the institutionalization process could be studied in real time in the institutional projects.

Research context

When we entered the field in 2014 to examine the country's first public infrastructure project alliancing model, we soon noticed that the industry representatives were not only engaged in

delivering the first project with the novel collaborative governance form but wanted to also see the project as a significant driver of change within the whole infrastructure sector. The representatives were determined to ensure that the learnings from the pilot project and new kinds of collaborative ways of operating inherent in project alliancing were developed, standardized and spread to future projects. This was illustrated by the director of the Transportation Agency (TA): “This project is not a traditional project; it is more like an opening to something new for our industry . . . It will transform the old, adversarial practices into a collaborative and innovative way of working.” This early notion led us to focus on how the new collaborative governance model and its contractual and relational governance elements were institutionalized within the industry through institutional work of different actors over time. Consequently, we engaged in process research (Langley, 1999).

The industry sector in Finland is relatively dense, consisting of clients, contractors, special contractors, construction product firms involved in infrastructure project operations serving primarily the domestic market. Public procurers, which include state actors and municipalities, play a powerful role in the industry as major investors in the infrastructure. Overall, there are only a few key firms with significant resources and competences in infrastructure construction. The infrastructure sector in Finland is also highly regulated: national norms and regulations condition infrastructure practices and project work, set boundaries and requirements for actors operating within the field, as well as define and specify project delivery models and governance arrangements. In addition, the role of different industry associations in developing standards, norms, templates and practices on how project actors should work under different governance models has been significant.

The used procurement approaches and project governance before 2010 included private-public-partnerships, design-bid and build, design and build and particularly traditional fixed-priced contracts that facilitated price-competition and competitive bidding and resulted in lack of collaborative governance approaches. The industry was characterized by adversarial IORs, mistrust, disputes and extensive use of claims and extra work. Project conflicts and strong emphasis on the contracts were seen to contribute to low productivity and innovativeness within the field (Lahdenperä, 2012). Consequently, poor project performance was encouraged in search for alternative collaborative project governance models. Table 1 summarizes the perceived differences between the conventional project governance models and project alliances to govern large projects as perceived by the key industry members [3].

The analysis phase covers the preparation activities for the introduction of the collaborative project governance model by key actors of the infrastructure industry (2002–2010) and the execution of three institutional projects (2010–2020), which have been the first and most significant public infrastructure alliancing projects in Finland to date as well as field-level development programs initiated by the institutional projects (2014–2020). The consecutive institutional projects were analyzed as embedded-unit cases (Yin, 2009) and they include Project A (105 million EUR railway renovation project, 2010–2015), Project B (220 million EUR complex tunnel construction project, 2010–2016) and Project C (340 million EUR complex light rail project, 2015–2021). The projects had high structural, socio-political and emergent complexity (Maylor and Turner, 2017). The three projects were the first significant public projects in the industry that used the novel collaborative governance model and contributed to the field-level institutional change process; subsequently, they were selected as the focus of our project-level analysis, as they were the most significant alliance projects where institutional work was taking place during the institutionalization of the governance model between 2010–2020. As the institutional projects were implemented consecutively they also enabled the analysis of the institutional work and its development during the institutionalization process. Furthermore, the projects were also utilized as salient examples in different industry-level development programs where institutional work was carried out to advance and legitimize project alliancing in 2014–2020. These programs by

Governance practices	Conventional project governance practices (fixed-price contracts)	Project alliancing governance practices
Contractual governance practices	<p><i>Contractual arrangements and selection procedure</i></p> <ul style="list-style-type: none"> • Competitive bidding and focus on price in contractor selection • Multiple bi-lateral contracts • Adversarial claim culture • Focus on contracts as a safeguarding mechanisms • Contracts safeguard from other actors' opportunistic behaviors • Strong emphasis on lawyers and legal procedures and negotiations • Adversarial claim culture • Best for the own company principle <p><i>Coordination and incentives</i></p> <ul style="list-style-type: none"> • Separated roles and clear boundaries between organizations, particularly between designers and contractors • Own information systems and processes • Decision making based on each company's own interests and goals • Lack of transparency in financials • Risks and uncertainties need to priced and risk management is conducted separately • Close monitoring 	<p><i>Contractual arrangements and selection procedure</i></p> <ul style="list-style-type: none"> • Team-based selection focused on values and teams' alliance capabilities • Impartial parties to oversee the team selection process (e.g. psychologists) • Best team for the project principle • Multi-party contract • No-blame culture • Relational guidelines and commitments as part of the relational contract • Required collaborative values emphasized in sub-contractor selection • Established dispute resolution mechanisms inside the team • No litigation possibilities • Mutual liability waivers • Joint commercial model with key result areas and targets specified in the contract <p><i>Coordination and incentives</i></p> <ul style="list-style-type: none"> • Collective cost-estimation and open-book accounting • Unanimous decision-making • Best for the project decision-making • Shared financial risks and rewards: all win and all lose bonus schemes • Close integration and integration of designers and contractors during the early project development phase • Intense client/owner involvement throughout the project • Blurred boundaries of companies • Joint cross-organizational coordination bodies and working groups

(continued)

Table 1. Differences between the conventional project governance models and project alliances as perceived by the key industry members

Governance practices	Conventional project governance practices (fixed-price contracts)	Project alliancing governance practices
Relational governance practices	<p><i>Relationship building activities</i></p> <ul style="list-style-type: none"> • Reliance on formal networks • Hiding of information and problems • Focus on formal relationship building • Promotion of different organizations' own values and behaviors <p><i>Organizing arrangements facilitating trust and commitment</i></p> <ul style="list-style-type: none"> • Own information systems • Separate project organizations and teams • Distributed location of actors and organizations • External control and monitoring (e.g. quality auditing) 	<p><i>Relationship building activities</i></p> <ul style="list-style-type: none"> • Reliance on informal networks and informal relationship building • Complete transparency and openness • Establishment of common behavioral rules and values • Focus on co-operation and development of joint project culture • Focus in everyday collaborative actions and reflective meetings • Reliance on trust and collaboration • Focus on informal relationship building • Continuous education and learning workshops on collaborative skills and alliance capabilities <p><i>Organizing arrangements facilitating trust and commitment</i></p> <ul style="list-style-type: none"> • Joint information systems • Joint organizational structure and one unified inter-organizational project team • Co-location of the project team in collaborative space • Lack of monitoring and reliance on trust • External impartial cost controller and leadership auditors

networks of organizations included industry-level development program led by the clients (IPT1 2014–2016, IPT2 2017–2019, IPT3 2020-), by contractors (LCIFIN, 2014–2015, RAIN1 2016–2018, RAIN2 2019-) and by a special contract term working group (2015–2020).

By 2020, the project alliancing model had been used in over 50 projects in Finland and achieved legitimacy in delivering large, public inter-organizational projects, culminating in issuing official standard project alliance contract terms in 2020 (endpoint of the institutionalization process). The standard was based on learnings from the institutional projects and field-level development program work. The total value of the projects delivered with the alliancing model had increased from zero to over five billion euros, constituting over 10% of the whole infrastructure market. In addition, the industry culture was reported to be much more collaborative than before the project alliancing model. The unit of analysis in this study is the field, i.e. the infrastructure large sector. The unit of observation includes institutional work both at the project and field levels. Figure 1 presents the timeline of the pre-project phase, institutional projects and industry-level development programs in which institutional work took place.

Data collection

We engaged in various types of data collection to understand the institutionalization of the model in practice. The collected data is presented in Table A1. The longitudinal primary data consist of 49 interviews with key project members (6 interviews for Project A, 11 interviews for Project B and 13 interviews for Project C) as well as industry professionals engaged in the development programs (19 interviews) conducted during the period from November 2014 to September 2020. Industry professionals, including the industry association’s regulatory project representative, representatives of the project alliancing consultancy and researchers who were involved in introducing project alliancing, considered purposeful informants from the perspective of institutional change and institutional work, were interviewed. The semi-structured interviews lasted 50–120 min. Two to three interviewers were present in all interviews. The themes of the interviews included, for example, the introduction of project alliancing to the country and to the project, project alliance governance practices and values that were seen to be required and implemented in alliances, change efforts that the actors had taken regarding the project alliance governance model, industry-level development activities and the interviewees’ perceptions of the ongoing collaborative shift within the industry. All the interviews were recorded and transcribed for the analysis.

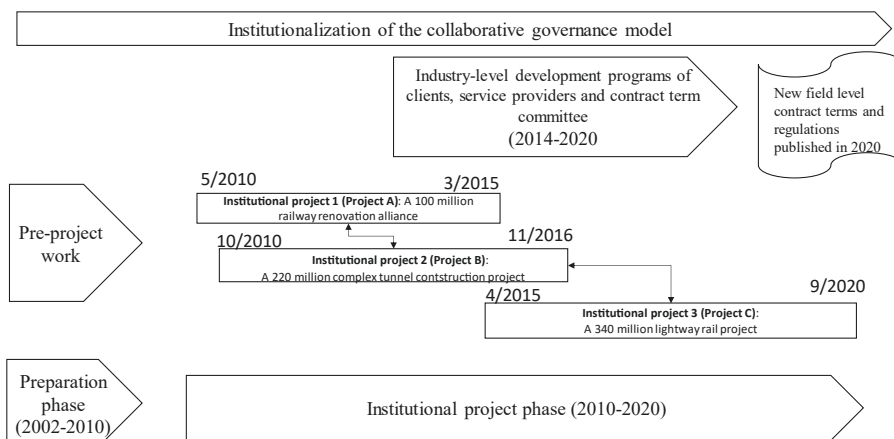


Figure 1.
Timeline of the
institutional projects
and industry level
development programs

In addition, we participated in lessons learned sessions for Project A, in two project workshops and lessons learned sessions for Project C and in various workshops of service providers' development programs from which field notes were written. Furthermore, we collected archival data to complement the primary data sources and particularly to understand the research context. These data include various project reports, plans of project-based firms participating in the alliances and public project presentations and speeches. The documentary data complemented the primary data in terms of the institutionalization activities and events that had taken place before the first pilot project and documented the key events of the institutional projects and other development activities regarding the project alliance governance form in the field.

Data analysis

To map the development of the sector-level governance model, we followed an inductive approach in the process of data analysis (Langley, 1999) and analyzed the institutional work of actors related to institutionalization of the governance model in terms of both relational and contractual governance practices at both project and field levels. During the first coding round, the analysis focused on the activities, change efforts, significant events, their timing, decisions and actors related to the development of contractual and relational governance practices within the industry and in the institutional projects. After this, the analysis and structuring of the data proceeded from first-order categories to second-order themes on institutional work related to contractual and relational governance (illustrated in Tables 2 and 3). Next, we focused in more detail on the analysis of the links between the institutional projects and institutional work in the field-level development programs and how the institutional projects drove the institutionalization of the collaborative project governance model and its contractual and relational governance aspects (Table 4). Thus, we were able to start theorizing how the institutionalization of the collaborative project governance model unfolded through institutional work at both institutional project and field levels.

Analysis

In this section, we present the analysis of the institutional work related to the institutionalization of the collaborative project governance model in the infrastructure sector: (1) preparation phase, (2) the consecutive institutional projects and (3) connections between the projects and field-level work. Together, these activities led to the institutionalization of the governance model (Figure 2).

Preparation phase: Toward the collaborative governance model (2002–2010)

We identified several activities of the key actors of the field that preceded the first institutional project. During 2000–2010, representatives from strong public procurement organizations, industrial associations, key constructors and a new alliance consultancy engaged in institutional work to develop novel solutions and governance models to manage complex infrastructure projects characterized by cost and schedule overruns and conflicts and contractual disputes. Table 2 presents data analysis related to different forms of institutional work at the institutional field level during the preparation stage. This institutional work was carried out by individuals and organizations, aiming at questioning the established governance models and in creating new contractual and relational governance practices.

Questioning established governance models and envisioning new ones

The leading field-level actors increasingly questioned the current taken-for-granted values and fixed-priced governance models within the local infrastructure sector, mainly because of

Second-order themes (institutional work related to the governance model)	First-order concepts related to institutional work	Selected illustrative quotes
Questioning established project governance models and envisioning new ones	<ul style="list-style-type: none"> Experiencing challenges with the used project governance models resulting in adversarial industry culture and lack of collaboration Building novel collaboration-based visions based on the learnings from the failed projects Initiating academic research projects to search for and explore novel collaborative project governance models and for establishing initial understanding of what is required in collaborative governance models Struggling with the contractual governance framework of project alliances and lack of practitioners to facilitate relational governance Establishing a knowledge broker consultancy for the introduction and facilitation of the new governance model Building professional connections to the leading alliance consultancy in Australia Combining both academic and practical knowledge on project alliances and attending seminars presenting evidence from the successful Australian project alliance 	<p><i>"But as it was conducted based on literature analysis, and when the field was trying to find a solution without a facilitator, we became stuck in the price issue and its fit with the EU procurement legislation, totally, I must say"</i> [A2]</p> <p><i>"Yes, I think one of the biggest questions for a long time was the wonder how we can meet the demands set by the public procurement regulations so that this model is feasible in the long run"</i> [X11]</p> <p><i>"The research report was really excellent, but I must admit that probably no one ever had an intent to implement the model"</i> [B5]</p> <p><i>"There was this guy, Jim Ross from Australia, who was presenting experiences from project alliances in this Lean in Public sector seminar in Karlsruhe. And a couple of us started thinking that this model would be excellent medicine for our continuous controversial set-ups in projects"</i> [A2]</p> <p><i>"So there was a pretty big transfer of my knowledge and skills to [founder of the AC] and then he became the adviser and facilitator in your country that was able to then develop the projects A, B and C and other alliances as well. And while some of the work that academics have done I'm sure was quite valuable, from how I saw it none of this would have happened without X"</i> [X8]</p> <p><i>"So we agreed with [NN] about collaboration and about following up with me and following up with TA and setting it up to get me over there to talk to the TA about alliancing, while at the same time he already had them interested in Lean practices. So that combination then and me being actually engaged professionally to go over to deliver the seminars"</i> [X8]</p>
International networking and establishment of a knowledge broker for the introduction of the new governance model	<ul style="list-style-type: none"> Establishing a knowledge broker consultancy for the introduction and facilitation of the new governance model Building professional connections to the leading alliance consultancy in Australia Combining both academic and practical knowledge on project alliances and attending seminars presenting evidence from the successful Australian project alliance 	<p><i>"There was this guy, Jim Ross from Australia, who was presenting experiences from project alliances in this Lean in Public sector seminar in Karlsruhe. And a couple of us started thinking that this model would be excellent medicine for our continuous controversial set-ups in projects"</i> [A2]</p> <p><i>"So there was a pretty big transfer of my knowledge and skills to [founder of the AC] and then he became the adviser and facilitator in your country that was able to then develop the projects A, B and C and other alliances as well. And while some of the work that academics have done I'm sure was quite valuable, from how I saw it none of this would have happened without X"</i> [X8]</p> <p><i>"So we agreed with [NN] about collaboration and about following up with me and following up with TA and setting it up to get me over there to talk to the TA about alliancing, while at the same time he already had them interested in Lean practices. So that combination then and me being actually engaged professionally to go over to deliver the seminars"</i> [X8]</p>

(continued)

Table 2.
Institutional work during the preparation phase (2002–2010)

Second-order themes (institutional work related to the governance model)	First-order concepts related to institutional work	Selected illustrative quotes
Establishing a knowledge base and momentum for relational governance	<ul style="list-style-type: none"> • Promoting and transferring knowledge from the Australian project alliances and their contractual and relational governance mechanisms in various industry seminars and education sessions • Strengthening collaboration with the Australian project alliance consultancy to facilitate knowledge transfer on the new governance form • Committing to experiment with project alliancing 	<p>“When he [Jim Ross] came here, I invested in the concept fully. It was not until we had this guy over here to tell us what this REALLY means and tell us that it is all about the people. And also that we ourselves need to understand our own behavior in project alliances. That it is not just things; it is about us being individuals and people. . . . these are the really challenging ones” [X7]</p> <p>“How to relate to this, are we ready? We are talking about stubborn Nordic Finnish people, at least at that time. Are we truly ready for such open activities where everything is open and risks are shared? We have group hugs and we talk about how coming to work really feels today . . . that can you lead a project like this . . . to form a dynamic organization and work with the same goals . . . is it possible, we were wondering” [A1]”</p> <p>“The overall outcome from that was to, I think it was too old; it was engaged, provided education by sharing the experiences in Australia and the insights that and experiences that I had on alliancing. And secondly to gauge the level of interest and enthusiasm to see how industry would react because if industry was not enthusiastic then it’s probably not gonna work” [X8]</p>

(continued)

Second-order themes (institutional work related to the governance model)	First-order concepts related to institutional work	Selected illustrative quotes
Contextualizing and solving contractual governance challenges	<ul style="list-style-type: none"> Contextualizing the Australian alliance model by integrating learnings and benchmarks from the US with Australian experiences Internal concept development at TA and convincing a broader group of leaders at the leading client on the value of the novel governance model Solving the contractual governance challenges related to the price component in relation to the EU legislation with the aid of legal experts Strategizing of the selection process of the pilot project at the client organization: not too complex to be able to practice the project execution model 	<p><i>"The most important questions related to the alliancing at this point were the procurement legislation and the market's readiness for this new model as well as the capabilities for sharing risks and acting transparently"</i> [X2]</p> <p><i>"Lots of stuff was happening within TA, building on what they learned from the May workshops and making a decision, you know, do we take this further"</i> [X1]</p> <p><i>"I think, for more than any one individual, it struck me that [NN] had the vision, to see the power of thinking Lean and alliancing. He had the practical bent to actually put it into practice and he was not just, he knew who to talk to, where it was needed and then he was able to go and talk to the people in TA and, arrange for me to come over so they could, I could share my expertise and experiences"</i> [X8]</p>
Building industry level capabilities and commitment to the collaborative governance model	<ul style="list-style-type: none"> Initiation of academic research projects to study the upcoming project experiences Momentum building around the pilot project and framing the pilot projects as field- and industry culture shaking to mobilize actors Infrastructure companies, designers and other service suppliers' self-initiated capability development and international knowledge acquisition on collaborative governance models 	<p><i>"I guess some of the key issues that were troubling people. One of the things that we discussed early on was whether or not A project was a suitable project to use as the template. Then given that strategic intention it was a very suitable project to use because the risks of failures were low"</i> [A2]</p> <p><i>"I think that at first, there were the key persons from TA and [NN], in other words a couple of central figures taking this model forward, in addition to [NN] and Jim Ross"</i> [X18]</p> <p><i>"We were sensing that this would be a huge thing for the field and of interest to us. We saw that we needed to be at the leading edge with this and that it would give us competitive advantage. Destructuring of controversial attitudes within the market and sharing the risks—those were the prerequisites"</i> [A1]</p> <p><i>"Our boss divided us, both construction workers and designers, into groups and defined which area of alliancing each group was going to concentrate on and after a couple of weeks we got together and told each other what we had learned. The material was primarily books on alliancing and the participants were also expected to prepare written summaries of their readings"</i> [A3]</p>

Table 2.

Table 3.
Three institutional
projects and the focus
of institutional work
related to contractual
and relational
governance

Institutional project work	Institutional work related to the development of the governance model	Selected illustrative quotes
<p><i>Project A</i> Focus of the institutional work related to contractual governance practices</p>	<ul style="list-style-type: none"> • Emphasizing juridical issues and regulations and ensuring that the governance model meets the requirements of the public procurement act • Further legal consultation to investigate the role of the fee component in EU procurement legislation and in the contract • Copying the contract content from Australia without extensively engaging project participants • Adopting relative traditional roles (client and service providers) in the tendering workshops and negotiations 	<p>"So I would provide information [to the consultancy's contact] and have teleconferences, emails, I provided all of the documentation and I'd have extensive consultations with the consultancy. I had also provided a comprehensive document called Compensation Framework for the Alliance template. That document got translated into your language. I had all of this experience and knowledge and documentation both for the alliance framework itself in the form of alliance agreements both for the interim) and execution phases. We had templates and papers about how to set up and look for managing the compensation framework with very extensive documents on how to set up the compensation framework" [X8]</p> <p>"The tendering workshops were experienced to have been conducted more through the traditional roles and there was not enough open dialogue. The role of the written tendering materials was considered as too significant when compared to the tendering workshops. The key result areas had a significant impact on the functioning of the alliance as they guided the daily activities." [Lessons learned document]</p> <p>"The contractual templates were copied quite straightforwardly from Australia." [X6]</p> <p>"And so what we had to do was basically come up with some equivalent using, respected professionals, lawyers, that would take on the role of pro-bono but it was a new concept. That was an interesting a whole new dimension that needed to be developed in order to protect the FTA from allegations from, disgruntled proponents, you know those who did not win, that the process." [X12]</p> <p>"External consultants were also used to support the monitoring of achieving the common goals, for example, through workshops and trainings where new ways of working to achieve the were introduced and taught to people" [A4]</p> <p>"He became the facilitator for the establishment of the entire alliance. When it came to all the early part of the selection process issuing the request for proposals, [the consultancy representative] did all of that with me helping him in the background. He conducted all of and facilitated all of the interviews of the wider group of proponents. The workshops ran every bit as well as similar workshops would in Australia. It was very good, really well run. So, they were running them every bit as well on their first attempt, they were running them as well we do it in Australia after doing it for 15 years" [X8]</p> <p>A significant advantage compared to the conventional project delivery forms was the genuine collaboration of the parties and their working toward the common goals [Lessons learned document]</p> <p>"Collaboration was emphasized in different collaborative workshops where the focus of the professionals from different disciplines was on solving different problems together" [A7]</p> <p>"When you are going towards something new, the first setbacks come pretty fast and it is easy to go back to old ways. You need to make sure that the principles that we are talking about... they stay for real... and sometimes have some events where we make sure that we all are going in the same direction" [A3]</p>
<p>Focus of the institutional work related to relational governance practices</p>	<ul style="list-style-type: none"> • Following the Australian alliance relational processes and methods by the book, practicing project alliancing primarily within the boundaries of Australian instructions • Replicating the values, behavioral guidelines and relational rules from Australia with the aid of the consultant • Behavioral coaching and training by the alliance consultant • Trust-building workshops and discussions of the joint project culture facilitated with the aid of the consultant • Questioning whether the collaborative working methods and behavioral values can really guide project activities among actors that are used to an adversarial atmosphere 	<p>(continued)</p>

Institutional project work	Institutional work related to the development of the governance model	Selected illustrative quotes
<p><i>Project B</i></p> <p>Focus of the institutional work related to contractual governance practices</p>	<ul style="list-style-type: none"> • Emphasizing learning from Project A's experiences in fine-tuning and adjusting the contract practices to the local context (e.g. development of the contract language and focus on collaboration quality through key results areas) • Focusing on lightening the written part of the tendering process and emphasizing the relational and collaborative mode in the workshops • Omitting the external psychologists and creating internal evaluation and assessment capabilities • Fine-tuning the contract form based on the experiences from Project A, particularly related to the commercial model and key result areas (public image addition) • Extending the alliance type of contracting and performance targets in contracts to the next-tier suppliers • Integrating maintenance phase operator into the alliance leadership team 	<p><i>"The most important development areas from project A were seen as the further development of the commercial model and the development of the price component of the tendering phase to ensure cost efficiency." [Value-for-Money report]</i></p> <p><i>"The relational and collaborative mode in the tendering workshops was emphasized" [Value for Money report]</i></p> <p><i>"The spirit and content of the contract focused on collaboration (e.g. behavioral commitment and no-blame elements)" [B3]</i></p> <p><i>"Learnings from project A enabled the use of internal competences and capabilities to assess the collaborative capabilities of the tendering consortiums and hence the external psychologists were left out" [B5]</i></p> <p><i>"Performance incentives in were added to some subcontractors' contracts in the implementation phase after noticing that traditional working models involving subcontractors do not adequately support overall project goal achievement" [B11]</i></p> <p><i>"Public image was added as a key performance indicator based on the experiences from project A. The legitimacy of these large projects was considered as a highly important factor" [B7]</i></p> <p><i>Cooperation between the owners was proactive and aimed at eliminating problems.</i></p> <p><i>Cooperation between the different engineering teams within the alliance worked well and the teams trusted each other and the same also applied to subcontractors [Value for Money report]</i></p>

(continued)

Table 3.

Table 3.

Institutional project work	Institutional work related to the development of the governance model	Selected illustrative quotes
<p>Focus of the institutional work related to relational governance practices</p>	<ul style="list-style-type: none"> • Experimenting with new types of organizational designs and roles (e.g. design management team and innovation coordinator) • Developing innovation management processes as new elements to facilitate cooperation and collaboration between designers and contractors (innovation rewards, cross-disciplinary innovation committees, designer-constructor pairs to innovate) • Emphasizing and combining legitimate lean management project processes to the project alliance practices, such as Last Planner management, efficient working in localational Big Room space and Target Value Design, which facilitate relational governance, shared beliefs and values as well as trust building in projects • Formal and continuous alliance training and relational workshops to facilitate trust building and development of shared beliefs on collaboration 	<p>“I usually in conventional projects we go to the contract and read carefully what is said in there – it has not happened in this project. I have not gone back to the contract when challenges have emerged, but we have discussed and negotiated, trying to find a solution without the contract route.” [B1]</p> <p>“They integrated the concepts of Lean construction into the whole process, which in my view made it better than what we do in Australia. And he could see the power of thinking Lean with alliancing, which was like, two key parts in the puzzle when you put them together they made a really, really powerful combination. And nobody had really done that before. It certainly was not done in Australia. We were very advanced in alliancing but, I would say not very progressive in Lean and still not very progressive Lean” [X8]</p> <p>“Planning Steering Group was established in the development phase to manage planning activities, integration of plans from different technical disciplines, integration of planning and construction and management of planning risks and quality assurance” [B8]</p> <p>“Innovation management processes are emphasized very much. Ideas are collected and discussed in engineering team meetings and at coordination events and taken forward and staff are continuously rewarded for ideas” [B6]</p> <p>“The most important of the new operating models learnt include the Big Room concept, the Target Value Design (TVD) process and transparent management and operating cultures that reinforce trust” [Value for Money report]</p> <p>“Learning and continuous improvement: Alliancing and lean construction training was provided especially during the development phase.”</p> <p>“Several different kinds of events were organized during the alliance project to reinforce team spirit and promote learning as well as a culture of continuous improvement”</p> <p>“One of the objectives of TA was to apply the procurement principles of alliance contracting, which had yielded positive experiences internationally and the lean construction ideology” [Value for Money report]</p>
<p><i>Project C</i> Focus of the institutional work related to contractual governance practices</p>	<ul style="list-style-type: none"> • Tailoring the contract partly based on the experiences from Project B (e.g. role of public image as a key result area and adding collaboration quality into the commercial model) • Utilizing the organizational solutions (cross-disciplinary working groups, innovation management) from Project A and Project B as templates for the organizational design 	<p>“Assessing and measuring collaboration quality needs to be added into the commercial model so that everyone realizes its centrality to the performance of the project.” [C15]</p> <p>“Contractual solutions that were created in the previous project were directly useful for us.” [C3]</p>

(continued)

Institutional project work	Institutional work related to the development of the governance model	Selected illustrative quotes
<p>Focus of the institutional work related to relational governance practices</p>	<ul style="list-style-type: none"> • Collaborative working and behavioral orientation taken as granted and not questioned within the alliance project team • Tendering workshop focused on evaluating project alliancing capabilities, values and the degree of integration of the consortiums • Routinizing, systematizing and codifying relational practices into processes and templates • Joint and engaged development of values and identity for the alliance project • Systematic training of newcomers in the alliance culture and philosophy, what they mean in practice and how actors can jointly contribute to them • Evaluation of psychological profiles of key alliance members to facilitate discussion of relational practices • Joint and engaged development of values and identity for the alliance project • Systematic training of newcomers in the alliance culture and philosophy, what they mean in practice and how actors can jointly contribute to them • Evaluation of psychological profiles of key alliance members to facilitate discussion of relational practices • Focus on establishing own relational guidelines and rules for the project • More flexibility in project alliance procedures from which only the most suitable and useful ones are used (e.g. the decision not to use psychologists in the procurement phase) • Emphasis on visual integration methods and in creative modification and development of new visual and virtual integration tools 	<p><i>"They try to find a common tone and develop their collaboration capability continuously. It is highly important to maintain this and coach them continuously" [X18]</i></p> <p><i>"The team realized that the benefits that are looked for by using project alliancing do not realize automatically and all of a sudden but you need to develop them systematically and continuously. To develop this kind of high-performance teams" [C4]</i></p> <p><i>"The point is not to invent everything in each alliance from scratch but develop and utilize the good practices as we have done in this project" [C1]</i></p> <p><i>"It is important to define the jointly certain fundamental issues and jointly create "our own way and culture and values. The processes and tools can be utilized as models but we need to really reflect the value together, to create our joint common belief basis, what is best for our project" [C10]</i></p> <p><i>"And we have discussed the responsibilities of collaboration coordinator – to highlight the fact that collaboration is the most fundamental issue in this governance model. These kinds of roles are the step to the right direction. We need to truly invest in this work and systematize collaboration practices" [C15]</i></p> <p><i>"It is not just that you put tens of people to sit in the Big Room together, we need to facilitate cooperation continuously" [C3]</i></p> <p><i>"At the level of personal competences the project has taught tens of client representatives to novel type of open collaboration with the service providers [Value for Money report]"</i></p>

Table 3.

Table 4.
Links from the
institutional projects to
field level
institutional work

Project	Links to field level institutional work	Selected illustrative quotes
Project A	<p><i>Codifying the contractual practices of the governance model in field level programs initiated by the institutional project</i></p> <ul style="list-style-type: none"> • Initiating regulatory group's work that started developing contracting terms and the standardized model for project alliancing (the group also separately interviewed the project personnel on their experiences to develop the contract terms and templates) • Initiation of the IPTI field level development program by leading public clients to develop the new governance model and legitimate it (focus on contractual solutions) <p><i>Codifying and legitimating the governance model in field level programs initiated by the institutional project</i></p> <ul style="list-style-type: none"> • Initiation of the LCIFIN project by leading constructors and service providers to develop the new governance model and spread the learnings <p><i>Communicating the positive performance implications of the project to field actors and networks in the field level development programs</i></p> <ul style="list-style-type: none"> • Experiences from Project A were communicated and used continuously as a case example in the field level development programs • Initiation of academic research projects to study and communicate the experiences from Project A • Framing the Project A as unique and field-shaking and promoting its performance in various media channels • Participating in project competitions to validate and legitimate the model (selected as the best project site of the year) • Various information sessions and industry seminars where learnings from Project A, contract content and its positive performance were promoted • Promoting the new governance model to other projects through benchmarks and through the consultancy company 	<p>“The project was the driver for the field level development projects. We saw the need to establish these networks in order to standardize and legitimating the model” [X15]</p> <p>“We noticed that there is this need for the standardization of the contract terms and started our work based on the learnings from this project” [X3]</p> <p>“My impression of the first project was that it was experimental and that because of its success and of the start of the Project B, the field actors started to think big and think about how to create something more stable and permanent.” [X11]</p> <p>“The first public alliance project in Europe was clearly an interesting research object from the perspective of the functioning of the new governance model. Many interviews studies and feedback seminars of the project were focused around this [Value for money report]”</p> <p>“The role of the project in developing and implementing the Northern Country’s alliance model has been significant because the practices and templates created for this project have been utilized a lot in other projects [Value for Money report]</p>

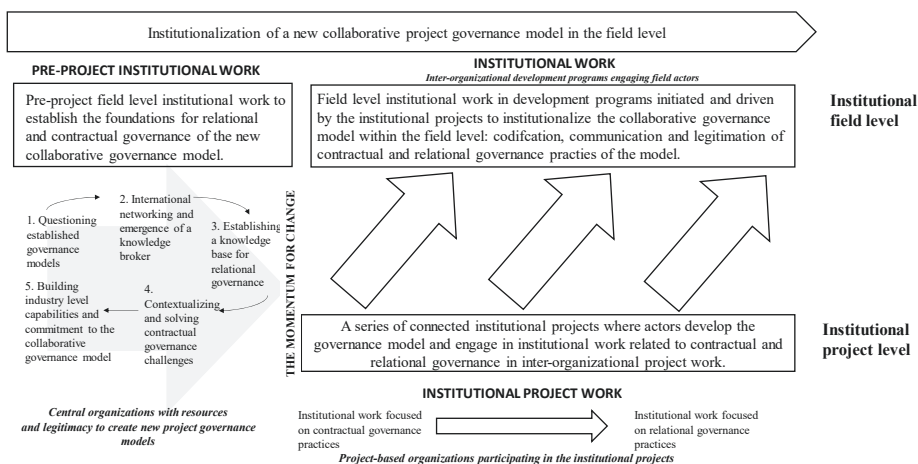
(continued)

Project B	Links to field level institutional work	Selected illustrative quotes
	<p><i>Codifying and legitimating the governance model in field level programs initiated by the institutional project</i></p> <ul style="list-style-type: none"> • Initiation of IPT2 and RAIN1 to further develop the governance model and particularly promote the integration of lean thinking with the alliance model • Utilizing learnings from Project B in the regulatory group's work that was developing contracting terms and the standardized model for project alliancing (specification of lean practices and behavioral guidelines) • Project B was used as a best practice example in the field level development programs (IPT1, IPT2, LCFIN and RAIN1) by leading public clients and service providers <p><i>Communicating the positive performance implications of the project to field actors and networks in the field level development programs</i></p> <ul style="list-style-type: none"> • Initiation of academic research projects to study and share the experiences from Project B • Contrasting the project in media with ongoing other failing complex transportation megaprojects and praising alliancing as the key to success <p><i>Legitimizing particularly the project's lean and relational governance practices as a best-practice-examples to manage different kinds of large projects</i></p> <ul style="list-style-type: none"> • Participation in competitions to gain media visibility for the collaborative governance practices (best project of the world reward by IPMA) • Promotion of Project B and its project manager in media, particularly in industry associations' magazines and in other mainstream media • Various information sessions and industry seminars where the learnings and experiences from Project B related to lean thinking and relational approaches were presented as examples • Initiation of research projects, where the focus was in extending the collaborative practices from project alliance model to other project delivery models (e.g. Design and Build) 	<p><i>"The key was that these first alliances were successful, that needed to be communicated to all field actors, to create belief in the model and how good it was. The continuation of the development programs based on the successes ensured the future of the model" [X10]</i></p> <p><i>"We also utilized the learnings from this successful project (Project B) in our work and interviewed its representatives on the contractual solutions" [X3]</i></p> <p><i>"The aim of the development program is to upskill the whole industry into this" [B5]</i></p> <p><i>"Project B has encouraged several Finnish contracting authorities to test alliancing in their own projects" [Value for Money report]</i></p> <p><i>"Positive experiences from alliance contracting have increased the popularity of collaborative models in Finland rapidly." [Value-for-Money report]</i></p> <p><i>"Media created this kind of positive and shiny picture of the first two projects. The site of the year awards and so on. That was crucial as well. The snowball started rolling" [X17]</i></p> <p><i>"And then there were these reports based on this project from the Treasury that recommended that alliance model should be used in all kinds of complex projects, this virtuous cycle around the governance model and particularly its relationship practices" [X15]</i></p> <p><i>"Project B, both as an undertaking and an example of alliance contracting, has attracted extremely high levels of attention since the beginning and it has been the most eagerly, or almost the most eagerly, followed of all of the TA projects during several years, including the current one" [Value for Money report]</i></p> <p><i>"The projects also involve testing new solutions. In addition to the above, the TA is presumably the first Finnish organization to use its alliancing know-how to bid ICT services out to tender. [Value for Money report]"</i><i>The application of lessons learnt from alliancing to conventional models is promoted by participating in the research projects" [X9]</i></p> <p><i>"TA aims to also apply the lessons learnt from the Project B to move conventional implementation models" [Value for Money report]</i></p>
		<i>(continued)</i>

Table 4.

	Links to field level institutional work	Selected illustrative quotes
Project C	<p data-bbox="322 445 342 873"><i>Codifying and legitimating the governance model in the ongoing, field level programs</i></p> <ul data-bbox="361 445 434 873" style="list-style-type: none"> • Project C was used as a case example in the field's development programs (IPT2, IPT3, RAIN1, RAIN2) specifically related to the development of project values and shared collaborative beliefs (e.g. in RAIN B collaboration workshops were the behavioral guidelines and rules of the project, were reflected and analyzed) <p data-bbox="440 445 480 873"><i>Communicating the positive performance implications of the project to field actors and networks in the field level development programs</i></p> <ul data-bbox="500 445 572 873" style="list-style-type: none"> • Contrasting the project in media with the ongoing other failing complex transportation megaprojects and praising alliancing as the key to success • Initiation of industry-academia research projects to research the collaborative practices in project C <p data-bbox="579 445 598 873"><i>Legitimizing particularly the project's relational governance practices as a best-practice- examples</i></p> <ul data-bbox="618 445 658 873" style="list-style-type: none"> • Various information sessions and industry seminars where the experiences from Project C and its collaborative values and behaviors were presented as examples 	<p data-bbox="322 900 361 1634"><i>"The principle from this project is good – to standardize certain issues, to also direct cultural values and behavioral rules – it is important. But then still the organizations have to do the work. This should direct our work in this development program; [C3]</i></p> <p data-bbox="375 900 414 1634"><i>"We should think how the behavioral emphasis and collaborative values of the project could be promoted in the field, how they could be assessed and what kinds of solutions could be developed to standardize and routinize collaborative behaviors and what we have learned in this project [X4]</i></p> <p data-bbox="427 900 467 1634"><i>"The focus should not be on people, people, people – from processes to tools and now it is in people, we have seen it in this project" [X7]</i></p> <p data-bbox="480 900 598 1634"><i>"From the perspective of the sector's development, the following conclusion is one example (indirect quotation): "Combining the expertise of different project partners, cooperation and the right kinds of incentives can also be used to make conventional implementation models more efficient. This also provides an opportunity to respond to current challenges posed by the pursuit of innovative procurement, the exploitation of digitalization and the reform of procurement regulations" [Value for Money report]</i></p> <p data-bbox="611 900 658 1634"><i>"Lessons learnt from alliance contracting and the visibility of the projects has made several building contractors and the entire construction industry keener to promote the alliance contracting model and also to develop other contracting models" [Value for Money report]</i></p> <p data-bbox="671 900 704 1634"><i>"Lessons have been shared to various parts of Finland. The positive experiences from this project facilitated the adoption of project alliancing in their other projects" [C10]</i></p> <p data-bbox="717 900 743 1634"><i>"This is not a play, not invented and if we do this for real, if we internalize the values for real this is working and it is working for the industry as well" [X19]</i></p> <p data-bbox="756 900 796 1634"><i>"I am sure that these projects have changed the industry deeply. We have clear signs and indicators of it" [C10]</i></p> <p data-bbox="809 900 848 1634"><i>"I think project alliancing has now received the status of an established tool and way of organizing and delivering projects in the industry's toolbox" [X11]</i></p>

Figure 2.
Process model for the
institutionalization of a
collaborative
governance model



experienced economic inefficiencies. Problems with the existing governance models were evident and the lack of trust and opportunism were considered the key reasons for project governance challenges. Therefore, the actors first interpreted the problems prevalent in the field and then framed project alliancing as one possible solution through gathering data and experiences about the Australian model and examining opportunities for contextualization especially from the legal and regulatory perspectives. However, there were challenges related to the contractual aspects of the model (European procurement legislation and price component), hindering piloting of the model. Ultimately, lack of experience-based knowledge of contractual and relational governance practices and a lack of facilitators were identified as the main challenges in taking the governance model forwards.

International networking and emergence of a knowledge broker for the introduction of the alliancing governance model

When a field-level knowledge broker emerged (a consultancy company focused on promoting project alliancing, Alliance Consultancy (AC)), change started unfolding (2006–2007). One of the founders of the consultancy, a highly networked individual with extensive experience in leadership positions at infrastructure construction companies, benchmarked integrated project deliveries in the US with the intention of improving productivity and searching for new practices for the infrastructure and construction industry. The consultancy started acting as an active knowledge broker and intermediary, developing networks with various academic institutions and actors in Australia to acquire knowledge on alliancing contracts and collaborative practices that were then developed further and shared with the leading field-level organizations. Therefore, AC played a crucial role in building the international networks for knowledge transfer and required capabilities to implement the governance model.

Establishing a knowledge base and momentum for relational governance

In 2009, key industry players, including client representatives and the alliance consultancy, participated in an international seminar where an Australian alliancing consultant, Jim Ross, gave an influential presentation and showed excellent project results for the alliancing model. The interviewees reflected that this was the key driver for change in thinking: The excellent

results from Australia, presented convincingly by a person who had witnessed them in practice, supported the valorization of project alliancing as a governance model and demonization of the fixed-priced contracts. After the conference, Jim Ross gave several presentations about the project alliancing governance model to various audiences in Finnish industry seminars. This way knowledge from project alliancing was disseminated to a wide range of industry representatives, who then started visioning what alliancing would mean in Finland. The presentations emphasized the relational governance practices as well as supported the specification of the cognitive concepts related to project alliancing and the questioning of the cultural foundations of the conventional project governance models. The collaboration with Jim Ross and AC was strengthened, creating also a highly important knowledge resource base for Transportation Agency (TA).

Contextualizing the project alliancing model and solving contractual governance challenges

The contextualization of the collaborative governance model to Finland's infrastructure sector started in June 2010 by TA, supported by the AC and Jim Ross. At the time, however, many individuals within the field doubted the concept of project alliancing, viewing the organizing and collaboration approach as too idealistic. Jurisdictional work focused on developing the contract and examining the possibilities of contractual governance under EU procurement legislation. At this time, legal consultation in relation to the EU's public procurement legislation and the applicability of the alliance fees as a price component were also being conducted. Lawyers were investigating the procurement process from the regulation point of view, but no indication that the law would be broken was found; however, they needed boldness to test and stretch the field-level regulatory boundaries in terms of the European procurement legislation. Gradually, doubts about the legal aspects were eliminated.

In addition, the selection of the first pilot project, Project A, was done with care and with a highly strategic orientation: TA wanted to make sure that the project would be simple and completed successfully and, thus, provide an excellent example of the collaborative governance model. Of particular interest was the intentional framing of the first institutional project as a shaper of relational norms and trust as the key governance practices: "The vision was that the projects should be collaborative and a "new opening for the whole field." At the same time, strategizing for the series of alliance projects was conducted. The aim was to select a significant, highly visible and complex project as the second institutional project to be able to show that the governance model could deliver significant value compared to conventional project governance models.

Building sector-level capabilities and commitment to the collaborative governance model

In addition, coaching for industry and market preparations for the collaborative governance model was organized and the call for tenders was published in November 2010. Many organizations reported that they had organized their own internal preparations and self-initiated capability development processes even before the call for tenders based on public information. In addition to searching for knowledge and practicing alliance collaboration practices through case exercises, the preparation processes within the companies entailed sense making and reflecting processes that focused on the philosophy and behavioral requirements of project alliancing. Institutional work in this stage was focused on educating the actors with skills and knowledge necessary to support the collaborative governance model.

Institutional work through consecutive institutional projects (2010–2020)

After the preparation phase, three consecutive institutional projects were implemented. These projects acted as arenas for institutional work, where the actual development of the

governance model and its contractual and relational practices took place in the daily project work. The consecutive institutional projects also featured shifts in the focus of institutional work, which resembled the gradual fine-tuning of the collaborative governance model to fit with the institutional context. The projects partly overlapped, facilitating the transfer of learnings and continuation of institutional work from one project to the next. The focus of the institutional work in the three institutional projects related to the governance practices are summarized in Table 3.

Clear shifts in the mode of institutional work shaping the governance practices of the model were visible from one project to the next. In Project A, the actors engaged in jurisdictional work to develop contractual governance practices, especially the price component. Enabling work was also related to the creation of support institutions such as the independent actors to monitor cost accumulation and ensure compliance. Institutional work related to the development of contractual governance in project A was also mimicking the practices and contractual content from Australia by the book to facilitate the adoption. Similarly, institutional work related to relational governance was driven by the direct replication and adoption of relational rules from the Australian alliance model that facilitated and supported the new collaborative ways of behaving.

Drawing on the lessons learned from project A, in Project B institutional work focused on developing project governance arrangements that combined ideas from lean practices and integrated project deliveries with the Australian project alliances. Lean practices, such as Big Room and Target Value Design that facilitated development of joint relational norms and trust as well as effective collaborative working were infused into the governance practices in Project B. The rationale for such institutional work was in linking the ideas of the governance model with the popular and legitimized ideas of lean thinking. This work contextualized the project alliance model and its practices to the specific industry, associated the model with the legitimized values and existing sets of taken-for-granted practices and therefore increased the legitimacy of the model. Based on experiences in Project A, contractual governance was fine-tuned, particularly regarding the commercial model, for example, by adding public image as a key performance measure and integration of a larger set of subcontractors in the joint performance measurement.

Finally, in Project C, the emphasis of institutional work clearly shifted from contractual governance to the development of relational governance from the perspective of internalized joint values and engagement of the project personnel in the definition of project identity and collaborative practices. Emphasis was especially on reflecting and elaborating what cognitive concepts and the values meant in practice and in the participants' day-to-day routines and on how collaborative values could be jointly developed based on the orientation of the personnel. Furthermore, flexibility in terms of following the "formal" project alliance practices was emphasized in Project C in order to adapt the relational practices to the needs and goals of the project audiences. For example, values and behavioral norms were constantly evaluated. These developments resemble the idea that institutional work was modifying and shaping the cultural-cognitive taken-for-granted values related to collaboration between the parties.

Links between the institutional projects and the field-level institutional work facilitating institutionalization of the collaborative governance model (2014–2020)

While the institutionalization of the collaborative governance model would not have progressed without the institutional projects, significant institutional work was also required at the institutional field level. Clients and service providers carried out institutional field level work in the development programs initiated, driven and directed by the developments and experiences in the institutional projects. These programs were initiated to enable the field-level institutional change and to share and spread knowledge gained from the institutional

projects to a wider industry-level network. The institutional projects also enabled the legitimization of the new governance model at the institutional field level by providing ideas and knowledge to the field-level development programs and this way directing the content of the field-level institutional work. Consequently, institutional work at the field-level inter-organizational networks and committees was tightly connected to the institutional projects.

Towards the end of the first institutional project, AC and the leading public procurers initiated a research and development program. First, IPT1 program (2014–2016) where the focus was on developing closer collaboration between the clients, facilitating collaboration and deconstructing such project delivery models that support zero-sum games. TA was a key player in this project and the AC organized and facilitated regular meetings within this group in order to transfer learnings from the first alliances to other clients. Institutional projects A and B were used as example projects and lessons from them were shared among 11 clients.

Later, continuation programs IPT2 (2017–2019), IPT3 (2020–2022) were initiated with the objective to develop project governance models further, to challenge the market, develop value generation in projects, develop productivity significantly during project execution and to develop people and their capabilities. Lean thinking including Big Room, Last Planner, Target Value design was also at the heart of the programs that included 13 clients and where learnings from Project B and C were shared. The programs included workshops and seminar series, combining training and education, implementing the developed tools and models in practice and sharing of the lessons learned. These events were characterized as a platform for co-operation of the leading procurers, through which the “cultural change of the industry can be influenced.” According to the program representatives, hundreds of professionals who participated in the events and projects have taken the learnings forward and into practice.

The service provider side also initiated industry-level development programs to facilitate institutional work at the field-level (LCIFIN, RAIN1 and RAIN2). Also, these programs were promoted and coordinated by the AC. The aim was to share experiences and research results from project alliancing, enable continuous improvement and standardization of relational practices and provide best practice examples from the institutional projects. The institutional projects were used as sources of knowledge within the field-level development programs that aimed at standardizing and institutionalizing governance practices and the collaborative governance form. The themes of the service providers’ development program seminars varied but were focused primarily on the implementation of lean thinking in project alliances and in the development of the relational practices and values. The participants of the seminars were referring to themselves as the alliance “evangelists” that are spreading the positive message of alliances and saw it as their responsibility to legitimize the model through promoting its superior performance in their networks when compared to more conventional project governance models. In addition to the clients and service provider’s development programs, also a field-level program committee started its work after the first institutional project in order to standardize and formalize the project alliance special contract terms and worked on these between 2015–2020.

The links between the institutional projects to the field-level institutional work in the development programs are described in [Table 4](#).

Synthesis and discussion

A process model of the institutionalization of a new collaborative governance model

How does a collaborative governance model become institutionalized? The model in [Figure 2](#) is a simplified, synthesized portrayal of the institutionalization process over time. The model is grounded in our empirical data and highlights the institutional work that was associated with the institutionalization of the governance model and its contractual and relational

practices in the infrastructure sector. The institutionalization of a collaborative governance model progressed and unfolded through institutional work before and during consecutive institutional projects and field-level development programs driven by those projects.

The preparation phase featured various forms of institutional work directed at developing and institutionalizing the collaborative governance model with contractual and relational governance practices. After questioning the established governance models to manage complex projects and identification of new solutions, the focus of the institutional work shifted to enabling work, including international networking and establishment of new actors with unique resources. Then theorizing, which included the development of new cognitive concepts and valorizing of the alliance model was carried out. This was followed by contextualization and jurisdictional work as well as through appealing to the field members by framing the upcoming institutional projects as field shaking. Finally, educational work was enacted to support the implementation of the new governance model. As can be seen, institutional work in which the central industry actors engaged before the institutional projects was simultaneously directed both at the development of contractual, i.e. regulative institutions and the normative and cultural-cognitive institutions related to relational governance. Together this pre-project work formed the momentum for change and enabled the institutional work carried out in the consecutive institutional projects.

Then, the three institutional projects featured institutional work related to the development of the contractual and relational elements of the collaborative governance model. The institutional work in the first institutional project primarily focused on the development of regulations and contractual governance formats through mimicking the Australian practices. As the contractual model proved its effectiveness in the first institutional project, more attention was directed to the relational governance practices that were seen to facilitate the development of relational norms and trust in the second institutional project. In this project, the actors aimed at better contextualizing the new governance model to the industry by attaching and merging it to the legitimized lean philosophy practices and fine-tuning both contractual and relational governance practices. This approach resembles the creation of hybrid combination and employs a bricolage process where the original Australian governance framework was reinforced with lean ideas that were already locally validated. Finally, institutional work in the third institutional project was directed toward changing the cultural-cognitive elements that were related to relational governance practices. The shifts in the forms of institutional work were enabled by the horizontal linkages between the temporary projects which ensured the continuation of the institutional work.

The institutional projects also initiated collective institutional work in the form of development programs by the clients, service providers and the contract committee at the field-level, which was crucial for the standardization and legitimation of the model. The content of this work followed and was affected by the institutional work at the project-level and it was primarily focused at codifying, communicating and legitimating the new contractual and relational governance practices of the collaborative governance model. Institutional work at the field-level development programs and their professional networks ensured the codification and standardization of the model and its templates, enabled communication of the models' positive results to a wider audience and industry networks and validated the model beyond the participants of the institutional projects.

Overall, the institutionalization of the collaborative governance model was a process that progressed through the projects' and the field-level institutional work and was facilitated by the horizontal links between the institutional projects as well as vertical links between the institutional projects and the field-level development programs. The horizontal and vertical links played a central role in enabling the continuation of institutional work and exchange of knowledge about the governance practices and realized in the form of informal encounters

(groups, professional networks), joint personnel and alliance leadership team members, seminars and knowledge exchange meetings, impersonal mechanisms (such as exchange of documents and value for money reports) and joint clients' alliance consultancy in all the projects and their representatives in the industry development programs. The links from the institutional projects to the field-level development committees were important in advancing the change in the field-level regulations and developing the model in the field-level development programs so that it could be considered as legitimate and taken-for-granted in the eyes of the industry stakeholders. Based on our evidence, the role of the alliance consultancy was highly relevant in engaging in institutional work and institutionalizing the governance model: taking the contractual development needs forward to the next project, in translating relational governance practices from one project to another and in driving the institutionalization of the governance model at the field-level through coordinating the industry-level development programs.

Contribution and implications

The study provides the following contributions. First, the study provides further understanding of the governance of IORs (Chakkol *et al.*, 2018; Lewis and Roehrich, 2009; Roehrich and Lewis, 2014). We complement these studies on relational and contractual governance by illustrating a specific type of collaborative governance model (project alliancing) and its institutionalization at the field level. Prior research has paid very limited attention to the evolution of the governance models across projects and particularly to the institutional projects in which actors engage in institutional project work. As the findings indicate, the institutionalization of the collaborative governance model was supported by the development of relational and contractual governance practices through diverse institutional work. In this way, the study also provides contextualized understanding of project alliancing; the findings give more detailed understanding of how alliances can be managed, providing also insight into diverse interpretations of the differences of relational project procurement forms, including project partnering, integrated project deliveries and project alliances that remain (Walker and Lloyd-Walker, 2015). The study also complements existing research on alliance management capability in the project context (Schilke and Goertzen, 2010).

Second, the study provides further understanding of large, contemporary complex projects and their management on how their governance models may be institutionalized in a mature sector (Aaltonen and Turkulainen, 2018; Artto and Turkulainen, 2018; Geraldi *et al.*, 2011; Holweg and Maylor, 2018; Maylor and Turner, 2017). Toward this end, we illustrate the intentional role of projects and institutional project work as inducing change in the ways of working in an industry sector. Our results suggest that the project actors first engage in institutional work to develop the contractual governance practices, after which work is directed to efforts to contextualize the governance practices and develop the relational governance practices further. Consequently, a more sophisticated insight into explaining the role of institutional work and its dynamics in advancing the standardization of collaborative models is provided (Bygballe and Swärd, 2019; Chakkol *et al.*, 2018). Without sustained and linked institutional work at different levels and by various actors, collaborative project governance models may remain as solutions within single projects. This may explain why the adoption and development of collaborative governance models has failed in some contexts and why there are a number of variants (Lahdenperä, 2012). The findings also highlight the importance of developing trust and social capital to facilitate the management of complexity in projects. Moreover, we respond to the call for more OSCM research on challenges in managing public projects and programs (Mishra and Browning, 2020).

Third, the findings also provide further understanding of how project governance models become institutionalized in fields that are characterized by temporary organizing. Hence, we

respond to the call to adopt an institutional lens to better understand the management and governance of large projects (Matinheikki *et al.*, 2019; Winch and Maytorena-Sanchez, 2020). The process model on the institutionalization of a collaborative project governance model points to the importance of institutional work required to create momentum for the institutional projects, where the actual governance model is implemented. Our findings also suggest that a series of institutional projects is needed as a context where the contractual and relational practices and the governance model are developed through institutional project work. Furthermore, different forms of field-level institutional work initiated by the institutional projects are also required to institutionalize the model within the industry sector. The collective institutional work at the field-level upholds the developing new governance model and ensures that it is communicated, codified and legitimated within the wider industry network. The links between the projects and the field-level development programs also played a central role in facilitating change and in building the momentum for the model. Our process model therefore suggests how varying, temporal and sustained institutional work is required both at the level of projects and field for a new project governance model to become institutionalized in fields characterized by project-based organizing. This way the findings extend the studies on the role of institutional projects in advancing change and bring attention to the temporal and dynamic dimensions of institutional work (Manning and Hagen, 2010; Maoret *et al.*, 2011; Tukiainen and Granqvist, 2016; Winch and Maytorena-Sanchez, 2020). The institutional projects reflect the notion of vanguard projects in that they are pioneering, explorative projects (Brady and Davies, 2004; Frederiksen and Davies, 2008; Laurila and Ahola, 2021). The findings extend and illustrate vanguard projects in the context of large inter-organizational projects and the field-level from an institutional change perspective. Managerial guidelines can also be drawn from the developed institutionalization process model on how to move away from traditional arm's length collaborations and to facilitate the adoption of collaborative project governance in the infrastructure and construction sectors.

Limitations and future research

The study has several limitations. The research was conducted in a specific institutional field in Finland. However, the mature nature of the investigated industry sector and the rapid institutionalization of the project alliancing governance model made the processes related to institutional change and institutional work relatively transparent to examine. Therefore, the investigated institutional field was ideal for theorizing as it offered a platform for examining how institutionalization of a governance model took place. However, this specific context is a boundary limitation of the study. Future research on the influence of contextual factors on the development and institutionalization of the governance model would be beneficial, including the effect of field-level structures and industry conditions, national contexts and nascent and emerging fields. In addition, this study depicts a highly successful institutional change process—at least to date. Creating a comparative set-up, including failed attempts to institutionalize governance models in project-based industries, would be highly beneficial in developing further understanding of how institutional change is produced and why the process is successful.

We made the intentional decision to focus the study on institutionalization of the project alliancing as a collaborative project governance model. The model is heavily concentrated on promoting collaborative behaviors and working practices, posing limitations for the generalizability of the findings regarding the development of contractual and relational governance through institutional work. It is likely that the collaborative governance model has attracted such actors that have alliance capabilities to engage in institutional work in the first place. Future research could complement this study by focusing on other types of project governance models and institutionalization processes to uncover differences and similarities

across the different types of changes. Future research could also examine how the institutionalized collaborative values regarding project alliancing may produce extended collaborative shifts within the institutional field and change working practices and processes in traditional project governance models, in which adversarial culture has been taken for granted. Similarly, future research could examine the general collaborative shift in governing large projects and study the institutionalization of other types of collaborative governance models. Research on the tradeoffs in terms of institutional work and mechanisms of contractual and relational governance and contextual factors affecting their effectiveness would also be highly valuable for both theory and practice. Furthermore, understanding what kinds of different steps organizations should take to develop templates and contract terms further in different contexts would be managerially relevant.

Finally, although we collected data over a long period and at different points in time, we still needed to rely on interviewees' descriptions and memories of the events during the preliminary stage before the institutional projects. As always, the informants' memories are prone to retrospective bias. To manage this challenge, we collected as much secondary data as possible from public press, industry reports, presentations, research reports and other types of documents. However, further empirical research should be undertaken to elaborate these findings.

Notes

1. It is important to note that project alliancing differs from other inter-organizational arrangements, which are set as fairly permanent in nature. Examples of these are strategic alliances (e.g. Gerwin, 2004; Schilke and Goerzen, 2010; Schilke and Lumineau, 2018), supplier alliances (e.g. Gulati *et al.*, 2005; Stuart, 1997; Stuart and McCutcheon, 1996) and joint ventures (e.g. NUMMI joint venture by GM and Toyota; Inkpen, 2008).
2. We thank the anonymous reviewer for pointing this out.
3. Based on interview data.

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Interviews Interview number	Interviewee	Interview date and duration of the interview
A1	Assistant project manager (Client/TA)	Nov 27, 2014
A2	Alliance leadership team member (Client/TA)	Nov 27, 2014
A3	Alliance project manager (Constructor)	Dec 5, 2014
A4	Person in charge of contractor (Contractor)	Dec 5, 2014
A5	Design manager (Designer)	Dec10, 2014
A6	Client organization's consultant (Designer)	Dec11, 2014
A7	Alliance leadership team member (Client/TA)	Apr 15, 2015
B1	Project manager (contractor)	Feb 16, 2015
B2	Health, Safety and Environment coordinator (contractor)	Feb 16, 2015
B3	Assistant project manager (Client/TA)	Mar 9, 2015
B4	Procurement manager (Client/City)	Mar 9, 2015
B5	Chairman of the Alliance Leadership Team (Client/ TA)	Mar 17, 2015
B6	Planning manager (Contractor)	Mar 17, 2015
B7	Public relationship manager (Designer)	Mar 17, 2015
B8	Technical project director (Designer)	Mar 23, 2015
B9	Chief structure designer (Designer)	Mar 23, 2015
B10	Project cost engineer (Contractor)	Mar 24, 2015
B11	Procurement manager (Contractor)	Mar 14, 2015
C1	Cost engineer (Contractor)	Jun 6, 2016
C2	Communications and stakeholder management coordinator (Client)	Jun 6, 2016
C3	Project manager (Contractor)	Jun 7, 2016
C4	Design manager (Designer)	Jun 7, 2016
C5	Permission engineer (Client)	Jun 8, 2016
C6	Designer (Designer)	Jun 8, 2016
C7	Communications professional (Client)	Jun 8, 2016
C8	Site manager (Contractor)	Jun 8, 2016
C9	City engineer (Client)	Jun 8, 2016
C10	Member of Alliance Leadership Team (Contractor)	Jun 15, 2016
C11	Production manager (Contractor)	Jun 15, 2016
C12	Quotation manager (Contractor)	Jun 17, 2016
C13	Scoping engineer (Contractor)	Jun 17, 2016
C14	Production manager (Contractor)	Feb 15, 2017
C15	Development manager (Contractor)	Feb 15, 2017
X1	Consultant (Alliance consultancy)	Mar 29, 2016
X2	Development manager (Contractor)	Mar 30, 2016
X3	Lawyer (Industry Association)	Mar 30, 2016
X4	Director (Contractor)	Mar 30, 2016
X5	Project Manager (Alliance)	Apr 4, 2016
X6	Alliance director	Jun 4, 2018
X7	Consultant (Alliance consultancy)	Sep 21, 2018
X8	Consultant (Alliance consultancy)	Nov 5, 2018
X9	Director of procurement (Client)	Jan 11, 2020
X10	Director (Industry association)	Jan 11, 2020
X11	Director (Client)	Jan 12, 2020
X12	Client's consultant	Jan 19, 2020
X13	Senior VP (Contractor)	Jan 25, 2020

Table A1.
Details of data
collection

(continued)

Interviews Interview number	Interviewee	Interview date and duration of the interview
X14	Senior VP (Contractor)	Jan 26, 2020
X15	Consultant (Alliance consultancy)	Mar 4, 2020
X16	Consultant (Alliance consultancy)	Mar 4, 2020
X17	Consultant (Alliance consultancy)	Nov 13, 2020
X18	Consultant psychology (Coach)	Sep 13, 2020
X19	Development manager (Contractor)	Sep 16, 2020

Documents and observations

Project reports (Project A, Project B and Project C) (Value-for-money)
 Alliance special contract terms and the version for comments
 Internal lessons learned reports (Project A and C) and memos from lessons learned sessions and workshops
 Project related documentation including behavioral rules, guideline sheets, organizational charts
 Industry reports and statistics produced by the alliance consultancy
 Reports and presentation materials from IPT1, IPT2 and IPT3 projects and LCIFIN, RAIN 1 and RAIN 2 projects
 Project's news articles and releases and selected national and industry news articles (15)
 Observations in lessons learned sessions and workshops of Project A and C and in field level development programs

Table A1.

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