IT Project Governance

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To my parents, who have taught me a lot about business and intellectual inquiry

To Åsa, with whom I am discovering life as it happens

To Marcus and Rebecka, who already know everything about the joy of discovery

Do not worry. You have always written before and you will write now. All you have to do is write one true sentence. Write the truest sentence you know.

(Ernest Hemingway, A Movable Feast*, 1964)*

Preface

This report is a result of a research project carried out at the department of Information Management at the Economic Research Institute (EFI), Stockholm School of Economics, and at the Institute for Business Process Development.

This volume is submitted as a doctoral thesis at the Stockholm School of Economics. As usual at the Economic Research Institute, the author has been free to conduct and present his research in his own ways as an expression of his own ideas.

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Stockholm in January 2002

Bo Sellstedt
Associate professor and Director of the Economic Research Institute at the Stockholm School of Economics

Mats Lundeberg
Professor and Head of the department of Information Management and the Institute for Business Process Development

Acknowledgments

Writing a doctoral thesis is at times quite a personal endeavor; it is also about learning a trade, and that is fundamentally a social process. As is evident from the book you are holding in your hand, a phase in that process has passed and it is time to acknowledge the support and encouragement I have received from many people over the past years.

For two reasons, I would like to start by expressing my sincere thanks to the men and women of "Financial Services Corporation". The first is because of the generosity extended to me by all those I have met with at *FSC*: permission to research the "NDS" project; your valuable time; your thoughts and feelings about the project; and your sincere and encouraging interest in my research. The second is because you are, and you represent, the people this thesis is about: the people working in, supporting, influencing, leading, and controlling large, complex information technology projects in organizations—as well as using the information systems developed in these projects. In particular, "Johan Sjöberg" was, together with "Karin Martinson", instrumental in making the study of the NDS project possible. "Johan Sjöberg" and "Henrik Bergman" were very supportive throughout the process. Several people, especially "Nils Høeg", were of particular help in facilitating data collection. In this thesis, you must all remain anonymous. For me, you most certainly are not.

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As you can see, it takes a village to write a thesis. It is also a family affair. My sincere thanks for curiosity, support and understanding from good friends and relatives. Special thanks to Birgitta and Bernt, who pitched in and helped out on several crucial occasions.

From my parents, Lilly and Fred, I have learnt a lot about work: about the business of business, about *Fingerspitzgefühl* and about observation, reasoning and other building blocks of intellectual inquiry. For this and for many other things I am truly grateful.

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The final product has benefitted from the contributions, support and encouragement from all these people and many more. As is always the case, the responsibility for the final result and its shortcomings rests with the author.

Stockholm in January 2002

Magnus Mähring

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Chapter 1

Introduction

In this chapter, I introduce the subject of this thesis: governance of IT projects. In doing so, I also introduce the perspective and focus of the study reported on in the thesis and describe the structure of the thesis.

To get a quick grasp of the focus of the study see section 1.3, which describes the purpose of the study, and section 1.4, which repeats and summarizes important delimitations. Reading guidelines for the thesis can be found in section 1.5.

1.1 Coping with Complex IT Projects—A Brief Introduction

Picture yourself in a boat on a river,
With tangerine trees and marmalade skies...

(Lennon—McCartney, 1967)

I would not go as far as saying that *this* is how executives perceive the realm of information technology (IT), its management and the management of IT projects, but many executives *do* seem to perceive IT as a strange and foreign landscape. In fact, executive involvement in IT projects can be seen as a case of a classic problem in organizational control theory: Managing sensibly what you do not quite understand (Perrow, 1986, pp. 42-46). This problem is perhaps most visible in the context of managing professionals (ibid), as is indeed the case where IT projects are concerned (Beath and Orlikowski, 1994). Seen from this viewpoint, IT projects provide an opportunity to study managerial control and its limitations.

Of course, IT projects are important in and of themselves. Coping with complex IT projects has been a difficult and important problem for quite some time, both for practitioners and academics (Ackoff, 1967; Keider, 1984; Sauer, 1993a). Whereas information technology becomes an increasingly important, integral part of organizations, the failure rate of IT projects remains high (Cole, 1995; Johnson, 1995). Not only do IT projects frequently fail, they also take on dysfunctional development patterns, resulting in information systems which are not used or which do not achieve intended or desired effects in the organization

(Ginzberg, 1981; Lyytinen, 1988; Markus and Keil, 1994). Most organizations are increasingly dependent on IT for their day-to-day operations as well as for their ability to defend their market position and sustain their competitiveness over time. Tightly interlinked with these developments is the idea that IT[1] is a problem for general management (e.g. Rockart, 1988; Walton, 1989, pp. 68-71; Martin et al, 1995).

The need for "top management support" has frequently been cited as necessary for IT project success as well as for other forms of IT deployment and use in organizations (Keen and Scott Morton, 1978, pp. 195-196; Jarvenpaa and Ives, 1991; Bardi et al, 1994). However, it can be argued that relatively little is known about what this support consists of and how it is provided (Sauer, 1993b). Perhaps consequently, top management support is often far from simple to obtain (Briner et al, 1996, pp. 63-71) and far from easy to provide (ibid; Mähring, 1996). However, as will be discussed later (in sections 1.2.3 And 2.7.1), the very concept of top management support may lead to difficulties in capturing important aspects of the problem of managerial involvement in implementation of IT in organizations.

With few exceptions, the literature on managerial involvement in IT sees managerial involvement as inherently good. It can, however, also be bad or outright ugly. This is sometimes the case for runaway IT projects, where escalation of commitment of senior managers is often found to be an important factor behind the continuance of "doomed" IT projects (e.g. Keil, 1995b). These findings certainly add complexity to the problem in that "top management support" becomes not only difficult advice to follow, but also one which (at best) downplays the risks associated therewith. This suggests a need for a better understanding of the *process* of executive involvement in IT projects (Kirsch, 1997). Whereas research on escalation of commitment to IT projects has added important aspects to the understanding of executives and IT projects, it has yet to offer a coherent view of how executives involve themselves in (the control of) IT projects and how the interrelation between executives and project (management) is constituted.[2]

In the research project reported on in this thesis, it has been an aim to find a different route to the problem. The following section describes choices concerning perspective, which were central in finding—or constructing—this alternate

1 Herein, the term *information technology (IT)* encompasses all forms of technology used to collect, store, create, exchange, present and use information in its various forms. The term IT thus includes communication technology. Cf. Keen (1995) and Internet resources *Britannica.com* (February 19, 2000) and *Whatis®* (February 19, 2000).

2 Specifically, several of these studies (e.g. Keil, 1995b; Keil et al, 1995; Newman and Sabherwal, 1996), while studying processes, use a framework for identifying and assessing *factors* leading to escalation of commitment (e.g. Staw and Ross, 1987). This does not provide well for understanding commitment-building *processes* (cf. Mohr, 1982, ch. 2; Markus and Robey, 1988, pp. 589-592). See further sections 2.4.4, 2.7.2 and 3.1.3.

route. In so doing, it is also outlines how this study differs from earlier studies of IS/IT implementation and managerial involvement therein.

1.2 Focusing: IT Project Governance

Sometimes, believing is seeing. This is largely the case with a world view, or *Weltanschauung*, and aspects thereof. This study employs the overall assumption of a socially constructed reality in and of which knowledge is gained through social constructions (Berger and Luckmann, 1966; Myers, 1997). The study also employs a view on management which is not purposely questioned or investigated in the study, but rather built upon. This view, which will be outlined below, is helpful in moving away from the common project-centric view of projects in general, including IT projects. Another choice of perspective concerns the view of organizational control. Here, a view which can be called governance-oriented is chosen. Two other focusing choices concern project control structures, where focus is on intra-organizational IT projects, and the centrality of organizational change and its management, which is not within the focus of the study. The benefits of the latter, perhaps somewhat controversial, measure are also explained below.

1.2.1 A Perfect World?

Lest we forget, perhaps even to the point of falling into the trap of producing sure-fire advice for managers: The world of management is not a perfect world, nor is it ever likely to be. An underlying assumption of this study is that management is genuinely uncertain and ambiguous (e.g. Sjöstrand, 1997, p. 11). Managerial action is also based on, guided by and constrained by structures (or institutions). While managers *do* influence actions in organizations, they do so with much uncertainty and unpredictability over whether and how their actions influence the behavior of others (Sjöstrand, 1997, p. 99). Further, a basic assumption of the study is that structures as essentially involved in the production of action. Structure and agency are co-dependent, and their form of interrelation is recursive (cf. e.g. Giddens, 1979, pp. 69-70).

The uncertainty and fluidity of management is not only a result of the constant flow of events in the organization's environment, but also characteristic of organizational life itself (e.g. Weick, 1979; March, 1991). It has been suggested that managers can only achieve "temporary co-ordination of heterogeneous individuals" (Sjöstrand, 1997, p. 99). Influencing thus becomes not only a matter of hierarchy but also of (among other things) various types of interactions in social networks (ibid, pp. 95-96; Kotter, 1982, pp. 67-75).

Management is not about making discrete, analytic decisions. To the extent that decisions can be distinguished, it is in the form of a number of concurrent decision processes interlinked in complex patterns (Forsblad, 1980, p. 157). Other studies have found managerial thinking (interpretation, sense-making) to be inseparable from action and that taking action can be used as a means for learning about a problem situation (Isenberg, 1984; 1986; 1987).[3] As part of the action, decisions happen (e.g. March, 1991, pp. 107-111). It follows from this centrality of action that decision rationality can be contrasted with action rationality—making things happen (Brunsson, 1985, ch. 2). However, this need not mean that rationality is abandoned, but rather that it is expanded to more fully encompass organizational actors as complex human, social beings, able to cope with and sometimes reconcile contradictions. In this view, they are "multi-rational" rather than "rational" or "irrational" (e.g. Sjöstrand, 1990; 1997, p. 41; cf. Lee, 1991b, p. 350).

While action is a central aspect of management, considerably more so than analytical (or rational, or discrete) decision-making, managers' freedom of action varies considerably from one situation to another (Sjöstrand, 1997, p. 98). At times, managerial action is largely determined by environmental factors, whereas at other times there is substantial opportunity to shape action (ibid; see also Holmberg, 1986). Furthermore, correspondence between what it is at all possible for a manager to influence, what others see the manager as responsible for and what the manager perceives as open to influence may differ. For example, in the eyes of others managers sometimes bear responsibility far beyond what they able to influence (Lord and Maher, 1993, p. 5). Mirroring this, managers are sometimes overconfident about their ability to influence—or at least give the impression that they are (Sjöstrand, 1997, p. 11).

Many studies have found managerial work to be characterized by variety, brevity and fragmentation and by a multitude of personal contacts and encounters (Carlson, 1951; Mintzberg, 1973; Kotter, 1982; Kurke and Aldrich, 1983; Tyrstrup, 1993). Managers live "in a whirl of activity, in which attention must be switched every few minutes from one subject, problem and person to another" (Stewart, 1983, p. 96). Many studies on managers suggest that these characteristics are further emphasized for senior executives and general managers (whereas middle-managers and first-time managers meet partly different challenges—see Kanter, 1989; Hill, 1993). In general management work, difficulties related to control of complex tasks not only have to do with task knowledge, but also with the pressures of constantly reacting on and acting upon a large number of issues at any given point in time.

This view of managerial work considerably problemizes the involvement of general managers in the control of IT projects. Their work situation, roles and tasks make managerial involvement in IT and in IT projects something quite different from the task of project management.

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[3] Cf. the management principle attributed to Franklin D. Roosevelt: "Above all, try something" (Schlesinger, 1998).

1.2.2 Distancing from Project Management

This is not primarily a study about project management. There are several reasons for this, as well as several reasons for stating it clearly. Literature on project management is frequently "project-centric": it focuses on how a project (often any project) should be carried out and has a strong focus on the project manager's role (e.g. Thomsett, 1980; Lock, 1988). Similarly, theories on projects (or temporary organizations) often focus on the project as organization, and on its life and times (e.g. Goodman and Goodman, 1972; Lundin and Söderholm, 1995).

Turning to studies specifically of IT projects[4], we find that term "top management support" can in itself be seen as project-centric: It defines managerial action in terms of what managers can or should do for a project.[5] Similarly, studies of IS/IT projects (and IS/IT-related projects, such as many accounting and control projects) often focus on management of the project (work) and on project managers as the actors in focus (e.g. Henderson and Lee, 1992; Westelius, 1996; Tjäder, 1999).

With this view, problems related to an IT project are apt to be seen as project management problems, to be solved by a project manager. A likely consequence is that the contextual influences (organizational/social and historical) on the project become obscure and under-emphasized. In contrast to focusing on project management, this study focuses on *the project as embedded in an organization* and on the *organizational control of the project.* To distinguish the focus of this study from a narrower focus on project management (or project administration), the term *IT project governance* is used to denote organizational control of an IT project.

1.2.3 Towards a Governance Perspective

In studies concerning issues such as ownership, interest and influence in organizations there is often an emphasis on one of two different perspectives: Influence is either viewed as predominantly based on ownership, or on the negotiation of differing interests between groups of stakeholders (Sjöstrand, 1987, pp. 41-43; cf. Hall 1991/1972, pp. 40-41). While these perspectives are sometimes seen as alternatives, emphasis on either of the two perspectives need not be absolute, it can be relative; the perspectives can be combined (Sjöstrand, 1987, p. 44).

The perspective emphasizing ownership, or principality, is prominently represented by agency theory (e.g. Jensen and Meckling, 1976; Fama and Jensen, 1983; Eisenhardt, 1988), which concerns the relationship between a principal and an agent, to which work is delegated. A central assumption here is the divergence of interests between the parties, and the problem is often seen as one of

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[4] Very briefly, IT projects are projects that concern the development of IT-related resources and capabilities. For a discussion of projects and of the task of information systems development, see sections 2.3 respectively 2.4.

[5] This will be discussed further in section 2.7.1 below (page 47).

exercising effective control over the agent (e.g. Fama and Jensen, 1983). Correspondingly, the term governance is often associated with corporate governance, a term popularized in recent years to denote owner influence over corporations and their executives (Pound, 1992; Johnson and Greening, 1999).

Because of the many associations, meanings and implications occurring in relation to terms like agency and governance, it is important to clarify that here, the term IT project governance is used *by analogy with* the term corporate governance and that it denotes organizational control of an IT project.[6] The study does not incorporate or apply agency theory in full. Consequently, many of the central assumptions of agency theory are neither required nor shared in this study, including the view of actors as self-interested rationalists (Eisenhardt, 1988, p. 491), the explicit and complete "siding" with the principal (e.g. Jensen and Meckling, 1976) and the view of the involved task as defined by the principal prior to assignment (ibid, p. 308; Eisenhardt, 1988, p. 490).[7]

In relation to the ownership versus stakeholder perspectives mentioned above, however, the choice of the term IT project governance rightly conveys a *relative* focus on the actions of executives in relation to an IT project and a project manager as well as the character of the relationship between th executives and the project manager (cf. Kirsch, 1996; 1997). In light of their responsibilities, executives are likely to have a perspective encompassing the organization as a whole (Forsblad, 1980, p. 155), in contrast to the more narrowly defined view of responsibility associated with a project management perspective: This view often sees responsibility as delimited to the fulfillment of a predetermined delivery (project output), with little or no regard for its organizational consequences (e.g. Kreiner, 1995, pp. 335-336; see section 2.3.4 below). Actions, interactions and influences of different stakeholder groups are also incorporated in this study. However, the focus of the analysis and the possible theoretical contributions primarily concern executive influence and the control relationship described above.

Using the governance perspective and the term governance helps achieve several things. The term IT project governance frames the problem different from the term "top management support": Although to a large extent it concerns the same group of actors and the same actions with regards to the same organizational task, the difference lies in the perspective and the language through which the actions and processes are described and understood. Thereby, it allows for understanding phenomena differently than a study employing an established

[6] A similar analogy is used by Sambamurthy and Zmud (1999), who study the management and control of information technology (in general) in organizations in terms of "information technology governance".

[7] An extensive and eloquent critique of agency theory is provided by Perrow (1986, ch. 7).

perspective on IT projects, such as top management support, most likely would have done.

The term governance also helps avoid the ambiguity which comes with the term IT (or IS[8]) project control. IS project control can either mean (organizational) control *over* a project (e.g. Kirsch, 1996; 1997) or (project management) control *within* a project (e.g. Henderson and Lee, 1992). The term IT project governance thus serves both to distinguish the study from project-internal control and to

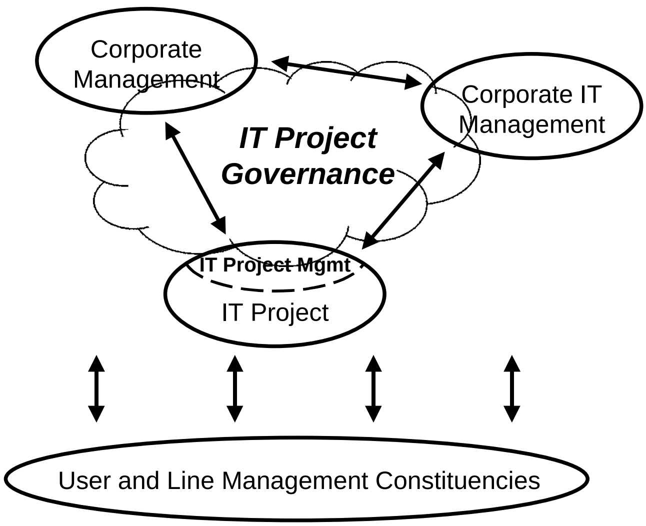

Figure 1: Sketch of IT Project Governance within an Organization

guide as well as convey an underlying perspective of organizational control and managerial action. Figure 1 summarily shows the relationship of IT project governance (organizational control over a project) to IT project management (including internal control of a project) and other central aspects of the organizational environment. The figure also demonstrates the relative emphasis on the actions of executives and the importance of organizational control structures in this study, and the relatively lesser emphasis on various groups of stakeholders in the figure described as “user and line management constituencies”.

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[8] The term *information system (IS)* herein denotes a computer-based software system for information processing, whether developed in-house or purchased in the form of a standard application package. Cf. Lundeberg et al (1981), Mårtensson and Mähring (1992) and Sundgren (1992).

I use the term IT project governance to denote organizational control of an IT project in a broad sense. The term thus includes not only the use of different control measures, but also other types of actions *pertaining to* the project, whether *directed at* the project or not. Thus, actions such as engaging in managing conflicts related to the project, demonstrating interest in the project and its results, providing input on system functionality and intended organizational effects, informing others about the project and the information system (IS) in the organization, etc. are among the managerial actions included in the study.

1.2.4 An Intra-Organizational Setting

In choosing a governance perspective, control structures become important. Specifically, this study focuses on *intra-organizational IT projects*—projects taking place (and being controlled) within one organization. This is partly a result of the process of designing the research study and selecting a research site. It can be argued that an intra-organizational setting is a good place to start when employing a new perspective on managerial involvement in IT projects. Studying inter-organizational or extra-organizational IT projects would have added complexity to an already rather complex matter. One option for subsequent work is to apply and build upon the results of this study in settings with differing control structures. Furthermore, the intra-organizational setting is and has traditionally been a typical setting for IT projects, which means that study results are likely to be relevant. This also means that the study results can be compared with and judged against earlier studies more readily.

For this choice of focus, the key is differences in control structures: For examples, in construction projects, several legal parties are normally involved. Compared to a project taking place within one organization, the control structures, the control mechanisms and the patterns of control actions differ substantially (Stinchcombe and Heimer, 1985, p. 17; Stinchcombe, 1985a, pp. 34-35). Inter-organizational IT projects, which in one or several respects involve several organizations, are not uncommon (e.g. Short and Venkatraman, 1992) and they typically pose specific problems which differ in part from those posed by intra-organizational projects. Extra-organizational projects and applications, existing outside of what we outside of what we normally consider to be organizations, can also be conceived of: One example is development of peer-to-peer software by independent but cooperating programmers.[9]

However, it seems that intra-organizational IT projects are or have been more common than the other two types, and/or more frequently studied. The three types of (structures for) projects discussed here are in reality ideal types, and differentiated in only one dimension. This dimension and a number of other

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[9] The Gnutella search system, whose main application is not one but several, developed and improved by independent programmers based on an open protocol, can be seen as one such example. See e.g. gnutella.wego.com (August 16, 2001).

distinguishing dimensions or characteristics of projects will be discussed further in chapter 2.

1.2.5 Weeding Out Change?

There is quite a large body of research on organizational change related to implementation of information systems (e.g. Markus, 1981; Benjamin and Levinson, 1993, Myers, 1994). Addressing the issue of organizational change in this study is both a matter of world view and a matter of delimitation or focus.

Regarding the matter of *Weltanschauung,* this specifically concerns the underlying view of technology. With variations, three views on technology and organizational change are often distinguished (Markus and Robey, 1988; Keil, 1991; Orlikowski, 1992). The first of these see technology as introduced into and adopted by an organization. In this view ("technological imperative"), technology is static and the organization adaptive. The second view sees technology as subjugated to and molded by organizational action ("organizational imperative"). The third perspective ("emergent perspective") combines the first two, suggesting that neither the technology nor the organization superimposes its structures or attributes on the other, but rather that a mutual adaption takes place in a dynamic process (Markus and Robey, 1988, pp. 584-585; Keil, 1991, pp. 17-35; Orlikowski, 1992).

According to the emergent perspective, complex patterns of change appear when new technology "meets" the organization. The outcomes of these processes are not attributable to either of the two entities involved, but rather to combinations of the two entities and the nature and life of the implementation (adoption, diffusion) process (Markus and Robey, 1988; Orlikowski, 1992; Lee, 1999). The "emergent" perspective, which will be covered in somewhat more detail in section 2.4.2, is part of the world view of this study.

Regarding the matter of delimitation, it is time to reveal an important focus choice: This study *does not focus on change* aspects of information systems development and implementation. The basic argument for this choice is as follows: Many large IT projects encompass or lead to substantial organizational change. *At the same time,* many of these projects are also major development efforts—or projects. Managing as well as governing an IT project will thus in many cases encompass both the management of IT-related organizational change and the governance of a complex development effort. These two sub-processes are co-dependent and interacting. Over a considerable time period, there have been many valuable studies on IS implementation which have focused on different aspects of IS/IT implementation and user-related organizational change (e.g. Lucas, 1981; Markus, 1983; Myers, 1994). These studies have contributed substantial knowledge on IT-related change, but often less on the processes of project governance to which the change processes are related.

In contrast, this study focuses foremost on the governance aspects of IT projects. The aim of this choice of focus and delimitation is to target an area where theory development has been relatively less well developed and where new findings can provide complementary contributions to existing knowledge on IS/IT development and implementation. In other words, I propose that governance aspects of large IT projects have been studied less than aspects concerning change management. In many projects, both aspects are important, and by singling out the less frequently studied of the two, the potential for contributions from this study is increased. A subsequent step, outside the scope of this particular study, would be to combine the two.

But are not IT projects without organizational change going out of style? It would seem not. As the number of information systems in use continues to increase dramatically, so does the number of installed "legacy" information systems which need to be replaced (Slee and Slovin, 1997). Furthermore, information technology increasingly takes on the function and properties of infrastructure (Broadbent et al, 1999), which also suggests that organizational change and improvements of the IT infrastructure may be separate but interdependent in many cases (ibid).

The discussions above on the focusing of the thesis work brings us towards the construction of the purpose of the study. Central aspects of the discussion above are then repeated in the list of delimitations summarized in the subsequent section.

1.3 Purpose of the Study

Above, it was argued that this study would benefit from a perspective on managerial control over IT projects which differs from the majority of earlier studies and that this perspective could build on a particular view of organizational control and managerial action. The term IT project governance was chosen to denote this perspective and focus. Thereby, we come to the question of what this study is to achieve:

> *The purpose of this study is to contribute to the understanding of IT project governance, through investigating the following two questions:*
>
> 1. *How does organizational control of large intra-organizational IT projects form and evolve?*
> 2. *How do executives engage in the control of intra-organizational IT projects?*

The formulation "contribute to the understanding" concerns the character of the contributions of the study, and is directly related to the interpretive stance of study. As will be discussed in chapter 3, possible types of contributions from interpretive studies include development of new concepts, generation of theory, drawing of specific implications and conveyance of insights into complex phenomena (Walsham, 1995; see section 3.1.2).

The first question in the purpose concerns the formation and evolution of processes, procedures and practices of organizational control in relation to an IT project. The second question expressly concerns a group of (presumed) key actors in the formation and exercise of IT project governance, namely senior executives. In this study, I will place special emphasis on this group of actors, while also acknowledging and taking into account how other groups of actors influence the control of intra-organizational IT projects.

1.4 Summary of Central Delimitations

> *... as is true in so much of organizational research, the resolution of the dilemma lies in distinguishing different types of organizations or situations.*
>
> *(Perrow, 1986, p. 31)*

There are several important choices which help focus the study and which also inform us about what phenomenon and setting the study and its results address—and, thereby, what it does not address. The study's central delimitations, many of which emerge from the discussion in section 1.2 above, are summarized and described briefly below. In the two subsequent chapters, the theoretical and methodological bases and backgrounds for the delimitations will be described further.

First, the study focuses *organizational control of a project* (or *IT project governance*), rather than project-internal control as part of project management. Consequently, the focus is on *the project in its organizational context*—the focus is broader than the inner life of a project. Expressed differently, the focus is on the project *in* the organization, rather than on (only) the project *as* organization. This choice of focus is a consequence of personal interest and is also supported by the investigation into earlier studies performed as part of this study.

Second, the study concerns *intra-organizational IT projects,* projects taking place within an organization. Projects engaging several or even many organizations during the project process and/or in the use of the project results are likely to have governance patterns which differ from intra-organizational projects. This focus is partly a consequence of the choice of research approach and of the choice of research site, which in turn is influenced by the researcher's personal experience and interests (see chapter 3).

Third, the study focuses on *large organizations.* In accordance with the considerable differences between small and large organizations, structural prerequisites for IT and management of IT issues differ substantially depending on organization size. The research described in this volume pertains to large organizations. There are no assumptions and certainly no claims concerning the applicability of the study results to small or medium-sized organizations. This is a result of the choice of subject as well as the choice of research site.

Fourth, the IT projects of primary concern are *large, complex IT projects of central importance for the organization*. These projects are sometimes called "mission-critical", meaning that business operations are dependent on the functioning of the information system in question. Further, although size and complexity are difficult to assess, the type of project in focus here is large and complex by most standards, such as number of hierarchical levels of the project organization, project time period, project budget compared to average IT project budgets, etc (see further section 2.5).

Fifth, and importantly, this study concerns *IT projects with little or no related organizational change.* The case study which forms the empirical basis for the study concerns an IT project with little or no directly associated organizational change. This makes it possible to focus on governance of the project, rather than on managerial participation in the management of organizational change.

The research approach of the study can be briefly described as an in-depth, retrospective, interpretive case study approach, with a single-case design. As will be discussed further in chapter 3, the choice of research approach corresponds with the knowledge goals of the study as well as the delimitations described above.

1.5 Reading Guidelines

Before turning to the theory and practice of IT project governance, I will comment briefly on the intended readership and the structure of the thesis. The primary intended readers of this volume are researchers in the field of Information Management[10] and in other areas within business administration. I also very much welcome the interested reflective practitioner as reader and have tried to accommodate both reader categories to the extent possible given the primary academic purpose of the thesis. To facilitate easier reading, all chapters begin with a paragraph describing the principal contents of the chapter, followed by a paragraph suggesting how to get an overview of the main points or messages in the chapter. In addition to tables and figures, text boxes are used to help the reader who wants to get a quick overview of the contents of the book.

The structure of the thesis follows a rather standard format. This introductory chapter is followed by a chapter which presents and discusses earlier work in the focal area and work in related research areas of use for the study. In this second chapter, section 2.9 summarizes findings from the literature review, forming an important basis for reading the concluding chapters (5–6).

Chapter three describes the chosen research approach and the research process and discusses the chosen approach, choices made, and reasoning behind the choices. The chapter also, in accordance with the view that the work is not independent of the person, contains a section which gives a sketch of parts of my personal background. This is intended to add to the possibilities for in-depth

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[10] The academic field of Information Management (IM) is also known as Information Systems (IS) or Management Information Systems (MIS).

interpretations of the thesis, including alternative or supplementary interpretations. Chapter three also contains an attempt to evaluate the research study, using two sets of criteria for evaluation of interpretive research. If a reader prefers to do so, this final section of the chapter can be skipped and revisited after reading the subsequent chapters.

Chapter four contains the case study of the New Deposit System (NDS) project, which took place in a mid-sized European bank, here called Financial Services Corporation (FSC). The case presentation is structured chronologically and starts with a brief history of the use of information technology in the company, followed by a more thorough description of the project, project management and managerial influence and control over the project. The chapter also contains an epilogue and retrospective comments by many of the principal actors involved in the processes described.

In chapter five, prior research (chapter 2) and the case description (chapter 4) are discussed and reexamined in light of one another. The aim of this chapter is to pursue the search for possible contributions given the material at hand. This is done on the basis of a theoretically informed interpretation of the case description, which in turn is used to find theoretical connections and possible contributions. In this chapter, section 5.1 can be read as a three-page summary of the (interpretation of the) NDS case. In the sixth and final chapter, the study's contributions are presented in the form of a coherent, generalized view of how IT project governance forms and evolves. Here, section 6.6 summarizes the

Table 1: A Quick-Reading Guide

For an Overview of...	See...	On...
The subject	Section 1.1	pages 1-3
Purpose	Section 1.3	page 10
Focus and delimitations	Section 1.4	pages 11-12
Key findings from the literature review	Section 2.9	pages 66-68
The basis for analytical generalization	Section 2.9	page 68
Research approach	Box 2	page 80
Research process	Box 4, Box 5	pages 94, 104
Case description	Small text boxes	throughout chapter 4
Interpretation of case	Section 5.1	pages 231-234
Study characteristics	Section 6.6	pages 289
Study contributions and implications	Section 6.6	pages 289-292

study's characteristics and contributions. Table 1 provides a guide for getting a quick overview of the thesis.

As can be deduced from the description above, the structure of the thesis is not an attempt to faithfully mirror the research process. The research process is described in some detail in section 3.3.

Chapter 2

Mixing Oil and Water: Executives and IT Projects

This chapter contains a presentation and discussion of the theoretical basis for the research study. In addition to providing tools for interpretation and analysis, the chapter also helps define and delimit what this research does and does not cover. The chapter also provides a broader background of issues within the IS field which pertain to the thesis subject and the contents of the case description (chapter 4).

In this chapter, sections 2.7–2.9, which address executive involvement in IT projects, organizational control of IS projects and limitations thereof and a comment on the whole chapter, are of particular importance as a basis for reading the concluding chapters (5–6).

2.1 Introduction to the Theory Chapter

In the previous chapter, theories about projects, information systems implementation and aspects of organizational control were found to be important for this study. In this chapter, the classification of theoretical issues has been refined and structured as follows: First, I introduce and comment on general management involvement in the management of information technology in organizations (section 2.2). Second, project theory is introduced and discussed (section 2.3), followed by theories on implementation of information technology (section 2.4). Thereafter, I comment on types of information systems (section 2.5) and characteristics of the organizational environment which the case concerns, namely banking (section 2.6). In sections 2.7 and 2.8, we come to executive involvement in IT project management and different aspects of this, including management control and limitations of management control actions in this context.

The final section of this chapter (2.9, “Points of Departure”) summarizes and amplifies central findings from the literature review and discussion in the chapter. This section also extends arguments for the study approach made chapter 1 and specifies the basis for analytical generalization of the study results (see below and section 3.1.1). Relationships between some of the theory areas included and the phenomenon IT project governance are schematically illustrated in Figure 2.

In addition to providing the theoretical basis for the research study, the chapter also provides concepts for defining and delimiting what this research covers and what it does not cover (cf. the quote from Perrow, 1986, on page 11). This concerns the classification of the empirical material of the study, which in

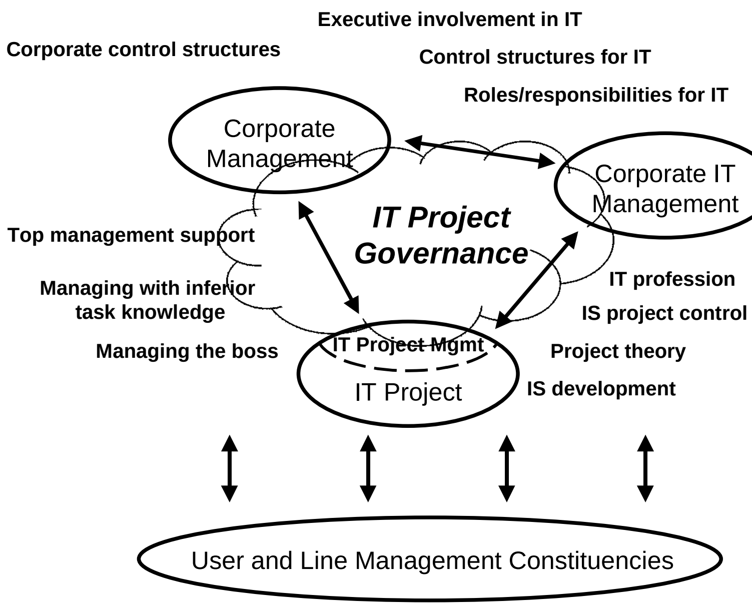

Figure 2: Some Theoretical Aspects of IT Project Governance

turn relates to the analytical generalization of the study results (see section 3.1.1). The chapter is also intended to give a broader background to issues within the IS field which pertain to the subject of the thesis and the understanding of the case description, in the hope that this will provide for a broader reading audience for the thesis. These three purposes of the chapter are roughly covered in the order overview/context, concepts, theory basis. The chapter has thus been structured so that the focus on theoretical issues gradually increases.

2.2 General Management Involvement in IT Management

The management of information technology in organizations has for decades been proposed as (at least partly) a general management problem and responsibility (Diebold, 1969; Benjamin et al, 1984; Earl and Feeny, 2000). Consequently, a lot of research has focused on means for promoting and/or facilitating executive involvement in IT management. While some classic articles argue for the importance of general management involvement based on the impact of IT on the business (McFarlan, 1984; Porter and Millar, 1985), other work has discussed how managers (can and/or do) impact IT-related planning and development processes (Rockart, 1988; Jarvenpaa and Ives, 1991). Still others have studied and/or suggested organizing practices that may facilitate general management influence on practices and priorities of the firm's IT department and on external suppliers of IT services and resources[11] (Boynton et al, 1992; Raghunathan, 1992).

In this literature, a common view of executives and IT is that IT is foreign and difficult for executives to understand and to control, that executives (consequently) tend to pay too little attention to IT issues, and that increased involvement by executives would lead to more effective (and/or progressive, successful, profitable) use of IT in an organization (e.g. Rockart and Crescenzi, 1984; Doll, 1985; Lederer and Mendelow, 1988). As will be discussed later (section 2.7), this view is also common for executive involvement in the management and control specifically of IT projects.

Part of the literature in this field looks at how executive involvement can be facilitated (e.g. Rockart and Crescenzi, 1984), whereas other writings look upon the problem from an IT management standpoint, focusing on how to promote IT on the management agenda (e.g. Lederer and Mendelow, 1988). Much of the work in the area can be said to focus either on the means of organizational control of IT or on roles and responsibilities related to IT in the organization. A central issue in both cases is the interaction and relationship between three constituencies: the IT department, users (and line/operative management), and general management (Lucas, 1975, p. 116; Applegate et al, 1999/1983, pp. 36-38).

Most of this research explicitly or implicitly concerns large organizations. Several studies (e.g. Ein-Dor and Segev, 1978; Raymond, 1985; Thong et al, 1996) have shown that the management of IT and IT projects, like many aspects of organizational life, differ considerably between large organizations on the one hand and small and medium-sized organizations on the other hand. As stated in section 1.4, this thesis concerns large organizations.

2.2.1 Means for Organizational Control of IT

Now, then, through what means, what organizational arrangements, do executives engage in the control of IT? What do the control structures and procedures look like?

An early approach to integrating control of IT into organizational control structures was *cost allocation schemes* (variants of charge-out versus overhead accounting), where different arrangements are related to centralization/decen-

---

11 The term (organizational) *IT resources* herein denotes all IT-related resources, capabilities, knowledge, personnel, facilities, technology and systems which are used or available for use (in an organization). Cf. Keen (1991; 1995) and Internet resources *Britannica.com* (February 19, 2000) and *Whatis*® (February 19, 2000).

tralization of IT-related decisions (Dearden and Nolan, 1973). The use of cost allocation schemes to control IT are probably a more central aspect of organizational control of IT in situations when, as was normally the case in large organizations in the 1970s, computer resources are centralized and mainframe-based, making charges for storage and CPU time possible and sensible. However, a recent study has found charge-back to have potential for both planning for and controlling IT, a key factor being that charge-back arrangements are used as a basis for discussions between IT departments and business units (Ross et al, 1999).

Another way of controlling IT is by instituting a *corporate IT steering committee.* According to Nolan (1982), such a committee could have the tasks of linking the corporate strategy to the IT strategy, deciding on the level of overall IT spending, deciding on how IT operations should be organized, being involved in key staffing decisions and advising and auditing the IT department (ibid, pp. 76-78). Over time, corporate IT steering committees have come to be frequently used (Bahl and Dadashzadeh, 1992), especially in larger companies (Torkzadeh and Xia, 1992). IT steering committees do seem to have positive effects on coordination of IT-functional and business issues (Raghunathan and Raghunathan, 1989). The *level of overall IT spending* (the yearly IT budget or multi-year "funding commitments") can also be used as a separate means of IT control (Doll, 1985, pp. 21, 24-25).

Steering committees are often used as a forum for *corporate IS/IT planning,* although IS/IT planning can also be carried out without the existence of a steering committee. Corporate IT planning is often perceived as a recurrent planning effort which can be linked to other recurring corporate planning procedures (Teo and King, 1997). Sometimes called strategic IS planning (SISP), corporate IT planning concerns not only "strategic" information systems but rather strategic (meaning corporate-wide) planning for IS/IT resources and development efforts. As with IT steering committees, a frequent aim of using IT planning procedures is to "align" corporate and IS/IT functional strategies (Teo and King, 1997; Chan et al, 1997).

Structured intervention processes for increasing senior management involvement in and influence over IT have also been proposed (Rockart and Crescenzi, 1984, Boynton et al, 1992). These processes are time-delimited exercises, usually carried out in a series of workshops with senior management and usually facilitated by outside consultants (Rockart and Crescenzi, 1984, Boynton et al, 1992).

Excluded from this discussion on means for organizational control of IT, because of space and focus considerations, are several issues which concern what to control in the first place. These issues include determining the tasks, goals and capabilities of the IT organization (e.g. Brown and Ross, 1996; Feeny and Willcocks, 1998) and the question of whole or partial outsourcing of IT resources and operations (Lacity and Hirschheim, 1993; 1995; DiRomualdo and Gurbaxani, 1998). It also excludes overall IT organization design concerns, such as combinations of central and divisional/local IT departments (e.g. Lucas, 1986; Sambamurthy and Zmud, 1999) as well as the question of whether there will be an internal IT organization to control in the longer term (Dearden, 1987).

2.2.2 Roles and Responsibilities for IT

A frequently described set of roles for the management of IT in organizations are senior (corporate) management, line (divisional, "user") management and IT management (e.g. Lucas, 1986; Applegate et al, 1999). A common view of the *senior management* role includes that they have responsibility for setting strategic goals for organizational IT use and link the strategy and policies for IT to the business strategy. *Line management* are often seen as having responsibility for leading IT-enabled organizational change, actively participating in devising new IT applications and placing demands on the IT organization for services, support, maintenance etc. Not seldom, line management and senior management roles overlap, as both are seen as responsible for business operations, business strategy and organizational change (cf. Rockart, 1988).

IT management are consequently seen as responsible for maintaining the IT infrastructure and delivering IT services, but also for pro-actively scanning for and proposing new technologies and applications and for building and maintaining good working relationships with their (internal) "customers" (Lucas, 1986; Rockart, 1988; Henderson, 1990; Brown and Ross, 1996; Applegate et al, 1999). The role of *users* in IT management is often seen as closely related to that of line (user) management, especially for aspects such as providing requests and other input for systems maintenance, support, and of course as important stakeholders in IS development projects (Applegate et al, 1999, p. 194).

As described above, much research has pointed to the importance of executive participation in IT management for the use of IT in organizations. Jarvenpaa and Ives (1991) looked more deeply into what characteristics of participation or "support" were important. They found that involvement (a psychological state) was more strongly associated with the firm's "progressive use" of IT than was participation (behaviors). Although participation as such influences other's perception of involvement, factors such as working relationships makes involvement without frequent participation possible.[12]

A persisting problem underlying much of the research both on control means for IT and on roles in IT management, concerns the task of linking "the business" to "IT". Most or all role descriptions include "overlapping" procedures, responsibilities and competencies, such as the need for IT managers to be knowledgeable

12 On the other hand, Raghunathan (1992) has shown that CEO *participation* in the IT steering committee can improve such dimensions as alignment with organizational plans and the perceived importance and effectiveness of IT.

about the business and the need for senior management to understand enough about the technology to understand its current and potential impact on the business. The CEO's view of IT and attitudes towards IT are thus important for the questions whether and how linking between IT and general management occurs (e.g. Schein, 1989; Henderson, 1990; Feeny et al, 1992; Earl and Feeny, 1994).

The task of linking business and IT management is perhaps most clearly visible in the job descriptions for *chief information officers (CIOs).* The chief information officer is often seen as a person with overall responsibility for IT and its use in the organization. This responsibility includes promoting and driving IT-related organizational change and in doing so cooperating with other members of the executive team and other senior line managers to find and exploit opportunities for "creating value" with IT (Feeny et al, 1992; Stephens et al, 1992; Earl and Feeny, 1994).

The CEO–CIO relationship is an important part of the foundation for the CIO's job (Feeny et al, 1992). The CIO normally also supervises the management of the IT function, or the relationship with outsourcing vendors (Earl and Feeny, 1994; Applegate et al, 1999). Consequently, the CIO should have extensive IT *and* business experience, have "business-savvy" and have first-rate social and communication skills (Earl and Feeny, 1994). Although there are successful CIO's (e.g. Hopper, 1990), it is seen as a hard job and it is not a coincidence that the acronym sometimes stands for "career is over" (Markus and Benjamin, 1996, p. 386).

Recently, as a extension of the idea of building partnerships with user and management constituencies, it has been proposed that IT specialists should take on a more proactive role with regards to organizational change, effectively acting as change agents (Markus and Benjamin, 1996). This should not be confused with *technology* as "change agent" (a conception—or misconception—related to technological determinism) nor with *responsibility* for achieving (driving, coercing) change. (Markus and Benjamin, 1996, pp. 393-399).

This would call for building increased trust and credibility (ibid; Bashein and Markus, 1997) and working in a more process-oriented mode. In turn, this would call for a considerable change in skill set for many IT specialists, in that social skills (communicating, cooperating, helping) would become more visibly prominent than they are normally seen to be today (Markus and Benjamin, 1996; Bashein and Markus, 1997).

2.2.3 Waiting for Godot?

VLADIMIR: *We have to come back tomorrow.*
ESTRAGON: *What for?*
VLADIMIR: *To wait for Godot.*
ESTRAGON: *Ah! (Silence.) He didn't come?*

(Samuel Beckett, Waiting for Godot*, 1955)*

Repeated predictions have been made that executives should and will in due time know (competence) and care (involvement) about information technology (e.g. Diebold, 1969; Rockart, 1988; Martin et al, 1995). That similar claims and predictions are made at different points in time, however, raises the question whether this is a case of waiting for Godot. Will the day come when executives treat IT in a way similar to other issues? Has it arrived?

Recent developments promise the arrival of integration of IT management amongst the core responsibilities of general managers (Martin et al, 1995; Morris, 1996). Some see this as the "synchronization" of technology and business cultures (Morris, 1996, p. 330). On the other hand, if we for a moment assume that consultancy firms know what "hits home" with their clients, it would seem that Godot may yet again be somewhat delayed. Relatively recent articles on IT in *McKinsey Quarterly*, explicitly directed at CEOs and other senior executives, bear titles such as "How Otherwise Good Managers Spend Too Much on Information Technology" (Battles et al, 1996) and "Escaping the IT Abyss" (Dempsey et al, 1997). Introductory paragraphs in these and other similar articles and reports contain statements such as the following:

> *Throwing good money after bad would make any manager uneasy. But then, uneasiness could be a good thing where IT investments are concerned. Few senior executives understand why their investments in IT have gone wrong or how to get them right in the future, according to recent interviews.*
>
> *(Dempsey et al, 1998)*

> *Some time in the not too distant future, some new Peter Drucker is going to point out how managers in the 1990s spent way too much on information technology because CEOs were afraid, unwilling, or untrained to manage it.*
>
> *(Battles et al, 1996)*

> *Most high-potential leaders believe that the global leader of the future will have to have far more understanding of the benefits—and limitations—of [information] technology.*
>
> *(Goldsmith, 2001)*

In spite of statements such as these, it could also be the case that IT is already managed in a way similar to other issues in organizations, thus imperfectly. It could be that the writings on the wrongful neglect of IT on behalf of senior managers are caused by a certain lack of perspective on a new and fast growing profession (and academic field). The IT profession and its impact on organizations will be discussed further in section 2.8.2 below. But first it is time to turn to the notion, promise and reality of projects.

2.3 Projects: The Rational and the ... Less So

Almost anything can be called a project (Sahlin, 1996, p. 13). Like writing this thesis for example—or reading it, or buying the book, or persuading someone to do so. Getting a cup of coffee? Project! At least for some (e.g. Frame, 1987, pp. 2-3; see discussion in Engwall, 1995, pp. 40-41, 47). Therefore, it becomes quite important to discuss what can be meant by the word project, and in particular what is meant and not meant in this thesis. It also becomes germane to look into the promises of projects, what really happens in projects and aspects of how projects are controlled and influenced.

2.3.1 The Notion and Promise of Projects

> *The project [as idea and concept] promises control and delimitation, while simultaneously promising liberation and the transcendence of boundaries.*
>
> *(Sahlin, 1996, p. 14)*

Phenomena labeled as projects (or temporary organizations) cover a wide variety of undertakings (Engwall, 1995, pp. 40-48). For example, a national effort to eradicate an epidemic disease (Bryman et al, 1987, p. 256), setting up and performing a play (Goodman and Goodman, 1972), revising management accounting and control principles (Westelius, 1996), European integration (Sahlin, 1996, p. 14) or building an opera house (Hall, 1980, ch. 6) can all be considered to be projects. Uses of the word project include meanings such as the project as thought or idea (“the European project”), the project as plan (“we have a project” meaning “we have a plan”) as well as the project as task and organizational entity (Engwall, 1995, pp. 45, 63; Sahlin, 1996, pp. 13-15).[13] Additional examples of projects are given in section 2.3.3 below.

In this thesis, the predominant meaning of the word project is as *a delimited organized undertaking*, i.e. the combination of a delimited task and the organizational entity (or temporary organization) challenged with that task. Lest this seems *too* clear, it should be noted that the delimitations in task, time and organization are defined and continually redefined (socially constructed and reconstructed if you will) by actors involved in or with the project (Sahlin-Andersson, 1992; Hellgren and Stjernberg, 1995). This will be discussed further

[13] For further discussion on different meanings of the word project, see e.g. Engwall (1995, ch. 3) and Sahlin (1996).

in the following sections. But before turning to the specifics and intricacies of projects, there are some important aspects of projects which have less to do with details and more to do with hopes, dreams and promises.

The project as concept and as organizational design choice is associated with a promise of doing things faster, with less hindrance and with less bureaucracy than would be possible within the "regular" organization (Bennis, 1966, pp. 11-12; Bryman et al, 1987, pp. 253-254, 257). A typical example of this view is illustrated in the following: "Project management is a special set of disciplines and management processes which is required when an organization is about to undertake a degree and rate of change that its normal management processes cannot cope with" (Edwards, 1996, p. 372).

Closely related to this view is the view of projects as characterized by a lack of hierarchy and bureaucracy, as being more "organic" and adaptive than "regular" organizations (Bennis, 1966; Palisi, 1970; Bryman et al, 1987; see also Kadefors, 1995, p. 395). This promise of projects also bears with it the hope that *non*-temporary organizations traditionally built on the principle of hierarchy can become "projectified"; organized through projects to a large and increasing degree (Bennis, 1966; Midler, 1995). Of course, a promise of this magnitude requires the proper rhetoric to carry it: "Adaptive, problem-solving, temporary systems of diverse specialists, linked together by coordinating and task-evaluating executive specialists in an organic flux—this is the organization form that will gradually replace bureaucracy as we know it" (Bennis, 1968, p. 74).

The above quotes from Edwards (1996) and Bennis (1968) also illustrate that project management is often seen as a special type of managing—something different from, and superior to, "normal" management. Not only is project management often seen as superior, but it is also often seen as context-independent; a set of skills and tools applicable in a vast variety of situations (Engwall, 1995, pp. 47-48; for examples see e.g. Baker and Baker, 1992; Randolph and Posner, 1992).

While the possible ultimate victory of the project as organization form is certainly not the topic of this thesis, acknowledging the promises and the positive connotations of projects is an important step towards getting to know the phenomenon a bit better. The next step concerns the "normal" (typical, common) view of projects.

2.3.2 The Normal View of Projects

One of the commonly assumed defining characteristics of projects is that they are *limited in time;* they start at a certain point in time and are always intended to stop existing at a specific point in time (Kreiner, 1995, p. 335; Engwall, 1995, p. 45). Another defining characteristic is that they have a specific *task,* to be fulfilled within their lifetime (Lundin and Söderholm, 1995, pp. 438, 440; Andersen, Grude and Haug, 1995, pp. 24-26).

Furthermore, projects are commonly seen as carried out by a group of people, often called a *project team* (Lundin and Söderholm, 1995, pp. 441-442), which is led by a *project manager* (Engwall, 1995, pp. 66-68). Fulfilling the task encompasses the "delivery" of an *output*, or result (cf. Engwall, 1995, p. 45) through the carrying out of the *project process* (or transition process, Lundin and Söderholm, 1995, pp. 442-443). Like project durations, the *resources* available for a project are usually limited, normally by a *project budget* (Engwall, 1995, pp. 45-47). Figure 3 summarizes this rather "normal" view of a project.

Sahlin (1996) suggests three dimensions along which projects differ: Projects can be delimited or holistic; oriented inward or oriented outward, and individual or collective. Holistic projects concern e.g. the development of democracy in eastern Europe (What belongs to the project and what does not?) Projects which are oriented inward do not deliver results to their environment. Individual

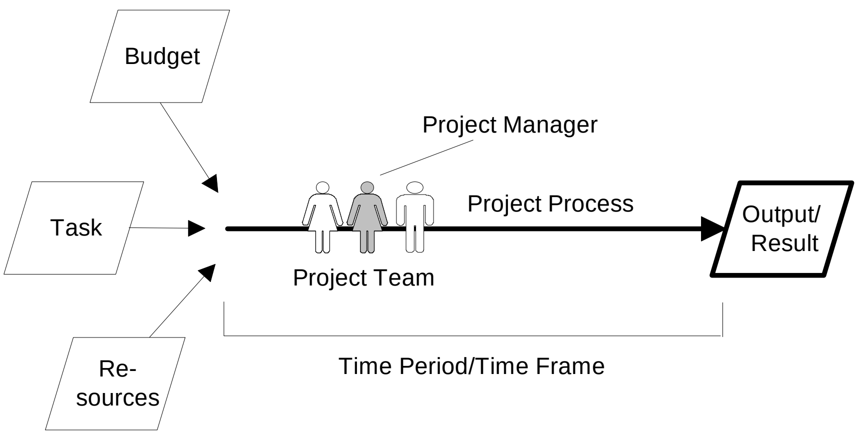

Figure 3: Commonly Assumed Characteristics of Projects

projects are carried out by a "project team" of one (ibid, pp. 13-14). The remainder, projects which are delimited, oriented outward and collective, correspond closely to the "normal" view presented here. However, neither this classification nor the standard view of a project tell the whole story. As we shall see, projects are more complex and messy than Figure 3 suggests.

2.3.3 A Project is a Project is a Project?

Although the project management literature has a tendency to treat all projects as equal and project management as context-independent (Engwall, 1995, pp. 47-48), the fact that a large variety of undertakings are called projects raises the question whether distinguishing between different kinds of projects can help improve our understanding of projects and how they are managed (Bryman et al, 1987, p. 281; Packendorff, 1995, p. 324).[14]

Are there important differences between projects, and what are these differences? For example—adding to the earlier examples—what distinguishes ordinary construction projects of repetitive character (Kadefors, 1995), extraordinary construction projects (Sahlin-Andersson, 1986, 1989), organizational change or renewal projects (Ekstedt and Wirdenius, 1995), arranging Olympic games (Løwendahl, 1995), social projects in a local community (Boklund, 1996), transportation infrastructure projects (Hall, 1980, ch. 2, ch. 3, ch. 5) and information technology projects (Newman and Sabherwal, 1996)?

Studies of construction projects (Kadefors, 1995) and theater production (Goodman and Goodman, 1972) suggest that these two types of temporary organizations have in common a considerable *role clarity* and a relatively high degree of *standardization* (or institutionalization) in how these projects are formed. In construction projects as well as in the setup, rehearsal and performance of a play, roles are well-known to participants and change very little; there is little or no transfer of assignments or responsibilities between different roles (Goodman and Goodman, 1972, p. 108; Kadefors, 1995, pp. 402-403). For example, gaffers do not act, actors do not direct, bricklayers do not install ventilation, and ventilation specialists do not design floor plans. This role clarity is part of an institutionalized set of rules, routines and norms which govern work practices (e.g. Kadefors, 1995). Role clarity and standardization increase the efficiency in setting up and carrying out a project, but it also reduces propensity for change in work processes (ibid, pp. 404-408).

In line with this, Bryman et al (1987) suggest that construction projects differ from "other" projects in that their uncertainty level is lower and that formal procedures are well-developed and important. The existence, use and efficacy of formal procedures could be due to extensive use of subcontractors or *repetitiveness* (ibid, pp. 258, 280). Studies of extraordinary construction projects suggest that these have less role clarity than more ordinary construction projects (e.g. Sahlin-Andersson, 1989, pp. 181-182). Thus, repetitiveness, and its opposite, *uniqueness* (Lundin and Söderholm, 1995, p. 441), do seem to be an important dimension in assessing projects and their differences. Uniqueness is often seen as bringing with it abstractness and *complexity* (ibid, p. 441). Complexity is also often seen as resulting from project *size;* large projects are often (considered) more complex, ambiguous and demanding than smaller projects (cf. Stinchcombe, 1985a, p. 25; Sahlin-Andersson, 1992, p. 65).

Another distinguishing factor among projects is the (actual and desired) adaptability to changes in the project environment and the project's degree of

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[14] Perrow (1986, p. 31) suggests that distinguishing between different types of organizations and situations is frequently a resolution to dilemmas in organizational research.

interaction with the environment. Interaction is sometimes seen as conflicting with *"bracketing"*, the often sought-for separation (or *delimitation*) of the project from its environment (Lundin, 1995, p. 315). Bracketing concerns the decoupling of a project from other past, present and future processes. Bracketing gives the project an identity and includes both the separation of a project from its surroundings and its reattachment when the project is terminated (Lundin and Söderholm, 1995, p. 446).

As described by Lundin and Söderholm (ibid), bracketing can be interpreted as distancing from the environment. Indeed, some product development projects seem to be deliberately distanced from their environment both in physical location and in communication, such as e.g. Apple Corporation's Macintosh project (Rose, 1989). For (intra-organizational) information systems projects on the other hand, the relationship to and interaction with the project environment during the project process—called *boundary-spanning*—seem to be crucial (Guinan et al, 1998).

Many other dimensions could be mentioned in which projects differ. Those dimensions described above are thought to be perhaps more central or more visible than some others, but a main point here is that projects do differ. Why is that important? First, projects have different control structures depending on their task characteristics and organization among other factors. For example, large, complex construction projects typically involve the coordination of many organizations working together (e.g. Sahlin-Andersson, 1989; Hellgren and Stjernberg, 1995), whereas organizational renewal projects are typically managed and controlled within the bounds of one organization (e.g. Ekstedt and Wirdenius, 1995). Second, types of control actions are related to characteristics of the controlled tasks (e.g. Perrow, 1986; see section 2.7.3). This, in turn, contradicts the idea that project management is a uniform, universal competence: Instead, work processes and the organization of projects differ depending on project task, work area and other conditions, and different project situations pose different challenges for project managers (Engwall, 1995, p. 204). With this as a background, issues concerning organization and control of projects will be discussed further in the following.

2.3.4 Organizing (and) Projects

> *"What drives a project to completion is then not the initially declared ends and means, but commitments, dependencies and expectations developing in the process of interaction."*
>
> *(Sahlin-Andersson, 1992, p. 74)*

In spite of the old claim that there is nothing as practical as good theory, "good" theory on projects exhibits vast differences in perspective compared to many of the practically-oriented textbooks on projects. Relatively early in this study, a database search for literature on projects and project management was carried out. A large number of books on project management, aimed at practitioners and with a distinctly rationalistic, normative and prescriptive focus were found (e.g. Thomsett, 1980; Lock, 1988; Baker and Baker, 1992). In contrast, research on projects often points to a reality where projects are socially constructed, politically constituted and thus arenas for social, political and cultural expressions and processes in the same or similar way as organizations in general (Sahlin-Andersson, 1992; Blomberg, 1998)[15]. It would seem that a normative, prescriptive view appears frequently in the literature on projects, whereas a descriptive and analytical view based on empirical research is less common (Engwall, 1995, pp. 10-11; Packendorff, 1995, p. 325).

Many practitioner-oriented texts discuss control *within* a project, whereas control *of* (or over) a project is partially viewed as given, partially as an issue to be managed by the project manager (see e.g. Thomsett, 1980; Lock, 1988). This also means that the goal-setting process is often viewed as unproblematic in this literature (Engwall, 1995, pp. 169-170; Kreiner, 1995, pp. 335-336). A common view of project management in this literature seems to be "have task and resources, will travel": With project goals which are clear, decided upon and fixed at the outset, the responsibility of the project manager becomes one of fulfilling the project contract (delivering according to specification within time and budget constraints) rather than caring about or taking responsibility for effects beyond the contract (Kreiner, 1995, pp. 335-336; for examples see e.g. Baker and Baker, 1992).

In contrast, research on projects is much more likely to give attention to goal-setting and external influences on the project. It would seem that in practice—according to theory—goal setting is often a process where objectives emerge and change over time, influenced by actors as well as circumstances (e.g. Hellgren and Stjernberg, 1995; also Blomberg, 1998). Especially in complex, inter-organizational projects, uncertainties and ambiguities are of considerable proportions (Stinchcombe, 1985b; Sahlin-Andersson, 1992, pp. 73-76). Blomberg (1998, pp. 43-51) even suggests that the occurrence of ambiguity and drift in project goals is strongly correlated with project success, while projects meeting criteria for project planning (well-planned, meets predetermined goals) are likely to be (perceived as) ultimately unsuccessful.

Uncertainty and ambiguity in a project situation can be used as a strategy for realizing projects where stakeholders have differing views and goals (Sahlin-Andersson, 1992, pp. 71-77). This strategy gives room for various interpretations and meanings to be ascribed to the project, which facilitates holding actors together and which may also postpone conflict: As long as proposals and plans

[15] Some research on projects builds on concepts and theories developed for non-temporary organizations (e.g. Sahlin-Andersson, 1989), whereas other studies more explicitly aim at developing a theory for projects, or temporary organizations (e.g. Bryman et al, 1987; Lundin and Söderholm, 1995).

are not clear, criticizing plans or goals is difficult. However, the ambiguity strategy comes at a certain loss of control over the project and norms concerning project management often make it necessary to pursue an ambiguity strategy behind a facade of clarity (ibid; cf. also Brunsson, 1985).

The above-mentioned studies suggest that not only the complexity of the project task but also the complexity of the network of actors involved influence how projects are organized, managed and controlled. Engwall (1995) suggests distinguishing between projects based on how they are organized, specifically on the organizational location of project commissioner and project contributors in relation to the project manager (see Figure 4). The commissioner is the actor commissioning the project manager with the project task. Contributors are actors

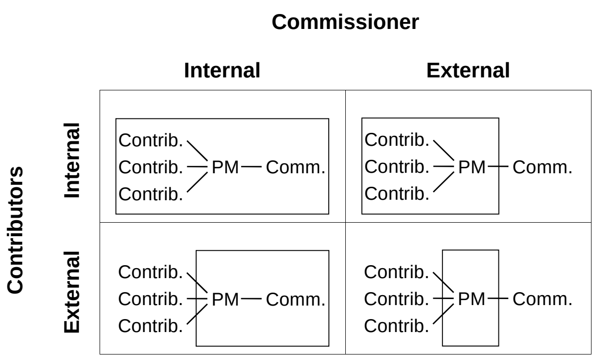

Figure 4: Different Types of Organization Structures for Projects (from Engwall, 1995, p. 205)

that perform work in (and/or for) the project. The assumption here is that different project management skills are needed to manage contributors that are external in relation to the project manager's organization (e.g. subcontractors) compared to internal contributors. The same would be the case with an external commissioner (client, customer) compared to an internal commissioner. Role clarity and separation of responsibilities are likely to be considerably more pronounced with external actors compared to an all-internal project (ibid, pp. 204-205).

Engwall's classification implicitly uses the market–hierarchy dichotomy of control (cf. Williamson, 1975): For both the control of the project task (by the commissioner) and the control of project sub-tasks (by the project manager), there is a choice between the use of hierarchy or market mechanisms. Basically, external parties imply a market mechanism, whereas internal parties imply a hierarchy through which control is exercised (see Figure 5).

The classification in Figure 4 and Figure 5 does not take fully into account the complex patterns of stakeholders—including commissioners—often found in project, e.g. in construction projects (Sahlin-Andersson, 1992, p. 65). Not only are multiple commissioners a possibility, but control and cooperation is negotiated and performed in networks of actors (see e.g. Sahlin-Anderson, 1989; Hellgren and Stjernberg, 1995; Morris, 1996). Furthermore, the typology does not take into account the *users* of project results, an important aspect of e.g. information systems development projects (cf. Markus and Keil, 1994).

The hierarchy–market dichotomy is also used by Stinchcombe (1985b), to classify and characterize control of (rather than within) a project. This distinction is important because the means of control and the patterns of control actions differ between these two types of projects (Stinchcombe and Heimer, 1985, p. 17; Stinchcombe, 1985a, pp. 34-35). Where several legal parties are involved, legally

		Commissioner: Internal	Commissioner: External
Contributors	Internal	Whole: hierarchy Sub-tasks: hierarchy	Whole: market Sub-tasks: hierarchy
	External	Whole: hierarchy Sub-tasks: market	Whole: market Sub-tasks: market

Figure 5: Classification of Project Control Relationships Combined With Hierarchy–Market Dichotomy (based on Engwall, 1995 and Williamson, 1975)

binding contracts are normally used as an important means for exercising control. In intra-organizational projects, however, control is mainly exercised through different means of organizational control (hierarchy), and the "interface" between the project organization and its organizational surroundings is normally less clear (Stinchcombe, 1985a). For example, a project within a car company aimed at coming to terms with quality problems in production is most probably controlled through different structures and means than a construction project where a hospital orders the construction of a new wing by a construction company (a contractor).

However, Stinchcombe (1985b) shows that contrary to basic assumptions about organizing choices based on transaction cost theory (e.g. Williamson, 1975), contracts are often used to control projects in which many adjustments and changes will have to be made during contract performance, for example in research and development projects. In other words, contracts can be and are sometimes used to arrange hierarchy (Stinchcombe, 1985b, pp. 121-122, 137-138). Examples of this include contracts and contract relationships incorporating means and mechanisms for dealing with contingencies and contracts written on a cost-plus basis (ibid, pp. 137-138).

Hellgren and Stjernberg (1995) suggest the term *project networks* to describe a type of mixed market and social settings in which multiple organizations (including multiple commissioners) interdependently control, manage and carry out complex projects. These situations are characterized by a high degree of uncertainty; ends as well as means are continually redefined in the interactions of the participating organizations. In project networks, which are neither markets nor hierarchies, no organization has legitimate authority for the whole network, and network boundaries cannot be (effectively) identified or controlled. An example of a change in network boundaries is found when (the set of) organizations involved (e.g. building owners) change during the project process (ibid, pp. 378-381)[16]. Furthermore, repeated cooperation between organizations allows for the reconstruction of earlier cooperation and organizing patterns in new project networks (ibid, pp. 381-382).

Løwendahl (1995) stresses the importance of the character of the linkage between a project and its parent system, *project embeddedness,* and proposes that this characteristic needs to be taken into account when implications for project management are formulated (ibid, p. 348). For example, in a non-embedded (or extra-organizational) project, such as the project organization for organizing the Olympic games at a certain time and place, the task of acquiring additional funding is quite different from the same task for an intra-organizational project. Furthermore, there are no organizational routines, norms or procedures common to project team members that the project can "inherit" from a parent organization (ibid, p. 356). Related to this, Blomberg (1998, pp. 19-30) stresses that projects are interconnected with their environment not only in terms of embeddedness and boundary-spanning during the project process but also through what might be called temporal interconnectedness[17]: Projects are historically constituted and have long-term consequences beyond the duration of the project.

Even for projects taking place within one organization, several organizational sub-types can be distinguished: The project can be carried out completely within the existing organization, or with special supervision (steering authority, where separate control is exercised), or with people assigned to the task but without a formal project organization (split authority), or with a separate project organization and separate control structure (full authority) (Løwendahl, 1995, p. 348; Jessen, 1996, pp. 74-75). The latter version corresponds to the "normal" view of projects in Figure 3 (page 24).

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[16] This means that not only are several "commissioners" involved, but the combination of commissioners can and often does change during the project.

[17] This term is not taken from Blomberg (1998) but proposed here.

This section shows that the control structure for a project can be constituted in several different ways and that these differences make for quite different ways in which the projects are controlled, influenced, and "owned" (Stinchcombe, 1985c, p. 228; Løwendahl, 1995). In spite of these differences in control structures—and settings—for projects, much of the literature on projects (practitioner-oriented as well as research) largely neglects the consequences of these differences (Engwall, 1995, pp. 203-205; Løwendahl, 1995, p. 361). Understanding these differences is an important part of focusing this research study as well as assessing its results. This is also the case for understanding the task which the study concerns, information systems development.

2.4 Understanding the Task: Information Systems Development

One of the cores of the academic field of IS/IM concerns the development and implementation of technology-based resources and capabilities for information processing. This research area encompasses information systems development (ISD) methodologies, socio-technical change processes, user participation in development, user adoption and diffusion of information systems, management of IS projects and several other areas.

This section addresses several aspects of the task of IS development, including the centrality of ISD methodologies, the nature of the task, politics in ISD and IS implementation processes. In the subsequent section the task is then related to the resulting artifact, through a discussion on different types of information systems.

2.4.1 IS Development: Methodology is Required

Quite a lot of literature on IS project management can be found under the heading information systems development methodologies. Information systems development (ISD) methodologies usually support project planning and project management, directly and through the sequential ordering of tasks in models of development work (cf. Avison and Fitzgerald, 1995, pp. 20, 205-211; see also Lundeberg and Andersen, 1974, for a view of how these aspects are related). The traditional model for IS development is the waterfall model, or the systems development life cycle (SDLC) (Avison and Fitzgerald, 1995, p. 20). In this model, systems development is carried out through a number of sequential steps. In different variations, these steps typically include feasibility study, requirements analysis, systems analysis, systems design, construction (program coding and testing), conversion/installation[18] and operation and maintenance (based on Lucas, 1982, p. 292; Avison and Fitzgerald, 1995, pp. 20-29; Applegate et al, 1999, pp. 31-36; and Jurison, 1999).[19] A typical view of the waterfall model is shown in Figure 6.

Over time, IS development methodologies have come to encompass more and more of the aspects associated with development, implementation and maintenance of an information system (see Nilsson, 1995). Some methodologies include change analysis, modeling and change of work processes and change management (an early example is Lundeberg et al, 1981) and many (or most) methodologies also incorporate tools and procedures for project management and control—in fact, traditional IS development methodologies have project management and control embedded in them (Fitzgerald, 1996, p. 6; Jurison, 1999). A central argument for the use of IS development methodologies is that they increase effectiveness and efficiency in IS development through planning and control, division of work tasks, skill specialization and standardization of work processes (Fitzgerald, 1996, pp. 4-7).

The SDLC model retains a strong influence on IS development work (Avison and Fitzgerald, 1995, pp. 29-35; Agnér Sigbo, 1995) in spite of considerable criticism (Zmud, 1980; Fitzgerald, 1996) and the early existence and continued emergence of alternative and often radically different methodologies and approaches (e.g. Persson and Strandler, 1978; Jacobson et al, 1992; Yourdon, 1994; Baskerville et al, 2001).[20] One criticism is that the SDLC approach does not provide an effective means for coping with the uncertainty inherent in the development of large information systems (Zmud, 1980, p. 48). Further, the SDLC is also said to exercise too much control on work content and practices (hampering creativeness and learning) and to be too "narrowly scientific" in its outlook on IS development (Fitzgerald, 1996, pp. 10-16).

Zmud (1980) points to improved IS development management practices and improved planning and control as areas for improving large software development efforts. The first of these includes modular design and construction, stepwise refinement of specifications, top down development, structured design,

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[18] This step, whereby the system is put into operation, is often called "implementation" in the systems development literature. This wording was avoided here since I in other places in this thesis use the word implementation in its broader sense, as a process aiming at successful integration of an information system in an organization, encompassing issues such as participation of users and other stakeholders, adoption by users, and organizational change (see section 2.4.3).

[19] For more elaborate descriptions and comparisons of IS development methodologies and models, see for example Olle et al (1991); Avison and Fitzgerald (1995), Nilsson (1995), Iivari and Lyytinen (1998) and Iivari et al (1998).

[20] For discussions on different types of IS development methodologies and overall strategies for IS acquisition (including standard application packages), see e.g. Nilsson (1991; 1995), Olle et al (1991), Andersen (1994) and Andersson and Nilsson (1996).

structured system reviews and the employment of a chief programmer team. The second includes evolutionary development, emphasizing requirements analysis and development of different versions of a software, where functionality is added over time.[21] It also includes acceptance criteria, scheduling, use of planning diagrams, well-defined milestones, system documentation (to further conceptual understanding of the information system being constructed), sponsor acceptance of final systems specifications prior to implementation, structured system reviews and program change control (ibid).

These remedies should come as no great surprise to today's systems developer. However, of certain interest here is that much of the criticism towards the SDLC model as well as proposed remedies imply a view of rationality quite

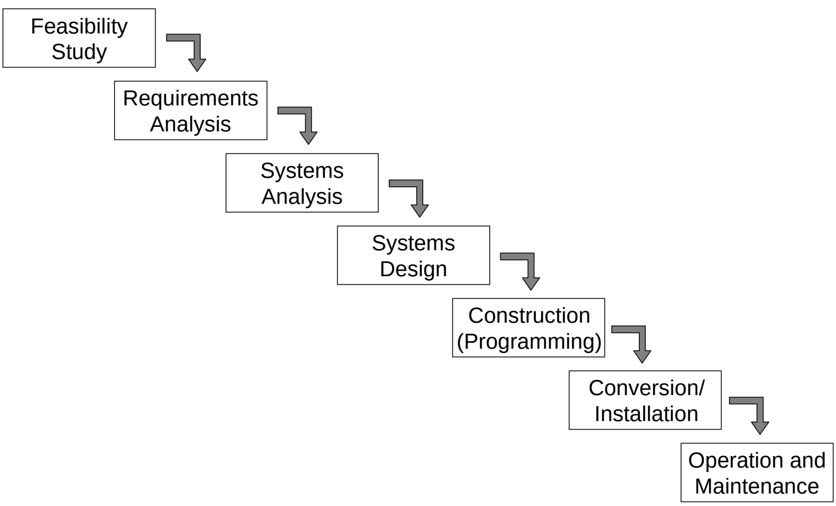

Figure 6: The Traditional Systems Development Life Cycle (SDLC) Model (based on Lucas, 1982, p. 292; Avison and Fitzgerald, 1995, pp. 20-29; Applegate et al, 1999, pp. 31-36; Jurison, 1999)

similar to that which underlies much of the project management literature. What, then, happens if information systems development methodology is viewed from the perspective of power and politics?

Robey and Markus (1984) argue that rules and procedures embedded in ISD methodologies can be seen as rituals—"symbolic behaviors that reinforce the

21 A prerequisite for this to work is that the architecture of the system is built from the start, in a way that allows for all subsequent versions (Zmud, 1980, p. 50).

prevailing belief system in an organization" (ibid, p. 5). For example, the feasibility study can be used to portray the project, the intended system and the participants and their roles in a way which is advantageous to the group with most influence over the study results, usually the IT professionals. Further, rules for "sign-offs" (e.g. user sign off on system specifications—or final approval of the completed IS) can be used as political instruments for shifting responsibilities and blame (ibid, pp. 10-11).

In a deconstructive analysis of an IS development methodology text, Beath and Orlikowski (1994) found far-reaching inconsistencies and contradictions in the depiction of the interaction and relationship between users and developers and the related role of the methodology. Specifically, Beath and Orlikowski found that the text portrayed users as naive, technically unsophisticated, insular and enmeshed in conflict, whereas developers were portrayed as more knowledgeable, professional (which users were not) and corporate-minded. They also found that the methodology helps give developers command over the development process while assigning users a passive role. At the same time, the methodology assigns users far-reaching responsibility for the *outcome* of the development process, e.g. by stipulating user approval (through sign-off) of system specifications prior to construction (ibid, pp. 367-373).

Thus, the ISD methodology helps IS professionals gain control over the process, while shifting responsibility for (and potential blame related to) outcomes to users. Through these rituals, IS developers only have formal responsibility for following specifications, not for the appropriateness of the specifications or of the finished information system (ibid, p. 371; cf. Robey and Markus, 1984).

Similarly, Yakura (1992) found that IT consultants use their (allegedly proprietary) IS development methodologies as a source of symbolic power and a legitimizing practice. The specific methodology, often presented as "scientific", was frequently used to reinforce the professionality of the individual IT consultants and the consultancy firm and to legitimize their services, both in the selling/entry phases and during the process of providing services (ibid, pp. 106-119). Yakura also found that in none of her four studied cases was the "fact" that the methodologies were scientific negotiated or questioned by clients. In one case, where the project ran into problems, the consultants' ability to apply and adhere to the methodology was questioned by clients, but not the appropriateness of the methodology itself (ibid, pp. 114-119).

These studies strongly suggest that methodologies are inherently political and that they can be and are used for many purposes other than the effective and efficient development of an "appropriate" information system. Methodologies are likely to be derivative of their societal and organizational institutional contexts, reflecting but also reinforcing these contexts. Examples of structural elements which reinforce existing user–developer relationships and help provide developers with professional authority and power include division of labor, forms of control, locus of technical and work expertise, and allocation of resources and responsibility (Beath and Orlikowski, 1994, pp. 373-374).

Neither professional values and norms, nor methodologies govern user–developer relationships absolutely; many other aspects affect how these relationships develop and how users and developers interact, cooperate and clash in IS development projects (Robey et al, 1989; Kirsch and Beath, 1996). But methodologies as well as professional norms *do* influence individual behaviors. The influence of professional values and norms in ways beyond their embeddedness in methodologies will be discussed further in section 2.8.2 below.

Just as we are finding several perspectives on IS development methodologies, there are quite a few aspects of the process the methodology is related to. In the following, I will briefly present some different and differing aspects of information systems development and its outcomes before going into studies on politics in IS implementation.

2.4.2 The IS Development Task—Some Characteristics

Information systems development was at one time seen—and is still sometimes seen—as an engineering task. For a long time, however, the social aspects of ISD have been visible and acknowledged, making ISD a socio-technical task, a task which deals with organizational change and technical development in close consort (Høyer, 1971; Bjørn-Andersen and Hedberg, 1977; Mumford, 1981; also Avison and Fitzgerald, 1995, pp. 5-6).[22]

But there is something peculiar about the design and construction work in ISD. This work is about "fashioning abstract conceptual structures of great complexity" (Brooks, 1995/1975, p. 180). It is an abstract work process which concerns an abstract "product", invisible until its completion (Zmud, 1980, pp. 45-46; Yakura, 1992, p. 2; Morris, 1996, p. 329).[23] These features of the work and its product are mirrored in the unusual degree of plasticity of the underlying technology (Swanson, 1994, p. 107).

Furthermore, several researchers have pointed to the characteristics of the dynamic which usually results when the product of the construction work, the information system, meets the organization. In this process, the organization as well as the information system take on new properties—they have transformational effects on each other, like "reagents that react to and change each other's properties in a chemical compound" (Lee, 1999, p. 8). This means that both IS use and organizational change are (to some degree) emergent in many or most IS

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22 While organizational change is outside the scope of this study (see section 1.2.5), even a brief discussion on central aspects of ISD need include the aspect of socio-technical change.

23 Arguably, even a completed information system is not visible "as such", unless it is in use. Observing an information system without someone using it is akin to "observing" a movie without the projector running.

implementation situations (Markus and Robey, 1988; Orlikowski and Hofman, 1997).

One reason for the complexity of the effects of IS implementation is that information systems not only are models *of* social processes, but also models *for* the ongoing creation of social processes by organizational actors (Boland, 1979, pp. 269-270). Information systems are not objective, they are models, structures, which impose restrictions on social processes while being formed by those processes (Boland, 1979; Orlikowski, 1992, building on Giddens, 1984). In this way, designing an information system "is an integral part of the building of a world" (Boland, 1979, p. 270; see also Ehn, 1988). From this it follows that IS development is also an arena for enactment of power relations, fueled by struggle for control over information and information flows, by organizational change and by the allocation and consumption of organizational resources (Markus and Pfeffer, 1983; Kling and Iacono, 1984; Pfeffer, 1992, pp. 88-100).

The description above primarily concerns in-house IS development and implementation. In acquisition of standard application packages (Nilsson, 1991), project life-cycles are considerably different (ibid). In development of standard application packages and other software products (Carmel and Sawyer, 1998), those aspects of the development process which concern interaction with the project environment, especially users, are more reminiscent of product development projects (cf. Kidder, 1997/1981, on development of a new computer model; Brooks, 1995, on construction of systems software). In most software product development situations, developers are physically and organizationally separated from users and rely on intermediaries to link to users (Carmel and Sawyer, 1998, p. 11). Software product development, however, is outside the scope of this book.

2.4.3 Politics and IS Implementation

> *"Once we acknowledge that people think and act, that people are active makers of their physical and social reality, the inadequacy of narrow, mechanistic theories of information systems implementation becomes clear"*
>
> *(Myers, 1994, p. 195)*

Information systems implementation is a social process, the management of which is often seen as the key to successful adoption and use of information systems (Lucas, 1981, pp. 1-3). As already mentioned, information systems implementation is frequently related to organizational change, organizational politics, user involvement in the development process and adoption and acceptance of information systems by users (Markus, 1983; Franz and Robey, 1984). It is also about arriving at implemented information systems that are useable, useful and used (Markus, 1983; Markus and Keil, 1994).

The introduction to this text (see sections 1.2-1.4) emphasized this study's focus on governance aspects of IT projects, rather than on the management of organizational change in IS implementation processes. This section, which contains a very brief résumé over IS implementation research, is included for two reasons: First, because an overview of areas within IS implementation research points to the relative emphasis on processes of IS development and implementation of this research stream and thus supports the argument that there has been relatively less attention placed on governance issues (control structures, control forms). Second, because certain aspects of and concepts from IS implementation research will useful also in the study of IT project governance.

One of the central aspects of implementation research concerns *users.* User participation in the development process, user acceptance of information systems, and the interaction between users and information systems developers is a frequent topic (e.g. Franz and Robey, 1984; Ives and Olson, 1984; Kwon and Zmud, 1987, pp. 228-229). Another focal aspect of IS implementation research concerns the *processes* for arriving at technically and functionally *usable information systems.* This includes management of the requirements process and designing the information systems in accordance with work processes and incentive structures, as well as aspects of IS development methodology, including the matching of the method to the task. (Sauer, 1993a, pp. 73-74; Markus and Keil, 1994; Poulymenakou and Holmes, 1996).

The management of *organizational change* is of central importance in IS implementation research (Keen, 1981; Benjamin and Levinson, 1993). Models of change in the literature (explicitly used or implicit) are often sequential (cf. Keen and Scott Morton, 1978, pp. 199-201; Keen, 1981; Walton, 1989, p. 5; Benjamin and Levinson, 1993) and have intellectual roots in organizational dynamics (Lewin, 1952; Beckhard and Harris, 1987; Schein, 1988a). In line with these roots, resistance to change is an important aspect this research (Benjamin and Levinson, 1993), as is building and sustaining organizational commitment to a change effort (ibid).

A fourth important aspect of IS implementation research (related to organizational change aspects) is *organizational politics* (Markus, 1983; Kling and Iacono, 1984). Politics have been studied in the context of resistance to IS implementation and in the context of consequences of the impact of political considerations on the design and functionality of an information system. In implementation research focused on organizational politics, stakeholder groups are often seen as striving for influence over IT decisions and over design of information systems, with the aim of protecting or gaining power and influence in the organization (Markus, 1983; Kling and Iacono, 1984).

This research has shown that IT solutions have to be not only technically and functionally feasible, but also politically feasible in order to be used by and useful for people in the organization (Markus, 1983; Kling and Iacono, 1984; Markus and Keil, 1994). Efforts to influence the functionality of information systems and how they affect work processes and control processes do not end with implementation. Rather, the continued development paths of systems is of a similar interest to actors as is the initial development process (Kling and Iacono, 1984).

Kling and Iacono (ibid) looked at how *coalitions of actors* control "developmental trajectories" of information systems. They found that a coalition of actors can use (among other things) an ideology for IT and structural elements for control of IT to further their preferred line of action. The ideological aspect concerns shared language and beliefs about the "meaning of computing", or, in other words, what is "good" use of information technology (ibid, pp. 1223-1224). The structural aspect concerns (legitimized) arrangements for resource allocation for IT. Such arrangements include the use of steering committees for projects or for IT operations, as well as a senior manager taking responsibility for an IT development effort. Both these arrangements provide legitimation for resource allocation to a project or other line of action (Kling and Iacono, 1984, p. 1224; see also Pfeffer, 1981, p. 243).

A fifth aspect of IS implementation research, related to the other aspects and dealing with the complexities which the other aspects reflect, concerns actions and roles which facilitate successful IS implementation. Management roles will be discussed more specifically in section 2.7.1 below. In addition to the management aspects, the interrelationships between managers, users and IT specialists are often central in studies of IS implementation (e.g. Lucas, 1975, p. 116; Markus and Keil, 1994; Myers, 1994). In contrast to aspects facilitating success, the following section deals with aspects of IS implementation concerning failure or imminent failure of IS/IT projects.

2.4.4 Escalation and Failure of IT Projects

The research stream called IS failure can be seen as a subset of IS implementation research. Studies on IS failure are to a large extent carried out similarly to IS implementation research, and they deal with problems very similar to those in the area of IS implementation. Many case studies on IS failure can be read as case studies in IS implementation, although the specific outcome makes the alternative labeling possible. Research on IS failure also resembles (other) IS implementation research in that it can be classified into factor studies (e.g. Lucas, 1975) and process studies (e.g. Beynon-Davies, 1995). However, processes leading to failure may have some special characteristics beyond the obvious (Persson, 1979, provides a cross-disciplinary collection of views on failure).

Perhaps the most frequently cited classification of IS failure is Lyytinen and Hirschheim (1987), who distinguish between *correspondence, process, interaction* and *expectation* failure (ibid, pp. 263-267). Sauer (1993a, pp. 26-30) has suggested *terminal* failure as a supplement to these. The types of failures are briefly explained in Table 2. Of these types, expectation failure, while indicating that expectations of stakeholders are important in IS development, has weaknesses in what may be its too wide applicability and relative lack of distinctions concerning legitimacy of claims for different actors, aims and intents, etc. (ibid, pp. 24-26).

IS failure research, like other IS implementation research, looks to user participation, organizational politics, management support and the appropriate design of information systems (Sauer, 1993a; Poulymenakou and Holmes, 1996),

Table 2: Types of Failure of an Information System or IS Project (from Lyytinen and Hirschheim, 1987; and Sauer, 1993a)

Correspondence Failure Failure to meet design criteria.
Process Failure Failure to produce a workable information system within given time and budget constraints.
Interaction Failure Failure in terms of low level of use or poor user satisfaction.
Expectation Failure A superset of the three previous types of failure, expectation failure is the inability of an information system to meet a stakeholder group's expectations.
Terminal Failure The termination of an IS project or the termination of use of an existing information system.

but also to management of changes to systems specifications, risk management, management of project evaluations (Keider, 1984; Sauer, 1993a, pp. 325-329; Poulymenakou and Holmes, 1996).

Closely related to IS failure research is research on escalation of IT projects (Keil, 1995b, Newman and Sabherwal, 1996). This research looks at dysfunctional IS development processes, specifically processes in which there is sustained resource allocation in the face of negative feedback about project progress (Keil, 1995b, p. 422). This research uses research on *escalation of commitment* to projects and other organizational processes (e.g. Staw and Ross, 1987; Brockner, 1992; Drummond, 1994).

The research in this field (e.g. Keil, 1995a, 1995b; Newman and Sabherwal, 1996) argues that the commitment of managers (and other stakeholders) is a major factor in both failures and successes of studied IT projects. For example, Newman and Sabherwal (ibid) found that changes in stakeholder commitment over time affects a systems development project substantially, and that sustained commitment was a key requirement for successfully completing IS projects (ibid, p. 43; also Sabherwal and Elam, 1995). On the other hand, a high degree of personal responsibility (often associated with commitment) has been found to be a culprit in IS escalation, related to self-justification and sunk-cost thinking (Keil, 1995b, p. 432).

Keil (1995b) analyzed a large IT project in terms of escalation, using a framework concerning escalation of commitment from Staw and Ross (1987) to analyze an extensive case study. The framework, including Keil's (1995b) findings, is shown in Table 3. Using the framework, Keil (ibid) classifies factors that can contribute to escalation of a project into project, psychological, social and organizational factors.

Table 3: Factors that Promote Project Escalation (adapted from Keil, 1995b)

Project Factors
Evidence that continued investment can produce large pay-off
Project regarded as investment in research and development
Project setbacks appear to be temporary problems
Psychological Factors
Prior history of success
High degree of personal responsibility for outcome of the project
Errors in information processing
Emotional attachment to project
Social Factors
Competitive rivalry between organizational units
Need for external justification (in terms of rationalizing to other parties)
Norms for consistency (in individual behavior and organizational norms)
Organizational Factors
Strong advocates who provide continued funding and protection
Empire building
Slack resources and loose management controls

Escalation theory assumes a close connection between escalation *of commitment* and escalation of an *organizational course of action,* where the latter is equated with continued allocation of resources in the face of negative feedback. In fact, many of the studies use continued resource allocation as a measure of commitment (cf. Staw, 1976; Brockner, 1992). The same seems to be the case in e.g. Keil (1995b): Escalation of commitment and escalation of an IT project are treated as one. This is a potential problem for this research stream, as will be discussed in section 2.7.2 below, where commitment is discussed in connection with managerial involvement in IT projects. But before doing so, we will turn from the task to the artifact.

2.5 Understanding the Artifact: Types of Information Systems

Above, it was argued that differences in the institutional arrangements of projects are related to their control structures and that the nature of the task influences characteristics of the project. Similarly, the characteristics of the task are directly related to the characteristics of the intended output, the artifact resulting from the IT project—the (type of) information system developed.

In research on IS development and implementation, there is relatively little consideration of variety in implementation processes and organizational impacts in relation to the characteristics of different kinds of information systems (or types of IS innovations) that these processes concern (Grover et al, 1997, p. 283). In the following, two typologies of information systems are presented and discussed, partly in order to help frame the case study and the contributions of

Table 4: IS Innovation Types (from Swanson, 1994)

Innovation Types	**Description**	**Illustrations**
Type Ia	IS Administrative Process Innovation	Maintenance departmentalization (1970s and 1980s) Chief Information Officer (1980s)
Type Ib	IS Technological Process Innovation	Systems Programming (1960s) Chief Programmer Team (1970s) Data Administration (1970s and 1980s) Application Prototyping (1980s)
Type II	IS Product and Business Adminis-trative Process In-novation	Accounting Systems (1950s) Information Centers (1970s and 1980s) Executive Information Systems (1980s and 1990s)
Type IIIa	IS Product and Business Techno-logical Process In-novation	Material Requirements Planning (1950s and 1960s) Airline Reservations Systems (1970s) Computer Integrated Manufacturing (1980s and 1990s)
Type IIIb	IS Product and Business Product Innovation	Airline Reservations Systems (1970s and 1980s) Remote Customer Order Entry and Follow-on Cus-tomer Service Systems (1980s)
Type IIIc	IS Product and Business Integration Innovation	Inter-organizational Information Systems (1980s) Electronic Data Interchange (1990s)

this research study. The underlying assumption is that what this study arrives at concerning governance and managerial involvement is related to the organizational importance and impact of the IT project studied, and to the type of information system(s) the project concerns.

Swanson (1994) has proposed a classification of information systems innovations based on the types of impacts they have on the IT function, the organization as a whole and the organization's interaction with its environment (ibid). According to this typology, Type I innovations are related to the organizational IT function, Type II innovations are related to administrative business functions, and Type III innovations are related to the core technology of the organization, potentially resulting in product or service differentiation or other changes with potential strategic impact (ibid, pp. 1076-1077). An overview of the typology is given in Table 4.

Swanson suggests that different types of IS innovations have different impacts on the organization as well as different second-order effects. IS innovations pertaining to the IT function (the "functional IS core") are likely to have weak second-order effects, whereas innovations pertaining to the administrative and technological cores of the organization are likely to have strong second-order effects, in that they often lead to changes in other parts of the organization beyond that part in which the innovation is adopted (ibid, 1075-1078).

Given the premise that technology is (also) socially constructed (Orlikowski, 1992, p. 402), an IS innovation is formed by existing structures and involved actors as well as by technological attributes (ibid, pp. 405-409), rather than being determined only or primarily by the technology available or used. This goes both for the IS innovation on the societal level and for the specific instance, the innovation in the organization (ibid, pp. 405-409; Swanson, 1994, 1081-1083). In line with this, Swanson's typology relates IS innovations to their organizational context and impacts, rather than being based on internal or intrinsic attributes of a product or technology as such.

Swanson's classification builds on organizational innovation theory (e.g. Daft, 1978) which will not be used in this thesis. However, the classification is useful to describe what type of IS innovation, or what type of information system, the case study concerns. This is of importance in that it says something about the characteristics of the IS and its relation to (and importance for) its organizational environment. Specifically, the type of information system in focus in the case description in chapter 4 Can be characterized as an *operative information system* of type IIIa in Swanson's typology.

Classification of information systems is also addressed by Markus (1984, ch. 2-3), who distinguishes between operational (cf. type IIIa and IIIb), monitoring and control (cf. type II), planning and decision (cf. type II), communication and inter-organizational systems (cf. type IIIc). The basis of this typology is that different types of systems impact the organization in different ways. Thus, both in practical development work and in research on IS implementation, it becomes important to look at the type of system in order to anticipate and/or understand the type of effects.

In this typology, the implementation of operational systems is seen as affecting (among other things) work flows, work force composition and social interaction patterns. Implementation of monitoring and control systems is seen as affecting autonomy and control, as are planning and decision systems (which for example influence where and by whom decisions are made). Introduction of communication systems affect work location and communication patterns, whereas inter-organizational systems affect inter-organizational dependencies (ibid).

To further clarify an important difference between operative information systems and various types of control systems: the introduction of operational systems "directly" affect a large number of people, whose work can become threatened or fundamentally changed as the new technology is introduced (cf. Zuboff, 1988). Control systems on the other hand, such as e.g. financial control systems, directly affect only those relatively few people who are involved in financial control activities as managers or staff (cf. Westelius, 1996, e.g. pp. 181-204), but indirectly—in second-order effects—they affect just as many or more people, because new financial control systems often mean changed principles for financial control, which in turn affects individual behavior (Östman, 1980).[24] Interestingly, several influential studies of IS implementation concern planning and control systems without explicitly discussing how this may affect the results of the studies (Markus, 1981; Markus 1983; Kling and Iacono, 1984).

Different types of information systems are often seen as requiring different development strategies, resources, implementation tactics and maintenance routines (Alter, 1992, pp. 127-140). Operative information systems, also called transaction processing information systems, are characterized by relatively large demands on development and maintenance resources and strict routines for maintenance changes. Often, business operations are vulnerable to malfunctions in transaction processing information systems (ibid). A frequent example of this type of system is an airline reservation system (Copeland and McKenney, 1988), but information systems with these characteristics can be found in most or all industries, from manufacturing (Zuboff, 1988) to health care (Wiederhold and Perreault, 1990).

In relation to this discussion of types of information systems, it should also be noted that *second-generation information systems,* systems replacing existing, "legacy", information systems, pose special problems. One problem is that development of a second system is often associated with large increases in ambition level (Brooks,1995, pp. 51, 234, 257, 259). Another and quite different problem is that existing information systems are embedded in organizational processes, making process change as well as system replacement difficult (Kelly et al, 1999). Legacy information systems may be especially common in industries such as financial services, for reasons to be discussed in section 2.6 below.

If Kelly et al (ibid) are right, it is likely that some second-generation (and later generations for that matter) information systems bring with them little or no organizational change. Edwards (1996) proposes that IT projects that are major in terms of investment and technical change, but with little or no "user change" (organizational change), may constitute special situations for project governance (ibid, p. 377).

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[24] Cf. Langefors (1973/1966, pp. 200-208) on operative respectively directive information.

Although no typology of information systems or of IT projects according to size or complexity was used in this study, one definition of IS size states that "a large software system is understood to be one that requires more than one management level to coordinate the effort, and more than a six month development period" (Zmud, 1980, p. 45). Another view of project complexity and risk suggests project size, organizational familiarity with chosen technology and project structure (how clear/fixed vs. unclear/fluid the project task is) as important criteria for IT project risk assessment (Applegate et al, 1999, pp. 282-284). In a study testing this framework (Gogan et al, 1999) found that system interdependence and fixed time constraints made projects involving legacy systems potentially more risky than "strategic opportunity" projects involving new technology.

2.6 Understanding Specific Context: IT in Banking

Above, it is argued that the nature of the task, the characteristics of the resulting IS (innovation) and the characteristics of project organization and control influence what a project is and becomes. Here, it is argued that the organizational and industrial context also matter. The case study described in chapter 4 takes place in a bank, which gives us a reason to look briefly into what information technology means for banks and other financial firms.

The financial services industry has been undergoing considerable changes in competition and industry structure for some time (Niblack, 1980; Löwstedt et al, 1981; Crane and Bodie, 1996). These changes include reductions in government regulations, competition from new market entrants from other industries and new information technologies, the latter in turn leading to declining processing costs and a reduced significance of geographic boundaries (Crane and Bodie, 1996). The rapid developments in information technologies also enable changes in service offerings, service production and service distribution (Pennings and Harianto, 1992; Crane and Bodie, 1996).

But there are additional reasons why the firms of a once highly regulated, conservative industry (Burton, 1990; Pettersson, 1993; Rogers, 1993; 1999)[25] where risk assessment and risk management is central (Crane et al, 1995) have long been early adopters and innovators in IT (McKenney, 1995). In financial services firms, as in other information-intensive industries, information processing capability (through the above developments) correlates strongly with product and service scope, quality and delivery capability. IT is the core production technology of these firms, and thus of fundamental importance (Applegate et al, 1999, pp. 17-18; McFarlan, 1984; Eriksson and Mattsson, 1996, p. 36).

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[25] Deregulations of financial sectors in several countries have been followed by periods of turbulence as well as long-term reduction of stability and ditto increase in competition, though as different times in different countries or regions, such as the US, the UK and Scandinavian countries (Burton, 1990; Pettersson, 1993; Rogers, 1993; Lai, 1994).

Through the use of IT, firms in these service industries have been able to "industrialize" major parts of their operations, which is a key to improving productivity in service industries (Levitt, 1972, 1976). This includes routinization of service processes, standardization of services, decoupling of the customer from the service production process, delegation of tasks to less skilled labor, and mechanization of tasks (Levitt, 1972; Northcraft and Chase, 1985). In banking, even early information technology hardware and software facilitated this "industrialization" of service production (McKenney, 1995, ch. 3; McKenney et al, 1997). For example, Bank of America was active in developing not only software but also hardware for check processing in the 1950s, achieving huge productivity improvements during the late 1950s to mid-1960s (McKenney, 1995, ch. 3).

There are some characteristics of service production which can serve to further clarify the dependence on IT (and the resulting vulnerability) of financial firms. Most service production is characterized by *inseparability of production and consumption* and by the *perishability* of services.[26] These attributes mean that the production process is highly visible to customers and that production output cannot be "saved for later"—there is no inventory (Normann, 1983, pp. 15-17; Zeithaml et al, 1985). These characteristics lead to different demands on the processes for providing customers with services, compared to production and distribution resources and processes in product-based firms (Normann, 1983; Campbell and Verbeke, 1994). For examples, it is difficult or impossible to create buffers in service production, since services have to be produced at the point and the time of delivery, which places extraordinary demands on the IT infrastructure in terms of reliability, or "system up-time".

Keen (1991) suggests that two dimensions are central in how an organization's information technology platform determines the organization's capabilities: *reach,* ability to communicate information to different locations, and *range,* ability to provide different types of information and perform complex transactions (ibid, pp. 1-9, 179-180). In the financial industry, customer needs, the type of services delivered and the points of service delivery seem to favor concurrent availability of the whole range of automated services, as well as systems support for non-automated services. This in turn places high demands on integration of information systems, technology and other IT resources (Harris and Katz, 1991; Peffers and Tuunainen, 1998).

Furthermore, not only do IT resources need to be highly integrated as such, but there also needs to be a high level of integration between information systems and business processes (Harris and Katz, 1991; Peffers and Tuunainen, 1998) as

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[26] Other characteristics of services include *intangibility* (services cannot be observed, touched, etc. in the same way products can) and *heterogeneity* (services are often unstandardized, largely due to the personal interaction often inherent in service delivery) (Normann, 1983, pp. 15-17; Zeithaml et al, 1985).

well as a high level of inter-organizational integration of information (transaction) flows (Pennings and Harianto, 1992, p. 31). Probably as a consequence of these integration demands, financial services firms are likely to have centralized IT departments and large central data processing facilities (e.g. Caron et al, 1994, p. 243; McKenney et al, 1997). In recent years, however, there is an increased level of IT outsourcing in the banking sector as in other sectors (Ang and Straub, 1998). "Complete" outsourcing is relatively rare, however,[27] and the degree of outsourcing correlates strongly with firm size: Small banks are more likely to outsource part of their IT operations and management than larger banks (ibid, p. 544).

The large information systems portfolios commonly resulting from advanced, early adoption of IT comes with the drawbacks of requiring large running costs and a great deal of maintenance work (Swanson and Beath, 1989, pp. 97-100). Having a long history of IT use and a large IS portfolio also often means that the number of aging, or "legacy", information systems is growing, and that information systems differ in age and in technology used (ibid). Legacy systems often prove to be major obstacles in exploiting new business opportunities or acquiring and integrating new technologies, and thereby they in effect threaten the competitive capabilities of the firm (Kelly et al, 1999).

In the midst of this situation, the continued ability and propensity of banks to adopt technological innovations is strongly related to prior experience and to inter-organizational relationships (Pennings and Harianto, 1992). While the former factor indicates considerable path-dependency in innovation capability, the latter factor indicates a route to changing innovation capability, namely by engaging in (or disengaging from) inter-organizational relationships which provide access to external expertise (ibid).

However, as we shall see below and in chapter 4, being masters of the core technology is not the same thing as being masters of the firm, nor vice versa.

2.7 Executive Involvement in IT Project Management

Above, we have addressed executive involvement in IT, projects and various aspects of IS development. We have also briefly outlined specific characteristics of the banking industry related to the use of IT. Together, these sections provide important contexts concerning the problem area, theory areas and distinctions and delimitations related to this specific study. In this section, we focus more specifically on executives and IT projects. In the section, we will look at several different perspectives on executive involvement in IT projects, including variants of top management support, escalation of commitment, and the organizational control perspective. In the subsequent section (2.8) we then turn to limitations of control.

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27 The major IT outsourcing effort at Continental Bank (US) is an exception (see Huber, 1993).

2.7.1 Top Management Support, Managerial Roles and Leadership

> *Few nostrums have been prescribed so religiously and ignored as regularly as executive support in the development and implementation of management information systems (MIS).*
>
> *(Jarvenpaa and Ives, 1991, p. 205)*

It would seem that top management support is the thing to have. Many studies have shown, again and again, the importance of top management support for the success of IT projects (Lucas, 1975; 1981; Bardi et al, 1994).[28] However, what "top management support" means has been hard to pinpoint (Sauer, 1993b). For example, what is support and what is not? What support is necessary? There are several other questions related to this and to help raise them, we will first look at three perspectives which seem to fit with earlier studies on executive involvement in IT projects.

The research on managerial involvement in IT projects seems to adhere to one of three rather different views on management, which have been extensively used in management research, namely: *functions* (e.g. Barnard, 1956/1939), *roles* (e.g. Mintzberg, 1973) and *leadership* (e.g. Kotter, 1982; 1990).

In the first of these perspectives, the functional, executive involvement in IS projects is studied in terms of (in my words) "services delivered as needed" (cf. Sauer, 1993a). In this perspective, where studies on "top management support" fit well, the manager as individual is hardly visible; only the functions she provides.

In the second perspective, management involvement is studied in terms of "role performances" (e.g. Rockart and De Long, 1988). Here, individuals take on different roles, and several interrelating roles need to be performed sufficiently well for an IS development and implementation process to be successful. An important difference of the role perspective compared to the functional is that it takes the individual into account. Roles are formed and changed as action merges with role perception and role expectations (see Sjöstrand, 1973, ch. 5).

The third perspective focuses on the leader and/or on leadership as a process. In this perspective, one individual is often seen as driving and facilitating successful implementation of information technology through her/his personal characteristics and/or abilities to manage change processes (e.g. Walton, 1989; cf. Kotter, 1982).

In his study on IS implementation and failure, Sauer (1993a, 1993b) looked more deeply into top management support and "support management", suggest-

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[28] The same is often stated in project management literature (e.g. Pinto and Slevin, 1987; Pinto and Mantel, 1990; Pinto and Kharbanda, 1995, ch. 4; Ford and Randolph, 1998; Scotto, 1998).

ing that support for an IS project can be divided into *funding, fixing* and *power-broking* (Sauer, 1993a, p. 100). Funding includes financing as well as making various types of resources available for the project. Fixing includes helping the project by changing or circumventing organizational rules or procedures. Finally, Sauer describes power-broking as something like support of last resort: When financing or fixing fails, a power-broker can help by influencing people or groups with control over funds or contingencies (ibid, pp. 101-102). Sauer also suggests that power-broking is often closely associated with top management support (ibid, p. 102), although it can be provided by actors in other positions.

How does support form according to this theory? Sauer (ibid, pp. 90-91, 97-99) suggests that "supporters" evaluate (proposed) information systems to determine whether they serve the putative supporter's interests. Based on this evaluation, they then decide what support to give. In this process, which can and does take place repeatedly during a project's lifetime, prior commitments can limit the extent to which support can be changed. Project managers and project team members can in different ways influence stakeholders to provide needed support (ibid, pp. 103-109, 325-326; Sauer, 1993b, pp. 63-65).

Sauer's study differs from several other studies on "top management support" in that it is a process study.[29] Many studies pointing to the importance of top management support for successful IS implementation have been factor studies (e.g. Lucas, 1975; 1981; Bardi et al, 1994). Given the basic differences between factor studies and process studies, it is likely that a more detailed knowledge of the "anatomy" of top management support can be gained through process studies, as demonstrated by Sauer (1993a, 1993b). However, there are several problems which remain in this area, some of which are likely to be linked to the perspective and the framing of the problem.

Let us make this clear: The term "top management support" *implies a framing* of the problem. The problem in question is framed in terms of what managers should do in order to contribute to (or ensure) the success of a specific IS implementation effort. This framing implicitly takes for granted that this particular IS implementation effort is worthwhile for the organization (both in itself and in comparison to alternative activities), that it is a feasible and reasonable route to proceed upon, and that if supported, it is likely to have results which are sought after by the supporting executive(s) and/or other parties. In so doing, this perspective strips away the question of whether the project is worthwhile in a way similar to the taken-for-granted view of goals in parts of the project management literature (see section 2.3.4 above). Another direct consequence of this perspective and this framing is that this research tells us relatively little about how managers act, why they act in certain ways, and if, how and why their involvement in an IT project may change over time (cf. Lucas, 1975; 1981; Bardi

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[29] See section 3.1.3 for a discussion on factor respectively process studies.

et al, 1994). The manager is viewed from the viewpoint of the project, the outlook is project-centric. From this follows the classification of this perspective as functional: executives are to perform functions as needed.

In the second perspective, managerial involvement in IS implementation is viewed as a set of roles to be filled and performed (e.g. Rockart and De Long, 1988, pp. 151-169; Lederer and Nath, 1991; Benjamin and Levinson, 1993; McKenney, 1995, pp. 4-6; Edwards, 1996). Typically, roles related to IT projects include that of a *sponsor,* a senior executive seen as a sort of benefactor or “godfather” for the project, often with formal authority and ownership of the problem the project addresses. Another typical role is that of the *champion,* an active executive or a middle manager who helps drive the project forward through promoting, persuading and cajoling, among other means. A third typical role is that of the *project manager.* Sets of roles, as suggested by different authors, are summarized and compared in Table 5.

Sometimes, sponsor and champion are seen as combined in one role (Benjamin and Levinson, 1993), with both formal authority and an active persuading role. Other authors highlight the change-agent role of the champion, in contrast to the sponsor (Edwards, 1996). With the exception of Benjamin and Levinson (1993), these studies see each executive role as embodied in one individual. They do not address interaction between actors as a process related to fulfillment of roles.

Beath (1991) has pointed out that for a person taking on a champion role the demands and the prospects for success depend upon the amount and type of support coming from the IT organization. This support can range from providing the IT champion with facts and figures that help the “good cause” and providing resources (free in early stages) to supporting the champion in political processes (ibid, pp. 356-359, 367). However, there are potentially conflicting interests between IT executives and champions. In some instances, IT executives promote IT department issues, e.g. enforcing standards and procedures. Consequently, some champions choose to work around the IT department in order to achieve their goals (ibid, pp. 367-369).

This second perspective acknowledges individuals in relation to a role. These roles are carried out in organizational processes, although typical roles and role sets are often not oriented towards the dynamics of governance processes. Specifically, there is often no account of how a role changes over the course of a project.

In the third perspective, top management responsibilities in major IT implementation efforts are seen as a question of *leadership.* In this perspective, top managers are seen as important for building and communicating a corporate vision, in which major IT initiatives are integrated and explicated (Walton, 1989, pp. 216-218; cf. Kotter, 1982; 1990). Walton stresses the need for leadership throughout the process of implementing new information technology, at several organizational levels (ibid, p. 217). Even if leadership is seen primarily as a process (Kotter, 1990, p. 3), the actions which build and sustain the process are often tied to a small number of individuals (ibid, ch. 2).

The individual leader's (e.g. CEO's) attitudes towards and assumptions about information technology are likely to be important influences on her/his behavior in initiating and leading IT-related change. Both the basic "faith" in IT as "good"

Table 5: A Summary of Views on Key Roles in IS Implementation

Study	Context	Role 1: Executive with Formal Authority
Rockart and De Long (1988)	Executive Support Systems	*Executive sponsor:* An informed and committed senior executive with realistic expectations, who initially requests the ESS and is willing to spend time and effort on the project and advocate it to stakeholders.
Lederer and Nath (1991)	IS development (within an organization)	Not described.
Benjamin and Levinson (1993)	IT-enabled organizational change	Combined with Role 2.
McKenney (1995)	Long term industry-leading use of IT	*Technology champion:* A top executive, usually the CEO, who nurtures IT solutions to growth-restraining problems, allocates funds, and demands results ("visionary and bookkeeper").
Edwards (1996)	IT projects (within an organization)	*Sponsor:* Member of senior management accountable for effective implementation of all changes involved in a major IT project, who oversees project and serves as a link between project and its environment and as an ambassador for project.

(cont.)

for the organization and their degree of conviction about the likelihood of achieving positive outcomes influence CEO behavior (Schein, 1989, p. 9). In this perspective, a CEO or other leader can facilitate change by promoting and coercing the behavior of members of the organization. This can be done by, for example, disconfirming existing behaviors, values and assumptions, by inducing anxiety or guilt, by providing psychological safety during transition, by stimulating subordinate learning and by reinforcing new behaviors, values and assumptions (Schein, 1989, pp. 2-8). CEOs can also act as role models in order to stimulate imitation or identification, e.g. by using IT and making their IT use public (ibid, pp. 5-6).

The leadership perspective has been used relatively infrequently in studies on IS/IT implementation. A characteristic of the leadership perspective seems to be that IT-related change tends to be subsumed under the umbrella of corporate leadership. It is likely that the nature of leadership will *not* change considerably

Table 5 (cont.): A Summary of Views on Key Roles in IS Implementation

Role 2: Influencing Executive	Role 3: Project Manager/Team	Study
Operating Sponsor: Participates in the development of the ESS, knows the executive sponsor well and serves as an intermediary between her/him and the development team.	*Project manager and design team:* A group which is responsible for the development effort, able to work with stakeholders and combine skills and resources.	Rockart and De Long (1988)
Project champion: An executive from the business area, who defends and advocates the project, influencing other executives. Takes personal risks to help the project.	*Project manager:* Responsible for day-to-day operation of the project.	Lederer and Nath (1991)
Champion: One or more people who provide and advocate funding and other key resources, influence stakeholders and provide coaching and counseling as needed.	Not described.	Benjamin and Levinson (1993)
Technology maestro: A technology manager with “remarkable combination of business acumen and technological competence”.	*Technical team:* A group able and willing to develop new procedures and functions that take advantage of emerging technology.	McKenney (1995)
Champion: Promotes breakthrough change effort without having formal authority to lead, control or coerce change (cf. change agent).	*Project manager:* Manages project work on a continuous basis.	Edwards (1996)

depending on the nature of the specific task or type of change: Leadership will remain leadership, although there are likely to be variations related to culture and context.[30]

Corporate leadership is often associated with and studied in relation to large-scale organizational change (Kotter, 1990; 1995). In the study of managerial

[30] Conversation with John P. Kotter, November 30, 1993.

actions in relation to IT projects, it would seem that the leadership perspective would be suited to studies where an IT project is an integral part of a substantial corporate change (though it need not necessarily be "transformational", cf. Kotter 1995). In contrast, theories on escalation of commitment focus on resource allocation rather than organizational change.

2.7.2 Commitment and Escalation: Too Much of a Good Thing?

> *Organizational behavior, as a field, historically has confused theories of human behavior with theories of organizational outcome.*
>
> *(Salancik, 1977a, pp. 1-2)*

In section 2.4.4 above, I described research on escalation of IT projects, and indicated that we would return to the subject of escalation and commitment. This section focuses primarily on the concept of commitment as part of social action, rather than on escalation of IT projects. In so doing, it contrasts the view of commitment in escalation theory with other theories on commitment.

Whereas studies on top management support generally assume that (IT) projects should survive and should be "supported" in order to do so, studies on escalation of commitment concern what happens when organizational undertakings should *not* survive, but do. In so doing, escalation theory, whether in psychological research or applied in the study of IT projects, studies "decision-makers" who allocate resources to a course of action (e.g. Brockner, 1992, p. 39). Applied to IT projects, commitment and its escalation can be seen as one aspect of managerial involvement.

In studies on escalation theory, escalation of commitment is equated with continued allocation of organizational resources in spite of negative feedback concerning the viability of the course of action. Continued resource allocation is seen as being carried out through repeated decisions in which "real choice" exists concerning whether to continue, and the outcomes of the alternatives are uncertain (Staw and Ross, 1978; Brockner, 1992, pp. 39-40). Thus, in this perspective, allocation of resources is often seen as resulting from (discrete) decisions by a group of "decision makers". (cf. Staw and Fox, 1977; Garland, 1990; Brockner, 1992). In these studies, a frequently used model for studying and explaining escalation of commitment divides factors causing escalation of commitment into task-related (project), psychological, social and organizational (structural) (e.g. Staw and Ross, 1987)[31].

Other views of commitment emphasize that commitment is a psychological state, which results from actions characterized by visibility, irrevocability and volition (e.g. Salancik, 1977a; 1977b). In view of this, it would seem that escalation theory has indeed confused human behavior with organizational outcome.

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[31] This is also the model used by Keil (1995b) as described on pages 45-47 above.

By equating resource allocation with commitment, the above view of escalation of commitment incorporates (and obscures) an operationalization of the studied phenomenon. This operationalization replaces constructed meanings of human behavior in social contexts with measurable outcomes of discrete decisions. While this facilitates the use of extensive (as opposed to intensive) research methods, it fails to acknowledge central characteristics of what commitment is or is generally thought to be.

Commitment is a psychological phenomenon and a social phenomenon. This is evident from how actions bind the individual to something. The visibility of the actions, that they can be seen by others, is an important dimension. Furthermore, the actions should be of a kind which cannot be reversed (irrevocability), and they should be carried out with volition, i.e. by choice and consequently with responsibility on behalf of the actor rather than because of external force (Salancik, 1977b, pp. 64-70). These characteristics of actions are of course not clear-cut, nor easy to determine. It would seem that this is a matter of perception and construction by the actor and by people in the social context of the action (cf. Salancik, 1977b, p. 69), which implies social interaction as part of the formation of commitment (cf. Brunsson, 1985, pp. 52-53).[32]

One of the differences between escalation theory and this explicitly social view of commitment seems to concern the level of analysis (cf. Strauss and Corbin, 1990, p. 162); another is the centrality of decision making versus action (cf. section 1.2.1; also Brunsson, 1985). The escalation-theory view can be seen as focusing on organizational commitment resulting from group decision making, whereas the view above represented by Salancik focuses on individual commitment resulting from individual action. Both views take in the social context in explaining commitment. One way to bridge the two views could be to distinguish between individual commitment, group commitment (both being psychological/social) and organizational commitment[33] (which could perhaps be equated with sustained resource allocation). One argument for this is that equating resource allocation with commitment would be less problematic on the organizational level than on the individual and group levels, or, for that matter, when mixing levels of analysis.

If the discussion above addresses what commitment *is,* what does it do? Being committed is being tied (bound) to a line of action (Salancik, 1977a, p. 4; Brunsson, 1985, p. 52). If the ties are "strong", they persist through the effort and energy required to overcome difficulties that arise in following through with the line of action to some sort of goal or result (Brunsson, 1985, p. 52). The actions

[32] Whereas Salancik (1977a; 1977b) emphasizes the psychological aspects of commitment, Brunsson (1985), emphasizes the social, although both authors include both aspects in their respective views on commitment.

[33] In this context, I do not mean this as individual commitment to a specific organization.

leading to commitment include promises to endorse and participate in an action, as well as assuming responsibility for the concerned action (ibid, p. 53). Consequently, responsibility can be avoided by non-participation, non-endorsement or opposition. This, however, comes with a risk should the proposed action take place and be perceived as successful (ibid, p. 53).

Expectation influences commitment, in that it is detrimental to associate with a prospective action which is unlikely to materialize. On the other hand, commitment increases the individual's motivation to see the line of action through, and the commitment of important parties influence expectations that the line of action will be carried out (Brunsson, 1985, pp. 174-175). Ways to avoid commitment include avoiding committing behaviors or avoiding visibility of behavior (Salancik, 1977a, pp. 45-46). Reduction of commitment can be effectuated by constructing an explanation for why a change of behavior is justified. It can also be effectuated by replacing the individuals who are committed by past actions (ibid, p. 48).

Salancik (1977b, p. 63) also points out that the question "Commitment to what?" is important. Commitment can be related to an organization as well as to values, goals, policies or beliefs (Salancik, 1977a, pp. 2-3, 27-42). For example, one person committed to a *goal* (no matter the road there) and another person committed to a *procedure* (leading to a goal) may end up adversaries after having worked together for some time.

The discussion above suggests that there are weaknesses associated with the escalation-theory view of commitment related to the operationalization of the concept. It also suggests that the view of commitment offered by other literature is richer, facilitating richer descriptions and analyses. At the same time, the view of commitment as psychologically and socially constituted *also* adheres more closely to the common sense view of what commitment is. One possibility which this broader view of commitment opens, is to link commitment to control actions (broadly defined). To do this, we need to take a look at organizational control.

2.7.3 The Organizational Control Perspective

This section attempts to do several things. First, it introduces and comments upon forms and classifications of control. Second, it summarizes and discusses a small cluster of reports on IS project control. Finally, it addresses selected additional aspects of control, with specific focus on problems and issues of particular interest for this study.

Several researchers within organization theory have suggested classifications of different forms or types of control. Two frequently addressed dimensions seem to concern *through what means control is exercised* and *what control pertains to.*

In the first dimension, a recurring distinction is between *direct* (personal) control and *bureaucratic* (indirect) control (Perrow, 1986, p. 129; Sjöstrand, 1987). According to Perrow (1986), who also distinguishes *cognitive* control, direct control includes order-giving, direct surveillance, and rules and regulations.

While direct control can be considered expensive and reactive, bureaucratic control, which include specialization and standardization and hierarchy, is far more efficient. Cognitive control, or more correctly "control over cognitive premises underlying action", which by Perrow (ibid) is considered difficult to achieve but very effective, becomes evident in subordinates voluntary restriction of what "stimuli" will be attended to.

In a variant of this classification, Pennings and Woiceshyn (1987) see *personal control* as agency-related, concerning individual and group actions through information and control systems. This control is dyadic, it takes place between controller(s) and controllee(s). In other words, indirect control (in the above) can also be dyadic. *Systemic control* on the other hand is an organizational attribute, vested in the task structure, technology, social structure and culture of the organization (ibid, pp. 74, 80-84).

Turning to second dimension, the question of what control pertains to, a frequently used distinction is between *behavior control* and *output control.*[34] Behavior control concerns the exercise of control over how things are done and outcome control concerns control by stipulating desired outputs of a process and measuring actual outcomes against desired (e.g. Ouchi, 1978; 1979). To these forms of control can be added *input control.* Control through influencing inputs includes selection/employment of managers and other employees (Eisenhardt, 1985, p. 148; Sjöstrand, 1987, pp. 86-87). This selection of individuals encompasses a form of *value* control in that individuals can be chosen based on their values and beliefs (ibid, pp. 86-90). Often, value conformity between controller(s) and controllee is seen as desired by the controller(s) and this can then be additionally furthered through training and other forms of organizational socialization (Eisenhardt, 1985; cf. Schein, 1988b/1968). Influence over behavior in Sjöstrand's (1987) classification encompasses direct, interventive actions as well as indirect influence through policies, instructions and rules. This indirect influence also bears a powerful value-influencing function, through its effectual "programming" of human action (ibid, pp. 86-87).

The classification of control into input, behavior and output is consistent with the two dimensions of control classifications suggested above. There are, however, other concepts used in control theory whose relations to other concepts are more ambiguous. Three of these, discussed in the following, are: values, self control and trust.

As mentioned above, Perrow (1986) sees "control over cognitive premises" as an alternative to direct and bureaucratic control. Ouchi (1978; 1979), on the other hand, sees "clan control" as a form of control comparable with behavior and

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34 These concepts are related to and often seen as based on transaction cost theory (Williamson, 1975) and/or agency theory (Jensen and Meckling, 1976; see section 1.2.3). For a succinct account of this, see Eisenhardt (1988).

output control. In his view, clan control concerns control which neither focuses on behavior nor on outputs, but on *adhering to norms and values* of a group and to feelings of belonging to that group (ibid). A problem with the label "clan control" is that a clan is a distinct type of organization, where the individual's relation to and position in the organization often are quite strong and stable, based in many cases on blood ties (Sjöstrand, 1997, pp. 207-209). Examples include family clans, business dynasties and mafia families. In Ouchi's (1979) typology, however, clan control refers to a form of control built on shared norms and values and a sense of belonging, regardless of the type of organization this takes place. Value control (cf. above) might thus be a better term for the phenomenon in question.

Sjöstrand (1987) sees influence over values as occurring in conjunction with input control, but also in conjunction with various forms of indirect control. In this study, norms, values and shared beliefs are seen as ingrained in and reproduced through both structures and human action (Schein, 1992; cf. also Giddens, 1979). Thus, existing values, norms and beliefs influence control and are influenced as control happens, whether it be direct or indirect and whether it concerns inputs, behavior or outputs. In this process, organizational culture is formed or influenced (Sjöstrand, 1987, p. 87). In this study, culture is viewed as quite stable and thus difficult to influence separately and intentionally (Schein, 1992). (Cf. also the concept systemic control, page 55.)

Another suggested form of control is *self control.* This includes independent (by the individual) problem assessment, goal setting, self-rehearsal, self-observation, self-evaluation and self-reinforcement and/or punishment (Manz and Sims, 1980, pp. 362-364). This form of control differs in one important respect from other control forms discussed above: Whereas control forms are often seen as alternative or complementary choices for the exercise of control, the controller and the controllee are in this case the same person. In terms of the distinction made by Pennings and Woiceshyn (1987) concerning dyadic-personal respectively indirect control, it would seem that self control should rather be categorized as intrinsic-personal.

Pennings and Woiceshyn (1987) devote considerable attention to *trust* as a form of control. Predominantly, they see trust control, as concerning interpersonal trust among a dyad or group of people.[35] Trust (faith in dependability and predictability) emerges over a longer time period but can be destroyed abruptly. In relationships where trust is part of the control set, the dyad or group involved develops particular rules that govern their relationship. This mutual trust reduces complexity and workload in a person's task environment (both for controllers and controllees). It works partly through constraining behavior, which is intrinsic

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35 Pennings and Woiceshyn (1987) also briefly discuss institutional trust—trust related to a certain role incumbent (e.g. the HIM manager), which can be seen as part of structural control—although they mainly focus on personal trust (ibid, p. 86).

to and exercised by the individual her-/himself; compliance is self-monitored and reinforced (ibid, pp. 74, 85-86). Specifically, trust will lead to a reduction of other control activities by the controller (Johansson and Östman, 1995, pp. 25-26). In this way, trust relates to self control. This discussion points to a similarity between trust and values/norms, in that both moderate the use of various forms of control.[36] This will be the predominant view of trust in this study: not as a separate control form in itself but rather as a characteristic of a control relationship, which moderates use of control forms. The issue of trust in control relationships has not been frequently addressed in IS project control studies (e.g. Kirsch, 1996; 1997), although an early effort using control theory (Beath, 1987) reports, in passing, on mutual trust between a project manager and users/managers as an aspect of project governance.

It should be noted that the control forms discussed here are not distinct, exclusionary choices but complementary and interdependent (Holmberg, 1986, p. 146) and are thus often used in conjunction in the control of complex tasks (Kirsch, 1996, p. 17). A related detail concerns the relationship between *monitoring* and control: Eisenhardt (1985) suggests a clear separation between the two: Obtaining information is not the same as acting on that information in order to influence behavior (ibid; Kirsch, 1996, p. 3). In contrast to this, Mårtensson and Mähring (1992, pp. 29-30, 116-119) found a considerable variety in the functions and purposes of information flows to managers and a fluid delimitation between monitoring and control: Monitoring encompasses communication and interpretation of meanings which influences behavior (cf. also Johansson and Östman, 1995, pp. 16-19).

Theories on organizational control have been used quite infrequently in studies of executive involvement in IS implementation (or in the control of IT projects).[37] A prominent exception is offered by Kirsch (1996; 1997), who looked at the use of different control forms in relation to information systems development projects.[38] Kirsch (ibid) used a classification of control forms based on Ouchi (1978, 1979) and on Manz and Sims (1980). This classification is summarized in Table 6.

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[36] In a wider sense, trust can also be seen as an important part of informal organizational networks, which in turn are part of the ties forming the texture that holds organizations together (Pennings and Woiceshyn, 1987, p. 87; cf. Weick, 1979/1969).

[37] This is rather interesting since the "standard" roles often found in IS implementation studies (section 2.7.1 above) actually resemble a standard control relationship with a twist: If the control aspect is emphasized for the three roles found in Table 5 (page 50), they could be renamed principal—intermediate—agent, or controller(s)—controllee.

[38] Henderson and Lee (1992) also use control theory to study IS projects, but focus on the management of IS design teams, in other words control relationships *within* a project where the project manager is the controller, not the controllee.

In a study focused on self control, Kirsch and Cummings (1996) found the perception of self control by IS project managers to be highest for individuals with considerable work experience, leading smaller, less complex ISD projects. They also found that the existence of work procedures modified by project managers increased the perception of self control (ibid, pp. 212, 214). In another study of professionals in service industries, self-management was found to increase effectiveness in functional units but not in cross-functional units, which is of interest since project teams are often cross-functional (Uhl-Bien and Graen, 1998, pp. 341-342).

In the first report on her study of IS project control, Kirsch (1996) found several things about how IS managers and user managers controlled IS projects. In line with prior research, use of behavior control was found to be related to controllers' understanding of the development process and to task characteristics (such as observability of the steps of the process). In addition, outcome control,

Table 6: Characteristics of Four Modes of Control (adapted from Kirsch, 1996, p. 4)

Formal modes	**Behavior Control** Behaviors that transform inputs to outputs are known. Controller monitors and evaluates controllee's behaviors. Explicit link exists between extrinsic rewards and following behaviors.
	Outcome Control Desired task outcomes are known and measurable. Controller evaluates whether outcomes were met. Explicit link exists between extrinsic rewards and producing outcomes.
Informal modes	**Clan Control** Task-related behaviors and outcomes are not prespecified. Goals are determined by clan and evolve during the task period. Clan identifies and reinforces acceptable behaviors. Rewards are based on acting in accordance with clan's values and attitudes. Shared experiences, values, and beliefs among the clan members. Members exhibit strong commitment to the clan.
	Self Control Controllee sets own task goals and procedures. Controllee is intrinsically motivated. Controllee engages in self monitoring and self evaluation. Rewards are based partly on controllee's ability to self-manage.

such as rewards for goal attainment, was related to measurability of outcomes (including interim results). As outcome measurability decreases, the likelihood that project managers self-manage projects increases, which is not the case when behavior observability decreases (Kirsch, 1996, p. 14).

In this report, Kirsch did not find any clear indications of how and when "clan" (value) control was used. This is probably related both to the chosen research approach and to the nature of how values and norms influence people. Kirsch (ibid) primarily investigated personal, direct control, using questionnaires. Shared values and norms are to a large extent taken for granted, unconscious and often transmitted by such means as socialization, structures, symbols, and through direct action in (response to) critical incidents (Schein, 1992, ch. 2, ch. 12). In a subsequent report on the same study (Kirsch, 1997), the use of a qualitative approach helped achieve better results in this respect.

Kirsch (1996, p. 15) also stressed that the typical IS approach to managing the development process is replete with behavior control mechanisms, many of which are embedded in ISD methodologies, and that this puts controllers with little or no task (domain) knowledge at a disadvantage and forces them to learn the language and techniques of IS. (Cf. the discussion on IS development methodologies in section 2.4.1.)

In a second report (Kirsch, 1997), combinations of control modes where investigated. In this study, it was found that factors such as availability of pre-existing mechanisms, task characteristics (observability, measurability), role expectations and project-related knowledge (cf. domain knowledge above) affected controllers' selection of control forms (control modes). The first factor means that controllers use existing control mechanisms, such as standard reporting practices and planning approaches. Similarly, standard objectives were used for goal setting (outcome control). Control through values and norms was relied upon when outcomes and behaviors were difficult to observe. Role expectations, both concerning the role of self and of others, also influence controller actions, in that accordance with role expectations are sought.[39] Together with controller task knowledge, the (perceived) skill of the project manager influenced choices to rely on outcome control and to "induce" self control (ibid, pp. 231-232).

Finally, Kirsch (ibid, pp. 234) suggests seeing the use of combinations of different control forms as control portfolios, and proposes that controllers construct a portfolio of control forms (or modes) through a process. In this process, a combination of existing and newly constructed control mechanisms are chosen, on the basis of the controller's individual prerequisites for the control task (see Figure 7).

Kirsch's (1996; 1997) study achieves several things. First, it provides details on what managers actually do when controlling IS projects. Second, it provides (partial) explanations for managers' choices of certain control forms over others in different circumstances. Third, it points to the importance of looking at combinations of control forms. Fourth, it shows that control theory can provide a means for studying managerial involvement from a *project governance* perspective rather than from a *project management* perspective.

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[39] Here, Kirsch (1997, p. 232) does not seem to distinguish between a controller's *role perception* (self) and her/his *role expectations* concerning the role of the controllee (other) (cf. Sjöstrand, 1973, ch. 5).

Kirsch's study concerns IS projects of varying sizes and complexities, although almost exclusively controlled by one controller from the IS department, with a user manager in a secondary role. More complex or extensive patterns of actors involved in governance are not covered in the results. Further, the study does not provide compelling evidence on why and how controllers go about forming their "control portfolios", nor does it offer more elaborate descriptions of whether and how control behavior changes during a project. Still, the study shows that if we want to understand managerial behavior in IS project control situations, organizational control theory offers tools for doing so as well as potential for arriving at explanations which avoid some of the problems related to e.g. the top management support perspective.

The *view of the control relationship* as involving one (or one primary) controller and one controllee is far from unique for Kirsch. Much of agency theory also sees one controller or equates situations involving one respectively several controllers (e.g. Jensen and Meckling, 1976; cf. Eisenhardt, 1988). In studies with other theoretical starting-points, similar views of controllers as "lone rangers" can be

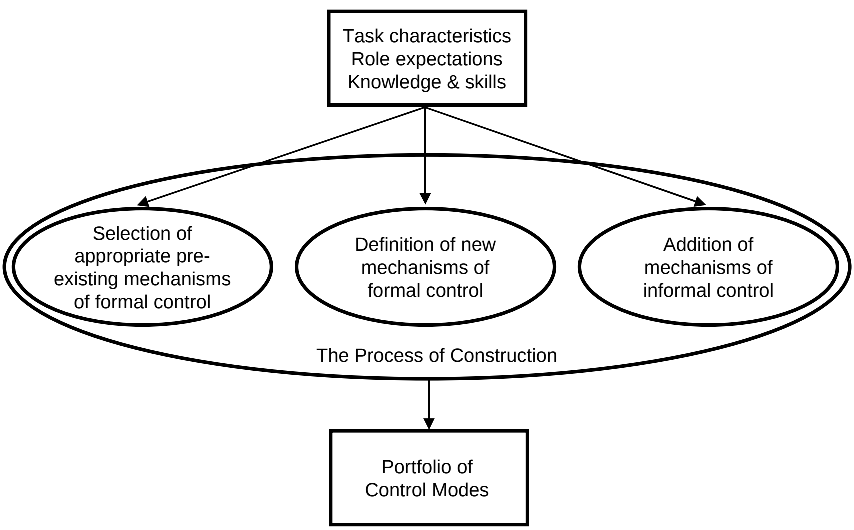

Figure 7: Constructing a Portfolio of Control Modes (from Kirsch, 1997, p. 233)

found (cf. section 2.7.1 above). In contrast, escalation theory usually assumes that a "group of decision makers" controls a project, but normally does not dwell upon how this group is formed or how individuals in the group interact. Kirsch's studies on IS project control investigate IS managers as controllers of IS projects, with user managers also exercising control as responsible for providing a user´s perspective on the development work (Kirsch, 1996; 1997).

However, a commonly used view of how control and influence is exercised in organizations entails the concept of a *dominant coalition* (Cyert and March, 1992/1963; Child, 1972, pp. 13-19; Pennings and Woiceshyn, 1987, pp.74- 79; Scott, 1992, pp. 288-290). Originally, the term referred to the group of people which had decisive influence over *goal formation* (Cyert and March, 1992, pp. 30-37). Sometimes, the dominant coalition is thought of only in terms of the control of the organization as a whole (Scott, 1992, pp. 288-290). Cyert and March (1992), however, relate a specific coalition to a decision or set of decisions and also suggest that members of a coalition change both over time and in relation to the decision in question (ibid, p. 31). Pennings and Woiceshyn (1987) relate the dominant coalition to a task to be controlled.

Kirsch (1996) points to a need for research on how individuals share control of a task and on how modes of control differ for different "control episodes" during an IT project (ibid, p. 17). Given the durability of the dominant coalition concept, a viable way of doing the first would be to study how a coalition exercises control over an IT project and a process study would be a viable way to study how control changes over the course of an ISD project.

Related to how control is exercised and by whom is the special problem of *managing in situations where subordinates have superior knowledge* about the task at hand (Perrow, 1986, p. 42), or, in other words, managing sensibly what you don't understand. Perhaps the classic example of this concerns managerial control of professionals in non-professional organizations, where a manager not belonging to the profession is clearly in a situation of having inferior task knowledge in relation to his subordinates. However, it can be argued that this situation is common in organizations (ibid, pp. 42-43), as illustrated by the following quote: "Whereas the boss retains his full *rights* to make all decisions, he has less and less *ability* to do so because of the advance of science and technology" (Thompson, 1961, p. 47, quoted in Scott, 1992, p. 43, emphasis in original).

If this situation is so bad, why is it so common? A partial answer to this dilemma is reached by differentiating between technical expertise and administrative expertise, expertise in managing (Perrow, 1986, p. 46). It seems likely that the problem of the boss who just doesn't seem to understand is more of an inevitability than an anomaly. As Perrow (ibid) points out, even the expert turned manager will soon lose touch with the forefront of her—previous—field of expertise. But if we assume a situation where controllers have little or no task (domain) knowledge, it is of interest to see if and how this affects how control is carried out. In the case where a cross-functional team works with a temporary task (in a project), this problem is likely to be especially pronounced even for project managers (Uhl-Bien and Graen, 1998, pp. 341-342). While the phenomenon is common and explainable, there remains the question of how controllers handle this dilemma in action.

Another aspect of how control is exercised connects control theory to project theory: In the control of projects, control is complicated by the fact that a particular project lacks the continuity of a business unit for example. In a non-temporary organization, output control is facilitated by the repeated (monthly) reporting of outcomes, on which control can be based. In non-repetitive IS development projects, where interim outcomes are difficult to observe (see section 2.4.2), it is reasonable to assume that relying on outcome control comes with high risks. Given the resources and time needed to complete a large IS, doing better the next time may not be an option. In some cases, and for some people, there may not be a next time. Adding to this situation the premise that controllers' domain specific knowledge is often very low, which inhibits behavior control (cf. the discussion above), we have quite a complex and difficult control situation. It is about to get a little bit more complicated.

2.8 The Other Way Around

The previous section looked at various perspectives of managerial involvement in the management and control of IT projects, thereby also touching several theoretical bases. At this time, we have also touched upon two different but related limitations to control. One concerns how controllees can influence how they are controlled (e.g. through building trust and demonstrating self control). The other concerns influence exercised within and by a profession, over its members and by these members over other groups in organizations.

2.8.1 Managing the Boss

In the popular 1980s English TV series *Yes, Minister!*, viewers could follow the fortunes of a practically clueless British cabinet minister as he was effectively managed by his closest non-political staff member. Somehow, the poor minister repeatedly managed to get into deep trouble in spite of his (sometimes) good intentions, whereby his aide would help the minister put things right, in the process undoing the MP's initiative and getting the results the aide had preferred in the first place. In addition to being an entertaining TV series, *Yes, Minister!* illustrates that subordinates manage their superiors, not just vice versa. In its portrayal of how this occurs, the series also reflects a common sentiment regarding managing upwards: it is often seen as slightly immoral or devious (Gabarro and Kotter, 1993/1980, p. 150).

Research on manager–subordinate relationships (ibid), however, shows that the relationship between a manager and her/his boss may be as important to actively "manage" as the relationships with her/his subordinates. Bosses can link managers to other parts of the organization and secure resources (ibid, p. 152). Further, the relationship between a manager and her/his boss is normally one of mutual dependence. Actively managing—rather than passively accepting—the relationship with a boss includes calibrating work style, expectations and information flows and communication patterns. By doing this a manager builds trust and can also question and influence the boss' assumptions and views (ibid, pp. 153-157).

In a rather comprehensive literature review and model-building effort on *selling issues to top management,* Dutton and Ashford (1993) investigate a number of aspects of this phenomenon, focusing on middle managers as "sellers" of issues.[40] They suggest that issue selling consists of initiation, packaging and process, and that important outcomes concern not only whether top management devotes attention to the issue but also whether the "seller's" credibility for future issue selling attempts suffers or is enhanced (ibid, pp. 404-406). This means that "issue sellers can be torn between a desire to do whatever it takes to get the issue sold and a need to curb their behaviors to maintain or bolster their credibility as viewed by top management" (ibid, p. 406).[41]

Initiation of issue selling concerns an individual's choice of whether to initiate the selling of an issue. In this choice, assessments of personal risks and rewards and likelihood of success are important. Dutton and Ashford propose that functional managers are more likely to bring up issues concerning their functional domain than issues outside the domain. Perceived access to top management, e.g. to the communication network of the dominant coalition (of the firm) is also important, which in turn lead Dutton and Ashford to suggest that general (middle) managers are more likely to initiate issue selling than functional (middle) managers. The riskiness of the decision on the issue and the availability of a solution also affect the decision to initiate issue selling (ibid, pp. 407-408).

Issue packaging refers to how an issue is framed and (rhetorically) presented. By framing an issue as a top management responsibility, the likelihood for success in issue selling increases, but the risk for loss of seller's credibility also increases (cf. to "cry wolf"). In the selling process, enrolling others in the selling attempt can be used to reduce personal risk. Immediacy of action and "bundling" with other issues also increase chances of getting attention. Issue packaging also concerns choosing between public or private channels and formal or informal ways of presenting the issue. In these choices, adherence to organizational norms increases the chances of selling a specific issue (ibid, pp. 410-420).

In sum, Dutton and Ashford, and the literature they build on, emphasize that senior managers are influenced in what they give attention and time to and that thus other actors are important in the "management of meaning" in the organization (ibid; Dutton, 1986). The importance of subordinate influence on senior managers is an important addition to the earlier discussion on managerial con-

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40 This builds on the agenda-setting literature which concerns how organizational (often strategic) agendas are set (e.g. Dutton, 1986).

41 Consistent with social constructionism (Berger and Luckmann, 1966), Dutton and Ashford (1993) see issues not as inherently strategic, but rather as strategic when so determined by top management.

trol. The discussion in this section has shown that control is not exercised in a one-way relationship by independent and aloof actors. Rather, it is carried out by actors enmeshed in the organization, its structures and patterns of interaction.

Some interactions and loyalties which affect the control, management and organization of IT projects even go beyond the boundaries of the organization. A specific instance of this will be discussed below, as we return to the IT profession.

2.8.2 The IT Profession in the Workplace: Loyalty is a Many-Splendored Thing

"The central organizing reality of professional life is control of tasks."
(Abbott, 1988, p. 84)

We have already touched upon issues pertaining to the IT profession (section 2.4.1), but it is now time to take a somewhat closer look at the subject. A profession can be described as an occupational group with a special, abstract skill which requires extensive training to acquire and which needs to be applied with discrimination. Further, professions are seen as claiming control over areas of work, or occupations. The area within which authority is held and exercised can be called the jurisdiction of the profession (Abbott, 1988, pp. 7-9, ch. 3).

Studies of professions are often institutionally oriented and often study the process through which a profession emerges and comes into being as a societal institution, often called the professionalization process (e.g. Wilensky, 1964; Larson, 1977). Other studies focus on how professions function and how professions interact with each other (e.g. Abbott, 1988; Sikka and Willmott, 1995). Yet other studies focus on how professions influence aspects of life in organizations (e.g. Wallace, 1995). It is this latter aspect of professions, professional influence on actions in organizations, which is in focus in this thesis.

The enactment of professions in the workplace is an important part of a profession's claim for jurisdiction (Abbott, 1988, p. 64). In an organizational setting, a variety of factors or circumstances influence how and to what extent actors belonging to a profession are able to uphold the jurisdiction of that profession. These circumstances include individual competence or lack thereof, reorganizations and the need for professionals to perform extra-professional tasks (ibid, pp. 65-66).

The IT profession can be seen as less institutionalized than "classic" professions such as medicine, accounting and law (ibid, p. 83). For example, there are no legal or licensing restrictions on practicing systems analysis, contrary to being a practicing physician, chartered accountant or lawyer.[42] (Schooling into the

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[42] Although certification has actually as one time been proposed (McCracken, 1979) and a US certificating institute is or has been active (Orlikowski, 1988, p. 116).

profession is also less pronounced and uniform than for e.g. physicians, lawyers and the clergy.)

Perhaps unexpectedly, this lower degree of institutionalization can be an advantage for the IT profession and its members in inter-professional workplace competition. Abbott (ibid, pp. 83-84) describes how "the computer professions" have successfully claimed increasing control over organizational tasks. Starting with specialized knowledge of programming languages (and of computer operation), computer professionals have also gained control over the algorithms (or procedures) themselves and over the nature and extent of the generated information.

In the years since Abbott's book was published, this expansion of jurisdictional claims by the IS/IT profession has continued, as shown in changing views on the IS/IT professional body of knowledge and evolution of research topics in the field (Cecez-Kecmanovic, 2000). As information systems have "proliferated into all business functions and levels of management" (ibid), the professional body of knowledge of IS/IT professionals has (as an ideal) come to include aspects of all functional areas of management (ibid).

As further illustration of this ongoing development, it would seem that several recent, major management trends have been at least partially claimed by the field and profession of IS/IT. These arguably include business process re-engineering (control over the design of organizational processes—cf. Davenport, 1993; Caron et al, 1994), virtual organizations (control over boundary setting and networks—cf. Venkatraman and Henderson, 1998) and electronic commerce (control over organizational processes, transactions and boundaries/networks—cf. Rayport and Sviokla, 1995; Storey et al, 2000).

When studying professions in the workplace, there is an important distinction to be made between professional and "non-professional" organizations. Professional organizations (hospitals, accounting firms) are focused on carrying out tasks which lie within the jurisdiction of a professional group (healthcare, auditing). This means that supervisors are often professionals themselves and that professional norms and values are less likely to be at odds with organizational values, norms and goals. In non-professional organizations on the other hand, professional groups are usually subordinated to an administrative control structure (see e.g. Scott (1992, pp. 253-256; Wallace, 1995).[43] This discussion focuses primarily on professional groups in "non-professional" organizations.

In nonprofessional organizations, professionals participate in two systems, the profession and the organization. These two systems are based on different principles of organizing, and the dual membership also carries with it the

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[43] Freidson (1984) suggests that the influence of professionals within organizations need not be directly correlated with the societal influence of their profession: Even as professionals or professional groups are subjected to increasing formal control, their professions may uphold their autonomy.

problem of diverging goals, norms and values between the profession and the organization. From the organizational viewpoint, this poses a special problem of organizing (Scott, 1966, p. 266). In the nonprofessional organization, formal rules concerning an area of professional expertise are likely to reflect the shared ideology of the larger professional community (Wallace, 1995, p. 248; Freidson, 1984).

Furthermore, professionals are likely to make explicit their professional system of norms and values to protect their jurisdiction of expertise within the firm (Wallace, 1995, p. 248). From a cultural perspective, this can be seen as being part of the development and maintenance of a professional subculture within an organization, a subculture which supplements, conflicts with and counterbalances the primary organizational culture (Bloor and Dawson, 1994, p. 291).

Thus, the claim for influence of IT professionals in the workplace can be seen partly as an extension of the struggle for legitimacy, respect, power and influence of the profession they belong to. Furthering the profession and furthering the group and the individual in the specific organization are likely to be—and to be seen as—interdependent and coinciding by actors belonging to the profession. Furthermore, with reference to section 2.4.1 above, the use of "professional" IS development methodologies would be an expected part of—a contribution to as well as a blueprint for—these actions. This would mean that a sense of belonging to the IT profession—sharing its norms, values and views on "proper" work processes—is likely to influence the actions of IT professionals in organizations, including their approaches to and actions related to the management of IT projects.

It has been suggested that IT (or DP, data processing) is *not* a profession but rather an occupation (Orlikowski, 1988). This suggestion is made partly on the basis of the IT occupation lacking economic, organizational or political control over their labor. Several other studies, however, indicate that viewing IT workers as professionals is informative and helps explain e.g. power relations in organizations (Abbott, 1988; Beath and Orlikowski, 1994; Markus and Benjamin, 1996). In this study, the central aspect of professionalism concerns how it influences the actions of IT professionals in a non-professional organization. For this purpose, professional theory seems to offer well-functioning theoretical tools.

2.9 Points of Departure

In this section, I will repeat and amplify some of the central findings from the literature review and discussion in the chapter, specifically with regards to shortcomings of prior studies.[44] This is a selective summary aimed at outlining some of the theoretical issues focused in the concluding chapters and at further

[44] Literature searches for this study were conducted repeatedly during the course of the study and largely concluded by the beginning of 2000. Although a some references from 2000–2001 have been included in the thesis, there has been no systematic literature search covering these years.

articulating the arguments for this study and its design. The section does not end with a complete and consistent research model, but rather with pieces of a puzzle, which I intend to put together in the coming chapters, particularly in chapter 5. This reflects the investigative research approach of the study, where empirical material and theory have been collected and selected based on an interplay between the two and how they inform each other (see section 3.3).

The start of this chapter provided an overview of various research streams concerning general management involvement in IT management. In conjunction with this (section 2.2.3), it was also suggested that issues concerning general managers and IT are likely to be non-temporary and that this empirical field will continue to pose theoretical as well as empirical challenges.

The literature review in this chapter also supports the claim made in the first chapter that managerial actions related to IT projects have been studied predominantly in relation to implementation processes, rather than in relation to project governance. Consequently, a focus on governance addresses important issues in need of investigation.

Research on managerial involvement in IT projects has also often employed a "top management support" perspective, frequently through factor studies. This perspective has weaknesses in that it is project-centric, that it assumes that IT projects should be completed, that it is implicitly or explicitly normative (stating what managers "should" do) and that it often does not provide in-depth knowledge about processes of IT project governance.

The research stream focusing upon escalation of IT projects includes aspects of IT project governance. However, it has a limited view of managers as "decision-makers" (cf. section 1.2.1 on the complexity of management), it equates socially defined meanings of social and organizational processes with the material outcome of those processes, and it does not separate individual, group and organizational commitment to a course of action. Commitment is a more complex phenomenon than escalation theory allows for. This research was also found to often be factor-oriented. Together, these shortcomings reduce the potential for understanding IT project governance.

Employment of organizational control theory to study organizational control of IS/IT projects (or IT project governance) has been limited, with some promising exceptions. The research conducted with this theoretical perspective does not so far cover process views of IT project governance in-depth, but stresses the need for process-oriented research on IT project governance using control theory.

Looking back on this chapter, a recurring theme concerns the control of tasks involved in IT projects and the contingencies and dynamics of task control. In fact, chapter 2 can even be understood as dealing (to a large extent) with the nature of the organizational tasks involved in information systems development, the organizational control of these tasks, the relation between task characteristics and control, and the dynamics of this relation.

One of the central assumptions of control theory is that the types of control actions taken with regard to an activity or unit or person are related to the characteristics of the controlled task (see section 2.7.3). For projects, a commonly assumed and observed characteristic is that they change in character during their "life-cycle" (section 2.4, cf. also Figure 6, page 33). These two aspects relate directly to the proposed need for increased knowledge about the formation and evolution of organizational control of complex (temporary) tasks in general and IT projects in particular (section 2.7.3).

Consequently, this study does employ control theory in a process-oriented study design. Issues pertaining to complications and limitations of control are also included, such as commitment, escalation, managing with inferior task knowledge, upwards management and professional influence.

The literature review in this chapter has also provided concepts for describing in general terms the empirical material included in this study and thereby the basis for analytical generalization of the study results (cf. section 3.1.1 below). In short, the organizational setting, the project and the information system (and the IS innovation) can be classified as follows: The *organizational setting* in which this will be studied, a medium-sized European bank, can be characterized as an information-intensive organization where information technology is part of the core technology of the firm, while the primary tasks of the organization are not within the jurisdiction of the IT profession. The studied *project* is a large,[45] complex, non-repetitive, multi-year, intra-organizational information systems development project, employing technology new to the organization. The *information system* to be developed is a "mission-critical", operative (i.e. transaction-processing) information system, which is part of the core technology of the organization, aimed at replacing an existing legacy information system, and associated with little or no user-related organizational change. The type of *IS innovation* is an innovation of IS product and of the technological infrastructure of the business ("IIIa" innovation), although there were also distinct though limited aspects of business product innovation ("IIIb" innovation) included.

The choice of case is consistent with the focus on governance and the choice not to include organizational change. This helps focus the study on a narrower theory area which is considerably less extensively studied. The choice of case, as well other choices concerning the research approach, are described in the next chapter, which accounts for how the study was conducted and why it was conducted that way.

Together, the theory areas and related concepts covered in this chapter are intended to provide the tools for understanding more about IT project gover-

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[45] As a comparison, Kirsch (1996) studied 96 IS development projects ranging from 42 to 45,000 person-days and from three months to seven years project duration, with averages of 7,938 person-days and two years (ibid, p. 7). The project studied here encompassed roughly 90,000 person-days and was carried out over six years.

nance. This is the aim of chapters four through six, in which we will explore issues (including but not restricted to) how control over a large IT project forms and evolves as managers engage in the task, how commitment comes into play along with the perils of managing with inferior task knowledge and how control and commitment interrelate.

Chapter 3

Research Approach and Research Process

This chapter starts with a description of the research approach: the use of one, retrospective, interpretive case study. This description is followed by a discussion of the central choices made, including comments on some possible alternatives. After this first major part of the chapter follows a section about my background and my interest in the research described in this volume. Following this, the second major part of the chapter consists of a relatively detailed description of the research process. The chapter ends with some additional comments on aspects of the research approach, its execution, and consequences thereof.

A quick overview over the chapter can be gained by examining Box 2 (research approach), Table 8 (summary of collected data), Box 4 (summary of data collection) and Box 5 (summary of the process of working with data).

3.1 The Research Approach

In this section I describe, explain and argue for my choice of using one retrospective, interpretive case study for this research study. I go about this by commenting on some central aspects of the case study approach, and thereafter by commenting on the three aspects of the study design indicated above: the choice of an interpretive research approach, the choice of a single-case study design and the choice of a retrospective case study.

3.1.1 A Case Study Approach

The use of case studies is sometimes described not as a research method, but rather a research approach or research strategy, where several distinct methods are typically used (Eisenhardt, 1989, p. 534; Yin, 1994, pp. 1-3, 78-80). Methods used in conjunction with case studies include interviews, document studies and observation of artefacts (see further section 3.3.3). Case studies are most often, as in this thesis, used as tool for doing intensive (as opposed to extensive) research, i.e. in-depth study of one or a few instances of the focused phenomena (Pihlanto, 1994, pp. 369-370).

Both positivist and interpretive perspectives on case studies stress the suitability of case studies for gaining certain types of knowledge, such as "new insights" (Eisenhardt, 1989, p. 548) "rich insight" (Walsham, 1995, pp. 79-80) and for understanding a phenomenon in its context (Benbasat, Goldstein and Mead, 1987, p. 369; Myers, 1994, p. 199). Case studies are also seen as suitable for answering "how" and "why" questions in situations where control over events by the researcher(s) is not possible or suitable (Yin, 1994, pp. 6-7). They can be used for descriptive purposes, for building theory or for testing theory (Eisenhardt, 1989, p. 535). During the research process, case study research allows flexibility in data collection in order to take advantage of the nature of the specific case and the emergence of new themes to improve results of the research study (Eisenhardt, 1989, p. 539). A summary of characteristics of case study research is given in Box 1.

Typical Characteristics of Case Study Research

- Concerns intensive and in-depth study of one or a few entities
- Aims at understanding phenomena in context
- Incorporates several data collection methods
- Does not involve control over events
- Allows flexible strategies for data collection and analysis
- Involves frequent visits to field site(s) for an extended period of time
  (Note: Not in this case, since a retrospective study was conducted)
- Focuses primarily on contemporary events
  (Note: Also different in this retrospective study)
- Useful for addressing "how" and "why" questions
- Suitable for description, theory building and theory testing
- Proposed as a preferred research strategy for interpretive research

(Based primarily on Benbasat, Goldstein and Mead, 1987; also on Eisenhardt, 1989; Walsham 1993; 1995; Yin, 1994.)

Box 1: Typical Characteristics of Case Study Research

On the other hand, case study research is typically time consuming and may result in "unreadable" documents (Yin, 1994, p. 10; Weick, 1979, p. 38) and the path from data to theoretical contributions is often cumbersome and obscure (Eisenhardt, 1989, pp. 539-540). Furthermore, case study research is often *considered* to provide little basis for "scientific" generalization (Yin, 1994, p. 10; Weick, 1979, pp. 36-38), and considered to require more multiple subsequent studies to build "general" theory (Eisenhardt, 1989, p. 547; Lee, 1989, p. 41). There are, however, several specific aspects which render these problems less troublesome in this study.

Yin (1994, p. 10) makes an important and often overlooked distinction between statistical generalization and *analytical generalization,* where the latter concerns generalizing (to build) theories, and the former concerns enumeration of frequencies. In this study, the focus is on analytical generalization. Furthermore, several of the concerns mentioned above derive specifically from a positivist epistemology: they are considerably more problematic when the purposes of the research effort include testing hypotheses, ensuring reliability and achieving statistical generalization (Walsham, 1993, pp. 14-15). Thus, case studies can be said to be especially well suited when the underlying epistemology of the research is interpretive (ibid, p. 14), although they are also compatible with a positivist epistemology (see e.g. Eisenhardt, 1989; Lee, 1989; Yin, 1994). This will be commented on further in the next section.

3.1.2 An *Interpretive* Case Study

> *If men define situations as real, they are real in their consequences.*
> *(Thomas and Thomas, 1928, p. 572)*

Case studies can be categorized according to their underlying epistemology. One such categorization, suggested by Chua (1986) and Myers (1997, par. 11-14), is positivist, interpretive and critical. In short, a positivist[46] stance implies an objective and objectively observable reality and has *theory testing* as an important research goal, whereas an interpretive stance implies that reality can only be accessed through social constructions and has *understanding* as an important research goal. Finally, a critical social theory stance views social reality as historically constituted and reproduced by people, who in turn are constrained by existing structures, and has *emancipation* as an important research goal (Walsham, 1993, pp. 9-14; Myers, 1997).

This study has an interpretive approach, with an underlying social constructivist view on reality and knowledge (Berger and Luckmann, 1966). There are also certain aspects emphasized in critical research, for example concerning the social, cultural and political contexts of human action, which are of importance in this study.

A view of human, social action which is related to an interpretive research approach is the assumption that *people know what they are doing* (Lee, 1991b, p. 350; Sarker, 1997, p. 209). In other words, a person's behavior is rational in a broad sense of the word, i.e. rational given her premises and the situation at hand (Lee, 1991b, p. 350; see also Kanter, 1977, p. 291). This broad view of rationality can also be called *multi-rationality* (Sjöstrand, 1990, p. 3; Sjöstrand 1997, pp. 41, 197-199; cf. section 1.2.1). This view of human action is employed in this study, both in the interpretation of data and in the approach to data collection, specifi-

[46] In this discussion, I group logical positivism and anti-positivism together under the popular, but admittedly simplistic label positivism (see e.g. Popper, 1989, for a quite different view). Lee (1999, p. 12) separates positivism in the philosophy of science from *positivism-in-practice*, where the latter can be said to refer to a set of socially constructed beliefs, rules and practices which are employed in "positivist" research (ibid, p. 16).

cally interviewing (see below). However, interpretation should not stop with this assumption.

Combinations of an interpretive approach with (elements from) critical social theory have been suggested to overcome certain perceived weaknesses of the interpretive perspective (Orlikowski and Baroudi, 1991; Myers, 1994). This particularly concerns under-emphasis (or neglect) of external and internal conditions which give rise to meanings and experiences, unintended consequences of human action, structural conflicts in organizations, and the historical constitution of social reality (Orlikowski and Baroudi, 1991, p. 18). In this study, the organizational and historical contexts of the focused processes of project influence and control are of importance and it is acknowledged that interpretations of social events and processes go beyond the interpretations of actors involved in these processes.

Above, I commented on research goals in terms of knowledge contributions. Focusing on research in information management, Walsham (1995, p.79) suggests that four types of generalizations can be made from interpretive case studies: development of concepts, generation of theory, drawing of specific implications and contribution of rich insight (see Table 7). With a few qualifications, these types of contributions are coherent with the purpose of this study (cf. page 10) and, arguably, the concluding chapters of this text provide examples of all four types of generalizations. The qualifications to be made are, first, that herein, there is no sharp distinction made between generating theory and contributing to theory. Second, "rich insight", in Walsham's (ibid) terms, is herein seen as making a qualified effort to *convey insights* into complex phenomena.

Whereas the social construction of reality is a premise of this research work, it is not the object of study (Norén, 1995, pp. 171-173). Although the study is interpretive, my choice of language does not explicitly and consistently reflect social constructionism in the case description, but rather adheres to "normal" use of language. The interpretive approach is visible in the types of knowledge contributions sought and in the methodological choices.

Table 7: Examples of Generalizations from IS Case Studies (from Walsham, 1995, p. 79)

Type of Generalization	Interpretive IS Case Study
Development of concepts	Automate — Zuboff (1988)
Generation of theory	Theory of organizational consequences of IT — Orlikowski and Robey (1991), Jones and Nandhakumar (1993)
Drawing of specific implications	Relationship between design and development and business strategy — Walsham and Waema (1994)
Contribution of rich insight	Limits of machine intelligence differences between plans and practical actions, need for more thoughtful machine design — Suchman (1987)

3.1.3 A *Process-Oriented* Study

Research on IS implementation has been classified into factor (or variance) studies and process studies (Lucas, 1981; Markus and Robey, 1988; see also Mohr, 1982). Factor studies aim at finding the factors or variables which *lead to* (are necessary and sufficient for) successful IS implementation, whereas process studies study implementation processes over time and view neither the process nor the outcomes as variables that take on a specific value. Process studies indicate prerequisites which are necessary but not sufficient for a certain outcome (Markus and Robey, 1988, pp. 589-593).

Sabherwal and Robey (1995) have suggested that process and factor approaches can be reconciled and even combined. However, it is claimed that a prerequisite for this is that the underlying epistemological assumptions of positivism are assumed, including the objectivity and observability of the social world (ibid, p. 307). Lee (1991b) has, on the other hand, argued that positivist and interpretive studies can be combined through sequences of investigative steps. This can be done in phases within one study or over the course of several separate but related studies carried out by the same researcher(s) or by different (groups of) researchers (ibid, pp. 363).

In line with the epistemology and the (related) knowledge goals of this study, the focus in this study is on *process,* not explanations through factors. The focus on process is well in line with the case study approach as such and with the interpretive stance of the study.

3.1.4 *One* Case Study

The choice of using one case study instead of several is partly a consequence of the choice of an interpretive approach, the choice of the purpose of the study, the preferred scale and scope of this thesis and the actual developments during this research study. As mentioned above, an interpretive approach implies a focus on understanding as research goal. Research contributions aiming at "rich insight" (Table 7 above) and other types of understanding call for depth in data collection and analysis, which in turn limits the possible and preferable number of cases for a particular research study.

In addition, this study also has a focus which arguably affects how many cases can feasibly be included in the study. In order to understand managerial actions with regards to a certain IT project, it becomes important also to understand the project process, the organizational environment and the historic context in which events and processes take place. This richness of context which is of relevance for the focused phenomena further suggests a study design with one or a few cases.

Early in the data collection phase of this study, I saw a potential for collecting rich data from the research site (called *Financial Services Corporation, FSC).* Partly because of that, I chose to start data collection at FSC to see how far that would take me. During the study, I found that there was extensive documentation available concerning the NDS project, and that interview data promised to be interesting as well. I decided to take advantage of this situation and try to make extensive use of data obtainable from FSC.

During the work with data collection at FSC, I also continually compared my emerging understanding of the events in and around the NDS project with existing research on IS implementation, both with other case research studies and with main themes and main conclusions from other types of research studies. Doing so further increased my interest in the NDS project, since my impression was (and is) that this case has the potential of supplementing previous studies in interesting ways. These developments at the research site strongly influenced the decision to settle for a one-case study design.

Yin (1994) suggests a single case study design for the testing of well-formulated theories, for extreme or unique cases, and for revelatory cases (ibid, pp. 38-41). In these terms, the second rationale is most applicable here. The studied case was one of few projects of its kind during this time period (and probably so today), in terms of its task, how it was run and how the process of controlling the project was constituted. However, as pointed out in the previous section, there are other views of the values of single-case designs, and several of the types of generalizations listed in Table 7 will be applicable for this study.

A single-case study design has advantages in terms of achieved depth compared with a multi-case design. Conducting one-case research studies has been advocated by several scholars within information management (Lee, 1989; Walsham, 1993) as well as shown to be a highly feasible research strategy in studies focusing on different aspects of information systems implementation (see e.g. Markus, 1983[47]; Myers, 1994; Beynon-Davies, 1995; Keil, 1995b; Myers and Young, 1997). Additional case studies could, however, be fruitful in a subsequent study, where the study design could benefit from what is learnt from this study.

Secondary analysis of existing case studies (Yin, 1994, pp. 121-123) were considered as a possible way of supplementing the one-case design of this research study. A research approach based on one original case study together with several secondary cases has been used before in a very similar context with interesting results (Sauer, 1993a). However, in using secondary cases, the researcher is confronted with (partly unrecognizable) differences in research approach, perspective and focus among case studies with different origins, something which complicates this research strategy (Yin, 1994, pp. 122-123). For this reason as well as for reasons of time and workload, secondary case study analyses were not used.

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[47] An interesting aspect of the methodology of Markus's (1983) study is that the epistemological stance is not explicitly stated, and that the study has been viewed as interpretive (Walsham, 1993, p. 20) as well as being in accordance with positivist research criteria (Lee, 1989).

3.1.5 A *Retrospective* Case Study

The case study in this thesis concerns a project taking place in an organization between 1988 and 1994[48], whereas the data collection for the case (described in section 3.3.3) was carried out mainly during 1997 (the first meeting was in May 1996 and follow-up interviews and meetings stretched into 1999).[49] There are several methodological issues, favorable and unfavorable, of relevance to this circumstance. One such is the advantage of being able to collect data about direct effects and other consequences of the project visible three years after implementation, without having to conduct the research over a period of several years.

Furthermore, developments in the organization some years after the events studied took place may allow for additional and more complex views of the events. In this particular case, collected data indicate that if the study had been done in conjunction with the ending of the studied project, several interviewees would have been more focused on the project's "success", whereas at this later point in time, the results and effects of the project were viewed in a more nuance way. In addition, it is likely that the passage of time makes information about the system and the project less sensitive for the organization and for the people involved, providing for increased openness towards the interviewer and fewer problems with getting publication approval from the research site.

On the other hand, there are several disadvantages to retrospective data collection through interviews, which concern difficulties collecting reliable accounts of "actual" events and sequences of events. Specifically, there are greater risks that interviewees' portrayal of events suffer distortion due to lapses of memory, rationalization, self-presentation, simplification, attribution, hindsight biases, or by neglecting events which they believe to be unimportant for the interviewer (Wolfe and Jackson, 1987, p. 124; Glick et al, 1990, p. 302; Golden, 1997, p. 1244)[50].

Yet another, closely related, issue of relevance when collecting data retrospectively through interviews, is the emergence of a "collective truth" about the studied phenomenon in the organization over time (Vaughan, 1996, pp. 68-69[51]; also cf. Berger and Luckmann, 1966). This socially constructed view of prior events may make it difficult to get hold of data which are inconsistent with the

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48 The case description (chapter 4) stretches back into the 1960s and forward into 1999.

49 All interview dates (excluding follow-up meetings) are listed in Appendix D. See also section 3.3 below for an account of data collection.

50 Several of these problems with "participant recall" in retrospective interviews are likely to be present also in interviews concerning current events (Rubin and Rubin, 1995, pp. 218-225).

51 Vaughan's (1996) study of the launch decision preceding the 1986 Challenger space shuttle disaster is an impressive example of the use of one retrospective case study to study a set of organizational phenomena.

collective view since they may be forgotten, suppressed or sorted out by the interviewee as irrelevant.

Another related consideration is that people's emotions are most likely less strong in retrospect than during the project. The conveyance of emotions in interviews can be important clues to what the important issues are or were and without them the researcher may not get as close to some important issues. On the other hand, an interviewee discussing issues retrospectively may be more open to other perspectives and may have a broader view of certain issues.

Further, a retrospective case study also implies the exclusion of participant observation and direct observation as research methods, giving document studies a potentially more prominent role than in a case study of a current phenomenon. A specific potential risk here is an over-emphasis on formal (i.e. documented) settings and relative neglect of informal settings and events (cf. small talk and invisible arenas—e.g. Sjöstrand et al, 2001).

I have tried to compensate for these potential problems related to data collection and bias in the data in several ways, both in the study design and when collecting and working with data. First, I have made quite extensive use of documents and company records (see section 3.3.3). In addition, I structured the interview process as to take the interviewees through the project process during the interview. Through this, I challenged the interviewees to remember how they perceived events when they occurred (this is described further in section 3.3.3.1). As described in section 3.3.4, data from different sources were used to arrive at a coherent account supported by these different data (Yin, 1994, pp. 90-94; Mason et al, 1997, pp. 314-315; Golden, 1997, p. 1245). Approaches within case study methodology and historical method aimed at dealing with biases in the data where also employed, such as source critique and formulation of alternative explanations (Stanford, 1994, pp. 147-160; Yin, 1994, p. 81; Mason et al, 1997). Partly for the same purpose, a time line was used to iteratively build a coherent story (Mason et al, 1997, pp. 312-313).

Concerning the forming of a "collective truth" about the project, I anticipated this risk by acquiring pre-knowledge of the NDS project from several sources and by studying an internally produced white paper describing the project early in the data collection phase.[52] During data collection, I therefore systematically attempted to "get behind" information or statements which were strongly in accordance with what I perceived to be the collectively formed view, especially during the interviews. An important internalized and expressed vehicle for handling this risk was the emphasis put on understanding events and actions in their organizational and historical/temporal context, rather than evaluating them with the use of hindsight (Vaughan, 1996, pp. 69-70; see also section 3.3.3 on data collection below).

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[52] The existence of a white paper was as such an indication of this risk.

The risk for over-emphasis on formal settings was also partly addressed through the interview process, which helped uncover the importance of impromptu meetings and conversations between actors involved in the processes studied. It was also found during the study that discussions in formal settings often mirrored or reproduced earlier informal discussions and that formal discussions thus partly resulted from and made sense only in relation to events and discussions that had occurred in informal settings.

During the course of data collection, actual developments in FSC provided reasons to reevaluate the NDS project. Several interviewees commented on recent developments and used them in discussing and judging the outcomes of the NDS project. This provided additional perspectives on the choices made concerning the NDS project, which would most probably not have been gained, if the study had not been either retrospective, or conducted longitudinally over an extended time period (following at least part of the project process, plus revisiting the case site three years later).

3.1.6 Some Reflections on the Choice of Research Approach

I did not consider a broad range of different research methods when starting this research work. From quite an early stage, I was primarily oriented towards using a case study approach. There were several reasons for this. Earlier experiences using short case studies (see Mårtensson and Mähring, 1992) had made me interested in, intrigued by and curious about getting “closer” and “deeper”. I wanted to understand more about what happened in social processes in organizations. Participation in reviews of ongoing IT projects in several organizations gave me the opportunity to do so, as did participating in the meetings of an IT steering committee as process consultant for some six months. I found these experiences very stimulating and they further helped increase my preference for intensive research approaches.

Not surprisingly, the research issues which have interested me over time tend to require an intensive rather than extensive research approach, and vice versa: My interests and preferences concerning both research issues and methodological approaches are likely to have affected, simultaneously and interactively, both the choice of research focus (what to study) and the choice of research approach (how to go about studying it) for this study. In the words of Strauss and Corbin (1990), my interests, previous training in interviewing and previous experience related to IT project processes and organizational IT management would suggest a good “theoretical sensitivity” (ibid, pp. 41-43) with regards to the chosen focus of the study and the study approach.

However, since I have an interest in interacting with people, a case study incorporating direct observation (Yin, 1994, pp. 86-87) and participant observation (ibid, pp. 87-89) or even a clinical research approach[53] (Schein, 1987a) would certainly have been good alternatives to a retrospective case study. So why did I not choose a concurrent case, where these methods could be employed? One problem was how to determine if a particular ongoing IT project was suitable. When searching for potential research sites, I was looking for IT projects with senior management involvement, projects of major importance for the organization, and (during one period) IT projects which were or had been in considerable difficulty. I found it difficult to assess whether ongoing projects met those criteria, it was easier to determine the degree of match for projects close to completion or already finished.

Another consideration was that I was somewhat reluctant to choose a research method where the time necessary for data collection was, in my view, difficult both to determine and to control. At this time, I thought that employing either a case study approach encompassing participant observation or using a clinical research approach would mean being at research sites for an undetermined, but quite long, time. In retrospect, a feasible alternative would have been to find an IT project nearing completion and collect data both retrospectively and through direct observation and/or participant observation.

Furthermore, when searching for potential research sites, I had knowledge of several major IT projects which I thought would be excellent material for case studies. In several instances, prior personal contacts with people in some of the potential case organizations made research access at least distinctly possible. Since I anticipated access to be a potential obstacle, I thought it important to make use of the contacts I had. As it turned out, my proposal for a research cooperation was met with approval at one of these organizations, Financial Services Corporation (FSC).

Summary of the Research Approach

1. A case study approach was chosen because in-depth understanding of a phenomenon in its context was desired.
2. For the same reason, and partly as a result of the research process, a single-case study design was chosen.
3. Although not initially an aim, the choice of case meant that the case study was retrospective.
4. The epistemology of the study is interpretivist.
5. The chosen research approach is a result of a combination of deliberate choices according to a initial criteria, personal preferences and adjustments made in response to developments in the research process.
6. Achieving coherence in the research approach was important, exactly following a predetermined plan was not.

Box 2: Summary of the Research Approach

[53] Clinical research (see e.g. Schein, 1987a) bears significant resemblance to action research. Working methods and associated values and norms closely resemble those found in process consultation (e.g. Schein, 1988a).

The research process, including the entry process at FSC, will be described further in section 3.3 below. Before that, however, since this section has described my research choices as partly personal choices, the following section describes some aspects of my personal background and how some of my professional interests have formed over time. The main points from this section are summarized in Box 2.

3.2 My Background and Evolving Interest in the Research Area

Probably, no research work is independent of the people performing it. For qualitative, interpretive social science research, this is certainly the case (Lee, 1999, pp. 16-21, 25). In this study, my personal and theoretical interests and biases play a central role in the emergence of the text and the results of the study (cf. Schultze, 2000, p. 25). It is my understanding of the subject and the phenomena studied which is reflected in the text, which in turn is an attempt by me to communicate with the reader and facilitate her/his understanding.

It follows from this that knowing something about the author might put the reader in a better position to interpret the thesis. In an interpretive research study, inclusion of the researcher's background is about applying the "golden rule" (Lee, 1999, p. 25) or about being consistent with the research choices, views and values.[54] Another way to put it is that just as the historical background of IT management at Financial Services Corporation helps explain what happened in and around the studied NDS project, knowledge of aspects of my background might help understand my choices, views, preconceptions and conclusions in this study. Of course, the description below tells the reflective reader as much about what experiences, perspectives and values I *do not* have as about the ones I do (or might) have.

I was born in Stockholm in 1964 and raised as the only child of a Swedish mother and a German father. During my childhood, my parents were small business owners in consumer electronics retailing. As customary with a family business, kitchen table discussions concerning the business were frequent, as was meeting in the shop and—for me—hanging around, looking about and helping out in the shop and the workshop. Helping out was about having fun and about responsibility. Earning pocket money (e.g. from packaging electronics components or promotional gifts or installing car stereos) was a nice side effect.

My father came to Sweden as a refugee from East Germany in 1951 and learning about his childhood and youth experiences has been important for me in forming my world-view, including not taking for granted a lot of the things usually taken for granted by many of the people I meet in my current work. In my earlier school years, my father's background together with my parents'

54 I discovered this often overlooked principle through the example of Roth (1993).

occupation, my rather voracious reading and a certain enthusiasm for learning as well as for conveying knowledge sometimes fit less than easily with childhood conformism. I think I learnt about, learnt to cope with and learnt to appreciate not conforming. Both my Swedish and my German heritages are important for me, and I feel I belong to two countries and two cultures. I was a German citizen through childhood and now have dual citizenships. A citizenship is not a formality.

When I was sixteen, my parents sold the company, then quite successful on a small scale. The new owners opted to expand the business, and probably because of incursion of large fixed costs, less than successful management and increased competition they went broke after a few years. The firm was subsequently restructured. Observing these developments was surprisingly unemotional, but quite interesting and informative in terms of how several coinciding (internal and external) large changes disrupted a stable situation for a small firm. For me, the management issues were and are the ones which stand out most clearly from this experience.

Through a series of choices based on upbringing, interest and recommendations by others, I specialized in business (particularly accounting) in upper secondary school, and then started the combined undergraduate and graduate program in economics and business administration at the Stockholm School of Economics. At this time I had become very interested in programming and proceeded to take the courses in programming available at the school, including a course offered at the Royal Institute of Technology open for SSE students. I also tried to get into a doctoral course on APL programming (the course had already started), and later remedied that unsuccessful attempt by learning APL and working as an APL programmer for two summers.

In my second year at SSE, I started working as a teaching assistant at the department for information management, proceeded to teach programming and then started teaching other courses in the field. I soon became interested in management and organization development aspects of using IT in organizations, took a course in consulting, and started reading literature on organization development and change.

In 1988, I participated in teaching an executive course at SSE called *Executive Computing*. In the course, seven senior executives (CEOs, chairmen) from large Swedish organizations learnt about information technology and computer literacy, combined with discussions on the management and use of IT in their organizations. As one of the junior teachers, I found listening to their discussions very interesting and I learnt about seeing the world through the eyes of executives and about their reasoning.

In the following year, I completed my master's degree at SSE and started a research project on information support to executives, together with my colleague Pär Mårtensson. In this research project, completed in 1992 (see Mårtensson and Mähring, 1992), I learnt about information in organizations, about managerial work and about differences in perspective between people with different experiences and positions. I also learnt a lot and had a great deal of fun setting up and running a research project with 15 major Swedish companies together with Pär.

Running a reference group in this project proved to be helpful in the following years, when together with colleagues I led corporate competence development programs aimed at changing the values, skills and behavior of key people in a large firm's corporate division, which markets and sells complex information technology products and services to large organizations. An important function of these action-learning programs was to support senior executives in their organizational change efforts.

During this period, I also participated in several reviews of IT projects together with colleagues at the Institute for Business Process Development (Institute V), and also coached project leaders and managers coping with project management and IT-related organizational change. Through this, I learnt about managers' difficulties and frustrations in trying to influence and control complex IT-related projects. In related work, I have participated in forming control structures for organizational IT management and helped improve the work practices of steering committees for organizational IT management. Together with earlier experiences, this work increased my interest in the management of IT and in development processes from a senior management perspective. During the whole doctoral period, and especially in recent years, teaching, course development and course directorships at SSE have provided opportunities to nurture my interest in organizational issues both from theoretical and practical viewpoints.

Before concluding this section, I should mention some theories that have influenced my thinking and my work, although they are not in primary focus in this thesis. These related theories include systems theory[55] (e.g. Checkland, 1981), levels of abstraction (Lundeberg, 1993), theories concerning learning and communication with a cognitive perspective (e.g. Bandler and Grinder, 1975), information theory (Langefors, 1973), and process consultation (e.g. Schein 1987b, 1988a).

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55 Note that systems theory is not the same as "the Systems Model" of organizations, which has been critiqued and contrasted with an action framework (Silverman, 1970). The systems model can be considered to be a label for some research in organization theory which (according to the critique) used systems theory to build theories of organizations viewing reality as objective and leaving little freedom of action for organizational actors (Silverman, 1970; see also Björkegren, 1986, pp. 270-273, for a summary of these differing views). In contrast, general systems theory (e.g. Miller, 1978) and systems thinking (e.g. Checkland, 1981) imply a much broader view, and can be used to form a multitude of different and differing views of organizations (see e.g. Scott, 1992; Lundeberg, 1993).

In this section, I have described some aspects of my background and my research-related work up to the point where this particular research journey begins to take form. In the next section, the research process for the current study is described.

3.3 The Research Process

> *"We do not simply 'collect' data; we fashion them out of our transactions with other men and women. Likewise, we do not merely report what we find; we create accounts of social life, and in doing so we construct versions of the social worlds and the social actors that we observe"*
>
> *(Coffey and Atkinson, 1996, p. 108)*

This section contains an account for the research process, from the initial forming of an idea concerning what to study, via gaining access to the research site and collecting data, to working with the data and arriving at results from the study.

3.3.1 Early Stages of the Research Study

In 1993, having completed a previous research study the previous year (Mårtensson and Mähring, 1992), I was working on defining my thesis subject. At this point in time, I used four key words to guide the work of finding a research issue and research sites: general management, information, core business processes and change. One idea I had was to study general managers leading change processes concerned with business process innovation (cf. Davenport, 1993), including changes in information flows and employment of information technology.

During 1993 and 1994, several experiences contributed to the focusing of the research. Participating in reviews of IT projects in organizations, I met CEOs and other senior executives who hesitated and felt awkward when confronted with important IT projects in distress. I started thinking about this phenomenon and wrote a paper based on some experiences from projects I had knowledge of (Mähring, 1994).

In connection with writing this paper, I obtained a tentative permission from "Company X" to write a case study on a large IT project there. However, this permission was subsequently withdrawn as a consequence of personnel changes at the company. In spite of several attempts, I failed to obtain a new, more definitive permission to write this case study. After this, I turned to literature studies and worked on focusing the research during 1995.

During 1995 and 1996, as this work continued, a colleague and I interviewed three executives in a major bank (the chairman of the board, an executive vice president and the CIO) concerning the management of IT in the bank (which was not FSC). Additional interviews and discussions were held with managers in other companies, including financial firms. These interviews provided important additional pre-knowledge about IT issues from the perspectives of board members and senior managers and of some issues pertaining specifically to information-intensive firms, such as banks.

At the beginning of 1996, I had a list of eleven research-site candidates, put together from newspapers articles and from what I picked up from colleagues, friends and other contacts (cf. Benbasat, Goldstein and Mead, 1987, p. 373). I actively cultivated contacts with two research sites. Most of the case candidates

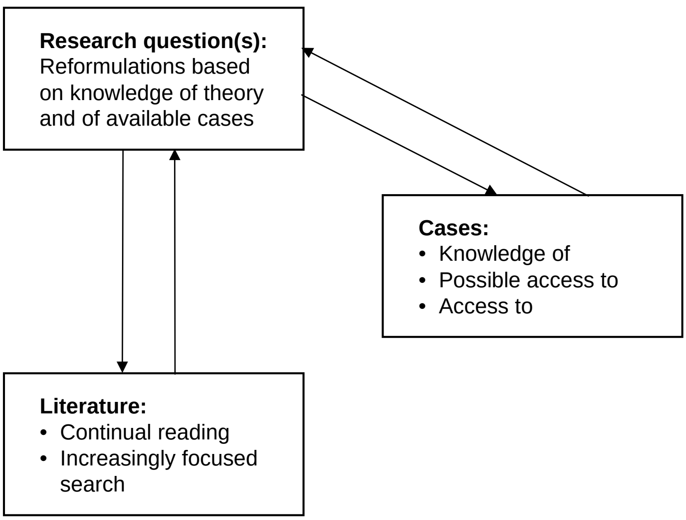

Figure 8: Case Selection as an Interplay Between Formulations of Research Focus, Potential - Cases and Study of Existing Literature

concerned intra-organizational IT projects, which was in line with my previous experience and thus favorable for my "theoretical sensitivity" vis-à-vis the studied phenomena (Strauss and Corbin, 1990, pp. 41-43). On the list, I also included projects where I thought the chances for getting access were slim or non-existent. One of these projects included on this list was the NDS project.

An important reason for keeping even unlikely candidates on the list, was that throughout the process of searching for research sites, I continuously reviewed my research question(s), read literature and matched literature and research questions with known, possible research sites (see Figure 8). Thus, the process was not one of selecting research site(s) based on predetermined criteria. Rather the process was one of bringing my interests (influenced by earlier experience) and theoretical issues found in the literature together with projects which would be interesting research sites, and mutually adapting these dimensions to an evolving research question and the accompanying delimitations and case study characteristics.

Literature was scanned for and studied throughout the research process, from an early stage to late in the writing process. The choice to approach literature this way was made partly because I was not without prior knowledge of theory, personal experience, skills, biases and prejudice when the study started. I therefore thought it better to gain increased understanding by bringing literature into my learning cycles. Thus, there were iterations not only between data and ideas, but also with literature continually bringing input into the process of understanding and working with ideas (Kelle, 1995, pp. 45-49; Coffey and Atkinson, 1996, pp. 155, 158-159).[56]

3.3.2 The Entry Phase at Financial Services Corporation

In late spring of 1996, I met with the former project leader of the NDS project, an acquaintance of my colleagues' whom I had met earlier on several occasions. The purpose of the meeting was to discuss the subject of managing large IT projects in organizations, and my aim was to get additional input to this research study. Though not the main purpose of the meeting, I also intended to test the waters concerning the possibility of using the NDS project as a case study in the thesis. Based of what I knew of the NDS project, I thought it would make an interesting case study. The approximate criteria for choice of case site(s), based on notes from this period, are given in Box 3.

These criteria for choice of case site are approximate, since they were adapted continually during this phase of the project. At the end of the meeting with the former NDS project leader, I asked if he thought it possible to make use of the NDS project as a case study. He responded positively and promised to check the matter with the executive vice president responsible for Business Development at FSC. One or two weeks after our meeting, it so happened that the former NDS project leader was appointed executive vice president and CIO of Financial Services Corporation.

Approximate Criteria for Choice of Case(s), Spring 1996

- The case should concern an IT project in a large organization.
- The IT project should be of considerable importance for a central part of business operations.
- The area of the business affected by the project should be such that the manager responsible for the whole part of the business affected is the CEO (i.e. it should not be a project contained within one organizational unit).
- The project process and the management of the project should bear signs of an escalation situation. (In retrospect, this criterion was not critical.)
- The case should provide data on management actions aimed at controlling, or otherwise coping with) the IT project.

Box 3: Approximate Criteria for Choice of Case Site(s), Spring 1996

56 This approach to the use of literature is at odds with research approaches advocated by e.g. Glaser and Strauss (1967) and by Eisenhardt (1989), who in turn have differing views of literature use.

About one week later, he contacted me and verified that FSC had decided to grant me permission to do a case study of the NDS project. The terms we agreed on were that the real name of the company would not be revealed and that the CIO and the head of business development would approve the written case study in terms of confidentiality and accuracy before publication (see Appendix A). Having agreed on this, we discussed possible interviewees. During the discussion, I probed for interviewees beyond those suggested by asking about people with different or opposing perspectives and people with outside perspectives on the project. I also tried to ensure that different phases in the project process and different control perspectives were covered. I also asked my contact for other materials, such as project documentation.

My contact also promised to arrange for me to receive the project white paper and also to provide me with access to whatever other material from the project could be found. He also commented on which of the interviewees were most likely to have NDS project documents and what different types of documents they were likely to have. After having agreed on an interview list, I sent this list to my contact, who arranged for a memo informing the interviewees of the research study (see Appendix A). The memo was sent out directly after the summer vacations.

The CEO and the Chairman of the board were contacted separately and at a later stage of the data collection period. They were first contacted by the CIO. After their agreeing to be interviewed, I scheduled appointments with their respective secretaries. As agreed with the secretaries, I sent a letter introducing myself, my research and the focus of the interview to these two interviewees three or four working days before each interview. The letter followed the content of the memo and the research description earlier sent out to the other interviewees.

As mentioned above, my plan at this time was to use at least two case studies for the thesis, where FSC's New Deposit System (NDS) project would be the first. As described in section 3.1.4, however, the data from FSC proved interesting and numerous enough to encourage me in revising this strategy and decide instead on a single-case research design. This change in research strategy became final at the time when half of the interviews at FSC had been conducted. As mentioned above, I deliberately kept the option of case design open in order to be able to revise the case-research strategy as limitations and opportunities arose (cf. Benbasat, Goldstein and Mead, 1987, p. 374).

3.3.3 Data Collection

The data collected at the research site include documents, (project) records, interviews and observations of artefacts (the NDS system, in use). Yin (1994, pp. 79-80) suggests six sources for case study data. The two sources not mentioned above are direct observation and participant observation, which were not used since the case study was retrospective. The observation of use of the NDS system is an instance of direct observation of an artefact in use, which in turn is one of the outcomes of the studied project. It is not, however, to be confused with direct observation of the phenomena in focus, namely managerial influence and control over the NDS project.

Studied documents include project documentation (including system specifications), the project newsletter, project progress reports, minutes from steering committee meetings, and news clippings. Excerpts from archival records are mainly personnel listings and data on resource use in the IT department and the NDS project. Some of these types of data were also collected from other types of documents, such as meeting minutes. Interview data consist of extensive notes from 31 interviews with 26 people from different stakeholder groups concerning the NDS project. Finally, I have had the NDS information system demonstrated for me and tried using it. A listing of collected data, with comments, is shown in Table 8 below. The following describes the collection of data from interviews, documents and corporate records, as well as observation of artefacts.

Interviews and Interviewing

As described above, preparation for the interviews included authorization from two executive vice presidents and information to interviewees about the study and its sanctioning through an internal memo, accompanied by a one-page description of the study and its anticipated contributions, including benefits for FSC. During the course of the case study, seven additional interviews were added to cover additional perspectives on the project. One original interview candidate was excluded due to a leave of absence during the interview period.

The interviews can be described as guided conversations (Rubin and Rubin, 1995, pp. 122-125) and thus had relatively little visible formal structure, although an interview guide was used to guide the interview (see Appendix B, page 323). No questions were sent out beforehand, no paper was handed over at time of interview and I tried to look at the interview guide as little and as unobtrusively as possible during the interview. The interview guide was used mainly as a check list, a conversational agenda (Holstein and Gubrium, 1995, p. 76) to ensure that the focal issues were covered during the interview.

The selection of issues to cover during a interview also depended on the interviewee's position and role in (relation to) the NDS project and other personal characteristics. For some interviews (such as with the CEO), a special interview guide was designed, based on the general interview guide. Over time, issues were added to the interview guide (Eisenhardt, 1989, p. 539). Also, the interview process was adapted not only to the specific interview situation, but also over time to pursue ideas, obscurities and apparent contradictions concerning the focused processes and events at FSC (Rubin and Rubin, 1995, pp. 43-44).

In spite of the focus on dialogue and adaption to the interviewee and the specific interview situation, the main phases of the interview were relatively stable between interviews. These phases can be described as: mutual introduction and background, the project process, discussion and reflection on the project in context, and closing remarks and reflections. My approach to the interviews was guided by wanting to gain the interviewee's trust and promoting openness and a sense of closeness between interviewer and interviewee. Ways of doing this included showing empathy, reflecting on statements from the interviewee and

Table 8: Summary of Data Collected for the Case Study

Types of Data Collected	**Comments**
Interviews	
Interviews with different categories of people in and outside of the company	A total of 31 interviews with 26 people have been conducted. Interviewees were stakeholders in the project or people with first-hand knowledge of the project. A list of interviewees (positions etc) is given in Appendix D.
Project-Related Documents and Records	
Project steering committee meeting minutes and other documents	Minutes and other documents from 27 steering committee meetings during five years have been studied (approx. 300 pages) and summaries of these and other significant documents have been written. The material includes excerpts from project records.
Project documents	Documents prepared in connection with major decisions on the project and minutes from project management meetings have been studied. These documents contain excerpts from project records. Documents concerning the conceptual and technical design of the NDS system have also been studied.
Project records	Project records (mostly spreadsheet files) containing information about staffing, budgeted and actual time consumption costs in the project as well as personnel listings have been studied.
Project newsletters	The internal project newsletters, spanning about three and a half years, have been studied (approx. 300 pages). The material includes excerpts from project records.
Project white paper	A white paper (approx. 160 pages) describing the project and experiences from the project had been produced internally shortly after completion of the project. The white paper includes excerpts from project records.
Information material about the new information system	Information and presentation material about the project and about the new information system from different periods has been studied.

(cont.)

on the interviewee's personal situation at certain points in time, exhibiting specific knowledge about the company, its projects or its technology, sometimes recounting personal experiences of my own and sometimes, to promote openness, demonstrating knowledge of potentially confidential information (cf. Holstein and Gubrium, 1995, p. 77; Rubin and Rubin, 1995, pp. 128-139; 218-224).

As mentioned above (section 3.1.5), the second phase of each interview was structured and conducted in order to take the interviewee through the project process. Thus, a substantial part of each interview consisted of a chronologically structured dialogue concerning the project process, starting with the interviewees first impressions of the project when first learning about it, the rumors about the project circulating at that time, etc., and following on with how they became

Table 8 (cont.): Summary of Data Collected for the Case Study

Types of Data	Comments
Corporate Documents	
IT-department newsletters	IT-department newsletters from 1986 to 1994 were studied (97 consecutive newsletters). Comments on central issues in general and on the NDS project in particular have been written (94 instances), as well as summaries (14 instances) of significant project developments reported in the newsletter. The material includes excerpts from company records.
Internal corporate videos on major IT projects	Corporate information videos (two videos, 22 and 15 minutes long) were studied. The videos addressed two earlier major IT projects in FSC. (No video was made to introduce NDS.)
Minutes of corporate IT steering committee meetings	Minutes from corporate IT steering committee meetings (35 meetings) from 1984 to 1995 have been studied (approx. 270 pages) and summaries written. The material includes excerpts from company records.
Corporate annual reports	Corporate annual reports from 1985 to 1998 have been studied, with focus on the organization's situation, the management of the organization and IT-projects (most prominently the NDS project).
Corporate magazine articles	Articles concerning the NDS project and related issues (7 articles) have been studied.
External Information	
Articles, books and other publications	Books, newspaper and magazine articles and press releases concerning FSC and FSC's environment (over 200 instances) have been collected during the period of the study. A database search of national media was used, together with a press release subscription service.
Direct Observation of Information System in Use	
Notes from observation and demonstration of NDS	The information system NDS was observed in use and also briefly used during a demonstration session.

involved in the project, what their impressions then were, and so forth. When interviewees expressed or clearly demonstrated difficulties remembering the sequence of key events, a time line was introduced into the interview setting in order to coach the interviewee's recollection process (Mason et al, 1997, p. 312), a practice sometimes referred to as aided recall (Wolfe and Jackson, 1987, p. 130). The time line, which was used sparingly, contained critical events in and for the project, such as points in time for project reorganizations, implementation of the system, etc. Sometimes, the time line was sketched on paper during the interview, sometimes I provided parts of the time line verbally instead.

Most of the interviews were conducted without tape recorder. Wanting to emphasize closeness, as well as emphasize and build on the collegial relationship some of my colleagues had with people at FSC, I saw the introduction of a tape recorder into the interview setting as a potential risk in terms of distancing me from the interviewees and labeling me as a researcher. Also, one use of the interviews was to elicit sensitive information about the actions and attitudes of managers, and I considered the use of a tape recorder a possible detriment to this purpose (Rubin and Rubin, 1995, pp. 125-126; Walsham, 1995, p. 78).

Instead, quite extensive notes were taken during the interview. Directly after the interview, supplementary notes were added to the notes pages (with a different pen), and subsequently the notes were typed and supplemented using standard word-processing software. Interview documentation was written mostly in dialogue form and included my recollection of arriving at the research site, meeting the interviewee, how his/her office looked, events such as interruptions during the interview and leaving the research site. When a certain part of a dialogue could not be reconstructed, the interviewee's comments were written in a descriptive format. The documentation also includes reflections within brackets and closing remarks and comments which often pointed to issues to cover in upcoming interviews. Interview documents were written mostly in close conjunction with each interview[57] (Rubin and Rubin, 1995, p. 128; Walsham, 1995, p. 78).

Three interviews were tape recorded. There were two main reasons for using a tape recorder in these instances. The first reason was that I was personally curious about the differences between using and not using a tape recorder, and I wanted to take the opportunity to learn about these differences. The second reason was that a few interviews late in the process were scheduled at times when I knew that completion of the interview documentation would have to wait. By using a tape recorder in these interviews, I could learn about differences between using and not using a tape recorder in interviews, secure documentation

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[57] This differed, partly because of differences in work load and work planning. Some interview documents were written the same day, some the next day and some within a week. In a few cases, transcription of interviews was delayed further, in which case the text was written in a form which indicated the resultant loss of data.

quality at times when documentation had to be postponed and to some extent assess effects of not using a tape recorder in the other interviews.

Although this is a difficult assessment to make, a comparison of the interview documentation for interviews conducted with respectively without tape recorder is that the amount of text captured differs considerably, whereas the amount of content differs considerably less. During the taped interviews I also made notes and a comparison between notes and transcription suggests marginal difference in data capture between using and not using a tape recorder. As for the possible adverse effects of using a tape recorder during the an interview, my impression is that the influence on interviewees was limited. However, the tape recorder was used late in the data collection phase, and I was at this time able to show intimate knowledge of the project events as a way of gaining trust of the interviewees. Also, I used the tape recorder in interviews where less sensitive information was expected, and I actually refrained from using the tape recorder at the three concluding interviews, where I hoped to get hold of new and sensitive data on managers' actions.

Another important aspect of using or not using a tape recorder concern my skills and what I am used to, as well as views of personal identity. In most interviews I have made prior to this study, I have not used a tape recorder. I have practiced taking notes, and I have learnt an interviewing style which "fits" with not using a recorder. Furthermore, the use of a tape recorder is also related to how I want the interviewees to view me (Rubin and Rubin, 1995, pp. 114-117) and indeed to my self-conception. At this time, I wanted interviewees to see me as a person with practical experience, capable of working in work environments similar to theirs, who was at the time writing a thesis. Using a tape recorder, in my experience, risked making me less of a possible colleague and more of a "researcher".

Studies of Documents and Corporate Records

Data in the form of, and from, documents and corporate records were collected in the order I learnt about their existence and met with people who had or could arrange access to these data. In only two instances did I contact people at FSC for the specific purpose of collecting documents, access to all other documents was gained in conjunction with interviews. In the early discussions on data collection with my main contact at FSC, I received information on which interviewees were likely to have project-related documents. These interviewees were asked about access to documents in connection with interviews or when booking the interview, in those instances when a good contact was established already at this stage.

Depending on the perceived confidentiality of different documents, I either tried to get hold of a personal copy or borrow the document. Documents which were considered too sensitive to give out were studied on site at FSC. A desk in the offices of the FSC IT department was arranged for me to use, and several people were involved in seeing to it that I had the documents and the facilities I needed. Extensive summaries were written of these documents (minutes and other documentation from NDS steering committee meetings and from corporate IT steering committee meetings), using a laptop computer.

I spent about nine days at the FSC IT department. Apart from being very helpful with work arrangements, several persons also invited me to join them for lunches and coffee breaks. In addition to writing document summaries, I also took some field notes after conversations when issues I found of relevance for the study had been discussed.

The document summaries were sorted chronologically, in accordance with meeting sequencing. The documents for each meeting were summarized as follows: summary of document characteristics (number of document pages, author of minutes), group members (present and absent), contents of minutes, and contents of selected other documentation. The structure of each meeting as reflected in the meeting minutes was preserved in the written summaries. Additional documents related to a meeting were summarized in a corresponding way, and placed separately at the end of the meeting summary. Notes from the minutes included main issues discussed, decisions and recommendations made by the group, reports and key facts given to the groups, and indications of attempts by persons in the respective groups to influence or control the NDS project respectively corporate IT management. Some direct quotes from documents were noted in the summaries. Meeting documentation for the NDS project included reports with key facts, summaries of important developments and memos intended to prepare for key decisions. Some of these documents have also been received separately in electronic form. These were summarized in the same way, and printouts were made.

In addition, project records were received in electronic form from FSC, mostly in spreadsheet files. All these files were printed. In order to prepare for working with the data, all documents, summaries of documents and printouts of project records were sorted by category (cf. Table 8) and chronologically within each category.

Observation of the NDS System in Use

I also thought it important to examine the actual main output, the main deliverable, of the project studied. Since information systems are quite abstract entities, it is debatable whether an information system as artefact can be observed "as such" (in "itself, or perhaps as structure).[58] It is therefore I describe this observation as being of the developed information system *in use.*

[58] Is observing program code observing the system? What about observing executable machine code? Zmud (1980, p. 45) suggests that software "becomes visible *at its completion"* (emphasis added). But perhaps the software becomes visible only *through its use?*

For this purpose, I contacted one of the earlier interviewees in the IT department, who put me in touch with the person in charge of systems maintenance group at the time. I met with her for about two hours, during which she demonstrated the system and I tried using it. She also provided statistics on the information system and its use, and we had an interview segment in which I inquired about systems maintenance and her view of the NDS project. Notes were taken as usual during the demonstration and discussion.

It should be noted that at no time during the data collection process was access to data denied, with one exception: In spite of an initial suggestion from the CEO to check the board meeting minutes concerning mentions of the NDS project, access to these documents was not gained due to corporate rules and norms concerning the confidentiality of board meeting minutes. Instead, an

Summary of Data Collection

1. The interviews were used as the “backbone” of the data collection process; access to documents and records was gained in connection with interviews.
2. Interviews were conducted as interactive dialogue, striving for closeness between interviewer and interviewee.
3. Extensive notes were taken during interviews, then transcribed and supplemented in conjunction with interviews.
4. Documents were normally either copied or borrowed. If this could not be arranged, extensive summaries were written on-site.
5. Document summaries contain both information about document characteristics and document contents.
6. Documents, document summaries and records were sorted according to categories (cf. Table 8) and chronologically within each category.
7. The NDS system was observed in use, both demonstrated and tried, at the end of the data collection period.

Box 4: Summary of Data Collection

additional phone interview was held with an executive vice president who had been an associated board member during part of the studied period, and the interview with the chairman of the board was added. The issue was also partly covered in the interview with the CEO. At all other times when I asked for access to certain data, my requests were granted. Box 4 contains a summary of key aspects of data collection for this research study.

3.3.4 Working with Data

A central aspect of working with the collected data in this study, has been the use of a work process where there is an interplay between data and ideas (Coffey and Atkinson, 1996, pp. 153-155). Structuring, reading, coding and presenting data has been done in close conjunction with forming ideas and potential theoretical contributions and using literature to feed this process (ibid, pp. 155-156; Kelle, 1995, pp. 45-49; Schultze, 2000, pp. 25-26). In this process, akin to abductive reasoning (Kelle, 1995) theories are used as "heuristic tools" (ibid, pp. 45-49), meaning that they are used to inform and inspire the forming and reforming of ideas and concepts, rather than being a preset structure to be tested, as in hypothetico-deductive research, or being brought into the research process at late stages, as in inductive research[59] (ibid, pp. 33-38).

The quote by Coffey and Atkinson (1996) on page 84 above, states that we do not just collect data and report them, but rather fashion them and create accounts of social worlds. Figure 9 illustrates that the process of molding data into accounts and conceptualizations is there from the beginning.[60] Impulses and artifacts that get our attention, i.e. are selected and collected, are already colored by the researcher and by the process, and so it goes on as the research process progresses. Procedures and tools for working with data thus do not ensure

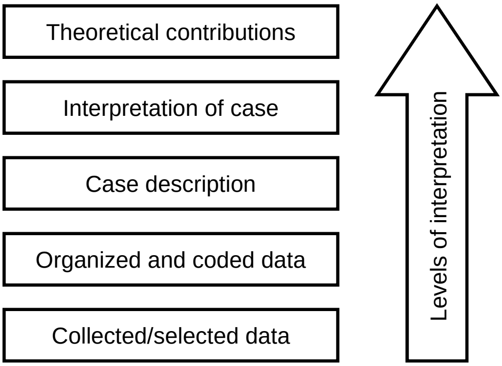

Figure 9: Levels of interpretation in the Research Process

objectivity, they facilitate consistency and openness in the research process (see below). In this process, there is repeated interpretation and reinterpretation of data (and literature), and all these interpretations are influenced by the researcher's current understanding of theory, as well as governed by research procedures.

Analytical tools used during work with data include the use of a time line document and coding. The time line document was used to reconstruct the sequence of events in and around the NDS project (Mason et al, 1997, pp. 312-313) and to build the case description. Coding (e.g. Coffey and Atkinson, 1996, ch. 2) was used to categorize data and supported selection and use of data in the

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[59] E.g. Glaser and Strauss (1967), Eisenhardt (1989, p. 536).

[60] Cf. also Lundeberg (1995; 2000) concerning levels of information respectively levels of abstraction.

case description. These and other aspects of working with data are described in the following sections.

Organizing Data

As mentioned above, all collected data (cf. Table 8) were sorted by type and chronologically in preparation for working with the data (Yin, 1994, pp. 94-97). In addition, personal notes (from individual work, discussions with colleagues and other meetings concerning the research study) were archived chronologically from the beginning of this research study, and used, for instance, to check the description of the research process in this chapter.

Yin (1994, pp. 94-99) argues for the importance of creating a "case study database" to guard the chain of evidence in case-study work, in order to enable other researchers to examine independently the "evidence" behind the case description. This implies that intersubjective testability (Popper, 1989, p. 18; Bergström, 1987, pp.108-120)[61] or replicability (Lee, 1989, pp. 35, 40-41) is a research goal. In this study, however, the issue of replicability becomes less important, due to the chosen research approach, the character of the research goals (cf. section 3.1.2 above) and the acknowledgment of the impact of the researcher in data collection and of the relative nature of data (Pihlanto, 1994, p. 380).

An open and detailed description of the research process, together with a relatively detailed case description, were instead found to be important for facilitating the reader's interpretation of the case and understanding of the main steps of the research process, and thus for evaluating the case, the entire research study and its contributions. The important distinction, here, is that the detailed description is provided for *understanding* and evaluative purposes, not to facilitate *replication* of this study.

Making Sense of Data

The primary level of analysis of a case study concerns what the case study is focused on; what the case study "is about" (Strauss and Corbin, 1990, pp. 161-164; cf. Yin, 1994). In this case study, the primary level of analysis is the *managerial influence and control over the NDS project* in Financial Services Corporation. This primary level of analysis stands in conditional relationship to other levels—its context (Strauss and Corbin, 1990, p. 162), and should therefore be seen in the context of these surrounding levels (ibid, pp. 161-164).[62] This view emphasizes the contextualization of the focused phenomenon more than Yin's (1994) corresponding concept, *unit* of analysis (ibid, p. 21). In this case, surrounding (or secondary) levels of analysis include project management, project work,

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[61] Popper (1989, p. 18, footnote *1) later modified and expanded his view of intersubjective *testability* to intersubjective *critique*, where testing is one of several important aspects.

[62] This model is apparently a systems model, cf. Miller (1978), Checkland (1981).

corporate IT management, the organization and the organizational environment (see Table 9). Organizational actors are present on all these levels.

That several levels of analysis are important follows from the assumption that the context of a specific phenomenon is important for understanding that phenomenon (cf. section 3.1.2). Specifically, in order to understand the actions of managers in relation to the NDS project, it becomes important to understand the project process and (project-internal) management of the project, as well as the organizational context in which events took place and by which they were influenced.

Based on these levels, a coding scheme was created and used to code data. Codes were attached to data in accordance with levels of analysis and type of data (e.g. chronology, key facts, commentary), see Appendix C. Color markers and pens were used in the coding process. The coding also included data on influence of organizational (IT) history on the NDS project (cf. Mason et al, 1997).

In addition to the coding, a time line document was used to structure, triangulate (Fielding and Fielding, 1986) and analyze data. With a basic time line and the coded data as a basis, the time line was expanded to encompass all coded data in a 90 page document. This document was then used as a blueprint for the

Table 9: Levels of Analysis in the Case Study

Type of Level	Level	Description
Outer Context Levels	Organizational Environment	Characteristics of the environment and events in this environment affecting or relating to the organization
	Organization, Corporate Management	Organizational characteristics, control structures, management processes and events and circumstances concerning the organization and its management
	Corporate IT Management	Structures, processes, events and conditions concerning how IT is managed in the organization
Primary Level	*IT Project Governance*	*Actions of managers and other actors related to and/or influencing the project; project governance structure*
Inner Context Levels	Project Management	The management of the project by the project management team and the project manager
	Project Work	Work carried out in the project, events within the project, progress and problems
	Information System under development	The information system under development by the project and its evolving attributes both imagined and actual

case study description. During this work, reflections on the case together with ideas and potential findings about and from the case study were noted in a separate file, forming the building blocks for a preliminary version of the contents and results of the analysis. Additional notes, including figures were written either on poster-sized papers hung on my office walls or on regular paper, in both cases also copied and filed together with the written text.

When the case description had been completed, several new iterations of interpretation and analysis followed. In these, the case description was reread, literature reviewed, and outlines, sketches and contents of the concluding chapters repeatedly revised and rewritten. In reading the case and the underlying data, some phenomena were studied especially closely. These phenomena included actions possibly concerning managerial control (and thus control forms) and how individuals and constellations of individuals acted over time, including possible reasons for their actions. Possible theoretical contributions from the study were organized into "clusters" (based on theoretical themes and/or empirical phenomena) and then organized into a line of argument, which was then successively and repeatedly revised (see also a later section on structuring of the interpretation.)

At early stages of the process of working with data, my intention and plan was to use data coding procedures much more extensively than I ultimately did. These procedures included employing an elaborate coding scheme and building theoretical constructs through coding. Several developments changed this plan. The first coding round provided a good basis for writing the case description and I wanted to proceed with this step rather than mentally "getting stuck with data". Further, since data collection was prolonged and since literature was scanned for and read throughout the period, theoretical issues which the study could contribute to emerged during the first coding round and the building of the time line document. This provided possible theoretical contributions from the study, re-balancing my abductive approach somewhat towards the deductive. Nevertheless, the underutilization of coding procedures in the study can be seen as a methodological shortcoming.

However, the use of a coding scheme functioned as a safeguard against bias and negligence on the part of the researcher and as a tool for structuring data and for furthering the researcher's understanding (Coffey and Atkinson, 1996, p. 26). Regardless of how extensively coding is used, however, it is not the basis on which the production of the case description rests—that basis rests with the researcher (ibid, pp. 26-30). Thus, it was my interaction with the data that produced the understanding of the phenomena studied, which in turn is reflected in the case description and in the analysis (ibid, pp. 26, 108, 153-156).

Writing and Checking the Case Description

The presentation form chosen for the case study is a chronological account of events interwoven with commentaries by actors, supplemented with an epilogue where the NDS project and the management of the project is reflected upon by actors three years after implementation of the NDS system.

The length of the case description was partly a conscious choice, partly a consequence of the working method chosen. As mentioned earlier (page 96), a detailed case description facilitates the reader's understanding of the research and of the research results. The process of expanding a time line document and building the case from that document, incorporating several levels of analysis, added substantially to the length of the case description.

A detailed case description facilitates alternative interpretations from different theoretical or epistemological standpoints. Although such analyses are difficult because of the assumptions and perspectives inherent in the case description, the level of detail may provide a better basis for such an analysis. Further, detailed descriptions of organizational processes may facilitate deeper understanding of these (types of) processes (cf. Alvesson, 1996, pp. v-vi), which is favorable in light of the aims of this study (cf. section 3.1.2). On the downside, a long case description may reduce readability. Therefore, highlights from the text have been placed throughout the case description in order to make reading easier.

The time period covered in the case description was determined by the project period and the pre-history and subsequent events deemed important as context for the project period, but also by the methodological approach and assumptions (e.g. importance of historical context and multiple levels of analysis). Availability of data made it possible to extend the description backwards to the 1960s, providing for a brief overview of how IT use began in the company, and the retrospective data collection made it of interest to expand the description to the period when data were collected, as did late developments which shed additional light on the managerial actions related to the studied project.

The case study is presented here in anonymous form, as agreed with FSC. One reason for choosing an anonymous case was to increase the openness during data collection, both from a corporate and from an individual point of view. Possible consequences include that most readers can provide less context (and less prejudice) of their own and that refutation of my description of events and processes at FSC can not be made based on independent sources (Liebenau and Smithson, 1993, p. 239).

Quotations in the case description were translated from Swedish to English by me. In the translation, it was attempted to follow the wording and the tone of the original closely. Translated quotes were then usually edited slightly for improved readability. Edits concerned grammar (very limited, only to clarify meaning), repetition and digress but not style or "flavor" of speech (Rubin and Rubin, 1995, pp. 271-274). All quotations, whether edited or not, have been checked with the respective interviewee for accuracy of content and of form of expression, and for permission to use the quote (ibid, pp. 273-274). In preparation for this, quotes were re-translated into Swedish and compared with the Swedish original in the time-line document. The material sent to interviewees for approval included a few lines of the case description preceding each English quote, followed by the Swedish version with identical omissions (marked "...") as the English version. This arrangement made possible the comparison of language versions while leaving the degree to which the English version was screened at the interviewee's discretion. The overall feedback from the interviewees was that they recognized themselves in the quotes and that the content was correct.[63]

In a few cases, interviewees offered corrections on details. These corrections generally concerned the descriptions adjacent to the quotes (which were included to provide context) rather than the quotes themselves. When corrections or elaborations concerned the quotes, footnotes where added rather than excluding (or changing) the quote. In a few cases the interviewees found the quotes too drastic in their wording and in one case an interviewee wanted to improve the grammar and (change) the manner of speech. A few of these problems were solved by cutting out parts of the quote, provided that the meaning was not changed. In other cases, a quote or part of the quote was excluded and the relevant information was added to the text instead. In no case was a quote edited without checking the original wording in the interview documentation, including handwritten notes.

Quotes were only edited by cutting text, not changing the wording in any way which would be inconsistent with any part of the meeting documentation. In a few cases, I contacted the interviewee a second time to discuss keeping a quote and in one case making the quote anonymous was offered and accepted as a solution.

At this point in time, the full version of the case description was checked with my initial primary contact at FSC. His overall feedback was that he found the case description correct, save for some minor details, and that the storyline made sense to him. He also commented on reliving the project through reading the case. In some cases, he specifically commented on less positive parts of the description of project outcomes as being correctly described.

The case was then revised based on this feedback and the feedback from interviewees. No revisions were requested or made which concerned the interpretation or depiction of events; changes were only made concerning "facts", such as at what time a certain event took place, or how many subsystems an information system consisted of at a certain time, etc. Following this, the case was sent to a second executive vice president at the research site, who had at this time

[63] One of the interviewees wrote in her reply: "It is somewhat surprising that you remember [the quotes] in such detail. I can't remember that you taped our conversations."

taken over responsibility for IT and business development.[64] A letter was included to explain choices concerning the case description, rationale behind the choices and the intended use of the case description.

A meeting followed, in which the case was discussed. The feedback this time was also that the description was correct and that it provided a interesting, balanced, in-depth account of events. This person also commented that the story ended on a less positive note than he had anticipated, but that this was well substantiated in the description. He also provided supplemental information on effects (which was later checked and supplemented in contacts with other people at FSC) and asked for an adjustment in a quotation to avoid a possible, unintended, derogatory interpretation (this was changed, mostly through omission, since it did not change the meaning of the quotation).

In conjunction with this meeting, copies of the case description (with quotes highlighted) were delivered personally to the secretaries of the CEO and the chairman of the board, together with written and oral information on intended use and what my request pertained to. In subsequent telephone contacts with the secretaries, I received permission to use the quotes without revisions.

During 2000 and 2001, I was invited to hold several talks at FSC on different aspects of the NDS project in particular and IT projects in general. Generally, groups consisted of people with different personal relationship to the NDS project (deeply involved, observed project from a distance, not with FSC at the time). These presentations were used as opportunities to sharpen and test arguments and conclusions and to see the case from different viewpoints. The presentations were well received and there were usually lively discussions. My descriptions of events did not meet with objections and interpretations were generally accepted and appreciated for providing new perspectives, sometimes after clarifying discussions.

From 1998 onwards, I have also been in contact with people in various parts of FSC for other, varying reasons. In these contacts, I have, as a side-activity, inquired about on-going events and current and future developments concerning the organization and aspects of IT management and use. Usually, the content of these discussions have to a considerable extent corresponded to my existing understanding. Surprises, or "anomalies", were investigated through continued conversation in order to find explanations and make comparisons with my prior understanding of the organization. On several occasions, my conversation partners explicitly commented on what they saw as my extensive understanding of FSC as an organization and as a company.

These interactions with people in FSC provided additional views on the NDS project, and on management in FSC during the period of the NDS project, which were used in the analysis. They also provided a means for testing my overall

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64 This person was also among the interviewees in the study.

understanding of the organization in light of developments after the period in focus and after the regular data collection had been finished. Earlier, a research-in-progress paper (Mähring, 1998) and the presentation of the paper at a conference had also been used to further analysis work in a similar way, though with a focus on possible theoretical contributions.

Structuring and Presenting Interpretation and Contributions

The results of the analysis are presented in the form of two chapters (5 and 6). The first of these takes the form of an interpretation and discussion of the case description. This interpretation has the dual aim and characteristic of being *theoretically informed* and of *informing theory.* It is based on previous work described and discussed in chapters 1 and 2. It is also used to assess and contribute to previous work.

That the interpretive discussion is theoretically informed also means that it is focused on aspects of theoretical significance given the purpose and focus of the study. Thus, the interpretation is selective, or complete at most in relation to the study focus, theory basis and delimitations. Even given this specification, choices nevertheless have been made regarding how to document and present the interpretation. A central choice concerns whether to revisit the case in an extensive way; to provide a complete restatement of the earlier case description (for an excellent example of this approach, see Vaughan, 1996). Another alternative is a focused and selective analysis/interpretation of the case description. This selective interpretation can be built with the use of episodes and encounters (Newman and Robey, 1992),[65] critical events (Wolcott, 1994, p. 19) or phases (McKenney, 1995).

I have chosen a focused/selective approach to interpretation, partly because, as Vaughan (1996, chs. 1, 8) exemplifies, an extensive revisiting of a case may require as many or more pages than the original case description.[66] Another important reason for a focused/selective interpretation is found in the need identified earlier (section 2.7.3) for knowledge about the *dynamics* of IT project governance.

In order to discuss the dynamics of organizational control over IT projects we need to consider how the characteristics of the NDS project and its governance change over time. One way to do so is to distinguish (i.e. construct) phases in the studied process. However, the phases of interest for this discussion are not identical to formal project phases. Nor do they correspond to primary tasks in information systems development, such as "analysis" and "construction". Furthermore, we need to keep in mind that the division of a process into phases

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[65] See also e.g. Van de Ven and Poole (1995) about explaining processes of change.

[66] Vaughan's (1996) choice is also motivated by the need to relate to and contradict an official "truth" (in this case about the 1986 Challenger space-shuttle disaster).

is in itself an act of interpretation, in this case to be used as a vehicle for further analysis.

The criteria used for delimiting phases include critical events (such as initial approval of the project, decisions on project existence)[67], shifts in the relationship(s) between project controllers and project manager and shifts in the character of project governance, project management and project work. Critical events are seen as indicating (and sometimes manifesting) shifts in the project process, rather than events causing or constituting shifts. They are part of a process, but in this context serve to make visible a shift occurring over time.

Thus, critical events are not assigned the centrality of "encounters" (cf. Newman and Robey, 1992, above) or other variants of "sudden periods of revolutionary change" stipulated by the punctuated equilibrium model (ibid; Tushman and Romanelli, 1985; Gersick, 1991; Van de Ven and Poole, 1995).[68] Consequently, to underscore the gradual change of the processes studied, the phases are partly overlapping.

The phases are presented after the case description (section 5.1, starting on page 231) and mirrored in the structure of section 5.2, the central part of the

Table 10: Illustration of Differences between Chapter 5 and Chapter 6

Sample Content from the Two Concluding Chapters	Comment
Chapter 5 (page 247): "Controller behavior early in the project process may also be partly influenced by *deferral of judgment.* At a point in time when the project image was that of 'the project in the making', controllers may have wanted to suspend evaluation of project progress and of the project manager. Deferral of judgment was partly propagated by those controllers with knowledge about the work process, namely the managers from the IT department."	Discusses the case guided by study purpose and surveyed literature, using concepts from control theory. Introduces a new concept and substantiates its meaning and applicability.
Chapter 6 (page 276): "A group of actors' level of activity in project governance is also related to the point in time of the project at which a certain event occurs. Specifically, early in the life of a project, a steering committee may be less inclined to take action because of *deferral of judgment*, and because of unclear positions of individual actors within the group. 'Better', then, to wait and see (page 247). This phenomenon does not seem to have been identified in earlier studies of IS project control (Kirsch, 1996; 1997), escalation (e.g. Keil, 1995b) or in several other studies on executive involvement in IT projects (e.g. Sauer, 1993a). The emergence of this contribution here is probably partly because of the study's process-orientation."	Builds on the previous chapter, reintroducing the concept and placing it in a general context. Expands in general terms on how the phenomenon denoted by the concept is part of how project governance forms. Positions the finding in relation to previous studies.

67 Other events include e.g. major changes in project plans, conflict in steering committee, change of commissioner, change of project leader, external reviews, key meetings, milestones in project work and project outcomes.

68 The difference may be due to the use of multiple levels of analysis in this study, which may make process shifts more complex and less distinct.

analysis chapter. The critical events used to delimit phases are described in Appendix F (starting on page 335). In contrast, the section headings in chapter 4 resulted from the work with the case description. Similarities between the headings in chapter 4 and the phases in chapter 5 follow from the abductive approach and the emerging understanding of the studied phenomena, though the two have not been synchronized.

An alternative to a chronological discussion in chapter 5 would have been a thematically structured discussion. However, compared with a thematically structured discussion, the chronological organization of chapter 5 achieves several things. Arguably, it provides a stronger test (and evidence) of the consistency and coherence of the interpretation. In a thematically organized discussion,

Summary of the Work with Data

1. The primary level of analysis for the case study was managerial influence and control over the studied IT project. Other levels of analysis included project management, the project process, corporate IT management and the organization.
2. In addition to the collected data, work notes were saved and sorted chronologically to facilitate reconstruction of the research process.
3. The reading, structuring, analysis and presentation of data was carried out in an iterative work process.
4. A time-line and a set of coding schemes were used as important tools in process of structuring and analyzing data.
5. The time-line was used to chronologically structure data and to aid in the evolving understanding of events (in and) around the IT project studied.
6. The set of coding schemes were used to code data according to levels of analysis, types of data and main theoretical issues. Coding contributed to ensuring that relevant data were included in the analysis and the case description.
7. The presentation of the case is carried out through a chronologically structured case-study narrative. The names of the corporation and the individuals have been changed.
8. The case description has been checked with senior executives at the company for accuracy and confidentiality.
9. The analysis was finalized, revised and presented through the writing of a theoretically informed interpretive discussion (chapter 5).
10. The contributions of the study emerging from work with data (including the writing of chapter 5) were organized into a line of reasoning, the final version of which is presented in chapter 6.

Box 5: Summary of the Work with Data

the checks and balances against the eclectic use of theory and the selective use of empirical "evidence" are weaker. Indeed, chapters 4 and 5 can even be read side by side as a test of the coherence of the interpretation and of its grounding in the underlying case description. The chosen structuring of chapter 5 is also well suited for both discovery and presentation of findings specifically concerning processual aspects of IT project governance.

There was also the alternative of carrying out separate, "complete" analyses of the whole case description from several theoretical perspectives (à la Allison, 1971). This was deemed too work-intensive to be carried out within the scope of the thesis and also beyond the purpose of the thesis. This remains an interesting and potentially very fruitful approach, which could be used to carry out an extension of this study and further test the study's findings.

Throughout the period of working with data, theoretical contributions had been continuously formulated, reformulated and clustered. When working with the interpretive discussion, they were revised and restructured into a line of reasoning guided by the focus on dynamics of IT project governance and the chronological approach used both in the case description and the interpretive discussion. In close connection with the writing and finalizing of the interpretation, the concluding chapter was written. The aim of this writing was both to summarize and sharpen findings from the whole interpretive process and also to extend these findings where possible.

Chapter 6 thus builds heavily on the previous chapter, but is not only a summary of it. Whereas chapter 5 contains a theory-informed interpretation of the case, chapter 6 is theory-focused: It builds on, relates to, critiques and contributes to theory. Table 10 illustrates the differences between the two concluding chapters.

The main parts of the work with data are summarized in Box 5. The results of the process described here are presented in the subsequent chapters. Before closing this chapter, some additional issues concerning the research approach are discussed, below.

3.4 Evaluative Comments on the Study

Assessing your own work is as necessary as it is difficult. It is also perhaps more difficult to assess a qualitative study, where there is no direct equivalent to e.g. established statistical method. It may also be more difficult to assess interpretive studies because the standard criteria of reliability and validity do not apply. Below is an attempt to assess the study, using two sets of criteria for interpretive research. Since this is a retrospective methodological evaluation, *this section can also be read after chapters 4 through 6.*

The evaluation criteria used are Lee's (1999) criteria for assessing the "goodness"[69] of an interpretation and Klein's and Myers' (1999) principles for conducting and evaluating interpretive field research. Below, I will summarize my personal assessment of how these criteria and principles have been followed in this study and offer some examples which support that assessment. It should be noted that these sets of evaluation criteria were not used in the design of the study, only in retrospect. Lee (1999) suggests the following four assessment criteria (ibid, p. 21):

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[69] The words "goodness" and "good" reflect the complexity of evaluating a study built on assumptions of social constructionism and processes of (subjective) interpretation.

1. With a good interpretation, any absurd or irrational behavior would no longer appear so.
2. With a good interpretation, new observations would no longer surprise the observer.
3. With a good interpretation, new observations would no longer surprise a different observer, to whom the interpretation has been communicated.
4. With a good interpretation, an observer would be able to enter the organizational world of the observed human subjects, whereupon she/he could communicate with them.

Of the four criteria[70] listed above, the first has been addressed thoroughly in the study. This is reflected in the case description and the analysis work by the relative absence of judgments of actor behavior and by continuous efforts to make sense of behaviors, using the basic assumption that people know what they are doing (cf. section 3.1.2). The second has also been tested quite extensively, partly as a consequence of the abductive approach to data collection and analysis work and partly through my recurrent contacts with people in FSC (cf. section 3.3.4). Lee's (1999) third criterion can be seen as concerning intersubjectivity and how this is facilitated by presentation of the interpretation. This has not been tested. The fourth criterion has not been tested in quite the manner described by Lee, but in a different manner: In consultative discussions, I have supported actors in FSC regarding to how to manage processes related to IT and IT projects. Thus, whereas observers have not been used to assess the study results, people I have interacted with have used my input in their actions within the organization.

Klein and Myers (1999) suggest seven principles for conducting and evaluating interpretive field studies. These principles include applying the fundamental principle of the hermeneutic circle, contextualization of the focused phenomenon, reflection about the interaction between researcher and subjects, relating interpretation to theory, dialogical reasoning, sensitivity to multiple interpretations and sensitivity to biases in the collected material (see Table 11).

Adherence to the principle of the *hermeneutic circle* is described both in the account of this study as using an abductive approach (page 94) and also in the description of how the interpretive work was carried out (section 3.3.4 above). However, while Figure 9 (page 95) outlines results of major steps in the interpretation and analysis, considerable parts of different steps or episodes in the

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[70] A comparison of these criteria with Alvesson's and Sköldberg's (1994, pp. 35-39) trilateral model for truth assessments (Swedish: "det trilaterala sanningsbegreppet") shows that Lee's criteria are geared towards *correspondence* and *meaningfulness*, and relatively less towards *applicability.* In contrast to Alvesson and Sköldberg (ibid), Lee's (1999) criteria seem to imply a strong interrelatedness between meaningfulness and correspondence.

interpretive process have not been documented. As a consequence, iterations and reinterpretations taking place during the work could not be accounted for on a detailed level in the description of the research process above.

The second principle, *contextualization,* has been covered quite extensively in the case description, in the interpretive discussion of the case and also in the study's conclusions. Furthermore, in addition to Klein and Hirschheim's view of contextualization, this study also relates the personal history of the researcher to the study, so that the research can be understood in relation to the researcher. This in turn relates to the *interaction between researcher and subjects.* Above, I have not "critically reflected" on the social construction of data through interaction with participants. I have, however, been open about how data are constructed and molded, and I have been open about the character of the interaction between researcher and participants (section 3.3 above).

Chapters 4 through 6 demonstrate *abstraction and generalization,* based on the details revealed by interpretation of data. In these chapters, abstraction and generalization start with a detailed, coherent story of the NDS case, based on collected data then continue by (re-)interpreting this story with explicit use of theory and end with the formulation of theoretical contributions, expressed in general terms. As for *dialogical reasoning,* this is closely related to—or even an alternative way to describe—an abductive research approach. In this sense, the

Table 11: Summary of Principles for Conducting and Evaluating Interpretive Field Research (adapted from Klein and Myers, 1999)

1.	**The Fundamental Principle of the Hermeneutic Circle** Iteration between the interdependent meaning of parts and the whole that they form as a basis for understanding
2.	**Contextualization** Critical reflection of the social and historical background of the research setting; showing how the investigated situation emerged
3.	**Interaction Between Researcher and Subjects** Critical reflection of how data were socially constructed through interaction between researcher and participants
4.	**Abstraction and Generalization** Relating details revealed by the interpretation of data through application of the first and second principles to theoretical, general concepts that describe the nature of human understanding and social action
5.	**Dialogical Reasoning** Sensitivity to possible contradictions between theoretical preconceptions guiding the research design and actual findings; subsequent cycles of revision
6.	**Multiple Interpretations** Sensitivity to possible different interpretations among the participants, e.g. as expressed in multiple narratives or stories
7.	**Suspicion** Sensitivity to possible biases and distortions in the narratives collected from participants

interplay between theory and findings is inherent in the research approach. This, along with revision cycles, has been described above. It is also demonstrated to a certain extent in the discussions in chapters 5 and 6, for example where findings from this study contradict findings from earlier studies. However, the revision cycles, while accounted for in this chapter, are not documented as such, nor dramatized in the text of the concluding chapter, nor in the structure of the thesis. While dialogical reasoning was used extensively in the working process, this is less extensively reflected in the presentation of findings in this text.

As for sensitivity to *multiple interpretations* among participants, as expressed in different and differing accounts of events, this principle is closely related to the principle of *suspicion* concerning participant accounts. In the following chapters, differing accounts are *presented* only sparsely (e.g. pages 118-120), although differences in perspectives are more frequent (pages 130, 189). There are two reasons for this. First, I found it to be my responsibility to reconcile differences in accounts as much as possible as part of working with data, e.g. through triangulation. Second, extensively demonstrating ability to catch differences in accounts between participants was seen as potentially impeding the readability of the case description. "Backstage", however, I have tried to ensure that differing accounts were included in the time line document (see above) and that triangulation between sources and types of sources was used extensively in order to arrive at an account that was as plausible and coherent as possible. In this process, the possible personal interests of interviewees at different points in time, i.e. when events occurred respectively when interviews were conducted, were taken into account. Just as with the principle of dialogical reasoning (above), there is in this text a significant difference between the relatively detailed account of the research process in this chapter and the presentations of the case and the findings in the subsequent chapters.

In summary, this discussion finds that in relation to Lee's (1999) criteria, three out of four have been satisfied to a considerable degree in this study. As for the fourth, an alternative test of the interpretation in use in the organization has been described. In relation to the principles suggested by Klein and Myers (1999), it was found that most principles were addressed in the study. Contextualization is perhaps the principle most clearly demonstrated in the text, whereas the principles of dialogical reasoning, multiple interpretations and suspicion, while addressed in the research process, are predominantly conveyed in the methodology discussion and account in this chapter and only sparsely demonstrated in the text of the concluding chapters. The principle of interaction is probably least accounted for in this thesis.

Chapter 4

The New Deposit System Project

This chapter contains the case description used as the empirical basis of this research study. The case concerns a project aimed at developing a complex, mission-critical information system intended to replace an existing legacy information system. The project takes place in a financial firm, here called Financial Services Corporation (FSC). The case description focuses primarily on project governance, but also on project management and project work, and describes these phenomena in their organizational context. The description is chronological, except for a final section which contains evaluative comments by people involved in the project or its governance.

To facilitate reading of the case description, a list of people mentioned in the description is provided in Appendix D (page 327) and a list of information systems and successive hardware platforms at FSC is given in Appendix E (page 333). Figures, boxes and frames containing highlights from the text can be used to get an overview of the case.

4.1 Introduction to the Case

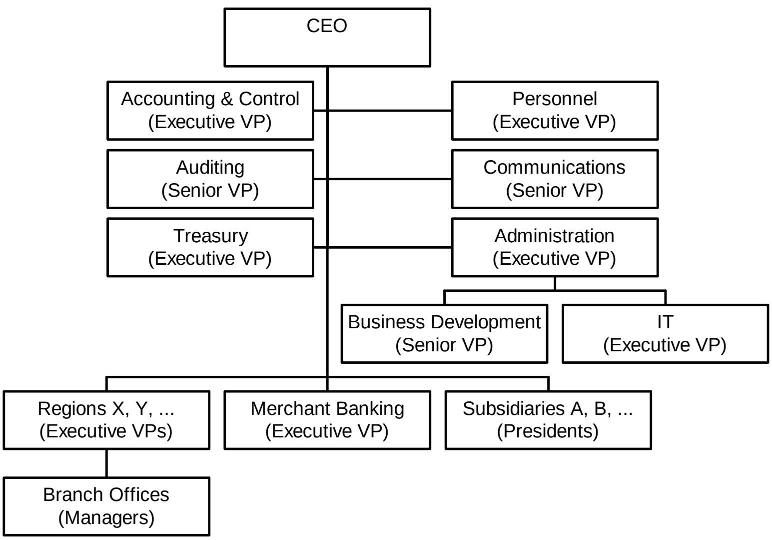
In early 1994, the CEO of Financial Services Corporation[71] is asked by a business magazine about the most important event in the up-coming year for his company. His answer: the implementation of the bank's new deposit system, "a heart transplant" for the company. The effort leading to this important event had gotten under way in late 1987, when a feasibility study was initiated. At that time, nobody in the bank knew that these early efforts would evolve into a project larger than any previous or concurrent IT project in the bank. At that time, it was one project among several.

Financial Services Corporation (FSC) is a middle-sized European bank with its domestic home market in one of the Nordic countries. Its branch office network has national coverage and the bank has in recent years built a presence in neighboring countries through organic growth and acquisitions. FSC is a full-service bank, but its retail banking division has traditionally generated most of

[71] A pseudonym.

the revenue and employs most of the personnel. (An overview organization chart is found in Figure 10.) Over the years, FSC has adopted information technology at a pace similar to the average competitor; it is neither outstandingly innovative, nor extremely late in its adoption of IT innovations. During the 1970s and 1980s, some of FSC's competitors were known for a considerably higher ambition level concerning IT adoption than the industry average. In relation to these, FSC had the policy of not being on the "bleeding edge".

Earlier (chapter 3), it was suggested that to understand the project and the management control actions related to the project, one has to look at the project in its historical and social setting. This means starting earlier than 1987 and looking more broadly than in the project's immediate surroundings. This case study therefore starts with an overview of the bank's employment of information technology from the 1960s forward, and in doing so also highlights some aspects of the organization and its environment.



Only selected staff functions included.

Figure 10: Overview Organization Chart for Financial Services Corporation (based on FSC annual reports)

4.2 The Use of IT in Financial Services Corporation (1963–1987)

The use of information technology at FSC took off in the middle of the 1960s, with check processing and automation of general ledger bookkeeping as early, successful efforts. The first solutions employed punch cards, which were prepared at branch offices and then sent to the head office for processing. The central processing unit at the head office then sent back results from card batch runs. Through the introduction of this early technology, checks could be processed and filed directly at the branch office, and bookkeeping was speeded up. This was important at a time when transaction volumes were increasing substantially, partly because the use of checks instead of cash was promoted. Automation made it possible to keep the number of employees in branch offices at previous levels despite the increased business volume. At this time, at least one branch office outsourced the preparation of punched cards (to a nearby textile factory).

> *In the early 1970s, the first terminal system, deposit information system and customer information system are implemented in FSC.*

The next major step for FSC in the rationalization of business operations followed in the early 1970s with the implementation of the bank's first terminal system and deposit information system. Two years before completion of the project, the bank's CEO at that time had suspended the project for nine months, as part of a major, ultimately successful effort to improve the bank's financial situation. The project was resumed after this moratorium and ultimately resulted in the implementation of several interdependent technological innovations.

The most visible of these was a "terminal system" *(FS-Term),* which made data communication between all branch offices and the central data processing facilities possible. FS-term consisted of terminals in branch offices and hardware and systems software connecting these terminals to mainframe computers at central data processing facilities, where all applications (i.e. information systems) and databases were located at this time.[72]

The perhaps most important application running on the technical platform was the bank's first deposit information system (called *DepSys*) which was used to process all customer accounts and all customer payment transactions, both for individual and corporate customers. Tightly linked to DepSys was a customer information system *(CustSys)* containing customer information and changes were made in the existing general ledger application and an application for the management of certain types of loans.

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[72] For further explanation of technical terms used in the case description, see e.g. Keen (1995), http://www.whatis.com (February 1, 2000) or http://www.webopedia.com (February 1, 2000).

A central idea of the project was that transactions should be processed "at the source"—by cashiers. Thus, the need for back-office clerks was reduced, whereas the registration of customer transactions at the counter made an increase in the number of personnel with customer contacts both possible and necessary. The new technology also opened up possibilities for rationalization, which fit well with overall objectives in the organization at the time. Using training activities and internal consulting activities, many branch offices were able to increase their cost efficiency significantly with the help of the new information systems and technology, partly through personnel reductions. The data processing department of the bank, and particularly the IT manager at the time, had by several accounts been the driving force behind the IS/IT development efforts, particularly in the early stages.

In the late 1960s, the IT department had had considerable influence over systems development, including functional specifications for information systems and even the design of products and services delivered through these information systems. The IT manager at that time had a certain internal reputation for being innovative—even visionary—but also hard-hitting, sometimes using scare tactics to persuade senior executives to accept investments or project proposals. This situation, however, had changed during the seventies, under the leadership of two successive CEOs who saw the IT department (by now sometimes referred to as "the factory") as being responsible for delivering data processing at low cost.

> *Around 1969-1970 the IT department practically controlled the bank. They decided what account types we should have and what they should look like. We put a stop to that later. ... They had theories which they had taken from the US and which said that there would be a tremendous growth in the number of accounts, they showed these curves [going through the roof]. ... There were theories saying that it was all about making people open accounts, and then [consequently] they would start using them. That was insane; it doesn't work that way.*
>
> *Axel Rydberg, CEO*[73]

The seventies also saw substantive changes in organization structure and management control, personnel incentives and corporate values, as well as in market situation. Several of these changes led to different and increased information and information processing needs in branch offices, and there were predictions that these needs would become increasingly important in the following

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[73] All names are pseudonyms. Titles reflect the position/role of the individual at the point in time described. In other words, all titles should be read with the addition "at the time". For more detailed information on the positions/roles of people mentioned in the case description, see Appendix D, starting on page 327.

years. The rapid technological development since the end of the sixties (when the previous project had been initiated) also provided quite different possibilities for data processing than those possible with FS-Term. These changes were part of the rationale for the next major IT project in the bank. In 1978, a task group was formed with the goal of investigating the bank's second generation terminal system. The study was initiated by the data processing department, but several corporate executives would soon become involved. The person in charge of the task group was Gustaf Söderberg, who had been recruited to the bank in 1969 to work with data communication in the FS-Term project.

The work of the task group, were IT suppliers were invited to participate, was completed in 1980. The suggested solution concerned the technical platform: hardware, systems software, communication principles and protocols. New application software (information systems) was not included, since an important aim of the task group was reduce the interdependence of the technical platform and the information systems. Thus, the suggested platform included general purpose terminals which would be able to run future real time applications as well as the existing batch-oriented information systems.

At the end of a prolonged tender process, which started in 1981 and finished in 1983, only one IT vendor remained willing and seemingly able to provide the solution which had been designed by the task group. The decision to go ahead with the project and the related investment was taken by the bank's board of directors in October 1983. Reasons cited at the time were market demands for new products and services, continuing increases in transaction volume and the need for improved customer service. Executives involved with the project as well as project management emphasized that the project was run in close cooperation with users and that users had a high degree of influence over design.

To address the management of IT and the problem of controlling increasing IT costs, the CEO starts a corporate IT board in 1984.

Following the tradition of FS-term, the proposed design of the new terminal system *(NewTerm)* was in some respects conceptually and technologically advanced. All terminals in branch offices were to be general purpose terminals, so that all tasks involving data processing could be performed from any terminal. Also, the terminals were to have local processing capabilities, which was intended to improve e.g. data transmission speed, response times and reliability.[74] Gustaf Söderberg, who had headed the task group, was project manager and Verner Moberg, executive vice president and head of Central Administration, was the person in the bank's executive team responsible for the project.

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74 This means that NewTerm was an early example of client-server architecture.

At this time, several changes were taking place with regard to FSC's IT management. One was that the IT manager resigned, after more than 15 years in that post. He was replaced by three functional IT managers sharing responsibility for management of the IT department, and jointly reporting to Verner Moberg. Another change was that the number of IS development projects had increased quite rapidly, as did corporate IT costs, rising faster than other costs in the bank. The situation was addressed through the formation of a corporate IT board (CITB) in 1984.

> *I thought about this during the summer, and my conclusion was that you can't calculate IT projects [reliably], so you have to manage by controlling total costs [for IT] instead. And I can't be involved in making decisions in all projects, it's better to decide on the overall budget instead. And the formation of the CITB became the way to do this. ... CITB was the solution* I *came up with to get control over IT.*
>
> *Axel Rydberg, CEO*

The CEO chaired the CITB, and other participants included the three managers from the IT department, the head of the business development department, executive vice presidents (from regions, merchant banking and central staff units), and a union representative. As described by the CEO, the aim of the group was to improve management control and cost control of IT by setting priorities for IT projects (choosing among projects and setting the scope of individual projects). The importance of cost control was systematically emphasized during the first years of the group's existence, which also saw the introduction of new rules for proposing and approving IT projects. These included the rule that no project would be approved without a "commissioner", a senior manager from the user organization designated to control and sponsor the project. The head of one of the regions was selected as commissioner for the NewTerm project.

Another measure which was part of the effort to put more control in the hands of user representatives was the recruitment of Karin Martinson to the corporate Business Development department. She was assigned the job of supervising user representatives in the NewTerm project and managing their input to the construction units in the project. Karin had previously been head of a branch office and this was her first assignment in her new job at corporate headquarters.

> *This was the first time that I worked with this type of task, and it was extremely frustrating. It was difficult to define roles and responsibilities. The IT department was a very unwieldy organization [to work with]—and different—and it was easy to be pushed back. It was the first time I seriously reflected over projects. The IT department ran projects themselves at this time. I reflected on this and saw how*

much the organization mattered. There hadn't been a really functioning customer [to the IT department] before.

Karin Martinson, Business Development department

Adding to the complexity of the project was FSC's deep involvement with the vendor in specification work for communication and systems software development, including specifying the technical environment for systems development work. Relatively early in the NewTerm project, the supplier ran into trouble in their development of hardware and systems software, which contributed to delays and increased project costs for the bank. The cost increases and delays put the project under certain pressure both from management and employees. Those who primarily managed this pressure were the project manager Gustaf Söderberg and Verner Moberg, as Gustaf recalls:

I put a lot of effort into keeping the project alive, to ensure its existence. The relation to Verner Moberg ... was very important. ... Verner had really stuck his neck out in symbiosis with me. So I got all the support I needed [from him].

Gustaf Söderberg, project manager NewTerm

In fact, Gustaf sometimes received more support than he had wished for: At times, in meetings with the vendor, Gustaf worked to ensure that Verner Moberg would not make agreements with senior executives from the vendor without consulting Gustaf or other people from FSC first. In Gustaf's view, this would risk complicating the development work both for FSC and for the vendor.

Through the CEO's daily contacts with Verner Moberg (their offices were next to each other and they were jointly involved in several contexts), the CEO was continually informed about the project, though information was usually not given with much detail.

Well, I have the simple rule that I work through something like this thoroughly and make a decision, then I leave it. As long as things work out OK, I don't need a lot of reports that state that things are going according to plan. If there are problems, I want to know about that of course. It is not that formal. ... When I went into Verner's room, I [sometimes] asked him about how the project was going along. ... If everything was OK, that was it, and if he said there was a problem ... well, then we dealt with it.

Axel Rydberg, CEO

Some important personnel changes occurred at this time. Karin Martinson became head of the Business Development (BD) department. In the NewTerm project she was replaced by Nils Høeg, head of administrative development in one of the regions. Furthermore, a new IT manager, Erik Östergren, was externally recruited in late 1985. He joined the corporate IT board and the three IT managers were phased out of CITB over the following years. From early on, the importance of IT cost control in FSC was clearly perceived by Erik.

At this time NewTerm was plagued by delays, but it had also advanced so far that the first test installations had been made and an internal information video of NewTerm had been produced, for use at regions and branch offices. Erik did not come to assume major responsibility for the NewTerm project, but had an important role supporting the project manager, whereas Verner Moberg remained the executive responsible for the project. However, because of the size and impact on business operations, there was also some responsibility resting with the CEO. The information video for NewTerm contains a scene where the CEO of FSC and a senior executive from the supplier partner for the NewTerm project together inaugurate the first installation of the new terminal system. In doing so, the CEO says, jokingly:

> *Well, Mr. Russell, we have hung together in this project, and I hope this works now, because otherwise we will hang separately.*

During this time, the deposit system was also a matter of continued concern. In the early to mid-1980s, online front-end applications had been added to DepSys in order to overcome shortcomings of the aging batch system. One such application matched registers with transaction files to provide up-to-the-minute account statements, giving users the impression that accounts were updated in real time, although DepSys still operated in over-night batch mode. Another added application made it possible to store ten-digit account balances. The aging of DepSys had led to the initiation of a project in 1984, aiming at building an information system for managing exclusively corporate accounts. The proposed system, *CompSys,* was seen as first step towards replacing DepSys.

The CompSys project, aimed at replacing DepSys for corporate, but not for private, accounts, was started in 1984 and abandoned in late 1985.

The CompSys project was run with a new set of systems development methods, emphasizing user participation and a focus on business operations. A detailed information requirements analysis and systems analysis was carried out in 1985, but in the autumn of 1985, CompSys was postponed, or terminated. The official reason was that the NewTerm needed additional key personnel, who were working with CompSys; the bank did not have the capacity to run both projects simultaneously. While there is consensus among the executives involved that this was the case, an additional important reason for canceling CompSys was a growing insight that the separation of corporate and private accounts was a flawed solution from both a business and a technical viewpoint. Another factor was that the management of the project had been troublesome, and that systems specifications and program code produced in the project had quality problems.

There was a lack of key people. [But there were other things too.] The development of the payment processing application didn't work. There was a lack of competence. There was something unsound about the project.

Gustaf Söderberg, project manager NewTerm

This was soon after the recruitment of Erik Östergren as well as Karin Martinson's appointment to head of BD. Erik and Barbro conferred about CompSys and decided to abandon the project. Both Gustaf Söderberg and the systems development manager[75] supported the decision, which would make additional resources available for the NewTerm project.

[I] saw pretty quickly that it should be abandoned ... because I wasn't committed and I saw it with different eyes. We decided pretty quickly to abandon it.

Erik Östergren, IT manager

The NewTerm project was completed in 1988. It had been the largest, most complex and costliest IT project in FSC to date.

Karin Martinson's department, the BD department, was at this time gaining more influence over systems development, by functioning as gatekeepers for user demands and through their influence over IT budgeting processes. When Karin and Erik proposed the postponement of CompSys to the CITB, it decided accordingly. The development cost was then estimated at 2.5 million euros, and it was decided that the project was to be resumed two years later. At the time, as well as in the present day, there were and are different views as to whether resuming the CompSys project was ever a realistic option. However, the long-term need to do something about the deposit system remained.

As for NewTerm, the first implementations during 1985 were followed by a prolonged implementation period stretching through 1986 and 1987 (and with reduced intensity even into 1988). During the implementation period, there had been several postponements of large-scale roll-out of the new terminal system. In 1987, with the bulk of the implementation work done, it was clear that the NewTerm project was the single largest IT project to date in FSC in terms of cost, number of project years, and technological complexity, encompassing e.g. new hardware, systems software, data communication protocols, client program distribution and user interface. During the late stages of the NewTerm project, Gustaf Söderberg assumed responsibility as head of systems development in the FSC IT department.

75 This was before Gustaf Söderberg was appointed to this post.

Karin, Erik and Gustaf developed cooperative relationships at this time and were in frequent contact with each other. Karin and Gustaf had worked closely together in the NewTerm project for several years, whereas Karin's and Erik's relation was perhaps more characterized by their departmental relationship as main customer and supplier of IT services, respectively. The three of them would be among the key actors in the upcoming developments, as thoughts about a new deposit system again surfaced.

To summarize some of the key aspects of the situation at this time: In 1987, FSC was in a industry undergoing deregulation, with substantial uncertainty regarding market developments and the future competitive environment. In the industry, there was a widespread belief that innovations in products and services, probably in many cases combined with growth through acquisitions, would be necessary to compete successfully in the upcoming years. FSC had an organization structure which had remained stable for several years, and the IT department still had considerable influence over IT issues compared to the Business Development department and line management, but with an increasingly functioning dialogue with their main customer. Corporate control of IT emphasized cost control as a consequence of corporate culture as well as the CEO's choice, and the new IT manager, who had joined FSC when the large NewTerm project was already well under way, was working hard to comply with budgets for IT. One result of the NewTerm project was that the old deposit system was now running on a new hardware platform, which had an architecture based on the idea that changes in the technological platform, the hardware, should in the future be separated from development of information systems, rather than combined.

4.3 Early Days of the NDS Project: Innocence of Youth? (1987–1989)

In the autumn of 1987, with the implementation of the new terminal system well under way in branch offices, attention again turned to the need for a new deposit system. People in the Business Development department as well as in the IT department were concerned with the issue. Among those were Tage Lundell at the BD department, who had been responsible for systems support for corporate retail banking within the BD department during the period of the abandoned CompSys project:

> *Then, in the autumn of 1987, I brought up the issue of a new feasibility study. The background was that lead times for changes in DepSys were long and we needed to get to the market more quickly. And the old system was a heap of spaghetti [code]. Only one person really mastered it, it was written in assembler. ... We discussed resuming [the] CompSys [project], but it was not an alternative. We needed a new basis for the [deposit] business.*
>
> *Tage Lundell, Business Development (corporate accounts)*

Gustaf Söderberg was also active in these early stages, and emphasizes his and the IT department's role in initiating the project:

> *At this time, I was head of systems development, and the IT activities began to grow. It was trading, ... increases in office space at the IT department ... DepSys had been discussed. One problem was that only [one person] knew DepSys really well. ... We said 'We have to do something.' There were several discussions on [renovating] DepSys or [building] NDS. ... Albert Lindegren was clearly against the radical alternative. He was responsible for systems architecture. We did a feasibility study that Willy Danielsson was responsible for, so he became project manager after that.*
>
> *Gustaf Söderberg, head of systems development*

On the other hand, Erik Östergren, the head of the IT department, emphasizes that the initiative came from BD:

> *It was Karin [Martinson] who brought up the issue. I would probably have preferred to forget about it. Running large projects is terrible.*[76]
>
> *Erik Östergren, IT manager*

While this points back to the BD department, Karin Martinson emphasizes the IT department's issues as driving the project:

> *Well, it had a lot to do with the maintainability of DepSys. Few people could maintain DepSys—that was presented as an important reason by the IT department—and it was difficult to maintain and improve the system. You could say that many of the issues belonged to the IT department. There were also issues from BD's side. Interest calculation needed to be reviewed, being able to move customer accounts between branch offices, and consolidated corporate accounts, making that work. But the main focus, what initially drove the project forward, was the IT department's issues.*
>
> *Karin Martinson, head of Business Development*

As mentioned above, interaction and cooperation between the BD and IT departments had developed in the preceding years, and discussions among Karin, Erik and Gustaf on common issues were relatively frequent at this time. The relatively close interaction may well account for the lack of a clear view of

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[76] Erik Östergren comments on this in a subsequent contact: "What I meant was that when you start a journey like this, it is impossible to make precise predictions of needs for flexibility in product development, work routines and processes, customer information, risks, migration, training, and to decide [from the start] on ambition level, scope and delimitations. This is really incredibly difficult to communicate to the CEO. There is no way to get the precise business case that the CEO and the board want. Therefore, it's bound to become a very difficult journey." ... "It is only after 20-30% of the project time has elapsed that you have a solid basis for decision."

who the initiator of the new feasibility study was, although it is quite likely that Tage and Gustaf were more active in pointing at the problem and that Karin and Erik initially reacted to those impulses and became involved quickly through that. Karin was also probably inclined to pay attention to Gustaf's arguments concerning maintainability because of their earlier cooperation.

But furthermore, this was an issue waiting to be addressed, rather than the result of one individual's initiative. For several years, a substantial backlog of change requests concerning DepSys had been created, many coming from branch offices and some of those being channeled through the BD department. A standard explanation from the IT department for the backlog and for the low ability to respond to change requests was that DepSys was aging and thus very difficult to change and maintain. As a result of this, the view that DepSys was deteriorating and in need of replacement was established in the organization, both in branch offices and in the BD department. Less visibly, the fact that for several years maintenance had depended on only one person was also an important contributing factor to the backlog.

So the BD and IT departments jointly initiated a first feasibility study in late 1987. The feasibility study was carried out by Willy Danielsson (from IT) and Søren Alfredsson (from BD). Other people involved in discussions during the feasibility study included Tage Lundell from BD and Albert Lindegren from IT. Albert, who reported to Gustaf Söderberg, was responsible for a group within systems development which worked with systems architecture, especially for deposit-related systems. Albert had worked with databases for the early 1970s applications and had been responsible for central ("server") applications in the NewTerm project and for a project building one of the add-on applications for DepSys. Willy Danielsson worked in Albert's group, but the two of them had different approaches to the DepSys issue.

The Business Development and IT departments initiated a joint feasibility study for a new deposit information system in late 1987.

> *From the very start there were two [contending] wills in the project. I wanted us to take the old system and rewrite it from Assembler to COBOL, change the database to [a new database management system], design a modern [system] architecture and convert it into a real time system. Willy Danielsson and Søren Alfredsson [on the other hand] wanted us to build a new system from scratch, they wanted us to not be controlled by the old, but rather do it the way we wanted it to be.*
>
> *Albert Lindegren, IT department*

The start of the feasibility study was announced in the corporate IT board in December, with results to be presented by Karin Martinson at the upcoming February meeting. A reference group consisting of Karin Martinson, Erik Östergren, Tage Lundell, Albert Lindegren, and two technical/systems development specialists was formed to provide input to the feasibility study. In addition, Gustaf Söderberg was also involved in several discussions during the feasibility study. The study was carried out during the spring of 1988. It was not ready for the February CITB meeting, but was completed in April and scheduled for presentation in May.

When completed in April, the feasibility-study report contained a sketch for a technical design, a cost-benefit analysis, an overview timetable for the project, and more than 200 pages taken from working material (mainly listings of functionality requirements and database entity definitions). The report also contained a general summary and a special summary to the corporate IT board. The report summaries emphasize a number of needs for improved and different deposit system functionality and point to a number of problems of technical nature (see Box 6).

The report also includes an overview of four basic choices for the project: to acquire a standard application package from a supplier, to develop a new system in a joint-venture with another bank, to resume the CompSys project, and to develop a new deposit system in-house, from scratch.

In the report, the first three alternatives are dismissed. The standard application package under consideration did not have required functionality, would not function well with the bank's technical platform (the new terminal system), and the costs for purchase, modification, and operation would be higher than for in-house development. The alternative of a joint-venture had been investigated but was dismissed because differences in products, organization, and technology between FSC and the possible partner were too large.

As for resuming the CompSys project, the report concludes that building separate deposit systems for different account types would delay phasing out

Needs for improved and different deposit system functionality:

- Improved account statement information to customers
- Rapid change of attributes for products/services
- General maintainability/system flexibility
- Rapid implementation of systems functionality for new products/services
- Various changes in account information and account related routines
- Improved information for analysis of customer base as well as individual customers and for market activities

Problems of technical nature:

- The old deposit system is difficult to maintain (because it is written in assembler and because of personnel shortage)
- The rigid structure of the old systems makes maintenance and adding functionality cumbersome and time-consuming
- Risks for system failures increase with the number of alterations to the system
- The old database management system has limited functionality which in turn limits the functionality of the deposit system.

Box 6: Reasons for the NDS Project (from the NDS feasibility study report, April 1988)

DepSys, but also that changes in technical platform, personnel and products since the CompSys project was put on hold would make it difficult to resume the project. Building a new deposit system, on the other hand, would result in faster implementation, lower development costs, and a better system from both a user, a systems architecture, and a maintenance perspective. The costs for in-house development were estimated at 5.2 million euros, and the estimated completion time of the project was "during 1990" for the first phase and March 31, 1991 for the whole project. The report mentions no advantages with the rejected alternatives and no disadvantages with the suggested course of action. Many issues which would later become prominent in the project were also missing in the report:

> *[The feasibility study] was very technically oriented, there was no flexibility discussion like what would come later. The need for a new customer information system was not recognized. There was no vision for how work in the branch offices would be affected. ... 'Details' like test and switch-over were superficially treated, if at all. The focus was on a technical systems development project.*
>
> *Erik Östergren, IT manager*

> *In the spring of 1988, repeated instances of data production problems disrupted customer service. These events contributed to the perceived urgency of the NDS project.*

But the project was seen as urgent: During the spring of 1988, repeated instances of data production problems had occurred, causing disruptions in customer service. This was taken very seriously in the bank, and prompted emergency work in the IT department both to remedy the immediate problems and to prevent reoccurrence. While these problems where not clearly attributable to DepSys (on at least one occasion problems were due to a minor bug in the new terminal system), the occurrence of production problems as such are likely to have influenced the perception of risk associated with postponing the replacement of DepSys, especially within the IT department.

> *In my opinion we rushed into the project too quickly, with staffing, organization, analysis and data modeling work. We should have done a more thorough study [before starting the full-scale project]. [But] it was an* IT project. *It was started according to the existing model [for IT project work], the project manager was from the IT department and they said that it was urgent. ... Everybody wanted to*

finish *in a hurry. ... We rushed it too much. I thought so at the time too, but I felt it was the IT department's responsibility, it was the IT department's issues that were the driving force.*[77]

Karin Martinson, head of Business Development

The proposed project was discussed in the CITB for the first time at the May meeting. In focus are risks with keeping the old system, including the dependence on one or two maintenance specialists and possible security issues. The decision on the proposed project is postponed until the next meeting one month later. While the exact reasons for the postponement remain unclear, there are indications that reasons were not only administrative (such as lack of time). One indication is that the development plan was revised for the June meeting, quoting a development cost of 8.0 million euros instead of the April estimate of 5.2 million. Furthermore, the meeting minutes point out that this project was not included in the yearly IT budget. (And the budget, in turn, was an important means for controlling IT for the CEO.) Another possible reason is indicated by the CEO and chairperson[78] of CITB at the time:

The NDS project is discussed in the corporate IT board in May and June of 1988. Framed as critical and urgent, it is approved at the June meeting.

Well, NDS was in a way a necessary evil. It was nothing I wanted [to do], it was something that had to be done. If we could have bought [a system] I would definitely have preferred that, even if it had been more expensive. But it couldn't be done, there were lots of arguments put forward as to why buying was not possible. {smiles} I really tried to get us to buy [a system], but it didn't work. In my view, [information] systems should be competitively neutral. It's not the systems we should compete with, it's the people, the customer relationship.

Axel Rydberg, CEO

Thus, one assignment from the CITB to those involved in NDS was to produce additional and/or more thoroughly worked-out alternatives for the project. The June CITB meeting was devoted almost entirely to the NDS project. The project proposal was presented again, by Karin Martinson. This time, the CITB approved the next phase of the NDS project with its new estimate of 8.0 million euros and an unchanged final project deadline: March 31, 1991.

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77 In a subsequent contact, Karin Martinson comments that the push for focusing the project led to a forced full-scale start of the project. Karin suggests that if a small group of people had instead done a more thorough analysis of system architecture and business needs beforehand, a premature full-scale start of the project might have been avoided.

78 I here use the term chairperson because it is gender-neutral. For "chairman of the board" I use the legally instituted term.

> *We had done the spadework, built support. There was a distinct atmosphere that 'we have to do this'. Then the decision was taken in CITB and by Karin Martinson.*
>
> *Tage Lundell, Business Development*

But whose"atmosphere" was it, and where was the support? At this time, knowledge and insight into the process leading to a project to develop a new deposit system was very limited both in branch offices and in regional headquarters. The IT management control structure in FSC (see Figure 11 for an overview) stipulated that development projects were to be discussed as part of the work in yearly planning committee meetings involving regions and branch offices (where headquarter services and costs were negotiated and determined) or at least be congruent with the agreements on costs and services made in the planning committee for business development. The control structure also says that development projects should fit within the overall budget set in the CITB (cf. page 114 above).

But key people from the BD and IT departments, the two corporate units responsible for IT development projects, had worked together on a commonly perceived problem and had reached a joint solution to that problem. Furthermore, the jointly proposed project was framed as critical for retail banking

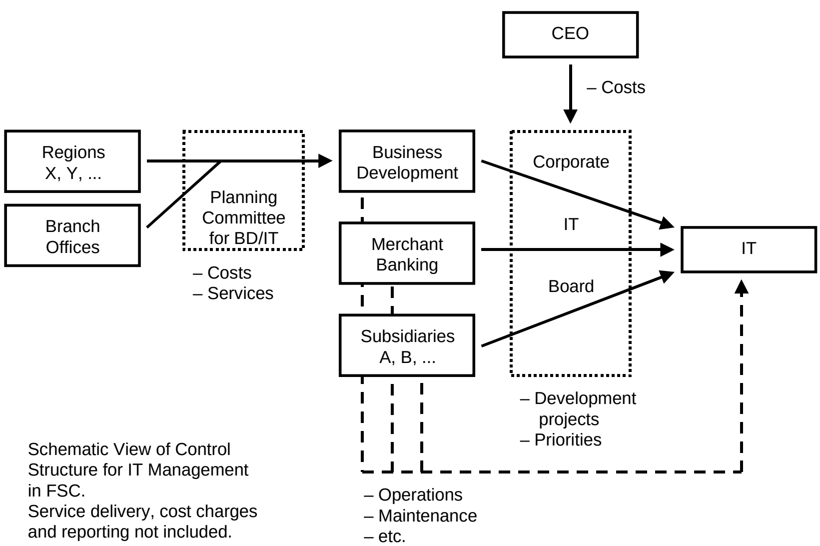

Figure 11: Control Structure for IT Management in FSC (partial view; source: author; based on interviews and corporate documents)

operations as well as urgent—at the discussion of the project it was suggested (by someone associated with the project, probably Erik Östergren or Karin Martinson) that it was uncertain at precisely what point in time DepSys would cease to function reliably. This was an important aspect of the decision:

> *It cost a terrible lot of money, of course, but my question was: can you manage the security [and reliability] in the mean time, with the old system? And they said they could.*
>
> *Axel Rydberg, CEO*

Part of the "spadework" done to clear the ground for NDS was to find a commissioner for the project. A commissioner was necessary for approval by the CITB, according to the established procedures for CITB. Erik Östergren and Karin Martinson discussed this issue with each other and with the CEO. The candidate chosen was a seasoned bank manager, previously head of several branch offices and now head of one of the bank's regions. Frans Trenter was highly regarded in the organization and had not recently been involved in an IT project. This was considered important partly because he might otherwise be seen as more of an IT promoter than a senior line manager, partly because being commissioner was considered as being "drafted" by several of the senior line managers; the burden should not be too unequally distributed.

> *We chose Frans based on his reputation and influence in the organization, and he said something like 'You want me to take responsibility for this project? That sure stinks, but OK, I'll do it'.*
>
> *Erik Östergren, IT manager*

> *Why I got into the project? Well... I was in it from the start. There were region interests to look after in the project. ... I didn't really know what it was I was supposed to contribute. I saw my role mainly as making sure that [the project] didn't run away.*
>
> *Frans Trenter, executive vice president*

> *Frans was very important. He really knows banking and he was important for steering the project in the right direction. It wasn't exactly a coincidence that I chose him particularly to be in the [project] steering committee. Even if he wasn't very happy about it, perhaps. Line managers, you know, don't like to get stuck with these things, they want to do business. ... That's natural. It is a commanded appointment ... But at the same time you can't force someone against their will, that wouldn't work. As I remember it, Frans said 'Oohh, so you want me to do this. Well, but alright, I'll do it'.*
>
> *Axel Rydberg, CEO*

So, Frans Trenter had somewhat reluctantly assumed the role of commissioner, and Willy Danielsson was appointed project manager. In addition, the steering committee was made up of the people involved in the initiation of the project. But after summer vacations, the start of the next phase, the goal study,[79] got under way only slowly, almost with ambivalence. A few additional people were taken into the project during the autumn, some becoming available as their work in the NewTerm project was finished. At this time, the IT department was also engaged in cost cutting. Costs for IT were running above budget as it were and the NDS project represented costs in addition to the budgeted costs. Indeed, the internal financial reporting for 1988 showed increased IT costs to be a major factor in significant cost increases for FSC.

In the NDS project, the duality concerning the focus, scope and approach of the project remained as work with systems analysis began. One of the people brought in from the NewTerm project was Inger Boye, who became responsible for systems analysis (Inger had earlier worked with systems analysis in the CompSys project). Both she and Willy Danielsson were proponents of building the new system "from scratch", i.e. based on an analysis of banking operations and change needs in operational procedures, rather than re-constructing the existing system. Albert Lindegren, responsible for the deposit-related systems unit in the IT department, had a very different opinion: He advocated a renovation of the old deposit system, based on the view that the core of the old system was well-functioning and that the system could be rewritten in COBOL, old programming code being replaced step-wise with new code.[80]

As design work begins, the question whether NDS should be built from scratch, specified on the basis of DepSys, or based on a renovated DepSys remains an issue of conflict in the project.

The project's official kickoff meeting was announced in the IT department newsletter in January 1989, and the IT manager emphasized the importance of the project and the importance of implementing the system without disruptions and with reasonable operating costs. The gradually increased ambitions of the project during the spring, however, worked in a different direction. At this time, there were repeated, extensive discussions between representatives from the Business Development department and systems analysts concerning systems requirements.

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79 The goal study phase roughly corresponded to a continued, more in-depth feasibility study combined with parts of requirements analysis (cf. Figure 6). The earlier feasibility study was correspondingly less in-depth.

80 During this time, FSC invited their major hardware supplier to have a person onsite, functioning as assisting project manager. The supplier provided a person, but the arrangement was terminated after a relatively short time. There are no indications that this arrangement substantially impacted project management or the analysis work during this period.

In these discussions, which several participants found frustrating at times, "flexibility" was a frequently used keyword: the BD people wanted the new deposit system to be constructed in a way which would allow for considerable changes in system functionality after implementation. There were good reasons for this: Deregulation in the banking industry and changes in tax-reduced savings forms at this time made predictions on future information needs difficult and uncertain. The project also had scope restrictions which also made requesting flexibility a seemingly viable solution to some of the specification work: If the structure of the new system would allow changes when they were needed (in contrast to the existing deposit system), that would be better than having a certain functionality from day one. In practice, however, requests for flexibility caused confusion among systems analysts:

> *During the goal study, there was a lot of insecurity. The client wanted to know why there wasn't any progress. We said: 'What do the requirements mean? What is meant by flexibility?' After some time there was a review [of the project] ... The most important result, as I remember it, was that there was no agreement on what kind of system we [were going to build].*
>
> *Inger Boye, sub-project manager Design*

In the spring of 1989, signs of problems in the project lead to a review. The project manager is replaced.

During the spring of 1989, concerns in the IT department about the stability of the old system increased. The atmosphere surrounding the NDS project was hurried. IT management pushed for the fast build-up of resources in the project and the timetable further underlined a need to move fast. The completion of the NewTerm project had made additional systems developers available to the NDS project during the spring, but whereas actual and projected resource use increased, project progress was at best limited. Some user representatives had been recruited to the project, being put to work with systems specifications without prior training. User representatives reported to and were supervised by IT department personnel in the project.

Given the indications of problems in the project, Gustaf Söderberg initiated a review of the project. Gustaf had recently attained positive results from using a review to bring another project on track, and that experience probably inspired the use of a review for the NDS project. The purpose of the review, which was led by two outside experts with previous experience of working with FSC's IT department, was to examine the goals, organization, plans and results of the project. During the review process, Gustaf's concerns about the state of the project increased, partly because of continued lack of progress in the project, but possibly also because of the additional focus on the project brought on by the review (including discussions between reviewers and people involved with the project).

Even as the review was still underway, Gustaf acted on the project management problems, initiating the replacement of Willy Danielsson as project manager: Albert Lindegren, the head of the group working with deposit-related systems and up to now in a supervisory role for the NDS project, was asked to take over after Willy Danielsson.

> *Then we changed project manager. ... I accepted the choice of person. There was a considerable anxiety about losing speed, and the [managers in the] IT department said 'There is no one else'. Albert is a very competent person, but he was not the right person to lead a project like that.*
>
> *Karin Martinson, head of Business Development*

Two of the primary conclusions of the review were that there were problems with how the project was managed and that a project manager with a different skill set was needed to match the evolving change in project scope. Another finding concerned the ambiguity about whether the project was aiming to reconstruct DepSys, or build a brand-new deposit system, or even build a new deposit system for a future corporate IS structure.

The change of project manager, however, was not without its problems. The final review report indicated an even more complex project than had been anticipated when Albert was appointed. Shortly after the review report, an experienced consultant was brought in to provide support to the new project manager. The consultant, Johan Sjöberg, had worked with the bank on several earlier occasions and had recently been brought in to bring another faltering project on track. The assignment to support the NDS project was added to that ongoing task. Johan had previously been systems development manager of a hi-tech manufacturing unit in a multinational company, thereafter IT manager of an IT department in a large manufacturing firm. He had subsequently worked as consultant, CEO-for-hire and head of a consulting business for about ten years. The new project management arrangement was not unproblematic, certainly not for Albert Lindegren:

> *... and then things happened very quickly and what happened was that I took over as project manager. ... Willy was through with the project and I had a good track record as project manager and I guess I was known as a sensible person. {smiles} And I would get support from Johan, so it seemed like a practicable way to go. ... In retrospect, I can see the inappropriateness of having the only person advocating the renovation of DepSys as project manager for NDS.*
>
> *Albert Lindegren, project manager*

Like many of the bank's employees, Albert Lindegren had worked for the bank for a long time, more than two decades. Many FSC employees display a high degree of loyalty to the bank, and Albert Lindegren is no exception. Loyalty and the "derived logic" concerning Albert's competence (viewed almost as separate from his opinions) are probable reasons why Albert was offered, and accepted, an assignment the goal of which he did not fully believe in.

Time and cost estimates are increased several times during the spring, summer and autumn of 1989.

During the spring, the approach of the project had gradually shifted from rewriting the old system to building a new system from scratch. This change would become more tangible during the autumn. One consequence of the incremental change in approach was that the feasibility study became increasingly invalid, since it was written on the premise of re-constructing DepSys. The timetable, the project plan, and the costs had to be revised, and were revised not once but several times during the summer and coming autumn.

4.4 A Large Project Grows Larger (1989–1990)

During the autumn of 1989, the shift in focus and scope of the project towards a more ambitious approach became increasingly visible not only inside the project, but also to the steering committee. A reason for the shift was found in user demands, perhaps particularly demands for "flexibility" in the new system. This demand was a sort of meta-level user requirement, a requirement to enable added functionality in the future.

Furthermore, a focus on the analysis of business operations as a way to build well-functioning information systems was increasingly recognized—and touted—in the IT community at this time: Extensive analysis of business operations as a basis for systems development, and subsequent design of information systems on the basis of this analysis, was the right thing to do. This was also a prevalent view in progressive books on systems development at this time.[81] Consultants in systems development methodology in FSC promoted this approach, as did textbook authors with whom people in the FSC IT department had been and were in contact with around the time of the NDS project. It was also in line with the views of several of the leading systems analysts.[82]

Elin Lenngren was recruited to the FSC Business Development department to be operatively responsible for the work with user requirements and to supervise the work of user representatives in the NDS project. Elin, who came from a competing firm, found an understaffed body of user representatives who were not trained in systems development work and who were supervised by IT personnel. She also found a project which was in a hurry, trying to keep up with

[81] See e.g. Lundeberg et al, (1978; 1981), Hugoson et al (1983), Hernbäck et al (1990). These authors were well-known authorities on the subject of ISD amongst members of the IT profession.

[82] However, none of the studied ISD methodologies from this period (see references in footnote 81) addressed development of second-generation information systems, nor did they acknowledge the replacement of an existing IS as different from developing an IS as part of introducing information technology into an organizational setting for the first time.

timetable which was based on assessments of the project task which were proving to be increasingly unrealistic.

> *There was a sense of us running late, that we had to hurry. That led to a pressure to produce as fast as possible. ... Design decisions were changed all the time, several times. ... We weren't ready to take decisions when they were taken. ... The whole project had a timetable beyond repair.*
>
> *Elin Lenngren, head of user representatives*

At this time, the project is starting to get noticed in other parts of the organization. Regional headquarters had received successive cost estimates showing considerable cost increases, and people, for instance some in the BD department who were not associated with the project, were starting to wonder about how the project was advancing.

> *I had seen the [NDS] project from a distance during 1989 and I was so furious because I just wondered what the hell they were doing. I used to go around saying 'Damn NDS'.*
>
> *Nils Høeg, project manager in BD department*

One reason for Nils' scepticism towards the NDS project was that he and his group in BD received questions and requests from the project which—to them—did not make sense. Nils was critical and persistent enough that his colleagues in BD after a while presented him with a paper parrot repeating "Damn NDS". But he was not alone in questioning the developments. At the same time, Jonas Ferlin, head of a technology group in the IT department, noted that his group repeatedly received the same questions from different people in the NDS project, giving an impression of confusion within the project.

Similarly, Frans Trenter, the executive vice president appointed commissioner for the project, grew increasingly upset about the increases in time and cost estimates for the project during this period.[83] Frans's solid experience of working in branch offices and regions probably helped form his view of what his role in the steering committee was, in several respects. In addition to influencing values and priorities, it also was a different set of experiences than, for example, Karin Martinson had acquired at this time.

> *It is important to go into the actual work environment, not sit outside and have someone report what it's like. ... That was a difference for Frans Trenter. He doesn't know the work processes [of information systems development] and he doesn't know the culture. He cannot read what is happening. Branch offices and development projects have very different cultures, different languages and*

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83 Nils Høeg had previously worked for Frans Trenter as responsible for business development in Frans's region.

different values and views. You can't read a project if you don't understand this. You become incredibly dependent on competent colleagues [in that case].

Karin Martinson, head of Business Development

My role was to keep the cost for the project within bounds.

Frans Trenter, NDS steering committee

This is not to say that Karin Martinson understood all the finer points of the technical issues involved. But whereas Karin's experiences from the NewTerm project had not led to a technical competence, it had perhaps provided a basis for dealing with them.

The technical questions are difficult. You have to know that you can trust [the people working with the technical issues], then you have to put your faith in them. ... I have worked with Jonas Ferlin[84] *earlier, for example. I know they don't keep things in the dark.*

Karin Martinson, head of Business Development

The cultures and views were indeed different. At several steering committee meetings, Frans protested about the increases in time and cost estimates. There were several heated arguments between Frans on one hand and Gustaf and Erik (whom Frans saw as ultimately responsible for the project) on the other. With some humor, Frans at some time used the term "low-current electricians" in reference to the IT people. But in spite of the humor, there was much seriousness in Frans's concerns.

[I] said to Erik Östergren that 'You are the one responsible, this is your project, don't you understand that?' But Erik was evasive, he didn't do anything about it. I don't think Erik really shouldered his responsibility.

Frans Trenter, NDS steering committee

On the other hand, Frans's view of how the project should be run and controlled ignited strong reactions from Erik and Gustaf, as well as from some others on the steering committee. Two quite different perspectives on planning and management were meeting and colliding in the committee's discussions.

I am struck by the fact that [some people] have the view that you can plan a project early on and then stick precisely to that. Quite a few competent people have a view [on this] that I cannot accept.

Erik Östergren, IT manager

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[84] Jonas Ferlin, technology expert in the IT department, had worked in the NewTerm project and would step into the NDS project in November 1990.

At one of the autumn meetings, the tension was released in a heated argument, which almost ended with Frans leaving the steering committee.

> *I tried to talk with them like: 'We have this much money, so I want us to divide the project into different phases, like with a building loan, and you get money for each phase.' I mean, nine million [euros] were down the drain.*[85] *But Erik Östergren said 'That's not how we work', so I said 'Well, you had damn well better start then!' and Erik said 'It doesn't work that way' and I said that [in that case I didn't want to be part of it].*
>
> *Frans Trenter, NDS steering committee*

Voices were raised and several people were quite upset. In the discussion, one of the arguments for cost control was that if it was possible to put a man on the moon, it must be possible to build a deposit system at fixed cost. At one point, there was a heated exchange between Gustaf Söderberg and Frans Trenter:

> *… We got so angry at each other Frans Trenter and I that we stood up and yelled at each other. I was so mad I yelled at him and he yelled back: 'Do you want me to leave the room?' and I yelled: 'Yes!''*
>
> *Gustaf Söderberg, head of systems development*

Frans Trenter ultimately stayed in the steering committee, but subsequently turned over the commissioner role and the chairmanship of the steering committee to Dan Lagerqvist, who at this time replaced Karin Martinson as head of the Business Development department.[86] Karin had become executive vice president and head of all central administrative staffs, including Business Development. This meant that both Dan Lagerqvist and Erik Östergren now reported to her. Karin also stayed in the NDS steering committee. In spite of the discussions on project costs, the work in the project continued with undiminished resources through the autumn, but Albert Lindegren was still ambivalent with regards to the project, and also quite alone in his job; Johan Sjöberg worked mostly with other projects in the bank.

An important change for FSC was announced in October 1989: The current chairman of the board would retire in early 1991, and the current CEO would then replace him. A new CEO would thus be appointed, and it was already at this time, one and a half years before the fact, announced who that next CEO would be. Stig Vennberg, executive vice president and head of one of the regions,

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[85] At this time, this was an estimated cost, not incurred cost.

[86] In a conversation concerning the case study, Henrik Bergman commented on the arguments in the steering committee: "In banking, you earn money by being better than others at assessing risks. That is a core competence as a banker. So it is very understandable that Frans became upset that we couldn't even assess risk properly for an *internal* matter—something we had control over ourselves."

would start working at the head office immediately and would become CEO in the spring of 1991.

In November 1989, Albert Lindegren reported progress to the steering committee. The protocol from this November steering committee meeting suggests a project group with confidence and a project under control: The bank's major IT supplier and an external IT consultancy firm had provided estimates of the size and complexity of the development work and a time schedule had been constructed on the basis of these external as well as internal assessments. Albert Lindegren reported that user representation was very satisfactory, project plans had been worked through in the project group, and projects costs to date where somewhat below budget. The cost estimate for the project was now somewhere between 150 and 184 person-years, and the first part of the system was to be delivered on March 1, 1993, two years later than the plan in the feasibility study. The steering committee approved of the work, but requested, on Karin Martinson's initiative, increased detail in the project plan.

There was still some tension in the steering committee because of the increases in time and cost estimates, but Frans Trenter was no longer commissioner and others in the steering committee, although concerned, were less so than Frans.

> *By now the [estimated] costs were around 15-20 million euros. ... Frans Trenter kicked up a row. Karin and myself were more understanding about it, I guess. There were some harsh words thrown ... That happens in a project of this size and complexity, it's not so peculiar. Karin and I had no major disagreements, I think, [though] there are always differences in nuances. I think we usually sought the lowest common denominator between us.*
>
> *Erik Östergren, IT manager*

The goal study, which estimates project cost to around 17 million euros, is approved by the steering committee on December 18, 1989.

The goal study, completed on December 12, was very much in line with the reports three weeks earlier, although resource estimates had been reduced to 140-170 person-years. The estimated cost of the project was 15.3-17.9 million euros. The goal study was approved by the project steering committee at its December 18 meeting. The steering committee requested additional clarifications of costs and benefits, a method for accounting for revenues from the new system, and additional information concerning the choice of database management system. No major objections were recorded. The change of committee chairperson was also announced at the meeting. Three days later, the project was presented by Dan Lagerqvist at the bank's monthly senior management meeting, and a month later, it was to be presented by Dan Lagerqvist for approval by the corporate IT board.

Whereas reports to the steering committee indicated a project in good health, others who read the goal study were less convinced, including some of the experienced systems analysts who had previously worked in the NewTerm project. Ellen Sandel was one of them:

> *Well, then some time in 1988–1989, I got into the NDS project. The goal study was completed around year-end, and it said a lot of ridiculous stuff like 'the analysis will be finished in April'. Quite a few people laughed at that. It also said '15.3 million [euros]' and that of course was a low figure. If you looked at the planned duration of the project, you could see that 'that's impossible' [to do it in that time period].*
>
> *Ellen Sandel, sub-project manager*

The goal study was presented at the January 1990 corporate IT board meeting, which happened to be Axel Rydberg's last CITB meeting, and Stig Vennberg's first. The meeting covered several topics, including a routine agenda item: a briefing on IT cost developments. There were also briefings on two ongoing and two proposed systems development projects, one of them the NDS project.

At the meeting, the rationale for the NDS project were presented, together with a cost/benefit-analysis which included an estimated internal rate of return of over 40%. Concerning the figures, the board concluded that the calculations were of somewhat limited value, but that cost control would be crucial in the project—time and budget constraints should be kept even at the cost of postponing introduction of some new system functionality. The CEO concluded the discussion at the meeting by stating that the project should be carried out as proposed.

In fact, few if any project proposals were turned down by the corporate IT board during this period. There were several reasons for this. The budget overruns for IT costs had been brought under control. Cost increases were lower than a few years earlier, and costs for some projects fell outside the budget since they were covered by the business area requesting the project (this kind of deviation from the control principle was tolerated by the CEO). Another reason for the high acceptance rate was that project proposals were in practice cleared before reaching the IT board.

> *You could say ... that the corporate IT board was like a corporate board. The issues had been worked through before they got to the CITB, but the fact that they were going to be handled there made sure that they were worked through properly.*
>
> *Erik Östergren, IT manager*

This was also the case with the NDS project. Senior managers involved with the NDS project had discussed the project with some of the committee members beforehand and issues which needed to be cleared with the finance department and other central departments had been taken care of. In retrospect, several persons hold the opinion that the project proposal was also influenced by existing experience of the CITB and that this experience is a factor in explaining the underestimation of resources in the goal study report.

Reports at the March 1990 steering committee meeting indicate renewed problems and the steering committee voices concerns.

While the November and December project reports to the steering committee had been positive, the next steering-committee meeting, in March, sees quite different information on the project. At the meeting, Albert Lindegren reported a delay in the startup of the information requirements analysis (reasons included inexperienced personnel, the need to develop methods for the task and a change of office location for the project). Albert also reported a need for additional personnel because several functions had been found to be larger than planned for, and a budget overrun of about 20% to date, for "unclear" reasons. Several questions were raised regarding whether project management was in control, and Dan Lagerqvist emphasized the importance of cost control.

Both Dan Lagerqvist and Erik Östergren informed that they did not have additional personnel to assign to the project. Furthermore, the work in the project so far had revealed that the planned division of the project into two stages might not be possible, leading to an investigation concerning the inclusion of additional functionality in the first stage. The resource report presented at the meeting showed that several main tasks have larger remaining resource needs than their original total budget. During the meeting, Dan Lagerqvist emphasized cost control and asked about the flexibility of the new system. On the second issue, he received assurances that the new system would not restrict or complicate future changes in business operations.

At this time, branch offices had received an internal memo stating that the project had started, but additional information on the NDS project was scarce and interest for the project modest. One important reason for this was that the substantial part of the development costs still lay ahead of the project, and thus had yet to be charged to the branch offices (central costs were allocated to branch office profit-and-loss statements, and this would later become the case with NDS development costs too). The NDS project and its emerging problems were not in focus when Stig Vennberg visits the IT department for the first time in March. On this occasion, the first in a series of yearly visits, Stig describes his ambitions for FSC, which include continued expansion in the Nordic markets and a strengthening of the full-service profile of the bank.

In contrast, problems in the NDS project are very much in focus at the next steering committee meeting in April, only a month after the previous meeting. At the beginning of the meeting, Johan Sjöberg, the consultant supporting the NDS project manager Albert Lindegren, presents a revised project plan. In the plan, development tasks have been moved from the second phase to the first. Expanding the first phase is reported to be necessary to avoid reproducing the rigid systems structure of the old deposit system. The change includes development of new screen dialogues in the new terminal system. Karin Martinson is very active at the meeting. Her response to the proposed change in project plan includes that the project should aim at simplifying routines for reporting to the new deposit system, avoid cementing old routines and support customer-oriented work organization in branch offices. The ensuing discussion results in a decision to accept the increases in the first phase.

At the steering committee meetings in April and May 1990, increases in cost and time estimates are again reported.

Albert and Johan also report other changes in the project plan: The project is delayed and all main tasks in the project have increased resource estimates (Development has the largest increase, +75%). Karin, Dan Lagerqvist and others in the steering committee stress that project planning and control needs to be improved and suggests e.g. increased use of deadlines in the project plan. Albert reports that a detailed plan for the next phase will be constructed in May. The main messages from the steering committee at this meeting are: Get a grip on project planning and control, and build a new system which is flexible enough to enable subsequent development of the business.

The reports at the steering committee meetings were far from the only channel through which steering committee members received news about project work. Committee members from the IT department often talked to the people in the project, as did people in the BD department, through their channels. Contacts were not only on the operative level.

> *I had a lot of contacts with people inside the project. That way, I got a picture of: How do they work? Is there progress? Do they make decisions?*
>
> *Karin Martinson, head of Central Administrative Staffs (CA)*

Reviews were yet another way. At this time, the second review of the NDS project is initiated. This time, Erik Östergren is more central in initiating the review, although Gustaf Söderberg is also active in bringing it about. The review, which is finished in April/May and partly reported to some of the members of the steering committee before the May steering committee meeting, further emphasizes the problems in project planning and control, and points out problems in the systems analysis work and the lack of a blueprint for the overall structure of the new deposit system.

As mentioned previously, current thinking on systems development influenced how the systems analysis was carried out. An external consultant with a first rate reputation in information systems development (ISD) methodology had been hired to help structure the systems analysis work, and the approach was based on starting with an analysis of business operations. The methodology was favored by those employing it and thought to be instrumental in insuring that the new deposit system would be well-structured, flexible, and attuned to user needs. According to several accounts, the methodology was quite new, and the methodology consultant partly used the NDS project to develop the methodology.[87] According to one person later involved in the project, the consultant "was one lesson ahead, he hadn't taken the whole course himself." Still, the consultant and the methodology had considerable influence on how the analysis work was perceived and carried out. But the work was time-consuming and cumbersome.

> *In retrospect, it becomes more visible that the analysis was based on a methodology which was probably not suited for the project. The thinking was based on [a methodology consultant's] ideas, probably applied* in absurdum.
>
> *External consultant*

Also contributing to the problems was a certain tension in the project related to the analysis work. In addition to the differing views between the project manager and the design team on the approach to building the new system, the head of user representatives at this time also tried to gain influence over how the project was run, promoting the users' perspective both on what was to be built and how. The three forces, pulling in different directions, adversely affected project progress.

One small-scale investigation within the project which *did* produce results at this time, concerned "early conversion" (or "pre-conversion") of information systems interacting with DepSys/NDS. The idea behind the investigation was to reduce risks in the process of converting from DepSys to NDS by implementing changes in dependent systems before conversion from DepSys to NDS. According to the plan, these systems would be altered so that they functioned as if NDS was already implemented, long before this was actually the case.

In the relatively short period to the next steering committee meeting, the problems in the project continued, and the steering committee meeting held in late May 1990 was a troubled one. At the meeting, the review is presented and discussed. While acknowledging the high priority given to the project in terms of management attention and resource allocation, the reviewers stress the need to remedy problems in methods use, project control, morale in the project group, and to strengthen the user perspective and the quality of requirement specifications through reorganization within the project. They also point to the lack of a blueprint for the structure of the new information system and suggest that the current deadline for completion of the new system (March 1, 1993) might not be realistic.

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[87] Some year into the NDS project, the consultant together with one person from FSC and other colleagues published an ISD methodology handbook.

Karin Martinson points out that the delivery date was well-founded when the goal study was presented, and that everybody agreed on that at the time. Albert Lindegren comments that the date was chosen as a combination of what was desired and deemed possible, and points to the problem of training new project members as a factor behind the delay. A discussion ensues, where possible reasons for the problems are discussed. In the discussion, Karin suggests that the project might be too large, and crippled by the need for unavailable resources and Dan Lagerqvist stresses the need to use existing resources more efficiently.

After some additional discussion, the reviewers suggest that the steering committee would benefit from learning more about this type of projects. They then point to inadequacies in project leadership and in routines for project control. A consultant in the project who had joined the committee for this particular meeting pointed out that sub-projects suffer from a lack of clarity concerning what should be done. To this, Karin Martinson answers: 'The products in DepSys should be included in NDS—What is unclear about that?'

After this discussion, Albert reports on the project plan, which had been revised since the previous meeting: The remaining analysis work will take six months longer and take 70% more resources than planned in the goal study. Karin asks what happens if delays continue in later project phases, to which Albert answers that further delays are unlikely but that there is an degree of uncertainty in the plans. Erik Östergren points to other factors which can cause delays, including changes in the environment, migration from the old to the new system, and extensive interdependencies between the deposit system and other information systems.

The discussion yet again turns to the lack of experienced personnel in both the IT and BD departments, and specifically the lack of candidates to recruit as technical architect (responsible for technical feasibility) for the project. After this discussion, Albert presents the devised approach of reducing risks in the process of converting from DepSys to NDS through "early conversion". The suggested approach meets with the steering committee's approval. The meeting is then cut short for lack of time. No definitive solutions to the problems emerging in the project have surfaced during the meeting.

> *Well, now we are in the spring [of 1990] I think, and at this time we started to hesitate. We discovered that we had to replace several old systems and we started to penetrate testing and other issues and saw how complex it was.*
>
> *Erik Östergren, IT manager*

Indeed, the situation was seen as problematic inside the project, in the steering committee, and by people in the project's vicinity (such as at the BD department).

> *They had started in January 1990[88], recruited a lot of people, 40–50 people, and appointed sub-project managers. But there was no guidance of that lost crowd. A lot of the sub-projects [looked as if nothing happened] when you viewed them from outside. There was no thinking on architecture. Albert Lindegren contributed a lot of the thinking there was.*
>
> *Johan Sjöberg, external consultant*

Additional difficulties and complications surfaced even after the spring 1990 steering committee meetings.

And the problems were not over with the reassessments of the project plan carried out in April-May and the resulting cost revisions. Additional technical difficulties were discovered in the project during this time, and the problems related to project work and project management continued. At this time the earlier planned separation into two project phases had been dismissed as technically infeasible, and instead it was proposed that the "first stage" would also encompass most of the second stage. Albert Lindegren at this time still favored renovating the old deposit system, and had made additional attempts to talk to Erik and Gustaf about this, but to no avail. He had also tried the subject with people in the BD department.

> *The business didn't see the difference between different parts of DepSys, that some parts, the core, was in good shape and that it was various additions which were not in such good shape. I never got any understanding for that. I tried to get angry at some point, with bad results.*
>
> *Albert Lindegren, project manager*

At this time, Albert is (and feels) alone in holding the opinion that renovating DepSys is a viable—let alone preferable—alternative. He is, however, about to become less alone in managing the project, as Johan Sjöberg's other assignments are reduced and he starts to spend more time dealing with the issues in the NDS project.

During the summer, Albert Lindegren and Johan Sjöberg led the work of revising project plans to account for the additional issues discovered in May-June and to improve the quality of the plans. This work resulted in additional substantial increases in cost projections compared to those given at the May meeting. The project was in a precarious situation. The steering committee's faith in the project (and in the project manager's ability to manage the project) had eroded as a result of the developments during the spring. As mentioned earlier, Frans Trenter had been negative about cost increases for more than a year. He had also been absent from steering committee meetings during the spring, probably because he had

88 This was not really the beginning of the project, but rather a change of phase; the goal study was completed in December 1989 (see page 134).

recently been appointed head of a larger region, but probably also as a result of handing over the role as commissioner, as well as disapproving of the direction of the project (cost developments).

As the feasibility of the current direction of the project is increasingly called into question, the project heads for decision on a major revision or abandonment.

But now, others in and around the project started to question the feasibility of the project. At the same time, the conception that DepSys needed to be replaced, and relatively soon, was still dominant in FSC. In other words: DepSys needs to be replaced, it *has* to be possible, but what is going on in the project (or, to some outside the project, in the IT department)? In this situation, IT management also starts to question the project, and Albert Lindegren finally succeeded in getting Erik Östergren's and to some extent Gustaf Söderberg's ear. Summer ending, Gustaf and Erik both to some degree contemplated a renovation of the current deposit system. For Erik, the risks associated with such a large project were an important factor.

> *The most difficult thing was probably assessing risks, for the project and for the system after the project.*
>
> *Erik Östergren, IT manager*

During the autumn, an increasingly fast-approaching crisis in the financial industry would further increase the tension and raise the perceived stakes associated with the NDS project.

4.5 Serious Doubts and Moments of Truth (1990–1991)

As part of the effort of getting the NDS project under control, the next regular steering committee meeting was replaced by a full-day meeting at a conference facility outside town, in order to scrutinize the project situation and the new plans. At this meeting, a union representative belatedly joined the steering committee. (According to corporate–union agreements, a representative should have been in the group earlier, but finding a suitable candidate had been difficult.) Frans Trenter did not attend the meeting, which was held in the beginning of October.

Karin Martinson chairs the meeting, which starts with an introduction by the project manager. Albert describes the project as being on the right track and with a good basis for continued work, but with failed planning and control procedures. He also says that these procedures have been improved together with other aspects of project management. The information requirements part of systems analysis is reported to have a six month delay which is difficult to remedy, but according to Albert, subsequent phases will most likely not cause additional delays. Karin asks if the steering committee can place trust in time and resource needs not increasing in later phases. The (somewhat evasive) answer is that each phase leads to improved planning and that starting subsequent phases will be easier than previous phases.

Albert then reports on the revised plans, which include a 55% increase in the estimate for the information requirements study compared to the May estimate and a two month delay. The project finish is set for autumn 1993. Karin Martinson asks if that time can be guaranteed. To this, Albert answers that giving a guarantee is difficult and that the timetable is believed in. He then immediately points to a problem: There is considerable uncertainty concerning the migration (the process of converting/switching from the old to the new system). Albert concludes that the plans are much better now than they have been. Yet Albert's response fails to comfort the group, and one member asks aloud: Is it at all possible to continue on the current path? Albert answers yes, but maintains that there is uncertainty.

After this, Johan Sjöberg presents the results of the work with restructuring and re-planning the project. He first points to NDS being three projects in one: development of business operations, IS infrastructure development and technology development. He then refers to cost and time overruns, but also points to the consensus regarding the need for a new system and regarding the chosen approach. Problems in the project are also described together with improvements that are either planned or already carried out and prerequisites for continued work.

This quite extensive description covers the project, the system, the plans and some key choices and their rationale. Elin Lenngren (responsible for user requirements) and Albert Lindegren supplement the presentation with information on different issues. A discussion ensues, which covers the above topics and ranges from the choice of DBMS to operating costs for NDS and priorities concerning requirements. In particular goals, intentions and systems requirements are discussed back and forth. The discussion leans towards a new deposit system with full functionality and use of the proposed, new DBMS, but Karin and Erik stress the need to investigate operating costs before deciding.

At the full-day October 1990 steering committee meeting, Johan Sjöberg presents four alternatives for the continuation of the project.

Subsequently, Johan Sjöberg presented four alternatives for continuing the project: to build a new system with reduced functionality, additional functions can be added later (estimated at 120-150 person-years), to build a new system and implement it for one product at a time (estimated at 150-200 person-years), to rewrite the old system with existing functionality, additional functions can be added later (estimated at 35-45 person-years), or, finally, to rewrite only current systems functions for transaction management (a limited part of the proposed new deposit system). Of these four alternatives, project management had weeded out the last one as infeasible. Johan also summarized different dimensions to be taken into account in the choice.

At this point a discussion commences, where most participants lean towards one of the first two alternatives. The discussion is followed by a presentation by the external methodology consultant, together with people from the IT department, which describes differences between the old deposit system and the proposed new system. The presentation emphasizes the rigidity of the old system and its limitations as infrastructure and support for business operations, compared to the new system. During the discussion, the possible necessity of a new customer information system is also discussed, but several people, including Erik Östergren, are opposed to the idea because of the increased project risk.

The meeting ends with each participant stating his/her opinion. Most participants favor one of the first two alternatives (which have in practice been treated as one during most of the discussions), whereas a few participants withhold their judgment[89]. It is decided to postpone the decision, and a new meeting is scheduled for the morning two days later. Place: the bank's boardroom. For the meeting, the project manager is instructed to prepare additional cost estimates for production costs for the new system, as well as costs for adding functionality given that alternative 3 is chosen.

In early October, the project manager resigns from the task. Johan Sjöberg takes over project management.

During the day, several informal discussions had taken place between the participants. In one of them, Ingmar Mankell, the union representative, spoke with Karin Martinson, saying: "We have no project manager". There were also several discussions between Karin Martinson, Erik Östergren, Gustaf Söderberg and Johan Sjöberg concerning the project management situation. At one point, Erik and Karin both stated the opinion that Albert would not be able to bring the project to completion. Johan was asked if he would be willing to replace Albert as project manager. He accepted, but the decision was not made public immediately.

According to Albert Lindegren, he did not know about these developments when he went to his superior Gustaf Söderberg the following morning and asked to be relieved from the project management position. Whilst he did not know any specifics of the previous day's discussions concerning project management, he knew that his situation was troublesome.

[89] Information on the positions of individual participants remains unclear.

I didn't feel right about the decision [about to be made]. I guess I wasn't up to it either. And then I guess it was also a matter of who was first.

Albert Lindegren, former project manager

In spite of resigning, Albert participated in the preparation for the next day's meeting. The change of project manager was kept confidential for the time being. On the morning of the scheduled follow-up meeting, there was anticipation in the air as the group assembled in the bank's boardroom to, as far as they could tell at the time, make the definitive decision on the NDS project. At the meeting, Albert presents revised figures for the alternatives, with two especially important revisions. The first revision concerned a substantial reduction in estimated operating costs for NDS (the argument was that cost increases do not occur until CPU upgrades are made, and that these upgrades benefit other systems as well). The other revision was a doubling of the person-year estimate for renovating DepSys (it is also pointed out that flexibility of DepSys will remain very limited despite renovation).

These were not figures I was committed to. They were the opposition's figures.

Albert Lindegren, former project manager

With much relief, the steering committee ultimately decides to continue the project, largely along the current path.

Other key aspects of the decision which are discussed are that the NDS project may hinder other IT initiatives, that the DBMS supplier (who also supplies major parts of FSC's hardware) guarantees the feasibility of the technical solution, and that the functionality of NDS will be cross-checked with the old system. After the presentations and clarifications, the group unanimously decided on the continuation of the new deposit system project. There was considerable relief when the decision had been made, and the meeting was closed. But contrary to what all the steering committee members believed when they left the room, this was not the definitive decision on the project. That decision, if one can be pointed out, was made six months later.

Although the decision was a go-ahead for the project, it also meant a reduction in ambition level. The guideline that the functionality of the new system should be cross-checked with the old system focused the functionality requirements of NDS more towards replacing the old system, albeit using a more modern technical concept. This steering committee meeting also practically meant the end of Albert's contact with the NDS project. He stayed on a few days, went on a week's vacation, and when he came back, the change of project manager had been announced and Johan Sjöberg had taken charge of the NDS project.

> *Well, so Albert Lindegren became the second victim. It's not good to change project manager like that.*
>
> *Gustaf Söderberg, head of systems development*

The change of project manager is not the only personnel change at this point in time. In preparation for assuming the CEO post the coming spring, Stig Vennberg starts to make changes in management: He appoints Henrik Bergman head of Business Development, and his predecessor Dan Lagerqvist becomes head of Human Resources. Henrik reports to Karin Martinson, who remains on the steering committee. Henrik Bergman had at this time worked in FSC for more than ten years, including one year as assistant to the CEO, one year as stock broker and two years as assistant to Verner Moberg during the years of the New-Term project, when he had worked intensively with the project from the business side.

Henrik Bergman, the new commissioner for the NDS project, has a new take on project cost: Too optimistic.

Henrik had subsequently worked at a branch office and been a member of the management team of one of the major regions. His work experience within FSC had given him an extensive personal contact network in the bank. Whilst in the region job, he had observed that the NDS project was under way, and that costs were increasing, but his first impressions of the NDS project on his new assignment as head of BD and commissioner for the NDS project was perhaps not what could be expected:

> *The first impression was that the figures were still very optimistic. I hadn't done any advanced cost estimation, it was more of a gut feeling. I thought it was unrealistic with only 100 person-years for what was to be done, to build a new deposit system for the bank. ... I think those involved, including those from BD, didn't want to see how large the project really was.*
>
> *Henrik Bergman, head of Business Development*

While Henrik Bergman steps into his new role, Johan Sjöberg steps into the role as project manager. He spends considerable time on additional planning for the project, but also starts to change how the project is led and managed.

> *The first thing Johan did was to create a lot of ethics rules. They were: don't shoot the messenger, it's forbidden to keep things in the dark, things like that. These ethics rules live on after NDS, those who were in the project carry them with us. They were great.*
>
> *Inger Boye, sub-project manager*

Johan brought other changes as well: He was liked and respected by many in and around the project after only a short while, and he changed not only rules, planning and organization but also initiated a change of spirit in the project. Johan was also seen as a good communicator.

> *Johan was full of ideas on how to get people along, engage them, heighten their attention to how this [project] goes. Johan Sjöberg was a* superb *project manager. Without Johan, the project hadn't gone that well. He is a very special person. Engaging, he has the* overview, *he has the necessary knowledge and he has the experience. We should be very happy about having had Johan as a project manager.*
>
> *Tage Lundell, BD, NDS steering committee*

> *Johan has an ability to describe things so that people high and low understand it—even our senior decision makers. {smiles}*
>
> *Sub-project manager, NDS project*

Johan also changed the overall idea of how the programming of the system is to be organized. The earlier solution was to have strict boundaries between program design and coding (one of the ideas being that programming could be commissioned to an external supplier). This solution was abandoned in favor of in-house programming which would allow closer interaction between design and programming activities. Work with realizing the plan to convert the interfaces of systems communicating with NDS in advance (pre-conversion) is started, in accordance with the original idea to reduce complexity, risk and time needed for the actual migration from DepSys to NDS. At this time, it is estimated that 90 connections between DepSys and other systems exist, and that all affected systems can be changed before actual conversion to NDS.

The new project manager, Johan Sjöberg, initiates changes in project management, including work processes, project norms and staffing.

There were also several changes in the project management team and in project organization at this time (see Figure 12). Jonas Ferlin, probably the top technology expert in the bank and one of the key people in specifications work for NewTerm, became head of technology issues (including technical/systems architecture) in the NDS project. Furthermore, the person in charge of user requirements was replaced. This latter change was noted in the project as having been carried out quite swiftly rather than smoothly by Johan Sjöberg and Henrik Bergman. Although the change was considered a rather harsh measure given the existing organizational norms, the action also contributed to increasing project members' respect for Johan Sjöberg (who they perceived had made the change): a common interpretation was that here was someone who was willing to take unpleasant decisions to get the project moving forward.

The new head of user requirements, Nils Høeg, had worked in the bank since the 1960s and had been involved in the first terminal system (FS-Term) project 12-15 years earlier. After working as head of administrative development in one of the regions, Nils had taken over after Karin Martinson as head of user representatives in the NewTerm project. Subsequently, he had worked in the BD

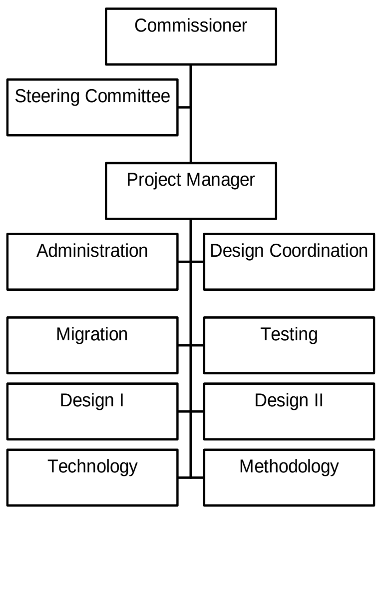

Figure 12: NDS Project Organization November 1990 (source: project newsletter)

department, mostly with projects, including being responsible for a recent conversion of an acquired competitor's branch offices to FSC's systems. During the last year, Nils had been quite critical towards the NDS project (see page 130), and his first impressions of the project on his new job were also unfavorable.

> *[The situation] was not very nice, I would say. ... I asked for a presentation of the main functions in NDS and the description I got was word for word identical with the goal study—I thought 'What the hell [is going on here]?' There was no coherent document, there were only a lot of separate documents, but in reality, the system functions were very closely related.*[90]

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[90] That there was no coherent view or model of the whole system at this point in time was partly a consequence of the methodology and work organization. Different parts of the system were specified separately by separate work groups.

Nils Høeg, head of user requirements

Other changes included the start of a project newsletter, which was distributed to all people working in the project, but also to other people involved with NDS in FSC as well as in supplier firms. In the first issue of *NDS news,* illustrated with a picture of a train set in motion, Johan states that the project has been thoroughly examined, that they are supported by the commissioner, that the strategy for the project has been established and that a new, reinforced project organization had been established: "The thing now, is full speed ahead (without going off the rails)!" Ten weeks later, the project would be on the verge of being terminated.

The still ongoing project planning process was continually revealing additional, considerable underestimations of the complexity involved in different parts of the project and the amount of work necessary to complete the project as a whole. The information from the project was frequently discussed by Henrik Bergman, Karin Martinson, Erik Östergren and Gustaf Söderberg, in different combinations. Erik Östergren gradually approached the opinion that NDS should be scrapped in favor of a renovation of DepSys and a new customer information system. Gustaf and Erik talked about the NDS project and the alternatives on numerous occasions, as did Erik and Karin, often in long evening sessions. While Gustaf was cautiously favorable regarding the project, Karin was ambivalent. Henrik Bergman was in favor of continuing the project, as expressed in meetings where these four people and Johan Sjöberg participated.

During the year, and increasingly during the autumn, Axel Rydberg successively handed over responsibilities to Stig Vennberg, including the chairmanship of the corporate IT board. Stig could perhaps be seen as showing a more pronounced interest in IT issues than Axel, but he clearly shared Axel Rydberg's interest in cost control. Stig chaired his first CITB meeting in early November. The meeting concentrated on projections of 1991 costs for the IT department and reports of two systems development projects. At the meeting, it was decided that the following meeting, in February, would include a closer look at NDS. For Erik Östergren, the next CEO's focus on cost control, particularly understandable in a beginning market downturn, did not fit well with the news from the NDS project, which now indicated over 200 person-years and costs approaching 20 million euros. In addition, continuing work in the project had uncovered problems with system interaction between NDS and *CorpCons* (the system for managing consolidation of accounts for large customers) as well as CustSys (the customer information system), indicating costly adaption or a possible need to replace these systems.

The steering committee met in mid-December. Discussions between the four executives were still frequent, and the new project plans were not yet ready. At the meeting, Johan Sjöberg reported on the new project organization and the improvements in project control, and recommended the "pre-conversion" concept. He also reported that a study within the project had resulted in the conclusion that a "big-bang" migration from the old to the new deposit system was necessary: all data, all incoming transactions and all users have to be moved from the old to the new deposit system at one and the same point in time.

Johan also reported that the information requirements study had been completed and that two special inquiries were under way: one aiming to find all currently existing problems in the development work and another aiming to find all increases in ambition level in current system specifications. Johan also mentions the recently surfaced idea of replacing CustSys and the need to replace a system for consolidation of corporate accounts (CorpCons), which contrary to earlier plans might also need replacement. This would be investigated during the next three months, according to Johan's report. He finishes his report by mentioning ambiguities in the project. Henrik Bergman states that if the goal study doesn't contain guidelines, any ambiguities should be checked directly with him, to avoid delays and unnecessary investigations.

The preliminary project plan now encompasses 200-250 person years *in addition to* 46 person years already put into the project and implementation is scheduled for the first half of 1994, at a cost of approximately 20 million euros. After discussion, the steering committee requests a "road map" for the project, which should be verified within the IT department and checked with the BD department, thereafter presented at the next steering committee meeting in January. Before the meeting ends, there is a discussion of the reasons for earlier planning errors. Johan explains that a lack of proper project planning is a major factor. Karin points out that the responsibility for sticking to the goal study rests with the project manager, and the responsibility for securing that the project is professionally managed rests with the IT department. At the next meeting, in just over a month, the new project plan will be presented and discussed.

In early January 1991 a new project plan is ready. The plan worked out in the project now says close to 300 person years and 27.3 million euros.[91] The inquiry into changes in ambition level (concerning functionality) has revealed only minor changes compared to the goal study, and the inquiry into problems in the project reports 86 large and small problems, of which 50 have been solved, 15 returned to sub-projects to solve, five more substantive problems remain to be solved and 16 remain to be analyzed.

While some of the planning results are vaguely positive, the costs are an important problem from the IT department perspective, both as such and related to another issue: the costs limits the budget available for other projects during the period, the resource strain on the development organization (the IT and BD

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91 From this point on, the costs incurred in the NDS project during 1988 and 1989, totaling a little less than 2 million euros, are excluded from project reporting and from project cost estimates. (Later, the project start date would be presented as January 1990, see page 213.)

departments) limits the ability to run additional projects regardless of the budget situation, and the NDS project requires a period of zero maintenance activity for DepSys as well as other related systems during part of the NDS development period. There are also continuing discussions in the project and in the IT department on the possibility that the development of NDS may lead to a need to replace CustSys and CorpCons (converting these two systems to work with NDS is considered more costly than building new systems). Furthermore, not only Frans Trenter but now also Karin Martinson point to the responsibility of the IT department (thereby Erik) for the project.

As revisions of project plans continue to result in cost increases, the IT manager floats the idea of terminating the NDS project.

Faced with this situation, Erik Östergren's earlier hesitation becomes even stronger. In continuing talks with Karin Martinson, Erik suggests that the NDS project should be abandoned and that DepSys should be renovated instead. To Erik, Karin seems to agree. On the day of the steering committee meeting, just before the meeting is about to begin, Erik takes Henrik Bergman to the side and informs him that he (Erik) is going to recommend that the NDS project be terminated and that DepSys be renovated instead. Erik also informs him that Karin is of the same opinion. Henrik is quite surprised by this, but further discussion is momentarily cut short by the start of the meeting.

> *I felt that 'This is wrong'. ... In my opinion they wanted to reduce risk in systems development but that led to a higher market risk. I thought neither Karin nor Erik had a sense of urgency and that they didn't see to the market risk. ... So at the meeting I said 'No. This is the wrong decision.'*
>
> *Henrik Bergman, head of Business Development*

The steering committee meeting starts with a report from Johan Sjöberg on the new project plan. Johan starts by again pointing out that earlier plans were sketchy at best, and that the new plans are much more detailed and has taken risks and uncertainties into consideration, so that further major deviations from plan are most unlikely. Johan also presents the new figures: 27.3 million euros and 284 person years. This is 66% more than the plan in the goal study, and the largest changes are in the areas Test, Conversion/Migration, and Development.[92] The largest risks are in the switch-over from the old to the new system, that there is no slack in the plan for mistakes in technical specifications, the need to recruit an additional 50 people to the project (mostly consultants) within a few months,

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[92] The project budget is divided into Management/Administration, Development, Test, Conversion/Migration and Other. Development covers Analysis, Design, Construction, Technology and Methodology. Cf. Figure 12 (project organization chart), page 146.

and pressure on related projects (here, replacements for CustSys and CorpCons are mentioned). After the presentation, a technical specialist presents the system structure of NDS.

Johan then presents a problem with CustSys: either CustSys needs to be adapted to fit with NDS (at a cost of 2.0 million euros), or NDS will have to be designed to emulate DepSys for the interaction with CustSys (which would be more costly). A discussion ensues, where Karin asks about time for recovery after an unsuccessful switch-over (Erik answers that administrative recovery could take two months), and Frans Trenter points out that earlier plans have not been followed and inquires whether the current plan (expressed in person-years and time) can be broken down further and restated in cost. Johan answers that this is possible only for the current year but that the plan is very solid. Johan then mentions the strain of large-scale personnel increase and the need for a separate testing environment for the project[93].

At this point, the meeting begins to shift course. Karin says that the presentation of the project plan shows that it is *not* impossible to complete the project, but that commitment from IT management is necessary. Gustaf Söderberg says that he backs the project plan, but that there is still an uncertainty in project time and cost estimates. Erik now says that it is possible to carry out the project, that we are well prepared, that the structure is good, and that "we have the best possible project manager" (quote from meeting minutes), but that the complexity of the project must be respected and that there are no guarantees for project time and cost. Henrik Bergman inquires whether further planning would reduce uncertainty (to which Erik answers no), and Johan points out that risks have been included in the project plan. Frans states that he can not remain in the committee if the IT department (i.e. Erik) does not assume more responsibility, at least for the project phases closest in time. Johan suggests an extension of the timetable with twelve months to reduce risks.

Erik comments that the large costs for NDS make it necessary to investigate alternatives, and that the NDS project heavily reduces the IT department's ability to meet needs for systems development from other parts of FSC. Erik now proposes that the NDS project should be canceled and that DepSys should be renovated, and hands out a memo outlining how DepSys would function after renovation. At this point, Henrik Bergman says that in his view, this would be the wrong decision to take. Frans Trenter also reacts very negatively to the proposal, as does Ingmar Mankell. Ingmar points out that even the new system has a limited functionality from a business perspective, that the decision on what to do should be based on business needs and that the decisions on prioritizing different projects are made by the corporate IT board (rather than by this group).

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93 Roughly, this means that the project requires a separate technical environment in the bank's mainframe, reserved solely for testing of program code developed in the NDS project.

The quite heated discussion is cut short here; meeting time had run out. The meeting is closed and a telephone conference is scheduled for the following Monday. Because of the events that follow, this telephone conference is later canceled.

In spite of earlier scepticism and criticism from members of the steering committee, the IT manager's proposal to abandon the project is not well received.

People in the steering committee at this point in time had considerably more confidence in Johan Sjöberg than in the previous project managers, and some individuals in the group were astonished by Erik's proposal to cancel the NDS project and renovate DepSys. Frans Trenter, for example, did not jump at the chance to cancel the project; he wanted accountability and cost control, not abandonment. Ingmar Mankell, quite upset, had for years heard the IT department put off change requests with the explanation that DepSys was difficult or impossible to change and that a new system was needed.

> *The IT department had no credibility in saying that DepSys should be renovated. ... [They were] bound by their earlier claim that DepSys couldn't be changed. I think that [they] didn't really know if it was possible to renovate DepSys, they just wanted to protect themselves. I haven't heard Johan pick up on the idea. If Johan had said that he thought we should renovate DepSys, then it would probably have been doable too. He wouldn't have said it if he hadn't made sure that it could be done.*
>
> *Of course costs should be controlled, but what has to be done has to be done. As it was, we had to put a lot of resources into examining alternatives which weren't possible anyway, according to what [the IT department] had said before.*
>
> *Ingmar Mankell, NDS steering committee*

> *I guess the IT department had pushed for building a new system, and then they got cold feet when they saw how large the project was going to be.*
>
> *NDS steering committee member*

For Johan Sjöberg, Erik's proposal runs contrary to what he has been trying to achieve in the last few months. Gustaf Söderberg remains in favor of the project, and Henrik Bergman rejects renovation as a unrealistic alternative. Karin Martinson is undecided, but quite worried about the costs for the project. Perhaps because of this, several people in and around the steering committee perceived her as initially favoring renovation of DepSys. In their respective positions, Karin and Henrik Bergman were ultimately responsible to regions and branch offices for systems development costs; they would be a likely focus of criticism when costs for the NDS project would start to show up on line managers' profit and loss statements. But in spite of this and in spite of Erik Östergren's and partly

Karin Martinson's intentions, Henrik Bergman had opposed scrapping the NDS project. The significance of Henrik's resistance was considerable:

> *Henrik Bergman became commissioner then, and he wanted the project. If Henrik hadn't come in we would have canceled the project.*
>
> *I guess that Karin and I assumed that Henrik would take our good advice and follow it. But we sure were wrong there! Henrik didn't take the advice. Instead, he fought hard for NDS.*
>
> *Erik Östergren, IT manager*

Shortly after the meeting, Karin briefs Axel Rydberg on the situation, and he refers the issue to Stig Vennberg. Karin and Henrik then discuss the matter with Stig (possibly on more than one occasion), and Stig recognizes that there are differences in opinion about what should be done, within the steering committee and within both the IT and BD departments. Axel and Stig also discuss the matter, and agree that Stig should look into it.

> *Then, what happened was that [the project] grew and these things have to be reassessed along the way, and when Stig was about to take office that was happening: the project had grown and there were some problems. So I said to Stig 'This was my thing [originally], but look at it without prejudice and see if it is still the right thing to do'.*
>
> *Axel Rydberg, CEO*

> *Something had to be done to see if we should continue the project or not. ... Normally, it would have been the IT department's [responsibility] to handle the issue. But as it was, I happened to have the time since I hadn't taken office yet, and it was a large and important project, and there were quite strongly conflicting opinions about what should be done.*
>
> *Stig Vennberg, CEO-to-be*

As Stig indicates, the project was seen as important. In fact, at this time the project was coming to be viewed as one of the main current issues for FSC. Other distinct issues were the acquisition of a smaller company and geographical expansion. An earlier acquisition had recently been completed successfully (Stig had been responsible for the post-acquisition merger process during the previous year). Stig Vennberg approached the issue from the perspective of wanting to listen to those involved.

> *There was a need to listen to all these people who had been involved in the project, to listen to them before we decided on what to do. ... You know, in a situation like this... To put it this way: It has happened before that FSC canceled an IT project and we were fine anyway. I wanted to find out if we really* needed *to do it. ... Above all I found it important to listen to the few people who worked with the old*

system. I had expected that there would be at least a few people who would stand up and defend their system, but when they too were doubtful [that changed the situation]. ... IT projects, they become dreams and rumors *so easily. It was important to find out what the situation really was like.*

Stig Vennberg, CEO-to-be

The CEO-to-be initiates a project hearing, in which he, the head of Central Administration and the head of Business Development hold meetings with people in and around the NDS project.

Stig Vennberg decides to interview people in and around the NDS project together with Karin and Henrik. During the next two or three weeks, they hold sixteen meetings with different people in and around the NDS project. For most meetings, two or three people were scheduled, and in some cases there was only one person visiting. In addition, Stig discussed the issue at a regular meeting with the executive vice presidents in line management positions (including Frans Trenter). This discussion included the alternative of buying a deposit system from a competing bank, but this option was not investigated further.

Stig, who at this time has limited personal knowledge and experience concerning IT and remembers that a previous IT project was canceled[94] without detrimental effects on the company, is initially inclined towards canceling the project.

[A previous CEO] canceled a project in the early seventies ... and that was a rather big thing in FSC, that he actually did that. So both Axel and I probably had a bias towards canceling the project initially.

Stig Vennberg, CEO-to-be

Meanwhile, the news of the so called hearing had halted project work. The work which was going on was preparation for the meetings with the executives, some administrative catch-up work, and some additional planning and investigation work. While this was frustrating for many people in the project, it was not decidedly negative:

Stig and Karin said 'Well, if the IT department can't decide, then we will have to'. That was just fantastic, in my opinion! My esteem for senior management improved immensely! They said that we will do it ourselves, not use consultants or let others decide. ... I admire him—Stig, that is—for doing that. That can't be a common thing to do for the management of a bank. ... It was fun, exciting and unusual. It was very important for the project.

Ellen Sandel, sub-project manager

94 This project was the FS-Term project, which was put on hold and later completed.

For most people involved in the hearing, it was an extraordinary occurrence. But the occurrence was considered unusual and interesting in other parts of the organization as well, particularly at the head office. For many people working at the head office, the hearing was one among a limited number of early opportunities to study how Stig Vennberg would handle a complex and problematic situation. As such, Stig's way of handling the problems with the NDS project was thought to provide hints on what the new CEO would be interested in and how he would handle upcoming problems. In addition, the hearing was probably to some extent also an expression of corporate culture:

> *[FSC management] demand of ourselves that we do some serious thinking of our own. Therefore we also use very little management consulting [services].*
>
> *Karin Martinson, head of CA*

Those involved closely enough to be included in the hearing spent some time preparing for their meeting. The meetings were organized as closed hearings, led by Stig Vennberg, who would often open the meeting with a question like "If you owned this bank, would you continue this project?" At the meetings, several proponents of the NDS project argued for the necessity of the new deposit system to meet user needs, and that the project and the system were necessary even if costs would run much higher than currently planned for. A recurring argument for NDS was also the need for new services for corporate customers, which would be difficult to realize in DepSys. Accounts of dialogues from some of the meetings (as recalled by those invited) provide clues to the decision which would follow:

- Tage Lundell, from the Business Development department, says in his meeting that the bank has no choice but to do the project, because of business needs. When Stig asks what Tage would say if the project would cost another 25 million. Tage answers that it is a hard question, but that the project still needs to be done.
- At the meeting attended by Ingmar Mankell, Ingmar repeats to Stig Vennberg what he had said in the steering committee: That the IT department's first telling users that the old system cannot be changed, and now suggesting renovation of DepSys is unacceptable. He also points out the problem of losing the trust of branch-office personnel if the project is abandoned. Stig comments that he does not want to be the CEO who brings down the bank with a bad deposit system, and that the bank currently can afford it, which might not be the case the day when the investment cannot be put off anymore.
- In the meeting with Johan Sjöberg, Stig asks if succeeding with the project is possible, and Johan says he is convinced that it is. Stig then asks about the cost, Johan answers that it will cost roughly 35 million euros, and Stig

(according to Johan) says something like: 'Well, I suppose it will cost 50 million before it is done—but not more than that.' Johan acknowledges this, thereby effectively agreeing on a cost limit at close to twice the current estimate.

- Nils Høeg was also asked about the limits at which development would no longer be worthwhile: Stig asked whether Nils would still propose the project if it would cost 60-70 million euros. Nils answered 'Undoubtedly yes'. At this, several people in the room laughed, and Stig Vennberg said (something like): 'Well, you have to consider, that is a heck of a lot of money, it would take us several weeks to earn that back.'

During the hearing process, about ten of the people invited to a meeting had as part of their preparation met with the previous project manager, Albert Lindegren, to discuss DepSys and possible renovation of DepSys. But Albert was also invited to a hearing meeting, together with Willy Danielsson, the first project manager, and Henning Engqvist, the person responsible for maintenance of DepSys. This was a particularly important meeting for Stig Vennberg, since he expected the people working with DepSys to "defend" the existing system, "their" system. However, this did not happen in the meeting.

Willy Danielsson was, now as earlier, in favor of building a new system, preferably from scratch. Henning Engqvist did not argue forcefully for keeping DepSys either[95]. Nor did Albert Lindegren defend the idea of renovating DepSys. He did say that the renovation of DepSys provided an alternative with lower risk, which would take more time. But he did not elaborate on reasons for renovating DepSys, though that alternative was still his personal preference. Albert had prepared for the meeting together with Willy and Henning, so that they would be able to present a coherent view. Furthermore, his view on the meeting was that he did not want to ruin things for his colleagues. Since he was no longer in the project, he found that it would not be fair to put obstacles in the way of his colleagues. Stig Vennberg's conclusive comments at the meeting were that he had expected the defenders of DepSys at this meeting, and opposition to NDS, and that he had found neither. This was an important conclusion for Stig during the hearing process (see quote above, on page 152).

In the hearing meeting with Erik Östergren, Erik again proposed that the NDS project should be abandoned, with the argument that there was still considerable uncertainty about the project task and that there were other alternative projects which would lead to positive effects earlier. These included building a new

[95] Henning Engqvist was the person who knew DepSys best and FSC depended on him for DepSys to work. He was on call around the clock 26 weeks per year, a colleague was first line support the other 26 weeks. The bank's dependence on Henning for maintenance and trouble-shooting related to DepSys was by this time commonly known as "the Engqvist syndrome" in the IT and BD departments.

customer information system and (also in other ways) increasing integration of core information systems.

A critical aspect of the NDS project concerned the feasibility of the technical concept, particularly the DBMS. As part of the inquiry into the NDS project, Stig and Karin therefore also visited a bank in a neighboring country during the hearing period. This bank had recently implemented a new deposit system, which used the same database management system (DBMS) as proposed for NDS. The visit probably provided additional support for the assumption that the proposed DBMS could be used for a deposit system of similar size and complexity as NDS was likely to become. While Karin adheres to this, Stig is less certain:

> *Well, [the visit] was about the database management system. There were theories that it was the future and other theories that it wasn't. I am not sure that the visit to [the other bank] gave that much. They had put a lot of resources into IT, and they had used [the same DBMS]... The way it is, is that when you do a job like this and try to find out what things really look like, you don't know [beforehand] what you get something out of and what you don't get anything out of. There is of course no way you can know that.*
>
> *Stig Vennberg, CEO-to-be*

After sixteen hearing meetings, the decision on the project is considered to be Stig Vennberg's.

After sixteen sessions with people in and around the project and separate discussions in the executive team, what was the situation? Among other things, Stig, Karin and Henrik had received arguments for continuing NDS and for renovating DepSys (although some strong argumentation for the latter had been withheld), they had formed a view of what different people wanted to do, they had been through discussions on system risks, development risks and business risks, and they had formed views on individuals' capabilities. But whatever had been found in the hearing process, it was now considered Stig Vennberg's decision to make.

> *I guess that as CEO, or CEO-to-be, it was really my decision. ... In a situation like that, you pretty much take the organization where you want. What you decide to do, that's how it goes. It's very difficult for anyone to contradict, to oppose a decision like that, whichever I had decided, to continue or to cancel [the project]. It's really a bit scary, but that's the way it is.*
>
> *Stig Vennberg, CEO-to-be*

The decision came shortly after the last meeting of the hearing. At a meeting which concerned another matter where Stig, Karin and Henrik attended, Stig said to Karin and Henrik (something like): 'Well, regarding NDS, I seems to me we have decided to go ahead.' No discussion followed. The same evening, Henrik called Johan from his home and said (something like) 'Stig has decided. We're going ahead.'

The following morning, Johan Sjöberg gathers all people in the project in the corridor outside his office, and announces the result of the hearing process: 'We are going ahead'. There is relief and excitement.

> *Then, it was full speed ahead and a lot of happy faces. ... You could say that Stig Vennberg taking hold of the issue, together with Johan's qualities and the crisis the project was in, led to a positive turn-around.*
>
> *Nils Høeg, head of user representatives*

An important factor in Stig Vennberg's decision was the risks associated with the different choices:

> *The reason was the large risks. My view when I had studied the issue was that there were larger risks associated with not completing the project than with completing it.*
>
> *Stig Vennberg, CEO-to-be*

Only a few days after Stig Vennberg's decision, in the last week of February, the corporate IT board holds its next regular meeting. At the previous meeting, it had been decided that the February meeting would include a more thorough report on the NDS project. This agenda was kept, and after the usual report on IT resource use (by Gustaf Söderberg), Henrik Bergman presents the new plans for the project. Henrik first reports on the resource increase compared with the goal study (from 171 to 234 person years) and explains that most of the increase is attributable to the test and migration phases of the project. Henrik then describes the studies conducted in the project in order to focus the project and reduce ambition level and concludes that business needs and prospective revenue increases make the case for NDS in spite of the cost increases.

Henrik also reports that two additional information systems (NewCorp and NewCust) need to be developed in conjunction with NDS and that costs for these systems are not included in the budget for NDS. The timetable for the NDS project has not been decided, spring 1994 is the earliest possible time. Henrik concludes by saying that the NDS project entails considerable resource strain on the bank, but that it also is of great value. Stig Vennberg supplements by commenting that this is the time to choose between keeping DepSys for another 15 years or developing NDS, and that the current, limited problems in handling corporate accounts are going to increase, leaving FSC at a disadvantage compared to its main competitors. He also states that this is a genuinely complex decision and that he understands the efforts to find less costly alternatives. In conclusion, Stig says that he is convinced that FSC has the competence and the will to carry through with the project.

At this time, participants ask Henrik about the reliability of the new cost estimates, and Henrik responds that the plan is thorough but that different timetables (meaning different alternatives for systems delivery/implementation) have different costs and that upcoming legal requirements may affect project work. He also stresses that NDS is not built to meet future needs, it is built to meet existing, neglected needs. After union representatives express their support, Stig Vennberg concludes the discussion by stating that there is no need for CITB to change the earlier decision to go ahead with the NDS project.

The corporate IT board adheres to the CEO-to-be's decision on NDS and approves two additional NDS-related development projects.

The group then turns to the other agenda items, including reports on one ongoing and two proposed projects, one of them being the NewCust system (the new customer information system). Henrik cites rationalization effects from NewCust and Erik comments that NewCust is a prerequisite for NDS. The group decides that the project should start immediately and that a project plan should be delivered to the group at a later occasion. As the meeting ends, one of the group members, an executive vice president, asks for follow-up reports on projects CITB has decided on.

The IT board, which was normally quite strict about project plans and budgets, at this meeting approves a project—NewCust—at unknown, but most certainly substantial cost (it was later budgeted at 3.9 million euros), in addition to the 27 million for NDS. From now on, it was thus not only a deposit system which was being developed, but also a new customer information system and a new system for managing and consolidating corporate accounts.

These three parts, treated as three separate but closely related information systems, constituted the main information systems for customer account management. There were several reasons for separating the three systems at the time: technical (easier systems development and subsequent maintenance, more flexible and maintainable systems structure); management (project management could be separated); and budgetary/political (costs for the added parts could be separated from costs for the deposit system). Taken together, these were the information systems that would handle data and transactions pertaining to products/services (terms, prices, etc.), customers, and customer accounts. The new customer information system (NewCust) was made into a separate project, with the project manager reporting to the same steering committee as the NDS project, whereas the new information system for corporate accounts (NewCorp) was made into a sub-project within the NDS project, although the costs for NewCorp would later be accounted for separately.

4.6 Getting a Grip on the NDS Project (1991–1992)

The decision to go ahead jump-started work on the project. Johan initiated a "pilot", a sub-project responsible for testing the phases of the methodology through carrying out a small portion of the development work. Meanwhile, Erik, Gustaf and other managers in the IT department saw to it that the project was provided with the additional personnel resources that had been requested.

> *[Before,] we had to fight for every systems analyst we wanted, but after Stig's hearing they just had to ask and the analysts arrived. ... Johan saw which people he wanted and didn't [want and that's how it went]. ... Johan could basically pick and choose people the way he wanted. It's much easier when you are backed by the CEO. But it's also important to have a strong project manager.*
>
> *Albert Lindegren, former project manager*

There was now a considerable consensus regarding the NDS project within the IT and Business Development departments. From this point on, nobody publicly discussed renovation of DepSys as an alternative. Closely related to that fact was the common interpretation of Stig Vennberg's decision that the CEO-to-be backed the project (see quote above as well as quotes below).

> *The fact itself that it is called into question whether [the project] is the right path [weighs down the project]. The* unequivocal decision *enabled us to get going again with full force.*
>
> *Tage Lundell, Business Development department*

> *Then, after [the decision], there was a common conviction that 'Now we're going to do this.'*
>
> *Christian Englund, external consultant*

> *The disturbances were over for the project. After [Stig's decision] you knew what it was about. You knew: Stig Vennberg has decided on this. You felt secure. You knew that [FSC] management had confidence in the* project, *that management had confidence in the* project manager *and that* one *person was running the project.*[96]
>
> *Ellen Sandel, sub-project manager*

[96] In subsequent conversation, Ellen Sandel clarifies this: "Through their decision, the bank's management had clearly demonstrated their commitment to complete the project. The continued mandate for the project now came directly from top management. People, or groups in the IT department, who still opposed the continuation of the project had no way of promoting that view without getting on a collision course with the bank's management."

> *[After the decision] those who worked in the project didn't have to worry about having the carpet pulled out from under them. They knew they had [the] support to do what they were going to do.*
>
> *Stig Vennberg, CEO-to-be*

The hearing process had also contributed to learning about the project, the proposed system, the technical and markets risks involved, and the situation of the project, not only for the executives leading the process, but also for those who had presented their views on the project or otherwise been involved in the discussions. The project plans were more detailed, and the general perception in and around the project was that the plans were now quite reliable. Soon after the CITB meeting, the implementation of NDS was set for spring 1995, partly to reduce project risks associated with the fast resource build-up which would have been necessary in order to complete a year earlier. The new project budget was set at 35 million euros including NewCust. Stig Vennberg did not involve himself in any additional discussions on how the NDS project was to commence after having taken the decision. He would, however, continue to keep himself informed about how the project progressed.

> *Stig didn't do anything after deciding on the go-ahead for NDS and he shouldn't have either. Stig just did that. He is good at delegating and not interfere in things he shouldn't be doing. That's* one *of his good qualities.*
>
> *Henrik Bergman, head of Business Development*

> *I followed the project regularly. Partly informally - a lot. Then there is also a group for these issues. But mostly I talked to people involved, many times. Every time I visited the IT department, we talked about NDS. ... I felt very engaged in this. ... There was all the time a risk that it wouldn't work, and I did not want to experience that—I had decided to go ahead with the project. So I think I felt more engaged in this project than in IT issues in general.*
>
> *Stig Vennberg, CEO-to-be*

The formal group was the corporate IT board, and other contexts included conversations with Henrik Bergman, Karin Martinson and Erik Östergren, as well as Johan Sjöberg and other people involved with the project. Of these people, Karin would over time become the one person Stig would most often actively seek out to inform himself about NDS, partly because she was organizationally and in office location closest to him.[97] Stig also received information on the project at his yearly visits to the IT department. While Erik Östergren had to some extent been "out of the loop" during the hearing process, he now stepped back in to support the project, as did Karin Martinson with renewed energy.

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[97] Karin would also become commissioner for NDS again, a year and a half later.

There was no hesitation from Erik after the decision, there was no shaking in his shoes. He supported the project fully.

Gustaf Söderberg, head of systems development

I focused a lot on tests, started doing that during 1990, [or] the beginning of 1991. It was all kinds of tests, elementary tests, system tests, integration tests, performance tests. ... Some things were very clearly my responsibility as manager of IT, especially if the system wouldn't run or if it would be too costly to run. ... I tried to make sure that the system and the documentation were of decent quality and that our own personnel [were used in the best possible way]... I also tried to see to it that [the] NDS [project] was linked with the IT organization. Part of that was that the IT project office was linked with the NDS project office to coordinate [NDS with] other ongoing projects.

Erik Östergren, IT manager

I felt a huge responsibility to get [the system] running on time and to stay within the cost limit. That was very important, especially after the hearing.

Karin Martinson, head of CA

As the project manager continues to work with changes in the project and bring project work up to speed, the commissioner works on building support for the project.

But for the time being, the main decisions and discussions on the management and control of the project were largely a matter for Henrik Bergman and Johan Sjöberg, sometimes with Nils Høeg involved. A division of responsibilities between Henrik and Johan soon emerges, perhaps spontaneously at first, but then also explicitly agreed upon. In addition to responding to issues and requests from Johan, Henrik takes it upon himself to build support for the project in branch and region management. He is in relatively infrequent contact with the project, but commits time to talking to branch and region managers about the benefits of the new deposit system.

Earlier, the arguments towards branch offices had been like the [arguments in the national] European Union referendum: 'We have no choice'. We now tried to turn the selling of NDS into being about advantages [of the new system]. Johan was quite busy building the project organization, so we split the work so that Johan worked with the project and I saw to it that there was cash flow to the project. ... I saw my role as head of BD as building trust in the development apparatus and seeing to it that the trust was deserved.

Henrik Bergman, head of Business Development

This "selling" was largely conducted in chance meetings with people who were part of Henrik's personal network. There were no formal meetings in region headquarters to inform people about the project. Instead, Henrik spoke with people about NDS when he had the opportunity, and tried to frame NDS in ways which he thought would fit with what the person he spoke to would consider to be important business needs. After a couple of months, he had thus gained increased acceptance for the project from a number of branch and region managers.

> *This was about building a buffer zone for the project so that it would withstand shocks. I also collected requests [concerning systems requirements] and provided feedback on that. After a while this work tapered off. The customer was committed then, you could say.*
>
> *Henrik Bergman, head of Business Development*

While thus reaching influential people in region and branch management, neither this effort or the preceding hearing seems to have changed the general view of the project in branch offices. For people in branch offices, the project was still largely obscure, little understood and perceived as tremendously expensive. Some people in branch offices also believed (and would continue to believe) that the project was run without user participation, except from the people in the steering committee.

Contacts between Johan and Henrik at this time were usually initiated by Johan, and issues brought to Henrik attention were typically dealt with quickly. Meanwhile, Johan's work with the project led to further changes in the project organization, further investigations concerning uncertainties and problems in the project work, and further project planning. Many of these efforts were carried out under the label "Operation Platform". Only two weeks after restarting the project, Johan stopped all regular development work and started this initiative, which aimed at concentrating project work on a few continuing problems, such as data modeling and the technical concept. During Operation Platform, a new project plan was constructed and posts and assignments in the project were reviewed. A month later, Operation Platform was declared successfully completed (18 of 19 targeted problem issues had been solved), and an open-air walking/quiz competition for all project personnel was held, finishing with a festive meeting at a conference site. A team spirit was forming in the project.

At the end of May, the first steering committee meeting since late January is held. At the meeting, Johan reports on progress in the project, including the advancements during Operation Platform. He also requests a ten percent "cost buffer" in addition to the already approved 234 person years, which would result in a 260 person year limit, explicitly excluding NewCorp and NewCust. The steering committee accepts this, though it is pointed out that CITB has to be informed. Then, something quite unusual happens: Johan requests that the project deadline be moved from the 1995 deadline decided on in February back to the earlier deadline spring 1994. Johan explains that he wants to keep up the pressure, the urgency, in the project work. This is encouraged by the members of the steering committee.

After this follows a discussion on reasons for earlier problems in the project (e.g. mixed quality of the data model) and then Nils Høeg reports on differences between the current systems specification and the specification from the goal study. Henrik comments that user requirements are not compromised, and the changes (some minor reductions in functionality) are accepted. Johan points out that no changes can be made in DepSys from nine months before migration to NDS, whereby Erik stresses that planned changes to DepSys need to be carried out during 1991–1992 and Karin suggests that there should be a common effort to anticipate new legal requirements. Tage Lundell reports on a productive discussion with the financial control department concerning the flexibility of NDS. There are several questions on how specific issues and tasks are managed in the project, but answers from Johan are accepted, no discussions ensue. Ending the meeting, Henrik states that future steering committee meetings will deal with both NDS and NewCust, since the steering committees are identical.

The request to tighten the project timetable is probably the first of its kind for the project. All prior changes in the project plan had been delays and cost increases. There are also other differences between this meeting and previous steering committee meetings: There is no questioning of the project. There are questions put and answered, but discussions are short. One reason is that this meeting is the first of many well-prepared steering committee meetings where issues have been cleared between Johan, Henrik, Erik and Karin (and in later meetings Frans Trenter) beforehand. Furthermore, the hearing had produced a significant difference in how the project was controlled. Everybody knew that the CEO had studied the project and decided to go ahead, and this led to a basic acceptance that the project was to be carried out (cf. page 159). This would also show in the corporate IT board meetings.

> *NDS was one of the main topics of every CITB meeting—CITB meets every three months.*[98] *But it was partly a charade when [NDS] was discussed, because everybody knew that Stig Vennberg supported it, so there was never any real discussion.*
>
> *Gustaf Söderberg, head of systems development*

There is also a brief report on NDS at the June CITB meeting, right after the usual report on IT resource use. At this particular meeting, however, two other topics take up the bulk of the time and attention. The first of these topics is a review of earlier CITB decisions and (thus) current major projects, including a discussion on reasons behind successful projects and problematic projects. During this

[98] This is a reasonable but very rough average. Meeting intervals fluctuated between two and six months.

discussion, the chief financial officer, a regular member of CITB, asks Henrik Bergman about risks for increases in ambition level for NDS and receives the answer that the ambition level is closely monitored. After this discussion, there are short briefings on three proposed projects, which are approved.

The second major issue is a thorough discussion, initiated by the new CEO, on whether the CITB itself is necessary or not. An important background point to this question was that all or most projects brought before CITB were approved. This was the case at this very meeting, and it had been the case for quite some time (cf. page 134). In the discussion, several people in the meeting emphasized that CITB provides a means for preemptive control: *Because* projects have to be prepared for approval by CITB, project proposals are worked through and support is summoned before projects are approved and started.[99] The discussion leads to the conclusion that information sharing, discussion, coordination and control together make CITB valuable, and Stig Vennberg adds that he finds CITB personally valuable. It is decided that the CITB should remain in the current function and format.

Since December, Jonas Ferlin had led the work with the technical concept. This work advanced considerably during the spring, and in late spring it resulted in the first comprehensive overview description of the new deposit system. (Jonas was not in favor of the ISD methodology used, and work with the overview description was not guided by the methodology used in the analysis and design groups.) At this time, the project received additional resources from the hardware and DBMS supplier in the form of several people intended to provide additional competence. One of them was Olof Tunström, who started out working with routines for managing change requests and would later head the project office.

> *I was quite astonished. I didn't understand much [at the start]. There was an unusually open atmosphere in the project, those working in the project were interested in things, it was open, things weren't concealed.*
>
> *Olof Tunström, NDS project team*

A buildup of resources was underway in the project in preparation for the construction (programming) phase. Most of the additional personnel resources would not come from the bank or the DBMS and hardware supplier but from consulting companies. After negotiations with several companies, contracts were signed with two major IT consulting companies for provision of application programmers. Getting hold of programmers was facilitated by a downturn in the IT consulting market at this time, and this downturn also contributed to making it possible to place considerable demands on the consulting firms. All consultants were interviewed and screened as for a regular hiring and quite a few were

99 Cf. Erik Östergren's quote on page 134.

rejected. Consultants accepted by project management were given introductory training before starting their work in the project.

During the summer, there were again changes made in the project organization. A new sub-project was started, for the management of added functionality and incoming change requests. It was called NDS2 and Inger Boye was responsible. The construction units were created in anticipation of the construction phase. Further, user representatives for NewCust as well as test users were organized into a separate function with Nils Høeg (head of user requirements for NDS) responsible. Both this last change and the start of NDS2 had problem-related reasons. NDS2 was a means for separating additions to specifications from the main project. This had become especially important since the functionality of NDS was now defined as based on the functionality DepSys had in 1990 with a well-defined set of (limited) additions, in contrast to the early ideas of specifying a new system from scratch. The other change had to do with the fact that user representatives had worked independently from each other, which in several cases had contributed to a lack of integration in systems design.

> *There was a gigantic backlog with change requests. It was partly a consequence of the discussions on ambition level. ... The flexibility ideas were disastrous for a while.*
>
> *Inger Boye, sub-project manager*

> *The business people were divided into functions, each led by an IT person. We changed that so that we had an integrated group of user representatives, which I led. I thought it was totally mucked up [to have] the supplier managing the customers. ... Are we hostages or the ones who push things forward? ... It was a huge boost for the BD people when we put them together. There was coordination and they saw connections they hadn't seen before. We often had reorganizations within [the project].*
>
> *Nils Høeg, head of user representatives*

In connection with this change, the Test group within NDS was split up, and an earlier key member of the project (from the period before 1991) was not given new tasks in the project. This reinforced an earlier interpretation by people in the project that Johan and Henrik would promptly move those people who didn't fit or function well in the project.

In late spring, Stig Vennberg had become CEO in accordance with prior arrangements, and Axel Rydberg had correspondingly become the new chairman of FSC. As described above, Axel's phase-out from daily matters had in practice started much earlier, and he would now have even less to do with issues concerning NDS, although the matter would continue to pop up every now and then in conversations with the new CEO.

In the autumn of 1991, the new CEO frequently discusses NDS and related IT issues on his visits to FSC branch offices.

In the autumn of 1991, Stig Vennberg takes up a CEO tradition at FSC: He visits every tenth branch office in FSC during the autumn and talks with branch managers and employees about the business situation and operations, including numerous issues of importance either from a local or central perspective. A major recurring type of issue concerned needs for improved information systems support. In this context NDS was frequently discussed, particularly associated costs and possible disturbances for branch offices.[100]

> *There were a lot of questions like that, a lot of things they wanted to know. It was a matter of answering [the questions] and calming down demands for other systems development in order to prioritize NDS. There were many discussions like that, lots of times.*
>
> *Stig Vennberg, CEO*

At this time, NDS had also become a recurrent subject at the monthly meetings of the CEO and the corporate executives. These meetings included Frans Trenter and the other heads of regions, as well as the executive vice presidents at headquarters. Although NDS was discussed in several fora, it was still quite an abstract phenomenon to most people outside headquarters and central staffs, partly as a consequence of the organizational philosophy and control structure of FSC. Specifically, since the major part of the costs for the NDS project had not yet been incurred, internal allocation of IT costs to branch offices had not begun to increase due to the NDS project.

> *[Regions and branch offices] didn't see much of the project at this time. They didn't see anything on their bottom line yet [and that's what they care about].*
>
> *Karin Martinson, head of CA*

Since the February decision to continue the NDS project, Erik Östergren and Gustaf Söderberg had been active in ensuring that the IT department actively supported the NDS project with additional resources when needed and by allocating resources to pre-conversion work and other necessary changes in other information systems. In addition, the methodology group within IT was incorporated into the NDS project, and in October the bank's mainframe computer system was upgraded for larger processing capacity, in order to increase efficiency of development and testing activities in the NDS project. Outside NDS, a major effort in the IT department during the year had been the integration of an acquired minor competitor into FSC's information systems. In spite of these

[100] This would also be the case in the following two years.

efforts, FSC's costs for IT were relatively close to budget for the first nine months of 1991, after having increased 17% (11% above budget) the previous year.

Inside the project, the resource buildup continued, from 45 people in June towards the 100 people planned for the year-end. Planning and control activities and routines increased. A project planning handbook and several related documents were distributed, and in October, a project office was started. The

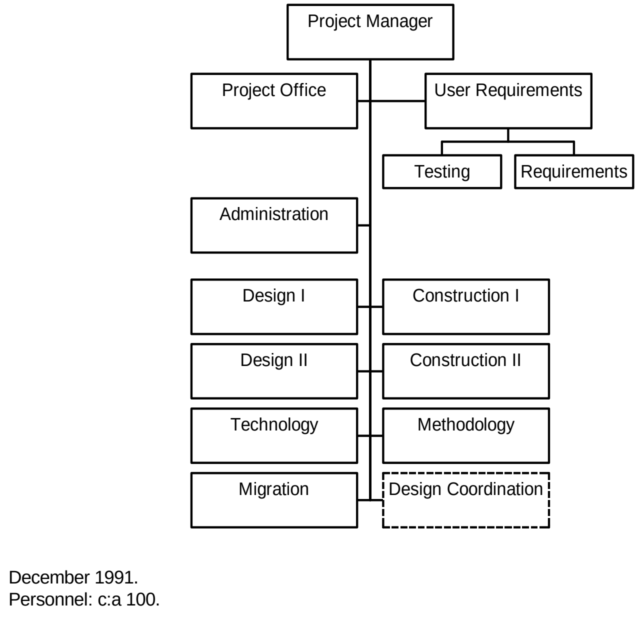

Figure 13: NDS Project Organization December 1991 (source: project newsletter)

internal project organization structure (see Figure 13) now encompassed up to five hierarchical levels: programmers, programming leaders, construction managers, sub-project managers, and project manager (only the top two levels are shown in Figure 13, for additional detail, see Figure 14, page 181).

> *There was an enormous amount of administration. We used [a project planning software] which should be avoided if possible. We used it to keep the timetable together and it was enormously laborious to use.*
>
> *Ellen Sandel, sub-project manager*

At this time, sub-project managers and their closest subordinates joined a leadership development program which was held annually in the IT department. The two-person project office monitored sub-projects, provided administrative support to the project manager and also supported sub-projects with coaching as well as helped out with project work when needed. As well as being designed to cope with the increase in scale, the buildup of planning and control was also due to a remaining problem in the project: The systems analysis phase was still not completed. April 1, 1992 became the new deadline for the analysis phase, and construction work would start in November focusing on those parts of the system for which the analysis had been completed.

The corporate IT board meeting in October discussed both NDS and New-Cust. The situation in NDS was presented by Erik Östergren, who described the problem issues mentioned above and reported slight overstaffing (70-75 persons) compared to plan. But the main issue of the meeting was NewCust, which had been approved in February. The project plan for NewCust was presented by Henrik Bergman, stating 3.9 million euros in development costs. A major part of the discussion concerned the connection between NDS and NewCust and the deadline for NewCust was set to make sure that NewCust was implemented before system tests for NDS would start. The conclusion of the discussion was a reiteration of the conclusion at the February meeting: "Ending the discussion, it was concluded that the [NewCust] project is necessary to carry out NDS, and consequently no separate decision concerning NewCust is necessary." (quote from the meeting minutes).

The November steering committee meeting started with a presentation of project status and plans by Johan Sjöberg, who described the conclusion of systems analysis by April 1, 1992 as critical and reported an estimated peak of 145 people employed on the project during 1992. The personnel increase as such was not considered a problem, except for an anticipated shortage of office space. Karin Martinson inquired about how to ensure that the critical deadline for analysis work would be met, and Johan answered that detail planning was under way and that NDS2 was a vehicle for separating additional requirements. Frans Trenter asked about costs for NDS2 and Johan replied that these costs would be reported separately. Johan also reports a reduction of the construction phase for the first version of NDS (excluding functionality included in NDS2) from 17 to 14 months, a reorganization of the Test sub-project, and that other business areas (non-retail banking) have to interrupt all development work during the NDS test phase. Karin raises the issue of responsibility for assuring this in ways which would relieve some pressure from the project, and Erik volunteers to investigate this.

Johan also reports an estimated resource increase of 33 person years, which includes NDS2, NewCorp, and additional pre-conversion work (the number of possible pre-conversion instances have increased from 50 to 110). Johan suggests that costs for pre-conversion work be seen as insurance fees. Karin asks if the risks warrant the costs and Henrik Bergman instructs that the project should investigate this issue. Henrik also asks when a new plan can be established;

Johan answers vaguely. Erik states that he has ideas which may help facilitate the migration process; Johan expresses appreciation of that. After this, NewCust is presented by its project manager, Carl Lagerkranz, who reports quite briefly that the NewCust project is well on track.

This steering committee meeting follows a pattern similar to the May meeting. Johan is more in charge of the meeting process; information is not only reported but also clearly "framed" by Johan (e.g. pre-conversion costs presented as insurance fee), and a substantial part of the information has been shared with key persons beforehand. Erik Östergren's supportive approach to the project is quite visible. A clear difference from the May meeting is the increased visibility both of the continued cost increases in the project, and of the nature and extent of the project's demands on its environment.

The increases in resource needs were in focus in the revision of project plans during November and December. This plan revision results in an unchanged timetable, but considerable resource increases compared to the May plan: 380 person years (approximately 35 million euros). About 100 deadlines within the project are specified in the planning process, and it is decided that all changes to DepSys should be halted 18 months before migration to NDS. On the positive side from a project planning and control viewpoint is that the outcome for resource use from December 1990–October 1991 was almost exactly according to the December 1990 project plan. There is also yet another reorganization within the project: Analysis and Construction are both divided in two parts; account conditions and accounts ledger.

> *The use of key people and organization [was good]. The project had different needs at different points in time. Johan was skilled at changing the project organization according to needs and to bring in people but also take people out, which he did resolutely.*
>
> *Erik Östergren, IT manager*

I addition to the changes in organization and control, Johan also formulates and communicates "Critical Success Factors for NDS" within the project. These "CSFs" were actually explicit norms or rules of conduct for personnel in the NDS project (see Box 7).

Critical Success Factors for the NDS Project:

- Everybody should be aware of and accept the project goals.
- Everybody should understand their contribution to the goals.
- The timetable should be sacred for everybody.
- All groups are winning teams.
- Everybody should respect decisions taken.
- Everybody should avoid incremental increases in ambition level.
- YOU are an ambassador for NDS.

Box 7: Critical Success Factors/Explicit Norms for the NDS Project (from the project newsletter *NDS News*, December 1991)

During December, the office space problems are solved by IT management. In the last IT department newsletter for 1991, Erik Östergren comments on office relocations and points out that NDS is the largest and most complex systems development project ever at FSC and that all personnel in the IT department have to support NDS when necessary.

The start of 1992 sees a project struggling to keep on track and struggling to keep the momentum necessary to produce the required results. In spite of the additional resource requirements reported in December, the project also demonstrates signs of acquiring some of the attributes suggested by its symbol: a trainset in motion. During 1992, the NDS project would become increasingly visible in the organization, starting in January with a section in the IT department newsletter written by Johan Sjöberg, describing the status of the project.

At the January 1992 CITB meeting, Erik Östergren reports on eleven major ongoing projects, including NDS and NewCust. Erik reports that the NDS project is on a tight schedule but that the timetable still holds. NewCust is also reported to be on track, with planned delivery of its first results to NDS in two months. The meeting also contains a report by Gustaf Söderberg on the development (i.e. increase) of IT costs during the previous five years. The increase is attributed to incorporation of systems from acquired and consolidated businesses or business units, and costs for development projects, foremost NDS and NDS-related work. After approving the next phase of an ongoing project for the merchant banking division, the meeting is closed.

In spite of the December plan revision for the NDS project, the current commissioner for the project, Henrik Bergman, continues to emphasize that the project is on track. In line with this, he cancels the February steering committee meeting: In an internal memo, he explains that since the project is on track, no steering committee meeting is necessary until April. At the same time, another review of the project is initiated and carried out during January and February, this time on the project manager's initiative.

The review is considerably more positive than previous reviews, praising project management but also issuing a warning for the lack of a clear migration strategy.

This review, carried out by the same external consultants as earlier reviews, is considerably more positive than the previous two reviews had been. The report points to a number of strong points for the project, such as first-rate support from commissioner and from corporate and IT management, very good project management, the overall quite high competence level of people in the project, project planning and control procedures, and the morale and work pace in the project. It also points to a number of potential problems or weaknesses in the project. Foremost among these weaknesses is the lack of a clear migration strategy as well as the lack of a risk analysis for the migration process. Examples of risks include the need to start changing DepSys if NDS is delayed, causing a situation where the NDS project would have to chase a "moving target" as well as risks relating to the delayed discovery of bugs in the new system and whether rollback to the old system would then be possible.

Other issues raised in the review report include a need to improve informal communication and cooperation, a need to improve integration of the Technology sub-project's work with other sub-projects, a risk for overexertion for members of the project team, and a clear questioning of the design approach and whether the approach ensures that the essential functionality requirements are covered.[101] The review also points to risks related to "freezing" changes to DepSys over a long period thus making the consequences of delays dire, a need to improve personnel planning and care, and the importance of the upcoming deadline in March.

The review is reported to a subset of the steering committee (including Henrik Bergman, Erik Östergren, Karin Martinson and Gustaf Söderberg) and not reported to other members of the group until the next regular meeting, in early May. In line with the review content, it does not lead to any major changes in the project or project control. This was, however, not only a matter of the review content:

> *By [then] the project had come into a different phase. There [was] not much to do about it by this time.*
>
> *Christian Englund, external consultant*

Some changes in project management and control were, however, initiated within the project at this time: the weekly project management group meetings were abandoned by Johan Sjöberg on the suggestion of one of the sub-project managers:

> *[The weekly project management meetings] didn't work so well, so we canceled them. It was Karl Johnson who suggested it.*
>
> *Johan Sjöberg, project manager*

Instead of the regular project management meetings, monthly, open meetings were held, typically over a period of two plus one day. During the first two days, each of the sub-project managers would report on their respective project, having previously submitted a brief, pre-structured written report. In many meetings, special attention was paid to one of the sub-projects. Johan Sjöberg, Nils Høeg and Jonas Ferlin would chair the meetings which were open to everyone in the

[101] The design work specifies functionality "from scratch", whereas the functionality of the implemented system needs to correspond extremely closely with DepSys, because of the complexity of interdependencies with other systems as well as requirements for consistency in how products/services are delivered through the system.

project, those outside the project whose work was affected by the project (such as people in the IT department working with NDS related systems maintenance/change work), as well as the steering committee members.

Members of the steering committee were frequent attendants at the new, open project management meetings which were held monthly.

Erik Östergren, Karin Martinson and Gustaf Söderberg frequently attended these meetings, where each sub-project manager's report to and discussion with the three chairmen (Johan, Nils and Jonas) was followed by questions, comments and information from other attendees (who during the first part of each meeting were confined to a listening role).

This quite elaborate arrangement was also upheld through seating arrangements: Johan, Nils, Jonas and the sub-project manager submitting her report were seated at a table in the center of the room, whereas other attendants were seated on chairs along the walls. This two-day session was followed by one day of summarizing work by project management, after which the project management team gathered for one day for a review of the status of the project, the current and upcoming main issues and risks, and the main tasks for the month to come. The arrangement was popular both with people in the project and steering committee members.

> *Oh yes, I have to tell you about our monthly project meetings! ... You got time with important people. And [the atmosphere] was* open*. Johan had the meeting in his hand, so you weren't afraid to tell about the problems you had. Johan can build you up if you are down, so you get the feeling you can make it. [You] felt important for the project. You had more freedom of action too, and so you used it.*
>
> *Inger Boye, sub-project manager*

> *[The meetings] gave a good view of how things worked inside the project. You could see which questions came up and if the right decisions are made and—not least—*if *decisions are made, if they are able to and dare to make decisions. You get a pretty good picture of that when you participate [in such meetings].*
>
> *Karin Martinson, NDS steering committee*

The attendance of steering committee members was not only a passive listening role. Several of the steering committee members used the occasions to comment on issues in the project and the project management process which they found important. In this way, the monthly meetings became an addition to other communication channels for members of the steering committee.

> *I preached a lot about responsibility. ... I wrote in* NDS News*, I talked about it at monthly [project] meetings and steering committee meetings. At the meetings, I also pushed making decisions or clearing up uncertainties, like pushing vendors.*
>
> *Karin Martinson, head of CA*

Thus, the monthly meetings provided a more effective means of internal coordination than the previous weekly meetings, as well as a forum for exchanges between the whole project management team and key members of the steering committee. The forum gave steering committee members a chance to observe project management in action and to listen to reports given by people in the project, and sub-project managers could experience some of the demands on the project from the project environment directly. The meetings also contributed to the spirit of openness which was part of the development of norms within the project, called by those involved “the project culture”.

> *The planning and control process in the project during the last two years was good. ... It was a combination of controlling the situation and opening up. On the one hand you have [in a project] a need to do your thing, to carry out the task you have full responsibility for. On the other hand, you need to keep in close contact with people outside [the project] for coordination, collecting requirements and support.*
>
> *Erik Östergren, IT manager*

While the attendance of steering committee members was considered by most or all to be a positive aspect of the new project-control procedures, it might also have led to a certain increase in self-censorship by sub-project managers.

> *Yes, well, you're right. We joked about that sometimes [among some sub-project managers]. ... You know, there were some senior managers sitting in the outer ring. Sometimes it felt like you did your presentation for them, not for Johan, and you knew that if you would bring up [certain] problems they would [jump on it] like wolves... So what we reported was usually correct as such, but with some things removed, those which would only cause problems and [unnecessary] work to bring up.*
>
> *Hans Fogelström, sub-project manager*

In addition to the monthly meetings, however, Johan would meet specifically with people from sub-projects where problems were reported or detected. These meetings would often reoccur regularly until problems were dealt with. Johan also dealt with lack of coordination or problems in communication and/or cooperation between sub-projects in informal settings.

Part of the activities contributing to the project culture were also pub evenings, guest seminars about various topics and parties. Seminar topics included invited talks by people who had carried out extraordinary achievements in other areas, such as mountaineering, as well as visits by a theater group specialized in conflict management.

During the early spring, the NDS Test team visited the DBMS supplier's test center and returned with confirmation of the feasibility of the test plans. In the following months, test facilities were constructed in accordance with these plans. From March through May, reorganizations in the project included termination of the Design sub-project, the addition of the NewCorp project (decided on in early spring 1991) as a new sub-project, and a new sub-project focused on managing system interfacing/integration (all data exchanges between NDS and other information systems). Since design work was still not finished, remaining work was partly referred to the next release of the system and handled by a new sub-project called NDS2, partly managed by one person from the project office. The latter work was supervised by Johan Sjöberg, Jonas Ferlin, Nils Høeg and the sub-project manager for NDS2, in an attempt to minimize the task.

Much of the work in the IT department was now directed towards supporting NDS and NewCust projects, and the Business Development department was also involved in helping the project. Additions to system specifications were at this time being halted by the BD and IT departments and the project jointly. Almost no additions or alterations were allowed, which helped reduce the estimated work load in the NDS2 sub-project. The first pre-conversions were successfully completed at this time, strengthening the confidence in the feasibility of the pre-conversion concept.

There was also a first decision on a revised migration strategy taken by project management together with key people from the IT and BD departments. Until now, the plan for the migration from DepSys to NDS had been a so called "big bang" migration, where a long weekend would be used to switch operation from DepSys to NDS—all transactions and all data would have to be taken over by the new system during the weekend, and by Monday morning, all branch offices and other users would use the new system.

The earlier "big bang" migration strategy is amended with a "shadowing" arrangement, to reduce migration-related risks.

Two consecutive investigations had confirmed the "big bang" strategy as the one feasible migration strategy, given the complexity of the DepSys–NDS migration. Now, considerable risks with this strategy (some of which were mentioned in the latest review, see page 170) had led to a new investigation and to a modified concept. Both NDS and DepSys were to run in parallel for five to ten days ("shadowing"), during which it would be possible to revert (rollback) to DepSys, should NDS turn out not to function properly. The new migration strategy was essentially a risk-reducing amendment to the "big bang" concept, reducing some risks but increasing the complexity (and cost) of the migration work itself.[102]

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[102] The new migration strategy would be discussed in and approved by the steering committee in May and again in August. The issue would return later.

In March, branch offices had a new reason to pay attention to the project. The increases in IT costs were added to the overhead costs which were charged to branch offices and thus affected their profit and loss statements negatively. The cost increase was substantial and many branch managers reacted sharply, voicing their opinions to region headquarters and the BD department.

In FSC, the yearly budget process for headquarter/corporate departments includes subcommittees with representatives from regions and branch offices. These subcommittees have to agree on spending by e.g. the BD and IT departments and decide on internal prices for corporate services for the upcoming year. A central idea is that the line organization should strongly influence plans and spending level of central departments. However, different branch offices have different views of the effectiveness and the desirability of this control structure, and the overall dissatisfaction with the increasing IT costs in branch offices would increase during 1992.

> *I think this way of working can be prohibitive. ... [Branch offices in major cities] experience a change pressure which [branch offices in the rest of the country] don't have, and they don't want to pay for things they don't need.*[103]
>
> *FSC branch manager*

> *Well, [the costs for IT] are not possible to influence.*
>
> *FSC branch manager*

In addition to the continuing lags in the design work, it was now found that a critical system module, interest calculation, was malfunctioning (performance problems and as well as calculation problems), requiring extensive revision work. Furthermore, insufficient hardware capacity in branch offices was found to cause problems with some system modules and these modules had to be divided into several modules in order to function with the existing hardware.

But on the other hand, the very first program "package" (the project plan divided deliveries from construction/programming into packages) was delivered from one of the programming groups to the test team in April, and work activity among the 150 people in the project was very high and productivity increasing.

Following a project planning meeting in early April, a plan revision is carried out by the project office during April-May. The plan, which is to be presented at the next steering committee meeting, indicates a risk for a two-to-four month delay in project completion and a new cost estimate of 40 million euros. Neces-

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[103] Customer demographics and customer needs vary considerably between and within FSC regions. Generally, branch offices in major cities meet more complex, varied and changing customer demands than branch offices outside major cities. As a result, the specific needs for IT support vary considerably between branch offices.

sary work outside the project is now being quantified, and the first estimate is between 25 and 45 person-years.

During spring 1992, increasing worries about the NewCust project would lead to the replacement of the NewCust project manager.

During spring, worries about the NewCust project had increased. Frans Trenter, Henrik Bergman and Johan Sjöberg were among the people concerned with a perceived lack of information from the NewCust project manager. The project was lagging and there were indications of cost increases. Christian Englund, one of the external consultants who had reviewed the NDS project was hired to provide support to the NewCust project manager. The consultant found that the concerns were well grounded and discussions involving Henrik, Johan and others led to the dismissal of the NewCust project manager. Christian Englund took over project management on an interim basis until a new project manager had been found, and subsequently provided support to the new project manager.

At the steering committee meeting for NDS and NewCust at the beginning of May, discussion about NewCust was postponed in order to give the new project manager time to revise the project plans. Johan Sjöberg reports on NDS. One of the first issues concern the need to revise the interest calculation module. Karin Martinson asks about what the risks are for additional, similar problems, to which Johan answers that the risk is limited; there would only be small problems if any at all. Karin asks about summer vacations, and Johan answers that they have been concentrated to five calendar weeks. Then, Johan explains that the separation of remaining requirements into a separate sub-project (NDS2) is important for the time schedule and that this task may delay implementation until early autumn 1994, too close to year-end for comfort. Several committee members stress the importance of meeting the deadline for the project.

Johan also informs the committee about the new migration strategy and reports an eight person-year resource increase due to that. Karin comments that the reduction in risk is worth every penny. The group proclaim their support for the new migration strategy. A discussion on user-oriented information material for NDS ensues, and it is decided that this information should encompass NDS, NewCust, and NewCorp. Ingmar Mankell, who is added to the working group for this task, also stresses the current need for personnel information, preferably through the corporate magazine. It is decided that people in the project will contact the editor. Then, a discussion on the January-February review follows. Johan comments that he finds the report's assessment of the identified problems and risks (possible failure is indicated) somewhat exaggerated. Henrik and Erik agree. Johan comments that too early a freeze on change requests for DepSys would create too big a backlog, that phase-out of personnel in late stages is a known problem that is being planned for, and that there is no competence shortage in the project at present. There is no major discussion after these comments, but Ingmar Mankell asks that for the next review, the report is made promptly available to the whole group, something which Henrik promises.

The meeting seems to reflect the project's running along, and the close contacts between the project manager and a subset of the steering committee, encompassing Henrik, Erik and Karin. Also, Johan Sjöberg seems to engage committee members in the adventures of the project and its outcome. At the same time, some committee members are "out of the loop", perhaps most prominently Ingmar Mankell. Frans Trenter, although attending this meeting, is less active in the committee and sometimes does not attend committee meetings:

> *Then, after the hearing, [the project] rolled along fine. I didn't engage myself that much in the project then. ... I have great confidence in Karin Martinson, and Gustaf Söderberg, Oscar Kirkegaard and Inger Boye are competent young [people].[104] And Nils [Høeg] came into the project. That was important too. He had been my head of administration in [my previous region]. He has both branch office and region experience. I was in contact with Karin Martinson routinely of course. ... [Towards the end all I could do was to] cross my fingers.*
>
> *Frans Trenter, executive vice president*

But in mid-1992, Frans did more for the project than cross his fingers. In addition to attending meetings and keeping up to date on developments, he informed his colleagues in the other regions about NDS, often a hard sell.

> *I told the other region heads that you can't have everything at once, first we have to get the heart of the business working [then we can do other things].*
>
> *Frans Trenter, executive vice president*

Karin Martinson informed people about the project in region headquarters and Stig Vennberg also continued to inform about the project. At a group management meeting, he presented costs to be debited to branch offices and in late spring he informed about the project at a meeting for senior staff managers at headquarters.

The NDS project starts to play a part in changes in the IT department.

At this time, the NDS project began to influence the IT department's organization and operations. One initiative spurred by the NDS project came from Gustaf Söderberg, who feared that Stig Vennberg would soon ask...

[104] Oscar Kirkegaard and Inger Boye were in the project team.

> *... "OK, so what is the next big system?" [Thinking about] that was a nightmare. So I wrote a memo called "A New Era for Systems Maintenance".*
>
> *Gustaf Söderberg, head of systems development*

In the memo, Gustaf argued for viewing information systems as capital investments, such as a building or a paper mill, and pointed to the need for maintaining them actively to avoid decay, thereby avoiding or at least considerably reducing the need for large-scale, high-risk development efforts. Gustaf's initiative led to a change project within the IT department called Active Maintenance.

Active Maintenance was among the issues discussed at Stig Vennberg's yearly IT department visit in early May, and it clearly was in line with a comment of his during the visit: "One doesn't always have to start from Adam and Eve [in analysis work]" (quote from IT department newsletter). Other major issues discussed included IT cost developments, local IT departments, enhancements to the existing hardware platform, emergency planning, and the NDS and NewCust projects.

The CEO's and CITB's focus on the increasing IT costs linked with plan revisions in the NDS projects to cause one of the few significant incidents in the interaction between project management and senior executives during this period. Apart from refining and revising plans for the project, revisions of estimated operating and maintenance costs for the new system were also made in the project at this time. In connection with this work, Nils Høeg in an informal conversation with Karin Martinson mentioned some new, preliminary figures concerning operating costs for NDS. Karin Martinson in turn mentioned these in a conversation with Stig Vennberg and following this, Stig brought up the issue with Henrik Bergman. At this time, Henrik Bergman was unaware of the revised figures. After the discussion with Stig, Henrik calls Johan Sjöberg and somewhat heatedly points out the inappropriateness of what has happened. After discussing this and addressing some issues of trust, they decide to let the matter drop. Johan follows up with a talk with Nils. The incident is not repeated. Operating costs would, however, be one of the subjects in the next CITB meeting at the end of May. Another important agenda item would be the NewCust project.

Prior to the CITB meeting, the newly appointed project manager for the NewCust project, Aksel Henriksson, and his support Christian Englund meet with Henrik Bergman to report on and discuss the revised plan for the NewCust project. Aksel and Christian report a revised project budget of 5.5 million euros, compared to the earlier 3.9 million. Henrik responds to the new figure by asking how large the buffer is in the new budget, whereupon Aksel and Christian reply that the buffer is around 0.7 million. Henrik comments that he is willing to go CITB and ask for more money for NewCust once, but not twice. He then suggests seven million euros as the grand total of the new project budget and asks if that will be sufficient. Aksel and Christian reply that seven million will surely be enough.

At the CITB meeting in late May 1992, Erik Östergren reports on ongoing projects, including NDS, for which he reports that work progresses according to the timetable, but that margins are slim despite very hard work by many in the project. The "best possible [resource] estimate" (quote from meeting minutes) for the project is now 350 person-years. Gustaf Söderberg reports on IT resource use, after which the head of the merchant banking division presents a proposal for acquiring a standard application package for parts of the trading operations.

At the May 1992 CITB meeting, the head of BD reports on a cost increase for the NewCust project from 3.9 to 7.2 million euros. He recommends continuing the project.

While NDS is not discussed as a separate agenda item at this meeting, NewCust is. Henrik Bergman starts by referring back to the CITB decision of October 1991, the budget of 3.9 million euros and the signs of problems starting in December 1991 leading to replacement of the project manager in the spring. Henrik then presents two alternatives: Either, following through with the current project, at a total cost of 7.2 million, or change NDS to include the essential NewCust functionality, at a cost of 5.5 million and one year's delay of NDS. Henrik recommends the first alternative, on the grounds that completion of the task can be assessed as certain, that the timetable does not jeopardize the NDS timetable, and the new project manager's experience ensures that no further cost increases will be necessary. He also reminds the committee of the advantages in terms of improved information systems structure and functionality of the NewCust system. The CEO concludes that the NewCust project is to be carried out according to the first alternative.

After the meeting, Stig talks in private with Henrik Bergman. Ensuring that he will not hold Henrik's answer against him, he asks if Henrik thinks that the NDS project will work. Henrik answers that he thinks it will, and that he would be more worried about the consequences of not going through with the project. Stig, whether or not seriously doubting the feasibility of the project, clearly did care about the associated risks:

> *No, I didn't doubt [the feasibility of] the project in any serious way. ... No, not* doubt, *but of course I felt there were risks. Of course I didn't want to become the last CEO [whose picture is] hanging in the boardroom. I had decided that [the project] should be completed and of course there were risks. Things could happen which would have great consequences for the bank, [for example] with the bank's customers upon implementation.*
>
> *Stig Vennberg, CEO*

In the midst of cost increases and management concerns, positive events dominate within the project. There is a big spring party for everyone involved in the project, and there is, for many of the sub-project managers, graduation from the leadership development program started the previous autumn. The graduation takes the form of two intense days working on the NDS migration/implementation process, including a visit by the CEO, who talks about his view of the NDS project and its importance and about leadership. Even more important, in June the first transaction is successfully processed by the first modules of NDS, as part of the testing activities.

In the midst of management concerns, the NDS project is more stable now than it had been; considerable results are being produced.

In the early summer of 1992, the NDS project is internally much more stable than a year earlier. The previous year's work had produced considerable results, the analysis was now actually close to finished and construction work was well under way. Since the start of 1991, considerable changes in project organization and project planning and control procedures had been made, and since the February 1991 hearing, the control of the project by the steering committee and corporate management had been considerably more consistent and supportive than before the hearing. But completion of the project was still far off and the problems far from over. According to the timetable, there were two years to go, there was no slack in the plan, resource consumption was a continuing problem and the activity level in the project was intense. The "NDS train" was on track and gaining speed, but it had a heavy load to pull and was still a long way from its final destination.

4.7 Long Railroad to Completion (1992–1993)

In August 1992, the project management team meets at Johan Sjöberg's summer house for an autumn kick-off meeting. During the meeting, the editor of the corporate magazine *FSC News* visits to interview and take pictures for articles in the magazine. She had been approached by people in the project (probably Johan) and had also attended one of the meetings during the spring where the CEO informed about NDS.

The meeting resulted in yet another reorganization within the project. The Design sub-project restarts and incorporates NDS2 and Method, and Production Test and System Test start. Another recently started sub-project is *NewProd,* which concerns a separate information system for product information. The project Personnel function grows in importance in anticipation of upcoming personnel reductions in the project, and it is included in the project organization chart (see Figure 14).

As Henrik Bergman is promoted to a different post, Karin Martinson assumes responsibility as commissioner for NDS.

At this point in time, Henrik Bergman is promoted to a senior position in FSC's merchant bank division and leaves the steering committee and his assignment as commissioner for the NDS project. Karin steps in as commissioner on an interim basis. After discussions involving Johan Sjöberg, Erik Östergren, Karin Martinson and Stig Vennberg in different combinations, it is decided that Karin should stay on in the role of commissioner throughout the NDS project. This solution was largely at the request of Johan and Erik that the continuity of the project was important and that this continuity required someone

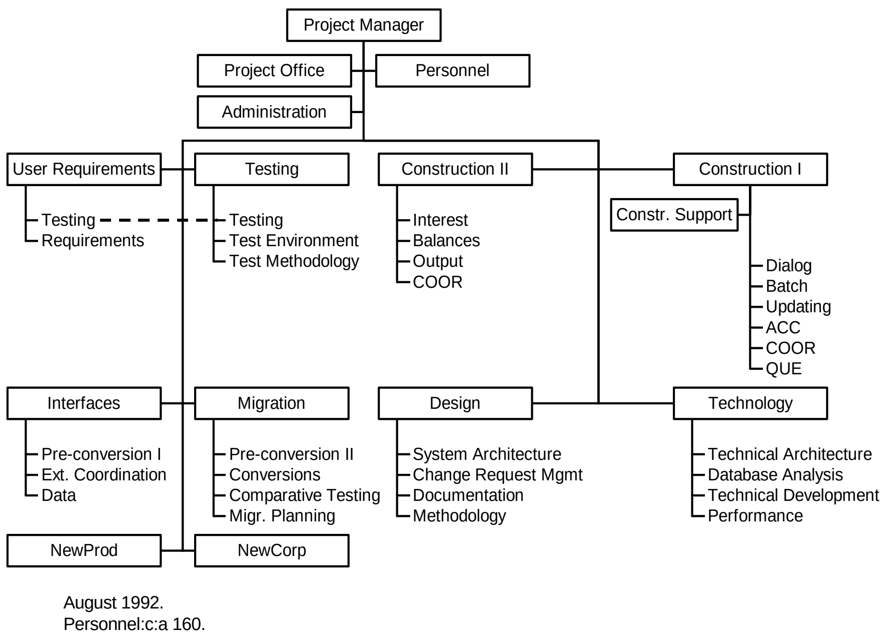

Figure 14: NDS Project Organization August 1992 (source: project newsletter)

already familiar with the project as commissioner. The new head of the BD department, Märta Bremer, would participate in the steering committee meetings, but Karin would chair them and act as commissioner.

Following the project management meeting, revisions of project plans by the two people in the project office lead to the first indications of a new, looming cost crisis for the project. Johan Sjöberg is informed, but the three of them keep the information to themselves for the time being. These first indications were probably found before the steering committee meeting at the end of August.

Expressing confidence in the project, the project manager reports incremental cost increases as well as substantial progress at the August 1992 steering committee meeting.

At the August steering committee meeting, Johan as usual reports on project progress. First Johan reports that one of the system modules now uses the new DBMS. Henrik asks about how operations function and Johan replies that CPU-utilization is 50 percent higher than with the previous DBMS (the module has not been performance-optimized yet), but that response time is the same as earlier. Johan then reports that the currently planned number of pre-conversion tasks is now 84 and that 12 interfaces have so far been converted without problems.[105] Management of customer information in connection with changes in these systems are discussed.

Johan then informs the committee that the lack of personnel with in-depth knowledge about DepSys may lead to bottlenecks in the project work. Henrik asks about project risks, and Johan answers that there are certain risks and uncertainties but that he is confident that the project will be completed successfully. Johan then presents the new migration plan. The new plan leads to a cost increase of 1.9 million euros, half of which due to additional performance tests. The committee decides to approve the migration plan, but assigns Johan to bring back the issue of the performance tests to the committee at a later time, for a separate decision.

Another agenda item concerns information to branch offices. Nils Høeg presents a plan and reports that a group working with the matter has been formed. The group will also be of help for matters concerning the project where the support of branch offices is needed. NewCust is not discussed; a status report has been distributed and no deviations from the plan have been detected. At the end of the meeting, Johan hands over a gift to Henrik and thanks him for his contributions to the project.

Just like the previous meeting, this meeting also contains reports on incremental cost increases and additional problems, but there is also information on substantial progress in the project work. Johan expresses and demonstrates confidence in the project, and although the committee tries to tighten resource consumption, it is doubtful whether they have the means to do that. And in September, the design work is finally (as good as) finished. The common description of the NDS project (e.g. in newsletters) is that it is running very well.

The September CITB meeting is devoted to NDS, save for the usual brief reports on current projects (by Erik) and on resource use in IT during 1992 (by Gustaf). After this, Karin recapitulates information about system functionality for

[105] As described earlier (e.g. pages 137, 145), "pre-conversion" means that the interfaces of other information systems are changed to function as if NDS was already implemented, before this is the case. The purpose of pre-conversion was to significantly reduce the complexity and risk of the switch-over (or migration) from DepSys to NDS.

NDS and presents the current time and cost plans for the project. She also describes major changes in the plans, such as the incorporation of dialogue functions in branch office computers and the new migration strategy, as well as presents project costs for the years 1992–1994 (30 million for NDS, 6.5 for New-Cust). NDS is reported to have higher operating costs, which are offset by efficiency gains. Erik describes the new migration strategy in more detail and reports a two-to-four month delay in the project. Gustaf points out that the current introduction of a new product places additional restrictions on the few people who know the old system and who are needed for pre-conversion activities in NDS. Erik reports that staffing in the project will be reduced from the current 170 people to around 30-40 people in the maintenance organization. After the quite thorough presentation, the meeting is closed with little or no discussion.

At the meeting, Karin and Erik, with the help of Gustaf, jointly made a well-prepared case for NDS, in spite of the additional resource increases. Perhaps the presentation temporarily helped to ward off hard questions, but there would be additional reasons for questions at the two following CITB meetings.

Information activities directed towards the organization from the project and from executives involved with the project continued during the autumn. Stig Vennberg visited branch offices for the second year, which gave ample opportunities and reasons for discussing NDS, and Erik Östergren participated in monthly group-management meetings to provide information about the project. Frans Trenter kept up the dialogue with the other heads of regions.

> *I didn't discuss NDS that much [with branch managers]. We had regular branch-management meetings [in the regions], and I guess I talked about the project to some extent. But there was good information from the project to the organization, such as* NDS News*, and there was also sometimes information in [the CEO's] monthly information letters and in my monthly information letters within the region.*
>
> *Frans Trenter, executive vice president*

However, the distribution of development costs to branch offices which began in March had made it more important to address the questions and concerns of branch offices. A common view among people in branch offices was that they were not sufficiently informed, and that the NDS project made headquarters, specifically the BD and IT departments, even less inclined than usual to act on change requests from branch offices:

> *We didn't get any [information on the project] as far as I can remember. Stig Vennberg wrote about the project in the annual report and in his internal organizational memos. I think it basically said that the system is very expensive, that it was the largest venture in the bank, and that during the project no other requests [for changes in information systems] could be met.*
>
> *FSC assistant branch manager*

While branch offices were used to hearing about the backlog and about how other priorities made change requests less likely to be met, what they were now hearing was that the NDS project was the number one priority, making it unlikely for change requests to be met in the near future, *and* that changes to the old system would have to be canceled altogether for 18 months prior to implementation of the new deposit system. The level of understanding and trust and was such that some people in branch offices suspected NDS to be a convenient excuse for not meeting user needs.

The first autumn issue of FSC News contains two large articles on the NDS project. In the following issue, a reader's letter calls the project "a playground for consultants."

In the autumn's first issue of *FSC News,* two large news articles about the NDS project appear. The articles focused on the project work as such, on the importance and necessity of the project, and also on the user representatives, people from branch offices who told "their" stories about what it was like to work in the NDS project and how important it was. Although the articles were written in a very positive tone, some people in branch offices were less than enthused with what they read. In the subsequent issue of *FSC News,* there was a long anonymous reader's letter with the heading "A Playground for Consultants?" The reactions were not very surprising to those who had talked about NDS with people from branch offices: How is it possible that an information system, and a replacement at that, can cost that much? How can it be that the whole company cuts costs and saves pennies, and this project costs astronomical figures? Is this a playground for expensive consultants? How can this be ethical given how we[106] have to skimp and save? The letter was answered in the same issue by Karin Martinson, who explained some of the complexities in the project work and argued for its importance. The argument continued in the following issue.

There was also an increase in information activities within the IT department at this time. Johan Sjöberg had started to write short contributions in the IT department newsletter during the spring. In the autumn, he participated in kick-off meetings within many units within the IT department, to inform them about the project and explain how and why the project would affect most of these departments on its way to implementation. An important reason for doing this was a certain grudge or enmity towards the project from people in other parts of the IT department, caused partly by the visibility of the evolving team spirit within the NDS project, the amount of resources poured into the project, the high status of working in the NDS project, and the extent to which the project influenced activities within the department. Johan Sjöberg, Erik Östergren and Gustaf

[106] "We" probably also implying "the people who earn the money".

Söderberg tried to offset this, and increased interaction between the project and the department was one way to do so.

> *I found it important to make the NDS project belong to the whole [IT] department, and that happened with the system interfaces [and pre-conversion work]. There were many interfaces and many systems are completely redone to work with NDS.*
>
> *Johan Sjöberg, project manager*

> *A lot of the management activities [in the IT department] were oriented towards this. There was a lot of work in the leadership development program geared towards NDS and we had IT management conferences with 30-35 people working on how to support NDS. It was important not to leave the project by itself, [but instead] to make it a common concern.*
>
> *Erik Östergren, IT manager*

In October, a project management meeting is held at a conference site, with the project manager, the two people in the project office and all the sub-project managers present. The meeting soon comes to focus on the looming cost crisis in the project, and the deadline problem. One estimate made in the project office at this time, showed that ten million euros had been used during 1992 and *another 50 million* euros would be required to finish the project. The original meeting agenda is thrown overboard, and the meeting breaks up into small groups to find solutions. The meeting results in a revised project plan and cost estimate, and a renewed sense that the task is possible. The new plan lands at 460 person-years and 50 million euros, the upper cost limit set by the CEO two years earlier.

> *During project planning, deliveries from construction teams are structured and assigned different colors, which are then used to concretize the program code deliveries.*

The project management team's work with project planning also resulted in an innovation which would have a substantial impact on how the project was viewed and managed. The planned deliveries from the two construction teams were divided into four large chunks and one smaller chunk, and these chunks were named Red, Green, Blue, Yellow and White. The "color deliveries", as they were soon named, were to be delivered with an interval of about four to five weeks, starting at the end of February 1993. Exact dates were set for the deliveries, determined by starting with the necessary dates for migration and counting backwards.

The implications of this structuring of the output from construction were that it helped visualize and concretize what should be delivered when. Through this it also provided a means for communicating about construction deliveries and project progress within the project as well as externally. This also meant that in the coming months "the color deliveries" would also became a way to describe progress to the steering committee. Presently, however, Johan had concentrated on informing Karin, Erik, Frans and other members of the steering committee about the revised project plan and the additional cost increases in the new plan. The November steering committee meeting was well prepared.

The meeting started with good news about NewCust: The new project manager reported on a project meeting deadlines, projected to finish on time and with little risk of "incremental increases in ambition level". The one risk at this time would be changes in requirements concerning the interface to NDS. A review of the NewCust project has been carried out by a major IT consulting firm and actions had been taken in response to the results.[107] Karin asks for a reaffirmation of project plans in two months (at the next steering committee meeting). After this, Johan reports on NDS. He informs the committee that new system interfaces are continuously discovered and that this is worrying. Karin comments that change requests have to be prioritized so that the ambition level is kept under control. Frans Trenter asks if NewCust can cause delays for NDS, and Johan answers that he is not worried about that, but that NDS will affect NewCust. Frans, referring to a very public IS implementation failure in another company at this time, stresses the importance of the extensive performance tests earlier discussed. The group decides to approve these performance tests.

After this, Johan goes through the revised project plan, with new deadlines. He reports that there are significant risks in the deadlines, but that he wants to keep the planned migration/implementation date, due to problems with postponing implementation.[108] He then stresses that all changes to DepSys need to be halted immediately, and that change requests concerning NDS have to be managed very restrictively, including trying to postpone adherence to new legal demands. There is no major discussion on the plan and cost revision. At the end of the meeting, the union representative Ingmar Mankell (whose regular office is in a different region) stresses that meeting material should be sent out in due time, so that those who are unable to follow the project on a daily basis can familiarize themselves thoroughly with the issues to be discussed. Johan Sjöberg makes a promise to that effect.

Ingmar Mankell's request provides a clue to the fact that the revised plan met with little or no discussion, in spite of hitting the 50 million euros mark in project cost. Again, the meeting was well prepared in advance, although not all group members were equally well briefed:

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107 The consulting firm characterized NewCust as a highly complex project in their review.

108 The principal problem was that a relatively minor delay in getting ready for implementation (e.g. until September) would create risks related to the year-end. There might be insufficient time for tests and/or for rollback to DepSys after possible implementation failure or discoveries of system malfunction. Avoiding these risks could mean a further postponement until the following year.

Sometimes I felt that 'OK, informal contacts are necessary, but...'. Sometimes—sometimes an issue was already settled when it came to the steering committee. By that time it was ridiculous to bring it up in the committee. I understand that they talked to Frans, you can't bypass an executive vice president. But you could bypass the union representative...

Concerning the informal contacts between meetings, I think they led to more formal meetings with me and some others as hostages.

Ingmar Mankell, NDS steering committee

Soon after the committee meeting, the planned freeze of systems maintenance is effectuated—sort of. All deposit-related applications and all application with interfaces to NDS are "frozen"—no changes are allowed. Development activities can go on, but not implementation of the changes. Exemptions are granted by a (restrictive) committee consisting of Gustaf Söderberg, Johan Sjöberg and Nils Høeg. However, putting a stop to changes in DepSys was not that easy:

Well, then there were amazing problems. We were to take the functionality of DepSys over into NDS, but DepSys kept being changed, so we decided that no changes were to be made to DepSys for 18 months. We shut down what we considered to be the main inflow of change requests, but a month later the number of implemented changes were back at the previous level. People from branch offices phoned in [change requests], [and] people in BD had lots of channels into the IT department.

Gustaf Söderberg, head of systems development

Eventually, Erik and Gustaf and NDS project management succeeded in gaining control over the inflow and processing of change requests, mostly through bureaucratic means such as using specific forms for change requests to be signed by an authorized person from the BD department, and having all requests go through one of two approval committees (one of which only met monthly). These events functioned as an eye-opener which later led to a review and revision of routines for managing requests and assignments from the business in the IT department.

In close connection with the steering committee meeting and the gathering of support for the new project plan, there is also a CITB meeting scheduled (one week after the steering committee) and thus a need to inform Stig Vennberg about the developments in the NDS project. Erik was involved in meeting with Stig, as was Karin (but probably not Johan, in spite of Erik's recollection to the contrary). When they informed Stig, he questions them in a way which is perceived as quite intense at least by Erik:

We had not too nice a meeting with Stig before announcing the cost increase from 35 to 50 million in CITB. ... Stig is very demanding and this was right in the

> *middle of the banking crisis... Stig did not let it go through casually. It was I, Karin and Johan. [I] don't remember the details, only that it wasn't exactly pleasant.*
>
> *Erik Östergren, IT manager*

> *No [I don't think there was such a meeting], not that I participated in anyway. But I never had anything to do with the CITB...*
>
> *Johan Sjöberg, project manager*

These differences in recollections are congruent with Johan's and Stig's agreement during the hearing process (see page 154) and with Stig's retreat to the regular command structure after the hearing process and subsequent decision. It is also congruent with IT cost control as an important part of his relationships to both the current and the previous CEO (see pages 126, 170 and 178). Considering that Johan was never involved in the CITB, it is most likely that Erik and Karin met with Stig to inform him of cost developments in the NDS project.

At the start of the CITB meeting, Erik Östergren goes through ongoing projects, including NDS. For NDS, Erik initially comments that a more extensive report will be given at the next CITB meeting in March. He then informs them that 50-60% of the construction work is completed, that system testing has begun, that 47 of 110 pre-conversions have been made, and that a two-to-four month delay needs to be made up for the migration date to hold. The CEO asks Erik if everything is under control up to migration. Erik answers that it would be wrong to say that every detail is under control, since there are for example performance problems being investigated. The CEO asks what will happen if NDS is not ready on time. Erik answers that there are two possibilities, either to uphold the freeze in changes to deposit-related systems, or start making updates to DepSys, in which case NDS and DepSys would have to be updated simultaneously to maintain identical functionality, which would be very difficult. NewCust is reported to be well on track with no risks for delays.

The meeting continues with discussions on six other ongoing projects, for which there are no major crises reported. After a report from Gustaf on IT resource use, a discussion concerning a new project is the last agenda item. The new project concerns IS support for a new type of services to be launched and the discussion encompasses marketing, organization and IS/IT issues.

In connection with major cost increases, NDS project developments were reported to the FSC board of directors.

In connection with major cost increases, NDS project developments were also reported to the FSC board of directors. NDS developments were never one of the main items on the board's meeting agenda, and they were usually reported in terms of resources and progress:

> *NDS was on the board's agenda a few times. It was when time and cost changed; that was reported to the board.*
>
> *Axel Rydberg, chairman of the board*

Although cost increases were reported, they did not need approval by the board, partly because of how costs for development work are viewed in FSC: hardware investments are activated in the balance sheet, while in-house software development is viewed as a cost:

> *The way it works is that for software [development] we can take the costs directly, but hardware investments become issues for the board. That's how it works. Maybe it's an old residue in FSC and it's still very much that way.*
>
> *Stig Vennberg, CEO*

Apart from resource consumption, there were also other factors of interest for the now chairman Axel Rydberg and other board members:

> *Well, seen from the board's perspective, [we] cared a lot about security issues, that nothing would happen with the customers' accounts, for example that account balances changed or that customers got each others' accounts, or something like that. That is just not permissible. And we cared about the costs, that they wouldn't increase too much. ... And they were to be booked as operating costs, none of it was to be activated in the balance sheet. This is a normal cost in this type of business. And normally you fool yourself if you believe that cost increases [resulting from these projects] are temporary and that costs will decrease again. That usually doesn't happen.*
>
> *Axel Rydberg, chairman of the board, former CEO*

Neither now, nor later, did the board act on the information received concerning the NDS project. From the board's perspective, the matter was one for the CEO and his reporting officers, largely because of how the allocation responsibilities is determined and viewed by the parties, but maybe also because of competence aspects.

> *What's important for us on the board is that management understands how to use new tools like this in a good way and that they can link them to the business, to operations, to the organization we have and to customer needs—that they are used in a way which is in line with how we work. And I think they do, and so it's no big thing for the board.*
>
> *Axel Rydberg, chairman of the board*

> *Yes, it's a difficult question for them. Boards probably have difficulties assessing IT compared to other issues.*
>
> *Stig Vennberg, CEO*

Although a new migration strategy had been worked out during spring 1992 and later approved by the steering committee (see page 174), the matter was not settled. Several prior attempts had been made to find a less risky migration strategy, but none of the proposals had been deemed feasible. Even with the new migration strategy, the consequences related to a possible system failure were considered to be severe. A prolonged standstill of banking services, a delayed breakdown of the new system (e.g. due to hardware capacity problems), and the possibility of inconsistencies in account balances were considered scenarios which were deemed likely to cause the defection of customers and loss of customer goodwill and trust of major proportions.

Towards year-end, the technical architect discovers that the migration strategy might not work. After the IT manager organizes a working group, a successive migration strategy is designed.

In addition, towards year-end Jonas Ferlin, the technical architect, pointed to another risk: one long weekend might not give enough time to perform the migration process by which all data and all incoming transactions would be taken over by NDS. This was very important, since at this time two or three previous investigations had shown that "big-bang" was the *only* option. Subsequently, an amendment to the "big-bang" strategy had been found, but now Jonas' discovery indicates that the "big-bang" migration strategy (amended with the shadowing arrangement or not) might *not* be an option—*either.* The options for the migration process were two impossibilities.

> *Erik Östergren did something really great there. Erik said 'We* have *to have successive migration. We have to put our best technicians within and outside NDS together to investigate this.' Erik was also in the meeting that started the work. The group eventually found a way to [carry out a] successive migration.*
>
> *Johan Sjöberg, project manager*

Erik made clear to the group that a direct switch-over, a "big-bang" (or variation thereof) was too risky and that there *had* to be a different solution. The group, led by Jonas Ferlin, worked through most of the year-end holidays and came up with the blueprint for what would be the project's final migration strategy in early January 1993. The new plan meant that the new system would be started with only a few "live" customer accounts, then one branch office would be added, then about ten branch offices and some separate units of FSC, and finally the remaining branch offices would be added. Each of these steps would be carried out during weekends and each step would have a option to roll back to the old system.

By now, NDS and NewCust were like the proverbial dog's tail wagging the dog (the IT department). Much of the work in the IT department was now geared towards supporting NDS/NewCust (e.g. pre-conversion work), NDS/NewCust resource needs and costs limited the capacity for other work, many systems had frozen functionality specifications until NDS was implemented, and, on the positive side, practices from NDS were spreading in the IT department (such as the start of a IT project office). To coordinate and plan NDS/NewCust and other major efforts, the IT department had held a project conference in early December, with key people from different parts of the IT department and large projects. This conference and other similar activities would continue to be important for building and maintaining interaction between NDS/NewCust and other parts of the IT organization, where people sometimes felt they were—being wagged.

> *The level of support [from the IT organization] was exceptional. It was almost too much at times. ... There was some excess force used on the environment. ... It was things like when people [in the NDS project] said 'you wouldn't want to risk NDS, would you?' when others [outside the project] were to do things that the project needed. It was a bit unnecessary at times.*
>
> *Christian Englund, external consultant*

Two of the sub-projects within NDS which had frequent contacts with other parts of the IT organization were Migration and Interfaces (managing pre-conversions). For Migration, the computer operations group would be frequently affected later in the project. At this time, Interfaces had contacts writing contracts: The Interfaces sub-project met with systems groups in IT responsible for maintaining systems interacting with DepSys (and thus later with NDS). In these meetings, where people from other parts of the NDS project also attended, written contracts which specified exactly how these other information systems were to interact with NDS and when they would be ready to do so, were drawn up and signed by the "parties".

In the project work, the project follows the project plan's critical path (which means that any delay would directly affect the deadline) and many people work nights and weekends. During tests, performance problems have been detected in all major program modules and in one meeting, Jonas Ferlin comments (something like) "There is no computer in the world that can make this system run". Johan appoints Jonas Ferlin "performance general", meaning that Jonas has authority to act directly on any and all issues relating to performance in all sub-projects within NDS. A separate sub-project for Performance testing is also started.

At the January steering committee meeting, Aksel Henriksson reported good progress in the NewCust project. Johan then reports that the situation for NDS looks substantially better than in November, that pilot tests have been successful and that system quality seems to be good. Johan also reports that the Performance testing has been made into a separate (and critical) sub-project, and that the maintenance organization for NDS will be planned for during the spring.[109] After the status report, Johan describes the work of finding a new migration strategy. He presents how it will work, that it will cause more work in the IT department but less in the NDS project and that additional costs are about 0.8 million euros. In the report on the new migration strategy, the IT operations department advocates sticking with the "big-bang" approach, but Erik Östergren comments that the new approach actually would also work better for operations. Most participants dismiss an alternative which would mean that both systems would run in parallel during an extended period, managing different account types. Märta Bremer points to needs to reduce the time frame for migration and risks concerning rollback if many branch offices have been moved to the new system early. After considerable discussion, the group decides to approve of the new strategy, given that the Business Development, Accounting and Auditing departments approve.

So the reception of the new migration strategy was somewhat mixed in the steering committee. But in contrast to several previous occasions, the intense discussion had a somewhat different flavor and effect—Johan was beginning to use the steering committee partly as a reference group:

> *You could say that Johan used the group like an instrument... For example, the migration strategy led to a critical discussion in the group. All the critical issues came on the table, and Johan took the results from the discussion and went ahead with [and took care of] them.*
>
> *Gustaf Söderberg, head of systems development*

At this time Johan's informal contacts with some of the people in the steering committee were also to some extent formalized into what was called "the small steering committee", which included Johan Sjöberg, Nils Høeg, Karin Martinson, Erik Östergren and Gustaf Söderberg. These meetings were alternated with the regular steering committee meetings, each about every two months. Another, minor, change in project management at this time is that, beginning January, *NDS News* is issued monthly and used to report on project progress and plans. In each issue there is also a guest writer from outside the project (mostly people in the steering committee) who writes about his/her view of the project and expresses his/her support.

> *"Red" delivery arrives on time from the Construction subprojects at the end of February 1993.*

At the end of February, the first delivery of modules ("red") is made to System Testing. The delivery is made on schedule and the event is celebrated at a breakfast for the

[109] This would mean that the maintenance organization would start one year before implementation.

whole project, where everyone in the project gets a red artificial flower and Johan praises the group for a job well done.

> *[The colors] were clear and visible milestones to be able to start* testing*. Everyone worked like hell to meet them. It became a race, prestige, between the two construction teams. The concentration gets very intense when you do it this way.*
>
> *Olof Tunström, NDS project office*

Things were lightening up somewhat in several respects. In February a trade magazine describes the NDS project as one of very few successful systems development efforts of its size and complexity and contrasts it with other, abandoned efforts in the financial sector. In addition, FSC has come through the previous year's crisis in the financial sector with good earnings capacity and high but manageable credit losses.

At the CEO's annual visit to the IT department in March, functioning parts of NDS are demonstrated for and tried by the CEO, and he receives—to his own and others' amusement—a "System Tester Diploma". Other items during Stig Vennberg's visit included a briefing on the new, cost-saving data network for overseas offices; management of the bank's 1300 PCs; efficiency and reliability in mainframe operations including favorable bench-marking against competitors; the Active Maintenance initiative and NewCust. Cost reductions were still an important theme, and Erik Östergren later informs in the IT department newsletter that IT costs are to be reduced to the 1991 level after the large projects have been completed.

IT costs and NDS progress are in focus at the March 1993 CITB meeting.

In mid-March, CITB has its first meeting since November. Erik Östergren reports on ongoing projects and Gustaf reports on resource use. As part of his presentation, Gustaf confirms that the IT department adheres to FSC's current hiring freeze—except for five key people with very specific competence which was not available in-house. The CEO asks about total costs for the IT department for 1993. He gets the answer that they will be somewhat below the 90 million euros for the previous year and that they will be substantially lowered in 1994. After discussing two other ongoing projects, the meeting turns to NDS/NewCust. Erik Östergren first reports on NewCust, informing the group that there are some cost additions due to additional work needed, that the current project staffing of 37 people will be reduced to eight in maintenance operations and that the project plan looks very solid.

Turning to NDS, Erik repeats the project goals and intended effects at some length and goes on to report that 70% of programming and (already) 50% of system testing has been done. Current total costs are 28.5 million, and the total estimate is 46.3 million euros. He then describes performance problems caused by the new DBMS as a serious risk and uncertainty, points to the very tight timetable, but also stresses the high motivation and competence present in the project. The CEO asks if implementation is possible in the autumn of 1994 and Erik answers that it is if delays are limited, otherwise implementation has to wait until 1995. Another member of CITB asks if it is true that FSC will be far ahead of its competitors when NDS is in place. Erik answers that this is undoubtedly the case, and Karin Martinson adds that NDS and other projects to be finished in 1993 will create a new systems structure for retail banking operations as well as for some parts of the merchant banking division. Erik closes the presentation by commenting on the importance of reducing the number of consultants in the near future. Stig Vennberg closes the meeting.

In the corporate IT board, Erik and Karin (and Gustaf) are now in a position of speaking *for* the project, evidenced e.g. by Erik's careful recapitulation of goals and effects (benefits) of NDS at this meeting. The CITB meetings were thus at this time becoming quite different from the steering committee meetings, exhibiting more tension and more questioning of NDS/NewCust, whereas the steering committee was gradually shifting towards a supporting rather than controlling role.

At the March steering committee meeting for NDS and NewCust, Aksel Henriksson reports that the NewCust project follows the project plan and costs. Aksel also reports that CPU-usage by database queries has increased between 30% and 100% after switching to the new DBMS, but that response times are close to the same. Gustaf comments that this concerns a minor part of the total response time. Karin asks if all the testing activities are worth the cost, and Erik answers that they are because NDS depends on a well-functioning NewCust. Additional questions are answered by the project manager, and the group suggests that the remaining "change requests" to be handed over to the maintenance organization are called something else.

Johan then reports on NDS, informing the committee about the upcoming red delivery and that an additional 2 person-year resource increase compared to plan are needed to meet the red delivery deadline. Ingmar Mankell asks about personnel workload, and Johan answers that some individuals are watched for possible exhaustion. Karin Martinson stresses that the project should go back to the "customers" of the project and investigate possibilities for reducing ambition levels (i.e. functionality). Johan points to the upcoming "green" deadline as crucial. Märta asks about some of the current cost/benefit figures and Erik volunteers to investigate and report back. Some additional minor issues are raised and answered by different people in the group, typically with the aim of reducing pressure on the project.

One week later, the green delivery is completed on time. At a gathering the morning after the deadline, everyone in the project gets a folder with a green flower, a green apple, a bag of spinach seeds and a note from Johan printed on green paper. There are some short, playful ceremonies involving the programming and testing teams, and there is even green champagne and a piece of green cake for everyone.

The blue delivery is completed in early May, in accordance with plans, and duly celebrated like the previous deliveries. Other events in the project at about this time include performance improvements and increased test activities. The increased test activities lead to conflicts with IT operations over access to test facilities and over forms for running the tests as realistically as possible on the one hand, but without causing risks for disturbances in operations on the other hand. Cooperation improves considerably between the project and the operations group during late spring and autumn.

The "green" and "blue" deliveries in NDS are completed on time, and the NewCust project reports progress according to plans during spring 1993.

The project office has continued to monitor the enduring cost squeeze for the NDS project and in May, Olof Tunström from the project office puts heavy pressure on sub-project managers to reduce headcount in their sub-projects without delay when work tasks as tasks are finished and to plan for shutting down their respective "shops". Current plans call for about 100 people to leave the NDS project during 1993. A direct reason for the cost incurment is the 25 percent increase in average work hours during the spring. People in the project worked even harder than earlier and many (or most) enjoyed doing so.

> *It was* fun *in the NDS project. People got to go places, do things. It's more fun to be a sub-project manager in a large project than to be project manager for a small one. There is a sense of community. But [everyone] worked incredibly hard. Afterwards you can think that you weren't really sane. You were engulfed in it for years. A lot of people just exerted themselves...*
>
> *Ellen Sandel, sub-project manager*

The continuous cost and time squeeze also contributes to continuous reminders from Erik, Gustaf and Karin—in steering committee meetings, monthly project management meetings and elsewhere—to "avoid increases in ambition level" (quote from successive guest writer columns in *NDS News,* written by Gustaf and Erik). Gustaf, Erik and Karin are among the steering committee members most frequently present at the monthly project management meetings. Märta Bremer from BD also visits in April, and in addition personally visits the System Testing sub-project in May, to learn more about the actual project work.

In IT department newsletters published late in the spring, Erik comments on the upcoming large personnel changes and on the good news that IT costs have been falling during the first four months of 1993. He also points to the importance of the Active Maintenance effort at a time when many of the large information systems are newly developed, and highlights that NewCust is on schedule.

A sense of pride over the NDS project is spreading in the IT and BD departments. In branch offices, people find the project hyped, yet obscure.

A sense of pride over NDS is now growing not only in the project but also in the IT and BD departments. The idea that FSC is the only company among its immediate competitors capable of carrying out a project of this size and complexity is taking hold amongst people in the project, in IT and BD. But the project and its eventual results are still close to invisible to people in branch offices, except for the additional cost debited to their P&L statements. It is unclear for them what the changes following from NDS are and what they will mean for branch offices. People in branch offices increasingly hear that the NDS project is the largest in FSC (ever), that no other bank does anything of this size, and that NDS will give FSC large advantages over its competitors. This is a far cry from Henrik Bergman's explanation in the CITB in early 1991 (see page 158), that NDS is needed to meet the current business needs, not future needs.

During spring, people in branch offices also have another reason to learn about NDS and NewCust. A large effort to increase data quality before moving data to the new DBMS is initiated and branch offices are required to verify a large portion of their customer data, comparing proprietary data to external (census) data.

At the mid-June steering committee meeting, Aksel Henriksson starts off by reporting on NewCust, which is still following the revised project plan. Concerning the effort to improve customer data quality, Frans Trenter asks Aksel to inform the respective regional head offices on exactly which branch offices mismanage or lag in the work with correcting customer data. Karin congratulates Aksel on thus far following the project plan.

Johan then reports on NDS. One of the first issues concern new government regulations, which make changes to databases necessary. Johan reports that ways are sought to minimize this effort. Johan also reports on the start of the maintenance group and on the start of work on prioritizing change requests collected under NDS2. On being asked, Johan explains that rollback from NDS to DepSys will be easy to do until after the second quarter (1994). Another question concerns threats to the timetable, to which Johan answers that response-time problems for some modules is one of the more prominent threats. Nils Høeg comments that the problems are acceptable for some of the modules/functions but more of a problem for others. Karin comments that it would be possible to start NDS with response time problems given that they are solved with NDS2.

The discussion in the steering committee now focuses on the completion of the project and on ways to manage problems on the way there and in connection with implementation. There are no discussions on prohibitive problems, problems which would potentially threaten project completion. In other words, the focus has shifted from concerning whether the track is passable anymore, towards enabling that the project reaches its destination with fewer hassles on the way and if possible without delays (and under a cost limit which is quite real).

The same evening, the whole project team together with the steering committee had a summer party, which would become the most memorable for many in and around the NDS project, after a less than inviting prelude:

> *The weather was just awful, rain and clouds, and I thought 'How is this going to turn out?' We went in buses from [the IT department out to a conference site]. On the way out the clouds started to break up and the closer we came the more sunny the weather got. That was fantastic. It was a very successful party. The parties were important. The steering committee attended the parties too, and that was good.*
>
> *Johan Sjöberg, project manager*

The weather change was for some a metaphor for the change in the project during the spring. Together with specially written song texts and the sense that this was the last time everybody would be there, it made for a highpoint after months of uninterrupted hard work. In the next project newsletter, Johan commented that the spring had been the best six months in the project.

Another event indicating that the project situation was more stable was the start of the maintenance group for NDS during the summer, with one of the earlier construction sub-project managers responsible. Starting the maintenance group one year before implementation would make it possible to learn the system and work at a higher level of effectiveness from the start of regular system operation. It would also make it possible for the project to shift some responsibility and resource consumption for alterations and additions from the project to maintenance (an organization chart indicating the changes in the project at this time is shown in Figure 15). Another indication of things to come was an invitation to the staff of the branch office involved in the first stages of the migration process to visit the project in August. The pilot branch office personnel are at this time reportedly very pleased to be "guinea pigs" for NDS.

At this time, the migration from the old customer information system to NewCust is also started: NewCust runs parallel to the old system during the summer and the switch-over to NewCust is to be completed in September. This means that a different migration strategy was used for NewCust than is planned for NDS, where the switch-over will be direct but divided into four phases, with parallel but not redundant production during the migration process.

NewCust is put into production in parallel with CustSys, which will be shut down in September 1993.

In some contrast to all the good news, however, part of the large, yellow delivery from the Construction sub-projects is delayed. To deal with this, Johan and the project office decide to split the yellow delivery into two parts, with the first and largest part delivered on time (July 10) and the remaining part to be delivered two months late, on September 1. The yellow delivery in July doubles the program code to 3.5 million lines of program code, whereas the September delivery would add some functionality but not increase the program size significantly, and neither would the final white delivery, also to be delivered in September.

In early autumn testing activities continue, including elaborate year 2000 tests, although tests of the first complete version of the system are delayed because of the delay in program construction. In spite of the delay, Johan comments in the

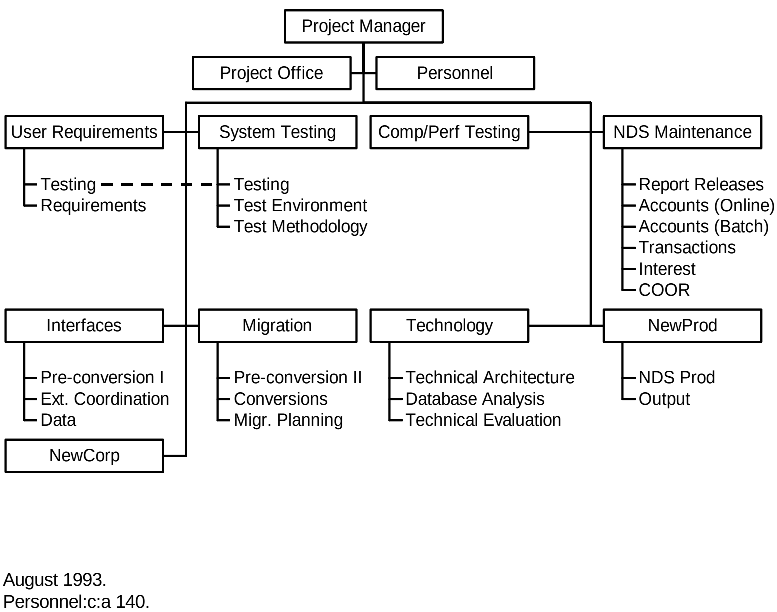

Figure 15: NDS Project Organization August 1993 (source: project white paper)

September IT department newsletter that "the odds [for the NDS project] are starting to look pretty decent".

In early September, NewCust is fully implemented and turned over to its maintenance group and the old system (CustSys) shut down according to the plan from May 1992. The NewCust project is hailed as textbook example of meeting time and budget demands. (Although the project was started with a different timetable and with a budget of 3.9 million, compared to the final cost of 7.2 million euros.)

At the October steering committee meeting, Aksel Henriksson gives a final report on NewCust. Apart from the (above mentioned) facts on the project completion, there is also information about a considerable increase in operating costs compared to the old system. Karin comments that operating costs need to be evaluated for NewCust and NDS jointly. Aksel is thanked for his good work in the NewCust project.

Johan then reports on NDS. He starts by saying that the project so far has gone very well but that the near future looks grimmer—there is a risk for delays. Test-conversions (DepSys–NDS) will be made. Karin comments that for each action which may affect customer accounts there has to be a conscious decision as to whether customers need to be informed. After a discussion, the group decides that those decisions will rest with BD. Johan then reports on the phase-out of project personnel and comments on risks for delays, which include the risk that some of the minor problems discovered and addressed daily may turn out not to be minor. Johan also comments that fast error tracking and correction is crucial and that fast solutions often mean resource and thus cost increases—a delicate balance to be struck with minimum time delay. Karin responds that the group needs to be prepared to take unpleasant decisions in crisis situations. She also says that it is important to distinguish between project and IT department costs and that the overall goal of reducing costs for consultants should be kept in mind. The meeting is closed.

After having concluded the NewCust project, Aksel Henriksson becomes responsible for a new sub-project, DataQuality, in NDS during an interim period. The reason for starting the new sub-project is that the data correction effort carried out by branch offices during spring and summer did not solve the problem with data inconsistencies. The main reason is that NewCust was fed with data from CustSys and external (census) data, whereas consistency tests towards DepSys were not carried out. It was thought that branch offices could do this on implementation of NDS, but the large number of inconsistencies, more than one million accounts being affected, makes that option infeasible. About 500,000 of the accounts will now be corrected through specially designed database operations, whereas about 750,000 accounts are checked manually, resulting in about 70,000 manually executed changes in the database records.

DataQuality, a new sub-project in NDS, checks over 1.2 million customer records, 500,000 automatically, 750,000 manually.

The focus on cost control continues in the project. Resource use and personnel scale-down in sub-projects (the project team was now down to 140 people) was continuously monitored, and minor tasks continued to be “commissioned” to units in the IT department, which was not charged to the project budget. This had been going on for quite some time. For example, one of the systems development units (with about 6-8 people) used about 75% of their work time on NDS-related work since the end of 1991.

Focus on cost control and eventually cost reductions also continues for the IT department as a whole. After several discussions with the CEO, and under significant pressure, Erik Östergren has committed himself to reducing FSC's IT costs to the 1991 level (about 80 million euros) by 1995. Whilst cost control clearly was an organizational priority, and actively pursued by the CEO, there are different views as to what freedom of action the IT manager really had or didn't have:

> *[The IT manager] never understood that the systems were meant for the business. He thought that systems live a life of their own and that the budget determines how much you are allowed to spend.*
>
> *FSC executive*

Although the cost limit was perceived as quite real in the project, and further emphasized by the overall cost-reduction pressure from the CEO on the IT department, there may have been gray areas concerning how absolute the 50-million-euro limit was. In addition to the cost-shifting measures described above from the project to regular units in the IT department, it is an open issue what would have happened, had the real and/or projected costs continued to increase.

> *Then at some point we just had to accept [what it cost]... We shortened the list [of functionality requirements], but that was probably more because of the time [constraint] rather than the cost, I have to say. After a while we had probably put too many resources into the project to stop it.*
>
> *Ingmar Mankell, NDS steering committee*

> *The decision that NDS could cost max 50 million [euros] became a very clear mark. It was known in the bank and approved by CITB. We struggled hard to meet that limit.*
>
> *Erik Östergren, IT manager*

At the end of October, Ingmar Mankell writes a guest column in *NDS News*. In addition to expressing his admiration for the work effort in the project and commenting on the need for the new system, he also points out that expectations for NDS are far higher in branch offices than what can be met with the delivery in the "first step", i.e. the system to be implemented in the spring.

> *On November 1, 1993, construction of NDS is completed as testing activities run at full steam.*

On November 1, after the final (and mi nor) "white" delivery had been delayed for about one month, construction of NDS is completely finished. Various testing activities are running at full steam, including full system tests, performance tests and comparative tests, the latter being tests where the "behavior" of NDS is compared to DepSys, to see that the two systems process transactions in exactly the same way. During October and November, a crisis develops in and through the test work: An increased number of errors are found towards the end of the testing work, leading to a backlog for bug fixes and for retesting. The most important task is now considered to be making the new system stable, which becomes increasingly difficult to test because of all the changes being made. To handle this problem, the start of the system is divided into two different releases, one for the first pilot migration and one for the following three migration dates. Another measure is the start of "the NDS Emergency Room". The "NDS ER" consists of a group which makes very restrictive choices on which bugs to fix for the first release and which retests to make, in the vocabulary of the day, there is an "iron curtain" for bug fixes—only those absolutely necessary to make the pilot release work are approved.

On November 8, the NDS project opens its very own branch office in a room in the project's office facilities. Inger Boye is branch manager and the branch is opened with some pomp and circumstance as Johan cuts the ribbon, champagne is served and FSC key chains are given away. The purpose of the new branch office, which handles all regular banking business, is to be able to convert "real" customer accounts (held by project personnel and people from the BD department) from DepSys to NDS and use them (roughly 700 transactions) before the migration process starts. Of the 100 accounts, 70 will be converted from DepSys to NDS when NDS is started "empty" on February 1 and the remaining 30 accounts will be converted during the following migration stages.

Performance tests continue, and at present, NDS together with existing information systems load the 125 MIPS[110] mainframe precipitously close to maximum capacity. Whereas DepSys uses about 5 MIPS, NDS uses about 70 MIPS. To hedge for a possible CPU overload, IT management orders a larger mainframe with another 25-30 MIPS to be installed in the coming months. This order is accounted for as part of regular updates and hardware investments, but the timing is clearly to support NDS and avoid hardware capacity problems on implementation. Contrary to the early beliefs, online transactions have not posed the biggest performance problems. The nightly batches threatened to take so much time to process that the time window available during the night would not be sufficient. During the work with performance enhancement led by Jonas Ferlin, the maximum number of transactions per second had been increased from 20 to 53.

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[110] Million (CPU) Instructions Per Second—a common measure of CPU processing capacity and load.

At the late November steering committee meeting, Johan reports that the large number of consultants scheduled to leave the project pose a problem because of the backlog for error correction and possible remaining corrections to be made in the interest calculation module. Johan also explains the problem with the increasing backlog for system testing and that this makes a stable final release in December unlikely. The pilot release, however, should be ready on time. The high work load, particularly for a small number of key people, is also considered a problem. On Karin's initiative, the group decides that Johan and IT management should look into how these key people can be relieved of some of their work load. Johan then comments that final performance tests are under way and show no major problems. After a short run-through of minor changes in project accounting figures, with one or two questions from Märta Bremer, the meeting is adjourned.

NewProd, developed within the NDS project, goes into production on December 1, 1993.

A few days later, the NewProd information system goes into full production on December 1. Developed as part of the NDS project, this system provides information on FSC's retail banking products and services. One purpose with the new system is to make possible rapid changes in (specifications of) financial products. Reports on the NewProd project point out that the project budget was not fully used.

In December, Erik Östergren announces that not only are changes to systems related to DepSys not allowed until after NDS has been implemented, but changes in other, unrelated information systems are to be put into production very restrictively and not during NDS migration weekends.

The small steering committee meetings have continued during 1993 and their last meeting for 1993 is in Johan's office, the day before Christmas eve. Meetings with the small group are now normally to a considerable extent run by Johan, to keep key committee members closely informed about developments.

Right before the Christmas holidays, project participants and people around the project receive the year's last issue of the project newsletter, where Johan comments that 1993 has "undoubtedly been the best" year in the project's life and thanks people in the project team for their efforts during the year.. In the same newsletter, the month's guest writer, a manager in the IT department, reminds readers that NDS is not only a deposit information system but rather the centerpiece of a new systems platform for FSC's retail banking, including technical features (COBOL, a relational database management system), and important functionality improvements (uniform interest calculation function, corporate-account consolidation, money-market functions, customer accounts movable between branch offices, functionality to process larger transactions and transactions involving the year 2000, flexible changes in product specifications and interest-rate tables, and uniform storage of transactions). The main argument of the article, however, is that NDS is important as a platform for future functionality improvements and should not be seen as a system delivered in its final version: "In the best spirit of IKEA, we will increasingly let our customers perform transactions themselves. Many applications will be introduced to facilitate this, and these self-managed services will naturally be easier to program for a real-time [database]."

The situation for the project in late December 1993 can be characterized as impending accomplishment combined with sustained pressure. Whilst the construction of the information system is finished by now and the timetable tight but manageable, the challenges ahead concern continued cost control, the phase-out of people from the project, and continued high pace and focus in remaining tasks. For people in project management, however, the work load was not near the pace in the project itself, and sometimes less than energizing:

> *We discovered ... Johan and I, that we* needed *a crisis every now and then. We sometimes sat and longed for a crisis so that there would be some action [for us]. We used to say to each other: 'Heck, we need a crisis now to speed things up a little.'*
>
> *Nils Høeg*

There would be some more excitement coming their way during the spring. As for the steering committee, the shift in their role from controlling to supporting would continue during the coming months. Given the developments during the last year, the accomplishments, the current relatively solid basis for concluding the project and the amount of resources used, the steering committee and other executives had less active influence on the project.

4.8 An Implementation Clockwork (1994)

During January 1994, NDS is started successively, with modules being added until the whole system is up and running, at first empty. Peripheral information systems managing transaction flows, which have been redesigned to check whether a specific account should be handled by DepSys or NDS and direct them accordingly, will soon start redirecting some transactions, first for project test accounts, to the new deposit system.

At this time, the CEO visits the IT department to get briefings on and discuss topics including costs for IT, results from IT bench-marking activities, the moratorium on putting system changes into production due to the upcoming NDS implementation, the "Active Maintenance" effort, expansion of IT support activities to FSC offices abroad, and thorough briefings on the large projects.

As part of the briefing on NDS, Stig Vennberg visits the NDS project office, where he is briefed on testing, maintenance and migration activities. Stig comments that the business has high expectations for the new system and that the trust in the project's ability to succeed with its task is also high. Stig also visits the special project branch office.

The first transaction was also processed by NDS in late January. An "important customer, who must remain anonymous due to the bank's confidentiality rules, deposited 1011 euros" (quote from IT department newsletter).[111] When the transaction verification came up on the computer screen, cheers broke out in the room. Subsequent thorough step-by-step analysis of the transaction showed that it had been processed correctly all the way through, and that the interaction between NDS and the bank's general ledger had worked properly. Following the successful first transaction, processing of test transactions are started, and the sub-projects for System Testing and Interfaces are subsequently terminated.

At the January 1994 corporate IT board meeting, Karin Martinson presents new procedures for IT cost control.

At the January CITB meeting, Karin starts off by informing the group about changes in control procedures for IT costs in FSC. In addition to all investments in systems development over 500,000 euros being decided by the CITB, limits for changes to existing systems and for small projects are set for each customer to the IT department. This is intended to reduce the number of changes and enhancements for the IT department, which in turn would contribute to the goal of keeping IT costs down to 85 million euros for 1994 (about five million less than the previous year). Use and consequences of the new rules are discussed (e.g. what should happen to cost limits when responsibility for an information system shifts to another department).

Gustaf then reports a substantial and continuing decline in the number of consultants since the peak the previous year, and a stable number of employees. Four ongoing projects are each discussed to about the same extent, one of which is NDS. Karin reports that the NDS project is on track, describes the migration steps during the spring, comments that the total cost is still around 50 million as planned and comments on an analysis which shows costs and benefits of NDS in operation. The CEO concludes the discussion by saying that the positive effects in the market are larger than previously realized. He also comments that he is "not worried at all anymore" about the success of the project, and that he does expect some initial disturbances in operations since there are always bugs left when a system goes operational.

During January and February, people from BD, including Märta Bremer and Nils Høeg, visit regions to inform them about NDS. Information to branch offices follows later, with a "road show" involving Nils Høeg, Tage Lundell, and others.

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[111] It can be revealed—without breaking confidentiality—that this was one of the senior managers in the IT department.

The situation is still such that branch offices see NDS as increasing IT costs and stopping all improvements to other information systems.

The NDS steering committee meeting at the end of January 1994 contains a detailed briefing on the migration plan.

At the steering committee meeting at the end of January 1994, Johan as usual starts by reporting on the project situation, explaining that the timetable is tight and very susceptible to disturbances. Karin Martinson asks about the migration steps and possible problems related to them, and Ellen Sandel explains differences in complexity for converting different types of accounts (the accounts in question for the first migration steps being less complicated to convert). Johan comments that there is a certain risk that there will not be time enough to test the final release of the system thoroughly enough in time, and that this can be managed by postponing the inclusion of some of the changes (thus withholding some of the functionality in the initial implementation). This is not questioned by the group.

Then, Karin asks about the time window for putting systems into production during the autumn, and Erik answers that some introductions will be made but that the time window is quite narrow. Karin comments that those issues related to managing processing at year-end should be prioritized over setting new functions into production. Johan then comments on performance testing, essentially saying that there are minor problems but that the situation is OK.

After the basic project briefing, Märta Bremer and Tage Lundell report on information activities towards regions and branch offices. Thereafter, Ellen Sandel, responsible for migration planning and management, gives a detailed briefing on how the migration process is planned for the spring as a whole and for the respective migration steps. After some questions, Johan asks the group about the possible exclusion of a certain feature in the new system. The group quickly agrees that the added functionality (which concerns how customers are notified about account transactions) should be skipped if inclusion causes a "large work load" for the project. Johan also reports on a previously decided audit of sensitive code, which has just started. The earlier cost limit of 0.1 million euros for the task is confirmed. After a question about the work load and strain on key people in the project (answer: less of a risk at present), the meeting is closed.

The project manager holds a presentation about the NDS project at a corporate board meeting in early 1994.

At this steering committee meeting, much of the focus was on quite detailed information about the project situation, the project plan and the steps involved in bringing the project to completion. Other items included different kinds of support to the project (information activities) and decisions to help pave the way for the timely completion of the project (functionality reduction).

Johan Sjöberg is invited to an FSC board meeting around January/February 1994 to make a presentation on the NDS project. At the meeting, he gives an overview of the project process and talks about certain aspects, such as the use of colors to name deadlines and how that contributed to an increase in the commitment to meeting deadlines, evident in a 25% increase in work hours after color deadlines had been introduced. He also describes the upcoming migration process and how it will be managed. This event had the character of providing information about a major, interesting event in the business. It was not a briefing intended for prospective action by the board nor was it used in that way.

In preparation for the migration, a control room for managing the migration process had been built. In this room, a small group would monitor each step of the switch-over and take decisions at check-points during the switch-over process on whether to proceed or rollback to DepSys. These people included among others Johan Sjöberg, the sub-project manager for migration Ellen Sandel and her team, and the technical architect Jonas Ferlin.

On the third weekend of February 1994, the first of the four migration sessions is carried out successfully.

On the third weekend of February, the first of four migration sessions is carried out, as seventy project test accounts are successfully converted from DepSys to NDS. The full migration procedures are tested, including e.g. closing automatic teller machines (ATMs) for about 10-15 minutes. The migration network schedule used to control the process contains 145 activities and a number of check-points and decision points. About 100 people are involved in the process and about 60 problems are identified and solved during the process, which starts Saturday at about 00.50 AM and ends Sunday at 02.00 AM, 30 minutes ahead of plan. When the process had been completed, a flip-chart was used to summarize events and everyone involved gathered for a debriefing.

An atmosphere of parting and ending was by now developing in the project, as people in the project team continue to leave the NDS project during the spring, normally for jobs in the IT department or in branch offices. Two months from now, only the migration team, the maintenance group and the project office and project manager would be left working with the project. For many, the new jobs are perceived as less exciting than what they have done in the NDS project during the previous years. The number of attractive jobs within IT at this time was limited, partly because the activity level in systems development was lower, in accordance with the CEO's efforts to cap IT costs.

Two steering committee meetings were held during March, one on March 1, the other three weeks later. At the first meeting, Johan Sjöberg reports on the first migration. There is a discussion on how reporting should function during the migration session. Karin emphasizes the importance of complete reporting to migration control management and that delays will probably be trimmed during subsequent migration sessions. Gustaf asks about conversion errors and Johan gives a report on conversion errors, which were all expected to occur beforehand. Additional comments and questions from members of the group concern amongst other things how central accounts are managed in preparation for and during the migration session.

The project manager reports on migration steps and the project situation at two steering committee meetings during March.

After this elaborate information and discussion on the first migration step, Johan makes his regular report on the project situation, though with (even) less discussion than usual. Part of the reporting which causes some discussion concerns a suggestion from the project concerning allocation of the costs incurred for the effort to improve customer-data quality and for the security audit. After discussion, the suggestion is approved, resulting in a shift of a major part of the costs away from the project budget. The final issues in the meeting include pending acceptance of emergency recovery plans and routines for NDS by the auditing and accounting departments.

At the subsequent steering committee meeting on March 22, Johan briefs the group on the upcoming migration weekend, the first one involving real customer accounts. Johan reports that one of the procedures during migration makes it necessary to close out-of-country ATMs, that auditing functions in NDS have been accepted by the auditing department, and that a contingency plan for major production breakdowns has been developed (making production recovery at a different site possible within 24 hours)[112]. Johan also explains the upcoming migration, showing the network plan and informing the committee about how some minor issues involved in the process are handled, such as the 15-minute stop for ATM withdrawals. After some questions and additional information, Karin asks about backup procedures for the NDS program code and Erik confirms that they exist. Johan then suggests that the NDS project should be terminated in mid-July if the migration process goes according to plan. He also suggests that a project white-paper should be produced by key people in the project in order to codify and transfer knowledge gained in the NDS project for future projects. Both suggestions are approved by the committee and the meeting is adjourned.

The migration at the end of March includes the accounts belonging to the pilot branch office, the central accounting department, and three FSC subsidiaries. In addition to the preparations taking place around the system migration itself, a

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112 This is in addition to various on-site recovery routines, which are much faster.

person from the project had spent the previous week in the pilot branch office to answer questions and help with any issues concerning the switch-over from the user side. This time, about 4000 accounts were transferred to the new system and the process finished five hours early because of fewer problems, an improved network plan and faster processing because the CPU ordered in late 1993 had now been installed. Karin Martinson visits the migration control room during the weekend and speaks to those present after the process is successfully completed, commenting that "It is a privilege to be involved. It is first now when I have seen the operative work during a switch-over, that I understand how complicated this really is" (quote from the IT department newsletter).

Towards the end of March, the second release of NDS, containing additional code which was not included in the first release because of the backlog in system testing, is put into production and the current installations are updated without problems. The migration process for upcoming migration steps is repeatedly tested with actual data during this time, and performance testing is carried out, largely during nights to provide functioning test conditions (e.g. to facilitate measuring CPU usage).

At the mid-April CITB meeting, NDS was not on the agenda. For the second time, Karin (not Erik) reports on the new cost constraints for systems maintenance and enhancements. Gustaf reports on drastic decreases in costs for consultants and Erik comments that for NDS, the remaining people with in-depth knowledge about the system is down to 40[113], compared with 120 developers in the project a year earlier. The other main topic of the meeting concerns a two-million-euro systems development proposal, which is approved.

Errors, suspected to be caused by NDS, are found in the bank's general ledger in late April 1994. This constitutes a serious crisis for the NDS project.

A few days after the CITB meeting, errors are discovered in the bank's general ledger. This is an unprecedented event and although the errors on first assessment do not seem to be many or of large proportions, the very fact that NDS seems to produce errors in the books is serious enough to directly threaten further switch-overs. A former sub-project manager is called in to lead the work with solving the problem.

The project report sent to the committee members before the steering committee meeting a few days later calls the situation a "serious crisis", and indeed it would become the central subject of the meeting. Johan starts by reporting back on how the issue of giving customers information when the ATM machines are closed has been solved and then the meeting goes directly into the general ledger problem. Johan reports on the problem and on what is being done to find the cause.

113 More precisely, these 40 people are in the maintenance group.

In the ensuing discussion, Karin asks if the error is caused by NDS, and Johan answers that there are no errors in the NDS checksums or other controls built into the system. Karin then carefully formulates a summary description of the situation (quoted from the meeting minutes): "After NDS production had started, discrepancies have occurred in the general ledger during a few days. Work is being conducted under the supervision of the accounting department, aiming at verifying all transaction flows between NDS, the general ledger system and other systems. The work with this verification needs to be completed before the switch-over of the pilot branch offices[114], which we have planned together with the accounting department."

After additional discussion, the group sets a date for deciding on informing the branch offices in question: Sunday evening May 8, eleven days later. Nils Høeg describes the current contingency plan for informing the potentially affected customers. Johan then turns to the regular project report, which is quite quickly dealt with (including the information that resource use is still somewhat over plan). There is little else of concern at the moment, and the planning situation for the project's regular activities is good.

The crisis concerning the general ledger errors is resolved: No bugs in NDS.

Two days after the meeting, most—but not all—of the errors have been detected: they were manual data-entry errors. One undetected error remains, however, and another few days later Johan is scheduled to report at a FSC senior management meeting about the project's effort to find and fix the cause of the error. On his way to the meeting, he gets a call on his cell phone. The person calling informs him that the error has been found and that it was not an error in NDS, but in another system, interfacing between NDS and the general ledger system. Johan began his presentation with this good news. There was no longer a visible threat to the migration schedule and once found, the error could be corrected with limited effort.

In the middle of May, the next migration step is taken. Accounts for six branch offices and one subsidiary are converted to NDS. This time, over 80,000 accounts were converted, with results as good as those in previous switch-overs. The migration weekends, while being highly focused around-the-clock events with high concentration amongst participants, were also becoming somewhat playful, as confidence in the ultimate success of the effort increased:

> *We made bets with each other about at what time the whole [weekend migration] process would be completed—we gambled for real money. We had bets for checkpoints too, with bottles of champagne as prizes.*
>
> *Johan Sjöberg, project manager*

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[114] Meaning the six branch offices included in the next migration step.

After the penultimate migration run, another steering committee meeting was held. After Johan's briefing on the project situation, there is a discussion on user training, in which Nils reports that branch offices have not put aside enough time for this. Region headquarters have sent out memos to stress the importance of training, but with mixed effects. After discussion, it is decided that Nils should report to Märta on developments before additional efforts are being made. Nils also reports that most questions from branch offices which are already using NDS concern NewCust. The termination of the project is set to occur contingent upon successful operation of NDS past the first turn of the month after implementation. Gustaf informs the committee that the IT department will focus NDS maintenance particularly, devoting the NDS maintenance group solely to NDS. Erik reports that off-site emergency recovery has been tested successfully for NDS, with recovery within 15 hours.

During May and the first days of June, emergency recovery procedures and the final migration step are tested and repeatedly rehearsed.

Test runs for the final and largest migration step had been carried out several times during the latter half of May and early June. The test runs included using and converting full data volumes and performing a complete rollback from NDS to DepSys. Three days before the final migration step was to start, it was decided on short notice to do one more test migration before the real one. The stakes high, migration was very well prepared and a certain tension and nervousness had developed for many of the participants, but not everyone:

> *We practiced [far too much]. It became boring towards the end—there were never any errors. If there was an error, everybody ran to fix it.* Nobody *was nervous.*
>
> *Edith Lange, sub-project manager*

Contrary to Edith's assertion, there was some tension in the air on Friday evening June 10, as the migration process is initiated. Under the supervision of Ellen Sandel, Johan Sjöberg, Jonas Ferlin and others from the remaining project team, and with participation of Gustaf Söderberg, Erik Östergren and other people from IT management, the migration process starts shortly after midnight. During the evening, around 50 people in IT have gathered to monitor the last transaction processed by DepSys and toast for the old system as it is about to pass into history.[115] This time around, over three million accounts are converted to the new system during the weekend. Karin Martinson, as well as Frans Trenter and Stig Vennberg, receive progress reports from Johan via phone several times during

[115] DepSys was started the following Monday morning to facilitate a prospective rollback, then shut down.

the weekend. Over 150 people are involved in the migration process, which encompassed 180 specific, coordinated activities. The fully implemented system contains 253 different links to other information systems. The migration session passes without major problems.

On Monday morning June 13, 1994, NDS is in full operation in all FSC branch offices. Operations were normal during the day, meaning that several thousand users performed a total of 110,000 payment transactions in FSC's nearly 500 branch offices. The user support desk, which had a particularly large staff the first day, received a total of 128 phone calls during the day, considerably less than expected. The low number of help requests were partly because NDS worked well, but also because users did not see many changes compared to the old system. Since the existing hardware and operating systems were used, characteristics of the user interface were the same, although many specific function dialogues had been changed. This meant that the need for training and adaption to the new system was very limited for users, but also that users asked what all the fuss had been about:

On June 13, 1994, NDS is in full operation in all FSC branch offices, processing 110,000 payment transactions during a day of "business as usual".

> *There was no drama about it. It was like: 'OK, we're running a different system now...'*
>
> *FSC branch manager*

> *If we would go back [to the old system] we would see what an advantage NDS was, but it was no big deal when it arrived. ... There were some glitches, like you couldn't get the account number on the screen automatically. That caused some irritation—you thought: 'Damn, haven't they finished it?'*
>
> *FSC assistant branch manager*

> *There was a lot of [big] talk, but there wasn't much to it [when it arrived], nothing that revolutionized business operations. ... It didn't meet expectations.*
>
> *FSC branch manager*

> *Well, people in branch offices thought: 'This has cost 50 million euros and what did we get for that [money]?'*
>
> *Frans Trenter, executive vice president*

> *[There was] this view that this was the bank's largest venture and then when the system comes, there are very few changes [for] branch offices. Most of the change request list was still intact and what we had [in fact] done was to change the engine, but the rest of the car was still a [Volkswagen] Beetle... Of course people were disappointed.*
>
> *Ingmar Mankell, NDS steering committee*

But there were positive effects visible quite soon after implementation too. New account types can be designed and launched much more quickly (with exceptions for major innovations in account design, which would require systems development work as earlier) and changes in interest rates are also quickly carried out. These and other features of the new system also make it possible for FSC to attract several new corporate clients.

> *This was something NDS contributed with which was immediately visible: NDS helped the bank gain a number of new clients among large corporations, because we could do deals we hadn't been able to do earlier.*
>
> *Erik Östergren, IT manager*

But for now, the focus for the project participants and the steering committee was to celebrate the successful implementation of NDS and wrap up the project. On Tuesday, the day after the first business day with NDS, there is as usual a debriefing of the migration process, and also a steering committee meeting. At the steering committee meeting, Johan reports in some detail on the weekend's migration work and on the first day of operation. Statistics for the weekend and the first business day are given and Johan and Nils comment on an expected moderate increase in calls to the user support desk during the week, that users miss a function not included in the new system which will be added, and that NDS had come to a temporary standstill at 10:10 the previous day, but that the problem had been solved. Johan goes through additional detailed information on the first day's operation and comments on how various issues will be addressed and by whom (often the maintenance group). At the end of this largely informational meeting, it is decided that the following steering committee meeting, at the beginning of July, will also be the last one.

Among the closing-down activities, there is also a final party a week later with much cheerfulness, singing and nostalgia. Again, songs had been written for the occasion and Johan comments on a very successful party in the final issue of *NDS News.* In his column, Johan thanks everyone involved and points out that the timetable was set 3½ years ago and that migration weekends were scheduled 1½ years before they were carried out. He also comments on the importance of the people involved, the project culture and the backing from FSC management. Stig Vennberg, the CEO, is the final guest writer in the project newsletter[116], commenting on his involvement in deciding on the project's future and that he has had doubts now and then during the project, but that the final result is very satisfying. Stig specifically points out that FSC's competitors still have their

[116] Frans Trenter had written a guest column in the previous newsletter.

corresponding projects in front of them and that NDS has already brought in new customers to FSC.[117]

At the last NDS steering committee meeting, one of the people in the maintenance group reports on events (including errors) in NDS operation since migration. She comments that the migration was an anticlimax for the maintenance group, with much less work than anticipated. Other information items include that an audit of NDS has been carried out by the security department and reported to the maintenance group for action. Johan then reports on the project white paper, written by people from NDS project management including Johan and Nils. After some feedback and other comments on the white paper, it is decided to classify it as confidential information. After this, the formal decision to terminate the project is taken by the group (including, for the first time in 1994, Frans Trenter). Karin expresses her own and the steering committee's gratitude towards Johan and the project team and thanks them for a "fantastic journey". During the meeting, project figures are reviewed. The final cost quote for the project is 50.2 million euros and 500 person years. In the white paper and in other documentation, the project's start year is now quoted as 1990.

The meeting is followed by a celebratory dinner, where according to the meeting minutes, Frans Trenter expressly recognized Erik Östergren's "considerable merits and knowledge—concerning wines." Summer ending, there is also a dinner for the project management team, hosted by Stig Vennberg. At the dinner, Stig presents the people from the project management team with diplomas commemorating their contributions to the NDS project.

The successful implementation of the new deposit system and the—anticipated and partly realized—positive effects on customer service and internal efficiency is reported on in the following issue of the corporate newsletter *FSC News* ("Heart Transplant Accomplished") and also mentioned in the following FSC quarterly report and its accompanying press release. The "fantastic journey" was over for the project. For the new information system, the journey had just begun.

4.9 NDS and Its Changing Environment (1994–1998)

In August 1994, at the first corporate IT board meeting after the successful implementation of NDS, Stig Vennberg continues his efforts to decrease IT costs. Karin Martinson yet again reports on how development costs are to be controlled and Gustaf Söderberg reports on resource use—including a reduction in costs for external consultants, offset by the hiring of a small number of systems developers. Three other projects are discussed, one of which had postponed implementation a couple of months, allegedly as a consequence of the NDS implementation.

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[117] Service to corporate customers was improved more visibly than for private customers, more about this below.

During the autumn of 1994 and spring of 1995, the CEO continues his effort to reduce IT costs.

In early autumn, the NDS maintenance group places a few people in the Business Development department to "facilitate continued close cooperation", but most of the work in maintenance is geared towards tests in preparation for the year-end activities. In FSC, as in other financial firms, the year-end requires a large number of extraordinary processing tasks to be performed and usually causes various problems which are managed during the first days of the new year. Other work in maintenance concerns fixing additional bugs and working on the extensive change-request list.

In the autumn, the systems development part of the IT department (headed by Gustaf Söderberg) is split into three parts, with Gustaf Söderberg managing two of them and Johan Sjöberg managing the third part, which services merchant banking.

At the October CITB meeting, costs are again the main topic. Gustaf Söderberg reports on somewhat lower consulting costs and Stig Vennberg asks about total costs, which are two million higher than promised. The goal for 1995, an additional cost reduction of four to five million, is discussed. There is also extensive discussion of an ongoing project for which a projected cost increase from 2.0 to 3.6 million euros is reported. The cost increase is approved.

The cost-control focus of the CITB discussions affects the IT department managers considerably during this period, as it had done for some time and would continue to do, in spite of the return to previous levels of profitability of FSC since more than a year.

> *They cut consulting costs as much as they could after NDS. NDS was supposed to be a peak. They thought development costs would stabilize [at a lower level]. I remember an [IT] management seminar where management of personnel reductions was discussed.*
>
> *Christian Englund, external consultant*

In the spring of 1995, the CEO continues his effort to curtail IT costs. At the March CITB meeting, he very clearly states that FSC cost developments do not allow increases in costs for IT. He therefore assigns the departments for IT, Business Development and Merchant banking to jointly investigate how to reduce IT costs to the 1991 level in 1996–1997 and to assess the business consequences of the reduction. In spite of this, a new development project (for about 3.5 million euros) is approved by the group, including the CEO, for reasons including its importance for branch offices and short payback time.

At the following meeting in May, the representatives of the departments report back on their investigation, but not entirely to Stig Vennberg's liking. First, Erik reports on costs for the IT department, which amount to 85 million euros for

1995, now including the project approved in March with no increase in total cost. Erik then explains the increase in costs since 1991 with increased demands from the business and a large increase in processing volumes. Erik also comments that the IT department's costs as a percentage of total costs are lower now than in 1991. Jointly, the departments for BD, IT and merchant banking report back on their investigation, emphasizing that a cost decrease to 80 million would damage the company and that 85 million for 1996 is a more reasonable level.

Stig Vennberg comments that this would mean stable costs at the level of 85 million during 1994 to 1996 and that this would form the basis for upcoming planning work for 1996. Karin comments that the 1997 level is harder to assess. The head of the merchant banking division comments that the discussions concerning activity and cost levels have been very constructive and also mentions that merchant banking has additional IT costs in international offices and that these offices are in great need of additional information systems capabilities to support the business. The CEO closes the discussion by commenting that a useful prioritizing has been made and a cost limit been set. Three new projects, incorporated in the overall plan, are approved.

Shortly thereafter, in June, an additional CITB meeting deals with additional changes in priorities and with deciding on several additional new development projects which necessitate these changes. Karin Martinson reports on the changed priorities. Märta Bremer reports on the three proposed projects. For one of them, continued competitive advantage through the information system is the main argument, whereas introduction of new products/services is the primary reason stated for the other two projects. All three projects are approved with limited discussion. The next CITB meeting is scheduled for November.

The IT management practice of continued approval of new projects and continued efforts to reduce or at least freeze IT costs continues, with varying results, in the following years. The CEO's efforts were not only carried out based on his own convictions, however, but rather quite in line with views of other managers in FSC and also in line with important structures and principles in FSC which concern the decentralized control structure and associated values concerning the importance of the branch offices and the service-oriented role of headquarter departments.

> *For quite a while, central costs increased more than external costs and that was not very popular [with branch offices and regions]. Karin had to hold back pretty hard to get that [problem] under control. Region heads don't like central costs. They raise objections and it is hard [to win them over].*
>
> *Frans Trenter, executive vice president*

To further sharpen the tension between cost control and needs for additional development projects, there are in 1995 increasing signs that NewTerm, the terminal system which forms a central part of the bank's IT platform, is aging.

Once a farsighted design, a lack of continuous improvements in the proprietary hardware platform by the vendor makes it necessary for FSC to start looking into what the next generation hardware and systems software in branch offices should look like. While the first steps towards the NDS project were taken by people in the IT and BD departments, it is now complaints from people in branch offices about old technology and a fear of losing ground to competitors which contributes to focusing the issue.

In response to the aging of the NewTerm platform, Karin Martinson and Johan Sjöberg start the NxTerm project in early 1996.

At the beginning of 1996, Johan Sjöberg and Karin Martinson thus start working on a project aiming at replacing NewTerm with a new IT infrastructure for branch offices, called *NxTerm*. The demand from branch offices is considerable, and Johan and Karin also muster solid support from regional headquarters, including requesting and receiving assignments of key people to the project. After having worked with the project for several months, gradually involving more people in the task, Karin and Johan again visit regional headquarters to present the proposed project and gather support for it. The earlier support from the executive vice presidents in charge of regions is strongly affirmed, and the demand from branch offices continues to grow. In contrast to several earlier efforts, such as FS-Term and NewTerm, this new project continues to be driven by demands from branch offices. In late spring, however, the situation changes quickly because of continued cost increases in the company. At an FSC senior management meeting, corporate management decides to cancel the project, together with several other proposed investments of various kinds.

Shortly thereafter, in mid-1996, Erik Östergren resigns and Johan Sjöberg is appointed IT manager, or Chief Information Officer, CIO. The change is accompanied by a change in reporting relationship: Whereas Erik had reported to Karin Martinson, Johan Sjöberg reports directly to the CEO. During the autumn, the NxTerm project is resumed. Johan's appointment is popular with many in the IT department, because of his qualities as manager and leader during the NDS project. The appointment reinforces earlier effects of the NDS project on how the IT department is managed. Such effects included use of NDS practices as a basis for project management handbooks and for work in the IT project office. Now, the project office is rejuvenated over the next year, and other management practices (as well as managers' practices) increasingly resemble how the NDS project was managed.

> *Well, that Johan has been appointed, that influences things. Johan is admired by the [people in the] IT management team. That leads to a lot of things being run like NDS. There is a risk in that: that everybody wants to run large projects and*

that projects get larger than they would need to, or that we start more large projects than we need to.

Ellen Sandel, sub-project manager

By this time, NDS has been in operation for two years. Over the two years, NDS has proven to be very reliable, with very infrequent production problems. Those disturbances in production which do occur have been minor (nothing in the vicinity of incorrect account balances) and have normally been due to either minor bugs introduced in the program code during maintenance work (partly because changes have unforseen consequences), or due to unforseen, incorrect values in input data (e.g. on one occasion, this led to garbled text on screen).

Additional, closely related smaller information systems have been built, contributing to NDS functionality and perceived usefulness. One such addition is a new, second-generation self-service banking system for corporate customers, which quickly became popular with this customer segment. Another addition is a system for the analysis of individual customers which helps analyze customer profile, use of products and services, and profitability for individual customers. It also becomes possible to create and use customer-specific price-lists and the tailoring of offers to corporate customers (e.g. offers for managing their cash-flow).

An original feature of NDS would at this time rather unsuspectingly prove to be of extraordinary value: During 1996, the central bank in FSC's home market employed a vastly different rate adjustment policy than it had previously done. Over a period of little more than a year, the central bank changed one of its main interest rates over 20 times, far above the previous frequency span for rate changes. In the old deposit system, rate changes could only be made at certain times (turn of the month) and involved manual work as well as changes in program code. With NDS, FSC could follow rate changes by the central bank closely and swiftly. The resulting improvements in the bank's net interest income during this period covered the development costs for NDS.

The enormous positive effects of NDS' rate-adjustment capabilities were unforeseen, and were not reflected in the day-to-day work in the IT and BD departments. Attitudes towards maintenance and further development of NDS did not change, and there remained a backlog of NDS functionality requirements which had been lifted from the specifications of NDS.

Whereas NDS has made some routines much more efficient, other routines in NDS are perceived as cumbersome and time-consuming to use, something which is attributed partly to terms for different account types. There is a need for further development of NDS.

There is an enormous potential to save time by making [the information] systems easier to use, making small changes. It's important to hang in there and [improve] the systems.

Ingmar Mankell, NDS steering committee

In the maintenance work, however, the backlog of requested changes and enhancements is about the same size as at implementation, several hundred change requests are in the queue at any one time, and quite a lot of "original" change requests are still in the backlog. The NDS program structure and program code is perceived as complex by the 40 or so people working with maintenance. The complex program structure makes it time-consuming to learn the system for new members of the maintenance group. Furthermore, most people in maintenance, because of the complexity, work only within one of the twelve main partitions (parts) of the program code, which has led to a situation where only a few people have a thorough understanding of how the whole information system works.

It is very different from [maintaining DepSys]. Few people have the whole picture and the technical design is tricky [to understand]. It is hard to get [those] to stay, who grasp the whole picture.

Those who maintain NDS have difficulty getting into [how] the system [works], and they have even more difficulty getting into other parts than the one they are working with. ... we have many more people working with NDS than with DepSys, but we are dependent on particular individuals for different parts of the system. Take the interest-rate-calculation module, for example; one person grasps that, and he's a consultant...

Anna Flygare, head of systems group for deposit-related systems

Some parts of NDS are especially difficult to maintain and to some of the programmers working with NDS, this—and the need to do something about it—has been known since even before the 1994 implementation of the system. As early as 1995, but with increased effort in 1996, the subsequent heads of the NDS maintenance group promoted the need for restructuring parts of the NDS program code to improve maintainability.

During 1996, the NDS maintenance group promote the need to renovate NDS, meeting much questioning from the BD department.

This effort would affect three central functions of NDS (including interest-rate calculation and processing of payment transactions) and the estimated cost would be about two million euros. Numerous discussions between the maintenance group and the people in the BD department circled around whether this problem had been known about during the NDS project and whether the changes were absolutely necessary.

The matter has escalated to Karin Martinson, and Karin strongly questions whether these maintenance projects are really necessary. ... If we don't get acceptance for the fact that a large investment has to be allowed to cost [some maintenance too], the success story will become a drag [for us].

Anna Flygare, head of deposit-related systems

The restructuring of programs that was needed was for me a big disappointment—that the structure of the system didn't function better. I have tried to find out: Why is it necessary? Is it really necessary?

Karin Martinson, head of CA and BD

Johan says that he did not know the restructuring would be needed. I don't know... Maybe only the technicians knew about it. But they say they have mentioned it. Maybe nobody wanted to listen then, everyone just wanted to finish [the project].

Anna Flygare, head of deposit-related systems

In late 1996 and early 1997, there is finally an acceptance from the BD department to go ahead with the restructuring project, first for one of the modules, then also for the other two. In parallel, some other related issues receive increased attention from the IT and BD departments. These issues concern increased demands for system functionality from the business, increasing resource needs for maintenance of a large number of remaining legacy systems (in spite of the new systems implemented in 1993—1994) and continued international expansion of FSC operations, making necessary e.g. 24-hour operations of core information systems.

NDS does not operate around the clock—batch operations are run during the night to perform certain updates of other systems and to prepare for the next day's operations. Nor does NDS support the use of multiple currencies or multiple ledgers, which are necessary when operating in several countries. The multi-currency functionality would also be necessary to manage the (as yet unclear) consequences of the European Monetary Union.[118] These shortcomings in the present were results of explicit choices made early in the NDS project, after discussions in the steering committee.

Those were conscious decisions in the project. I participated in discussing what to do and [we] chose not to do it. That was the right thing to do then, but it is ill-fated now.

Albert Lindegren, IT department

Responding to the increased demands on information systems functionality, an investigation into purchasing of a standard application package is initiated.

[118] Although the euro is the currency used in the description, the euro was not at this time a working currency in any European country.

These issues, and the multi-currency problem in particular, lead to another joint investigation by the IT and BD departments, supervised by and with the involvement of Johan Sjöberg and Karin Martinson. The investigation soon comes to address whether FSC should buy a recently introduced standard application package for banking operations, sold by one of FSC's IT suppliers. The standard application package, called *BankSys*, would replace up to between 40 and 50 of FSC's current information systems, including the newly developed systems NDS, NewCust, NewProd, and NewCorp.

> *The systems development process has not been that focused earlier, but time to market is very important now. That also leads to the question of whether to go for standard application packages? Was NDS the right thing to do? NDS doesn't handle multiple currencies for example. Should we have renovated DepSys and switched to a standard application package now instead?*
>
> *Gustaf Söderberg, head of systems development*

During the spring of 1997, as the investigation into BankSys continues, Henrik Bergman is again appointed to head of the BD department. Just as with the appointment of Johan Sjöberg, the reporting relationship is changed so that the head of BD now reports directly to Stig Vennberg. Karin Martinson becomes director of personnel, after more than ten years in various posts in business development.

> *[The most strenuous thing about managing business development is] to make the long-term IT development [processes] merge with the fast changes in the business. Balancing this, getting rid of nonessentials and managing demands and the frustrations [resulting from unmet demands]. It is a big responsibility and there are many issues going on at once.*
>
> *Karin Martinson, personnel director, former head of CA and BD*

> *It is a hard job! Everybody complains [about what you do] and [several] have fallen on that post. You function as a sort of liaison and it is not so easy to face eight executive vice presidents and their demands. But Henrik is very structured and clear-headed, he can withstand pressures and influences.*
>
> *Frans Trenter, executive vice president (retired)*

Henrik Bergman also brings to the job his extensive and varied experiences from business operations and from regional headquarters and a correspondingly extensive personal network, which is also deemed helpful by many in the balancing of demands and influences.

In late spring, Johan Sjöberg and Henrik Bergman jointly recommend to Stig Vennberg that FSC should acquire BankSys and start a multi-year project to integrate the use of BankSys into FSC operations, gradually phasing out proprietary information systems. With the proposed overall plan, BankSys would be introduced in international operations first and NDS would be replaced in FSC's home market in about five to six years. Stig Vennberg approves the recommended course of action personally as well as in the corporate IT board and the BankSys project is started shortly thereafter.

In connection with the decision, Stig Vennberg asks Johan Sjöberg if the decision on BankSys means that the NDS project was in retrospect unnecessary. Johan answers that this is not the case, since FSC has received good benefits from NDS already and will continue to do so for several years until it is replaced. But the prevalent view of NDS, especially taken together with the development effort called Active Maintenance (see page 178), had been and to large extent still was that FSC would "never again" have to replace its deposit system.

> *Well, there were two ways to go. Either keep building on NDS, with for example additional ledgers [and] 24-hour operations. On the other hand there was the problem of [systems support for] international offices. So the question becomes: Which is faster? For me that's the key point in deciding to go on with NDS or go for BankSys—which takes us the forward on the fastest route?*
>
> *Karin Martinson, personnel director, former head of CA and BD*

> *Well, I don't really know how to view this. I mean, I understand it, but I put a lot of feelings and personal effort and energy into this, and the years in maintenance weren't easy—and now we throw it away. I see that as a failure for the whole IT department. We didn't quite succeed in building a system that could last. I mean, everything changes ... but I maintain that the requirements specification lacked vision.*
>
> *Hans Fogelström, former head of NDS maintenance*

Although the replacement of NDS would not happen for another five years or more, a major part of the NDS restructuring projects are canceled directly after the BankSys decision. The maintenance group is further affected as people start leaving for other jobs. In the months to come, the IT and BD departments would start referring to the BankSys project as a reason for limiting enhancements and maintenance work on NDS.

In spite of purchasing a standard application package, the work of adapting the system to FSC operations (including some strategic decisions on what to update in-house and what to commission to the vendor) and of gradually replacing the existing system portfolio is judged to take considerably more time and greater resources than the NDS project did. In fact, the first estimates for the new project are between two and three times higher than the final quotes for the NDS project.

This in turn means that FSC now have one project for replacing a large part of its technical platform, specifically in branch offices and one project for replacing a large part of its system portfolio in addition to other development projects, regular maintenance, a year 2000 readiness project and a project to prepare all affected information systems for the common European currency. Strains on resources, especially key people, is high and costs are threatening to increase considerably in the next years.

In mid-1998, with Johan Sjöberg being close to retirement, Johan, Henrik Bergman and Stig Vennberg discuss possible successors to the CIO post. The solution, probably emanating from Johan, becomes that Henrik assumes responsibility for IT as well as retaining his post as head of BD. When the decision is made, it is also decided to carry out the change immediately to avoid uncertainty in the IT department concerning succession. Johan stays on at FSC to support Henrik with specific investigations.

The joint BD and IT position is thought to bring IT and business development closer, but is also likely to change the role and relationships of the BD department. Its earlier role was mainly intended as working on behalf of the branch offices and regions to make priorities for IT development and assign development and other task to IT. This loyalty, while never perceived as total by branch offices, is now called even further into question, as the BD and IT departments together may form a more substantive body for what the names imply: business development using information technology. Thus, the change may indicate a change in how IT is viewed and managed by FSC corporate management and thus the role of IT in FSC, meeting an increased pace of IT deployment.

> *Well, it's the same cost focus, but they have realized that IT is so important that if we don't put enough into it we can't be [competitive]. People who come to us from other banks wonder about the stone-age equipment we are using. But that is also because the systems we use are out of pace[119] with each other.*
>
> *Ingmar Mankell, former in NDS steering committee*

> *[The task] becomes more complex. There are many more systems on the market. There is a trend towards standard applications. There are more possibilities. ... The need for a new architecture increases. ... It's about combining—developing the IT infrastructure and simultaneously developing the information systems: Internet, asset management, trading, managing new financial products...*
>
> *Karin Martinson, former head of CA and BD*

During 1998, the BankSys project is fraught with continuing problems, especially concerning deliveries from the supplier. As with NewTerm more than ten years earlier, it turns out that the supplier is having trouble delivering as agreed and the 50 or so people in FSC working in the project experience repeated delays. During the autumn, Henrik Bergman starts an investigation into the project and

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[119] The information systems were developed at different times and, originally, for different technical platforms.

into the choice to implement BankSys. In early 1999, the investigation, led by Johan Sjöberg, leads to a decision to abandon the project. One of the main official arguments is that FSC will be able to provide their business operations with the necessary system functionality faster by building on their existing systems than through the BankSys project.

Meanwhile, NDS continues to function very reliably. On a regular business day, NDS processes between 500,000 and over one million payment transactions (adding up to over 20 billion euros) for over three million accounts. A major part of the transactions are customer-managed through ATMs, phone banking and now also through Internet banking. The system now has over 300 connections to other information systems, accesses and updates over 100 internal databases and processes and dispatches ten million account statements yearly.

The introduction of NDS provided FSC with better system functionality for managing customer information, improved account-consolidation functionality and related customer services, more efficient handling of transactions and some customer services, easier changes to product specifications and interest rate tables, in some respects lower risks in system maintenance, year-2000-compatibility and more modern (or less dated) software and DBMS technology. Together with a information system developed subsequently, NDS also, among other things, makes it possible for branch offices to make elaborate profitability analyses on individual customers and facilitates the tailoring of offers to corporate customers. Developments after the implementation of NDS also indicate that to FSC corporate management, NDS also provides something else: the option to postpone the next major deposit system project—not for ever, but for a while.

4.10 Reflection and Hindsight (1997–1998)

I met the people engaged in the NDS project and its governance mostly during 1997 and 1998. This section summarizes some evaluative and reflective comments on the NDS project as well as general patterns which the interviewees saw when looking back on the project three or four years after implementation. This means that the quotes here are from a time just prior to the end of the chronological description above. For example, the BankSys project was about to be started or had started, but had not been abandoned, at the time of the interviews.

Most of the people I met with thought of the NDS project as a fantastic experience and as a very well-managed project—from 1991 onwards. For many of those involved, it had been a "fantastic journey" (in Karin Martinson's words from page 213) and many were proud to have been part of the NDS project team. But to many people I met, the "success" of the NDS project was not undisputed.

> *Project-wise—yes [the result was good]. System-wise—that is doubtful. Project-wise we managed the 50 million [euro] limit, even if it unofficially probably cost 70-80 million, including NewCorp, NewProd, the data-quality improvement effort and the second release, which was not included in the original specification.*

> *But we made it on time, the system was delivered by and large with the proper functionality and the quality was OK. System-wise, on the other hand, the system doesn't have that super-duper flexibility and it doesn't support new products [the way it should]. Hardware costs also ballooned ... but hardware upgrades are done on a regular basis, [maybe that's another] four to ten million [euros].*
>
> *Olof Tunström, former NDS project office*

> *The project cost was 50 million [euros], in the project. But: What has it cost that business development has been on hold for 18 months? DepSys was frozen during that period, but all systems involved in pre-conversion activities were also frozen. Counting things together, you end up with costs between ten and 50 million in addition to NDS. In total that could be a hundred million, just because a system was in bad shape.*
>
> *Gustaf Söderberg, head of systems development*

While the "real" costs for the NDS project can be disputed and while there have been substantial costs in addition to the official final cost quote, there are on the other hand similar uncertainties surrounding what the effects were and not least what risks were avoided.

> *Furthermore, one can ask whether DepSys might have been more rotten than was thought [at the time]. ... Only one person knew DepSys really well...*[120] *Also, DepSys contained islands of dead code, code which wasn't used. That was like a landmine [and] nobody knew what would trigger it. That was something which created anxiety.*
>
> *Henrik Bergman, commissioner for NDS 1990–1992*

Many people who worked in the NDS project management team (especially in the later project years) have had favorable career-development paths after the NDS project and many of them have been involved in the major IT projects undertaken after NDS, as well as participating in build up of IT support services for newly acquired businesses or in new markets. Likewise, other people who worked in the project have benefitted from their NDS experience. Having worked in the NDS project is seen as a merit in FSC, and people from the project are generally seen as contributing well in their various positions after the project. However, in a limited number of instances, people had been removed from the NDS/NewCust projects because of alleged under-performance.

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[120] In a subsequent contact, Henrik Bergman comments that the fact that only one person knew DepSys well made it difficult to determine with certainty the maintenance situation and the condition of the old deposit system. In a way, this means that not only was the organization dependent on one person for keeping DepSys running, but managers in FSC were limited to one individual for getting information about and assessments of DepSys.

[Of the] people in the project management team, there are [a few] who were burnt-out and whose careers in FSC perhaps have been different than they might have assumed and different than if they hadn't been in the project. ... But there are good things on the personnel side as well. We now have more engineers in FSC [because of the project], which [is] very good.

FSC executive

From the branch office perspective, however, the view of NDS has not changed considerably since the system was implemented.

I think... there is a perception that [the project] didn't come to much. I think they cut things out pretty desperately at the end in order to meet the deadline.

FSC Branch Manager

When discussing weaknesses in the project and its management, many interviewees were with hindsight critical of how the project was started and of the approach to system design. Specifically, there was criticism of the guiding idea that analysis and design should not be influenced by existing systems, that those who had developed existing systems were not consulted in the analysis work, and that design work was instead carried out by external consultants who in most cases had no previous banking experience.

But: I cannot understand that so many people were needed. The project was unwieldy, it wasn't effective and the marginal output from the last people [added] was low. ... I don't think the development methodology was good. We started inventing the wheel all over again. It was supposed to be done from scratch, not influenced by what was already there. [But] then [one of the DepSys experts] had to verify that functionality was the same for DepSys and NDS anyway.

Ellen Sandel, former NDS sub-project manager

They probably shouldn't have done the analysis from scratch. They should have done a reverse engineering based on DepSys and added functionality requirements from [the] BD [department]. They shouldn't have done that gigantic analysis thing, it didn't make much of a difference anyway.

NDS was a systems re-engineering project, but that became clear only late [in the process].

Christian Englund, external consultant

Several interviewees suggested that a reverse engineering approach (determining functional requirements by starting with the functionality of DepSys and adding a limited number of improvements) would have saved the NDS project much time and ten million euros or even considerably more. On the other hand, there were indications that the analysis had produced results which were valuable, though less tangibly so in the short run:

What we did corresponds well with what has come later, such as [a vendor's] data model for financial services operations.

Tage Lundell, BD department

Other reflections on the downside of the NDS project concerned how the size of the project was assessed and managed.

At the beginning of the project, it seems that they took people who were available rather than people who were suitable. That's a consequence of keeping the project under wraps. If you don't admit the size of the project, you can't appoint good enough people because if you would, you would [thereby] say that the project is larger than you want to admit.

Henrik Bergman, commissioner for NDS 1990–1992

Additional comment on the overall management of the project concerned how (or at what point) the project was finished and the use of external expertise:

Also, you could say that we wrapped up the project too quickly. We didn't follow through all the way. We created a maintenance group that wasn't up to par and NewCust wasn't really properly finished either. And now we have 25 people maintaining NDS.

Gustaf Söderberg, head of systems development

One reflection in hindsight is how little benefit we had of external parties. We had [a hardware vendor] involved at an early stage, but we had little benefit of them. We had a lot of consultants in [the project], who gave little added value. They were skilled labor, but added very little in addition to that. ... Could we have done something differently? Did we under-utilize external competence?

Erik Östergren, former IT manager

But the project was completed and met some of the resource limits, and it resulted in a functioning information system which met the crucial functional requirements. This relatively positive outcome is attributed by many to Johan Sjöberg, the project manager from October 1990 onwards. Johan's leadership qualities were emphasized in many of the interviews (cf. also page 144), as was the management of the project in general:

Well, have you understood the secret behind the success of the NDS project yet? Johan Sjöberg. That's the secret. Running such a large project requires a skilled project manager who is accessible. Johan is calm, he doesn't 'sweat' or worry. ... He is a very skilled analyst, you can quickly get answers on how to proceed [when you need them].

Edith Lange, former NDS sub-project manager

Johan thinks in a way which is very healthy for a project or an organization. He does not care about prestige. He is like a scientist, who states things the way they are. ... For example, I remember a meeting about the interest-calculation module, where Johan calmly said that "we have probably figured this out wrong, we probably have to do it some other way". There was no prestige, and no hangups because of that.

Henrik Bergman, NDS commissioner 1990–1992

The most important was the project manager. [The project] was so large, almost nobody else can do what Johan did. Albert Lindegren hadn't gotten acceptance for the things Johan got acceptance for. Johan gets a yes where nobody else gets a yes. ... And there is another thing about Johan: He captures when there are problems and he listens. This was the first time I haven't had to shout to make myself heard. ... But Johan listened, and he also sensed when things weren't all well...

Ellen Sandel, former NDS sub-project manager

Additional comments include the importance of putting the right project manager (or managers?) in place and aspects of the project culture.

Concerning people, it was Gustaf [Söderberg], who strengthened the project management capacity as it was needed. I think Gustaf should be credited for that. Then it was Johan Sjöberg, who reshuffled the project management team when needed. The staffing of the project was very good...

Christian Englund, external consultant

One of the critical success factors in the project was that people were so incredibly dedicated. There was a lot of overtime and a lot of unpaid overtime.

Olof Tunström, former NDS project office

A large part of why you succeed is that you have a lot of fun!

Edith Lange, former NDS sub-project manager

There were also additional contributing factors to the project's relatively happy ending offered by the interviewees. These factors were often related to the personal experiences of the individual interviewee. For example, several of the interviewees who worked in the project described the project's "journey" as a result of what happened inside the project, whereas people in project management and outside the project saw other sides of the process.

First and foremost, the people in project management, especially Johan... Second, focusing deliveries, focusing certain issues [at the monthly meetings], starting things early, such as the Migration sub-project. ... Thirdly, the project control procedures, and the openness and problem management techniques we used.

Olof Tunström, former NDS project office

That we managed to complete the project was probably to a large extent because there was a different project management team. Johan had experience from leading large projects and had an ability to structure what was to be done. And then it was probably because we had discussed the needs thoroughly so there was a clear picture of what should be done and why. ... I myself probably contributed too [by making the decision] ... I think there was confidence within the project that we were in agreement that this should be done. ... I talked a lot about this being an effort, but it's important for us to do it. I think that was of help too.

Stig Vennberg, CEO

The most important was Johan Sjöberg, him as a person ... and how he led the project. Then, it was probably [also] the measures Johan and I took together, moving people rather mercilessly and dividing responsibility so that I covered the flanks and Johan drove the project forward.

Henrik Bergman, commissioner for NDS 1990–1992

Finally, there were several discussions and reflections concerning management involvement in the governance of IT projects in general and NDS in particular. There are also reflections on how projects are managed in FSC and how project size matters.

I think you could say that one experience is that we manage to complete large projects which have been thoroughly discussed. It's much worse with smaller projects which maybe don't get the attention and are started with poor preparation, haven't been thought-through and haven't been discussed enough.

Stig Vennberg, CEO

The white paper ... I don't think it came out so well. Damned if I would learn anything preparing for a project start if I read it. I mean, the classics are there, like staffing, management, control and support. But those are things you can only [get] in a large project. In a small project staffing is difficult, you don't get the staffing you need. In a mid-sized project staffing is usually OK, but support is often missing. It's like when size and risk increase, you also get the [necessary] prerequisites.[121]

Nils Høeg, former head of NDS user representatives

Concerning how to control IT projects, senior managers reflected both on the nature of IT projects and on how to control them:

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[121] Nils Høeg comments on this in subsequent correspondence: [The white paper] "was more a history of the making of NDS. We thought that maybe it could be useful for other projects which could avoid making the same mistakes we did. In that respect I do not think the white paper has become a bestseller."

> *IT projects are difficult. It's a new area. If you compare [it] with the construction industry, when they build [a large bridge] they can determine in detail what it's going to look like. ... With IT projects you don't have the same degree of control over the situation at all. I guess it's because it's a new field.*
>
> *Stig Vennberg, CEO*

> *There is no blueprint for [controlling] this [kind of thing], you solve it as it happens, as things develop. And you solve it informally, not formally.*
>
> *Axel Rydberg, chairman of the board*

The problem of limited task knowledge and other aspects of control limitations were also addressed in several interviews:

> *Well, but you know, I don't think it needs to be that way. If you view it from the angle that you know the business, what business operations look like, credit assessments, deposits and so on, then it's not so sure that the person you talk with has a knowledge advantage. ... Also, you learn over time. ... It's something you learn over time as an executive: sensing and hearing when something is not right, when there is something you should dig deeper into. That problems can occur in projects like this, that's one thing. If [they] present the whole picture, then we look at it and solve the problem together. But if they withhold things, don't give the whole picture, that's not good. That's something [they] only do once.*
>
> *Axel Rydberg, chairman of the board*

> *A reflection on [steering committees]. How large is their influence really? ... This was a unique project, but if we would do it again, I would demand more detailed [information], not to discuss details, but to get background knowledge.*
>
> *Ingmar Mankell, former NDS steering committee*

> *One thing is interesting, how important the start is in these situations. When we came to the third review, there wasn't much you could change, the project was rolling in a certain direction. That means that early reviews are very valuable, because a small change in direction has a large impact on the end result, but at the end there isn't so much you can change, then you just have to keep up the pace until people feel sick, in order to finish.*
>
> *Christian Englund, external consultant*

This concluding section of the case study has given room for personal reflections and comments by the people involved in the NDS project and its governance. In the next chapter, it is time to begin investigating what the NDS project has to say about IT project governance in more general terms, as well as to provide another level of understanding concerning what happened in the NDS project.

Chapter 5

Understanding the NDS Project

This chapter provides a theoretically informed interpretation of the case description found in the previous chapter. In addition to providing an interpretation of the case, the chapter is also used to inform theory, providing the basis for the contributions presented in the concluding chapter.

To get an overview of how the interpretive discussion is structured, see the section 5.1. The reader interested primarily in the main contributions of the study may choose to go directly to chapter 6 and return to this chapter if and when necessary.

5.1 Structure of the Interpretive Discussion

There are many stories—possible as well as extant—about the NDS project. The previous chapter contains *one* such story. Similarly, this chapter deals with one of many possible interpretations, one attempt at understanding the NDS project and specifically its governance.

While there are many possible interpretations of the case description, the text in this chapter has, as has been discussed earlier, certain attributes which are not common to all possible interpretations. First, the interpretation is theoretically informed; it is based on previous work described and discussed in chapters 1 and 2. Second, it informs theory; it is used to assess and contribute to previous work. Third, the interpretation adheres to certain criteria for interpretive research. (See sections 3.1, 3.3.4 and 3.4 for accounts and discussions concerning these characteristics of the interpretation.)

What follows here is thus a selective analysis/interpretation of the case description. It focuses on the governance of the NDS project, related to several secondary levels of analysis (cf. Table 9, page 97) and seen as a dynamic phenomenon. To facilitate this analysis, phases were constructed to help structure the interpretation and help distinguish changes in characteristics of project work, project management and project governance (cf. section 3.3.4 and Appendix F). The structure of the main part of this chapter (section 5.2) mirrors these seven phases, which are presented below and shown in Figure 16.

The first two phases concern the *emergence of the NDS project* (section 5.2.1) and the *formation of its governance* (section 5.2.2). The emergence of the NDS project is seen as depending on developments in FSC over a longer time period and resulting from the actions of people in the IT and business development departments in FSC. One of the central aspects of project formation concerns the framing, or construction, of the project as necessary and urgent. At this stage, staff managers from the IT and business development departments and their subordinates were active in initiating the project, while the CEO retained a passive role (evaluate and approve project proposal), as did other senior executives in FSC. The governance of the project is, correspondingly, formed by

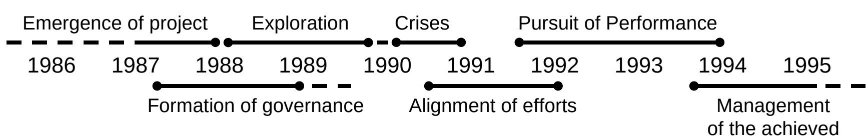

Figure 16: Constructed Phases in the NDS Project

applying FSC standard procedures from the corporate IT board and the internal project management procedures.

After these overlapping phases follows a long *explorative period* (section 5.2.3) during which the NDS project and project management struggle to find functioning work forms, plans, procedures and priorities. Concurrently, project governance is characterized by a steering committee that struggles to handle dissent while also trying to find ways to influence the troubled project. Contributing considerably to the uncertainty and relative confusion of this phase is the fact that there are two distinct, conflicting views of the project task within the project team during this period: a) replicate old system functionality in the new information system and add a limited number of specific functions, and b) build a really new deposit system to last. Correspondingly, there are two conflicting project directives expressed in the steering committee: limit cost and time, and maximize flexibility to change the new IS and business operations later. During this period of troubled project management and troubled project governance, trust in the project manager deteriorates, first so that the first project manager is replaced and then so that the second project manager comes under considerable pressure from the steering committee and some of its members.

The fourth phase concerns how this pressure on the project and project management, due in part to conflicting views of project task and priorities as well as developments external to the project and the dynamics of project governance, develops into a prolonged *crisis period* (section 5.2.4) for the project, with two successive, distinct crises developing and evolving. The first (in October 1990) is handled within the control structures for the project whereas coping with the second crisis (in January 1991) involves extending activities beyond the regular control and governance structure to involve the CEO and more prominently the CEO-to-be. The first crisis results ends with a decision to continue the project (facilitated in part by a polarization of alternatives) and the appointment of a new project manager (the third). The latter crisis is resolved through a hearing led by the CEO-to-be and the subsequent decisions on continuation of the NDS project and the start of the closely related NewCust project. The second crisis is primarily a crisis in project governance rather than a crisis in project management or project work. This crisis concerned issues such as personal commitment and risk for controllers; the situation within the project was continuously improving during the period preceding the second crisis, following the appointment of the new project manager three months earlier.

After this phase there are two phases characterized by *alignment of efforts and interests* (section 5.2.5) and *pursuit and achievement of work results* (section 5.2.6) in the project. During the first of these, in the aftermath of the CEO decision, discussions about project direction disappear from the agenda: the project is not questioned nor is the route the project is taking. With the backing of the CEO's decision and the backing of the commissioner (the new head of the BD department), the project manager continues the effort to focus the project and improve project work and project management. As this effort gradually pays off, confidence within the project increases, as does the steering committee's trust in the project manager. This phase gradually evolves into a somewhat different phase, where the project manager and the project management team continue to improve project work and project management, partly in response to continued projected cost increases while the project manager becomes increasingly proactive and influential in relation to the steering committee.

During these phases of the project, the relationship between the steering committee and the project manager changes considerably. Early on in these phases, the commissioner has taken on the responsibility and work of governing the project, giving much leeway for the project manager and acting on behalf of the project towards the project environment. Over time, this evolves into a situation where the project manager influences a considerable part of the agenda and the views of the steering committee, which, following another change of commissioner, regains the governance task as a group. This situation continues until the completion of the project, with the steering committee members over time becoming more active in helping, rather than (more narrowly) controlling the project.

The final phase of the project concerns *management of the achieved* (section 5.2.7). In other words, it concerns how the project is disbanded and the people and the project results are diffused into the surrounding organization. It also concerns how the new deposit system is managed and maintained, how knowledge gained in the project is taken care of and how the image of the project and its results is maintained. The evolution and management of the project image and rationale become increasingly visible in the case over time. Subsequent developments in FSC illustrate that the rationale for the NDS project is still addressed in events after project completion. The NDS project image influences the viability (or legitimacy) of possible actions in a way that resembles the influence exercised on possible action by the original rationale for NDS in the early days of the NDS project.

The interpretive discussion of the case, below, follows these phases. The discussion, which constitutes the major part of this chapter, is followed by a section discussing specific aspects which concern the whole process or its outcomes. Within section 5.2, some phases are given more space than others. This is because theoretical issues are usually addressed when they are first encountered in the discourse and this results in shorter subsections at the end of section 5.2.

5.2 The NDS Project Revisited

In the design of the interpretive discussion below, a central aim was to reduce repetition of the case description, while giving adequate context and specific content for the reader to understand the reasoning and also be able to assess the plausibility of the interpretation, including its relation to previous studies. To facilitate this, there are below a number of short descriptions referring to the case description as well as a number of cross-references to specific pages and sections within the case description and the theory chapter.

5.2.1 Emergence of a Project

Rather than being the work of any single change agent or project sponsor, the NDS project was shaped into being by a number of people acting on the basis of their different agendas as well as their shared interpretations and beliefs constructed over time. These shared beliefs[122] concerning the existing deposit system and perceived related problems had by the autumn of 1987 become *coherent enough* for an organizational course of action to be initiated.

[122] The words “interpretations”, “beliefs” and “ideas” , are expressly *not* intended to imply that actions in FSC were “unfounded”. Rather, these wordings indicate that the issues and conditions at hand were complex, inherently uncertain and thus difficult to assess. Furthermore, in the epistemology of the study actions are not based on what “really is”, but on what is socially constructed as being—what we construct, is (see section 3.1.2).

The beliefs—or "working truths"—that the existing deposit system was in need of replacement and that a new deposit system should run on the existing technical platform, were the result of interpretations of events and of ideas and principles of IT adoption evolving in the organization over more than a decade. These interpretations and ideas included that the backlog in change requests was due to the "aging" of the existing deposit system, manifested in its low maintainability, and that the development and replacement of information systems should be separated from changes in the technical platform (page 113).[123]

The previous attempt at replacing DepSys, the CompSys project, manifested and reinforced the idea that DepSys needed to be replaced. The initiation of CompSys was a result of the perceived replacement need and simultaneously a verification of that need. Because of the way it was framed and managed, the cancellation of the CompSys project did not contradict this view in the short run, and even served to strengthen the idea over time. The framing of the cancellation as a two-year postponement necessitated by urgent need for resources in the NewTerm project further helped construct the view that DepSys needed to be replaced and the unofficial reasons for cancelling the CompSys project did not challenge the perceived need for a new system, only the viability of the DepSys effort (pages 116-117).

The NewTerm project also influenced the emergence of the NDS project two years later. While the existence of NewTerm had worked (and been used) against CompSys, it worked in favor of NDS: The imminent completion of the NewTerm project signaled achievement and capability within the IT department, and many employees had increased their professional knowledge during the NewTerm project. Furthermore, as personnel resources used in the NewTerm project would become idle, the absence of a new project would have caused an intricate personnel-management problem in FSC, an organization rewarding employee loyalty while at the same time heavily emphasizing cost effectiveness. The NDS project would also constitute a new task in line with the competencies and interests of key personnel working in the NewTerm project. In very practical terms, the timing was right.

In fact, the timing was more than right. The urgency associated with the project from its inception would plague the project during its early years and remain with the project largely throughout its existence. Everyone was in a hurry (page 130). A central, underlying reason for the hurry associated with the early days of the NDS project was *the initial construction of the NDS project as necessary and urgent.* This image of and rationale for the project was important in summoning attention and increasing prospects for funding approval. Given the cost focus of corporate IT control and the lack of budgeted funds for the NDS project,

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[123] The long form "page" is used for references to this document, whereas page references to other documents have the short form "p." or "pp.".

project approval by the CEO and the corporate IT board could not be expected without more than proper cause.

The long period during which replacement had been discussed together with the increasing functional shortcomings of DepSys were instrumental in the construction of this view. More recent events in the organization, specifically the occurrence of production disturbances at the time of the NDS feasibility study, further increased the credibility of the "necessary and urgent" rationale during the period leading up to the first CITB approval decision in the spring of 1988. The production disturbances also helped direct attention to the one thing possibly more important in IT management than cost control: reliability problems in data production, directly leading to disruptions in retail banking operations. For an IT manager with a certain reputation for risk-aversiveness and with a (perceived) clear and explicit assignment from the CEO to keep IT costs under control, production reliability was perhaps the one thing of higher priority than cost control.

Thus, historical developments, the constructed project rationale and independently occurring events concerning data production problems together helped the project through the formal approval process of the corporate IT board and the concurrent and correlate process of gaining acceptance from the CEO. Not only was the project approved by the CITB (albeit on the second take), but the need to replace DepSys was established to the point where the CEO was concerned not only with cost but perhaps even more with ensuring sufficient production reliability until the new system could be implemented (page 125).

The considerable revision of cost estimates (from 5 to 8 million euros) between CITB meetings approving the project also signify an unclear view of the work process. But while the work process was unclear, there was a functioning understanding of organizational norms and views concerning decentralization and cost control. As later stated by the second NDS project manager concerning the time plan, plans were probably "a combination of what was desired and deemed possible" (page 138).

Decentralization and cost control were considered keystones in the profitability of FSC, and consequently they impacted corporate IT governance. This is clearly manifested in the main control measures being an overall cost limit for IT, but also in the view of IT as a *cost* and the use of charge-back of IT costs to branch offices. These arrangements and the use of the corporate IT board follow commonly proposed means for organizational control of IT in the 1970s and 1980s (cf. Dearden and Nolan, 1973; Nolan, 1982; section 2.2.1).[124] However, while cost charge-back and the IT steering committee were used for discussions concerning

[124] The CITB was instituted in 1984, two years after publication of the Nolan article on IT steering committees in *Harvard Business Review.* (Concerning the diffusion of business knowledge, see e.g. Alvarez, 1998; Nohria and Eccles, 1998.)

priorities (cf. e.g. Ross et al, 1999; section 2.2.1), the work of the CITB did not extend into alignment of IT with business strategy—except in the sense of cost control. That IT issues were not regularly on the agenda of the senior executive group is also consistent with the view of IT in FSC at this time.

This adds up to a rather unidimensional, hands-off control strategy[125] by the CEO (until the CEO succession 1990/1991, coinciding with the project crisis period). However, the use of cost control and charge-back was to some extent moderated by discussions in the corporate IT board, where non-IT managers had the opportunity to justify their needs for IT investments. In CITB, IT managers were regularly scrutinized concerning their cost control efforts, but they also had the opportunity to describe needs for investments, often from an infrastructure-maintenance perspective. Through this, CITB did function as a forum for coordination between "the business" and the IT department (cf. Raghunathan and Raghunathan, 1989; section 2.2.1). However, the IT department had primarily a defensive role in CITB; IT managers were pressured and had nothing close to an expanded role in corporate development (cf. Markus and Benjamin, 1996; section 2.2.2).

Thus, the formation of the project was subject to the organizational setting in which the project emerged. Existing corporate norms and values, procedures and control structures (corporate and IT) together with historical developments concerning IT set the stage for the emerging project and also wrote part of the script. This was also the case for the governance of the emerging project.

5.2.2 Formation of NDS Project Governance

As the NDS project got under way, governance procedures for the project were formed, or rather, adopted and applied. Just as the formation of the project was constituted by historical developments and broadly consensual interpretations of situations and developments in FSC, project governance procedures were taken "off the shelf". There was an existing set of procedures, specified by the rules for project approval by the corporate IT board and by procedures for IT projects in FSC. Kirsch (1996; 1997; section 2.7.3) also reports on the use of pre-existing control mechanisms, but the NDS case suggests that the impact of contextual factors and the reliance on pre-existing control mechanisms may be much larger than she suggests. The organizational actors involved in initiation of the NDS project were also involved in governance and the formation of governance. For example, project approval by the CITB was dependent upon the appointment of a commissioner for the project, and the initial project commissioner was suggested by the business development and IT managers to the CEO, who appointed him (page 125).

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[125] By "strategy", I mean a line of action pursued with a certain amount of intent and consistency, whether by a person, organization or other entity exercising willful action.

Correspondingly, the steering committee was put together by, and included, the people involved in project initiation (page 126). This followed from the project-initiation process and was also facilitated by the previously established relationships between the BD manager, the IT manager and the systems development manager. These relationships were related to previous joint work processes as well as continuous interaction in their respective positions. In these and other relationships between actors involved in project initiation, there were relatively stable divisions of responsibilities. There was also *trust*, partly based on position, partly resulting from personal interaction and cooperation in managing tasks where responsibilities met or overlapped, such as in the cancellation of the CompSys project (page 117).

These occurrences of trust correspond to those described by Pennings and Woiceshyn (1987; section 2.7.3), although this study, while still finding *personal trust* of great importance, perhaps places relatively more weight on *position-based trust* (or institutional trust) than did Pennings and Woiceshyn (ibid), who address it only in passing. Furthermore, the dyadic trust described by Pennings and Woiceshyn (ibid) is herein seen as elements of *chains of trust*, personal and position-related. These chains of trust, extending through a network of actors, are important throughout the governance process, such as in how views of actors evolve prior to formation of the project (see below).

To expand somewhat on the above: In line with the CEO's hands-off, *generic control* strategy[126] for IT, he favored keeping issues with the BD and IT managers, thus in practice exercising position-related trust in them. The BD manager in turn had interacted frequently with the IS development (ISD) manager in the NewTerm project (where she had worked with him in a setting with inferior task knowledge on her part; page 114) and thereby had developed trust in him. The IT manager had a certain trust in the ISD manager partly based on their interactions and the latter's knowledge about FSC and his (eventually) successful completion of the NewTerm project. From working together, certain position-related trust had also developed between the BD manager and the IT manager (pages 117-118) and between the BD manager and her subordinate involved in the NDS feasibility study. These chains of trust helped build consensus, both in project formation and in the formation of governance for the project.[127]

Following from this, there was in FSC a *group of actors with sufficiently coherent views,* who were instrumental in the formation of the project and its governance. Building on Cyert and March (1992/1963) and Child (1972) as well as earlier

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[126] By generic control, I mean control actions that are not adapted to a specific context. See further page 249.

[127] Note that consensus not is unequivocally positive—consensus also means limitation of perspectives on problems.

studies in the field of Information Management (e.g. Kling and Iacono, 1984)[128], this group of actors can be called a *dominant coalition* in that it has decisive influence over the NDS project and its governance. The concept of a dominant coalition corresponds more closely to managerial involvement in the NDS project than does the roles suggested in several other studies (cf. Rockart and De Long, 1988; McKenney, 1995; Edwards, 1996; see section 2.7.1), as will be discussed further below. In the case of the NDS project, there were competing views of what should be done (pages 120, 126, 137), although there were no competing coalitions of actors actively opposing the emerging view of the necessity of the NDS project. The lack of overt and prolonged politics in connection with the start of the NDS project can be attributed partly to this and to the (closely related) way the process evolved. This encompasses the exclusion of regions and branch offices in early work and the construction of the project as "necessary and urgent".

In the early phases of the NDS project, the CEO was involved in project approval and cost monitoring through the corporate IT board. In other respects, he was relatively distanced from project governance for a number of reasons: delegation, the prevalent view of IT as cost rather than an issue of organizational change and the view of IT project governance as a generic control task. Generic control, relative distance to the project and relative passivity would also characterize CEO involvement during the exploration phase, although the CEO continued to keep himself informed of progress and other people's assessments through the executive vice president acting as commissioner and through the BD manager. The reliance on existing control procedures thus encompassed not only formal procedures, such as the ones mentioned above, but also informal procedures, such as conversations between the CEO and the BD manager and the CEO and the commissioner.

As already described, the BD, IT and ISD managers were more deeply involved in the project. In addition to being involved in project initiation and project governance, these managers were also involved in selecting key personnel for the project. One such choice was that of project manager, which was also path-dependent: the person from IT responsible for the first feasibility study was chosen. There was no elaborate process behind this choice. As with the governance procedures, key personnel were chosen by default.

While the IT department was pressured with regards to overall IT expenditures and the cost-focused view of IT in FSC, IT professionals had considerable influence over the design and interpretation of procedures concerning IT projects, such as project management and reporting procedures. In line with observations in earlier studies (Robey and Markus, 1984; Beath and Orlikowski, 1994; section 2.4.1), the IT department could thus exercise influence over the initiation,

[128] See sections 2.7.3 respectively 2.4.3.

formation, management and governance of the NDS project (pages 122, 129). This was further facilitated by the fact that the BD department was small and strained for resources in comparison to the IT department. Further, the BD manager and others in the BD department experienced a tech-knowledge gap which made them prone to abdicate on issues defined as technical and thus within the IT domain (page 122). Thus, the construction of issues as falling within the knowledge domain and/or professional "jurisdiction" of the IT department constituted a route to (increased) influence for IT professionals in an organization designed and evolved to place little influence in the hands of central staffs and to control IT basically by limiting IT-related activities.

However, decisions on work procedures and control procedures are part of what gradually becomes a project. The NDS project *did* come into being gradually, through actions which signaled its existence. Many of these were acts of formalization, which concerned appointments, assignment of responsibilities, project organization, project reporting and control structures, budget, go-ahead decisions, presentations of plans and approval of plans (pages 118-126). Thus, the emergence of the project and the formation of project governance were inextricably interlinked. Many of the acts of formalization, including adoption of governance procedures, are what make the undertaking a project in the eyes of people in the organization. This centrality of structure in the constitution of a project contrasts considerably with the idea of projects as flexible processes (e.g. Bennis, 1966; Palisi, 1970; Bryman et al, 1987; section 2.3.1).

The shaping of the project and its governance structures did involve boundary-setting between the project and its organizational environment, e.g. through assignment of personnel and other resources and through the assignment of responsibilities concerning the use of these resources (pages 123). In other terms, a certain amount of bracketing was taking place (Lundin and Söderholm, 1995; section 2.3.3). However, in addition to being constituted by its organizational environment and organizational history, the project was also dependent on and influenced by (and in turn influenced) the organizational environment and developments in the organization throughout its existence (pages 184, 190) and the boundaries between what was done in the project and outside of it were permeable (pages 191, 199). Bracketing is thus a relative phenomenon, and it is in this case subordinated to embeddedness (Løwendahl, 1995; section 2.3.4) and boundary-spanning (Guinan et al, 1998; section 2.3.3).

The gradual emergence of the project relates directly to actual and possible differences in opinions concerning when the project started. Specifically, the views of different people about the relative importance of some of these acts should influence their views on the project start. Was it in the autumn of 1987 (when the feasibility study was started), in late spring of 1988 (when the project proposal was approved in the corporate IT board), in the autumn of 1988 (when key personnel were recruited), in early 1989 (when a project meeting was held), in the autumn of 1989 (when recruitment increased), or in December 1989 (when the goal study was approved by the steering committee)? This example partly supports Blomberg's (1998; section 2.3.4) observation that projects have a pre-history and a post-existence which is not evident from the clear delineations that the constructed starts and endings of projects constitute. This temporal relationship between a project and its environment can be called *temporal interconnectedness.* This further contrasts with the project management literature, which views the delimited time span of projects as a central characteristic (e.g. Lundin and Söderholm, 1995; section 2.3.2).

In spite of the acts of formalization involved in the formation of the NDS project and its governance, many of the actors involved—at the time and/or retrospectively—attributed emerging problems in the project to insufficient clarity, formalization and delimitation of the project. In other words, more structure was often seen as a remedy to problems plaguing the project in its early stages.

5.2.3 Exploration and Dissent (Uncertainty and Risk Control)

So the view of "the problem" and "the solution" had become coherent enough for a course of action to be initiated and legitimized through promotion by the functional managers concerned, through acceptance by the CEO and through formal approval by the corporate IT board. There was still, however, at this point and several years into the NDS project, considerable uncertainty surrounding *what* really was to be done and *how.* The definition of the project task was under influence from organizational principles, norms and structures, as embodied in behaviors by organizational actors in several arenas. It was also, though less so, under influence from norms and concurrent ideas in the IT profession at the time, as perceived and used by IT professionals in FSC. The prolonged uncertainty regarding how to conduct the project included not only the character and focus of the work, but also management and governance of the project.

What was still perceived as certain, was that the project was necessary and urgent. This view fueled—and was fueled by—the influx of people from the NewTerm project. Key people from the NewTerm project came into the NDS project early and assumed responsibility for analysis work and other tasks, influencing the views and varieties of views of how the project was to be carried out. To help get the NDS project up to speed, more people from the NewTerm project came into the project over time. They were generally expecting to "get to work", but it was still unclear what was to be done and how. In combination with "a time table beyond repair" (page 130), the resulting situation was framed as lack of progress, not as premature staffing. Thus, staffing of the NDS project increased the perception of urgency within the project, as well as increasing the level of uncertainty and anxiety.

But what was the uncertainty about? It would appear that the project should have been guided to a considerable extent by what was sensible to do in FSC and by the working definition of the project task. These two aspects could potentially have defined and delimited the project to an extent where uncertainty would have been greatly reduced. Why was this so, and why did the project not play out this way?

The organizational characteristics influencing the scope of the project included an emphasis on cost control and cost effectiveness, decentralized responsibility for how business operations are organized, a prevalent view of IT as a *cost* for the business, a corresponding view of IT as not primarily related to organizational development but rather to productivity gains through automation and personnel reductions, a relatively stable business environment and an enduring organization structure. These views and principles were shared by branch managers, region heads and the CEO, enacted in the ongoing management of the firm and manifested in fora such as corporate planning committees and the corporate IT board.

The view of the project task included a number of defining characteristics: that it concerned the replacement of an existing IS (thus development of a second-generation information system), that the project was started primarily for "technical" reasons, that hardware considerations (including user interface) were excluded from development work and that the functional changes compared to the old IS were (or were likely to be) limited. These initial characterizations of the project task coincided with and were constructed under the influence of corporate principles and norms concerning IT.

The view of the task as replacement of a legacy information system with minor functional changes was also in line with the perceived roles of people and units at headquarters. At the time of the NDS project, there was no person or unit with a perceived, clear responsibility for finding ways to apply IT as part of organizational change, and the business development department and its manager defined their role primarily as working on behalf of branch offices rather than setting an agenda of their own.

The discussion above would arguably lead us to expect a project that would be large and potentially complex, but at the same time rather well specified in terms of roles, tasks and non-tasks. The early plans to divide project work and project deliveries into two stages, as well as the early cost estimates and systems specifications consequently adhere to organizational views and norms concerning low cost and low risk. The suggested stages also served to reduce discontent from branch offices and regions for having to pay up for something they would receive benefit from only later. So the characteristics of the organization and the perception of the task seems to have defined the project rather clearly, had it not been for the influence of the IT profession and for that word, "flexibility".

While *cost* was certainly communicated as a central evaluation criteria for the project (together with *time*, in order to reduce risks associated with failure of the old deposit system), *system flexibility* was also touted as a central criterion for the project. In project work, these criteria were seen as and experienced as contradicting. A way to understand the emphasis on system flexibility in a setting where, otherwise, the fast delivery of a low-cost system would be preferable, is to see it as an attempt to decouple information systems development from organizational change, thus trying to steer clear of influencing or restricting the operative organization over the heads of branch offices. This serves to maintain the status quo concerning the separation of organizational responsibilities between central staffs and local units and between the BD department and the IT department. It also maintains the partially illusory freedom of action for branch offices concerning design of their business processes. "Partially illusory", because information systems *do* structure work and human interaction in organizations (Boland, 1979; Orlikowski, 1992; see section 2.4.2). Since FSC had many organization-wide information systems (including the deposit system), branch offices were restricted (and guided) by FSC's information systems in how they organized locally.

Central staffs did not have the authority to decide on changes in operative business processes, nor did they have the authority to decide on limiting opportunities for local units to change their operations. The preferred or acceptable solution, likewise the seemingly workable solution, for branch offices and the BD department was to request flexibility, i.e. to hedge for later changes in business operations, while not unduly and unwantedly complicating things by inducing change in the present. The resulting contradictory project directives in turn opened for the construction of two different and differing views of the project task.

Relatively early in the project's work, two views of the project task emerged: to replace DepSys while adding a limited number of new and well-defined functions, and to build the NEW deposit system based on the functions and needs of the business. At times, the second view encompassed building a deposit system that would never have to be replaced again. At other times, it was also the first part of a new IS infrastructure for retail banking in FSC. There were not only two views but also two *wills* at work in the project, and this became even more pronounced when the first project manager was replaced (page 128). The ensuing conflict concerns not only what to achieve but also the work processes and thus the tasks of the people involved in the project.[129]

The choice of systems design approach within the project was in turn closely related to the view of the project task. An approach focused on business activities/processes would call for a more advanced or progressive design approach, while an approach focused on systems re-engineering would correspondingly

[129] In terms of Swanson's (1994; section 2.5) framework for IS innovations, NDS was primarily a type IIIa IS innovation, it would not alter business operations in any major way, although it was at times later in the project framed as a "type IIIb" innovation.

imply a technical design approach, excluding most of the business-oriented analysis work.

The latter approach would have been at odds with the normative view expressed in progressive ISD methodologies at this time. These methodologies emphasized the need to include analysis of business activities in IS development work (page 129). There was not complete consensus concerning this view in the NDS project. Influential systems developers in the project were in favor of using elaborate and business process-oriented development methodology, technology specialists were among those opposed. While a wider design approach can be seen as furthering the IT profession, this disagreement can be seen as an expression of different specialities within the profession.

The influence of professional norms and values does help explain a choice of design approach which little altered the design, implementation or effects of the new information system (pages 211, 225). In terms of Abbott's (1988; section 2.8.2) view of professions in the workplace, the emphasis on an elaborate design approach can partially be understood as an attempt by people in the IT department to advance the interests of the IT department by advancing the IT profession. In this case this is done by promoting and employing the latest knowledge of the profession. The definition of the project is thus influenced by and manifested through the choice of design approach. This definition of the project itself as well as the character of the procedures resulting from the design approach promote the importance of the IT profession within the organization. An underlying message of the progressive IS methodologies at the time was that "IS development is business development (and hence important)."

The choice of a more extensive, business-oriented design approach can thus be seen as a response/reaction to the tight reins on—and skepticism towards—IT in FSC (pages 112, 132, 153). Working to extend the domain of the IT profession in FSC opens a viable course of action for the IT department, while furthering the domain of the IT department as such would probably not have been viable. When it came to design work, the IT professionals were in charge, placing users in subordinated roles and in situations where they appeared less knowledgeable than their superiors from the IT department (pages 127, 165).[130] Domain knowledge, professional jurisdiction and reinforcement of organizational responsibility combined with the way work guided by the ISD methodology was organized (cf. Robey and Markus, 1984; Abbott, 1988; Beath and Orlikowski, 1994; Wallace, 1995; sections 2.4.1 and 2.8.2). Use of methodology was not, however, prominently used as a *direct* means for creating legitimacy in the NDS project. This differs from Yakura's (1992; section 2.4.1) study, which may be due to differences between in-house IS development and the provision of consulting services.

[130] To some extent, this changed later in the project (see page 165).

The contradictory directives from the steering committee thus contributed to a conflict in the project, thereby contributing to confusion and lack of progress in a project gradually growing larger and more complex. Overall, the *control repertoire* (cf. Holmberg, 1986; section 2.7.3) of the commissioner and other members of the steering committee, individually and as a group, consisted of following up and trying to enforce cost and time estimates, and other directives (concerning priorities, results/effects, and guiding principles). In addition, some of the steering committee members had other roles in relation to the project based upon their positions in the company. For example, the managers of BD, IT and ISD all had responsibilities related to providing the project with people and other resources. The focus on cost and time was part and parcel of working in FSC and part and parcel of working with IT in FSC, but it was also reinforced by the project reporting procedures and the characteristics of the use of these procedures by the project managers during these phases of the project (pages 133, 135).

During this period, project managers reported on the project in accordance with standard norms for project management. While governance procedures had been taken "off the shelf", the expectations and perceptions of people in the steering committee were influenced by the way project work was presented, in other words the "meta-message" of project reports. Several of the executives involved and other steering committee members were not knowledgeable about the character of the NDS project task or the "proper" management of a project like the NDS project. In addition to taking governance procedures for granted, steering committee members formed opinions about the project and its progress based partly on *how* the project managers reported as well as what they reported (pages 133, 135; cf. above).[131] Thus, governance evolved through the interaction between controllers and project manager(s), with trust and commitment being aspects of this evolution (cf. Beath, 1987; Pennings and Woiceshyn, 1987; sections 2.7.3). Control is here exercised in two-way relationships the character of which is negotiated through the interactions taking place.

In this situation, two consecutive project managers tended to report in accordance with the standard model for project management. In this model, goal-setting is seen as unproblematic and goals are seen as fixed (cf. Engwall, 1995; Kreiner, 1995; section 2.3.4). This view of project reporting contributed to bringing the project manager into a defensive position, because nobody knew the project task at this time and nobody knew what the "right" goal was. In practice, task and goal were interdependent and goal-setting was dynamic (cf. Sahlin-Andersson, 1992; Hellgren and Stjernberg, 1995; section 2.3.4).

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[131] Analogous to Yakura's finding that the ISD methodology was not questioned even when consulting performance was (section 2.4.1), reporting procedures and evaluation criteria for the NDS project were not questioned as project work and project management came under increasing pressure.

In this exploratory phase of the project, it was rather more an R&D activity than a controlled production environment (which would be a more suitable metaphor for later stages in the IS development process). However, the relative uncertainty and fluidity of early phases in IS development seem to be hidden in IS methodologies, where phases are presented as uniform in character and comparable in terms of planning, execution and control. This reduces the perceived uncertainty in early phases, but causes a mismatch between work characteristics and planning-and-control procedures (cf. sections 2.4.1 and 2.7.3).

The focus on time and cost was ineffective partly because it was out of sync with the project phase and the project work process at the time. Furthermore, a major part of what the control actions pertained to were events yet to occur. The plan revisions caused the most frustration in the steering committee,[132] ultimately leading to the resignation of the first commissioner relatively early in the project process (page 132). Reviewing the situation surrounding this event, we find a reported lack of progress in the project and a discrepancy between the reporting on the project and the character of the work process, which amplified the negative news from the project. In addition, the commissioner lacked domain knowledge and does not seem to have had a working approach to understanding the project. There was a clash of values and perspectives between the commissioner and the IT people in the steering committee.

This conflict was sharpened by diverging values and conceptions, predominantly between IT professionals and the non-IT people, especially the first commissioner (pages 131-132). The IT professionals' experience included development work, coping with new technology, adhering to methods and related principles and learning about the task while performing it. Non-IT controllers on the other hand, represented organizational and industry-related values that included cost-consciousness, customer value and, at least for some, a conception about risk assessment and risk control as a core competence for bankers. In addition to this difference in views and values, the commissioner's clear and narrowly defined view of his role and mission as focused on keeping the costs "within bounds" (page 131) further contributed to the conflict and frustration. As the new head of business development took over the commissionership, the overt tension between the members of the steering committee diminished.

What we can see here may be the contour of a central dilemma in IT project governance, a dilemma that stems from the nature of the controlled task and controller knowledge of the work process (cf. Kirsch, 1996; 1997; section 2.7.3).[133]

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[132] Though reports on budget overruns in ongoing work served to make other negative news highly believable.

[133] In this and the following paragraph, there are some repetitions of earlier content, restated using concepts from control theory.

The NDS project, like any IT project, is not a repetitive task that can be readily controlled on the basis of evaluation of output. In other words, *output control is problematic.* At the same time, non-IT steering committee members possessed varying but limited knowledge about the complex, highly abstract, non-programmable work process.[134] This makes also *behavior control impracticable.* What controllers partly seem to have been doing is trying to promote self-control. In addition, follow-up on project plans can be seen as a form of reconstructed output control, although plans are not controller-set goals and task outcomes are not readily observable for controllers, save possibly for resource use.

Controller behavior early in the project process may also be partly influenced by *deferral of judgment.* At a point in time when the project image was that of "the project in the making", controllers may have wanted to suspend evaluation of project progress and of the project manager. Deferral of judgment was partly propagated by those controllers with knowledge about the work process, namely the managers from the IT department. The meaning and implications of budget overruns and increases in cost estimates was also where the rift in the steering committee emerged (pages 131-132).

So lack of task knowledge, deferral of judgment and differences of opinions concerning the project and evaluation criteria for the project work (correlated with differences in task knowledge) all contributed to a relatively passive approach by the steering committee at this time. There is also the question whether controllers perceived that there were control actions available, which, if invoked, could lead to constructive results in the control relationship and/or in the controlled tasks. It would seem that their perceived control repertoire was limited. Together with the lack of consensus on how to control the project, this means that there was no functioning control strategy.

As discussed above, several characteristics of the control situation contribute to the high complexity of IT project governance in early stages, including controllers' choices of control modes (cf. Kirsch, 1996; 1997; section 2.7.3), evolution of the control relationship (cf. e.g. Beath, 1987; Pennings and Woiceshyn, 1987; section 2.7.3), dynamics concerning the dominant coalition (cf. e.g. Child, 1972; Kling and Iacono, 1984; sections 2.4.3, 2.7.3), and dynamics concerning the formation of a dominant control strategy.

In line with Kirsch's (1996, 1997) specific findings concerning the selection of control modes, the NDS case also indicates that control was influenced by pre-existing project governance mechanisms, role expectations (and additional individual role definition) and project-related knowledge. As discussed above, task characteristics (observability, measurability) are bound to make both

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[134] Note that this statement distinguishes "task programmability" (cf. Eisenhardt, 1985; section 2.7.3) from "controller's knowledge of the transformation process" (Kirsch, 1997; section 2.7.3), whereas Kirsch (1996) *replaces* the former with the latter.

behavior control and outcome control highly difficult in ISD projects (page 247). In combination with non-IT controllers' limited task knowledge, this meant that the use of behavior control was limited. However, when the opportunity to observe and influence the work of the project management team arose (on the controllee's initiative), it was taken by several steering committee members (page 172). This form of behavior control did not require specialist knowledge of the work task, but could still be used to gain information on how the project was managed and organized and what constituted acceptable behavior in the project.

Kirsch (1996) also found that low outcome measurability led to increased self-management by controllees. Looking at the whole NDS project process would not lead us to this conclusion. Rather, self-management by the controllee seems to have been closely related to the controllee as an individual and her role perception, rather than to task characteristics, controller knowledge or (others') role expectations. The third and last NDS project manager did use self-control, but this was not prominent in the previous two although there were some (seemingly ineffective) attempts by controllers to (in the terms of Kirsch, 1997) "induce self-control". Seen from a governance perspective, this can tell us something about *input control* (Sjöstrand, 1987; section 2.7.3).[135] An alternative framing of the relationship between task characteristics and self-control is that when both behavior and output control is problematic (see above, page 246); *controllers can use input control to achieve self-control* by selecting a controllee with high propensity for self-control. Thus, input control in terms of selection of key personnel can be used when behavior and output control are impracticable or problematic.

Kirsch (1997) also proposed that controllers put together a portfolio of control modes through a certain process (cf. section 2.7.3, Figure 7). In contrast, the NDS case and the discussion thus far in this chapter clearly indicate that controllers do not employ a *distinct* process to *select* a portfolio of control modes. In addition to accepting existing control structures to a very large extent, they may instead be guided by an *individual control strategy.* This individual approach to control, which encompasses the perceived role and a basic idea for workable involvement in control activities, seems to be based on reasoning (or sense-making), rather than a distinct selection process.

One way of describing different individual control strategies is to look at how controllers viewed the controlled task in relation to themselves. This does not just concern role expectations, including the controller role in relation to the individual's role in the organization as a whole; it also concerns constructing a workable approach to taking part in the governance of an IT project. Making use of several statements about rationale for control strategies in the case, not only concerning

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[135] Here, input control is seen as the control of a task through resources and other inputs, including selection and recruitment of personnel in relation to this task.

the NDS project, we can find several rather different examples of control strategies.

First, we can find examples of managers approaching a control task without particular concern for task characteristics or related adaptation of how control is exercised. Examples of this include situations where standard control mechanisms such as budgets, cost control, etcetera are used (e.g. Axel Rydberg, pages 114, 189). This approach to control can be called a *generic control strategy.* It implies that one control situation is rather like another ("have management skills, will control").

Second, we see examples of approaching a control assignment through comparing the controlled task with a different type of task, for example comparing IS development with construction projects (e.g. Frans Trenter, page 132). This approach can be called *control by analogy.* It is based on the idea of transferring domain-related knowledge from one type of situation to another, in the process analogizing—in practice even equating—the two types of situations.

Third, we find examples of controllers who in different ways try to piece together an approach to control, based on the assumption that control needs to be adapted to the specific context. This *adaptive control strategy* does not imply domain expertise, but rather includes various means for understanding developments in a project as well as means for influencing it. Examples include having or acquiring an ability to interpret various types of information on the project and understand implications of developments (e.g. Karin Martinson, pages 130, 172). This implies a reliance on interpreting meanings and understanding implications of what IT professionals say, without (necessarily) understanding the specifics of what they say. Prior experience of ISD projects from a non-technical perspective may be one basis for this.

Some controllers also mention using—or not being able to use—an understanding of the task as a basis for control (e.g. Karin Martinson on Frans Trenter, page 130). Not surprisingly, this is equivalent to "controller knowledge of the task" (or transformation process), and can be called *control through expertise.* Instances of trying to learn the task were not observed, although there were indirect indications that lack of task knowledge negatively affected governance (page 138).[136]

Yet another approach to governance involves basing control actions on trust in the project manager and/or other key people in the project (e.g. Karin Martinson, page 131; Henrik Bergman, pages 161-162). *Control through trust,* here, is an approach to control. It does not imply seeing trust as a control form. Even if trust is not the primary approach to control, trust is a characteristic of a control

[136] It should be noted that control through expertise would not offer a solution to dilemmas of control: As discussed in section 2.7.3, Perrow (1986) points to the fact that experts who become managers lose expertise in relation to specialists. Also, Snook (2000) contains a dramatic example of how management based on expertise contributes to organizational failure (cf. also Weick, 2001, for a comment on this).

relationship that influences/moderates the use of other control forms (this will be discussed in relation to several phases below).

As becomes increasingly obvious in this discussion, these ideal types of control strategies can and do occur in mutations or combinations and a controller can also shift between these approaches over time. The reason I venture to call them strategies is that they—each one and in various combinations—may form the basis for how a controller approaches the control task, thus preceding "selection" of control modes. This view offers an alternative to the control-portfolio process suggested by Kirsch (see above), although the alternative view suggested here is less firmly anchored in the empirical data than is the critique of Kirsch's process model. In addition to this being a tentative list, it should also be noted that individual control actions are also influenced by other factors, such as dynamics of commitment, which are discussed below (see page 251).

Late in this phase of the NDS project, as the project had long lost its innocence and the image of the project had evolved from "the project in the making" via "the large project" to "the large, troubled project", the looming crisis gradually brought about deeper involvement in project governance by executives and increased coherence of views on project scope and goals. This is manifest in, for instance, considerably more direct instructions to the project manager during the spring of 1990 (e.g. page 138). However, deeper or more active involvement in governance still did not equal "effective" governance (in terms of effects of interventions). The most direct and important input from the steering committee was probably the clear directive to base NDS functionality on the old system, thus completing a journey from a relative focus on rewriting DepSys with specific additions (page 122) to an emphasis on enabling future organization development (page 129) and back to replicating DepSys functionality with some additions (pages 138, 225).

However, at this point the design approach was set and not changed or revised to reflect the shift in directives and resulting alignment of project directives. The immediate impact of the clarification on project work was very limited or even non-existent. So the outcome of the situation with contradicting directives and alternative design routes was that the directives were clarified into systems re-engineering, the design approach used business activities as a starting-point and system functionality was ultimately mapped against the old deposit system.

In terms of the evolution of governance, the views on project goals and priorities in the steering committee had converged over time, while at the same time concerns and worries increased and trust in the project manager deteriorated. There were also quite a few instances of acceptance of budget overruns and increases in cost estimates. Thus, organizational commitment to the project (i.e. sustained resource allocation; section 2.7.2) increased during this phase, but individual commitment did not. In fact, ambiguities regarding the IT manager's individual commitment was one source of the conflict involving the first commissioner, who saw the IT manager as solely responsible and also saw what he perceived to be lack of commitment and responsibleness (and possibly conviction) on part of the IT manager (page 131).

In spite of continued resource allocation in the face of negative feedback, the definition of escalating commitment in escalation theory (cf. section 2.4.4), *individual* commitment by members of the steering committee did not increase drastically. Acceptance of cost increases (actual and projected) was a default action, one which did not require visible action on part of an individual. Visible action through personal initiative would mean commitment to a course of action associated with considerable uncertainty, whichever alternative one would choose to promote. In addition, while projected cost increases were accepted, request for the allocation of additional personnel was turned down at least at one point (page 135). Beyond resource strain in the BD and IT departments as a partial explanation for this, assigning additional personnel would have required visible (at least within each department) personal initiatives by the BD and IT managers. Thus, it would seem that organizational commitment can increase without a corresponding increase in individual or group commitment, and that different types of resource allocations may influence levels of commitment differently, depending on whether they necessitate visible personal initiatives.

The relationship between action and individual commitment (cf. Salancik, 1977a; section 2.7.2) is also related to personal risk. Personal initiatives in the governance of the NDS project at this stage would also mean increased individual commitment, increased assumed responsibility and increased personal risk, related to the uncertain outcome of the project (cf. Brunsson, 1985; section 2.7.2). Correspondingly, as is discussed below, individual control actions can also disassociate an actor from a course of action, having the effect of reducing individual commitment. In sum, this discussion on commitment strongly supports the view of commitment represented by Salancik and Brunsson and correspondingly reinforces the critique of basic assumptions in escalation theory initiated in section 2.7.2. (On pages 253-254 below, there is a related discussion on procedures for reinforcing individual and group commitment in times of crisis and dynamics of repositioning individual commitment.)

Ideas, or overall conceptions of the project, that governed project work and project management during the first years of the NDS project included the initial construction of the project as "necessary and urgent", the task of project planning as "a combination of what was desired and deemed possible" and "low-cost and flexible" as an organizational guideline for information systems development. Though the image of the project retained the construction "necessary and urgent", this was over time supplemented with an image of "the project in the making", then "the important project" and then "the troubled project". Next stop: "the project in crisis".

5.2.4 Crises (Credibility and Existence)

In spite of efforts in the project and in the steering committee, especially during the latter part of the exploratory phase, the flow of negative reports from the project continued, causing increasing worry for steering committee members and increasing concern over whether the project manager was up to task. There had already been two external reviews and one change of project manager. The clarification of project focus and reduction of ambition level towards systems re-engineering did not seem to help in getting the project on track and there was a deterioration of trust in the current (second) project manager. The act of bringing in a consultant to support the project manager had had limited effects (page 132), but a certain trust in the consultant had developed in the steering committee.

In late spring of 1990, it was quite clear that neither the project manager nor the steering committee was in control of the project. The second review, in the spring of 1990, had alleviated worries through articulating a variety of serious problems in the project. In this situation, the IT manager did not assure the committee that the continuation of the project would work, but rather informed them about potential sources of further problems. In terms of commitment, this constituted an action which disassociated the IT manager from the project, reducing his commitment to the project.

In this situation, there was a need to reassert that the NDS project was the right course of action and to recommit members of the steering committee. There was also a process of shifting or redistributing responsibilities. Different views on responsibility had contributed to the earlier conflict in the steering committee, as the first commissioner found the IT manager to be *the* person responsible for the project, while the IT manager clearly did not share that view and sought to avoid being placed in that situation.

Internal investigations in the project and the IT department during the summer of 1990 led to a half-hearted revival of DepSys renovation as an alternative to NDS and the stage was set for the full-day crisis meeting of the steering committee in early October 1990. This meeting (pages 140-144) results in several things.

First, it educates (non-IT) steering committee members about the complexity of the task and the lack of viable, attractive alternatives to what is still “necessary and urgent”. There are alternatives presented, but there are also presentations on the drawbacks of these alternatives, and there is a revision of figures in favor of the NDS alternative in preparation for the adjacent follow-up meeting. Thus, the meeting also results in a polarization of NDS and other alternatives and a negative image of the DepSys-renovation alternative. This concurs with Brunsson’s (1985; section 1.2.1) view of action rationality, as something partly achieved by designing alternatives so as to contrast and to make one alternative clearly preferable (cf. also Rombach, 1986, pp. 100-107, on the polarization of positions in organizational talk).

Further, the meeting also results in a broadly shared commitment and responsibility in the steering committee. With the first commissioner absent from this and several other meetings during this period, nobody claims that the IT manager should take full responsibility individually and in the end everybody speaks out for continuing the NDS project (pages 142-143). In the meeting minutes, it is stated that "the final decision" on the project had been made (at the follow-up meeting). In Salancik's (1977a; 1977b; see section 2.7.2) view of commitment, the members of the steering committee were committing themselves (visibly, by volition, and with stated irrevocability), quite systematically by asking everyone individually and then repeating the process at the follow-up meeting after the first vote was incomplete. Through this arrangement of a social situation, personal and group commitment are systematically increased for the participants.

Finally, the meeting also clarifies that the project manager is neither comfortable nor credible in his current position, as his personal lack of dedication to the NDS project shows through (cf. page 128 on the background to this). It also becomes increasingly visible that the consultant supporting the project manager has in practice taken over part of the project management role. This becomes manifest in the change of project manager that follows.

In sum, the episode of the prolonged meeting ends with an apparent resolution of the crisis, a "final decision", a new project manager and—coincidentally—another new commissioner (page 144). The joint aim of the steering committee and the new project manager was now to get the project under control (meaning no further cost increases or other plan changes after the ongoing revision of project plans). But the continued reports on increases in project-cost estimates lead to another crisis (page 147-149). This time around, the crisis is primarily in project governance rather than in project work or project management. Prior to the earlier crisis, the project had been in disarray, and reporting and reviews had shown considerable causes for concern. This time, project work and project management was improving consistently and considerably. As the crisis in project governance unfolds, however, it causes a virtual standstill in project work.

The cause for concern was the continued increases in cost estimates, which triggered action by the IT manager. His suggestion to scrap the NDS project in favor of a different project was the result of rekindled doubts about the viability of the project and concerns about resource use, especially given the IT manager's perceived No. 1 mission to control IT costs (pages 116, 242) and against the backdrop of a deteriorating market situation in the industry. A central implication of this action is a *reversal of commitment,* a (renewed) disassociation from the project that leaves other steering committee members committed while withdrawing his own individual commitment. The IT manager's proposal consequently incited aggravated protests from several members of the steering committee (pages 150-151). In reversing commitment, the IT manager also rebuts earlier explanations of the maintenance situation for DepSys as well as the rationale for NDS, in effect renouncing the original "necessary and urgent" image of the NDS project.

In a sense, the IT department and particularly the IT manager thus became victims of their own creation. The repeated message that DepSys was decaying and the (consequential) construction of the NDS project as necessary and urgent led to the IT manager becoming bound, committed, to the NDS project as a course of action and to the problem definition underlying the project image. Consequently, alternative courses of action lacked credibility if suggested by the IT manager (or other senior manager from the IT department; page 151). The meaning constructed to induce action thus limited what the IT department and the IT manager could do and say. Consequently, the IT manager's suggestion to abandon the NDS project led not only to a crisis in project governance and thus *consequently* for the project, it also led to diminished confidence in the IT manager among several members of the NDS steering committee.

What happened in and around this meeting can also be described as a breakdown (or break-up) of the dominant coalition. Early in the project the BD, IT and ISD managers were on—and sought—common ground, but this was an individual initiative by the IT manager, opposed by the new BD manager and (less visibly) by the ISD manager, with the former BD manager (Karin Martinson) caught in-between. As the dominant coalition breaks down, so does its commitment to the NDS project.

The escalation of the issue (not of commitment, per se) to the CEO and CEO-to-be also make the IT manager's act of proposing to cancel the (by now well-known) NDS project visible in the organization. The hearing further associates the IT manager with the cancellation proposal, though he is absent from the hearing process. This, as the continued story of the NDS project shows, can be seen as a case of acting to change commitment related to the dual risks of supporting ultimate failure versus opposing ultimate success (Brunsson, 1985; section 2.7.2). As Brunsson (ibid) discusses, other actors' choices also influence the outcomes: the visible, volitional and irrevocable decision of the CEO-to-be in the hearing considerably influenced expectations that the NDS project would be completed.

What, then, did the CEO-to-be do in the hearing? Arguably, he investigated ground for consensus and assessed risks. What the CEO-to-be did *not* do, for good reasons, was to find out for himself "what the situation really was like" *in terms of the project task* at the heart of the matter. This would have required in-depth expertise both concerning IT project management and concerning the specific task of building deposit systems with the specific technology in question. Instead, the investigation was, in this and other respects, based on listening to, weighing and assessing *other people's assessments.*

The first issue concerned what the current consensus opinion on the project was (and thus what the reactions to different outcomes of the hearing would be). As described on page 155, this assessment was biased in favor of NDS by the moderation of opinion by some hearing participants. It could be argued that the CEO-to-be also built or reinforced consensus by gradually revealing his own views on the matter during the hearing process. In this way, the CEO-to-be gradually shifted, and gradually made public, his own position on the matter in relation to his emerging view of the positions of other actors.

This relates to Brunsson's (1985; section 2.7.2) ideas on how expectations about the likelihood of completion of a line of action influence commitment, but with a twist: While Brunsson (ibid) suggests that commitment by important parties influence the expectation that a line of action will be followed through (cf. also the quote by the CEO-to-be on page 156), we here see the leanings of the CEO change with his emerging views of the consensus and the risks. As he subsequently reveals his conclusions, the relation shifts and comes to resemble the one described by Brunsson (ibid). This, in turn, can be seen as a type of top management support, which is not well covered by Sauer's (1993a; section 2.7.1) classification of support into funding, fixing and power-broking. It is, however, not without problems, as will be discussed below.

The closely related second issue, risk assessments, can be seen as concerning several dimensions. One was whether the project could be completed at all. This was answered in the affirmative by listening to "experts", including the project manager, and by forming an opinion of the project manager. Another dimension concerned the risks of the alternatives for FSC, where completion was considered less risky than abandonment (cf. the meeting with Ingmar Mankell, page 154). This was also related to personal risks with going ahead versus cancelling the project ("I didn't want to become the last CEO...", page 179).

As it happened, the risk assessments and the consensus view concurred, making for the decision to continue the project. In spite of the distinct nature of this decision, its announcement by the CEO-to-be was very low-keyed (page 156), although it immediately became a major, symbolic event in and for the project (and was used as such by the project manager, page 157). Shortly thereafter, as the CEO comments on the decision in the corporate IT board, he polarizes alternatives in favor of the NDS project (page 157). However, the polarization of alternatives, which can be seen as related to action rationality (cf. page 252), did not appear separately or independently from other rationalities. Specifically, the hearing process encompassed a quite elaborate analytical process where there was listening, dialogue, weighing of options and risks and also assessment of and influence over the consensus view. The latter part concerns the understanding of a wider set of consequences, not only those tangible but also consequences pertaining to individuals and social networks. Thereby the hearing process in a sense merged decision rationality and action rationality.

Governance by the CEO at this point also took the form of setting a maximum cost limit in personal conversation—and thereby in a personal contract—with the project manager. This cost limit was not based on current estimates, but rather related to what cost would be possible for the organization to carry and for the new CEO to defend in the organization. Used this way, as a limit rather than a control parameter, the upper cost limit can be seen as a form of input control.

The decision resulted in a perceived certainty about the intention of FSC management to see the project through, and thus a sanctioning of the project and the project manager by the CEO. Following from this is further increased confidence in the project manager within the project and from the steering committee and commissioner. The IT manager on the other hand, who has been in a tight spot since the beginning of the project, is now seen as having been overruled by the CEO-to-be on an issue seen by many as entirely or primarily within the IT manager's domain. Prior to the hearing, however, it is doubtful whether it had been viable for the IT manager to promote the NDS project at projected cost (pages 160, 253).

In effect, the coalition of people with decisive influence over the project now included only the commissioner (head of BD) and the CEO, with the CEO backing off from active involvement in project governance directly after the decision. (In addition to the dominant coalition of controllers, the project manager would over time influence the project considerably through controlling most of the information flow and reporting from the project and through the high level of trust from the commissioner and the CEO.) In spite of his personal stake in the welfare of the project, the commissioner at this stage employed a hands-off strategy for governance and also—in practice—shielded the project from the steering committee by postponing meetings (pages 161-162).

Above, it has been suggested that the key actors in ensuring survival and progress for the NDS project *at this particular time* were the CEO, the commissioner and the project manager. This would mean that this is the first time during the life of the project where the actions and roles of the dominant coalition and the project manager together correspond to the standard roles for IS implementation discussed in section 2.7.1 and summarized in Table 5 (page 50). There is an "informed and committed sponsor", a champion who "advocates the project... and influences other executives" and a project manager "able to work with stakeholders" (pages 159-160).

Earlier instances of the dominant coalition (as well as later ones) were constituted differently and, for example, the previous CEO and the first commissioner did not constitute a functioning set of roles for the NDS project. Assigning roles does not per se solve IT project governance problems. The dynamics of the dominant coalition was a result both of personnel changes (appointments) and of changes in individual commitment. It was a changing group of people, not a sponsor and a champion who remained in place. Later on in the project (see discussion below), continuity in the dominant coalition would become a concern for involved actors and although there were attempts to limit changes, there was still a considerable number of planned as well as unplanned changes in the dominant coalition over time.

This view of involved executives as a dominant coalition that changes over time, contrasts substantially with observations (e.g. McKenney, 1995) and prescriptions (e.g. Benjamin and Levinson, 1993; Edwards, 1996) in studies focused on roles and role sets of managers in IT projects (see section 2.7.1). The dynamics of the dominant coalition in the NDS case suggests that the role set commonly proposed (cf. Table 5) is not stable and that managerial support is likely to hinge on a constellation of actors, rather than on one or two individuals.

In terms of personal commitment, the commissioner is committed to the project through his actions and through the web of social relations in which the actions have occurred. There is also a widespread perception that the CEO is committed to the project (although there may have been circumstances later on under which CEO could reverse his stance—see the brief Q&A between him and the BD manager recounted on page 179). As for the other members of the steering committee, they have been sidestepped in the decision process and will be sidestepped in governance for a time, but they are still bound to the decision made and compelled to support the project. In so doing, the commitment of the steering committee builds over the next months and so does that of the IT manager, as he quickly gains respect in both the IT department and the project for how he supports the project (page 160).

Implications of the way the crisis has been resolved show immediately in the flow of key people, resources (including approval of related projects) and support to the project (pages 157-159). It also shows in the immediate end of discussion about alternative routes. From now on, this would be the way to go. Now, this may sound like a project manager's dream, but there are risks inherent in these consequences. Henceforth, there is virtually no room to discuss doubts about the project and no forum or person to present concerns to. The result is double-edged: dedication and single-mindedness. The project image is now one of "the sanctioned project".

If this is what top management support is (cf. section 2.7.1), there are at least two questions which need to be addressed: First, what happens when a CEO bets on the wrong horse, i.e. where a CEO decision favors a course of action which ultimately proves non-viable in spite of CEO support, setting the stage for project escalation (cf. section 2.4.4)? Although the outcome of the hearing process in the NDS project was in many ways quite favorable, the description of the hearing process does not bear witness to any superior ability by the CEO in assessing the viability of the project as such. Rather, it points to the uncertainty of the situation and to other aspects than "facts" as influencing the outcome of the process (page 155).

Given the coercive nature of a CEO decision in this context (cf. “it was really my decision...”, page 156), more frequent use of visible, distinct CEO decisions on projects would probably also produce organizational endeavors that would scarcely be questioned. For example, the abandonment of the BankSys project was preceded by (commitment-reducing) initiatives by the CIO and the former CIO (page 223) who had both been active in the start of the BankSys project. Furthermore, the absence of pronounced CEO commitment to BankSys was arguably a favorable condition in the ultimate reversal of the organization’s commitment to the BankSys project. This in turn speaks for the factor "personal responsibility" in escalation theory (e.g. Staw and Ross, 1987; also Keil 1995b; section 2.4.4). However, since personal responsibility is also closely related to commitment and thus to sustained action, this factor is as likely to explain implementation successes as to be found a culprit in escalation situations.

Second, countering the risks just mentioned, it is quite likely that it would not be possible to handle several projects this way. It was partly the extraordinary nature of the hearing that contributed to its effects. Further, the regular use of this or a similar procedure would shift organizational practice, thus changing the meaning attributed to a CEO decision, and probably result in centralization of assessments of a number of issues. “Top management support” as constructed in the literature, is perhaps *most effective when it exceeds the norm* or the expected—and that makes for problematic organizational practice.

This observation has not been found in literature on top management support (cf. section 2.7.1). Given the extensive treatment of top management support in the literature, how is it that this does not seem to have been addressed earlier? One answer is that studies on top management support (e.g. Lucas, 1975; 1981; Sauer, 1993a; Bardi et al, 1994) tend to focus on *the project* as unit of analysis (cf. page 96) and on the success of a single project. These studies do not seem to consider project governance in the context of ongoing management of IT and IT projects in an organization.[137]

5.2.5 Alignment of Efforts (Trust, Identity and Association)

Following the hearing and its immediate aftermath, there was a division of responsibilities between the project manager, who focused on internal tasks, and the commissioner, who focused on buffering the project (page 161). Project management tasks included reducing the continued duality of purpose within the project, reorganizing for increased efficiency and finding procedures to coordinate and align work efforts to achieve results. Measures included using special campaigns such as “operation platform” (page 162), a sort of “project within the project” and making relatively frequent changes to the organization

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137 This claim also holds up in reference to literature on projects (in general) addressing top management support (e.g. Pinto and Slevin, 1987; Pinto and Mantel, 1990; Briner et al, 1996; Scotto, 1998).

structure of the project (pages 167, 181, 198). The project manager also worked to inform and educate the steering committee on the project during this period, signaling that the project was increasingly under control.

The commissioner focused on selling the project to regions and branch offices, including selling a positive image of the project and what it will deliver and thus help branch offices achieve. Over time, the image of the project evolves into "the important, contributing project"—the project that will deliver benefits to the organization. The changes in and of the project image over the course of the project are now quite substantial. When the project emerges, the image is one which says "we *must* do this *now*", while the aftermath of the hearing serves to produce an image geared towards promoting the benefits of the NDS project. From this point onwards, the imperative aspect of the initially constructed image fades, partly because there were now other mechanisms that pushed the project forwards. Of course, each new image did not distinctly replace the previous. Rather, images overlap, although there seems to have been a dominant image and related rationale at most periods during the project process.

The commissioner also "buffers" the project from its environment, partly through his selling efforts, but also by protecting the project from what might somewhat irreverently be called "unnecessary governance". By cancelling or postponing steering committee meetings, the project and the project manager get breathing-space to improve the project organization and produce results. (In one of the first meetings after the hearing, the project manager thus is able to report good news concerning project plans, page 162). The postponement of steering committee meetings also in practice mean that there is no existing forum for inspecting the project outside of the conversations between PM and commissioner, who in turn reports to the CITB.

The formal project organization was deemed important by people in the project. The formal project organization structure was used as a tool for formal control, but also as a means for signaling developments in the project, such as a shift in project phase, and corresponding shifts in attention in the project work. The elaborate use of formal project organization in the case studied—and the elaborateness of used project organization charts—further departs from the view of projects as different and separate from the regular workings of organizations (Bennis, 1966; Bryman et al, 1987; Lundin and Söderholm, 1995; Edwards, 1996; sections 2.3.1, 2.3.2).

At the same time, the NDS case shows how formal project organization, elaborate and hierarchical, was used as a rather flexible tool for guiding and directing project work. The guiding of project work not only concerns the organization of work, but also the use of reorganizations to signal changes in project work, such as a shift in focus of attention or a change in project phase. Developments in project work and project management thus seem to have been tightly coupled: the continuous improvements in project planning and control contributed to improvements in project work. Incidentally, this *also* contradicts Blomberg's (1998) contrarian view of project planning as counter-productive or negatively correlated with project success.

Project reorganizations would be used frequently and effectively by the project manager in the following years, combining the use of formal structure with flexibility, thus in actuality fulfilling one of the promises of projects (section 2.3.1). In contrast to some of the more romantic ideas about projects, however, this—together with the earlier observation on the central role of structure in the formation of projects—also shows that projects can be formal structures as much as flexible processes and that they can contain several hierarchical levels and rely on formal structure (pages 167, 181, 198). This highly visible and elaborate use of formal structure in turn exists within the organization, including *its* structures (cf. page 240 above).

From the autumn of 1990, and more visibly so after the hearing, there were over time continual improvements in project work, planning and reporting and the work of the project management team. Especially during 1991 and early 1992, there emerged a project culture, project morale and a sense of pride in working in the NDS project. The project manager was a—or *the*—key person in achieving this. The project was now acknowledged as a major effort and one which would contribute to the retail banking business of FSC. The project continuously received a great deal of support from its environment. From the IT department, support was extensive and substantial. It was provided with help from the IT manager and ISD manager, or through direct contacts. In the latter cases, the project's reputation and standing in the organization was of help both as such and by providing a means for pressuring the counterpart, usually a specific unit in the IT department, by referring to the project's importance for the organization (and implicitly its backing by the CEO).

Kirsch (1997, section 2.7.3) pointed out that the skill of the project manager influenced choices on control means, specifically whether to rely on outcome control and self control. This also seems consistent with observations from the NDS case, although actors generally seem to have based these judgments on trust, which encompassed assessments of project management skills, and—prominently—the perceived character of the control relationship as it is played out in interaction between controllers and controllee. Here, development of trust is central, accompanied by self-control on the part of the controllee and also increased upwards management. In spite of increased trust, learning about the project task and a broadening of the control repertoire (on the project manager's initiative), the influence of the controllee over the controllers means that while the basis for governance is improved and the control repertoire expanded, the influence of the steering committee is reduced.

During the spring of 1992, there is a specific situation concerning the New-Cust project where input control is very visibly used by a controller. The BD manager sets an upper cost limit for NewCust considerably above revised cost estimates (page 178). This event demonstrates a striking similarity to the situation where the CEO-to-be sets an upper cost limit to the NDS project through personal agreement with the project manager (pages 154, 255).

5.2.6 Pursuit of Results (Performance, Expectations and Delivery)

During 1991 and early 1992, the steering committee had gradually been let back into the governance task again, though there was a continued practice of separate, conclusive discussions between commissioner and project manager, followed by information (or pro forma discussions) in the steering committee (page 187). Related to another shift of commissioner in late 1992 (back to the first-mentioned BD manager, to whom the IT and BD managers now reported, pages 132, 181, 181), discussions in the steering committee became less preordained and the IT and ISD managers became more active in the committee meetings.

At this point in time, however, there was a gradual shift in the relationship between the steering committee and the project manager. Whereas there was tension related to control issues in the committee meetings during late 1992 and early 1993, this tension fades as the steering committee becomes increasingly "implicated". Remaining tension shifts from the project manager—steering committee relationship to the CITB, specifically between the "NDS representatives" (commissioner and IT manager) and the other people in the CITB (the CEO and members of the CITB not involved in the NDS project). In spite of this, the CEO represents continuity and security for the project: He is committed to the completion of the NDS project and reinforces this commitment when talking about, explaining and defending the NDS project on various occasions, e.g. in branch office meetings (page 166).

So too does the most recent commissioner, who had been involved in the project from the start,[138] as well as the executive vice president who was the first commissioner. For example, the latter promotes NDS when explaining the need for NDS and for related sacrifices to his peers (page 177). This promotion of the project by members of the steering committee and others involved with the project was also an important element in the "shift" in the steering committee.

The dominant coalition for the NDS project, other members of the steering committee and also the project manager in this way maintain, adjust and communicate the image of the NDS project. The continual adjustments of (or changes in) the project image over time are related to developments in the project and changes in project scope as well as to what was organizationally feasible. The project image is also a carrier for (or includes) a rationale for the project (e.g. a

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[138] This commissioner appointment was partly made on the grounds of ensuring continuity in the governance of the project.

needed heart transplant, or a future competitive advantage) without this rationale becoming a matter of discussion or elaborate description. Through this, communication of the project image is one important way of attaining broad acceptance of the NDS project. The dominant coalition for the NDS project, the (third) NDS project manager, other members of the NDS steering committee and the CEO were at different times important in constructing, changing, maintaining and communicating the NDS project image.

During this phase, the project manager uses advances in the project to promote the picture of a well-functioning project to the steering committee and also uses other sources (such as the company magazine) to describe and promote the project (page 184). Another example is the CEO visit in early 1993, where working parts of NDS are demonstrated and even used by the CEO (page 193). Here, "reporting" on visible output from the project is used as a symbolic event reinforcing morale within the project and demonstrating progress to the CEO. Possible effects include both reassurance about progress and some increased understanding of the project task. This event is far from a regular instance of output control. Rather, it is an example of extensive upwards management (cf. Gabarro and Kotter, 1993; section 2.8.1). Interestingly, upwards management is not addressed in previous studies on IT project control (Kirsch, 1996; 1997; section 2.7.3), perhaps because of the intellectual heritage from agency theory (cf. discussion in section 1.2.3).

In the steering committee, the project manager also presents (and frames) possible bad news to reduce negative impact. To a considerable degree, the project manager now successfully manages the steering committee's expectations and perceptions of events in the project. He is open, but selectively open and careful with the presentation and timing of potentially negative news. For example, he frames costs as insurance fees and keeps potential crises under wraps until a way to manage them is found (pages 168, 185). One such example is the looming cost crisis in October 1992 (page 185), which is solved within the project management team. Subsequent reporting on problems to the steering committee, as well as reporting on upcoming problems, does not threaten the image of a project manager in control. Related to cost increases, managers in the IT department help in distributing work tasks and related costs within the IT department outside the project.

Organizational commitment to the project increased with the pursuit of the task. Over time, resource use accumulated (quickly during 1992–1993), but also *sacrifices* made to facilitate NDS project work. These sacrifices also led to increased organizational commitment, although they did not always constitute additional resource use. An example of this is the case of the lengthy postponement of changes to retail banking information systems (page 187). In chapter 2 (and continued in this chapter), escalation theory (e.g. Staw and Ross, 1978; 1987; Brockner, 1992; section 2.7.2) was criticized for its view of commitment and a separation of commitment into personal, group and organizational was proposed. Here, not even the view of organizational commitment as resource consumption holds up entirely.

Over time, organizational commitment reflects back on the steering committee as a group. While the steering committee had a passive role in the hearing and also in governance during a period, group commitment gradually increased. It did so, however, not as a result of visible, volitional, irrevocable action, but rather as a result of acceptance of and alignment with the CEO's earlier decision and the prolonged absence of deviation from the line of action to which the dominant coalition and the project manager were committed. Thus, group commitment in this situation results from gradual implication into a line of action through compliance over time. At a certain point, the steering committee has evolved from being highly implicated (directly after the hearing) to being highly committed.

In spite of the high and rising level of commitment by the steering committee, its influence over the project declines as the project draws near completion. In contrast, there is an expansion of the committee's role in reassuring people in the organization of the project's ultimate success and of standing by to help the project if and when needed.

In reassuring different parts of the organization about the necessity, ultimate success and benefits of the project, the project was sometimes framed as "the-heart-of-the-enterprise project", but there were also times at which the competitive advantages of the new deposit system were touted (page 196), creating an image of the "competitive-advantage project". Here, the lack of detail, precision and substantiation of claims of competitive advantage are part and parcel of how the image of the project is constructed and how it can be used. Obscurity furthers flexibility in adjusting the image and reduces the risk of scrutiny. The somewhat overstated image at this point in time illustrates how the image of the project guides conceptions of status and reputation as well as expectations of project outcomes. Image can be used to influence expectations and gain support or acceptance for a course of action. Expectations do influence action (cf. Sahlin-Andersson, 1992; section 2.3.4).

Within the project, work is intense, but there is also a sense of pending achievement and a sense of winding up (people leaving, project group becoming smaller). Most of the people involved in and with the project have now, as stated in the project norms, each become "an ambassador for NDS" (cf. page 169), notably including the first commissioner. In a way, the activities related to project completion start in January 1994, when the first version of NDS is working and as the project manager is invited to the board of FSC to make a presentation about how the NDS project has been managed.[139]

The multi-step conversion process during the spring is conducted and described as a military operation. The extensive conversion plan and process has several purposes and functions. First, a failure at this point would probably have been very problematic in terms of eventual user confidence in the new IS and likewise for several individual actors in terms of reputations and futures within FSC. It would also severely affect the reputation of the IT department in FSC. Second, the conversion process is the reason and the occasion for informing about the upcoming implementation of NDS. Third, the drama and the complexity of the conversion process visualizes the achievement of the NDS project and the complexity and scope of the project task (page 208). A professional and elaborate conversion process, which is successful, thus becomes a showcase for what the IT profession is about, what the FSC IT department is capable of and what an achievement the completion of the NDS project is. During this concluding phase of the project work, the image of the project included "the unique, professional project" and, after implementation, "the unique, successful project".

The successful implementation receives much attention internally as well as substantial external press coverage (which also supports the internal understanding of the achievement). Other events and tasks related to the completion of the project include the writing of the project white paper and a dinner with the CEO for the project management team. These events acknowledge the effort and the personal sacrifices of key people as well as promoting the accomplishment as a characteristic of the organization. They also reinforce the image of the NDS project and the new deposit system, as does the external promotion of the project and its uniqueness (page 109).

5.2.7 Aftermath: Management of the Achieved

Now, there remains the question of what the NDS project wrought and how this was managed. Four central aspects of *the management of the achieved* can be distinguished, namely the evolution of the IT infrastructure, the legacy of organizational practices from the NDS project, corporate IT management post-NDS project and the continued management of the image and rationale of the NDS project after implementation.

As for the evolution of the *IT infrastructure*, NDS, NewCust, NewProd and NewCorp proved to be central in the information systems infrastructure and constituted a platform for new information systems, such as an IS for profitability analysis and the internet banking application. Maintenance of NDS, more costly

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[139] As a reminder, the presentation to the board focuses on the management of the project, primarily aspects of leadership and team dynamics. The story later told in the project white paper starts in 1990 and likewise focuses project work and project management primarily from autumn 1990/spring 1991 onwards.

than originally assumed, also came to include extensive restructuring work. This led to resentment and disappointment in the BD department and was defended by the IT department as a matter of maintaining the value of an investment. In this process, there were also discussions (involving the NDS project manager) concerning who knew what about restructuring needs and at what time.

In addition to the artifacts produced by the NDS project (and parts of its environment), the project also produced another kind of enduring outcome, a *legacy* that included working methods and norms within the IT department concerning project management and leadership. It also included people, commended for their contributions to the NDS project, who were often considered and selected for new positions of particular importance in the IT and BD departments. Participation (especially management roles) in the NDS project was a strong merit.

A third aspect of management of the achieved concerns the continued management of the *image and rationale* of the NDS project. At the completion of the project, there was pride over participation and results amongst those involved and following from the promotion in connection with the implementation, a consensus view of *the very successful project* formed and was reinforced over time (partly by the key people involved in the project).

However, over time new issues and tasks concerning IT management are related to NDS. In light of these subsequent developments, NDS is reevaluated at different times. This is not done formally, but in the process of understanding upcoming issues, there is the question of what the current situation says about the NDS project. A prominent example of this is the CEO's question to the former NDS project manager as the BankSys project is started (page 220); another is the restructuring effort that leads to a reassessment of the NDS project.

Even more interesting than the specific outcomes of these reassessments is the role that the NDS project image plays in the organization's dealings with emerging issues. The importance of the NDS project and the framing and promotion of the NDS project during its lifetime retroactively call for making sense of the NDS project in light of new developments. Consequently, new developments are also judged on the merits of whether they have a rationale that is consistent with the currently prevailing image of the NDS project. This means that reassessments of the (past) NDS project have potential repercussions on the present and that reassessments of the NDS project can be used in current events in a way similar to the use of the NDS project image during the project process.

As time goes by, the image of the NDS project seems to turn from "the unique, successful project"—via, during the BankSys period, the "was it necessary?" project—into "the mythical project". The image, no longer actively managed, takes on a life of its own and influences subsequent projects (page 216).

Post NDS, *corporate IT management* returns to the previous strong focus on cost control—at least for a while. In spite of a successful, large multi-year project, a very positive post-project assessment and improvements in profitability related to the NDS and pent-up user demand for development of new information systems, there is *still* a strong focus on bringing down overall costs to previous levels. The values and norms of FSC, the corporate view of IT and the history and principles of corporate IT management together affect IT management more than the contemporary experience of success. As IT costs again begin to increase, this development is evaluated against the yardsticks for IT management developed during the 1970s and early 1980s (pages 213-219).

In other words, systemic control (Pennings and Woiceshyn, 1987; section 2.7.3), vested in the organization's task structure, social structure and culture and reinforced over an extended time period, proved to have substantial influence over corporate IT management practices. This, particularly "the corporate view of IT", also corresponds to Kling and Iacono's (1984; section 2.4.3) concept of the *ideology of IT* (or *"meaning of computing"*), the shared language or beliefs concerning what is "good" use of information technology.

The above also illustrates that even if the organizational impact (or non-impact) of an IS in terms of user-related change can be non-controversial or consensual relatively early on in a project, politics can still be a fundamental aspect of how the development process and its governance plays out. The allocation of resources, influence over (current and future) work processes, professional jurisdiction and shifts in influence over subsequent developments are by themselves and taken together sufficient grounds for power and politics to be inherent aspects of these processes (e.g. Pfeffer, 1981; Kling and Iacono, 1984; Abbott, 1988; Pfeffer, 1992; sections 2.4.2, 2.4.3, 2.8.2).

While changes in FSC did not pertain to operative business processes, but there were actual and potential shifts in influence over resource allocation and procedures between local and central units, as well as changes in the organization of and relationships between the central departments. An additional example is the scepticism of branch offices for which major IT efforts, especially if repeated, meant reduced influence over their own cost structure as well as potentially reduced influence over the organization of operative processes (pages 175, 184). Another example is that the dedication of the CEO in bringing down IT costs after implementation of NDS kept not only the costs under pressure but also the IT department and the IT manager (cf. above).

As the story ends, however, we also see developments indicating that organizational competencies gained from the NDS project may play out in new ventures (page 216-220), indicating a possible concurrence with Pennings' and Harianto's (1992; section 2.6) findings on the effects of earlier experiences on organizational innovation adoption capabilities.

5.3 What is Success?

In discussions with people in FSC and other companies as well as with several researchers during the course of the study, it has proven almost impossible to escape the question of whether the NDS project was successful or not. Answering this question is not per se required given the purpose and knowledge goals of this study (cf. page 10 and section 3.1.2). A discussion of the question of NDS project success, however, may contribute some additional thoughts on the complexities of IT project governance.

Whether the NDS project was successful or not begs a straight-forward answer. The evaluation of a project depends not only on aspects such as the perspective, criteria, purpose and context of the evaluation, but also on the point or period in time at which the evaluation is made. At the time of implementation of the new deposit system, the project was widely regarded as very successful, generally more so among people who were close to the project. In early 1997, when most of the interviews for this study were carried out, subsequent developments made other assessments possible; some intended and some unintended consequences had materialized, others had failed to appear. Some unwanted consequences (such as absence of multiple ledgers and multiple currencies in NDS) were results of early decisions which were not revised later in the project process.

From a conventional project-management view on projects ("have task, will travel")[140], the management of the NDS project, from 1990/1991 forwards, can to a large extent be seen as a success story. Within the given limitations, set relatively early in the project, the project delivered a reliable system in accordance with specifications. Time and cost restrictions set in early 1991 were adhered to exactly in the case of time and acceptably in the case of cost. If we focus particularly on project management skills, procedures and team performance, the view becomes even more positive. In these respects, the NDS project was a source of individual and organizational learning in FSC and served as a model for other subsequent projects.

If on the other hand we extend the view of the project to incorporate developments which were unforseen or deliberately excluded from the scope of the project, the assessment becomes more difficult. What will it take to achieve multiple-ledger, multiple-currency functionality? But yet again: What was it worth to be able to cancel the troubled BankSys project in early 1999, knowing that the successfully installed, reliable New Deposit System was Y2K compliant, i.e. ready for the millennium turnover, unlike most legacy systems at this time?

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140 Or, focusing on a prespecified delivery while meeting time and resource constraints.

An alternative framing of the main question of this section is: *When* is success?[141] In 1997, with the BankSys project under way, the NDS project looked to some people in FSC like an effort in vain: Would it not have been better to renovate DepSys and switch to the new integrated banking system in due course? A few years later, with the benefits of subsequently developed information systems made possible by NDS, with the benefits of following frequent rate changes and with the continued trouble and subsequent termination of the BankSys project, the assessment of NDS had changed again.

The variations in post-implementation assessments of NDS over a longer time period and the impact of unforseen external events on these assessments are two prominent aspects of answering whether the NDS project was successful or not. These two aspects also illustrate the genuine uncertainty and ambiguity associated with governing IT projects, as with other aspects of general management work (cf. section 1.2.1).

Yet another complication of evaluation concerns the extent to which there is a distinct ending to the undertaking which is to be evaluated. Following implementation, NDS was maintained, partly restructured, used as a basis for other applications and subjected to replacement efforts. All these activities, and the corresponding underlying problems and issues, suggest that the end of the NDS project was the end of a process phase and the termination of a certain organizational arrangement for dealing with a set of permanent issues requiring continuous organizational and managerial attention. The management and development of information system resources is not a matter of managing discrete activities during certain time periods, it is an ongoing task.

[141] Cf. Star and Ruhleder (1996, pp. 112-114) and Mårtensson (2000, pp. 18-21): *When* is an (IT) infrastructure?.

Chapter 6

Understanding IT Project Governance

This chapter discusses and generalizes arguments and analyses brought forward in the previous chapters, particularly in chapter 5. This presentation of the study's contributions is structured into four main sections of this chapter, which discuss central aspects of IT project governance: contexts, formation, dynamics and dissolution.

A possible shortcut to reading this chapter is provided in section 6.6, which contains a summary of the study's characteristics and contributions.

6.1 Introduction to Study Contributions

While the previous chapter was anchored in the case, interpreting and discussing the case in relation to theory, this chapter is theory-focused: It builds on, relates to, critiques and extends earlier studies (cf. Table 10, page 103).

As described in the first chapter, this study aims to contribute to the understanding of how intra-organizational IT projects are governed, especially with regards to the formation and evolution of organizational control and the characteristics of managerial action over time (cf. page 10). The four main parts of this chapter present these contributions structured according to an overview of the process of IT project governance. *Contexts* of IT project governance (section 6.2) discusses findings on characteristics of the type of projects this study pertains to, including how they relate to their environment. *Formation* of IT project governance (section 6.3) concerns how project governance is formed in the early stages of a project. *Dynamics* of IT project governance (section 6.4) concerns central aspects of how and why governance changes over time. A special case of dynamics concerns *how governance dissolves,* which is addressed in section 6.5. Finally, section 6.6 summarizes this chapter and central characteristics of the study, as well as providing some thoughts on the use of the study´s results.

The central questions of the study posed in the first chapter focus the formation and evolution of organizational control over IT projects and executive engagement in control. In this chapter, the main structure follows the project governance process and executive engagement is treated within this context. This structure is chosen in order to retain the focus on process and on the evolution and dynamics of IT project governance. Executive engagement takes place within this context and the structure of this chapter therefore reflects a relationship among focal issues, not a ranking of importance of study purposes.

The findings presented in this chapter are subject to the delimitations of the study discussed earlier (chapters 1 and 3). They are offered here in generalized form, on the basis of the argument of analytical generalization (section 3.1.1). The basis for analytical generalization of the study's findings was broadly outlined in section 1.4 and rather elaborately defined in section 2.9. Briefly, the class of phenomena of which the NDS case study can be seen as an instance, can be described as intra-organizational IT projects concerning the development of complex, mission-critical information systems with limited user-related change in large, information-intensive organizations.

However, as indicated throughout this chapter the contributions are likely to pertain to a broader class of phenomena, which could be defined as *intra-organizational IT projects.* Furthermore, some contributions extend to an even wider class of phenomena, which could be described as *projects in organizations.* Each extension of the class of phenomena reduces the strength of the knowledge claims and increases the need for further work to extend, revise and refine the study's results. In the text of this final chapter, I alternate between the last two classes of phenomena. When I talk about projects (in organizations), I implicitly propose that contributions relate to this wider class and when I talk about IT projects (in organizations) I do so with the belief that contributions may not be readily transferrable to other types of projects.

If the reader so desires, the stricter definition of the basis for analytical generalization (see page 68) can be used in assessing the study's contributions and their applicability.

6.2 Contexts of IT Project Governance

A central aspect of how intra-organizational IT projects are constituted in relation to their environment is their embeddedness in and dependence on the surrounding organization. While literature on projects often emphasizes decoupling or bracketing (e.g. Bennis, 1966; Bryman et al, 1987; Lundin, 1995; Lundin and Söderholm, 1995), this study finds that intra-organizational IT projects can be characterized by *embeddedness, boundary-spanning* and *temporal interconnectedness* (pages 240-241).[142] The latter could perhaps also be called historical dependence or "inheritance", as it concerns how a project inherits procedures, norms, ideas and priorities from the surrounding organization, but also how it ultimately dissolves into the surrounding organization. So the organizational setting, both

[142] Page references in this chapter refer to the discussion in chapter 5 unless otherwise stated. These page references are used to support the general arguments made here and assist the reader in finding the corresponding discussion concerning the case description.

in terms of historical developments and current characteristics, is important for understanding the emergence and life of a project and its governance.

Embeddedness (Løwendahl, 1995), boundary-spanning (Guinan et al, 1998) and temporal interconnectedness (cf. Blomberg, 1998) become evident in the influence of pre-history on a project, in the multiple (and over time shifting) loyalties and roles of actors involved in a project and its governance, in the influences of the organizational environment and the dependence upon this environment for the legitimacy and survival of the project, and in the ultimate submersion of project participants and project results into the surrounding organization. Bracketing, while occurring in the formation and life of a project, is a relative phenomenon, related and subordinated to embeddedness, boundary-spanning and temporal interconnectedness (e.g. pages 240, 249, 264-265). This view of projects refutes the common view of projects in project management literature (e.g. Thomsett, 1980; Lock, 1988; Briner et al, 1996).

As will be discussed further below, the formation of an organizational course of action into a project, including its initial emergence from its organizational environment, seems to take place to a large extent through *acts of formalization.* These acts of formalization include assignment and definition of responsibilities, initiation of use of governance procedures and control relationships, approval of project plans and assignment of resources. In other words, project formation occurs through the application of rules, norms, procedures and other structures, which guide, support, restrict and facilitate control of the organizational undertaking that has just been labeled "project" (page 240).

As mentioned above, the importance of structure for an intra-organizational IT project not only concerns project formation but the entire existence of the project. It also concerns a project's relationship to the project environment as well as its internal (project) organization. In all these respects, the importance of structure contrasts with the common view of projects as flexible, task-oriented processes (e.g. Bennis, 1966; Bryman et al, 1987; Lundin and Söderholm, 1995).

An additional distinction concerning embeddedness, is that not only do organizational control structures and corporate values (or culture) form an important part of the situational context for an IT project, but so do also, as an intermediate layer, corporate control structures for IT. Corporate IT management is influenced by corporate structures and in turn influences IT projects and their governance. A way to describe this is that the embeddedness of intra-organizational IT projects is two-layered.

Furthermore, the values, norms and practices of the IT profession influence IT project governance. They do so not through the organization, only partly through corporate IT management, but arguably primarily through the organizational actors who themselves identify with the profession. Perhaps particularly in organizations with tight reigns on the IT department, the furthering of professional values may provide a possible way to promote the IT department indirectly, in situations where other such options are limited (page 244; see also page 286 below).

Turning to the importance of internal project organization (an inner context level of project governance, cf. Table 9 on page 97), this study shows that the structure of a (large) project can be quite conspicuous, elaborate and complex, containing several hierarchical levels. That formal organization and hierarchy can be a central aspect of project work and project management also contrasts with a commonly adopted view of projects (Bennis, 1966; Bryman et al, 1987; Lundin and Söderholm, 1995). An elaborate project organization, however, need not imply rigidity. Rather, project organization and project reorganizations can be used rather flexibly by project management to guide and direct project work (pages 258-259).

This study thus supports other studies on projects (Sahlin-Andersson, 1992; Hellgren and Stjernberg, 1995; Kreiner, 1995) in that project delimitations and goal-setting are dynamic rather than rigid, thereby challenging much of the project management literature (e.g. Thomsett, 1980; Lock 1988). At the same time, this study also challenges the view that successful project planning is negatively correlated with project success (Blomberg, 1998). However, as will be discussed further below, the characteristics of project planning (and reporting) need to be attuned to the characteristics of the work task.

Furthermore, as shown earlier project reorganizations not only concern the organization of work, but can also be used to signal developments in the project and to draw attention to specific issues (pages 258-259). In addition, it would seem that increased formalization (responsibilities, plans, goals) may turn out to be the remedy of choice, both for controllers and for project participants, when there are perceived difficulties in a project.

Given the importance of project embeddedness for the type of project studied here, variations in the nature of project embeddedness become of interest. This is not a comparative study, so the importance of the specifics of project embeddedness can not be argued on the basis of a comparative analysis of different projects. However, as discussed above, this study has identified considerable complexity in the interaction between a project and its organizational environment and underscored the importance of the characteristics of embeddedness for the governance of a project.

A few of the earlier studies on projects have argued for the importance of distinguishing projects based on the nature of their coupling to their environment (Engwall, 1995; Løwendahl, 1995). Findings in this study reinforce these claims concerning needed developments of project theory: While this study does not have a comparative design, it suggests that different structural characteristics of the relationships between projects and their environments influence project processes differently. Within the IS field, efforts to distinguish different types of information systems and/or development contexts (Markus, 1984; Swanson, 1994) should be worth using more regularly (as this study has attempted) as well as expanding upon.

One the other hand, it was suggested above (page 270) that this study's results are likely to be applicable to a class of phenomena which includes IS development efforts incorporating user-related change. This implies an assumption that—for the purposes and focused phenomena of this study—there are considerable similarities between the type of projects studied here and IT projects with substantial user-related change. Indeed, this study finds that the existence of politics in IS development does not end with the absence of or consensus regarding user-related change. Influence over resource allocation, jurisdiction over organizational tasks, influence over current and future user work processes, challenges to organizational norms and principles and shifts in responsibilities and competencies between organizational units are among factors ensuring this (page 266).

While this is well-established in theories on power (e.g. Pfeffer, 1981; 1992), some of the IS implementation literature has tended to focus user-related change and user–developer relationships and the constitution of implementation processes as major factors behind conflicts in IS development processes (e.g. Markus, 1983; Franz and Robey, 1984; Robey et al, 1989; Beynon-Davies, 1995). Kling and Iacono (1984) are among those who have discussed power and politics in IS development more in relation to interests and resources and this study suggests that there can be considerable similarities in terms of project governance, whereas it can be speculated that for example patterns of user involvement in design work and the characteristics of implementation processes my differ.

Just as there are distinguishing characteristics between different types of IS development situations, there are specific characteristics of IT projects in general, specifically in relation to governance. These characteristics and their consequences are clearly within the scope of this research, and they are important, even to the point of posing a central dilemma in IT project governance (page 246), which can be attributed to the nature of the controlled task and controller knowledge of the work process.

Specifically, information systems development projects are abstract, complex, non-repetitive tasks, which often run over an extended time period and consume considerable resources (e.g. Brooks, 1995; Zmud, 1980; Yakura, 1992; Swanson, 1994). Taken together, these characteristics make *output control impracticable.* Correspondingly, the low degree of observability, measurability and "programmability" of the work process (Kirsch, 1996; 1997), the expertise needed to understand the work process and non-IT controllers' generally low level of task knowledge, together make *behavior control impracticable.* These distinguishing characteristics of IT projects have direct consequences for the exercise of control. These characteristics stack the deck against controllers in general and non-IT controllers in particular (page 246). While this argument builds on Kirsch (1996; 1997), this study goes considerably farther in problemizing the practicability of output control and behavior control. This will be discussed further below (page 280).

The often reported distance in views and perspectives between users and managers from "the business"[143] on the one hand and IT professionals on the other also contributes to the distinctiveness of IT projects (e.g. Franz and Robey, 1984; Beath and Orlikowski, 1994; Markus and Benjamin, 1996). As will be discussed below, the knowledge threshold for non-IT professionals is also detrimental to user understanding of work tasks in IS development.

For the specific type of IS and setting this study primarily pertains to (in short: operative, mission-critical information systems in information-intensive organizations, cf. above), there are additional characteristics of importance. These include the extensive dependence of business operations on the information system(s), the complexity of system interfaces and thus the sometimes nearly unascertainable complexity of how the IS infrastructure and IS development work influence each other. From this also follows the "compound" of IS and business operations (Lee, 1999), which in turn results in potentially extensive consequences of development work on existing business operations even before the implementation of a newly developed information system.

Following from, and reinforcing, these distinguishing characteristics of IT projects, actors in organizations perceive IT projects as different from "other" projects (e.g. page 246). This goes for executives as well as for IT professionals. IT projects are constructed as different by organizational actors, and, not infrequently, they are constructed as a strange and foreign landscape where dreams and rumors flourish. Managers are likely to think and act differently in relation to IT projects compared to many other issues; their competencies, experiences, fears, preconceptions and assumptions are different in relation to IT projects compared with a variety of other types of projects. Literature (including this study) also addresses problems related distinctly to IT and IT projects, thus reinforcing the construction of IT projects as different.

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143 Note how this very common type of wording contributes to the construction of "IT" as different and separate from "the business".

6.3 Formation of IT Project Governance

One uses what one has at hand, said Cajsa Warg

Swedish proverb

Perhaps one of the most prominent characteristics of how IT project governance forms, is the reliance on pre-existing structures, procedures and practices. Following directly from the discussion above on the importance of embeddedness and "inheritance" (or temporal interconnectedness), formation of IT project governance is integrated with the formation of the project. The appointment of commissioner, steering committee and project manager, the formalization of reporting procedures for the project, etc. are all parts of the formation of a project, as well as parts of the formation of governance. In this process, there is likely to be extensive adoption of pre-existing control mechanisms and routines. This pattern of organizational and historical dependency may even extend to choices of key people for the project, such as the appointment of project manager (page 239).

The path dependency concerning involvement in a project is also likely to pertain to actors involved in governance. Early involvement begets continued involvement. Part of this depends on the group of actors involved in the start of a project, especially if these actors have pre-existing working relationships or other bases for existing and emerging trust (page 238). Although this study concurs with Pennings and Woiceshyn (1987) on the importance of interpersonal trust, it also finds a larger role for position-based trust than suggested by Pennings and Woiceshyn (ibid). Furthermore, shared experiences amongst actors, invoking *chains of trust* in the process of project formation, are likely to contribute to the formation of a *sufficiently coherent view* of a problem situation and of a viable course for addressing the situation *for action to be initiated.* This concurs with views of formation of action in social networks (e.g. Kotter, 1982; Sjöstrand, 1997). Either initially or over time, the emergence of a view of a project is likely to be preceded and/or accompanied by the emergence of a group of actors carrying that view. This group, a *dominant coalition,* influences the formation of a project and has a central role in project governance (page 238).

Although the concept of a dominant coalition is theoretically well-established (e.g. Cyert and March, 1992/1963; Child, 1972), it has been used only in few IS studies (Kling and Iacono, 1984). This study finds that the view of executive influence as related to a dynamically changing dominant coalition provides for improved understanding of executive involvement in IT project governance compared with both the "top management support" view (e.g. Lucas, 1975; 1981; Sauer 1993a; Bardi et al, 1994) and the role set view (Rockart and De Long, 1988; Lederer and Nath, 1991; McKenney, 1995; Edwards, 1996) of executive involvement.

The dominant coalition is also important in carrying the view of "the problem" and of the project as "solution". In a condensed version, this view becomes what can be called a *project image,* a summary view of the project which includes an identity of and a rationale for the project (page 235). The project image makes the argument for the project and drives the acts of formalization that construct the project.

The propensity to adopt existing procedures may be related to an assumption that IT project governance procedures are the responsibility of the IT department. Certainly, this provides an opportunity for an IT department to exercise influence over governance procedures, partly as a means to exercise influence over IT matters, partly as a way to adhere to professional practices. The role of the IT profession in the formation of IT project governance thus shows primarily in its influence on existing procedures for IT project management, reporting and control and the closely related influence on IS development methodology (page 239). These findings concur with e.g. Beath and Orlikowski (1994) and provide further support for Abbott's (1988) view of professions in the workplace. In so doing, this expands on Robey's and Markus' (1984) findings by adding professional norms as an influence in the use of rituals (procedures, methodologies) in organizational politics in the context of IS development.

In spite of the difficulties associated with standard control forms in this context, procedures in IS development methodologies seem to be geared towards output control (in the form of milestones, tollgates or similar) and behavior control (in the form of work-procedure descriptions integrated in the methodologies). That the methodologies tend to present phases in IS development as uniform both in character and in terms of planning and control procedures may reduce perceived uncertainty and anxiety, but it also contributes to a mismatch between task characteristics and planning and control procedures (page 246).

A group of actors' level of activity in project governance is also related to the point in time of the project at which a certain event occurs. Specifically, early in the life of a project, a steering committee may be less inclined to take action because of *deferral of judgment,* and because of unclear positions of individual actors within the group. "Better", then, to wait and see (page 247). This phenomenon does not seem to have been identified in earlier studies of IS project control (Kirsch, 1996; 1997), escalation (e.g. Keil, 1995b) or in several other studies on executive involvement in IT projects (e.g. Sauer, 1993a). The emergence of this contribution here is probably partly because of the study's process-orientation.

These aspects of governance formation, together with the aspect of control difficulties related to task characteristics discussed earlier are likely to contribute to making controllers without task expertise perceive their *control repertoire as limited*. In sum, there is much that inhibits active participation by non-IT controllers in the formation of project governance, at least for IT projects with limited related organizational change. Furthermore, the view conveyed in this analysis depicts the formation of IT project governance as a process that is considerably more organizationally (or institutionally) determined than suggested in earlier studies on IS project control (Kirsch, 1996; 1997; cf. page 237). Of course, controllers with or without task expertise can still be active in influencing the project (manager) *within* the adopted governance structures. They do so concerning specifics, e.g. influencing requirements and priorities for the proposed information system. They also do so in general ways, e.g. by influencing goals and priorities and through how the project image is constructed.

Notwithstanding the impact of existing governance procedures in the formation of project governance, controllers seem to have individual approaches to their control assignments. These *individual control strategies* are influenced by role expectations and project-related knowledge. Contrary to Kirsch's (1996; 1997) view, however, it is highly unlikely that individual control strategies result from a distinct process focused on the selection and combination of control mechanisms (page 248; cf. Figure 7 on page 60). Rather, there seems to be individual reasoning on behalf of controllers concerning a personally viable approach to engaging in the control assignment. Not surprisingly, prior work experiences (and the "management style" acquired through these experiences) influence the individual approach (pages 248-250).

A central aspect of the individual control strategy seems to be to what extent the control assignment is treated as generic or not and how specificity is handled. A tentative and incomplete set of individual control strategies found in this study include *generic control* (this is a task like any other), *control by analogy* (as far as I am concerned, this task is about the same as "X- type" tasks), *adaptive control* (while I don't understand the task itself, I realize that there are unique aspects to it, so I will try to understand what is going on), and *control through expertise* (I know this type of task). In addition to these different views of task specificity, use of *control through trust* (the project manager knows what she is doing, so we will be fine) can also be inferred from this study (pages 248-250). Within the adaptive control strategy, controllers can use several ways of making sense of developments in the project, including interpreting the language and the behavior of the IT professionals (e.g. by observing project management processes). On the other hand, it would seem that where generic control meets professional values and norms conflict is likely to follow.

The emergence of one or several coalitions of actors (group level) coincides and interrelates with individual reasoning concerning approaches to control. But how do individual and organizational levels correspond? This study has shown that dependence on pre-existing control mechanisms in project governance formation may be extensive, while at the same time actors have individual control strategies. One way to understand these observations is that while actors do have personal routes to engagement in the control task, these may under certain circumstances not substantially influence the *governance formation process.*

Instead, controllers may end up within an extensively (but not completely) predetermined framework for control, although they do so based on differing rationales (pages 237-238). Over time, this matters.

6.4 Dynamics of IT Project Governance

Controllers' differing rationales will affect how they engage in control and how their engagement in control activities changes during the course of an assignment. This is also influenced by the interrelationship between control actions and *individual commitment.* Individual control actions (and participation in group action), result from, demonstrate and affect individual (and group) commitment to a course of action. Since actions influence commitment, control actions can be (deliberately) used to change a level of commitment, e.g. *reduce commitment* or *reverse commitment* (i.e. reduce commitment to one course of action and (re-)commit to an opposed view), thereby reducing personal association and risk in relation to a project (pages 251, 254). In the same way, individual actions also affect the centrality of the individual's role in governance, e.g. in (or in relation to) the dominant coalition.

The relationship between action and individual commitment is also related to personal risk. Personal initiatives lead to increased individual commitment, increased assumed responsibility and increased personal risk, related to the uncertain outcome of the project (e.g. page 251). Specifically, in accordance with psychological and social perspectives on commitment, in particular the dynamics concerning the interrelationship between different actors with regards to commitment (Salancik, 1977a; Brunsson, 1985), there are personal risks linked to disassociating oneself from an ultimately successful effort backed by other (influential) actors in the organization. Since changes in commitment levels by other actors affect the likelihood for a course of action to be followed through, this creates a dynamic where an individual actor may find herself in a situation where any position is fraught with uncertainty and potential personal risk (page 251).

In this respect and in general, the study concurs with and supports perspectives and findings on commitment that acknowledge and take into account the psychological and social nature of commitment (Salancik, 1977a; 1977b; Brunsson, 1985). Consequently, results in this study call into question basic assumptions of escalation theory (Staw and Ross, 1978; 1987; Brockner, 1992): The operationalization of commitment as resource allocation made in escalation theory seems to be an oversimplification which obscures how commitment is constructed and evolves through social action and interaction. Indeed, Salancik's (1977a) comment on the risks of confusing organizational outcome with human behavior (cf. page 52) seems quite applicable on escalation theory (page 251). This critique also applies to IS studies using the Staw and Ross framework (e.g. Keil, 1995a; 1995b; Newman and Sabherwal, 1996). Indeed, some recent studies on escalation and de-escalation of IT projects focus more on escalation as an attribute or state of an organizational course of action, reducing the problematic hotwiring between escalation and commitment (e.g. Keil and Montealegre, 2000; Montealegre and Keil, 2000; Keil and Robey, 2001). Also, in several cases a decreased reliance on the factor-based Staw and Ross framework is followed by an increased interest in process (e.g. Keil and Montealegre, 2000).

According to Salancik (1977a), individual commitment arises from visible action. This means that non-default actions, which tend to be visible, volitional and based on personal initiative, are potentially more committing than going along with what has already been decided. This study supports that view, finding that resource allocation can continue to a project even as individual commitment is not directly increased. By avoiding visible individual control action, increased individual commitment can be avoided (or at least postponed) even in the face of continued resource allocation (page 251). Adding to this study´s critique of escalation theory (cf. above), this means that (collective) *avoidance* of individual commitment could be a possible factor contributing to sustained resource allocation in the face of negative feedback. Consequently, resource allocation may influence levels of commitment differently, depending on whether visible personal initiatives are necessitated. This strengthens the case for the separation of individual, group and organizational commitment made and used in this study (pages 53, 251). The individual's role and position in the regular organization also influence the resulting commitment on an action: An action is assigned meaning in relation to the actor's role(s) in relation to the project as well as in the regular organization. This means that embeddedness (cf. pages 270-272) also extends to role dynamics.

Even a CEO decision, committing the CEO individually and probably contributing to organizational commitment, does not ensure that other actors' commitments are increased, neither individually or on the group level, although it might lead to compliance for a time. While sustained resource allocation may be seen as closely related to organizational commitment, and thus usable as a proxy in factor studies, this study finds that not only resource allocation and resource use, but also *sacrifices* increase organizational commitment. Such sacrifices made by groups of actors include accepting postponement or cancellation of other positive events in the organization, including implementation of requested and/or promised improvements in existing information systems (page 262). In light of the discussion above, the operationalization of commitment as resource allocation made in escalation theory (Staw and Ross, 1978; 1987; Brockner, 1992) and used in IS studies (Keil, 1995a; 1995b; Keil et al, 1995; Newman and Sabherwal, 1996) proves to be quite problematic.

Group commitment seems to differ from organizational commitment in that it results from combined individual actions, especially visible consensus actions, as well as from organizational commitment over time. For the latter, an organizational course of action over time, perhaps with some delay, "implicates" actors within the dominant coalition as well as other controllers, albeit most likely to a lesser degree (pages 261, 263).

Actions that change individual commitment, specifically those which reduce or reverse commitment, may disrupt the dominant coalition and, through this, lead to a breakdown of the coalition and of group commitment to the project. Of course, disruptions in the dominant coalition may also result from other events, such as personnel changes. The breakdown of commitment to the project which may result need not, however, lead directly to a discontinuation of project resource consumption. This situation constitutes a crisis in project governance, which in turn may lead to a crisis within the project: a crisis for a project need not be directly related to or caused by the situation within the project. Problems in project work and/or project management may also lead to a crisis in project governance even as problems within the project are (being) resolved or addressed. The different levels involved are not tightly coupled (page 253) and developments "move" between different levels over time.[144] The dynamics of project governance in relation to crises will be discussed further below.

Concerning control forms, it was proposed earlier (page 273) that both behavior and output control is fraught with problems because of IT projects' task characteristics. But these trusted forms of control are reconstructed, or approximated, in various ways. Prominently, the IS development methodology and the related reporting procedures are used to report on project work (behavior) and project progress/achievements (output). Large parts of this reporting, however, are not based on "factual data" corroborated by third parties and/or control systems (cf. financial reporting) that deliver comparable and verifiable figures over time. Instead, it is largely the project management team and the project manager who assess the state of the project and its progress in relation to plans. This means that controllers can use (reconstructed forms of) behavior and output control if they rely on *other people's assessments* of the state of the project. *Trust* thus becomes an inherent aspect of the control task (page 245).

In sum, central aspects of IT project governance include the use of procedures (or rituals) emulating behavior and output control and extensive use of (and reliance on) other people's assessments. Trust and dynamics of trust consequently become central in the evolution of the control relationship. These aspects of control relationships do not seem to have been covered in earlier studies on IS project control (Kirsch, 1996; 1997), with the exception of Beath (1987) reporting on mutual trust in passing, and it is not focused in her study. Furthermore, while rituals relating to IS development methodologies have been discussed in a few instances (Robey and Markus, 1984), these aspects of how control is constructed, as well as the heavy reliance on other people's assessments and the importance

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[144] Cf. Lundeberg's (1993, pp. 60-74, 107-112, 137-139) framework combining levels and process (time).

of trust in the organizational control of IS projects, are often missing in earlier studies (including e.g. Markus, 1983; Robey, 1984; Sauer, 1993a; Bardi et al, 1994; Keil, 1995b; Myers and Young, 1997).

If controllers are uncertain about the reporting they receive, or worried about project progress, they can *expand their control repertoire* (as they are probably more likely to do in situations which are not "business as usual"). One way to do so is by employing outside expertise, e.g. to do a review of the project. This also constitutes an instance of relying on other people's assessments. As just indicated, it would seem that crisis situations are likely to "inspire" controllers to find other means for assessing and influencing a (not so well) controlled task. In these situations, measures such as reviews and hearings are also largely based on (the use of) assessments made by other actors (page 254). Broadening the control repertoire can, however, also be done over time, as mutual trust and openness increase (see page 284 below), for example by observing project management processes. Further, controllers with prior working relationships with people in a project can use these relationships to get other information and other angles on the project and on everyday project work, again using other people's assessments as a means for control.

As this discussion shows, there is in contrast to Eisenhardt (1985) much to say for *not* making a firm distinction between "monitoring" and "control" (cf. Mårtensson and Mähring, 1992; also Mårtensson, 2001), at least not in process studies. First, because various types of controller actions will be interlinked and second, because meanings assigned to actions have consequences. "Monitoring" actions by controllers are thus likely to have "controlling" consequences, making for extensive difficulty in separating intentions and consequences of discrete actions where actions are interrelated (cf. also section 1.2.1 on characteristics of managerial work).

In situations where there is a breakdown of commitment, actual or looming, several types of actions taken seem to be taken. In addition to extensive use of assessments by various actors, internal and possibly also external, there may also be an inclination to distinguish and polarize consequences of decision alternatives. This concurs with Rombach's (1986) observations on polarization of positions in talk, but also relates to Brunsson's (1985) idea of action rationality (page 253). However, in contrast to how decision rationality and action rationality are sometimes depicted (Brunsson, 1985, ch. 2) this study suggests that the two need not be opposed, as long as there are procedures or rituals that facilitate a shift from analytical reasoning and exploration of alternatives to action-orientation. For example, polarization of alternatives *following* an evaluative process serves to reduce perceived uncertainty and to facilitate confidence in, and commitment to, a chosen line of action. Furthermore, it would seem that there are procedures (or rituals) which can be and are used to test (and potentially reinforce) commitment (pages 253, 255). The use of these and other measures to test and possibly reinforce commitment would seem to be a function of controllers in situations where commitment is uncertain.

In connection with the discussion of crisis episodes in the previous chapter, there was also a discussion regarding what can be called *the pseudo-ideal of "strong top management support"* (page 257). There are at least two fundamental problems with this concept and ideal. A high-profile intervention and resulting commitment by a CEO (or executive of similar stature) is likely to carry with it a high degree of organizational commitment to the outcome of the intervention, regardless of whether this outcome ultimately proves viable or not. On the one hand, this commitment is likely to be reflected in a substantially reduced uncertainty in project work, project management and project governance, as well as increased support from the organizational environment and better access to resources, among other things. On the other hand, it is also likely to be reflected in something close to an end of discussion on doubts or concerns about the project's viability. There would no longer be any point in such discussions, and little opportunity for (no arena for) or acceptance of raising renewed doubts, at least for a considerable time.

The resulting commitment is likely to be strong enough to persist even in the face of considerable difficulties (cf. Brunsson, 1985; Sahlin-Andersson, 1992). It could be that it persists through the effort and energy required to follow through the project. It could also be, however, that the organization turns out to be strongly committed to a course of action which ultimately proves unworkable in spite of extensive support. This study also indicates that a high-profile intervention by senior executives does not ensure any improvement in the assessments of technical feasibility and development risks as part of the outcome of the intervention. In other words, as an organizational practice, this form of executive intervention increases the propensity for escalation. It is highly unlikely that an organization would benefit from regular use of this so often touted remedy for ailing projects. On the other hand, regular use of "strong top management support" may be an oxymoron.

Specifically, regular or repeated use of CEO intervention (or highly visible involvement) in projects is likely to shift organizational practice, changing the meaning attributed to a CEO decision, and probably resulting in a centralization of certain decisions and responsibilities concerning e.g. IT projects. As stated earlier (page 258), "top management support" as constructed in literature and practice, is perhaps *most effective when it exceeds the norm or the expected*, which makes for problematic organizational practice.

The frequent and positive mention of "strong top management support" in the literature, can at least partly be attributed to the often project-centered focus of studies on e.g. critical success factors of projects in the field of project theory and/or project management (e.g. Pinto and Slevin, 1987; Pinto and Mantel, 1990; Pinto and Kharbanda, 1995, ch. 4; Ford and Randolph, 1998; Scotto, 1998), as well as some IS studies (Lucas, 1975; 1981). From a project-centered view, this form of executive involvement will be important for projects that succeed, whereas failures are likely to be seen as occurring either because of the absence of top management support or in spite of existing top management support. From an organizational point of view, on the other hand, strong top management support raises the stakes and the commitments. It is also self-destructive as an organizational practice; it is an extraordinary measure for extraordinary circumstances. "Strong top management support" is a two-edged sword that dulls quickly if used repeatedly. I propose that the above discussion in effect dissolves the paradox succinctly described by Jarvenpaa and Ives (1991; cf. page 47), i.e. that top management support is often touted and frequently ignored.

Another factor of considerable importance in crisis episodes concerns the level of trust in the control relationship. In particular the controllers' trust in the project manager, related to the reliance on other people's assessments, is of considerable importance. The existence, non-existence and dynamics of trust also relate to several other issues, including self control (Manz and Sims, 1980), input control (Sjöstrand, 1987) and evolution of control relationships. While some earlier studies see self control as a control form on par with behavior or output control (Kirsch, 1996; Kirsch and Cummings, 1996), this study has seen self control (by a project manager) as something which affects how controllers exercise control and how the control relationship is constituted and evolves. Specifically, the use of self control by a project manager can over time lead to reduction of the intensity of control by controllers. It is likely that this is related to whether the exercise of self control is (made) visible for controllers, whether controllers perceive self-controlling behavior to be effective and whether controllers perceive that they can "trust ... and put faith in" the project manager (page 249). Trust may also extend and relate to other people involved in the project.

This study suggests that self control is related to a project manager's competence and/or personal characteristics, and that therefore it is difficult for controllers to "induce" (page 248). It is quite possible, however, that self control can be introduced by the project manager if and when mutual trust has developed in the control relationship, thus setting the stage for reduced use of other control forms. Now, if self control cannot be readily "induced" (in the words of Kirsch, 1996), it can be achieved through another control form, input control. Specifically, by selecting a project manager with high propensity for self control, managers can change the setting of the control relationship. Furthermore, selection of a project manager who is known to controllers beforehand and whom controllers have trust in, may considerably change how the control relationship evolves.

The evolution of the control relationship is interlinked with the evolution of the project. For example, recurring crises are likely to result in tension and conflict in a steering committee, perhaps between controllers as well as in relation to the project manager. Thus, replacement of project manager (input control) may both be aimed at getting current problems under control and have the effect of ridding the control relationship from lingering conflict and lack of trust.

A central aspect of the evolution of the control relationship thus concerns how trust develops between controllers and project manager (cf. also page 6.4). This development of trust is not only related to actual developments in the project: The interaction between project manager and controllers is itself an important aspect of how trust develops. This study contains examples of project manager behavior that leads to the deterioration of trust as well as behavior which builds and sustains trust. Specifically, how the project manager reports on project progress influences controller perceptions about the project and the project situation, as well as about the controllee and the control relationship. For example, reporting in accordance with standard IS development methodologies (corresponding to project management techniques) reinforces the legitimacy of standard evaluation criteria, which may not correspond to the nature of project work in early phases (page 246; cf. also page 272).

Correspondingly, a project manager may frame reporting in a way which reinforces the view that the project manager knows what she is doing and that the project progresses in the right direction, even when not all criteria in the project plan are being met (page 262). Thus, the project manager can have considerable influence (in various directions) over what is "expectable" and acceptable in terms of project progress. In contrast to the view of "issue selling" (Dutton and Ashford, 1993), this discussion points to *upwards management* as a continuous aspect of interaction and influence in the control relationship (cf. Gabarro and Kotter, 1993). Less visible in this study is how controllers' trust in the controllee affects the project manager's actions over time, although it is possible that this contributes to openness on behalf of the project manager, which in turn may facilitate a broadening of the controllers' control repertoire (cf. pages 248, 262).

The view of upwards management—or *managing the boss*—given in this study thus suggests that *exercising control implies being controlled*. There is mutual influence in the control relationship and this influence extends to a substantial impact on goal-setting and goal-evaluation by the controllee and other actors (pages 246-247, 262). Even as the control repertoire in use broadens, controller influence over the project (manager) may decrease (page 263). This mutual influence seems to be essential, rather than detrimental, to the pursuit of an organizational course of action, at the very least the type of complex tasks discussed herein. While not an original aim of this study, the here emerging view of the control relationship supports Perrow's (1986) critique of agency theory (e.g. Jensen and Meckling, 1976; Fama and Jensen, 1983). This critique also extends to parts of control theory (Ouchi, 1978; 1979; Eisenhardt, 1985; 1988) and consequently to studies on IS project control (Kirsch, 1996; 1997).

For a project perceived to be "on track", with controllers having trust in the project manager and with controllers committed to the project as it seems to develop, it would seem that tension within the dominant coalition and in the control relationship would subside. At the same time, tension may increase in other related relationships, such as between the dominant coalition and other controllers, or in relation to other arenas for control, such as the corporate IT board. In the latter arena, controllers may find themselves defending the project, facing questions similar to the ones they posed to the project manager earlier (page 261).

In addition to selling (in project formation) and defending (throughout the process) the project to a corporate IT board or similar forum for corporate IT management, controllers are likely to find themselves explaining, promoting and defending the project in various settings at various times during a project process (page 261).[145] In so doing, controllers use and reconstruct the project image.

The influence of controllers over the project image does not end with initial construction and the (perhaps) successful shaping of an IT project. Throughout the project, the project image influences and restricts project work and project management. It also guides and is part of project governance in action. (The project image even extends beyond the project period, as will be discussed below.)

Earlier, several problems related to the exercise of control have been discussed. The project image, however, constitutes a rather powerful vehicle for control in action. In line with the statement above that control is a two-way relationship, the project image is constructed and reconstructed in cooperation with and/or in negotiation between actors at different "levels" related to the project. Specifically, this process of interaction involves actors in project work, project management and project governance, as well as (stakeholder) groups in the organizational environment.

From this study, it would seem that the initial project image may be set early and perhaps rather forcefully (page 235). This initial image may retain a strong influence for a considerable time period, although it is malleable and is likely to be gradually replaced and/or wrapped with additional meanings. One type of instance where the project image may be reformed is in crisis episodes or when the project is questioned by groups in the organizational environment (page 259). This in turn poses a dilemma of countering skepticism and securing survival of the project on the one hand while not overselling in a way which is perceived as not trustworthy on the other hand (cf. Rombach, 1986, pp. 100-107). The latter may also damage trust in subsequent processes, if (user) expectations are not met upon implementation. In this process, the lack of detail, precision and substantia-

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[145] The temporal patterns and intensity of this activity is likely to depend upon a number of contextual factors, including the character of the project and the resulting information system.

tion are part and parcel of how the image of the project is constructed and how it can be used. Here, obscurity or lack of detail can further flexibility in adjusting the image and reduce the risk of scrutiny. On the other hand, while the lack of detail and substantiation increases the chances for acceptance of the project, it also increases the chances for disappointments when project results are at hand.

Not only controllers, but also e.g. the project manager, use the project image to communicate and influence the environment. Correspondingly, controllers use the project image to influence the project manager and project work, as well as the project's organizational environment. Above, it was suggested that the image is molded through a process of negotiation between controllers, project manager, project participants (as well as other organizational actors). This makes the project image a vehicle for control. Through the image, controllers can influence such aspects of the project as project scope and ambition level (pages 235, 254).

The use of a constructed project image as a vehicle for governance of an IT project does not seem to be extensively addressed in literature on IS/IT projects. The issue of influence is addressed, although often in the context of user–developer relationships (e.g. Franz and Robey, 1984; Robey et al, 1989)[146] Similarly, neither the determining consequences of a constructed project image nor characteristics of its evolution over time seem to be addressed in IS studies. In the context of understanding processes of IT project governance, the dynamics relating to the construction and reconstruction of a project image (and rationale) should be important aspects of how project governance forms and evolves. The project image concept can be seen as analogous to Kling's and Iacono's (1984) concept "meaning of computing", or ideology for IT: While the former pertains to a project, the latter pertains to corporate IT management.

Above, it was claimed that professional values and norms influence procedures for IT project governance. For example, the use of an ISD methodology which is seen as progressive, state-of-the-art, and which carries with it an implicit claim for increased influence over the design of business operations, has several functions in this respect. It means that IS developers act in accordance with professional norms for progressive IS developers; it potentially furthers the stature of the IT profession in the organization, and it potentially increases the jurisdiction and influence of the IT professionals (the IT department) in the organization. ISD methodology choices and related negotiations on project scope are likely to occur early in a project process, but professional influence and the use of professional norms—or promotion of professional expertise—to further a professional group in the organization can occur at any time throughout the project process (pages 244, 264; also page 276).

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[146] In different varieties, phenomena related to "project image" are addressed e.g. in literature on leadership (Smircich and Morgan, 1982) and enactment/sense-making (Weick, 1979). Similarly, Schein (1989) discusses persuasive actions in relation to change and Sahlin-Andersson (1992) suggests that expectations developing in interaction processes are important in driving projects to completion.

The study thus shows how domain knowledge, professional jurisdiction and reinforcement of organizational responsibilities can be linked together and interlinked with e.g. how work guided by the ISD methodology is organized. Taken together, the study's findings on professions in the workplace and on professional and political aspects of ISD methodology use supports several earlier studies in this field (Robey and Markus, 1984; Abbott, 1988; Beath and Orlikowski, 1994; also Wallace, 1995).

The study also shows that professional values and norms can influence central choices in an IT project in a way that cannot be readily understood without a view that combines organizational politics and professional influence. In so doing, this study adds theoretical concepts for understanding development processes not visible in earlier studies highlighting the political dimension (e.g. Markus, 1983; Kling and Iacono, 1984).

6.5 Dissolution of IT Project Governance

As described in chapter 2, there are many different ways in which IT projects can be completed or discontinued. In the more dramatic variants of project termination, regular governance procedures are in all reasonableness disrupted and discontinued. This section, however, primarily deals with how governance of a project is dissolved upon completion of a project, including implementation of an information system. In so doing, the section reconnects to several themes covered previously, such as embeddedness and temporal interconnectedness, but also discusses e.g. how the project image affects actions after implementation of the new information system.

There is, however, also the aspect of personal exit from IT project governance. This study provides examples of personal exit from project governance as a consequence of promotion or other change in job responsibilities. In addition, an extension of individual commitment-reducing behavior discussed earlier would include such consequences as exit from the steering committee and/or other involvement in project governance. This means that actions leading to reduction or reversal of commitment are useable as exit strategies (or can have exit as an unintended consequence). Reduction or reversal of commitment, on individual, group and organizational levels, is also likely to be a central part of abandonment processes, although this has not been studied here (cf. Drummond, 1996; Keil and Montealegre, 2000).

The dissolution of IT project governance, then, is not as simple as ending activity when a project ends. Part of the dissolution of a project is carried out through the project governance structure. Again, some of these acts are quite formal (e.g. deciding on the formal ending of the project, making a final report on the project in a forum such as a corporate IT board). Other acts are organizational rituals, symbolic events manifesting accomplishments (e.g. festivities in conjunction with project completion). Some of these events (and related actions by involved people) may also have the effect of changing and/or using the project image to attribute success as a characteristic of individuals, groups and/or the organization (page 264). Yet other actions by people involved in governance include taking part in channeling unresolved issues back to other fora within the organization (e.g. unmet user needs), predominantly within the mechanisms for corporate IT management (pages 265-265).

As discussed in section 6.2 above, actors and resources in projects submerge into the organizational environment on project "completion". At least for reasonably successful projects of some organizational importance, they are likely to carry with them a *project legacy,* consisting of ideas, values and norms concerning matters such as project management procedures and project leadership behavior (page 265). Whether this legacy extends to changes in principles and practices of corporate IT management is partly a matter of how tightly these principles and procedures are linked to organizational culture, or if you will, systemic control (cf. Pennings and Woiceshyn, 1987) and/or cognitive control (Perrow, 1986), i.e. how deeply embedded they are in the structures of the organization and the minds of its members.[147] As this study shows, even a project that turns out as a major organizational achievement need not have any major impact on corporate IT management practices (page 265).

Some actors involved in project governance are also likely to have other roles relating to a project and its results, such as being involved in decisions and priorities concerning subsequent project proposals, or being involved in issues that partly are consequences of the earlier project (e.g. discussions on maintenance, functionality improvements, etc.). In these discussions, they are likely to be bound by their earlier involvement in a project, in a similar way to being bound to a problem description by having repeatedly communicated that problem description (page 254).

So, some of the problems addressed but not resolved by a project will be transferred to other fora. Other problems, partly resulting from an IT project, will arise and be addressed as part of corporate IT management, perhaps resulting in new projects. Projects live on not only through what they achieve but also through what they fail to achieve and what they cause. They also live on through the continued existence and evolution of the project image, which calls for organizational actors to relate to the previous project and the project image in current affairs, being to some extent committed to the prolongation of the earlier course of action. The project image thus sustains commitment to (the rationale for) a line of action even after project completion. When new developments occur, the existing project image calls for making sense of the new developments in relation to previous "truths" and vice versa. the new developments may call for reassessments of the earlier project (page 265; also page 286).

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[147] Cf. the organizational ideology for IT, or "meaning of computing" (Kling and Iacono, 1984).

In sum, there are many activities taking place after the completion of an IT project, where "completion" is rather the ending of a phase and an organizational arrangement. As the project dissolves, issues and activities are inherited from the project, requiring continued attention or *management of the achieved.*

6.6 In Brief: Characteristics, Contributions, Implications

This section looks at the study from three angles: characteristics, contributions and implications. Of these, the first and second are predominantly derived from what you have already read whereas the last one provides some food for thought for the reader contemplating using what has been presented here.

Turning first to *characteristics,* this study has aimed to find a novel route to the study of executive involvement in IT projects. Several distinctive attributes of the study led to a focus on IT project governance, i.e. the organizational control of IT projects and the engagement of executives in this task:

- The study views and defines the focused phenomenon differently from most earlier studies. Instead of a project-centric view, the study focuses IT projects in their organizational context.
- It uses a combination of analytical tools which is new for this research area, including theories on projects, organizational control, commitment and professions.
- It revisits and relates to earlier studies on IS implementation, top management support, IS project escalation and IS project control.
- It employs a research approach extensively used in related research areas but less frequently used specifically for executive involvement in IT projects: a process-oriented, interpretive study based on an in-depth, retrospective case study.
- It uses literature to define in relative detail the basis for analytical generalization of study results.

The issue of how to deliver contributions from a single-case interpretive study was addressed in section 3.1. The answer was, in short: analytical generalization, breadth in types of knowledge contributions and focus on understanding. On the basis of these characteristics, the study results in a number of *contributions,* some of which are summarized below.

The study uncovers how central characteristics of work tasks in IT projects stack the deck against controllers, particularly non-IT controllers. Specifically, these task characteristics, including abstractness, technological complexity, duration, non-repetitiveness, and low degrees of observability, measurability and programmability render both output control and behavior control largely impracticable.

Further, the common lack of domain knowledge among non-IT controllers and the high threshold in learning about IT and IT work practices, together with the often reported distance in views and perspectives between IT professionals and non-IT controllers adds further complexity to the control setting. In addition, values and norms of the IT profession are enacted in the control relationship, in which mutual influence and evolving trust are central characteristics.

Using theories on commitment, the study decouples commitment from resource allocation, thereby refuting a central assumption of escalation theory. For example, it is found that suspension of personal and group commitment may contribute to sustained resource allocation. In contrast to escalation theory, commitment in this study re-emerges as a psychological and social phenomenon interdependent upon personal risk and individual action, supporting earlier work on the dynamics of action in organizations.

The study finds the governance of an IT project to be highly influenced by the organizational environment and its history and the corresponding principles and practices of corporate IT management. In contrast to parts of project theory and much of the project management literature, the study finds intra-organizational IT projects to be characterized by embeddedness, boundary-spanning and temporal interconnectedness. The often emphasized process of separating a project from its environment, bracketing, is found to be subordinated to the mechanisms reconnecting the project to its organizational environment.

A situation is constituted where controllers are apt to accept pre-existing control procedures and control forms, which are in turn likely to be extensively influenced by the IT department. They are also likely to accept that IS development methodologies, procedures and practices, including reporting procedures, are within the professional jurisdiction of the IT professionals. Further, the project manager and people working in a project are likely to have extensive influence over goal-setting.

Through the use of methodologies and procedures for IT projects, behavior and output control are reconstructed in rituals embedded in IS development methodologies and project reporting procedures. However, what is reported is quite subjective, open to judgment and influence by the controllee and highly difficult for controllers to verify.

In spite of the extensive influence of contextual factors on the control relationship, there is variety in how controllers approach the control task. A central dimension of this variety concerns whether a controller exercises generic control or adapts the individual control strategy to the characteristics of the setting and the controlled task.

This view of the characteristics of the setting for IT project governance extends findings from earlier studies on IS project control, specifically findings concerning the dynamics of control and the complexities associated with the controller role. The study finds that controller involvement can be depicted as occurring in a dynamic network of actors with weaker and stronger ties, where the stronger ties at each point in time form a coalition with decisive influence over IT project governance. In contrast to many previous studies, this study finds the ideal of "strong top management support" to be problematic: it seems to be an extraordinary measure which does not translate well into regular organizational practice.

In this environment, control is exercised through selection of key people (input control), through reliance on trust and through the use of other people's assessments. It is also exercised through the construction and reconstruction of a project image. The project image incorporates a rationale for and an identity for the project, and it is used by several groups of actors, including the project manager and members of the dominant coalition of controllers, to influence, negotiate and communicate the scope and aims of the project.

Arguably, *implications,* whether for research or for practice, are largely in the eye and the mind of the adopter. Still, I would like to offer some suggestions to facilitate for some readers a shortening of the distance between thinking and action, between contemplation and application.

One of the *research implications* from the study is that the constructed route to studying executive involvement in IT projects proved practicable and that it is by no means exhausted in terms of generating topics for investigation. Varieties in project embeddedness and project governance structures represent one such example; characteristics of the dynamics of control relationships (centrality of trust, extensive use of other people's assessments) represent another. Adding organizational change to the brew is another obvious extension of this research.

The doubts raised concerning "top management support" suggest a need to reassess how studies on executive involvement in general and varieties of top management support in particular are designed. It also raises questions that concern a possible need to reassess assumptions about managers and management in some areas within IS research. Specifically, it might be that the persistence of the top management support ideal suggests a need to take what we know about management more fully into account when designing studies related to management involvement in IT or in crafting implications for managers.

Concerning *practical implications,* I intend to uphold an intention advertised in the first chapter: I will refrain from delivering any sure-fire advice for managers within the covers of this volume. Not only is the world of management complex, but action strategies are also contingent upon the specific setting, including personal and organizational value systems. What I will do, is to comment on some of the study's contributions in terms of their possible "usefulness" for managers and project managers coping with (IT) projects in organizations.

In my view, it would most likely be useful for practitioners to consider the risks and problems related to "strong top management support", including its self-destructiveness as regular, repeated organizational practice. This is also about understanding the considerable differences in perspectives between executives (potentially "providing support") and project managers and other actors (demanding attention and priority). The dynamic view of coalitions, commitments and trust emerging from this study suggests an organizational practice which is a long way from the popular advice that project managers should "secure support" or "find a sponsor".

Further, I would consider a reminder that control is a two-way street quite useful. There is mutual influence in the control relationship, and this is not an anomaly and not something "wrong". Whether both (or all) parties recognize their co-dependence and how it is handled may however impact upon trust and other fundamental dimensions of the relationship.

Another contribution with practical applicability for IT project management practice is the proposed view of management involvement as that of a dominant coalition of actors that changes over time, subject to many influences. This, combined with the idea (and suggested legitimacy) of managing upwards, suggests a need to place considerable emphasis on communication, relationship-building and influence in the in-use definition of the project management task. The concept of project image can probably be of help in this context.

In addition, this study may inspire executives, project managers and other actors to take a closer look at some of the institutionalized practices of IT project governance in their organizations. Whether or not these practices turn out to be readily changeable, understanding them and understanding how they can be used is likely to make a substantial difference.

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Zeithaml, V. A., Parasuraman, A. and Berry, L. L. (1985). “Problems and Strategies in Services Marketing”, *Journal of Marketing,* Vol. 49, No. 2, pp. 33-46.

Zmud, R. W. (1980). “Management of Large Software Development Efforts”, *MIS Quarterly,* Vol. 4, No. 2, pp. 45-55.

Zuboff, S. (1988). *In the Age of the Smart Machine,* Basic Books, New York, NY.

The following library databases, search engines, online dictionaries and electronic document resources were primarily used in the study (sample access dates in parentheses):

Britannica.com and *Merriam-Webster Dictionary* (URL): http://www.britannica.com/ (February 19, 2000)

Geisha library system and other electronic resources at the SSE library (URL): http://www.hhs.se/library/geisha/default.htm (February 1, 2000), http://www.hhs.se/library/default.htm (August 31, 2001)

Hugin Online corporate news and press release distribution service (URL): http://www.huginonline.com/ (August 31, 2001)

LIBRIS web search bibliographic database at the Royal Library, Sweden (URL): http://www.libris.kb.se/ (February 1, 2000)

ProQuest® online information service with articles and abstracts (URL): http://www.proquest.com/ (February 1, 2000)

Webopedia online dictionary and search engine for computer and internet technology (URL): http://www.webopedia.com (February 19, 2000)

Whatis® online dictionary and search engine for information technology (URL): http://www.whatis.com (February 1, 2000)

Appendix A: Documents Concerning the Case Study Agreement

This appendix contains anonymous, translated copies of documents defining the agreement between the author of this thesis and Financial

Institute V/SSE
Magnus Mähring

Spec. of case study about NDS
1996-06-14 / 1996-06-20

Description of work with case study about the NDS project

Purpose and use of the case study

The case study is meant to be used as an example of how a large, complex systems development project can be managed. Of special interest are the forms for control of the project which were employed, "mechanisms" behind the evolution of the project in different stages, and how executives within Financial Services Corporation viewed the project during different phases, respectively what role they had in the project process.

The case study will be anonymous and used in research reports, in particular my doctoral thesis. Short versions might be used for scientific and popular articles, also in anonymous form.

During the work with the case study, I will, as needed, check contents of the case description with people I am in contact with. The final version of the case description will be checked with my main contacts at FSC before publication, with regards to the accuracy of the description and with regards to confidentiality.

Design of the work process

I want to structure the work so that I first get an overview picture of the background and execution of the project, thereafter supplementing and refining this picture. The persons I would like to meet are the following:

- Key people in the project
  - Johan Sjöberg
  - early project managers
  - architect
  - user representative(s)
  - the/those responsible for project administration/project secretary
  - sub-project managers (selection)
  - other people with good knowledge of the project
- Executives in Financial Services Corporation
  - Karin Martinson
  - Erik Östergren
  - Heads of regional head offices (selected)
  - Stig Vennberg (in a later stage of the case study process)
  - other executives who can provide perspectives of the project

At present, I see three phases in the NDS project which need to be covered:
1. background, initiation and growth,
2. the period during which the project was scrutinized and reorganized (1990/1991)
3. the carrying out of the project and the implementation of the information system.

I estimate the extent of the interviewing to 20-25 interviews of 1-1½ hours each.

Results of the study

On a general level, I think that the study will contribute new knowledge concerning how large IT projects can be managed (reasons for expansion, ways to get a project under control, prerequisites for projects, senior management's role). For Financial Services Corporation, I think that the study can contribute increased knowledge about how the IT department, Business Development department and other units in the organization together can create well-functioning prerequisites for IT projects

Services Corporation concerning the case study of the NDS project. The first document is a description of the study from the researcher's perspective, the second document is the memo sent out by the CIO of Financial Services Corporation to the potential interviewees, with the first document enclosed.

Financial Services Corporation

Inter-office memorandum

Date
1996-09-04

From: name, dept and tel. no.:

Johan Sjöberg, IT

To:

Gustaf Söderberg, ITX
Fredrika Jansson, ITUB
Henrik Bergman, MAQ
Albert Lindegren, ITXX
Karin Martinson, BD
Jonas Ferlin, ITXA
Tage Lundell, BDX
Nils Høeg, BDK
Karl Johnson, ITK
Ingmar Mankell, RNI
Elin Lenngren, BDF
Ellen Sandel, ITXX
Olof Tunström, ITUC
Christian Englund, ITXS
Hans Fogelström, ITDL
Inger Boye, ITUA

Re:

"Case Study NDS"

Econs. Lic. Magnus Mähring from the Stockholm School of Economics has asked me if we can accept that he in his doctoral thesis uses the NDS project as a case study. After consulting with Karin Martinson I have agreed to this, provided that it is done without specifically identifying the company and provided that we get to see the manuscript.

I have given your names to Magnus, as suggestions for interviewees who can contribute with interesting information and opinions.

Magnus will contact you during Fall, and I ask you to please take the time to meet with him for an hour or so.

Regards,

Johan

Encl: Description of the study

Appendix B: Interview Guide

This appendix contains a translated version of the interview guide used in the interviews at FSC, together with some information on its use.

The interview guide reproduced below was used in the interviews at FSC. It has been translated from Swedish (in some cases Swedish wordings are included) and the text has been somewhat modified and supplemented for reasons of clarity. (In the original interview guide, some issues were noted just by keywords.) The version of the interview guide reproduced below is called "2.3". After about five interviews, some minor changes were made to the guide, which was henceforth called "2.0". Minor additions to the guide resulted in versions "2.1", "2.2", and "2.21". Version "2.3" means that the guide has been translated to English.

All in all, changes to the interview guide were minor, except for the last section, called "Issues to sort out". These issues were added over time, partly because of questions arising from working with the material collected in earlier interviews, partly because I wanted to collect more information on certain specific events which I considered to be of importance. Boldfaced type corresponds to words and sentences marked with yellow marker to make them easily visible during interviews.

MM 1997-01-09 / 1997-04-17 / 1997-06-25

Interview Guide for FSC Interviews (version 2.3)

Keywords: top management, project process, change process, power/politics, control structures, stakeholders, culture, critical events/incidents, chronology

1. Introduction

a. **My background**:
   i. M.Sc. from SSE
   ii. (Programming experience)
   iii. Teaching at SSE
   iv. Research in information support and executive information systems (Econs. Lic. degree)
   v. Consulting assignments: reviews of IT projects, coaching of project managers, participation in a corporate IT committee
   vi. Experiences from own prior research, project coaching and project reviews led to interest for how large IT projects can be managed/handled

b. **The research study**
   i. Thesis: Management of large IT projects
   ii. Focus on "ownership" and management of project
   iii. I would like to talk about the whole project process from the beginning
   iv. The material will be used in a case study in my doctoral thesis (and in related research papers), and for feedback to FSC to help future projects
   v. The information will be used without naming FSC, anonymous (but not impossible for all to figure out which organization it concerns)
   vi. Quotations will be checked
   vii. Anything you wonder about concerning the study?

c. Tell me about **your background**

2. Role in project

a. **When did you get in touch with the NDS project?**
b. **What was your task then?**
c. **What did you know about the project at that time?**
d. **What was the situation for the project at that time?**

3. The Project process

a. **What was the process of the project from the time you got in to it/touch with it and forward?** (Chronology/overview)
b. Important **events?**
c. Important **phases?**
d. Important **persons?** - What did they **do?**
e. What did **different units** in the bank do? How did they **influence** the project? What **options/ means** to influence did they have?
   i. How did the **branch offices** and the **regional units view** the project at different points of time during the project process?
   ii. What **senior executives** were involved? **How?** How much? How did their involvement influence the project?
   iii. **The corporate IT committee?**
   iv. **The board of directors?**
   v. **Users?**

4. Critical factors

a. What, according to your opinion, was the **most important** factor that made completion of the project possible?
b. In what way?

5. Present state

a. How does the **New Deposit System function today?** What can be **learnt** from the NDS project? (Or: If one was to do NDS once more, what should be done differently?)
b. **What is happening today which is today's NDS? Are those projects managed in the same way?**

6. Issues to sort out [added over time]

a. What happened (who did what) before and during **the hearing?**
b. What effects did the **reviews** have?
c. **The CEO**s role/involvement over time (after the hearing)?
d. The role of **the chairman of the board?**
e. How many **moratoria** were there?
f. **The IT committee**: Handling of the NDS project respectively other issues during the NDS time period?
g. Who decided to terminate the **CompSys** project?
h. **Crises** after the hearing?
i. Who visited **FinBank** and what did they learn?

Appendix C: Coding Specification

This appendix contains the specification of how data were coded. See section 3.3.4 for a description of how coding was used in the research process.

MM / April 17, 1998

Coding Plan for FSC/RBS Case Study (version 4)

Levels of Analysis

Project-related

1.	Project process / project work	Green marker
2.	Project management	Yellow marker
3.	Managerial influence / control over project	Red marker
4.	Project pre-history, rationale, results and effects	Blue marker
5.	Interaction project - organization	Yellow underline
6.	Managerial influence over organization	Pink marker

Project Environment

7.	Corporate IT management	Red underline
8.	The organization	Blue underline
9.	The organization's environment	Black underline

Actors/Stakeholders (only where necessary for clarification)

1.	Project management	"PL" in margin (projektledning)
2.	Managerial influence/control	Initials
3.	Region banks	"RB"
4.	Branch offices	"BO"
5.	Other actors	Acronyms, such as
	- union representative	- "Union"
	- central business development department	- "BD"
	- user representative	- "User"

Other markings

1.	Chronology	Date (or eq.) noted in margin
2.	"Base facts" (e.g. project budget)	Marker/marking + "F"
3.	Retrospective comment/evaluation	Marker/marking + "RC" in margin
4.	Commentaries, explanations etc.	Notation in margin, e.g. "Explanation", "Comment on [person]"
5.	Notations of characteristics or nature of action	E.g. "coaching", "managing the boss"
6.	Control forms	"Ctrl"
7.	Project (re-)organization	"ProjOrg"

Appendix D: List of Interviews and People in the Case Study

This appendix consists of a list of interviewees as well as other people mentioned in the case description, together with brief information concerning their roles in the New Deposit System project and their positions at Financial Services Corporation (updated until late 1998/early 1999). Names are pseudonyms based on combinations of names of Nordic authors.

Individuals are listed in (English) alphabetical order. Page references indicate where additional information can be found.

Name Interview date (duration) Appears	**Positions in Financial Services Corporation**	**Positions/Roles in the NDS Project**
Søren Alfredsson No interview Page 120	BD (business development) department.	Carried out the first feasibility study of NDS together with Willy Danielsson.
Viktor Bengtsson Apr. 18, 1997 (1h, jointly with Koch) Page —	Assistant branch manager in FSC. Experience from several positions in branch offices for more than 10 years.	User and manager of users of the NDS system. No involvement in project.
Henrik Bergman Jan. 17, 1997 (1h45min) Page 144	Various positions in FSC central staff, merchant banking, branch offices and regions. Head of BD department 1990–1992 and 1997–present (executive VP). CIO 1998–present.	Commissioner for the NDS project 1990–1992 and chairperson of steering committee in the same period.
Inger Boye Jan. 13, 1997 (2h) Page 126	In the FSC IT department since 1978, mostly in systems development. Worked in the CompSys and NewTerm projects before NDS. Controller for systems development after NDS.	Sub-project manager Design; Change Requests; Analysis; NDS2.
Märta Bremer No interview Page 181	Head of Business Development department 1992–1995.	Member of NDS steering committee 1992–1994.

Victoria Carlén Sep. 30, 1998 (2h, incl. demo of NDS) Page —	Branch offices. Head of NDS maintenance group c:a 1996–present.	User representative.
Willy Danielsson No interview Page 119	FSC IT department, systems group for deposit-related systems.	First project manager for the NDS project. Succeeded by Albert Lindegren.
Christian Englund Autumn 1996 (30min) Jan. 29, 1997 (1½h) Page 159	External consultant.	Carried out several reviews of the NDS project. Interim project manager for the NewCust project, then support to the new project manager.
Jonas Ferlin Jul. 8, 1997 (2h) Page 145	Senior technology specialist in the FSC IT department. Involved in NewTerm project among others.	Sub-project manager Technology and technical architect. "Performance general" responsible for performance testing and system performance/ processing capacity.
Anna Flygare Jan. 27, 1997 Page 218	In FSC since 1960, in branch offices and IT department administration, then programming. Worked in the NewTerm project. Middle management positions in IT. Systems development group manager early 1990s. Member of IT department management team from mid-1990s.	Head of systems development group in IT department which developed supporting systems for NDS during the project period. Head of systems area which includes maintenance of NDS and related systems. No role in the project itself.
Hans Fogelström Jun. 18, 1997 (2h) Page 173	See next column. Since c:a 1996 head of IT function for a FSC subsidiary.	Consultant from IT vendor. Sub-project manager for Pilot sub-project, then for one of the Construction sub-projects. Head of NDS maintenance group from inception until c:a 1996.
Aksel Henriksson No interview Page 178	IT department.	Project manager for NewCust from spring 1992 until completion autumn 1993. Sub-project manager NDS DataQuality autumn 1993.
Nils Høeg Jan. 16, 1997 (2h15min) Mar. 25, 1997 (30min) Page 115	Branch offices 1965–1969. Involved in FS-term project. Head of administrative development, Region X, 1976–1985. Responsible for user requirements, NewTerm project, 1985–1988. Business Development department 1985–present. Involved in NxTerm project.	Head of user requirements November 1990–1994.

Niklas Jersild Apr. 21, 1997 (1h) Page —	Branch manager. Earlier in merchant banking division and in an international office. In branch offices since 1992.	User and manager of users of the NDS system and its predecessor DepSys. No involvement in project.
Karl Johnson Jun. 26, 1997 (2h) Page 171	Systems development and project management in the FSC IT department. After NDS involved in the NxTerm project.	Sub-project manager Method; System Testing.
Ivar Koch Apr. 18, 1997 (1h, jointly with Bengtsson) Page —	Branch Manager in FSC. Experience from several positions in branch offices for more than 10 years. Assignments in Region Y for a few years.	User and manager of users of the NDS system. No involvement in project.
Carl Lagerkranz No interview Page 169	External consultant.	First project manager in the NewCust project. Succeeded by Christian Englund (interim), then Aksel Henriksson.
Dan Lagerqvist No interview (retired) Page 132	Head of BD department in the late 1980s. Later executive VP, head of corporate personnel department.	Member of steering committee 1989–1990. Commissioner during 1990.
Edith Lange Jun. 9, 1997 (1½h) Page 210	External consultant 1992–1994. Management positions in IT 1994–1996. Project manager in FSC IT department 1996–present.	Sub-project manager Interfaces 1992–1994.
Elin Lenngren Jan. 20, 1997 (1h15min) Page 129	BD department since the late 1980s. Work in development projects. System owner for several information systems.	Responsible for user representatives during 1990. Sub-project manager Testing during 1991.
Albert Lindegren Jun. 12, 1997 (1h45min) Page 119	Branch office 1964–1966. IT department 1966–present (programming, database technology, project management, middle management positions).	Involved in early project specification work. Responsible for systems group for deposit related systems. Project manager NDS 1989–1990.
Tage Lundell Jan. 9, 1997 (2h) Page 118	Background from branch offices. Middle manager in BD department. Responsible for deposit-related systems in BD department from late 1980s to mid-1990s.	Member of NDS steering committee. Various investigations concerning the NDS project.
Ingmar Mankell Mar. 11, 1998 (1h45min) Page 142	Branch offices 1960–1970. BD department 1970–1972. Head of administrative development Region Z 1972–present. Union representative 1984–1994.	Member of steering committee.

Karin Martinson Jan. 22, 1997 (1½h) Sep. 11, 1997 (phone, 15 min) Dec. 9, 1997 (1½h) Page 114	Background from branch offices and region headquarters. Responsible for user requirements in NewTerm project 1983–1985. Head of Business Development department 1985–1989; 1995–1997. Head of Central Administration 1989–1997. Executive VP 1989–1998. Head of Personnel department 1997–1998. Head of FSC subsidiary 1998–present. Member of FSC management team 1989–present.	Member of NDS steering committee. Chairperson 1992–1994. Commissioner for NDS project 1992–1994.
Verner Moberg No interview (retired) Page 113	Executive VP, head of central administration during the late 1980s. Deeply involved in the NewTerm project.	None.
Erik Östergren Apr. 16, 1997 (2½h) Page 115	Background from various IT management positions in several financial firms before being recruited to FSC. IT manager 1985–1996.	Member of steering committee.
Axel Rydberg Aug. 12, 1998 (1h) Page 112	Chief Executive Officer 1978–1991. Chairman of the board 1991–present. Chairperson of Corporate IT Board (CITB) 1984–1990.	Approved NDS project in corporate IT board in 1988.
Ellen Sandel Jan. 24, 1997 (2h) Page 134	IT department 1965–present (systems development, other assignments). NewTerm project 1981–1988.	Started in NDS project 1988/89. Responsible for Migration from 1990–1994; Interfaces 1990–1992; Parallel Testing 1992.
Johan Sjöberg May 14, 1996 (2h) Apr. 15, 1997 (2h) Apr. 22, 1997 (1h) Page 128	External consultant. Head of systems development merchant banking 1994-ca. 1995. Special IT projects 1995–1996. Chief Information Officer 1996–1998. Special projects 1998–present.	Support to project manager 1989–1990. Project manager October 1990–1994.
Gustaf Söderberg Jan. 15, 1997 (2h) Page 113	Responsible for data communication in FS-Term project. Project manager NewTerm project 1978–1987. Head of systems development, IT department 1987–1998. Head of R&D group for new IT possibilities.	Member of steering committee.
Frans Trenter Apr. 18, 1997 (2h) Page 125	Branch offices 1960–1968. Region manager 1973–early 1980s. Branch manager during early 1980s. Executive vice president 1984–1995. Head of Region X 1984–1990. Head of Region Y 1990–1995. Retired.	Member of steering committee from 1988 to completion of the project. Commissioner 1988–1989.

Olof Tunström Feb. 13, 1997 (1h45min) Page 164	Originally consultant from IT vendor, then independent consultant. After NDS project involved in managing several projects within FSC.	Support for NDS project management. Co-responsible for NDS project office late 1991–1994.
Stig Vennberg Jun. 10, 1997 (45min) Page 132	Background from various positions in FSC. Head of region Y until 1990. CEO-to-be, assigned to special projects, 1990–1991. CEO 1991-present. Chairperson of Corporate IT Board 1990–present.	Led hearing of NDS project January–February 1991. Approved project plans and changes in project plans for the NDS project and related projects in the corporate IT board.

Appendix E: List of IT Platforms and Information Systems in FSC

This appendix contains short descriptions of information systems and hardware/systems software platforms mentioned in the case study description of the New Deposit System project in Financial Services Corporation. Page references indicate where additional information can be found. Figure 17 (below) summarizes the list.

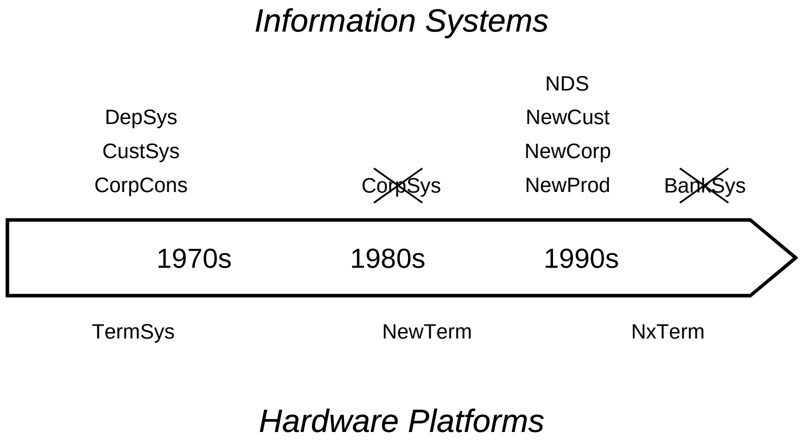

Figure 17: Selective Overview of IT Platforms and Information Systems in FSC

Name of Terminal/Information System	Description	Approximate Development and Use Periods
FS-Term Page 111	FSC's first terminal system, which connected branch offices and central processing facilities.	Developed from the late 1960s to 1973. Used from 1973 to 1988 (its replacement, NewTerm, began rolling out in 1985).
DepSys Page 111, 116	FSC's first deposit system, managing all customer accounts for retail banking.	Developed from the late 1960s to 1973. Used from 1973 to 1994.
CustSys Page 111	An information system managing customer data, which was developed in conjunction with DepSys.	Developed from the late 1960s to 1973. Used from 1973 to 1993.

CorpCons Page 147	An information system supplementing DepSys, CorpCons managed consolidation of accounts belonging to corporate customers.	Developed from the late 1960s to 1973. Used from 1973 to 1994.
NewTerm Page 113-117	FSC's second terminal system. Replaced FS-Term to bring local processing capacity and increased functionality to branch offices.	Developed and implemented from 1978 to 1988. Used from 1985 (pilot installations) onwards.
CompSys Page 116-117	A proposed information system for managing corporate accounts, envisioned as the first step towards replacing DepSys.	Project was initiated in 1984 and abandoned in late 1985.
NDS *(New Deposit System)* Page 118-122, 211, 223	The new deposit information system, handling processing for all customer accounts. Developed to replace DepSys.	Project started in 1987-1988 and was completed in 1994. System in use from 1994 onwards.
NewCust Page 142, 147, 157	The new customer information system, developed to replace CustSys. Closely linked to NDS.	Development started in 1990 and was completed in late 1993. Used from 1993 onwards.
NewCorp Page 147, 157	An information system for consolidation of corporate customer accounts, especially for large companies. Closely linked to NDS.	Developed from 1990 to 1993. In use from 1994 onwards.
NewProd Page 180, 202	An information system for management of information concerning FSC products and services. Closely linked to NDS.	Developed from 1990 to 1993. In use from 1993 onwards.
NxTerm Page 216	A new IT infrastructure for branch offices, intended to replace NewTerm.	Project started in 1996. Under development.
BankSys Page 220-223	A standard application package intended to replace over 50 different information systems, including NDS, NewCust, NewProd and NewCorp.	Project initiated in 1997, abandoned in early 1999.

Appendix F:
Constructed Phases for the NDS Case

Here, critical events indicating and guiding the construction of phases for the interpretive discussion of the NDS project (chapter 5) are briefly described. The criteria for and reasoning behind the use of phases in the interpretation of the NDS case are given in section 3.3.4.

The events described below are related to the start respectively ending of each phase, as illustrated in Figure 18, an amended version of Figure 16 on page 232.

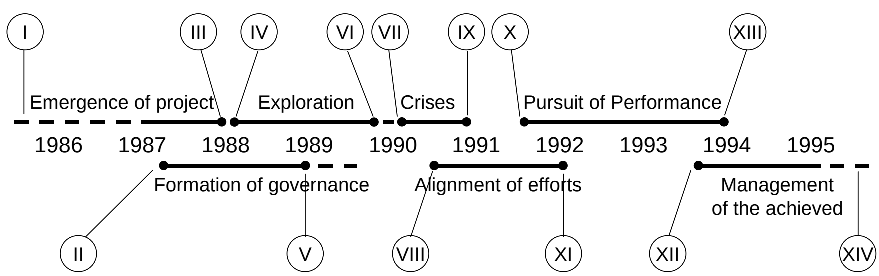

Figure 18: Constructed Phases and Critical Events in the NDS Project

I. Start of *emergence of project:* There is no specific point in time when the project "starts" to emerge. Among the distinct events indicating the early emergence of the project are: start of the CompSys project, cancellation of the CompSys project, start of discussions on new feasibility study (pages 116, 117, 118).

II. Start of *formation of governance* (autumn 1987): The Business Development, IT and IS development managers are involved in the start of a feasibility study for a new deposit system. The BD and IT managers are also assigned to the group that oversees the feasibility study (pages 119, 120).

III. End of *emergence of project* (spring 1988): Indications signaling a change of phase include the project approval by the corporate IT board and the CEO and the appointment of a project managers and a commissioner for the project (page 123).

IV. Start of *exploration* phase (spring/autumn 1988): The start of this phase follows directly from the ending of the previous (page 123).

V. End of *formation of governance* phase (autumn 1989): Following the appointment of Dan Lagerqvist as commissioner (page 132), tension in the steering committee is somewhat reduced, as indicated by the undramatic approval of the goal study in late 1989 (page 133). Project governance structures were in place and actors involved in governance were acting within those structures, although governance would continue to evolve.

VI. End of *exploration* phase (spring/summer 1990): Troubled steering committee meetings in the spring of 1990 result in a narrower and clearer definition of project scope towards replicating DepSys (page 138).

VII. Start of *crises* (summer/autumn 1990): Growing concerns during the summer lead to the steering committee meetings in October 1990 (page 140).

VIII. Start of *alignment of efforts* (autumn 1990): First efforts by third project manager to improve project management and control (page 144).

IX. End of *crises* (February 1991): Decision by CEO-to-be (and corporate IT board) to continue the NDS project and to approve start of the NewCust project (page 156).

X. Start of *pursuit of performance* (early 1992): Project reports that timetable holds up. Review conducted in January–February finds project on the roll (page 170).

XI. End of *alignment of efforts* (spring 1992): Introduction of new project management meetings, first transaction processed by first modules of NDS, analysis practically completed (page 180).

XII. Start of *management of the achieved* (early 1994): Project manager holds presentation about the management of the NDS project for the board of directors of FSC (page 206).

XIII. End of *pursuit of performance* (June 13, 1994): Implementation of NDS is successfully completed (page 211).

XIV. Fading of *management of the achieved:* No clear ending to this phase. Continues beyond the end of the studied period, probably for as long as NDS is used and as long as the memory of the NDS project is kept alive.

Appendix G: Author Index

Below, initials are included where more than one author have the same surname, not otherwise. For references with three or more authors, only the first author appears in the text, whereas all authors are listed below and found in the reference list. Like the reference list, this list is also in English alphabetical order.

Publications from the Economic Research Institute (EFI)

Reports since 1996.

A complete publication list can be found at www.hhs.se/efi/

Published in the language indicated by the title

2001

Adolfson, M., Monetary Policy and Exchange Rates - Breakthrough of Pass--Through.

Andersson, P., Expertise in Credit Granting: Studies on Judgment and Decision-Making behavior.

Björklund, C., Work Motivation - Studies of its Determinants and Outcomes.

Center for Management and Organization 50 (1951-2001).

Charpentier, C., Uppföljning av kultur- och fritidsförvaltningen efter stadsdelsnämndsreformen.

Dahlén, M., Marketing on the Web - Empirical Studies of Advertising and Promotion Effectiveness.

Ekelund, M., Competition and Innovation in the Swedish Pharmaceutical Market.

Engström, S., Success Factors in Asset Management.

Ericsson, D., Kreativitetsmysteriet - Ledtrådar till arbetslivets kreativisering och skrivandets metafysik.

Eriksson, R., Price Responses to Changes in Costs and Demand.

Frisell, L., Information and Politics.

Giordani, P., Essays in Monetary Economics and Applied Econometrics.

Gustavsson, P., Essays on Trade, Growth and Applied Econometrics.

Hedlund, A., Konsumentens erfarenhet - och dess inverkan på livsmedelsinköp på Internet.

Hill, M., Essays on Environmental Policy Analysis: Computable General Equilibrium Approaches Applied to Sweden.

Hvenmark, J., Varför slocknar elden? Om utbrändhet bland chefer i ideella organisationer.

Hägglund, P.B., Företaget som investeringsobjekt - Hur placerare och analytiker arbetar med att ta fram ett investeringsobjekt.

Höök, P., Stridspiloter i vida kjolar: om ledarutveckling och jämställdhet.

Johansson, C., Styrning för samordning.

Josephson, J., Evolution and Learning in Games.

Kjellberg, H., Organising Distribution - Hakonbolaget and the efforts to rationalise food distribution, 1940-1960.

Lange, F. och Wahlund, R., Category Management - När konsumenten är manager.

Liljenberg, A., Customer-geared competition - A socio-Austrian explanation of Tertius Gaudens.

Lindkvist, B., Kunskapsöverföring mellan produktutvecklingsprojekt.

Ljunggren, U., Nyckeltal i grundskolan i Stockholms stad före och efter stadsdelsnämndsreformen.

Läkemedel - Kostnad eller resurs för sjukvården? (red. Jönsson, B.,).

Löf, M., On Seasonality and Cointegration.

Martensen, K., Essays on Entry Externalities and Market Segmentation.

Matros, A., Stochastic Stability and Equilibrium Selection in Games.

Mårtensson, P., Management Processes - An Information Perspective on Managerial Work.

Nilsson, A., Market Transparency.

Norberg, P., Finansmarknadens amoralitet och det kalvinska kyrkorummet - En studie i ekonomisk mentalitet och etik.

Persson, B., Essays on Altruism and Health Care Markets.

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