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Reader's Guide

The reader's guide provides an indication as to who should read this book and the benefits to be gained. A summary of each chapter provides an overview of the step-by-step approach required for the successful introduction of Service-Oriented Architectures (SOA).

Who Should Read This Book

This book is aimed at the various stakeholders of enterprise software architectures, including software architects and evangelists, designers, analysts, developers, members of IT strategy departments, project managers, representatives of product vendors, and those interested in software architecture and its relation to structures and processes within large-scale organizations. Furthermore, this book is an excellent introduction to the real world of commercial computing for students in a variety of disciplines.

If you are a **software architect,** this book provides you with hands-on guidelines for the design of SOAs. You will find the definition of an SOA together with its key terms as we distinguish the SOA from approaches such as component architectures and software buses. Furthermore, this book provides concrete guidance for the most important design decisions one will encounter in practice. These guidelines comprise identifying services, assigning the appropriate service type and allocating the ownership of data to services. You will also discover how to utilize expansion stages in order to enable stepwise SOA introduction. This book also provides valuable advice on the design of a functional infrastructure for business processes and on how to achieve process integrity, approach heterogeneity, and initiate the technical infrastructure. We discuss these guidelines with respect to different application types, including Web applications, fat clients, mobile applications, EAI, and multi-channel applications. For the purpose of software architects, Chapters 4 to 10 are most valuable. In addition, Chapter 13, which covers SOA project management, will be helpful in ensuring an efficient collaboration within an SOA project. Finally, the case studies in Part III give you practical examples of how architects in other organizations introduced an SOA.

Do you see yourself in the role of an SOA **evangelist**? If you intend to implement an SOA within your own organization, you must successfully promote

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your ideas. Most importantly, you must be able to communicate the benefits of the SOA to all stakeholders of the application landscape within your organization. Chapter 11 will be of special interest to you because it presents the key benefits of SOA for the organization and each individual stakeholder. In addition, Chapter 12 provides an in-depth description of the steps required to set up an SOA, with considerable practice-oriented advice as to the introduction of appropriate processes and boards. After reading this book, you should have a deeper understanding of SOAs, enabling you to effectively argue the benefits to different stakeholders and to establish the necessary processes and boards to make your SOA endeavor a success!

If you are a **software designer**, **analyst,** or **developer** working in an SOA project, although you are likely to work in a specific part of your application landscape, this book will help you obtain a better understanding of the entire process. Furthermore, there are key challenges such as process integrity that directly impact your work. This book—in particular Chapters 7 to 10—helps to address these challenges in a coordinated manner within your SOA project.

If you work in the **IT strategy** department of an large organization, you should read this book in order to find out how SOAs can add to your IT strategy. Your work is likely to be driven by the demand for agility and cost effectiveness. Many enterprises have experienced projects that failed to deliver the required functionality and therefore lost business opportunities. Furthermore, many application landscapes suffer from high maintenance costs for their inherited assets and the integration of new applications. In Part II (Chapters 11–13) you will read about the various possibilities for overcoming these issues with an SOA. Finally, several strategies for introducing the SOA within the organization are presented. Part III (Chapters 14 to 17) contains several case studies with real-world evidence that validates the SOA approach. Those success stories provide "living proof" of SOA success and offer an impression of the different ways an SOA can be established.

If you are an experienced **project manager**, you should read this book in order to understand the specific benefits of SOAs for project management. The SOA approach implies a major simplification of the overall software development process, and this book makes these benefits accessible. However, SOAs will challenge you, and as a result, this book presents solutions to the most important problems one encounters in an SOA project, both from the technical and project management viewpoints. You will find Chapter 13, which focuses on project management, and Chapters 11 and 12, which depict the political environment, to be most beneficial. It should be noted that this book does not introduce a new software development methodology. You will require a sound knowledge of your organization's favorite methodology, accompanied with endurance, social competence, political cleverness, and management skills. This book will complement these skills so that they can be successfully applied in an SOA project.

For a **vendor of standard software packages**, this book presents valuable guidance for product management and sales. SOAs will soon gain tremendous importance in the enterprise software market. As a **salesperson** or a **product man-**

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ager, you need to understand the requirements of your enterprise customers in order to be able to offer solutions that fit your customer's needs. In particular, Chapter 11 will be very beneficial because it depicts the benefits of service-oriented software from the viewpoint of the various stakeholders. Being able to offer service-oriented software implies a significant competitive advantage. The inherent strength of SOAs will become the strength of your product. It enables you to sell sophisticated vertical solutions, generating product revenues for your company without the burden of high integration costs that inhibit the sales process.

A Roadmap for This Book

The successful adoption of an Enterprise SOA is based on three fundamental factors: architecture, organization, and lessons drawn from real-world experience. The IT architecture is the technical enabler for an SOA. A successful SOA adoption accelerates an enterprise by reducing the gap between strategy and process changes on one hand and supporting IT systems on the other. The IT architecture and the business organization are mutually dependent, although they both drive each other. Finally, real-world experience, in particular previous long-term IT infrastructure initiatives (both successful and unsuccessful) influence and validate many of the core concepts of SOA. Not surprisingly, this book is structured around these three factors. After we introduce the subject area in Chapters 1 to 3, Part I, Chapters 4 to 10, focuses on the **architecture**. Part II, Chapters 11 to 13, discusses the challenges of introducing an SOA at the level of the **organization,** depicting its benefits, processes, and project management. Part III, Chapters 14 to 17, provides **real-life examples** of successful SOA introductions.

Chapter 1, "An Enterprise IT Renovation Roadmap," identifies the need for agility and cost savings as the main drivers for the introduction of SOAs.

Chapter 2, "The Evolution of the Service Concept," describes how commercial information technology has moved toward the service concept over the last 40 years. Today's SOA is the preliminary endpoint of many years of painful "testing." Knowing and understanding previous pitfalls and mistakes help to avoid them in new projects.

Chapter 3, "Inventory of Distributed Computing Concepts," introduces the fundamental concepts of distributed computing that are required for subsequent discussions in Part I (Chapters 4–10). Particular topics will be communication infrastructures, synchronous versus asynchronous communication, payload semantics, granularity, and loose versus tight coupling.

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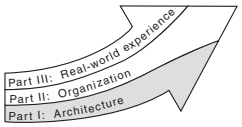
PART I: ARCHITECTURAL ROADMAP



Chapter 4, "Service-Oriented Architectures," describes the particular requirements of large organizations for building an architecture and defines the term "Service-Oriented Architecture" as it is used throughout this book.

Chapter 5, "Services as Building Blocks," is a direct continuation of Chapter 4. It introduces different service types—namely basic, intermediary, process-centric, and external services—and gives an in-depth discussion of their key characteristics.

Chapter 6, "The Architectural Roadmap," completes the discussion started in Chapter 5. Using the concept of building blocks, the high-level structure of SOAs is depicted. Chapter 6 introduces two key concepts: SOA layers and expansion stages. SOA layers aim to organize the aforementioned services at the enterprise level. Expansion stages are well-defined levels of maturity of an SOA that enable a stepwise implementation. In this book, three expansion stages are distinguished: fundamental SOA, networked SOA, and process-enabled SOA.

Chapter 7, "SOA and Business Process Management," shows how SOAs and BPM can complement each other in practice. This chapter draws a demarcation line between the responsibilities of a BPM infrastructure and the functional infrastructure provided by the SOA.

Chapter 8, "Process Integrity," delves into the challenges of distributed architectures with respect to consistency and how SOAs approach this major issue. This chapter provides numerous helpful, hands-on guidelines tackling real-world constraints such as heterogeneity, changing requirements, or budget.

Chapter 9, "Infrastructure of a Service Bus." By this point, the reader will know a lot about service types, the handling of business processes, and SOA layers. This chapter will address the issue of the type of runtime infrastructure that is required in order to put an SOA in place—an infrastructure that is commonly known as the "service bus." Chapter 9 highlights the fact that the service bus is often heterogeneous and provides technical services such as data transport, logging, and security.

Chapter 10, "SOA in Action," discusses how SOAs apply to specific application types such as Web applications, EAI, fat clients, mobile devices, and multi-channel applications.

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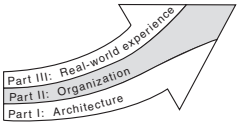
PART II: ORGANIZATIONAL ROADMAP

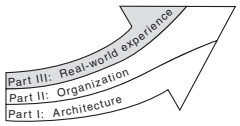


Chapter 11, "Motivation and Benefits," provides a number of important reasons as to why an organization should implement an SOA. It depicts the benefits for the organization as well as for the individual stakeholders.

Chapter 12, "The Organizational SOA Roadmap," names four pillars for the success of an SOA introduction at the enterprise level—namely, budget, initial project, team, and buddies. This chapter deals with challenges such as conflicts of interests of different stakeholders or financing the overheads of the SOA infrastructure and gives practical advice on how to overcome these obstacles.

Chapter 13, "Project Management," provides best practices of SOA project management. Most importantly, this chapter depicts how service contracts can drive the entire development effort. It shows how different tasks can be decoupled and synchronized at the same time and how complexity and risk can be reduced. Furthermore, this chapter describes testing, configuration management, risk assessment, and estimating costs and delivery dates.

PART III: REAL-WORLD EXPERIENCE



Chapter 15, "Case Study: Deutsche Post AG." The Deutsche Post World Net is a multinational group comprising three main brands and more than 275,000 employees. The SOA was set up for the Mail Corporate division at Deutsche Post, a partner to three million business customers, providing services to 39 million households through 81,000 delivery staff, 13,000 retail outlets, 3,500 delivery bases, and 140,000 letterboxes. The SOA at Deutsche Post AG covers a mainly Java-based environment. This fact indicates that a SOA can also be beneficial in homogeneous environments.

Chapter 15, "Case Study: Winterthur." Winterthur Group, a leading Swiss insurance company, has approximately 23,000 employees worldwide achieving a premium volume of 33.5 billion Swiss Francs in 2003. In 1998, Winterthur's Market Unit Switzerland developed a concept for an Application Service Platform. Since then, this integration platform, called "e-Platform," has been implemented and used as the technological basis for the realization of an SOA. Today, the SOA includes most of the mission-critical business applications. Its technical

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focus is on mainframe-based CORBA services. Well-organized processes and a service repository have been recognized as key success factors at Winterthur.

Chapter 16, "Case Study: Credit Suisse." Credit Suisse Group is a leading global financial services company operating in more than 50 countries with about 60,000 staff. Credit Suisse reported assets under management of 1,199 billion Swiss Francs in December 2003. The SOA was initially implemented in order to create multi-channel banking applications and online trading portals. In addition, the SOA was utilized to consolidate the core business application portfolio. Credit Suisse has implemented three different service buses in order to approach the different requirements of synchronous communication, asynchronous communication, and bulk data transfer.

Chapter 17, "Case Study: Intelligent Finance." Halifax Bank of Scotland (HBoS) is a UK Financial Services provider with divisions in Retail Banking, Insurance & Investment, Business Banking, Corporate Banking, and Treasury. HBoS is the UK's largest mortgage and savings provider with a customer base of about 22 million. Intelligent Finance was launched as a division of Halifax plc with the aim of attracting new customers from outside Halifax and specifically to target the UK clearing banks. Intelligent Finance was launched as Project Greenfield in 2000, starting an entire new banking operation from scratch, based on an SOA. Three years later, by the end of 2003, Intelligent Finance had 820,000 customer accounts, representing assets of £15.5 billion. The Intelligent Finance system was probably one of the largest and most advanced early SOA deployments in the financial services industry in Europe.