

Abstract

Purpose

ICT projects, especially in the public sector, can have a substantial impact on society but are challenging due to organizational and technological complexities and uncertainties. Collaborative and cooperative project delivery models, namely the project alliance method, can mitigate such challenges, but, thus far, have not been utilized in ICT projects. The purpose of this research is to explore and understand the cross-field transfer process through which the project alliance model was applied to the ICT field from the construction sector.

Research design

An inductive case study of the ICT project alliance early stages was performed. Data was collected from the first known ICT alliance project, conducted in the context of the Finnish public sector digitalization.

Findings

The findings show how the activities of institutional entrepreneurs impact the cross-field transfer process during the ICT project alliance's early stages. Furthermore, the results illustrate the characteristics of an ICT project alliance and compare those with more traditional project alliances.

Originality and value

The topic and results of the study are original and contribute to institutional research by identifying and studying the micro-level processes associated with the cross-field transfer process. The study also builds an initial understanding of a new method of organizing ICT projects and contributes to the project alliance literature. The managerial implications of the findings allow project practitioners to understand the emerging characteristics of an ICT project alliance, and enable managers in the ICT field to adjust and prepare their own organizations and processes for the application of the project alliance model.

Keywords: project alliance, ICT project alliance, cross-field transfer process, institutional theory, institutional entrepreneurship

Introduction

Different types of complexities, such as organizational, economic, or governance issues, cause difficulties, and even failures, in individual projects. In the information and communication technology (ICT) field, where fast-evolving technologies and methodologies play a crucial role, these issues are especially challenging (Flyvbjerg and Budzier, 2011; Rosacker and Olson, 2008). The more uncertainties and complexities an ICT project setup has, the more challenging it is for the project organization to use traditional plan-and-control-oriented project delivery models since there is a greater need for collaboration and flexibility to succeed (Rosacker and Olson, 2008; Wateridge, 1998). ICT projects are even more difficult in the public sector, where bureaucratic and regulatory factors need to be considered (Anthopoulos et al., 2016; Walser, 2013). The ICT field has introduced, for example, flexible and agile methodologies to meet these requirements and challenges within the software project development team (Drury et al., 2012; Hobbs and Petit, 2017), but a more comprehensive model to support the collaboration of all participant organizations throughout an entire project's lifecycle has not yet been introduced in this context.

Relational project delivery arrangements, such as project partnering and integrated project deliveries (IPD), have been applied, especially but not exclusively, in construction and infrastructure fields to solve some of the project complexity and collaboration issues in project organization (Lahdenperä, 2012). A field, or more specifically an organizational field, can be understood here broadly as a set of diverse organizations that are engaged in a similar function (Scott, 2001), and it is within this collective of actors where concepts of organizational practice are established, defined, and redefined. Hence, the concept of an organizational field is close to the concept of industry used in economics, but is broadened by also including other supporting and regulating institutions and organizations. A project alliance is, in addition to being a procurement (Davis and Walker, 2009) and contract (Jefferies et al., 2014) model, also one form of arrangements (Lahdenperä, 2012), in which all key participants form—through a collaborative, multi-party agreement—a single organization with shared risks, benefits, and decision-making power. Project alliances have also thus far been mostly applied in the construction (Jefferies et al., 2014) and infrastructure (Clifton and Duffield, 2006; Hietajärvi et al., 2017a) fields, involving both public and private sector organizations. The fundamental characteristics of a project alliance meet the strategic alignment, value delivery, and structural adoption elements, which are critical in digitalizing the public sector towards e-government (Cordella and Tempini, 2015; Gil-Garcia and Martinez-Moyano, 2007; Matt et al., 2015). However, the role of project alliances in the ICT field or public sector digitalization has not been studied much so far.

Even though projects are temporary organizations and institutions (Lundin and Söderholm, 1995; Winch, 2014), they are still connected to more stable settings such as business, institutions, fields, or society through their stakeholders, resources, objectives, and outcomes (Engwall, 2003). Institutions change and adapt to transformation pressures through various mechanisms. One way is to evolve internally; another is to transfer and adopt models that are validated and mature in different fields or institutions (Zietsma and Lawrence, 2010). Successful cross-field transfers are, for example, the introduction of agile methodologies from software engineering into manufacturing (e.g., Yusuf et al., 1999), and lean thinking from operations management into construction (e.g., Salem et al., 2006). However, not all management practices popular in one field fit the purposes of another. One example of such a mismatch was the controversial adoption of a Taylorian, productivity-based salary system in the Finnish public schools (Kangasniemi, 2009). The role of institutional entrepreneurs

(Greenwood and Suddaby, 2006; Maguire et al., 2004) in such a change and transfer process was evident in the vast amount of research, but the micro-level processes, practices, and activities that the “heroic” institutional entrepreneurs enacted have not received wide attention to date (Micelotta et al., 2017). The concept of institutional entrepreneurship refers to the “activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones” (Maguire et al., 2004, p.657) and differs from the traditional concept of change agents in the sense that it specifically focuses and engages with the change in institutions that it rules, and with the regulations and cultural-cognitive elements that shape actors’ behaviors (Scott, 2001). Consequently, the aim of this study is to explore the activities that impact the cross-field process of transferring the project alliance model from the construction field to the public ICT field, and, furthermore, to analyze and illustrate the characteristics of an ICT alliance project. In order to meet this objective, the following research questions are formulated:

1. What kinds of activities enacted by the institutional entrepreneurs are associated with the process of transferring the project alliance model from the construction field to the ICT field?
2. What kinds of tensions and synergies between the ICT field and project alliance model can be perceived, and what are the emerging characteristics of the resulting ICT project alliance?

This research is highly exploratory, and the findings are based on a unique case study of an ICT alliance project that is, to the best of our knowledge, the world’s first public ICT project delivered with the project alliance model. The case project aims to renew the road infrastructure information management system under the responsibility of the Finnish Transportation Agency (FTA), and already introduced, during the strategic planning phase, a completely novel form of project organizing and governance to be used in ICT projects: a collaborative project alliance model, transferred from the construction field to the ICT field. The case project started publicly with a procurement announcement in early 2017 and had a preliminary budget of €8 million.

The findings of the study show how the activities of institutional entrepreneurs impact the cross-field transfer process between the institutional domains of the construction and ICT sectors during the ICT alliance project’s early stages. Furthermore, the results illustrate the characteristics of ICT project alliances and compare those with more traditional project alliances implemented primarily in the construction field. The results of this study contribute to the body of institutional research by identifying and studying the micro-level processes associated with the cross-field transfer process, in which managerial practices and new forms of organizing are transferred from one institutional sphere to another. By analyzing and discussing the specific characteristics of the ICT project alliance as well as what kinds of adjustments are required for it, the study builds an initial understanding of a novel form of organizing ICT projects and, consequently, contributes to project alliance literature. The managerial implications of the findings allow project business managers and consultants to understand the emerging characteristics of the ICT project alliance model when working with software and ICT companies, and enable managers in the ICT field to adjust and prepare their organizations and processes for the application of the ICT project alliance model.

The paper is structured as follows. First, the relevant literature on project alliances and institutional entrepreneurship is reviewed. Then the empirical settings, research methods, and data analysis are described, followed by the results section, which provides a within-case analysis of the project and synthesizes the ICT project alliance characteristics. The discussion section elaborates on the activities

that took place during the adoption process and the tensions and synergies that emerged from it. The paper is concluded with explicit theoretical contributions, managerial implications, and suggestions for further research.

Theoretical background

In this section, the current understanding and discussions of the topic are provided through a theoretical background review of project alliances and institutional theory. The former illustrates the concepts related to the subject of transfer, i.e., the project alliance model, and discusses the contextual elements that are relevant from the perspective of our case project, i.e., the nature of the project's early stages and the ICT field. The latter part introduces the selected theoretical perspective of institutional entrepreneurship and the role of institutional entrepreneurs in cross-field transfer processes.

Project alliance model and the early stages of an alliance project

A project alliance is one form of collaborative project arrangement (Davis and Walker, 2009; Lahdenperä, 2012), which has been used most prominently in the infrastructure and construction fields, especially in Australia (Davis and Love, 2011; Walker et al., 2015). Early approaches to alliances and alliancing in project-based industries were strategic and involved sharing and collaborative activities related to technologies, product development, and services between organizations (Gulati, 1998). More recently, the concept of project alliances has also focused on the operational level of individual projects, and been defined, for example, as a contractual arrangement (Davis and Love, 2011; Jefferies et al., 2014), a procurement method (Plantinga and Dorée, 2016; Walker and Lloyd-Walker, 2015), or a delivery model (Fernandes et al., 2017; Ibrahim et al., 2013). The common elements in all abovementioned definitions and concepts—joint organization and decision making, unanimous objectives, and “pain and gain sharing” mentality—also justify the rationale of using project alliance in projects that are characteristically uncertain, complex, and vast in scope, targets, organization, technology, or in a geographical sense (Chen et al., 2012; Cicmil and Marshall, 2005; Walker and Jacobsson, 2014). Similar characteristics and challenges have also been found in ICT projects in software industries (Flyvbjerg and Budzier, 2011; Wallace et al., 2004). Whereas the ICT field has introduced iterative and flexible development methodologies at the project delivery process level, namely agile approaches (Chow and Cao, 2008; Fowler and Highsmith, 2001), the organizational integration and collaboration mechanisms and capabilities have been the predominant focus in the infrastructure and construction field (Hietajärvi et al., 2017a; Walker and Lloyd-Walker, 2015).

A project alliance model can be perceived through three main dimensions: 1) management and support, 2) collaboration, and 3) knowledge and sharing (Love et al., 2010), or five key features: 1) joint liability and organization, 2) joint decision-making and problem-solving, 3) open-book communication, 4) teambuilding, meeting, and workshops, and 5) monitoring performance and job satisfaction (Fernandes et al., 2017). However, to illustrate the operational aspect of the project alliance model, more descriptive mechanisms—referred to either as principles (Ross, 2003), characteristics (Lahdenperä, 2012), indicators (Ibrahim et al., 2013), or critical success factors (Hietajärvi et al., 2017b; Jefferies et al., 2014; Love et al., 2010)—are shown below in Table 1.

>>> INSERT “Table 1. Project alliance mechanisms” HERE <<<

Besides the construct features and mechanisms, the life cycle of a project alliance model also has some distinctive elements. The joint alliance organization will be involved throughout each project life cycle phase: strategy, procurement, development, and warranty (Hietajärvi et al., 2017b; Ross,

2003). Classic project lifecycle models consist of the front-end (pre-analysis, planning) and back-end (delivery and implementation) parts (e.g., Project Management Institute, 2013), which may have different organizations with different owners and objectives (Stewart, 2008; Williams and Samset, 2010). Whereas the first phases of both project alliance and more classical project models have similar targets and governance approaches, i.e., to strategically define the purpose and setup of the project by the owner organization (Davis and Walker, 2009; Williams and Samset, 2010), the following procurement phase has some fundamental differences (Walker and Rowlinson, 2008). In a traditional customer-supplier project sourcing setup, applied, for example, in purchasing ICT services and projects, the customer organization defines the project specification, sources the most suitable supplier from the market, and proceeds to sign a relational contract (Gelderman et al., 2015). However, in project alliances, the procurement phase is already characteristically collaborative, transparent, and inclusive (Love et al., 2010; Walker and Lloyd-Walker, 2015). The procurement phase involves all key participants and consists not only of contractual and commercial elements but also contributes to mutual project objectives and planning (Fernandes et al., 2017; Plantinga and Dorée, 2016). Moreover, the resulting alliance agreement also includes all parties involved in the project and emphasizes equality, collaboration, and cooperation (Davis and Love, 2011; Jefferies et al., 2014). Contextual and governance-related features also have an influence, especially in the procurement phase of the early stages of both classic and alliance projects (Chang and Ive, 2007; Edkins et al., 2013; Kock et al., 2016). In the public sector, for example, strict organizational and legal regulations and practices may challenge the procurement process by imposing limitations on the budgeting schedule, supplier selection criteria, and information sharing (Crawford and Helm, 2009; De Schepper et al., 2014; Wirick, 2011). This practice is especially evident with agile ICT projects, which require more flexibility and technological capabilities from parties than formal control (Lappi and Aaltonen, 2017; Walser, 2013).

Institutional entrepreneurship and cross-field transfer of managerial practices

Institutional theory has traditionally produced theories and models of how organizations and industries become similar by, for example, mimicking each other, and how processes become institutionalized, assuming that the role of human agency is minimal. However, over the years increasing interest has been addressed to the change of institutions and the conditions, drivers, and processes operating at multiple levels that are related to institutional change (DiMaggio and Powell, 1983). Consequently, the role of agency in institutional analysis, institutional entrepreneurship, and change has received more attention (Dacin et al., 2002). The concept of institutional entrepreneurship refers to the “activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones” (Maguire et al., 2004, p. 657). In a similar vein within project research, the traditional and dominant focus has been in examining how the institutional environments of projects both facilitate and constrain the management and organization of projects (Engwall, 2003) and how the organizational fields condition and affect the practices of project organizing (Manning, 2008). In turn, research that would specifically address institutional entrepreneurship in exploring new logics and introducing them to their field is rather limited.

A particular stream of research focusing on institutional entrepreneurship adopts the perspective of an active agency studying institutional change and deals with processes through which creative actors

strategically shape or create new institutional structures through their institutional work (Lawrence and Suddaby, 2006). Institutional work requires skilled actors who can use discursive tactics to theorize change in a way to make it concrete and lucrative to the different groups. They use framing to justify new practices as acceptable and valid and are able to mobilize diverse actors and generate collective action to secure the acceptance of the change (Wijen and Ansari, 2007). Prior research has identified different tactics and strategies through which actors can contest existing institutions and legitimize new ways of acting and behaving, such as practice work, boundary work, and identity work (Hargrave and Van de Ven, 2006; Micelotta et al., 2017). However, one of the most salient challenges of institutional entrepreneurship literature has been its simplified portrayal of a limited number of institutional entrepreneurs as “heroic” actors who can easily transform institutions without any complexities. This approach has hence given little appreciation to the complex, collective, and mundane processes of institutional change (Micelotta et al., 2017). Institutional entrepreneurs have typically been identified as outsiders to the field or as members whose positions bridge the boundaries of two or more fields (Greenwood and Suddaby, 2006). In particular, the cross-boundary connections have been alleged to play a central role in effecting change because of the access to novel ideas and practices, which contributes to more reflexive forms of action. However, detailed empirical portrayals of how cross-boundary connections and activities of institutional entrepreneurs affect the change and transfer processes have been rare.

While the majority of the economic activities within project-based industries take place in individual projects, they can be considered salient and significant arenas for institutional entrepreneurs to modify and transform existing institutional arrangements that prescribe the appropriate organizational behaviors in projects. The role of temporary projects in changing the ways projects are executed has been discussed in project learning and capability literature in the context of individual project-based firms (e.g., Brady and Davies, 2004), in project network literature in how projects may change the inter-organizational relationships of permanent project networks (e.g., Ahola, 2009) and in project innovation literature, where the focus has been more on the discussions of why it is challenging for innovations to spread within project-based industries and why the learning does not take place (e.g., Bygballe and Ingemansson, 2014). Much of the research effort has been addressed toward understanding and explaining the challenges and inhibitors of change and, consequently, the endurance of institutional logics within project-based fields. Whereas discussions and theories regarding active efforts made by institutional entrepreneurship and purposeful institutional work across industry fields to promulgate change in institutions, such as forms of organizing projects, have been rare.

Research on institutional change has only limitedly addressed the actual processes and activities related to cross-field transfer of different types of managerial practices across different industries. Instead, the transfers and translations of different structures and practices across different fields or institutional spheres have been addressed by political scientists who have examined how different policies are transferred and diffused from one institutional or national context to another (Radaelli, 2000). In this stream of research, the focus has been particularly on how the different policies are shaped, adapted, or recontextualized, and what factors affect this process. Furthermore, the spread of managerial practices in multi-national corporations has been examined within the field of international business studies. This stream of research has emphasized the role of the relationships between the parent organization and subsidiaries as one crucial factor that determines the success of

the transfer (Kostova and Roth, 2002). However, in these studies, the focus has been primarily on one single organization and on the processes and activities inside its boundaries. The drivers of institutional change within one institutional domain or industry have also been addressed more recently (Micelotta et al., 2017). Here, the focus has been on understanding the reasons and processes of institutional change primarily in the context of one industry or institutional domain. This stream of research has traditionally emphasized the perspective that the impetus for the industry level change typically comes from the outside and from the actors in the periphery. Instead, elite and dominant field actors seldom mobilize change processes if it is not necessary for their survival to do so (Greenwood and Suddaby, 2006). Institutional and boundary work into which the intermediaries and actors engage has been identified as one important driver in advancing change. Scholars focusing on industry structures and evolution have also studied how managerial practices, technologies, and innovations are spread and transferred across industries. In these studies, the institutional perspective has been largely dismissed (Abrahamson, 1991).

Research process

The research process section describes the applied research methodology as well as the data acquisition and analysis. This is followed by the description of the empirical case setting.

Methodology and data

The aim of this study is to explore the activities that impact the cross-field process of transferring the project alliance model from the construction field to the public ICT field, and, furthermore, to analyze and illustrate the characteristics of an ICT alliance project. The research is conducted using the first alliance ICT project (Tiestötieto) in the context of public sector digitalization (Finland). Therefore, in order to meet the aims of the research and gain an understanding of such a unique empirical setting, a qualitative research approach (Sarker et al., 2013; Yin, 2013) was chosen. As the unit of observation is one project, an inductive single case study strategy is used to meet the research purposes (Eisenhardt, 1989; de Haes and van Grembergen, 2009; Ketokivi and Choi, 2014). Furthermore, the units of analysis in this research are the activities and actors during the transfer process.

The data was collected from early 2017 to November 2017 and covered the front-end part of the project, namely the strategy and procurement phases. The data consisted of three main components: 1) subjective, original material from semi-structured interviews and observation sessions (10 items), 2) case project-related public materials, such as requests for quotation documents (79 items) and, 3) context-related public materials, such as laws and regulations on the Finnish public sector digitalization and project governance (21 items). The details of the collected data are presented in Appendix 1.

The interview questionnaires were based on the literature on project governance and project alliance models. The questions followed the structure of the procurement material and process and were mostly left open-ended to enable follow-up questions and to invite subjective insight from the respondents. The interviews were documented by using the notes of the researchers and tape recordings that were later transcribed. Some interview sessions were complemented with additional material provided by the respondent. The observation sessions were documented by using notes and pictures taken by the researchers.

The data analysis process began by first carefully reading through the acquired documents to get a comprehensive understanding of the context and case project. Then all acquired raw data were consolidated in digital format into the NVivo Analysis software. The data were analyzed to find the indicators related to the cross-industrial transfer process by introducing the alliance model into the ICT context. Here, a focus was put on identifying the different actors' activities and practices during and related to the transfer process, as the guiding assumption was that the transfer process is active by nature. Furthermore, distinctive elements of the ICT alliance project were coded from the data. These two themes were the focus of the first round of coding in NVivo. The findings were then reviewed by all three researchers. During the second round of coding, each indicator related to the transfer process was further analyzed to find and categorize the activities that contributed to the transfer process. Likewise, during the second round, the findings related to the ICT alliance characteristics were categorized using a descriptive framework proposed earlier in Table 1.

Empirical settings

The Finnish Transportation Agency (FTA) is a central government agency under the Ministry of Transportation and Communications. The FTA proclaims its purpose as follows: "The FTA enables smooth, efficient and safe travel and transport. We are responsible for Finland's roads, railways, and waterways and for the development of Finland's transport system" (<https://www.liikennevirasto.fi/web/en/about>). The annual budget of the FTA is €2.1 billion, divided between four operating divisions: Operations Management, Planning and Projects, Infrastructure Management, and Traffic and Information. The strategic goals of the FTA are described in their "Smart routes and intelligent traffic – for you" vision as: 1) a renewed ecosystem for mobility and transport 2) reliable digital services and greater operational efficiency 3) services based on a well-functioning and safe infrastructure, and 4) skilled professionals and an innovative organizational culture. The efforts associated with the second goal have distinguished the FTA as one of the most advanced and mature digitalization practitioner organizations in the Finnish public sector. The FTA has also been a driving force behind the introduction and increased popularity of the project alliance model in Finland. The FTA has conducted the largest and most successful alliance projects in Finland to date, namely the railway renovation project "Liekki," and the under-city road tunnel project "Rantatunneli" (Hietajärvi et al., 2017a; Hietajärvi and Aaltonen, 2017). The FTA has been motivated to increase the use of new, flexible, and collaboration-based project models, such as alliances, as they have seen that more traditional models are characterized by overruns, quality problems, and constant arguments, mostly due to the lack of common targets, sub-optimization, and rigid sourcing and delivery mechanisms.

In early 2017, the FTA launched a public procurement process for the first alliance model ICT project. This project, the road infrastructure information management system, "Tiestötieto," was selected as the case project for this research for two reasons. First, to the best of our knowledge, there is no previous published research on ICT project alliances. Second, the project being public made the data accessible to researchers. The project aims to renew the road network data management processes and systems, and integrate that data with the FTA planning and reporting systems to create a real-time, visual, and accessible system entity for all road traffic operations and management. The case project has two pre-project phases, strategy and procurement, which match with Ross's (2003) alliance life-cycle conceptualization. The actual delivery project will be executed concurrently using agile approaches and divided into several development and delivery cycles with distinctive planning processes preceding the first cycle, as illustrated below in Figure 1. Each cycle and resulting

deliverable is followed with optional post-project development and maintenance. The initial budget of the project is €8 million, divided between delivery (€5 million) and maintenance (€3 million, optional). This research focused on the strategy and procurement phases of the case project.

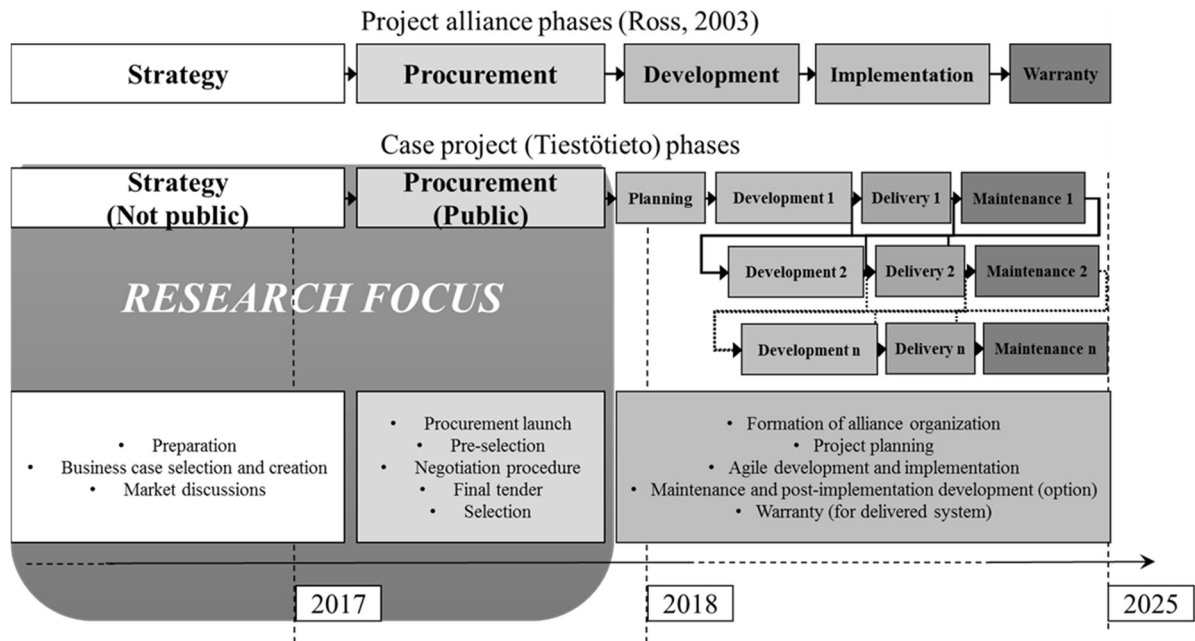


Figure 1. Project alliance and case project phases, adopted from Ross (2003)

Results

In this section, the results of the data analysis are presented in two parts that correlate with the research questions. First, the project early stage activities involved in the cross-field transfer process are illustrated and secondly, the identified ICT project alliance characteristics are presented.

Cross-field transfer process – Case project Tiestötiето

The case project consisted of two front-end phases, as described in Figure 1, the strategy and procurement. The main objectives and outputs of the strategy phase were to prepare the case organization to conduct alliance projects, to identify a suitable ICT development project and form a business case for the alliance based on it, and to initiate market discussions and training. The target of the procurement phase was to assess the capability of potential suppliers, select the most potent partner, and reach an alliance agreement with them. The activities contributing to the cross-field transfer process during these two project phases are presented in Table 2 and elaborated further below.

>>> INSERT “Table 2. Cross-field transfer process activities during project early stages” HERE<<<

Strategy phase

The alliance model came to Finland in the mid-2000s from Australia. It was brought simultaneously to the attention of both academics and practitioners through several channels. Several construction and management stream conferences and seminars held in Central Europe and Finland introduced the concept to practitioners associated with the infrastructure field. The initial research on the topic was initiated by the Technical Research Centre of Finland, which also produced the first seminal publications. The first alliance projects that were conducted more or less strictly following the Australian alliance contract and model started in the infrastructure sector and rapidly increased the awareness and capability for alliancing in Finland, as one respondent described:

We have always wondered why we [Finns] are so fast at implementing and utilizing new technologies and trends. We are like a “baking machine and iPhone” nation. It has to be have something to do with at one hand the relatively high education level, but more with the tight and centralized approach to governance. When compared to for example Germany and USA that have strong state level authority, Finland is steered strongly by the central administration.

Similarly, the alliance concept was emerging in the case organization, the FTA, as they were the ordering client in many of the first Finnish infrastructure alliance projects. The project alliance capability was also intensively developed further among contractors and consultants. The emerging top-down and business-attractive approach to project alliances resembles some of the other popular management concepts, namely quality management and lean. The most notable active actors in this process were both the FTA and an alliance consulting organization, referred to as Company X later on, established in 2012. There was no evidence of any systematic training within the FTA that would have aimed to increase alliance capabilities explicitly; a few proactive individuals built the preparation and motivation within the organization. Nor did any governance- or management-related mechanisms of the Finnish public sector central administration support or detract this kind of initiative. Company X, which was an external service provider to the FTA in the case project, on the other hand, had built their business model on being the leading pioneers and experts in alliance project consulting and management. Therefore, they have systematically built their competence and

capability across many fields. Our data also shows how institutional entrepreneurs in both organizations, the FTA and Company X, conducted boundary-crossing activities during the preparation by introducing and proposing the project alliance model. As a FTA representative described “There were quite a few official and unofficial channels used to justify and advocate the [alliance] model. Luckily the infraside references were on our side”

As the previous quote implies, the FTA started to consider the project alliance as a possible project model for ICT development projects in 2016 after positive experiences from several successful infrastructure project alliances, such as the Rantatunneli project between 2010 and 2015 that built a 2.3km tunnel under the city of Tampere. The FTA perceived that the transparency and shared value approach of the model could perhaps support the general specification and customer-supplier related challenges in ICT development projects. The fact that public sector projects and public sourcing process in Finland emphasize transparency and open-book approach was also considered a supporting factor. The institutional entrepreneur at the FTA in this phase was more specifically the ICT department director who had also been involved in alliance projects conducted by the infrastructure division. This was explicitly acknowledged also by the FTA personnel, as one respondent declared that “The role of [the department director] was absolutely vital for the introduction and progress of this case”. The director had introduced the concept of an alliance model within his organization, and it had gained notable support, especially since the key personnel were involved in training and brainstorming workshops arranged by Company X. The next step was to select a suitable ICT development project as the first ICT alliance project pilot. The FTA had several criteria for the target project, as described by one respondent. First, it had to have “a critical mass worthy of project alliance”, as one respondent described, which means that the project scope and scale had to be big enough to justify the cumbersome tendering and negotiation process. Second, the system entity had to ensure that “we have to have clear picture of the planning, delivery, and maintenance of the system lifecycle and be able to control the system architecture logically.” There was a clear need to have a concept of the process requirements that the system would support and a way to govern the project lifecycle – as defined by one FTA representative “In such novel case we need reduce the amount of moving parts by keeping the ownership tight”. This kind of project was identified and chosen from the FTA’s digitalization program. Interestingly, the MoF, as the head of public sector digitalization, did not participate, mandate, or control the pilot project selection or business case directly, even though this project and the project alliance initiative were clearly communicated during the process. One respondent describes: “MoF has not been too keen to involve themselves directly after the introduction of the IT governance act... the Business case tool was used internally only to some extend.” This response can imply that there is not widespread awareness about the project alliance model regarding the public sector digitalization and project actors, and also that the agencies are trusted to know and manage their own substance-related development projects the best. During the pilot project selection, the FTA also determined that the development phase could be done using agile methodologies, as they had recognized several synergies between the project alliance and agile work: “We have a strong feeling that alliance can be the continuation and extension of an agile development team.” In mid-2016 the FTA had joined forces with Company X during the business case phase and initiated workshop sessions for the identified key personnel within the organization to determine the project model and tendering method, but the FTA kept the technological conceptualization to themselves. Company X also assisted the FTA in training. FTA personnel had also sought reference projects from both within the public sector field, and externally—academic sources included—but did not find any. This led to a situation where the FTA and the case project received, if not formally then mentally at least, a showcase status that had a positive impact on the key personnel’s motivation

and visibility, which was commented as follows: “Here we go stepping in the minefield. It is a jump towards great unknown – we have no idea what we are heading to,” but complemented with a more serious notion: “We will try to establish a default ICT alliance model... It will hopefully really be the next new normal.”

The FTA and Company X held two separate market discussion sessions in late 2016 and early 2017 for all potential and interested supplier prospects, altogether from 27 different organizations. This number implies that the news of the pilot project had reached the market since this case was not yet announced using the formal public tendering procedures and channels. The target of the first one-day session was to introduce the pilot project, focusing on the current status, objectives, and requirements of the delivered system. This goal was achieved by the FTA. After, Company X introduced integrated and collaborative project delivery models, focusing on project alliance models. Then the facilitators of Company X opened the discussion for the possibility to utilize a project alliance model for the case project. The overall reception was positive and accepting—21 out of 27 considered IPD both interesting and possible and were willing to participate in the tender process (at rate of 4.2 out of 5)—this was especially evident among the prospects that had previous experience with project alliances from the construction sector. ICT practitioners and companies were more neutral and restrained. “ICT projects and companies tend to be more accustomed to clear customer-supplier contracts and models,” analyzed one respondent. The summary of the first day session consisted of three items: “1. Market info session clarified the project targets, but concrete details about scope still needed. 2. Project must be planned and executed by a vast and highly competent consortium 3. The main competence requirements are technological, substance, and project model and management.” During the second market information sharing session, the FTA and Company X summarized the previous session’s outcomes and provided more detailed information about the project scope, system requirements, and possible project model. Still, at this time, the FTA had not publicly committed to the alliance model as a customer, but stated in the introductory presentation as follows: “The customer has not yet made a final decision on the delivery model or procurement method.” Company X was also very careful not to mention the project alliance explicitly, even though the proposed model they presented was a 100% match with the alliance model description provided later in the request for quotation (RFQ) document. The discussions were concluded in a workshop in which all participants evaluated different relational project arrangement, deliverable scoping, and procurement options. Based on the results of the market discussions, the FTA made three major decisions internally: 1) the alliance was chosen as a project model, 2) the negotiation method chosen was a procurement method, and 3) the procurement project was separated from the development and implementation project. The FTA appointed a project manager for both projects, who, along with advocating for the division director and the ICT department director, formed the key personnel and informal coordination group for the case project. The FTA then proceeded to construct the procurement announcement and initial RFQ document that are required by the Finnish public sourcing regulations. The FTA consulted internally with the central government sourcing department, who, besides contributing the law-mandated elements to the announcement document, were also eager to increase their own knowledge about the alliance model through this pilot project. The public procurement announcement was published mid-March 2017, and it effectively ended the strategy phase of the project front-end.

Procurement phase

The public procurement announcement was launched through the public sourcing portal HILMA and consisted of five parts: the participation forms, selection and participation criteria, initial RFQ package, initial contract draft, and technical documentation. In order to participate, the service providers were instructed to form a consortium that could cover all required applicability and

capability criteria. Applicability criteria were the formal requirements related to participating in public sector projects, such as company governance and financial status reports. Capability criteria explicitly covered the previously-determined substance, technology, negotiation method, and project management-related competencies of the key personnel and company references. Altogether nine consortiums submitted the participation documents by the deadline in early May, and just one prospect was dropped for failing to meet all criteria. The selection was made by the procurement project steering group, which involved the key personnel and Company X. One challenge in the procurement announcement was the phasing of the project and confusion regarding the used terminology. The procurement announcement applied almost as such the documents used in earlier infrastructure project procurements and the evaluation criteria provided by Company X, while many consortiums were more represented by ICT companies. For example, the term “development” was understood as an actual project deliverable (software) development instead of a distinctive alliance project phase. The FTA acknowledged this only afterward, stating, “It was at the same time funny and not funny to understand that we didn’t quite manage to eliminate the ambiguity of terminology and speak the same language with the prospects.” Interestingly, the initial contract form and agile delivery methodology did not cause a stir among the legal experts of the prospects but received mostly positive feedback, as the FTA’s lawyer commented: “I was expecting like 30 pages of comments, but the lists were really short... This model is much less risky for both parties than a classic client-supplier contract...It seems that ICT companies are accustomed to just ‘start doing’ instead of writing everything explicitly down like in construction projects...” To prepare the prospect consortiums for the negotiation method and alliance project model procurement, the FTA and Company X arranged four in-depth training sessions free of charge that started after the market discussions. The motivation for the FTA to do this was to improve the comparability of the prospects and quotes throughout the process. After the training, the prospects submitted their initial quotations. Based on the quotations the number of prospects was reduced to three using the following criteria: 1) project team 60%, 2) development phase project plan proposal 40%.

The negotiation method was a pre-approved and predetermined sourcing method covered by the sourcing law. In effect, this method meant that the client organized three workshop days in late May 2017, one for each prospect, in which the project development, commercial model, and contract model were reviewed. The consortiums were tasked to prepare the workshop agenda. The FTA provided the facilities and arranged for the key project and specialist personnel to be available, and Company X acted as a facilitator and external reviewer of both the consortium and client performance. The aim of the workshops, as stated by the client and facilitator in the invitations and workshop introduction, was to initiate and test team integration and collaboration performance, scope the project objectives both from technological and delivery perspectives, and to review, discuss, and develop the commercial and contractual parts of the project. “We really want to first and foremost see how the teams perform, and if they know what they are getting into. The details can be worked out, but if the team is not up for it then there’s no point continuing” declared the Company X respondent. The workshop was conducted in three separate rooms with project and technology representatives focusing on the scope of the project, and legal and management personnel covering the commercial and contractual parts, respectively. The consortium project managers were tasked with running the project scope workshop, and their performance was evaluated by a group that consisted of FTA management outside the project as well, and a Company X representative. Each consortium had slightly different topics in their agendas, but the RFQ and negotiation invitation established the primary topics to be covered. Each workshop part was then reviewed by all participants for critical issues, findings, and development areas. Commercial and contract participants gave their summary

before adjourning, and the whole workshop was then reviewed by the client and Company X “with no holds barred” approach in order to estimate the prospect consortium. It was evident that even though this negotiation method was beneficial for the alliance model, it was very straining for the participants, especially the FTA personnel who had to commit themselves for three consecutive days: “If the routine didn’t develop and there wasn’t anything new from the different consortiums, then this would be really exhausting”, described the FTA respondents.

The open issues found in the workshops and other emerging questions were consolidated and answered by the FTA before the remaining three prospects were asked to submit their final quotations by the 25th of August 2017. The procurement coordination group (FTA personnel only) reviewed and graded the quotations first individually, and then did the final, written evaluation together. The predetermined grading criteria were: 1) Quality 75% (“Project management and collaboration [project manager and team capability] 25%”, “Value delivery [Architecture solutions and project plan] 50%), 2) Price 25%. The price component was exceptionally low compared to other public ICT project procurements in Finland. There were no major discrepancies in the individual evaluations, and the winning prospect was identified with no difficulties. The elements and factors that made the winner stand out from the competition were related to the quality criteria, especially the performance and collaborative approach of the prospect’s project manager and team. Curiously, the winner did not have the most competitive pricing, but, on the contrary, the highest. The results of the evaluation and selection decision were communicated directly to all prospects by the FTA, and there was also a public declaration of the selection required by the sourcing law. The law also mandates an appeal period after the declaration, before the decision and contract can be finalized. Unlike with most public tenders, the decision in the case project did not yield any appeals by the losing prospects, which also was surprising to FTA management representative: “Not a single appeal or complain. Probably first time ever”. This result suggests that the transparency and open communication related to the alliance model and negotiation method can positively impact the closure of project procurement. In order to gain further insight and learn from the process, the FTA also arranged a feedback session at the end of November to all participants and other interested parties, similar to the session that was held for the first round rejects in June. The procurement phase ended, and the development phase started officially in October after the signing of the alliance contract.

ICT project alliance characteristics

The analysis of the data also provided interesting findings regarding the characteristics of the ICT project alliance. Table 3 below categorizes the emerging ICT-specific characteristics found in the case using the project alliance model and mechanisms. The found mechanisms are elaborated further below and compared to the ones found in more traditional project alliances.

>>> INSERT “Table 3. ICT project alliance mechanisms” HERE<<<

One of the founding characteristics of the project alliance model, both in ICT and more traditional models, is the cooperative culture and collaboration. The ICT field can be considered very receptive to such a culture since that is also an essential element of increasingly popular agile software development and project management approaches. “This is like a natural extension to agile development”, was the analysis by one respondent. Clients and customers in the ICT field usually

accept the fact that they may not possess the highest or most up-to-date understanding of the available technologies in the market, which increases the role of the supplier almost naturally. These perceptions yield directly to the best-for-project approach that can also be used to prioritize decisions over applicable ICT standards or regulations, but only to some extent. Regulations and laws, especially those related to the environment and security, also naturally apply to construction alliances, but ICT alliance projects have an additional aspect that needs to be considered—information security. One significant aspect derived from the inherent diversity of ICT and construction industries is the use of terminology. The stabilized terminology applied in relatively conservative construction businesses can cause issues for ICT alliance project communication and cooperation if not synchronized and discussed with the project management, and the ICT-related terms used by software engineering practitioners can cause other discrepancies.

The ICT project alliance characteristics related to team formation differed mostly from construction alliances on the roles and capabilities of key personnel. Whereas construction alliances and projects have more defined and structured roles, in ICT projects—especially in agile projects—a more multitasked and ambidextrous approach is preferred. This approach means that a software developer must understand both the substance and applied technology, and be able to adhere to applied project management and collaboration methods. The case project also highlighted that the concept and utilization of a product owner—a client representative within a development team, responsible for product definition and acceptance—and a Scrum master—the delivery methodology expert responsible for project performance during sprints—are not yet mature in a project alliance: “It took some time for the purpose of, for example the Product Owner, to sink in, but as the main doers [developers] were already accustomed to them it didn’t become an issue”. Also, the utilization of end users throughout the project by providing user stories and validating the deliverables can be considered an emerging factor, as can the data providers and utilizers. The sooner all key participants are available for the project alliance, especially at the project’s front-end, the better. This optimization applies naturally to both ICT and construction alliances, but the difference comes after the implementation. Usually, in construction project alliances, the alliance organization is also left in charge of the maintenance and operation of the physical result, but in an ICT alliance, this back-end phase involves software and therefore does not necessarily require as extensive teams. However, since this phase is not covered in this study, this analysis must be left for future research.

There are no significant differences between ICT and more traditional project alliances when it comes to governance “The leap of faith in the steering group is much more dramatic when it comes to agile itself than ICT project alliance”, described one respondent. Equality and collaboration in decision-making procedures are embedded within the nature of the empowered, agile development teams. The primary element that distinguishes ICT project alliances is how they are connected with the project product and associated liabilities and insurances. A construction alliance project product is ready and usable at the end of the implementation, but agile ICT projects deliver usable software after each sprint, cycle, and release train. “You can tell that a bridge is ready when the scissors cut the ribbon, but here something is produced all the time which at the same times is good but at the same time challenging”, analyzed one respondent. This process should be considered, defined, and taken into account when agreeing on liabilities and insurances in the contract model. The warranties for ICT systems usually cover the immediate, post-implementation defects and hardly exceed one year, and the maintenance and post-implementation development is a separate commercial entity. However, in construction projects, the warranty for deliverables can last for over 5 years, but the need for post-implementation development or maintenance can be minimal. This discrepancy implies that, besides

the abovementioned terminology, the project lifecycle and phasing should also be reviewed and synchronized.

The approach to formal agreements in an ICT project alliance was dichotomous. The ICT field in general was more accustomed to relational, customer-supplier based contracts, which could detract from the adoption of a project alliance model. At the same time, the somewhat relaxed approach to contract negotiations and the increased role of the supplier in the ICT industry supported the collaborative, multi-party contract formation. An alliance contract was considered less risky and a direct, natural continuation to agile contracts, with the notion that a target price or budget is not necessarily the most suitable: “Definitely not a critical issue, we’ve seen so much worse contract drafts”, analyzed one informant who had experience from the software supplier side. Transparency in all aspects is not a hindrance for an ICT project alliance, but there are still some commercial specifics that should be noted. First, as the project outcome is more or less uncertain, especially in agile development, the reward and incentive mechanisms cannot be tied to the final product or stage-gate acceptance but must be tied to the actual deliverables and value creation. Second, many ICT projects yield technological or solution-based innovations by nature. The agreement must cover possible rewards and immaterial property rights related to aspects associated with innovation, including source codes and utilized technologies. The main phases of both ICT and project alliances are similar, albeit with some previously described contextual differences. However, the weight and importance of the phases separate these two from one another. Construction project alliances require and emphasize strong planning phase before implementation, whereas in ICT—especially in agile development—the planning phase is considered lightweight, visionary, and leans on iterative and concurrent delivery that also clarifies project and deliverable objectives progressively. The physical architecture and environment of construction alliance projects can consist of existing infrastructure that needs to be considered when project goals and objectives are planned. Similarly, the enterprise and information architecture applies to ICT alliance projects, but the distinguishing element is the legacy systems that suggest challenges related to data management, user capability, and integration within the delivered system.

In construction projects, the product is valid at the end of implementation if the predefined specifications and applicable regulations are met and accepted by client and authorities. Agile ICT project delivers working software after each sprint; therefore clients and companies must agree on how to define the deliverable objectives and ways to validate them. Testing and end-user acceptance can be considered acceptable validation methods. The validated deliverables also serve the coordination practices by enabling the clarification of project objectives and consequent re-prioritization of future sprints, and by constituting the foundation for project progress and team performance monitoring. The emerging teamwork and facilitation characteristics of an ICT project alliance are mostly connected to the technological aspects of the projects. First, as the ICT project site is not geographically or physically vast, as is the case in construction alliances, the team co-location, collaboration, and teambuilding activities are more natural throughout the project phases. Also, as the ICT project personnel tend to be technologically competent, the utilization of advanced communication, project management, and documentation solutions is more feasible.

The ICT project alliance model shares many characteristics with more traditional project alliance models used mostly in the construction field, but also has many notable emerging elements. Based on the analysis above, agile methodologies can be considered a suitable delivery approach under the project alliance model. Agile development welcomes change and uncertainty and advocates empowerment, flexibility, and ambidexterity. This benefit was also apparent when applying the

selected framework to the findings, as some evidence could have been coded under more than one dimension. Innovation, for example, is connected with both cooperative culture and commercial unity, and even though deliverables are mostly associated with planning, they cannot be ignored in team formation and operational procedures.

Discussion and conclusions

The aim of this research is to understand the cross-field transfer process through which the project alliance model is applied to the ICT field from the construction field. The study focuses on the activities of the institutional entrepreneurs and the interactions between the transferred model and the ICT field. To meet this aim, two research questions were constructed:

1. What kinds of activities, enacted by the institutional entrepreneurs, are associated with the process of transferring the project alliance model from the context of the construction field to the ICT field?
2. What kind of tensions and synergies between the ICT field and project alliance model can be perceived, and what are the emerging characteristics of the resulting ICT project alliance?

The findings of the research are accordingly discussed below.

Role of institutional entrepreneurs in the cross-field transfer process

There exists a shared understanding among project management scholars on the impetus for using novel, relationally-oriented ways of organizing complex projects to ensure their success (Lahdenperä, 2012; Walker and Lloyd-Walker, 2015). However, prior research within the field of project management has not adequately addressed the processes of adapting new ways to organize projects, nor has it paid attention to how cross-boundary activities across project-based industries are carried out in practice and how such processes may affect the transformation and evolution of the forms of organizing projects. The findings of this study regarding the discussed cross-field transfer process indicate that such processes are complex and involve the activities of institutional entrepreneurs over an extended period. The data analysis identified altogether six second-order themes related to the institutional work enacted by the institutional entrepreneurs, particularly from the FTA and Company X, when operating across the construction industry and ICT sector. The focus of the activities was first on establishing and gaining legitimacy, as well as on mobilizing the service providers of the ICT industry, to acquire competencies regarding the new project alliance model. After this, the focus shifted to building the capabilities for project alliancing in the pilot project and to translating and recontextualizing the method and its concepts, e.g., to the ICT field. Here, the improvisation of new practices in the context of ICT was also crucial. Finally, more efforts were directed at sharing the accumulated experiences with the wider industry audience and on promoting the transformation of institutional arrangements within the field.

In line with research on institutional entrepreneurship (Lawrence and Suddaby, 2006; Wijen and Ansari, 2007), the findings particularly highlight the role of multitalented individuals, i.e., that institutional entrepreneurs in organizations who operate in multiple fields, incorporating practices from one industry to another, promulgating change. In particular, the ICT director of the FTA and the consultant at Company X were able to combine their experience and understanding of the change within the construction field and replicate the construction sector's success with project alliances in the ICT field. In addition to their legitimate position and widespread cross-boundary personal networks, institutional entrepreneurs used persuasive framing to justify the new practices among a collective of actors to initiate change.

The results of this study also reveal the crucial role that individual first-of-a-kind or vanguard projects (Frederiksen and Davies, 2008) can play in initiating change in institutional arrangements within project-based industries. As the first alliance project in the ICT sector, the case project was an important field-shaker in the industry and provided a platform where established and institutionalized ways of organizing projects could be questioned with a reflective approach. The case project can also be interpreted as a platform where institutional entrepreneurs could enact the boundary work across the construction and ICT industries. As such, the results of this study complement the current limited understanding of the role of projects in advancing institutional change in project-based industries. More importantly, the findings show how the change process was initiated by a highly limited number of key individuals and was more of a bottom-up process, driven by a single pilot project and related activities instead of a centralized control and initiation process by, e.g., the MoF. Consequently, the results highlight how the new practices may gradually transfer across fields and how single projects may potentially stimulate shifts in the field-level logic later on.

Tensions and synergies related to the project alliance model in the ICT field

It is safe to state that constructing an ICT-specific project alliance model is most appropriate when agile methodologies are applied to develop the software solution. As one respondent said: “Waterfall will not work!” There are substantial synergies in the embedded characteristics and principles that connect agile methodologies and the project alliance model. First, the emphasis on collaboration and empowerment of the team is a crucial feature in both. Secondly, the contextual elements such as uncertainty and flexibility are considered and welcomed as field-level characteristic and as enablers for empowerment instead of as risks to be planned for and controlled. This model does, however, pose an organizational paradox, as identified by Lüscher and Lewis (2008): an autonomous project and project team require both engagement and disengagement in order to connect the project with the owner organization, to perform appropriately, and to meet the project objectives. Lüscher and Lewis (2008) suggested effective communication and acceptance to overcome this paradox. Therein lies a possible solution for the abovementioned ICT project alliance tension as well: effective ICT project alliance communication requires first and foremost a common language and unified terminology. Acceptance, on the other hand, is not related exclusively to the ICT alliance project but required in any project. In the public sector, the authority and communication mechanisms are transparent by default, providing ample paths for synergy and acceptance. On the other hand, as most ICT projects are not solely about developing and implementing a software solution, but also centered around process development and improvement, the acceptance and benefits realization of an ICT alliance project outcome creates strong governance-related implications for any organization aiming for digitalization (Marnewick, 2016; Matt et al., 2015; Wateridge, 1998). Software development and implementation activities provide at the same time strong synergy for applying project alliance to the ICT field: as most development is done on-site, especially when adhering to agile approaches (Drury et al., 2012), the team co-location and associated teambuilding, facilitation, and coordination activities are easier to manage.

There were two more evident organizing tensions related to ICT and agile elements in the ICT project alliance construct. First, the new roles and responsibilities that come with the technological aspects and agile development, such as the product owner, Scrum master, and information security or architecture specialists (Drury et al., 2012; Vlietland et al., 2016), need to be determined and embedded in the alliance team. Otherwise, the coverage of capability and competence requirements

will fall short. The competence requirements—technological, substance, and project management—propose synergy in the ICT alliance project model, as the suppliers’ role in the ICT field is characteristically stronger and considered more as an equal with the customer than in a conservative customer-supplier approach. These requirements enable better collaboration and a best-for-project approach during the procurement phase. However, to capitalize on such synergy, the scope, size, specifications, and pricing models in the project proposal or RFQ must be lucrative enough to justify the relative strenuous procurement process and attract best-possible-prospects suppliers. Second, the contract model should enable constant incentivization and value delivery through iterations instead of predetermined financial objectives and acceptance gates, and this should also cover the ICT-specific elements in the later stages of the project, namely maintenance and post-implementation development. The ICT field, especially when perceived in the public sector, would have faced difficulties to adapt the project alliance model before agile methodologies became increasingly popular and predominant way of conducting software projects (Fontana et al., 2014; Janssen and van der Voort, 2016). What remains to be studied is how the project’s back-end, especially the warranty phase (Ross, 2003), evolves and builds in the ICT project alliance. Does a purely agile model provide the best fit, or should some hybrid models be considered (Cooper, 2016)? The ICT field does have certain inherent competencies within institutions and individuals that support the ICT project alliance construct. The overall technological competence and awareness, is relatively high among ICT practitioners, compared to more conservative fields, such as construction. This savviness does enable improved resilience towards uncertainty and change and reduces the threshold for using modern communication and information technology solutions that improve collaboration and transparency. To summarize, the perceived synergies and tensions are presented below in Table 4.

>>> INSERT “Table 4. Synergies and tensions between project alliance model and ICT field”
HERE<<<

It was evident that the transfer process and work of the institutional entrepreneurs were supported for two reasons. First, the adopted model itself was such that it dampened field resistance. The alliance model had already exhibited a positive trend, due primarily to positive experiences in the field, and the collaborative and cooperative approach of the model needed mostly cosmetic adjustments to match with the ICT field. Second, the ICT field itself is generally flexible and keen to improve on both individual and organizational levels. Following, utilizing and developing new, advanced technologies has advocated for the acceptance of new ways of working that improve organizations’ value delivery capability, whether in the private or public sector. The combination of the model and field made it evident that the ICT project alliance had a relatively high integration capability, which is essential for project alliance formation and success (Hietajärvi et al., 2017a; Ibrahim et al., 2013). The ICT project alliance made sense to all parties from the beginning and enabled the formation of the key team that functioned well during the turbulence of the early stages of the project, especially when combined with the change caused by the introduction of the new model. This sense, along with the showcase status, enabled the project to overcome two more underlying paradoxes that Lüscher and Lewis (2008) identified: “Change and stability,” and “acting when meaningful and meaningfulness through action.” Interestingly, this approach yielded field-wide, and potentially even society level implications; the participants, especially at the FTA, felt that this could be “the new normal” and they could have a role in spreading the understanding among the practitioners in both the ICT and public sector areas. However, whether such belief can yield field-level enactment (Porac et al., 1989) remains to be seen, since neither this nor other known ICT alliance projects have been finished. Furthermore, even the concept of the ICT alliance project is by no means mature yet, including the proposed synergies and tensions that were left unsolved in this study.

Theoretical contributions

The results of this study contribute to a stream of institutional research that is trying to understand how new practices and ways of organizing spread, are adopted, and become institutionalized (Lawrence and Suddaby, 2006). By identifying and studying the micro-level processes associated with the transfer of a new way of organizing projects from one project-based field to another, this study complements prior understanding of institutional entrepreneurship that has been typically conducted within single-field settings. Furthermore, the analysis produces evidence of the driving role of individual pilot projects in initiating bottom-up change processes that may potentially produce changes in field-level structures and ways of organizing projects.

The findings on the birth of the ICT project alliance model also contribute to project alliancing literature (Walker and Lloyd-Walker, 2015), which has been primarily conducted in the context of construction and infrastructure sectors. By analyzing and discussing the specific characteristics of the ICT project alliance, as well as what kinds of adjustments are required for it, the study builds an initial understanding of a completely novel form of organizing ICT projects.

Managerial implications

This study had a strong motivation and access to a novel empirical phenomenon. However, what enables practitioners and managers to benefit from this study are the substantial, objective results and findings. The main managerial implications of the findings are related to the introduction of the ICT project alliance model. First, the project business managers and consultants are able to understand the emerging characteristics of the ICT project alliance model when working with software and ICT companies. Second, the analysis of the identified tensions and synergies enables managers in the ICT field to adjust and prepare their own organizations and processes for the application of the ICT project alliance model. In addition, practitioners working in or across several fields or industries may find the findings useful as the study highlights in detail the activities by institutional entrepreneurs that contribute to the process of adapting a new managerial concept from one field to another.

Limitations and further research

Several limitations of this study need to be acknowledged. First and foremost, the study covers only the early stages of one single case project in a predetermined context: the public sector. However, since the topic is new and unique, this limitation could not have been avoided by adding more case projects. This restriction limits the generalizability and reliability of the implications. However, the main purpose of this research was to introduce a new phenomenon and provide insight into it, not to make generalizable statements. Secondly, as the data covers only the early project stages, the validity of results and implications cannot be verified by using actual post-project findings. That would be a topic for further research. Thirdly, the data and analysis were both subject to respondent and researcher biases, respectively. The respondents were able to rationalize their views on the case since the interviews were conducted after the activities had taken place. However, the interviews were not the sole data source. Real-time observation studies were also used to provide more of an objective perspective on the activities, and a vast amount of complimentary public material was acquired. Finally, the researcher biases were managed by triangulating the findings between the three authors of this paper, and by asking for comments from the respondents.

This research has opened doors into an intriguing setting: project alliances in the ICT field. There is a need for further understanding and, consequently, research, on this topic. Since this study covered only the early stages of an ICT alliance project, longitudinal research on the entire ICT alliance project lifecycle is suggested in order to assess and analyze the fit-for-purpose and success mechanisms of it. As ICT projects tend to produce novel solutions by nature, it could be especially interesting to study the opportunity capturing during the development phase and how this could be used as a mechanism for institutional innovation (Hietajärvi et al., 2017c; Mignerat and Rivard, 2009; Zietsma and Lawrence, 2010). Second, as this study provided the first conceptualization of the ICT project alliance characteristics, more data and case studies are called for to operationalize and validate the concept further, and to analyze the similarities and differences between it and more traditional project alliance models applied in, for example, the construction field. Third, the case project leans on agile approaches, but other delivery methodologies are applied to ICT projects as well. How would a hybrid model, for example, detract or support the use of the project alliance? Fourth, the contextual peculiarities of the public sector impact both the ICT and project alliance. Therefore, it would be interesting to know how an ICT project alliance in the private sector would be different. This study provided insight into the horizontal transfer process of managerial practices across two fields but did not delve too deep into the field or the organizations within. What are the mental models in the organizations within a field, or through what kind of enactment organizations advance the field itself (Porac et al., 1989) in such settings would be interesting research topics for future studies. Finally, the underlying characteristics of the project alliance model and the activities used in the transfer process could also benefit the vertical integration and decision-making processes that take place in the many levels of public administration, especially in the context of digital transformation. These effects should be studied further as well, which has been noted by researchers of this particular stream (Snead and Wright, 2014).

This study set out to explore the birth of an ICT project alliance. The term “birth” was chosen in purpose as it aptly covers the transfer process through which the project alliance model was introduced from construction field to ICT field as well as the early stages during which the case project was born. Through inductive case analysis, this study provided insight into the activities and institutional entrepreneurs that contributed to the transfer process, and also conceptualized the characteristics of an ICT project alliance. Rarely can a researcher honestly state that a topic is novel, a setting is unique, or there is a gap in prior understanding, but in this study this statement can be applied without discredit. Equally rare it is to see that a research, even with the limitations associated with qualitative case studies, has the potential for affecting the way institutions, fields, and even society operate by sharing successful ways to deliver projects.

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Appendices

>>> INSERT "Appendix 1. The acquired research data details" HERE <<<

Table 1. Project alliance mechanisms

Construct	Description	Mechanisms	References
Best for project culture	Creating collaborative culture based on best-for-project and no-blame approach on decisions, open communication and continuous improvement	1. Mutual respect and good faith, 2. Commitment to improvement, 3. Unrestricted cross sharing of information, 4. No blame culture, 5. Common best-for-project mindset/culture, co-operative spirit, 6. Sound relationship, 7. Shared knowledge, 8. Open and honest communication - no hidden agendas	1.-2. Lahdenperä, 2012; 3.-4. Ibrahim et al., 2013; 5. Hietajärvi et al., 2017a; 6.-7. Jefferies et al., 2014; 8. Ross, 2003
Team formation and capability	Selecting and allocating the best available (capable, initiative) resources for the project as early as possible, with clear roles and responsibilities	1. Early involvement of key participants, 2. Team flexibility and responsiveness to change, 3. Encouraging initiative, 4. Appropriate and adequate resources, best people for project, 5. Flexibility and adaptability, 6. Learning climate, 7. Clear accountabilities and responsibilities within no-blame culture	1. Lahdenperä, 2012; 2.-3. Ibrahim et al., 2013; 4. Hietajärvi et al., 2017a; 5. Jefferies et al., 2014; 6. Love et al., 2010; 7. Ross, 2003
Joint governance structures	Constructing an equal and shared governance structure with unconditional commitment and support from key participants that supports leadership and decision-making power	1. Equality of key participants, 2. Mutual liability waivers, 3. Collective understanding, 4. Joint governance structure (consensus decision-making), 5. Leadership, 6. Strong commitment by client and senior management, 7. Alliance structure, 8. A peer relationship where all participants have an equal say, 9. Visible/unconditional support from top level of each participant	1.-2. Lahdenperä, 2012; 3. Ibrahim et al., 2013; 4.-5. Hietajärvi et al., 2017a; 6.-7. Jefferies et al., 2014; 8.-9. Ross, 2003
Transparent alliance agreement	Forming a collaborative multi-party contract that includes equal incentives and risks, and enables transparent open-book financials and communication	1. Transparent financials, 2. Collaborative multi-party agreement, 3. Risk and reward allocation, incentivization, 4. Equity, 5. Commercial incentives, 6. Alliance agreement, 7. A primary emphasis on business outcomes whereby all parties either win or all parties lose, 8. All transactions must be fully open book	1.-2. Lahdenperä, 2012; 3. Hietajärvi et al., 2017a; 4.-5. Jefferies et al., 2014; 6. Love et al., 2010; 7.-8. Ross, 2003
Shared objectives	Planning and agreeing jointly the project objectives and goals, enabling and encouraging innovation	1. Intensified early planning, 2. Jointly developed project goals, 3. Client care team, 4. Stretch targets, 5. Creativity, 6. Encouragement of innovative thinking with a commitment to achieve outstanding outcomes	1.-2. Lahdenperä, 2012; 3. Ibrahim et al., 2013; 4. Jefferies et al., 2014; 5. Love et al., 2010; 6. Ross, 2003
Coordination procedures	Measuring and aligning project outcomes and performance with objectives, and managing change and conflicts	1. Continuous learning and performance monitoring, 2. Joint process evaluation, 3. Effective coordination, 4. Compatible alignment, 5. Joint problem solving, 6. Collective responsibility for performance with an equitable sharing of risk and reward	1. Hietajärvi et al., 2017a; 2. Jefferies et al., 2014; 3.-5. Love et al., 2010, 6. Ross, 2003

Teamwork facilitation	Building and facilitating the performance of an integrated, co-located team	1. Advanced information and communication tools, 2. Continuous workshopping, 3. Seamless operation with no organizational defined boundaries, 4. Integration: people (e.g. joint alliance office), processes, tools, design integration, 5. Facilitation, 6. Team building	1.-2. Lahdenperä, 2012; 3. Ibrahim et al., 2013; 4. Hietajärvi et al., 2017a; 5. Jefferies et al., 2014; 6. Love et al., 2010
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Table 2. Cross-field adoption process activities during project early stages

Aggregate activity type	Activities	Project phase	Actor	Evidence
Gaining legitimacy	1. Strategically aligning the sourcing process to enable collaboration, transparency and new, innovative models. 2. Gaining higher authority support, but ensuring autonomy 2. Applicable laws 3. Justifying the need for alliance model and negotiation method, 5. Identifying a change agent with enough authority, motivation and competence	Strategy phase - preparation, business case	1.-5. FTA	<i>1. 'Procurement development report', chapter 4: "Strategic focus and development areas of procurement", 2. FTA interviews: "We have informed them [MoF] about the project according to the portfolio procedures, but we have had the peace to proceed how we see the best", 3. 'Procurement announcement': "The project objective is a complex information system and service entity that cannot be delivered using existing solutions, but planning, adopting and innovating new solutions. Therefore an alliance model is chosen, which requires pre-project negotiations that cover the project scope and commercial factors", 5. 'FTA interview' notes: "The tracks lead to our division director who had seen these alliances in action and was keen to try them in the ICT field as well"</i>
Persuading field-level audiences	1. Transparent and real-time communication 2. Public strategy that explicitly states project motivation 3. Establishing a show case status for the case project, 4. Fit-for-purpose analysis and conformation 5. Forming key personnel of all in-house key members, "evangelists" 6. Define the criteria for and identify potential pilot project	Continuously	1.-3., 5.-6. FTA, 4. Company X	<i>1. All procurement documentation public, mandated by law, 2.'Strategic targets', p.1: "We will develop our infrastructure and traffic solutions and data to improve and enable new services and automatized traffic management", 3. FTA interviews: "This is a unique adventure for us and we can feel the limelight. Interesting, not just for us, to see how this works and what will happen...", 4. 'Senior consultant', interview: "I was positive that this kind of collaboration and commitment would suit ICT world just fine...I'm sure that the public organization that have experience on infrastructure alliances will sooner or later see this too", 5. "The division director introduced the alliance possibility to us [procurement and delivery project managers] and then we all went to get our boss, the ICT department director, to hop in too", 6. 'FTA interview' notes: The project scope and scale, together with technology, lifecycle, and process requirements, had to be fit for the somewhat heavy alliance front-end.</i>

Motivating key parties	1. Dampen change resistance. 2. Market discussion. 3. Show case potential 4. Adjust selection criteria to increase collaboration and value role	Strategy phase - market discussions & Procurement phase	1.-4. FTA	1.-2. 'Procurement announcement' & 'Market discussion agenda and summary' documentation in preliminary RFQ package, 3. 'Workshop observation' notes: "Through this case we can increase our [FTA] alliance capability and visibility, and if this pulls off we can support other public sector organizations too.." 4. 'Final RFQ' document: "Criteria - Quality 75%, Price 25%".
Building capability	1. External: Training free for all prospects. 2. Internal: pre-project capability and motivation building 3. Understand and embrace the context specific competence requirement throughout the process	Continuously	1.-3. FTA	1. 'Feedback session' notes: "The training that we got before the first RFQs and negotiation was really useful... We got to understand the alliance and negotiation much better", 2. 'Senior consultant' interview. 3. 'Market discussion summary' & 'Initial RFQ' documents: "The key competences needed for all participants in consortium are substance, technology, project management and collaboration, and negotiation method"
Adjusting existing mechanisms	1. Terminology synchronization 2. Workshop and evaluation adjustment 3. Adjusting contract and project model elements to enable agile	Procurement phase - workshops	1.-3. FTA	1. 'Workshop observation' notes & 'Feedback session' notes, 2. 'FTA interview' notes: "We started the workshop with the format given by Company X, but soon realized that we had to adjust them for better fit" 3. 'Final RFQ' document
Stabilizing new mechanisms	1. Feedback session to all participants to gain and share mutual understanding for current issues and future possibilities, 2. Engage in academic research to increase understanding and enable conceptualization	Procurement phase	1.-2. FTA	1. 'Feedback session' notes, 2. The current study

Table 3. ICT project alliance mechanisms

Construct	Description	ICT specific emerging or adjusted mechanisms
Best for project culture	Creating collaborative culture based on best-for-project and no-blame approach on decisions, open communication and continuous improvement	1."Best for the project" can overrule applicable ICT standards, 2. Best practices and knowledge shared during sprint retrospectives, 3. ICT-alliance terminology synchronization, 4. The appreciated role of capable suppliers in ICT field supports co-operation and collaboration already in the early stages
Team formation and capability	Selecting and allocating the best available (capable, initiative) resources for the project as early as possible, with clear roles and responsibilities	1. New roles need to be considered: Scrum master, Product owner, end users, data providers. 2. Multitalented, ambidextrous competences required. 3. Utilization of existing technologies and preferences related to deliverables 4. Separate alliance organization for maintenance and post-implementation development
Joint governance structures	Constructing an equal and shared governance structure with unconditional commitment and support from key participants that supports leadership and decision-making power	1. Applicable information security, standards and regulations. 2. Insurances to cover rapid deliverables and outputs (agile). 3. ICT solutions warranty usually precedes and is included maintenance phase. 4. Development team empowerment
Transparent alliance agreement	Forming a collaborative multi-party contract that includes equal incentives and risks, and enables transparent open-book financials and communication	1. Transparency of deliverables (including source code) in contract 2.Target pricing challenges agile methodologies. 2. Agreed IPR rights to deliverables and innovations during project 3. Incentive and risk model cannot follow stage-gate but project deliverables. 4. Alliance contract still less risky than construction
Shared objectives	Planning and agreeing jointly the project objectives and goals, enabling and encouraging innovation	1. Uncertain project deliverable and system requirements decreases formal planning and development and indicates iterative approach (agile) 2.Usability and end user involvement important (user stories + validation) 3. Legacy systems, architecture and technology preferences impact deliverables and solution 4. Innovation and new technology utilization emphasized
Coordination procedures	Measuring and aligning project outcomes and performance with objectives, and managing change and conflicts	1. Validation of deliverables through testing and acceptance (end user, product owner), 2. Uncertainty and change addressed within development team, contractual conflicts escalated, 3. Coordination through prioritization during iterations, 4. Deliverables used to monitor project and team performance

Teamwork facilitation	Building and facilitating the performance of an integrated, co-located team	1. Procurement phase & negotiation method initiates teambuilding and project scoping similar to agile, 2. Planning & development & implementation onsite / in common premises (Big room) 3. Technical capability of key personnel advocates use of advanced communication and document management solutions
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Table 4. Synergies and tensions between project alliance model and ICT field

	Synergies	Tensions
Project alliance model	<ul style="list-style-type: none"> • Collaboration and team empowerment • Team co-location • Real-time communication and transparency 	<ul style="list-style-type: none"> • Contract model and applied terminology • Incentivization • Heavy project procurement
ICT field	<ul style="list-style-type: none"> • Flexibility and change resilience • Fast acceptance and constant value delivery • High technological capability • Supplier co-operation 	<ul style="list-style-type: none"> • Engagement with the parent organization • Roles and responsibilities • Maintenance of project deliverable

Appendix 1. The acquired research data details

1. Semistructured interviews and observations				
#	Session	Participants	Date & Duration	Comments
1.	Semistructured interview	Procurement project manager (FTA), Development project manager (FTA), Specialist (FTA), 2 x Researcher	26.4.2017 & 92 min	Transcribed
2.	Semistructured interview	Procurement project manager (FTA), Division director (FTA), ICT director (FTA), 2 x Researcher	4.5.2017 & 62 min	Notes
3.	Semistructured interview	Tender phase manager (FTA), 2 x Researcher	19.9.2017 & 110 min	Transcribed
4.	Semistructured interview	Senior Consultant (Company X), Researcher	29.3.2016 & 113 min	Transcribed
5.	Semistructured interview	Senior Consultant (Company X), Researcher	22.5.2017 & 50 min	Notes
6.	Observation: Procurement workshop #1	15 participants (FTA, Consortium 1, Company X), Researcher	22.5.2017 & 1 d	Notes, pictures. Additional material: Assessment criteria (Company X)
7.	Observation: Procurement workshop #2	15 participants (FTA, Consortium 2, Company X), Researcher	23.5.2017 & 1 d	Notes
8.	Observation: Procurement workshop #3	15 participants (FTA, Consortium 3, Company X), Researcher	24.5.2017 & 1 d	Notes

9.	Observation: Procurement process feedback session	All procurement process participants (30), Researcher	24.11.2017 & 180 min	Notes
<u>2. Case project related documents</u>				
#	Documents	Type & Author	Date & Description	Comments
1.	Operative and Financial plan for 2015-2018 ("Talous- ja toimintasuunnitelma")	Plan, FTA	2013: Initial budget introduction of the case project. Made for Ministry of Transport & Communications.	Part of background material package delivered to procurement process participants
2.	Strategic targets ("Strategian päämäärät")	Plan, FTA	2015. Strategic framework for FTA	Part of background material package delivered to procurement process participants
3.	Procurement guidelines ("Hankinnan toimintalinjaukset")	Guideline, FTA	2013. Sourcing guidelines, process descriptions, and instructions.	Part of background material package delivered to procurement process participants
4.	Procurement development report ("Hankinnan tavoitetilaraportti")	Report, FTA	2013. Sourcing development report	Part of background material package delivered to procurement process participants
5.	Public announcement for procurement	Document, FTA	March 2017. Public procurement announcement required by law	Main document with 10 appendices describing the procurement process, project objectives, participation criteria.
6.	Preliminary request for quotation [RFQ]	Document, FTA	April 2017. Initial public request for quotation.	Main RFQ document with 28 appendices describing scope, selection criteria, project schedule and target, applicable regulations, and contract drafts.
7.	Final request for quotation [RFQ]	Document, FTA	June 2017. Final request for quotation.	Main RFQ document with 28 appendices describing scope, selection criteria, project schedule and target, applicable regulations, and contract drafts.

8.	Q&A reply	Document, FTA	August 2017. FTA replies to questions made by consortiums during tendering process	
9.	Procurement process decision	Document, FTA	September 2017. FTAs decision on the winner of the tendering process	Main decision document with selection and assessment details (2 appendices).
<u>3. Public material related to subject</u>				
#	Document	Type & Author	Date & Description	Comments
1.	Public sector IT governance Act ("Laki julkisen hallinnon tietohallinnon ohjauksesta")	Law, Parliament of Finland	2017 (orig. 2011): The purpose of this Act is to enhance public service quality and availability by regulating the governance of public sector IT and interoperability of information systems.	Online at: http://www.finlex.fi/fi/laki/ajantasa/2011/20110634
2.	Shared government ICT service arrangement Act ("Laki valtion yhteisten tieto- ja viestintätekniisten palvelujen järjestämisestä")	Law, Parliament of Finland	2017 (orig. 2013): The purpose of this Act is to enhance government ICT operations, improve the quality and interoperability of ICT services, and improve the efficiency of ICT service production.	Online at: http://www.finlex.fi/fi/laki/ajantasa/2013/20131226
3.	Government programme ("Hallitusohjelma 2015-2017")	Guideline, Prime Minister's Office	2015: Result of government negotiations	
4.	Digitalization governance ("Hyvän hallinnon ja kyvykkyyksien tärkeydestä digitalisaatiossa")	Guideline, Ministry of Finance	4/2017: Public statement on the governance and capability management under national digitalization	
5.	National digitalization overview ("Ministers seminar on digitalization")	Presentation, Ministry of Finance	06/2016: Minister of Public reforms' seminar on public sector digitalization	

6.	Public sector ICT guidelines ("Julkisen hallinnon ICT linjauksia")	Guideline, Ministry of Finance	07/2017. Draft published for comments, four topics: 1. Data-and telecommunications services, 2. Device solutions, 3. Communications solutions, 4. ICT service management	
7.	Principles for Digital Government strategies	Guideline, OECD	10/2013. This document introduces draft "Principles on digital government strategies: bringing governments closer to citizens and businesses" for discussion by the Public Governance Committee	
8.	Public Governance Review: Finland & Estonia	Report, OECD	3/2015. This publication examines public governance arrangements in Finland and Estonia in two key areas: whole-of-government strategy steering and digital governance.	Online at: http://www.oecd-ilibrary.org/governance/oecd-public-governance-reviews-estonia-and-finland_9789264229334-en
9.	Digireview 2015 ("Digiselvitys 2015")	Report, State Treasury	12/2015. Report of review on the digitalization and productivity potential of government agencies	State Treasury is central government agencies support organization in digitalization and e-services development
10.	Project analysis overview ("Digistartti hankeaihioiden arviointi")	Report, State Treasury	3/2016. Report of ICT / productivity projects identified during "Digital Sprint" initiative	
11.	Digital service development ("Digitaalisten palveluiden kehittäminen & tuotanto")	Report, National audit office of Finland	04/2011: Report of review on how the efficiency and customerorientation is managed in the digital service development projects governed by the MoF.	

12.	Integrations under Public ICT contracts ("Yhteentöimivuus valtion ICT sopimuksissa")	Instruction, National audit office of Finland	07/2015. Report of review on integrations and interoperability issues in central government's ICT contracts	National audit office is the main auditing and control body of public sector organizations
13.	Follow-up report on MoF governance ("Jälkiseurantaraportti VMn hallinnonalan ohjausjärjestelmä")	Report, National audit office of Finland	02/2017. Follow-up report of review on the governance system of Ministry of Finance	
14.	Information on Government IT administration ("Tietoja valtion tietohallinnosta")	Report, Ministry of Finance	9/2017. Public report: Information on Government IT administration 2016	
15.	Information on Government IT administration ("Tietoja valtion tietohallinnosta")	Report, Ministry of Finance	9/2016. Public report: Information on Government IT administration 2015	
16.	Information on Government IT administration ("Tietoja valtion tietohallinnosta")	Report, Ministry of Finance	9/2015. Public report: Information on Government IT administration 2014	
17.	Information on Government IT administration ("Tietoja valtion tietohallinnosta")	Report, Ministry of Finance	9/2014. Public report: Information on Government IT administration 2013	
18.	Information on Government IT administration ("Tietoja valtion tietohallinnosta")	Report, Ministry of Finance	9/2013. Public report: Information on Government IT administration 2012	
19.	Public services – International comparison ("Asiointi julkisessa hallinnossa - Kansainvälinen vertailu")	Report, Prime Minister's Office	2017. International comparison study that aims to support public sector reform through digitalization	
20.	Experiences from West Metro construction ("Kokemuksia Länsimetron rakentamisesta")	Presentation, Länsimetro company	10/2017. Keynote presentation made by Länsimetro CEO during PMI Project Management Day 2017	

