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Organizational Implementation

*The Design in Use of
Information Systems*

Morten Hertzum

*SYNTHESIS LECTURES ON
HUMAN-CENTERED INFORMATICS*

John M. Carroll, *Series Editor*

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Morten Hertzum

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Organizational Implementation

The Design in Use of Information Systems

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ABSTRACT

Information systems are part and parcel of organizations. Yet, organizations often struggle to realize the benefits that motivate their introduction of these systems. To derive benefit from a new information system, it must be integrated into the structures and processes of the organization. That is, the system must be organizationally implemented. This book is about organizational implementation, which requires thorough preparations but also continues long after the system has gone live: (1) During the preparations, the implementation is planned. This phase includes specifying the effects pursued with the system, adapting the system and organization to each other, and obtaining buy-in for the planned change. (2) At go-live, the system is put to operational use and the associated organizational changes take effect. This phase is about insisting on the planned change even though go-live is normally hectic and accompanied by a productivity dip. (3) During continued use after go-live, implementation continues as design in use. This phase is long and improvisational. It includes following up on effects realization, but it is just as much about embracing the opportunities that emerge from using the system. Apart from covering the three phases of organizational implementation, the book inserts implementation in an organizational-change context and discusses barriers to implementation as well as boosters of implementation. The book concludes with an outlook to larger-scale issues beyond the implementation of one system in one organization and with an overview of the competences needed in the implementation team, which runs the organizational implementation.

KEYWORDS

benefits realization, design in use, effects specification, go-live, human–computer interaction, implementation team, organizational implementation, organizational change, sociotechnical change, system adoption, system configuration, tailoring, technology acceptance

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CHAPTER 1

Introduction

Information systems have transformed organizations and continue to do so. Brick-and-mortar banks have given way to e-banking and online payments (Chen et al., 2017). Libraries are turning toward communal and cultural activities because citizens increasingly find information online (Leorke et al., 2018). Sports organizations have started to embrace e-sport, which introduces an entirely new line of professional athletes (Heere, 2018). Workplaces have become more distributed because information technology (IT) provides possibilities for communicating and collaborating across distance (Olson and Olson, 2014). The paper trail associated with organizational proceedings has increasingly become electronic (Mosweu and Mosweu, 2018). It has become big business to mine the electronic footprints of our activities (Inanc-Demir and Kozak, 2019).

At the same time, organizations often struggle to realize the benefits that motivate their introduction of new information systems (Fitzgerald et al., 2014; Markus, 2004; Standish Group, 2020). Some systems are used for only a subset of the activities they were intended to support (Granlien and Hertzum, 2012). Others fail altogether because they are rejected by a powerful user group (Bhattacharjee et al., 2013). Still others succeed in one organization but fail in another (Aarts and Berg, 2006). The Standish Group publishes a biannual report with data about the success rate of IT projects. If success is defined as on time, on budget, and with a satisfactory result, then 31% of projects are successful, 50% are challenged, and 19% are failures (Standish Group, 2020).

1.1 ORGANIZATIONAL IMPLEMENTATION

While some systems fail because they are technically flawed, there are also many technically sound systems that are challenged or fail for organizational reasons. This book is about the implementation of information systems in organizational settings. When an organization adopts an information system, it must be integrated into the structures and processes of the organization. That is, the organization must adapt to the system, which in its turn must be adapted to the organization (Leonard-Barton, 1988). This mutual adaptation involves work-practice changes, system configurations, and the gradual realization of which affordances the system has—and lacks—in relation to the work performed in the organization. In brief, *organizational implementation* is:

the process of integrating a technological system into the structures and processes of an organization to accomplish desired change.

This definition covers off-the-shelf and custom-made systems, it avoids restricting implementation to the early use of a system, and it links implementation to organizational change. The

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starting point of organizational implementation is the managerial decision to adopt the system. Because this decision has been made before organizational implementation starts, the system vendor has already been selected and the system specified. However, the development of the system has not necessarily been finalized when the preparations for its organizational implementation start. Specifically, the system and organization have not yet been configured for each other. The responsibility for integrating the system into the organization typically rests with an implementation team established by management (Metz and Bartley, 2020). To succeed, this team needs to involve the organization in the implementation process.

The system may be for intra-departmental, organization-wide, or inter-organizational use. With larger scale, complexity increases. More users must be trained, more procedures revised, more data migrated, more interdependencies realigned, and so forth. Yet even for an intra-departmental system, the implementation team must cover a diverse mix of competences. To cover all the needed competences, implementation teams are dependent on collaboration with other actors. A steering committee will oversee the work of the implementation team and grant it authority to change the organization. External consultants, often employed by the system vendor, can supply technical competence about the system and how to configure it. Furthermore, champions, super users, and tinkerers are key contributors to the organizational implementation. Figure 1.1 gives an overview of the actors who surround the implementation team.

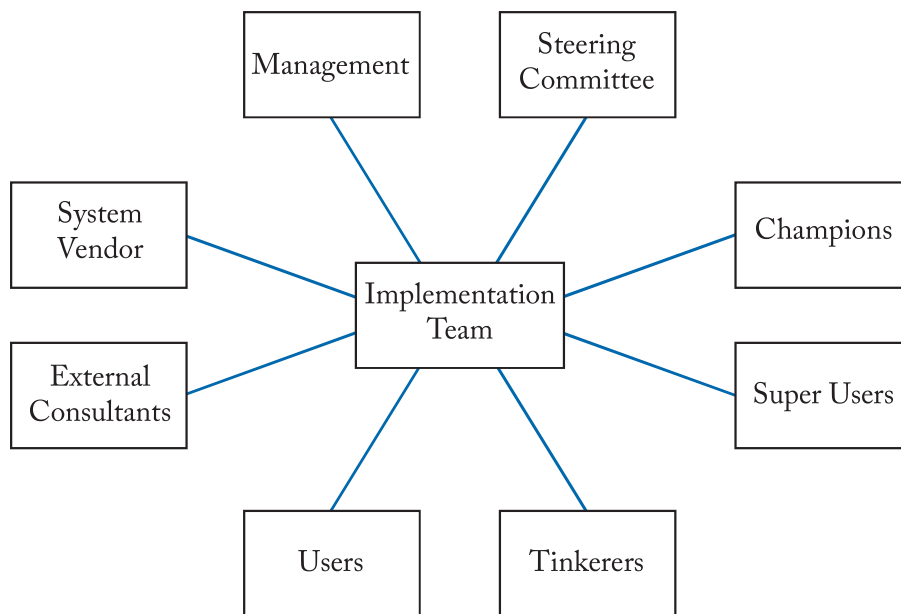


Figure 1.1: The implementation team and its collaborators.

Many troubled information systems result from a poor fit between the system and the organization (Howard and Rose, 2019; Zigurs and Buckland, 1998). Organizational implementation aims to find solutions to such troubles, which are often not realized, at least not fully, until the users start using the system for real work. Relatedly, many successful information systems result, at least partly, from implementation efforts to exploit opportunities that did not emerge until the users started using the system for real work. The successful implementation process requires adaptation, integration, and creative solutions to emergent issues. It is the continuation of design into use, rather than the transition from design to use.

1.2 SYSTEM VIEW ON ORGANIZATIONAL IMPLEMENTATION

For the managers and developers who decide and develop an information system, the system is the prime focus of attention and organizational implementation is a phase in the system life-cycle. Figure 1.2 illustrates this system-centric view of organizational implementation. The process starts with chartering, which is the phase during which the vision about a new system is proposed, approved, and funded (Markus, 2004). Chartering results in a business case that describes how the new system will make work more productive, satisfying, or both. After chartering, the development of the system takes place. It is the phase during which requirements are specified in detail, the information system is acquired or built, and the associated changes in organizational structures and processes are planned. At go-live, the system enters into operational use. Within the system view on organizational implementation, go-live also marks the transition from technical development to organizational implementation.

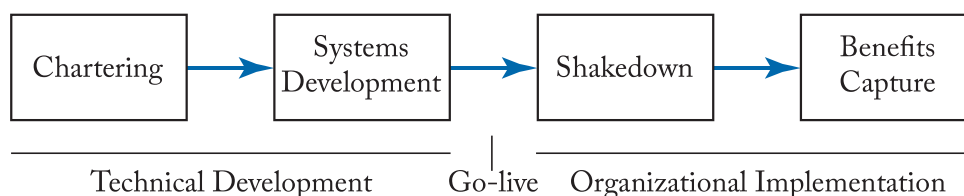


Figure 1.2: System view on organizational implementation, based on Markus (2004).

While organizational implementation must be prepared before go-live, it happens from go-live onward. The phase immediately after go-live is shakedown, during which the organization starts using the system and operating according to the changed procedures. This phase is about troubleshooting and reaching the state of routine use. Ideally, shakedown is brief and followed by a long phase of benefits capture. During benefits capture, the organization profits from the system and the new ways of working. This phase is characterized by routine use but may also involve upgrades and other improvement efforts.

The system view makes shakedown the critical part of organizational implementation. It may even be tempting to equate organizational implementation with shakedown. That would, however, be an oversimplification because it would tend to grant primacy to the system at the expense of the local practices in the organization. Shakedown harbors a belief that the system is right and, thereby, that the best way forward is to implement the system as planned. This belief under-recognizes how important the numerous, interrelated local practices are to a well-functioning organization and, thereby, to the successful implementation of an information system. It takes time for new practices to form. They emerge over an extended period of time and reinforce, revise, and reject different parts of the planned change (Orlikowski, 1996). That is, they influence benefits capture.

1.3 PRACTICE VIEW ON ORGANIZATIONAL IMPLEMENTATION

The practice view on organizational implementation stands in contrast to the system view. According to the practice view, the daily work—the practice—has primacy for those working in an organization (Feldman and Orlikowski, 2011; Miettinen et al., 2009). Performing the daily work involves an often complex configuration of people, systems, tasks, and structures. This configuration has been established over time, creates a negotiated order, and thereby aligns collaborative activities. While information systems are a means to support the daily work, their organizational implementation consumes resources that would otherwise be available for getting today's work done. Figure 1.3 illustrates how the people in an organization divide their attention and resources between using the present work configuration to get their work done and redesigning the work configuration to become able to work more effectively and efficiently in the future. It often requires most, if not all, of the staff's attention and resources to meet work-output targets. In addition, the hours spent meeting work-output targets are the productive hours that generate income for the organization.

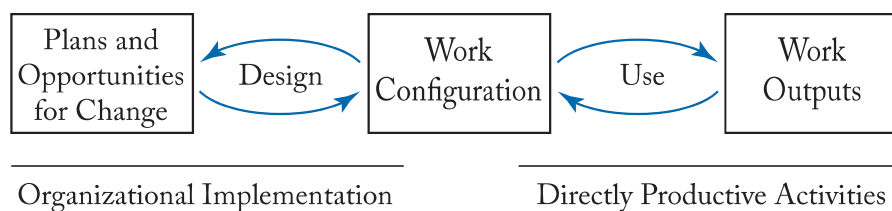


Figure 1.3: Practice view on organizational implementation.

An organization that adopts an information system cannot bill the implementation activities to its clients. The organization undertakes these activities for its own sake, for example to become more competitive in future bids for contracts. The implementation activities require a focus on how the work can be done differently, rather than on getting it done here and now. Many employees

are primarily concerned with getting their work done and perceive the activities of organizational implementation as secondary (Hertzum and Torkilsheyggi, 2019). After all, most nurses care more about patients than information systems. Similarly, most accountants, biochemists, curators, dentists, engineers, and so forth care more about their professional specialty than about information systems. These employees have little patience with information systems and may lose faith in a hard-to-learn system before they have worked through shakedown.

Some employees have a keen interest in devising improved ways of working. These innovators and tinkerers are important because they have visions for the use of information systems. However, their concern for the long-term evolution of their organization means that they tend to have a more open-ended time perspective than IT project staff, who work within project deadlines (Karasti et al., 2010). This difference in time perspective creates one pressure for completing the implementation project within the deadline set for shakedown and another for a series of implementation efforts spaced over the effective lifetime of the system. While the former aligns with the system view, the latter caters for exploiting emergent uses of the system to improve organizational practices. To accomplish their task, the implementation team needs to balance the system and practice views.

1.4 CHAPTER OUTLINE

The remaining chapters of this book describe and discuss organizational implementation from the position that it is equally about system and practice. Disregarding either view would make organizational implementation difficult to accomplish. To merge the system and practice views, organizational implementation is treated as design in use. If you are only interested in guidance on conducting organizational implementation, you can skip directly to Chapters 4–7. They are the main chapters of the book. Chapters 2 and 3 provide background about organizational change and technology adoption. Chapter 8 concludes the book.

We start with the context and rationale for implementing information systems. Chapter 2, “The Context and Rationale: Organizational Change,” will position the implementation of information systems in the larger activity of organizational change. Organizations adopt information systems to bring about desired change, but the organizational response to systems after go-live also reshapes which changes are seen as possible and desirable. This chapter elaborates organizational change by discussing its sociotechnical nature, its temporality, its depth, and organizations’ readiness for it.

Chapter 3, “Technology Adoption: Boosters and Barriers,” will explore the reasons for success, trouble, and failure in organizational implementation. These reasons are mostly about the fit between the technology and the organization. Management makes the decision to adopt a system on the basis of its positive assessment of this fit. The users form their perception of the fit when they experience the system. For both management and users, adoption results from interactions among

factors that boost adoption and barriers that thwart it. This chapter covers the two-stage adoption process, boosters of adoption, and barriers to adoption.

Chapter 4, “Implementing Information Systems: Three Phases,” will clarify that organizational implementation is a design-in-use process. That is, design does not stop at go-live but continues during use. Both before and after go-live, this design process involves the mutual adaptation of organization and technology. This chapter outlines the three phases of organizational implementation, to be elaborated in the following chapters.

Chapter 5, “Preparations: Planning the Implementation,” will elaborate the phase that precedes go-live. This phase includes effects specification, system configuration, new procedures, user training, and realigning incentives. The mutual adaptation of system and organization creates both opportunities and challenges. On the one hand, the preparations can influence the finalization of the system. On the other hand, activities such as user training are dependent on access to the final system. This chapter also covers standardization, user participation, pilot implementation, and champions.

Chapter 6, “Going Live: The Initial, Planned Change,” will cover the phase during which the system enters into operational use and the associated organizational changes take effect. It is at this point that the consequences of the system become salient to its users. Many users experience go-live as hectic and uncertain. To keep it brief, some organizations take a big-bang approach; others opt for incremental implementation. This chapter is about the implementation approach, data migration, precautions against errors, super users, and the productivity dip that accompanies go-live.

Chapter 7, “Continuing Design During Use: The Long, Improvisational Process,” will elaborate the continuation of and support for organizational implementation during operational use. This phase includes following up on the realization of the planned effects, but it is just as much about embracing the further opportunities that emerge from using the system. Often, these opportunities initially emerge as workarounds devised by innovative users, who tinker with the system. This chapter covers effects follow-up, workarounds, tinkerers, and continual implementation support.

Chapter 8, “The Larger Picture and the Local Needs,” will conclude the book by providing an outlook to two issues beyond the implementation of one system in one place. First, systems with infrastructural properties have a scale and scope that magnify the complexities of organizational implementation. Second, system vendors involve their client communities in generification activities, which determine how the systems can subsequently be configured for individual clients. These larger-scale issues complement how organizational implementation is perceived and performed locally. The chapter ends by cataloging the competences needed locally in the implementation team.

This book is intended for current and prospective members of implementation teams. It may also be useful for others with an interest in understanding organizational implementation. This audience forms a mixed group of practitioners, students, and researchers. The practitioners may be IT developers involved in preparing, supporting, and following up on go-live, or they may be

local staff, including super users, with the responsibility for IT implementation and support. The students and researchers may be from technical fields and mainly have a system view on organizational implementation, or they may be from organizational fields and have more of a practice view. Depending on background, some parts of the book will refresh familiar material, while other parts will introduce new issues and perspectives. I hope the book will serve as a common framework for people who approach organizational implementation from different backgrounds.