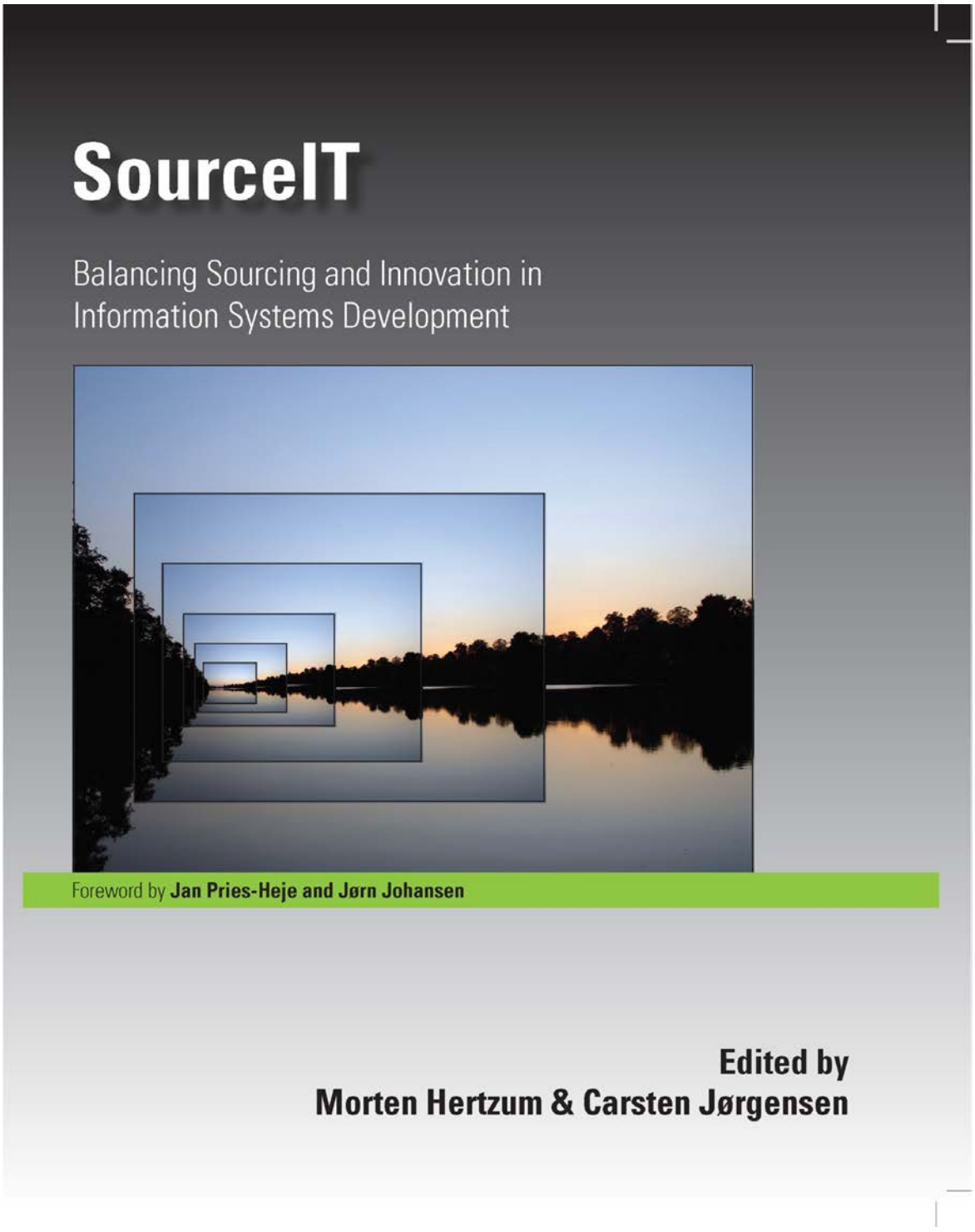

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[This document contains Chapter 1 of the book]

Introduction

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1 Introduction

Many organizations, not least the ones in the software industry, face the challenge of staffing their projects with people who have the right competences, come at the right price, and can be made to work efficiently together. Outsourcing has been one attempt to meet this challenge and insourcing has been another; and some organizations have devised still other sourcing arrangements to become or remain competitive. A sourcing arrangement involves a contractual relation between a client and a vendor, for example in terms of an offshore development centre, and a practical relation about the concrete work to be performed by client and vendor in implementing the contract. A crucial issue in every sourcing arrangement is to recognize whether important aspects of work suffer from the arrangement, for example because it primarily focuses on other aspects. One important aspect of work is innovation capability, which is central to the strategic competitiveness of systems-development projects. Although strategic competitiveness is central, many sourcing arrangements focus on making systems development more economically competitive. Sourcing may, however, also be a way of freeing innovative people from other project tasks, of getting access to innovative people, or of acquiring the mix of competences required to foster innovation. The interrelation between sourcing arrangement and the innovation capability required in a project is complex and, at present, poorly understood.

This book seeks to enhance our understanding of the interrelation between sourcing and innovation in information systems development. We define information systems development as "the application of information technologies (computers and telecommunications) to solve and address problems in managing and coordinating modern organizations" (Hirschheim, Klein, & Lyytinen, 1995, p. xi).

Notably, this definition goes beyond mere technical development by also including organizational implementation and system management. An understanding of the interrelation between sourcing and innovation is important in its own right, but we also aim to use this understanding to provide instruments for balancing sourcing and innovation in ways that match the needs of development projects. Therefore, the book addresses two questions:

- What are the preconditions for optimal sourcing in relation to innovation capability?
- How can an organization be most innovative, while making optimal use of sourcing?

Answers to these questions are in high demand because success in sourcing and innovation is difficult to achieve. Succeeding in either sourcing or innovation is far from easy, and succeeding in both at the same time is a real challenge. Yet, *practitioners* at many managerial and decision-making levels are faced with demands to devise innovative solutions in projects that involve various sourcing arrangements. These practitioners need guidance on how to make sourcing decisions. For example, IT-project managers need guidance on what type of sourcing arrangement to adopt at the strategic level and on how to organize the daily interactions among the sourcing partners at the operational level. At the same time, *researchers* are in need of concepts, case descriptions, and tool assessments that enable a better understanding of the challenges involved in successfully balancing sourcing and innovation. A good understanding of this balance will benefit research on software process improvement and it is a prerequisite for the creation of useful, research-based guidance on how to strike the balance. Apart from being useful to research and practice, this book provides cases and tools that can be used in *education*. With respect to education, we consider the book particularly relevant to advanced programmes in information systems development, software process improvement, and project management.

The basis for the book is the *SourceIT* project, a three-year research and innovation consortium with five partners: Roskilde University (the academic partner), DELTA Axiom (a technological service institute liasing between research and industry), CSC Scandihealth (a Danish IT vendor specializing in the development of healthcare solutions), Danske Bank (a Danish financial institution providing banking, insurance, and other financial services to citizens and businesses in Northern Europe), and Nets (a Danish and Norwegian financial institution developing and hosting payment services related to, e.g., credit cards). While CSC Scandihealth

has since 2005 been involved in partnership sourcing, Danske Bank and Nets have since 2005 and 2000, respectively, been involved in outsourcing, mainly to India.

2 Sourcing

In this book, sourcing is used as an umbrella term for outsourcing, insourcing, and partnership sourcing. Outsourcing can take various forms but at its core involves paying an external organization for performing functions previously performed internally in an organization (Lacity & Hirschheim, 1993). Conversely, insourcing involves starting to internally perform functions that were previously performed by paying external organizations to perform them (Hirschheim & Lacity, 2000). One possible reason for insourcing is to revoke an earlier decision to outsource a function, for example, to harness the internal innovation capability. Finally, partnership sourcing involves a redistribution of the allocation of functions between an information-systems vendor and the customer acquiring an information system. A report from IDC (Goepfert, 2002) concludes that outsourcing should be considered a strategic option by IT companies in all industry branches because all industry branches will face new conditions as a consequence of their own or their competitors' sourcing. This suggests that a huge number of managers at the strategic, tactical, and operational levels of IT organizations will be faced with sourcing decisions that involve considerable risks as well as opportunities.

While sourcing arrangements are typically regulated by detailed contracts, the complexity of many sourced functions is so high that contracts will often be incomplete (Schmitz, 2001). As a consequence, trust and relationship management become important components of sourcing decisions and of the resulting sourcing arrangement (Dibbern, Goles, Hirschheim, & Jayatilaka, 2004; Lacity, Khan, & Willcocks, 2009). In addition, the long-term nature of sourcing arrangements implies that it may be inopportune for the client to negotiate a sourcing contract that is too favourable because this will force the vendor to be inflexible throughout the duration of the sourcing arrangement in order for the sourcing arrangement to be profitable to the vendor. This phenomenon, known as the winner's curse (Kern, Willcocks, & Heck, 2006), further increases the importance of trust and partnership in sourcing arrangements.

2.1 Two types of sourcing

Sourcing arrangements may take many forms (Carmel & Agarwal, 2002; Dibbern et al., 2004; Lacity & Willcocks, 1998; Willcocks & Lacity, 2006). This book is, however, particularly about two types of sourcing: offshore outsourcing and partnership sourcing. Empirically, the book investigates examples of offshore outsourcing between Denmark and India and examples of partnership sourcing between IT vendors and healthcare organizations.

Offshore outsourcing consists of a client's subcontracting of an activity to an independent vendor working from an overseas location (Vlaar, van Fenema, & Tiwari, 2008). The large geographical distance between the client and vendor intensifies several of the challenges known from onshore and nearshore outsourcing, and it creates new challenges (Iacovou & Nakatsu, 2008). The new challenges include mundane issues such as large time-zone differences, which make it difficult to schedule meetings, and intricate issues such as cultural differences, which annul some of the elements that are otherwise taken for granted in interpersonal communication. Two important considerations in offshore outsourcing are to determine whether the vendor possesses the required knowledge and what type of relationship to establish with the vendor. The relationship may seek to gradually reduce the knowledge asymmetries between the client and vendor (e.g., by offering courses in the client's business domain to vendor staff) or to allocate tasks to the client or vendor only if they can perform the tasks on the basis of their existing knowledge (e.g., allocate coding to the vendor but retain needs analysis as a client task). Typically, the client–vendor relationship is quite hierarchical in offshore outsourcing, but in this book we also investigate relationships that aim at drastically reducing the knowledge asymmetries.

Partnership sourcing is characterized by a long-term, often strategic, relation between an IT vendor and a client. This partnership replaces the hierarchical client–vendor relationship typical of outsourcing. A partnership between the vendor and client becomes relevant because the technical development and organizational implementation of large IT systems extend over considerable periods of time and because the systems need to evolve over time to adapt to changing circumstances and emerging client needs. This flexibility or tailorability in IT solutions has been made possible by highly configurable standard systems, which are configured to meet client needs rather than developed from scratch. The question regarding which parts of the solution the vendor should configure and maintain and which parts the client should configure and maintain is, however, open. And, in partnership sourcing it is an important question because the client possesses

pertinent domain knowledge and is familiar with local particularities. The optimal balance may be for the client to take on some technical configuration tasks conventionally performed by the vendor and, conversely, for the vendor to become involved in some organizational implementation tasks conventionally handled by the client. An optimal allocation of the tasks may enable more innovative solutions that fit a broader range of local client needs. To avoid that system functionality becomes fixed prematurely, partnership sourcing is in this book based on effects-driven IT development, which aims to maintain a sustained focus on the effects to be achieved through the use of a system (Hertzum & Simonsen, 2010).

2.2 Four levels of sourcing decision

A sourcing arrangement goes through several stages. Based on the outsourcing lifecycle model by Cullen et al. (2006), we suggest that these stages can be usefully divided into four levels, each characterized by activities and decisions specific to that level, as shown in Figure 1.

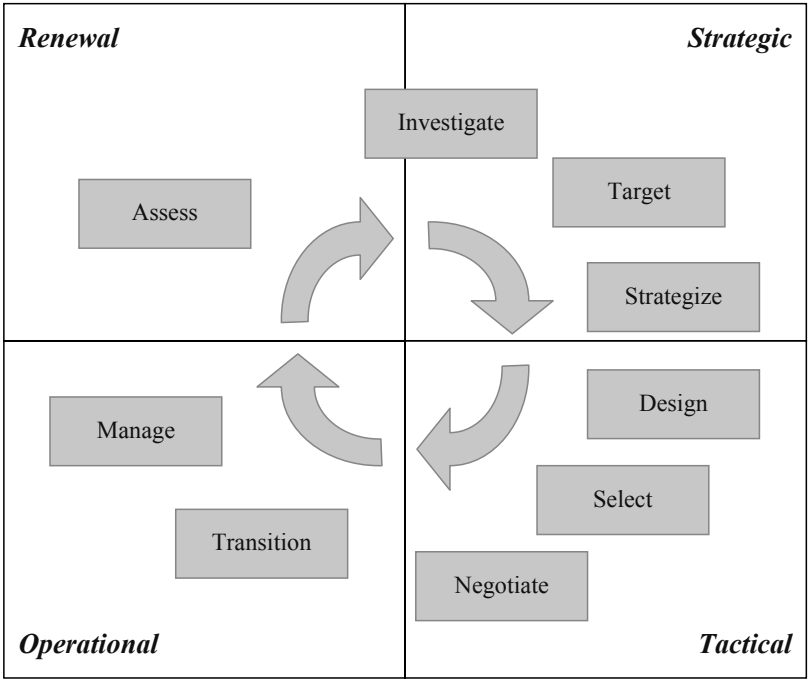

***Figure 1**: Four levels of sourcing, adapted from Cullen et al. (2006)*

At *the strategic level*, organizations investigate their needs and what sourcing can offer; then they direct their efforts toward identifying candidate functions for sourcing; and they develop a strategy for how to source the identified functions. A key consideration at this stage is to clarify whether sourcing is a means of cost savings, gaining access to new markets, acquiring the right mix of competences, becoming more innovative, or achieving some other goal. At *the tactical level*, organizations complete the design of the relationship between the parties involved in the sourcing arrangement; they select, in the case of outsourcing, the vendor to which functions will be outsourced; and then they negotiate any outstanding issues in the sourcing arrangement. A common decision to be taken at this stage is to determine whether a concrete task, or part thereof, should be outsourced as part of an existing sourcing arrangement. At *the operational level*, organizations make the transition from their previous way of working to the sourcing arrangement, and they manage the sourcing arrangement by planning, assessing, and improving their new way of working. Operational-level issues, for example, include continual coordination, communication, and cooperation among the members working on the projects that involve sourcing. At *the renewal level*, organizations revert from the day-to-day operation of the sourcing arrangement to a strategic assessment of whether to continue, change, or discontinue the sourcing arrangement. One consideration that may surface at this stage is whether to adopt a multi-sourcing strategy by sourcing functions to more than one vendor and thereby becoming less dependent on one vendor.

3 Innovation

Novel technologies are difficult to devise because it is difficult to be innovative and foresee solutions for problems and needs that have yet to be fully realized. User participation has been advocated as a means of identifying needs and assessing solutions, but to devise the solutions, designers may need to turn to special sub groups of users, such as early adopters (Rogers, 2003) or lead users (von Hippel, 1986). Novel technologies are also difficult to implement in organzations. For example, Day and Schoemaker (2000) find that even establihed organizations experience difficulties in implementing emerging technologies in spite of their many resources. As a consequence of such difficulties many organizations are inclined to postpone the adoption of new technologies – including new procedures such as sourcing – and simply proceed as usual. Factors that have been found to correlate positively

with organizations' capability to innovate include administrative intensity, external communication, functional differentiation, internal communication, professionalism, slack resources, specialization, technical knowledge resources, and a positive managerial attitude toward change, whereas for example centralization and formalization have been found to correlate negatively with innovation capability (Damanpour, 1991). According to Fichman (2000), many of these factors are more likely to be present in large than in small organizations. Conversely, Dybå (2000) argues that small IT organizations tend to be innovative because they are agile and, thereby, more responsive to changing conditions than large organizations.

A common distinction in the analysis of innovation is between process innovation and product innovation (e.g., Utterback & Abernathy, 1975). In relation to sourcing, it is relevant to subdivide process innovation into innovation in the systems-development process and innovation in the business process that the resulting system is to support. Innovation in the systems-development process may be an end in itself, for example, to devise more cost-effective ways of working, or it may be seen as a means of improving an organization's capability for product innovation or business-process innovation. Sourcing is an example of innovation in the systems-development process. It is presently unclear how sourcing concretely affects product innovation and business-process innovation (Dibbern et al., 2004; Kotabe, 1990; Nieto & Rodriguez, 2011).

Independently of the distinction between process and product innovation, Christensen and Overdorf (2000) distinguish between sustaining and disruptive innovation. Sustaining innovation consists of products and services that are better than their predecessors on quality attributes that are already appreciated by mainstream customers. Such innovation tends to build on exploitation, rather than exploration, of knowledge (March, 1991) and to lead to evolutionary change. Most sustaining innovations are developed and marketed by industry leaders for their existing markets. Conversely, disruptive innovation creates new markets by introducing products or services that mainstream customers initially see as being pointless or worse than their predecessors. Such innovation may lead to revolutionary change, but little is known about how to repeatedly produce disruptive innovations. Young, immature organizations do, however, seem to possess a higher capacity for disruptive innovation than established, mature organizations. The empirical work on which this book is based concerns organizations with an established position in two cautious and somewhat conservative business sectors – finance and healthcare. Thus, the predominant focus is on sustaining innovation.

4 Overview of chapters

Different readers may want to read different chapters. Figure 2 aims to guide readers in gaining a quick overview of the chapters and selecting those they want to read. In Figure 2, each chapter is positioned relative to the two types of sourcing and the four levels of sourcing decisions. In addition, we have divided the chapters into research chapters, which aim to address the researchers' need for concepts, case descriptions, and tool assessments, and industrial-experience chapters, which aim to address the practitioners' need for practical guidance. Research chapters and industrial-experience chapters are intermixed throughout the book (see below) because the themes that run through the book have been addressed from both perspectives.

Chapters 2 and 3 open the discussion on sourcing and innovation. In Chapter 2, Larsen et al. ask whether innovation can be outsourced. This is a central theme of the book and is analyzed in Chapter 2 on the basis of an empirical case in which

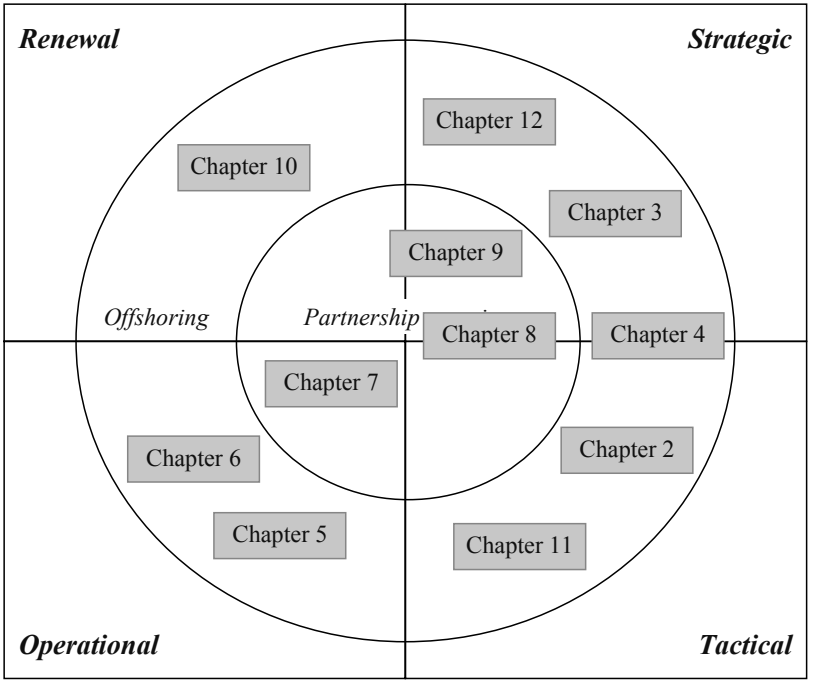

***Figure 2**: Positioning of chapters relative to the type of sourcing and the level of sourcing decision*

offshore outsourcing has partly been introduced to provide improved opportunities for innovation. Korsaa and Johansen, in Chapter 3, present a series of overall considerations that are important to establish a sourcing strategy. This chapter supplements Chapter 2 by introducing several of the other considerations that, besides innovation, enter into a company's decision about how to approach sourcing. While Chapter 2 is a research chapter, Chapter 3 is an industrial-experience chapter.

Chapters 4, 5, and 6 move from overall considerations about a sourcing arrangement to specific considerations about the interactions between onshore and offshore staff during offshore outsourcing. All three of these chapters are research chapters. In Chapter 4, Hertzum and Pries-Heje analyze a case in which a minimizing-interaction strategy was adopted to pay as little transaction cost as possible. The chapter asks whether this way of maintaining a clear distinction between onshore staff and offshore staff – and thereby between onshore tasks and offshore tasks – is an effective means of handling cultural and maturity inequality in offshore outsourcing. Chapter 5 by Madsen et al. addresses the need for transferring knowledge from the client to the vendor. In contrast to Chapter 4, the case in Chapter 5 involves a company that assigns a mix of onshore and offshore staff to most tasks in an explicit attempt to dissolve the onshore–offshore distinction. While this leads to a knowledge-transfer approach that goes substantially beyond minimal interaction, there are several similarities in the challenges faced by the companies discussed in Chapters 4 and 5. Pries-Heje and Pries-Heje, in Chapter 6, provide a framework for creating the teamwork relations necessary to succeed with knowledge transfer and teambuilding. The core of this chapter is a six-by-six matrix with techniques for building social capital in different phases of a team's lifecycle. By populating the matrix with different sets of techniques, it may be made to support interaction at different points between minimal interaction and more abundant interaction.

Chapters 7, 8, and 9 are about partnership sourcing and analyze the use of effects as a central instrument in managing the partnership. Chapter 7 is an industrial-experience chapter in which Simonsen et al. describe the process of effects specification. The chapter describes the series of workshops at which effects were specified in the case project and discusses the lessons learned from this effects-specification process. Chapter 8 extends the scope from the one project described in Chapter 7 to the six projects through which effects-driven IT development has, so far, been explored and elaborated. In this research chapter, Hertzum and Simonsen provide an account of the current status of the research on effects-driven IT development. Effects-driven IT development provides opportunities for a flex-

ible allocation of tasks between customer and vendor. Such partnership sourcing requires, however, that a close collaboration is established between customer and vendor. In Chapter 9 – an industrial-experience chapter – Barlach and Simonsen discuss what opportunities and challenges a vendor sees in partnership sourcing. The opportunities focus on improved conditions for innovation because the close collaboration is a way for the vendor to benefit from the customer's business knowledge. The main challenge is that the close collaboration may transgress typical customer–vendor relations.

Chapters 10, 11, and 12 describe tools developed for key decision points in a sourcing arrangement. The first of these three chapters is a research chapter, the other two are industrial-experience chapters. Pries-Heje and Olsen target, in Chapter 10, companies that have already outsourced something to a single vendor and now face the decision of either outsourcing more to the same vendor or to another vendor. This multi-sourcing decision is at the renewal level of sourcing and involves considerations about issues such as utility, transaction costs, and risk management. In Chapter 11, Jørgensen et al. describe a decision-support tool for the tactical-level sourcing decision about whether to outsource a specified project or area. Contrary to the tools developed in several of the other chapters, the tool described in Chapter 11 aims to support the outsourcing decision-maker exclusively by providing an opportunity for reflection, and not by recommending what decision to make. Chapter 12 by Korsaa and Johansen addresses the issue of assessing a company's sourcing capability. The chapter describes central concepts in capability assessments and then focuses on a particular model for sourcing capability assessment, the SourceAbility model. The importance of knowledge about a company's sourcing capability is emphasized by the frequent inequality in software-process maturity between the client and vendor in a sourcing arrangement.

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