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When project outcomes matter: Organizational integration in managing long-term target benefits[☆]

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ABSTRACT

We build on the research on managing long-term benefits by focusing on the management of outcomes during project execution through the theoretical lens of organizational integration research. Our research question is as follows: How can organizations arrange integration among organizational levels, functions, and projects to ensure the effective development of project outcomes and long-term target benefits? To address this question, we conducted a single case study with the Finnish Defence Forces (FDF) and four defense system projects as embedded cases. Our study provides new knowledge on project benefits management in three distinct areas: the integration mechanisms connecting projects, executives, and functions throughout project execution; effective information processing mechanisms for managing the development of outcomes; and the rhythmic initiation of new projects based on improved knowledge from ongoing projects. Based on our findings, we develop a model that covers project-to-organization, organization-to-project, and project-to-project interactions.

1. Introduction

In recent years, there has been growing scholarly and practical interest in making projects more impactful (Samset & Volden, 2016; Zwikael & Huemann, 2023). Recent research on benefits management has identified several management approaches for increasing project success in terms of achieving the targeted benefits (Breese, Jenner, Serra & Thorp, 2015; Marnewick & Marnewick, 2022). Furthermore, benefits management research has proposed several organizational arrangements for realizing benefits, such as forming a governance structure and inserting accountability into a project's organization (Musawir, Serra, Zwikael & Ali, 2017), defining the business case and project dossier (Badewi, 2016), and setting effective target benefits (Zwikael, Chih & Meredith, 2018). This body of literature tends to emphasize the undoubtedly important front end of the project and the alignment of the host organization's strategy and the project's outcomes (Einhorn, Marnewick & Meredith, 2019; Zwikael & Meredith, 2019). However, previous research has also suggested that projects can create unanticipated benefits (Bourne, Bosch-Rekvelde & Pesämaa, 2023; Gil, 2023; Zwikael & Huemann, 2023) that were not identified in the project's business plan. Previously mentioned benefits management activities are not

concerned with managing unanticipated benefits, but either suggest more planning before the execution of the project or the implementation of better overarching goals and measures for the project to target. The notion of unfolding opportunities for unanticipated benefits and changing outcomes necessitates the continuous management of benefits and outcomes over the entire project lifecycle to take advantage of the new long-term potential of the project outcome that becomes visible during project execution.

The goal of this study is to elaborate on the development of a project's outcome in a host organization during project execution using the notion of organizational integration (Galbraith, 1973; Lawrence & Lorch, 1967) as a theoretical framework. In this study, integration refers to the process of achieving unity of effort within an organization. In the context of a host organization (Morris & Hough, 1987), integration entails that different functions work together to develop project outcomes and create benefits. Accordingly, we address the following research question: How can organizations arrange integration among organizational levels, functions, and projects to ensure the effective development of project outcomes and long-term target benefits? To address this question, we focus on system development projects wherein a host organization develops a system that it uses to complete its

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organizational goals. These system development projects include the acquisition of the system, the necessary tailoring of the system to the host organization's needs, and the connection of the new system to existing operations. In addressing this question, we aim to establish new knowledge of the integration mechanisms at play when seeking to realize targeted benefits.

Our empirical research consists of a single case study of the Finnish Defence Forces (FDF) and four defense system projects as embedded cases within the FDF's organization. Specifically, we look at the organizational integration mechanisms at play in the FDF's organization, its organizational functions, and the projects to advance the realization of project outcomes that match the desired long-term target benefits. Furthermore, we analyze the organization's adjustments of the target benefits to ensure increased value for the organization. The empirical data from the embedded case projects were collected from a period covering the project execution phase. We also analyzed the implications of the post-project phase by considering the anticipated project activities after the completion of the embedded case projects and their expected effects through to the 2030s, which allowed us to get a sense of the logic behind realizing long-term target benefits. Two of the four embedded case projects (under the pseudonyms *ArmedVehicle* and *FirePlatform*) were weapon system projects that included procurements and adjustments of used weapon systems from foreign countries. The other two (*CommsRelay* and *MilConnect*) were communication and information system projects, with one comprising the development of software infrastructure and the other involving the sourcing and installation of physical networking infrastructure.

The findings provide new knowledge about the organizational arrangements that take place during the execution of development projects to achieve the targeted outcomes and target benefits. Accordingly, the findings contribute to benefits management research in four ways. First, we provide new knowledge on the organizational integration mechanisms at play between different projects, different levels of upper management, and different functions within an organization during the execution of a project with the specific purpose of generating targeted benefits. Second, the findings suggest that information processing (as a central part of organizational integration) needs to be effective, meaning that information exchange, and especially the use of effective information processing mechanisms, have a significant role in development of a project outcome. Third, we elaborate on how projects are initiated and organized as a series of activities, wherein the new knowledge created by a previous project serves as the basis for defining the outcomes of future development projects, thereby paving the path toward realizing long-term target benefits. Fourth, we develop a process model of organizational integration for benefits management that accounts for the project-to-organization (PtO), organization-to-project (OtP), project-to-project (PtP), and cross-organizational and cross-project (C&C) interactions that take place through the various integration mechanisms reported in our findings.

The rest of the paper is organized as follows. First, the theoretical background section outlines the practice of organizational integration in managing projects and the associated integration mechanisms in benefits management literature, which provides a theoretical foundation for the empirical study. The empirical study is described in the following sections, which consist of a section on the research methods and another on the analysis of the organizational integration mechanisms. These sections are followed by the discussion, which includes the study's contributions and managerial implications. The final section considers the limitations and avenues for further research.

2. Theoretical background

2.1. Organizational integration in the management of projects to ensure future outcomes and target benefits

In this study, we look at how organizations manage projects to

achieve long-term target benefits and outcomes. To this end, we rely on existing research on organizational integration as a theoretical lens, with a particular emphasis on information processing (Daft & Lengel, 1986; Galbraith, 1973, 1974; Tushman & Nadler, 1978). For integration, we use the same definition as Lawrence and Lorch (1967, p. 4), who described it as the "process of achieving unity of effort among the various subsystems in the accomplishment of the organization's task." Here, subsystems refer to organizational subsystems (i.e., the different functions and projects within an organization). The information processing view takes the perspective that organizations exist to process uncertain, asymmetrical, or ambiguous information, and to address cases in which information is lacking (Daft & Lengel, 1986). System development projects are established to complete a particular task, namely the creation of a new outcome for a host organization. Based on the information processing view of organizational integration, the key issue in executing the project is to seek and process the available information within the organization and to use the information generated during the project for the creation of the outcome.

Integration is achieved in organizations by employing integration mechanisms. Numerous integration mechanisms have been proposed for the integration of an organization's functions, which can also be applied to system development in a project setting. A broad categorization of integration mechanisms would distinguish between vertical (hierarchical) and horizontal (similar levels of authority) integration mechanisms, depending on the relative positions of the actors (Landsberger, 1961).

Vertical mechanisms, such as centralization, formalisation, and standardization (Burns & Stalker, 1961; Pierce & Delbecq, 1977), are hierarchy-based integration mechanisms (Landsberger, 1961) wherein the relevant information is exchanged between a superior and a subordinate. Standardization entails codifying the subordinates' allowed actions (Child, 1972), whereas centralization is focused on the decision making of a superior to coordinate the tasks of the subordinates (Burns & Stalker, 1961). Finally, formalisation refers to the creation of rules of conduct in the organization so that there is less of a need for information processing (Pierce & Delbecq, 1977). As system development projects are highly complex and ambiguous, we can infer that vertical integration mechanisms may be insufficient or may have limited effects due to the large amount of information processing needs.

Horizontal integration mechanisms are designed to ensure the direct coordination between various functions without relying on a hierarchical authority. Formal horizontal integration mechanisms, such as cross-functional teams (Galbraith, 1977, p. 116), integration roles (Galbraith, 1977, p. 115), integrative departments, or committees (Adler, 1995; Hage, Aiken & Marrett, 1971), are about decentralizing authority and facilitating planned decision making, through which tasks can simply be done instead of being referred upwards in the hierarchy (Galbraith, 1977, p. 111). Informal horizontal integration refers to the spontaneous coordination between functions (Galbraith, 1974) or cross-functional job-rotations (Edström & Galbraith, 1977). Information systems can be used to enhance both vertical and horizontal integration mechanisms (Daft & Lengel, 1986; Galbraith, 1977, p. 96).

The notion of organizational integration has been used as a theoretical foundation for studying the processes of integration in project-based firms. Studies relying on this notion have examined the different integration mechanisms employed in project-based firms to improve the efforts among different functions and deliver better products and services to customers (Cooper & Budd, 2007; Turkulainen, Kujala, Arto & Levitt, 2013). In doing so, these studies have highlighted the importance of integrating sales, operations, and service functions, as the involvement of different functions changes depending on the project's phase (Ståhle, Ahola & Martinsuo, 2019). On the pairwise integration between functions, sales and operations integration helps with the ambiguity at the front end, as those in operations tend to have better technical knowledge of manufacturing that can supplement the information that those in sales rely on in the front end of complex projects (Turkulainen et al., 2013). Operations and service integration connect

the project outcome and its lifecycle, thereby highlighting the use and value creation of the system during the project execution (Artto, Valtakoski & Kärki, 2015).

Organizational integration has also been used to study program management (Dietrich, 2006; Vuorinen & Martinsuo, 2018). In this vein, Vuorinen and Martinsuo (2018) have suggested that the creation of a goal and vision at the outset (front end) of a project or program is an important mechanism that connects the purpose of the organization to the project. In exploration programs, the objectives of the various functions and the program itself may conflict and therefore cause some tension during the program's implementation (Ben Mahmoud-Jouini & Charue-Duboc, 2022). During the individual project implementation in system development projects, information generated through the project is fed back into the organization and program (Turkulainen, Ruuska, Brady & Artto, 2015). The organization can then use this information generated to further improve other project outcomes (Turkulainen et al., 2015).

2.2. Organizing for project outcomes and target benefits in existing project benefits management research

In this paper, we use the definition of benefits management as "what is required from project leaders to do to ensure a positive impact from the project" (Zwikael & Huemann, 2023, p. 2). This definition allows the benefits management practices and literature to be analyzed using adjacent relevant discussions and theories, such as those concerning project governance (Musawir et al., 2017), agency theory (Zwikael, Meredith & Smyrk, 2019, 2024), or the resource-based view of the firm (Ashurst, Doherty & Peppard, 2008). Analyzing the benefits management literature through the lens of organizational integration, has yet to be done. This is somewhat surprising, given that the core idea of benefits management is to ensure a positive impact from the project and organizational integration is about achieving unity of effort in organization. The combination of targets of these two streams of literature is therefore how to unify effort of the project organization to the creation of value by creation of the project's outcome.

Regarding the value-creating capacity of the project outcome, Artto, Ahola and Vartiainen (2016) have focused their research on the operations phase of the system lifecycle and argued that the project outcome continues to create value for the host organization over a long time, even after the project's completion. Artto et al. (2016) underline the importance of the system operations phase for the host organization in the system lifecycle, wherein the project and its front end are considered mere parts of the lifecycle. Project outcomes pertaining to future post-project operations periods in the system lifecycle are contained within the concepts of long-term effects (Samset, 2003) and the first-, second-, and third-order consequences of a project (Johansen, Olsson, Jergeas & Rolstadås, 2019). Longer-term consequences are connected to the opportunities and benefits generated by the project and its outcomes. In line with such an approach, Zwikael (2024) has developed a project benefit framework for classifying different types of benefits for host organizations and the public at large.

Regarding the temporal system lifecycle view of project outcomes, there is a growing body of research on how to organize the project's front end using various organizational arrangements (Samset & Volden, 2016). The specific focal areas of this body of research include setting target benefits (Zwikael & Meredith, 2019), the project manager vs. top executive interface (Yang, He, Wang, Yu & Zhu, 2021), collaboration (Larsen, Karlsen, Andersen & Olsson, 2021), value creation in networks (Matinheikki, Artto, Peltokorpi & Rajala, 2016), and the co-creation of values-in-use (Liu, van Marrewijk, Houwing & Hertogh, 2019). Einhorn et al. (2019) have explained the logic of adjusting the outcome to ensure that the value is improved for the host organization. Accordingly, we find that the structures, processes, and practices at play when managing outcomes are often connected to the management of uncertainty, risks, and opportunities (Rolstadås et al., 2011), thereby covering the whole

project lifecycle and even the operations phase of the system lifecycle, wherein the use-value is created for the host organization.

The literature on benefits management suggests that there are many arrangements for the creation of benefits in the project's front end. To facilitate value creation over the entire lifecycle, different levels of the organization are required to work together to align the purpose of the project with the outcome (Zwikael & Meredith, 2019) and to align the outcome and the operations of the organization for a smooth transition from a particular project implementation to the daily operations of the organization (Zhang, Denicol, Chan & Le, 2023). One suggested way for a host organization to manage the project outcome is to create a project owner role that handles the benefits management process (Badewi, 2016; Zwikael & Meredith, 2018). Research on benefits management has provided a wealth of information on how to transfer information through the organization and to the project via plans, business cases, and assigned roles to effectively monitor and steer the project (Ashurst et al., 2008; Zwikael et al., 2019).

Previous research on benefits management has suggested a wide variety of practices related to ensuring the impact of the project and its outcome, but these have tended to focus on planning rather than doing. Generally, these activities can be divided into phase setting, planning, monitoring, and realizing (Zwikael & Huemann, 2023), which illustrates the emphasis on the time before the project and the planning that occurs beforehand. In setting activities, effective targets for the project are established so that it is clearly connected to a strategy (Zwikael et al., 2018). Initiation activities include forming a plan or a business case (Zwikael et al., 2019), and planning activities are concerned with selecting project personnel and briefing them (Zwikael et al., 2019) or providing them with detailed documentation, such as project dossier (Badewi, 2016). Monitoring involves reviewing the project's progress and updating the outcomes if needed (Zwikael & Huemann, 2023). Finally, realizing involves handing over the outcome to operations (Ashurst et al., 2008) and closing the project (Zwikael et al., 2019). Most of the activities consist of setting and planning the benefits before the project's front end and during its execution, and the benefits management literature suggests that these pre-planned benefits be continuously monitored during project execution.

According to benefits management research, the benefits management process is hierarchical, rational, and linear. Goals are derived from organization's strategy, which are then translated into objectives for a project plan that is then subsequently executed. Similarly, the control flows down from the upper management via the steering committee to the project owner and finally to the project manager (Zwikael et al., 2019). Breese (2012) has connected the characteristics of many benefits management practices to the modern paradigm of management science, which assumes an underlying logic, linear thinking, quantification, cause and effect, reductionism, control, and a split between thinking and doing. Regarding the interaction between the project and the organization, project strategy research has addressed various types of outcome-related connections between the host organization and its projects. In most project strategy studies, projects are viewed as subordinates to their host organizations (Morris & Jamieson, 2004). According to this body of literature, a project strategy consists of a mere static plan or predetermined goals given to the project by the host organization. When looking at integration mechanisms from the perspective of benefits management, most of the proposed methods seem to fall under vertical integration.

2.3. Summary of the theoretical background of benefits management and organizational integration for the empirical study

In contrasting benefits management research and the organizational integration literature, we can observe that the former stream has thus far been focusing mostly on vertical integration mechanisms. However, organizational integration research suggests that a much wider variety of integration mechanisms may be required to achieve integration in

complex situations. In complex projects, the tasks are varied, and uncertainties are high, as the projects create project outcomes. Such types of projects may require a large mix of vertical integration and horizontal integration mechanisms across various projects and organizations to both manage the information processing requirements (mainly vertical integration mechanisms) and improve the capacity of the information processing (mainly horizontal integration mechanisms). We aim to determine whether benefits management literature is missing those vital integration mechanisms connected to achieving benefits from a project, or if the information processing view does not hold when considering project benefits realization.

Benefits management research proposes a variety of activities for managing a project's long-term target benefits, though these integration arrangements are suggested to happen mostly at the project's front end. Plans, business cases, project dossiers, and reviews of the achievement of benefits in connection with pre-set goals do not incorporate the perspective of organizational integration, according to which the project is conceptualized as generating new information that can be used to improve the project outcomes. This is another area where an empirical case study can shed more light on the applicable organizational integration mechanisms at play when managing outcomes during project execution and throughout the entire project lifecycle.

3. Research method

3.1. Research approach

We analyze the notion of organizational integration as it applies to project organization with the purpose of generating impactful outcomes to achieve target benefits. To achieve this, we adopt features of the theory elaboration approach described by [Ketokivi and Choi \(2014\)](#). Specifically, we consider the empirical case of an organization using projects to generate impactful outcomes and apply concepts from the organizational integration literature to create new knowledge for benefits management research. Our empirical research consists of an embedded single case study ([Yin, 2014](#), p. 54), which allows us to examine the theme of generating outcomes and the integration mechanisms at play in the organization's natural environment, with detailed case-specific nuances being provided along the way. The unit of analysis in our research is an organization, through which we focus on the integration mechanisms within the host organization that arise over a project's lifecycle, with the ultimate aim of generating the targeted benefits. We approach organizational integration mechanisms from the perspective of individual projects, with each offering an embedded case that exemplifies a different set of integration mechanisms in the host organization. In the analysis, we combine information from the embedded cases with overall information about the organization, which provided us with the opportunity to elaborate on the process of creating targeted benefits.

3.2. Case selection

The selected case organization is the Finnish Defence Forces (FDF). We selected this organization as a revelatory case ([Yin, 2014](#), p. 53) of an organization that is the end user of the defense system's project outcomes. Our research began in 2019 from discussions between the FDF and our research team, which were initiated owing to our mutual interest in understanding the creation of targeted benefits through projects, which translated within the case organization into the creation of long-term defense capability through the execution of defense system projects. The FDF is a suitable case organization for this study because of its long planning horizon for building and maintaining defense capability and its effective use of projects for these purposes. For the FDF, the benefit of defense system projects is to acquire defense/military capability ([Koivisto, Ritala & Vilkkö, 2022](#); [Yue & Henshaw, 2009](#)). To realize this defense capability, the project outcomes (i.e., the complex

defense system) need to be connected to the existing systems in the FDF and prepare the organization for the use of the developed system.

In collaboration with the FDF, we selected four embedded case projects that all played a significant role in contributing to the defense capability of the FDF when completed, which allowed us to inspect how the FDF organized the development of defense capability. We controlled the variation in results by selecting case projects that were similar enough in terms of several parameters, such as importance, size, complexity, and duration; however, there were enough differences between the case projects to understand the potential sources of variations in the results. Therefore, we selected case projects that were similar in terms of the parameters of several significant core projects in the FDF that contributed to the defense capability of the organization. To introduce variation, the selected projects were of two different project types: command systems (software and communication infrastructure) and weapon systems projects.

3.3. Case organization: the Finnish Defence Forces (FDF) and the four embedded case projects

The FDF is an organization tasked with the military defense of Finland. Furthermore, the FDF is tasked with supporting other authorities in Finland, which means that it takes part in regional surveillance cooperation or otherwise provides international assistance and international military crisis management. The FDF organizes its defense system development and acquisitions through projects. The Joint Systems Centre in the FDF is responsible for preparing and executing these projects based on the defense capability requirements, and the project managers and systems engineers are located in the Joint Systems Centre. Project managers work with employees from different military branches (e.g., the Army, Navy, and Air Force).

The FDF has three levels of groupings for project-related activities: a project, a program, and a development program. The projects are connected to programs, which are combination of projects with synergies regarding defense capability. Program-level responsibility lies with the Defence Command (if combining multiple military branches) or is assigned to a military branch if the defense system development falls under the purview of a single branch. Development programs, which can be considered portfolios of programs, often spread across military branches and are similarly led by either the military branches themselves or directly under the Defence Command. Program managers and upper management (in charge of programs and development programs) are usually situated in the headquarters of a military branch or in the Defence Command. The program managers work as representatives of defense capability owners and users. They are the first point of contact for project managers when advice is needed to decide between different solutions and their effects on the overall system. The program managers can then discuss the direction of the project with the upper management if needed. [Fig. 1](#) depicts the organization related to defense system development in the FDF.

The four embedded case projects (shown in [Table 1](#)) represent the different types of projects executed by the Joint Systems Centre. Each embedded case project developed a defense system that contributed to the overall defense capability of the FDF. CommsRelay and MilConnect were both related to military communication (i.e., software and infrastructure). FirePlatform and ArmedVehicle both acquired and developed weapon systems. When gathering data from the case projects, we obtained narratives from the beginning of the project (2005, 2014, and two in 2015) and discussed the planned timespan of the projects (planned until 2026–2032). In the table we provide the approximate overall funding for each system acquisition and development project we analyze. At the time of data collection in 2021, the budget for the procurement of materiel in the FDF amounted to 574 million euros. This number does not include two strategic programs concerning the procurement of F-35 combat aircraft and new corvettes, which were funded separately. The case projects represented the acquisition and

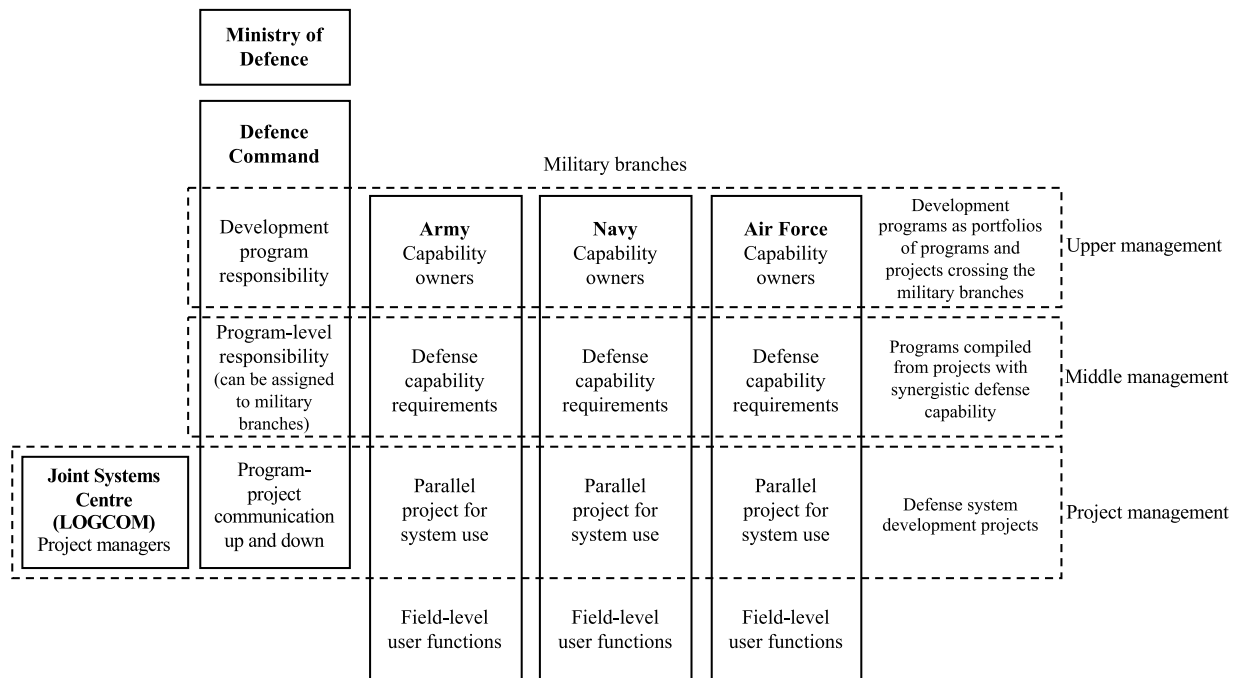


Fig. 1. Organizational context of the embedded case projects.

Table 1

Four embedded case projects from the FDF.

Project name	Project period until the interviews in 2021	Future time span of the pre-planned project actions	Defense system	Locus of system development	Funding (€) of project
CommsRelay	2015–2021	Activities planned until 2026	Military communication software system	Iterative development work by external software vendor, internal testing	> 10 million
MilConnect	2015–2021	Current plans until 2032	Military command and control system infrastructure	Internal resourcing, physical equipment from commercial markets	> 10 million
FirePlatform	2005–2021	Activities planned until 2032 Overall system lifecycle until the 2050s	Weapon system, modification, modernization of used weapon systems, supporting systems, ammunition	Initial government-to-government purchase of used material, system upgrades from original equipment manufacturer	> 100 million
ArmedVehicle	2014–2021	Activities planned until 2028 Overall system lifecycle until 2050s	Weapon system, renewal of used weapon system with improved system features, localization, supporting systems	Initial government-to-government purchase of used material, renewal of the system with original equipment manufacturer	> 100 million

development of significant new systems that needed to be connected to existing systems to generate the targeted benefits (i.e. defense capability).

3.4. Data collection

Data were collected via several methods. Primary data were gathered via semi-structured interviews and workshops. Overall, we conducted 39 interviews across the four projects and in the FDF involving 21 key individuals. Three authors of this article were present at all interviews. The final author, who was directly involved with the FDF, provided us with access to the FDF and supplemented our data with insights about the organization. The key FDF individuals included project managers, technical directors, systems engineers, program managers, managers in the project office, and other key individuals related to project work. Interviews were conducted via online video conferencing between November 2020 and December 2021. Table 2 contains the details of the interviews. The interviewees were selected based on their central roles in the projects. In the interviews, we used snowballing by asking the informants to identify the key individuals in the projects to both gather

new informants and verify that we interviewed all the relevant individuals regarding the project.

Another important data source was written material from the FDF, which included guideline publications, internal norms, materials specific to the case organization, and materials specific to the embedded case projects. Details of the written materials are presented in Table 3. We used four publicly available current books on lifecycle management, requirement management, and project management related to practices for the FDF. Proprietary documents were selected to cover relevant current norms and selected documentations from the projects.

We took multiple steps to ensure the validity and reliability of our case study. In the beginning, we formed a research protocol (Yin, 2014, p. 86) containing the details of our research objectives. Furthermore, the protocol outlined the data collection procedures, including procedures for protecting the informants, case selection, and informant selection. Then, we established an interview structure that contained an introduction to the interview (i.e., who we are, what we are researching, and different themes to discuss in the interview) to ensure that all the projects were covered sufficiently in the interviews.

The interviews were semi-structured and contained open-ended

Table 2
List of the interviews conducted in this study.

No.	Project-related roles and projects interviewees were involved	Date (YYYY-MM-DD)	Min	Pg ^a	i ^b
1	Management team of the Joint Systems Centre, Project Office, ArmedVehicle, CommsRelay, FirePlatform, MilConnect	2020-11-12	187	48	i01; i02; i03
2	Management team of the Joint Systems Centre, Project Office, ArmedVehicle, CommsRelay, FirePlatform, MilConnect	2020-12-15	121	34	i01; i02; i03
3	Project Manager, MilConnect	2021-02-10	94	23	i04
4	Technical Director, FirePlatform, Project Manager (former), FirePlatform	2021-02-12	142	28	i05
5	Project Manager, subproject for MilConnect	2021-02-15	101	20	i06
6	Project Manager, ArmedVehicle	2021-02-15	130	26	i07
7	Systems Engineer, FirePlatform	2021-02-16	86	20	i08
8	Sector Manager, Project Coordinator, Joint Systems Centre, MilConnect	2021-02-17	89	18	i09
9	Project Manager, CommsRelay	2021-02-17	112	27	i10
10	Program Director, Defence Command, MilConnect, CommsRelay	2021-02-22	104	22	i11
11	Project Manager, FirePlatform	2021-02-22	82	17	i12
12	Management team of Joint Systems Centre, Project Office, ArmedVehicle, CommsRelay, FirePlatform, MilConnect	2021-02-24	154	38	i01; i02; i03
13	Field User Officer, Army, ArmedVehicle	2021-03-19	115	27	i13
14	Project Manager, External Vendor Firm, CommsRelay	2021-03-25	80	18	i14
15	Contract Negotiation Expert, Commercial Department, CommsRelay	2021-04-08	91	22	i15
16	End-User Representative, CommsRelay	2021-04-14	87	20	i16
17	Program Director, ArmedVehicle, FirePlatform	2021-04-23	123	27	i17
18	Management team of Joint Systems Centre, Project Office, ArmedVehicle, CommsRelay, FirePlatform, MilConnect; Lawyer, Logistics Command, Commercial Department Sector Manager, Logistics Command, Commercial Department	2021-04-26	132	28	i01; i02; i03; i18; i19
19	Management team of Joint Systems Centre, Project Office	2021-05-12	67	19	i01; i02
20	<i>Nineteen FDF employees of various units and organizational levels as participants in the discussion on the management of projects in the FDF, a workshop event held on 20.5.2021</i>	2021-05-20	240 ^c	0 ^d	i01-i19
21	Capability Owner, Senior Executive, Army Command, ArmedVehicle & FirePlatform	2021-05-27	102	27	i20

Table 2 (continued)

No.	Project-related roles and projects interviewees were involved	Date (YYYY-MM-DD)	Min	Pg ^a	i ^b
22	Project Manager, subproject for FirePlatform	2021-06-07	114	22	i21
23	Management team of Joint Systems Centre, Project Office	2021-07-22	123	33	i01; i02
24	Manager, Joint Systems Centre, Project Office, ArmedVehicle, CommsRelay, FirePlatform, MilConnect	2021-09-03	90	21	i01
25	Manager, Joint Systems Centre, Project Office	2021-09-10	90 ^c	0 ^d	i01
26	Manager, Joint Systems Centre, Project Office	2021-09-17	60 ^c	0 ^d	i01
27	Manager, Joint Systems Centre, Project Office	2021-09-24	122	39	i01
28	Manager, Joint Systems Centre, Project Office	2021-10-01	60 ^c	0 ^d	i01
29	Manager, Joint Systems Centre, Project Office	2021-10-08	151	47	i01
30	Manager, Joint Systems Centre, Project Office	2021-10-15	56	22	i01
31	Manager, Joint Systems Centre, Project Office	2021-10-22	101	34	i01
32	Manager, Joint Systems Centre, Project Office	2021-10-29	26	11	i01
33	Manager, Joint Systems Centre, Project Office	2021-11-05	60 ^c	0 ^d	i01
34	Manager, Joint Systems Centre, Project Office	2021-11-12	60 ^c	0 ^d	i01
35	Manager, Joint Systems Centre, Project Office	2021-11-19	88	24	i01
36	Manager, Joint Systems Centre, Project Office	2021-11-26	60 ^c	0 ^d	i01
37	Manager, Joint Systems Centre, Project Office	2021-12-03	60 ^c	0 ^d	i01
38	Manager, Joint Systems Centre, Project Office	2021-12-10	49	17	i01
39	Manager, Joint Systems Centre, Project Office	2021-12-17	60 ^c	0 ^d	i01

^a Number of pages transcribed.

^b Informant identifiers.

^c Approximate interview duration.

^d Written notes.

questions regarding the interviewee’s background, roles in the FDF and the project, and the story of the project from the interviewee’s perspective. When we asked about the story of the project, we were interested in who the important persons and groups for the purpose of creating the outcome were and the major events that arose during the projects. Furthermore, we asked the purposes behind the connections to the important individuals and groups and for the major events. We asked about the topics of the discussions and the purposes of the connections to reflect on the different activities and organizing processes related to the creation of targeted outcomes at different levels and in different functions. We followed up with additional questions based on each interviewee’s answers to ask for more information regarding the planned themes and to explore new avenues of inquiry. Four researchers were present during the interviews (three authors and another researcher). One took the role of the lead interviewer, who was primarily responsible for conducting the questioning, and the others were more focused on taking notes, so that the lead interviewer could focus more on building a personal connection with the interviewee (Eisenhardt, 1989). The previously mentioned interview protocol was used in the interviews numbered 3–18 and 21–22. Interviews 1–2, 19–20, and 23–39 included discussions regarding the project organizing measures of the FDF and reflected on the authors’ preliminary observations and further questions on project organizing. We recorded and transcribed 30 interviews and

Table 3
List of the FDF-originating written materials.

Title	Description	Volume
<i>Proprietary documents of the FDF</i>		
HK666 Establishing and maintaining defense capability, the FDF Norm	A norm on constructing and maintaining defense capabilities over the capability lifecycle.	37 + 24 pages
HL419 Processing of assignments in the Logistics Command, the FDF Norm	A norm on the processing of assignments related to the building of material capabilities in the Joint Systems Centre.	6 + 13 pages
HQ496 Lifecycle management of troops and systems, the FDF Norm	A norm on managing the defense capability lifecycle of troops and systems.	27 + 32 pages
Project Office – Introduction	Description of the organization of the Joint Systems Centre Project Office and related instances; elaborates on related operational practices.	44 pages
Project card template	Sample document of a project card that each project manager is required to regularly update and share with the Project Office.	6 pages
Commercial Department – Introduction	Description of the organization and operational practices of the Joint Systems Centre Commercial Department involved in the commercial implementation of material acquisitions.	34 pages
Project MilConnect – Project card TL – IV	Sample document of status information provided in the project card of project MilConnect.	6 pages
Project MilConnect – Project plan TL – IV	Project plan for project MilConnect.	17 pages
Project MilConnect – Appendix to project plan TL – IV	Technical and operational description supplementing the project plan for project MilConnect.	17 pages
Project ArmedVehicle – (2021)	Description of the characteristics and historical events of project ArmedVehicle, as seen in 2021.	12 pages
Project FirePlatform – (2010)	Description of the characteristics and historical and future events of project FirePlatform, as seen in 2010.	10 pages
Project FirePlatform – (2018)	Description of the characteristics and historical and future events of project FirePlatform, as seen in 2018.	29 pages
<i>Publications about organizing in the FDF, publicly available publications</i>		
Pasivirta, P. & Kosola, J. (2007). <i>Requirements management practices in the FDF.</i> (in Finnish)	Guide on the application of requirements management practices within the FDF.	161 pages
Kosola, J. (2007). <i>Lifecycle management of defense capability.</i> (in Finnish)	Guide on defense capability lifecycle management within the FDF.	497 pages
Kosola, J. (2012). <i>Project guide for the FDF.</i> (in Finnish)	Project guidelines for the FDF.	77 pages
Kosola, J. (2013). <i>Guide to requirements management.</i> (in Finnish)	Guide on requirements management practices within the FDF.	155 pages

made extensive written notes for nine interviews. Recording and transcribing were conducted to capture accurate records of the interviews (Voss, Tsikriktsis & Frohlich, 2002).

We created a case study database (Yin, 2014, p. 102) to collect the transcribed interviews, archived and written materials, and literature. The database contained all materials, apart from restricted-use material, which was handled separately with the FDF devices. Finally, to increase the internal validity of our analysis, we had one author employed in the FDF organization, which helped to ensure that our interpretations of the organizational arrangements related to producing outcomes in the FDF were not subject to any misunderstanding. In addition, the FDF

inspected the article drafts for restricted information and offered their feedback. These verifications did not affect the results of the analysis or the contributions of the study.

3.5. Data analysis

To analyze the integration mechanisms within the organization for generating target benefits, we divided our data analysis into two interlocked parts: (1) a within-case analysis for the embedded case projects to establish a narrative for each project and to analyze connections from the viewpoint of singular system development projects, and (2) a cross-case analysis to compare the findings across the organization, to identify patterns among the integration mechanisms in the FDF to create targeted benefits, and to develop explanations for the found patterns. To conduct the within-case analysis, we collected all the relevant information from the case projects (e.g., interviews and proprietary documentation) and created extensive case reports. For the case reports, we established the facts of the embedded case projects, which included the purpose of the project, size characteristics of the project and the outcome, and important activities placed along a timeline (Langley, 1999). We used interviews along with the available documentation to cross-check the facts and interviewees' recounts of the project. Furthermore, norms and publications were used to better understand the contexts of the projects and the guidance offered to the project personnel. This allowed us to contrast the practices and their evolution through project stories and current organizational guidance.

Interviews were further used to create narratives for each case and thus to highlight the overall project story and how the projects developed over time, which is similar to a narrative strategy for analyzing process data (Langley, 1999). Narratives, timelines, and raw interview data were used in the within-case analysis. The data analysis was conducted with written text (e.g., transcribed interviews, archival material, case reports, etc.). We recorded the integration mechanisms related to targeted outcomes, including who contacted whom, the purpose of the connection, what information was exchanged between the parties, the modes of the integration, intensity, and when did the integration mechanism take place during the project.

The cross-case analysis was interdependent and iterative, and if the integration mechanisms, purposes, or other activities were found to be distinctive in the cross-case analysis in one of the cases, we went back to check whether similar actions happened during the projects, planned activities, or purposes of activities in other case projects, going all the way back to primary data (i.e., interviews and documentation). Illustrative examples of the primary data and derived insights are shown in Table 4. Iterative identification of the integration mechanisms and backtracking of previous cases helped us to form patterns of integration mechanisms across cases and notice distinctive integration mechanisms in individual cases. To facilitate the analysis, we formed a table of the planned activities and purposes of activities that we iteratively discovered in the data related to organizational integration mechanisms and the creation of targeted benefits. During the cross-case analysis, we noticed and formed categorizations of the integration mechanisms based on the locus of the integration, which allowed us to form a process model of organizational integration mechanisms for realizing targeted benefits.

4. Findings

4.1. Organizational integration mechanisms for developing project outcomes

Our findings suggest that there were several organizational integration mechanisms at play in the creation of long-term target benefits for the FDF, and we divided these into four categories based on the locus of the interaction: (1) project-to-organization, (2) organization-to-project, (3) project-to-project, and (4) cross-organizational and cross-project integration mechanisms. Table 4 summarizes these categories,

Table 4
Integration mechanisms and inherent observations connected to creating long-term target benefits in the FDF and embedded case projects.

Locus of integration	Summary of observations	Example quotes	Integration mechanisms
Project-to-organization	Sharing of the technical details of project outcomes across all levels of the organization—from project management to upper management	“Projects modify the future goals of the organization because they function in the present time and also paint the way forward. From there come decision points, wherein the decision is made to move forward in certain aspects. If needed, programs are asked to make the decision, and if the program cannot decide for some reason or another—for example, if the decision is so fundamental that it impacts so many things—then it is introduced to the Chief of C5, and they make the decision. So, the project outlines clear options and the pros and cons of the decision; then, the Chief of C5 makes the decision, and we move forward with that decision” (i11).	I. Project personnel providing upper management with detailed technical project knowledge improves upper management’s ability to coordinate the outcomes of long-lasting impacts and thus improve the performance of the organization.
	Continuous field testing in action during project execution to ensure well-working interfaces and beneficial effects among the outcomes of multiple projects and pre-existing systems	“Last year, we had a big international field test for our system. We had done the concept and plans, and we made a quick decision on which equipment we would get to the field test. [...] We have since changed the equipment” (i04). “We have an integration exercise, where we bring a new version of the product, every three months. [...] Then we have a field test	II. Projects continuously field testing intermediate deliverables with multiple ongoing projects simultaneously allow for early feedback to be gathered about the use of systems at the level of the whole organization; this enables early adjustments and corrective measures in system development projects for improved system use.

Table 4 (continued)

Locus of integration	Summary of observations	Example quotes	Integration mechanisms
Organization-to-project	Upper management’s participation in designing project outcomes with the project personnel	that lasts for six months” (i10). “I was personally present the first time [at the ArmedVehicle vehicle unit review testing and acceptance in the selling country], did my due diligence regarding what the admittance and testing would involve, and gave my comments about what else needed to be included for testing” (i20). “If we are thinking of a project like ArmedVehicle, then we need to think about the lifecycle costs. This system that we have currently planned will be used for 30 years, so we need to think about how much the use of its capability would cost as a whole for the next 30 years” (i20). “My role is that I challenge MilConnect personnel to consider whether this solution is durable—that is, we need to design a system that should be in production for the next ten years, and when it’s in production, it should fulfill the requirements effectively for the whole ten years” (i09).	III. Upper management’s participation in designing the project outcome informs the project about the outcome’s purpose in the organization, thereby improving the outcomes for the organization.
	Integration mechanisms for maintaining a long-term planning horizon for outcomes	“In field testing last year, we learned that the user that operates the system needs to be better informed of what we are doing, and now they are involved in the	IV. Organizational arrangements, such as upper management’s active participation in projects, harmonize the time-horizon of the project outcome with the organizational time-horizon, thereby improving the outcomes for the organization.
	Integration of user and maintenance functions to the project to ensure visibility about operational environment		V. User function’s involvement in a system development project improves the project’s awareness of the contextual conditions of the operations, which allows the

(continued on next page)

Table 4 (continued)

Locus of integration	Summary of observations	Example quotes	Integration mechanisms
Project-to-project	Initiating a development project for the use of the system in tandem with the initiation of the system development project	project. At that time, I did not understand how much involvement we need from the users to build this system” (i04). “The stepping stones to the goal were formed together with the operating function. We iterated between the goal and current challenges, and by putting them together, we were able to formulate an actionable plan” (i11). “Each project was initiated when the program was established. Both the training and personnel project and then the maintenance project were initiated at the same time at the beginning of the program” (i17). “I have almost daily contact with the system project manager to coordinate the development and use of the system” (i04).	project to develop outcomes tailored to organizations operation improving the outcomes. VI. Initiating the development of the use of the system in tandem with the initiation of the system development project involves the in-house user function in the system development at an early stage; this improves the organization’s preparedness for effective system use.
	Organizing for long-term defense capability through a series of projects that together form a developmental continuum for the evolution of the system	“We put the FirePlatform into field tests, but even then, we started to think about the future—that is, modernization of the system and new ammunition for the system. Then, we established the so-called second project” (i05).	VII. Organizing system development through the initiation of projects as a series of interconnected projects is a controlled and rhythmic way of ensuring the continuous renewal of the system and its outcomes in the long term.
Cross-organizational and cross-project integration mechanisms	Program directors’ role as middle management intermediaries between upper and project management	“I was in touch with the program director almost daily [...]. With the project manager, I wasn’t in contact aside from the project meetings in	VIII. Program directors balancing the pace and frequency of information exchange between project and upper management

Table 4 (continued)

Locus of integration	Summary of observations	Example quotes	Integration mechanisms
		which I participated, but otherwise, the daily contact with the project manager was facilitated by the program director. If there was something specific that I wanted the project to do, I would communicate with the program director, because I knew he had a grasp of the overall management of the program” (i20). “I interacted with the program manager almost daily; of course, it was easy, as we worked in the same building, so it was easy to see each other” (i20).	allows for more adjustments of the outcome and the organization’s systems, improving the outcomes. IX. Use of effective information processing channels among executives and project managers for sharing information connected to project outcomes improves the organization’s understanding of projects and their effects on the organization’s targeted benefits.
	Using rich communication channels for exchanging information about project outcomes and their long-term effects		

observations, sample quotes, and integration mechanisms.

4.2. Project-to-organization (PtO) integration mechanisms feed the organization information about the project outcome’s performance

The project-to-organization (PtO) integration mechanisms involved arrangements in which the project personnel had the necessary information needed for other organizational functions to realize targeted benefits. Projects involved other parts of the organization, such as program managers and upper management, to work on the project outcomes. These different types of involvement worked as integration mechanisms toward reaching the targeted benefits. The PtO integration mechanisms involved providing upper management with detailed technical project knowledge about the developed system and its life-cycle, as well as coordinating field tests for projects to develop the system further, but also developing the operations of existing and new systems in unison.

By participating in the technical design of the outcomes developed in the case projects, upper management was able to use the information to coordinate the development of different systems and observe how these different systems developed and formed the targeted defense capability. According to a senior executive overseeing ArmedVehicle and

FirePlatform, “In these systems [ArmedVehicle and FirePlatform], we needed to control for the scenario that when we get new parts for a weapon system, can we integrate the new system into the existing operational system” (i20).

We summarize our observations of the integration mechanisms as follows:

I. Transferring project-specific information to upper management (PtO): *Project personnel providing upper management with detailed technical project knowledge improves upper management’s ability to coordinate the outcomes of long-lasting impacts and thus improve the performance of the organization.*

Field testing of project outcomes or partial project deliverables in action took place through military exercises. Field testing of each system at multiple points during the development projects allowed the FDF to verify whether the system worked as expected when used with other systems. In CommsRelay, field testing occasions constituted an integral part of the software development cycle: a selected version release was constantly evaluated with one of the in-house end users over a period of several months. The end users adopted the version releases into their operative use in troop training and military exercises and then provided the project team with feedback about their use observations and new requirements for further development in the next project phases. Once the performance of a version of the system was tested for its match to the pre-set technical requirements, the project manager determined whether it was suitable for rollout for the entire pool of end users. Similarly, in MilConnect, field tests and military exercises enabled the project organization to observe whether the targeted capabilities were met by the current technical implementation. In particular, some of the most important military exercises set the implementation schedule for certain functionalities. A set of field testing in ArmedVehicle took place in the early phases of project execution, when the tests enabled the evaluation of different alternatives for system modification designs for achieving the desired performance. Based on the observations, we summarize the following:

II. Simultaneous field testing of not-yet-complete project deliverables of multiple ongoing projects for organization-level benefit implications (PtO): *Projects continuously field testing intermediate deliverables with multiple ongoing projects simultaneously allow for early feedback to be gathered about the use of systems at the level of the whole organization; this enables early adjustments and corrective measures in system development projects for improved system use.*

4.3. Organization-to-project (OtP) integration mechanisms provide the project with visibility of the organizational context and the intended use-case of the system

Organization-to-project (OtP) integration mechanisms involved mechanisms through which the organization and its management steered the project and its designed outcome to be aligned with the FDF long-term perspective. Also, the integration mechanisms involved coordination between the project and other organizational functions, such as military branches and their representatives, which gave the project valuable inputs regarding the context and the use environment of the outcomes. This allowed the project team to develop the outcome aligned with the use cases and context in which the FDF operates.

Information regarding the project outcomes was split between different managers. The project managers and project personnel (e.g., systems engineers) had the most up-to-date technical expertise on individual systems. In the FirePlatform project, the personnel had over 15 years of experience with that particular system (on top of a long career in the FDF). The project personnel had detailed information about the current fleet of specialized systems. Furthermore, the project managers had the most contact with suppliers and collaborating countries’ armed

forces and were thus well aware of detailed information regarding the markets of the systems, including the price, promised performance, solutions, and promising next developments. However, the project managers, while having deep knowledge about the technical properties and market context related to their specific systems, were largely only specialized in one or two systems. Upper management, in comparison, had a larger overview of the systems used in the FDF. They also had connections to operational planning (concerning operational military use) and were thus well aware of the intended purpose of the project outcome in the organization and the role of the system in contributing to the defense capability of the FDF.

In the case projects, upper management was involved in the development of the project’s outcome by monitoring the progress of the project, approving the designs and plans of the project, and having representatives in the project meetings. As a senior executive overseeing ArmedVehicle and FirePlatform commented, “I was personally present the first time [at the ArmedVehicle vehicle unit review testing and acceptance in the selling country]” (i20).

To create an outcome that would benefit the operations of the organization in the long term, upper management needed to participate in the design of the outcome with the project personnel. Knowledge sharing between upper management and the project personnel would connect them vertically in the organization, and receiving guidance about the purpose of the system and its connection to other systems helped the development of the outcome and the realization of its intended outcomes. Thus, we summarize our observations in terms of the following integration mechanism:

III. Upper management designing the project outcome with the project personnel (OtP): *Upper management’s participation in designing the project outcome informs the project about the outcome’s purpose in the organization, thereby improving the outcomes for the organization.*

Cooperation with upper management in designing the technical details of the project also involved keeping an eye on the long-term perspective. The systems that were acquired were planned for long lifecycles of use in the FDF. For example, ArmedVehicle was planned to be used for 30 years. For the FDF, it was vital that the design of the outcomes would take into account the long lifecycle, upgrades, costs associated (not only the procurement cost but also the operation costs), and dependencies that the system would create. Both upper management and the program directors instructed the project personnel to keep long-term perspectives in mind when designing the solutions. As a senior executive overseeing ArmedVehicle and FirePlatform remarked, “If we are thinking of a project like ArmedVehicle, then we need to think about the lifecycle costs. This system that we have currently planned will be used for 30 years, so we need to think about how much the use of its capability would cost as a whole for the next 30 years” (i20).

Norms and publications regarding defense capability lifecycle management in the FDF also echoed the sentiment that the timeframe of the weapon systems was long and provided illustrative examples, such as artillery systems in which individual cannons can have a lifecycle over 50 years. We summarize this organization-to-project integration mechanism related to harmonizing timeframes between the project and the organization as follows:

IV. Harmonizing time-horizon between the organization and project outcomes (OtP): *Organizational arrangements, such as upper management’s active participation in projects, harmonize the time-horizon of the project outcome with the organizational time-horizon, thereby improving the outcomes for the organization.*

To ensure the visibility of the contextual condition of the defense capability, field-level users’ representatives were integrated early into the project. Project managers’ and users’ representatives formed the

technical core of the project. The project managers had information regarding the markets and how the systems in the markets would be developing. Users' representatives had the best knowledge of the practices of the personnel who would be using the system and the realities of the environment in which the system was intended to be used. Overall, these arrangements created and maintained the visibility of the organization's long-term defense capability. Together with arrangements that connect the project and its outcome to upper management, through such practices, the whole organization gains visibility about the organization's systems use over the long term. Based on these observations, we articulated the following organization-to-project integration mechanism about involving users in projects:

V. Involving users to identify the contextual conditions (OtP): *User function's involvement in a system development project improves the project's awareness of the contextual conditions of the operations, which allows the project to develop outcomes tailored to organizations operation improving the outcomes.*

4.4. *Project-to-project (PtP) integration mechanisms link concurrent and future projects to the realization of benefits*

Project-to-project (PtP) integration mechanisms involve coordination between projects happening simultaneously for the realization of the targeted benefits, or in this case, subsequently building on and maintaining the defense capability of the FDF. The parallel projects allowed the coordination between the development and the use of maintenance projects to successfully operate the system. An interconnected series of projects controlled the development of the outcomes and steered the connection to other systems in use.

ArmedVehicle and FirePlatform both introduced new weapon systems to the FDF. To realize the potential of these weapon systems, the FDF needed to reorganize the units to use the new weapon systems. The reorganization consisted of the training of instructors and organizing the training of troops for the use of the systems. Furthermore, the functions responsible for the technical operation of the system needed to be prepared to provide technical support and maintenance of the weapon system. When the acquisition and development projects were initiated for the ArmedVehicle and FirePlatform systems, parallel projects for the development of the use of the system, as well as the development of technical operations and maintenance, were initiated. As the program director of ArmedVehicle said, "Each project was initiated when the program was established. Both the training and personnel project and then the maintenance project were initiated at the same time at the beginning of the program" (i17).

Using parallel projects connects different organizational functions horizontally. Regarding the initiation of parallel development projects for different phases of the system's lifetime, we summarize the integration mechanism as follows:

VI. Tandem initiation of system development and use projects (PTP): *Initiating the development of the use of the system in tandem with the initiation of the system development project involves the in-house user function in the system development at an early stage; this improves the organization's preparedness for effective system use.*

To develop new systems and ensure their long-term performance, the FDF continued building new defense capabilities in current and future projects and ensured smooth transitions using the developments and knowledge gained in previous projects. FirePlatform first acquired the vehicles and weapon systems and continued to secure the necessary materials for various units to function as a complete combat unit. As a continuation project, FirePlatform acquired new ammunition that could be used in the weapon system and improved its defense capabilities. As the technical director of FirePlatform remarked, "We put the FirePlatform into field tests, but even then, we started to think about the future—that is,

modernization of the system and new ammunition for the system. Then, we established the so-called second project" (i05).

Further projects developed communication arrangements. For example, MilConnect improved its communication infrastructure by continuing the steps taken during MilConnect's predecessor projects. CommsRelay continued the development of communication software, of which early versions had been developed in CommsRelay's predecessor project. Long-term plans for the systems—as was the case with ArmedVehicle, which had plans to develop the system until 2032 and even further—formed the outline which guided the initiation of the projects and then continued on the run by initiating future projects while still executing the current one. This enables continuous learning in projects and allows for the use of improved knowledge to adjust future project plans accordingly. Using projects as a controlled way to evolve the system serves as a vertical integration mechanism. Based on these observations, we articulate the following project-to-project integration mechanism:

VII. Series of projects for controlled and rhythmic development of systems (PtP): *Organizing system development through the initiation of projects as a series of interconnected projects is a controlled and rhythmic way of ensuring the continuous renewal of the system and its outcomes in the long term.*

4.5. *Cross-organizational and cross-project (C&C) integration mechanisms enhance information sharing for the realization of benefits*

The use of an integration mechanism helped to facilitate information sharing by making interactions more efficient. Integrative roles and intermediaries helped in the information exchange between the project and organization's functions. Another cross-organizational and cross-project integration mechanism was the use of effective information processing mechanisms to effectively convey the effects and purposes of the outcomes among the project personnel and the rest of the organization.

The program directors acted as intermediaries between upper management and the project managers, thereby allowing for quick responses to inquiries from project managers. Senior executives could obtain the information that they needed directly from a program director who was involved in frequent discussions with project managers. On this structure, a senior executive overseeing ArmedVehicle and FirePlatform said, "I was in touch with the program director almost daily [...]. [T]he daily contact with the project manager was facilitated by the program director. If there was something specific that I wanted the project to do, I would communicate with the program director, because I knew he had a grasp of the overall management of the program" (i20).

The program director's role is to ensure that the requirements related to the organization's defense capability are taken into consideration in projects; thus, they help in reviewing and adjusting the project design to correspond with the organization's intended capability. Upper management can contact a program director to obtain detailed information from the projects. Program directors acting as intermediaries aid the formation of the overall picture of the defense capability in the upper management, starting from the development of systems (outlined previously in the project-to-organization integration mechanism) and the exchange of information between upper management and the project manager (as outlined in previously in III integration mechanism). Program directors thus form an important vertical integration mechanism that enhances other integration mechanisms:

VIII. Coordinator roles for balancing the information exchange (C&C): *Program directors balancing the pace and frequency of information exchange between project and upper management allows for more adjustments of the outcome and the organization's systems, improving the outcomes.*

In the ArmedVehicle, FirePlatform, CommsRelay, and MilConnect projects, the program directors were working in the same location as the senior executives, which enabled them to meet up and quickly exchange information if the senior executives needed to know the status of the project or if the project needed input from upper management. As a senior executive and the defense capability owner of ArmedVehicle and FirePlatform commented, “I interacted with the program manager almost daily; of course, it was easy as we worked in the same building, so it was easy to see each other” (i20).

The project managers and program directors worked in different locations, so the chosen communication methods were phone calls (as needed) and e-conferences for project meetings. For example, in ArmedVehicle, the project manager and program director coordinated daily on the phone and discussed the technical options and how they would affect the overall system. They also discussed the project’s progress and the development of the end-product design. Many project managers were co-located in the same place, which allowed them to communicate and coordinate actions without the need to rely on a program director. On such practices, the program director of MilConnect and CommsRelay remarked, “When all the project managers [of my program] are employed by the Joint Systems Centre, information is exchanged on the local level without all the information going through the program or development program” (i11).

Overall, the information shared between program directors and project managers through rich information-sharing channels allowed the program directors to acquire in-depth knowledge on the development of defense capabilities. The use of rich information processing channels helps to facilitate coordination in the organization regarding project outcomes and long-term targeted benefits:

IX. Use of effective information processing channels (C&C): Use of effective information processing channels among executives and project managers for sharing information connected to project

outcomes improves the organization’s understanding of projects and their effects on the organization’s targeted benefits.

5. Discussion

5.1. Development of an organizational integration model for managing benefits in projects

Overall, our findings point to nine distinct integration mechanisms (I ... IX) connected to realizing targeted benefits. Vertical integration mechanisms communicating along the hierarchy (e.g., integration mechanisms I, III, IV) are complemented by horizontal integration mechanisms (e.g., integration mechanisms II, V, VI), in which projects share the relevant information directly with other projects and functions as needed. These integration mechanisms are complemented by the use of integrative roles (VIII) and effective information processing channels (IX). Furthermore, the analysis indicates that the integration mechanisms connected to the outcome differ depending on the locus of the integration. This means that either the project or the organizational function has the necessary information regarding task completion, which is then communicated to other functions or projects via differing methods.

Based on these findings, we have developed a process model of project-organization integration (Fig. 2) during project execution for realizing the targeted benefits. In line with the organizational integration literature and empirical observations from the FDF, we identified the organizational integration mechanisms that were active in coordinating projects and the different organizational functions that work together to create targeted benefits.

Target benefits provide the basis for integration as a goal toward which to strive. During project execution, projects create a way forward for organizations by developing and introducing new systems for organizations. Projects interacting with other organizations receive new information regarding the new developments in their areas of expertise,

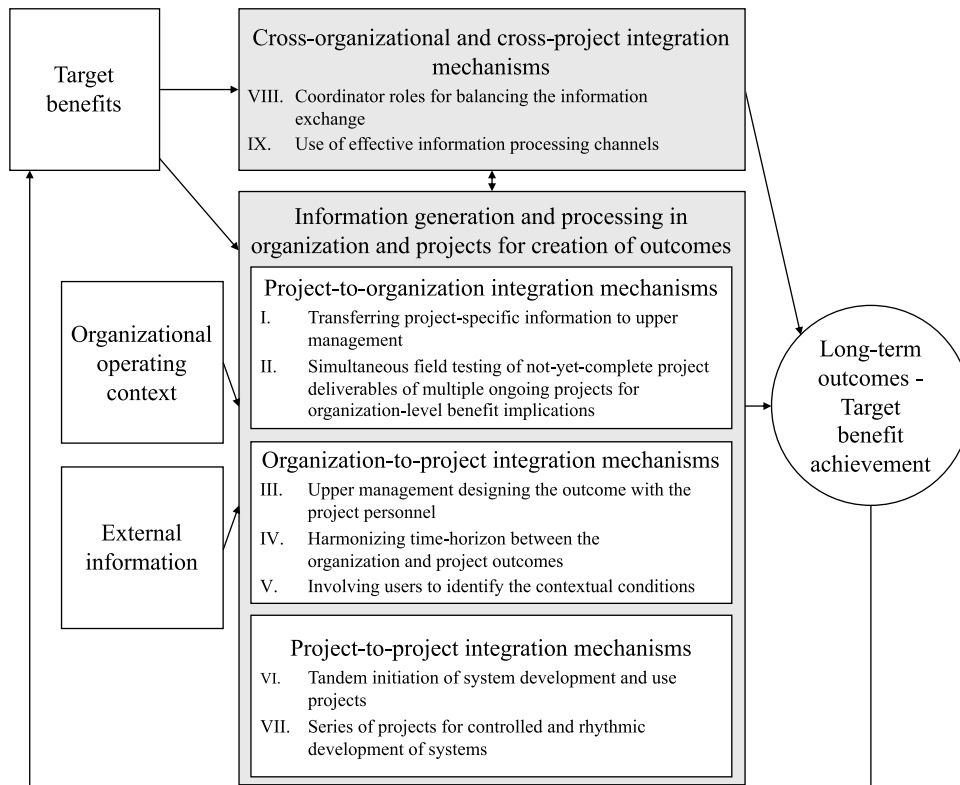


Fig. 2. Process model of organizational integration for realizing targeted benefits.

which projects then disseminate to the host organization. PtO integration mechanisms represent mechanisms that provide information about a project and its outcomes to the rest of the organization. Bringing other organizational functions into project work and making them involved in the technical details of the outcome helps to disseminate information about new systems to the rest of the organization. Furthermore, field tests work as a similar integration mechanism to both generate and disseminate information about the project outcomes to the rest of the host organization. These mechanisms help the organization to adapt to the use of the outcomes and improve the achievement of the targeted benefits. OtP integration mechanisms provide information about the needs, purposes, and intended use of the outcome from the rest of the host organization to the project. Interaction between the project and different organizational functions allows for information and feedback to be gathered from the organization that can be used to adjust the project outcomes to be more suitable for the organization, thereby improving the achievement of the targeted benefits.

PtP integration mechanisms connect the project and its outcomes to parallel and sequential projects. As projects are vehicles for renewal, these connections integrate projects into other ongoing development projects and form a series of projects to develop systems further in an organized and controlled way. Connecting the project and its outcomes to parallel projects and sequential projects improves the targeted benefits in the long term. C&C integration mechanisms strengthen the different integration mechanisms. As the creation of outcomes and benefits are complex tasks, the integrative roles and rich information processing mechanisms improve the transfer of information, thus improving the outcomes.

Together, the PtO, OtP, and PtP integration mechanisms (reinforced by the C&C integration mechanisms) contribute to the creation of long-term outcomes and target benefit achievement. As the projects and organization start to build the outcomes, the organization gains information about the needs and possibilities tailored to the organization and its systems. This allows the project and the broader organization to redefine the targeted benefits. This means that long-term outcome achievement feeds back into the process of redefining the target benefits for the project and the organization.

5.2. Contribution to existing knowledge

Our study contributes to prior research on benefits management in three ways: (1) we have developed a model of project-organization integration for realizing targeted benefits; (2) we have expanded the existing understanding of benefits management by connecting organizational integration and information processing view to benefits management; and (3) we have expanded the scope of benefits management from the singular project view to initiating and managing projects in time as a series of subsequent project building outcomes.

5.2.1. Organizational integration for realizing targeted benefits

The findings of our study suggest that to realize the targeted benefits of a project, the organization and the project need to implement a wide array of integration mechanisms between the project and its different functions. Our study suggests that upper management participating in designing the project outcome improves the outcomes for the organization by bringing the focus to the purpose of the outcome in the organization. Furthermore, upper management's participation in project work harmonizes the time-horizon of the project outcome lifecycle with the timescale of the organization, which improves the outcomes in the long term. Vertical integration in the organization in terms of the continuous sharing of information about a project outcome's development between upper management and project management helps the organization continuously manage projects toward achieving their targeted benefits in the long term, or—as observed in the present case—toward goals related to building defense capability over the upcoming decades. These findings complement the benefits management

discussion on using a business case across the project lifecycle to connect the purpose of the organization to the project (Einhorn et al., 2019) and having a project owner steer the project (Zwikael & Meredith, 2019). Overall, our findings emphasize upper management's continuous participation in the project during its execution.

Furthermore, our findings suggest that benefits management during the project execution has a multitude of connections both vertically and horizontally, both to designing the project outcome (OtP and PtP integration mechanisms) and to preparing the organization for the use of the outcome and realizing the targeted benefits (PtO and PtP integration mechanisms). These results suggest that to realize targeted benefits, the project outcome's design and development requires broad participation from the host organization by involving users and upper management. Specifically, such involvement in the design and development of the outcome prepares the organization and its functions for the use of the outcome. These insights bring forth new knowledge on benefits management (Zwikael & Huemann, 2023) by suggesting that designing and developing the project outcome requires the extensive involvement and connection of the host organization and its functions to the project outcome design and development, which then facilitates the realization of the targeted benefits.

In explicitly focusing on the integration mechanisms that are connected to the project outcomes, our study expands upon project studies that have used organizational integration as a theoretical lens (Ben Mahmoud-Jouini & Charue-Duboc, 2022; Stähle et al., 2019). In particular, we provide an expanded account of the information that is transferred regarding the outcomes as the organizations integrate the project and rest of the organization together. These findings suggest that the information flows from project-to-organization regarding the technology and the testing, and from organization-to-project regarding the contextual use cases and time-horizon of the organization. This expands the focus of the organizational integration research from just inspecting the organizational integration mechanisms to considering the contents of the connections between the organization and the outcome of the project. The connection between the outcomes and the organizational integration mechanisms also sheds light on why analyzing the content of the information exchange is important. This adds to research on organizational integration mechanisms, which attends to the ways in which information is transferred in organizations (Turkulainen et al., 2015). In this study, we focused specifically on the host organization's system development projects, which is a new context for considering organizational integration, which was previously restricted to firms that deliver integrated solutions (Arto et al., 2015; Stähle et al., 2019) and program management studies (Ben Mahmoud-Jouini & Charue-Duboc, 2022; Vuorinen & Martinsuo, 2018).

5.2.2. Continuing development of outcomes via effective information processing mechanisms

In the case organization, both the role of middle management (i.e., program directors) and the use of effective information processing mechanisms among the different functions in designing and developing the project outcome were of paramount importance in building targeted benefits. To facilitate the needed information exchange between upper management and the project personnel, middle management played a vital role in balancing the information exchange. Regarding middle management, program directors were focused on supporting project managers in designing and implementing a project with appropriate outcome-performance qualities. Program directors facilitated information sharing between executives and project managers by having frequent communication with project managers, often on a weekly or even daily basis, and the communication between program directors and project managers took place mostly through means that allowed for rich information exchange (i.e., through face-to-face meetings, phone calls, and video calls).

Our findings also revealed that cross-organizational and cross-project integration mechanisms facilitate other integration

mechanisms to work to a full extent in complex tasks, as the information processing view suggests (Daft & Lengel, 1986). In benefits management, there are two overarching ways of steering the project. The first way is suggested by the majority of studies using formal plans and documentations such as business cases (Einhorn et al., 2019; Musawir et al., 2017) or project dossiers (Badewi, 2016) to set and guide the development of the project outcome. The second way is to use a role and a person to guide the project toward developing the outcome (Zwikael et al., 2019). Our findings reinforce and complement the latter approach of guiding the project and the development of the outcome by suggesting that continual and involved steering of the project outcome with rich information processing mechanisms helps to align the project outcome and the realization of the targeted benefits during project execution.

5.2.3. Initiating and managing projects in time as a series of subsequent projects building targeted benefits

Our findings also reveal that the organization's targeted benefits, which in this case was long-term defense capability, were developed as a series of projects wherein new projects were initiated by taking into consideration all knowledge and advancement gained in previous projects. As the organization as a whole had participated in the projects, it was possible to establish the development of the next project by building on the previous project's outcomes. In this way, each of the projects built specific parts of the FDF's defense capability; however, learning also takes place in system development, wherein new knowledge is acquired continuously, and the environment changes rapidly during development in terms of technology (project personnel), operational requirements (upper management and user functions), and interfaces to other systems (including interfaces to the systems in international military partner organizations), which sets new requirements for further development of the systems. All this learning and new knowledge are evaluated when initiating future projects. In this way, projects for system development form a series of projects wherein current and future projects are linked through rhythmic transitions in time to form a developmental path through which learning, new knowledge, and rhythm and changes in the environment are continuously, and in an adaptive manner, taken into account.

The concerted series of projects links the development of project outcome's properties in terms of enhanced outcomes by serving as an adaptive and flexible approach wherein the system is continuously renewed and improved from project to project. In other words, this approach also enhances the generation of ideas and new pathways for system improvement in subsequent projects. This finding connects the perspective of benefits management of how to manage benefits of a singular project (Badewi, 2016) and extends it to parallel and sequential projects and how long-term benefits are formed through different linked projects. In general, we show how organizations manage sequential projects, in addition to the project portfolio, in the lineage of a project. Our findings on how the project series renews the system connect benefits management to the area of project lineages and complements the project-driven approach to renewing systems (Kock & Gemünden, 2019; Maniak & Midler, 2014; Midler, 2013).

5.3. Managerial implications

5.3.1. Building continual connections between the projects and the organization during project execution

Projects and organizations benefit from continual vivid information sharing among project personnel, senior executives, and user representatives. When sharing information about the designed project outcomes, the outcomes are then connected to organization-level goals and the contextual use environment of the outcomes. As targeted benefits and the success of the project outcomes go hand in hand, it is important that managers recognize how technical system details contribute to the targeted benefits. Through such communication, the two-way sharing of information (top-down and bottom-up) allows upper management to

pay attention to the interfaces among multiple systems to ensure that multiple projects and systems are working together seamlessly as a whole to produce the targeted benefits. Furthermore, the user representatives contribute to sharing information about the use conditions of the systems and help to modify the systems to better suit the organization. This two-way sharing of information from project to user representatives prepares the operative parts of the organization for the new system and its operations.

5.3.2. Communication across the organization on a personal level using interactive means for sharing rich information among various actors

The effective management of complex system development projects requires the use of rich communication channels for exchanging information about project outcomes and their long-term effects. This is especially important for tightly integrating the project work into various projects that fall under the broader purpose of the organization. In many case projects observed in our study, rich communication channels, such as phone calls, e-conferences, and face-to-face meetings, were used frequently—for example, in the routine of daily phone calls between the program and project director and weekly project meetings among the in-house users in information system development projects. To further facilitate the information transfer to the project, special integration roles (e.g., program manager or project owner) help balance the information transfer between the project and other organizational functions.

5.3.3. Initiating future successor development projects in an adaptive manner with accumulated knowledge and use experience from previous projects

For maintaining a long-term planning horizon with complex system development projects, managers benefit from organizing projects as a series of interconnected projects wherein new future projects unfold based on the realized accomplishments and accumulated knowledge from current and previous projects. Adaptive and flexible ways of organizing a series of projects can be seen as beneficial, as new projects are initiated based on previous experience and changes in the environment and can be used to continue the long-term development of the system via smooth transitions from current projects to their successor projects. Accordingly, long-term development would occur through natural on-the-run transitions from current projects to their successor projects, as well as through adaptively initiating future projects to form natural next steps that develop systems and their outcomes further in the long term.

6. Limitations and further research

We have studied how organizations arrange integration to achieve long-term outcomes. To answer this question, we chose a qualitative in-depth embedded case study as our method. While the case study offers deep insights into the mechanisms in the case organization and is suitable for the theory elaboration approach, the inherent limitation is the case and its context. We studied a military organization, which may have limitations regarding the generalizability of the results, and we suggest further research on the topic to determine whether the insights hold overall and across different contexts. Furthermore, the data were collected during a limited period from long-lasting projects. To ensure the validity of the data collected from the projects, we triangulated between different informants and written materials to sort out sequences and consequences; in this way, we limited the impact of the data collecting period.

Our study opens up three new avenues of research. First, although we found that continual and interactive participation in designing the project outcomes of different organizational functions is of paramount importance, and that several organizational arrangements were in place in the case organization to achieve the information exchange (including in-house user participation, field testing, and simultaneous development projects focusing on the development of system operation), we suggest

that further research on a flexible definition of the destination during project execution (or “designing in the making”) would be worthwhile. Such research would, in a natural way, highlight the importance of using an adaptive approach to adjust the project outcomes on the run in the midst of execution whenever the actual goal of the project needs to be redefined. This would also require that users, operating teams, and other stakeholders in the operations phase be brought to the fore as central actors participating in project execution. The obvious reasons for such a redefining of the project goal may lie, for example, in the learning taking place during project execution, the rapidly changing business environment, or the development of new enabling technologies. Second, our results on the various organizational integration mechanisms featuring PtO, OTp, PTP, and C&C organizational integration mechanisms for making the organization, its functions, and projects work as an integrated whole toward realizing targeted benefits (or, in the military organization case, toward defense capability) could be researched in the contexts of other types of organizations to enrich our findings with empirical data from various types of environments. Third, we derived a model of project-organization integration for realizing targeted benefits through our empirical study, and we suggest that the model be tested in future research to ensure its effectiveness in determining managerial patterns in different contexts.

CRedit authorship contribution statement

Tom Olsson: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Karlos Arto:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Alexandra Hauhia:** Writing – review & editing, Validation, Conceptualization. **Santeri Kivinen:** Writing – original draft, Investigation, Formal analysis.

Declaration of competing interest

The authors have no conflicts of interest.

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