

*"An outstanding depth-and-breadth resource for IT architects and Java professionals to understand and apply the marriage of SOA and modern Java."*

—Antonio Bruno, Enterprise Architecture and Strategy, digitalStrom

*"Provides clarity on abstract concepts and is filled with concrete examples of implementing SOA principles in Java environments."*

—Sanjay Singh, Certified SOA Architect

*"A great self-contained book on SOA using flexible Java implementations..."*

—Roger Stoffers, Hewlett Packard

*"...provides a holistic, comprehensive view on leveraging SOA principles and architecture for building and deploying performant Java services."*

—Suzanne D'Souza, KBACE Technologies

# SOA with Java

## Realizing Service-Oriented Architecture with Java Technologies

Co-Authored and Edited by Thomas Erl, World's Top-Selling SOA Author  
Co-Authored by Andre Tost, Satadru Roy, Philip Thomas

Contributions by Raj Balasubramanian, David Chou, Thomas Plunkett  
Foreword by Dr. Mark Little, Vice President of Engineering, Red Hat

# SOA with Java

*Realizing Service-Orientation  
with Java Technologies*

Thomas Erl, Andre Tost,  
Satadru Roy, and Philip Thomas



Pearson

PRENTICE HALL

UPPER SADDLE RIVER, NJ • BOSTON • INDIANAPOLIS • SAN FRANCISCO

NEW YORK • TORONTO • MONTREAL • LONDON • MUNICH • PARIS • MADRID

CAPE TOWN • SYDNEY • TOKYO • SINGAPORE • MEXICO CITY



# **SOA with Java: Realizing Service-Orientation with Java Technologies**

## **Table of Contents**

Cover

Title Page

Copyright Page

Contents

Foreword

### **CHAPTER 1: Introduction**

#### **1.1 About This Book**

Objectives of This Book

Who This Book Is For

What This Book Does Not Cover

#### **1.2 Prerequisite Reading**

How This Book Is Organized

Part I: Fundamentals

Part II: Services

Part III: Service Composition and Infrastructure

Part IV: Appendices

#### **1.3 How Principles and Patterns Are Used in This Book**

#### **1.4 Symbols and Figures**

#### **1.5 Additional Information**

Updates, Errata, and Resources

# **Table of Contents**

Referenced Specifications

The Service Technology Magazine

Service-Orientation

What Is REST?

What Is Cloud?

SOA and Cloud Computing Design Patterns

SOA Certified (SOACP) Professional

Cloud Certified Professional (CCP)

Big Data Science Certified Professional (BDSCP)

Notification Service

## **CHAPTER 2: Case Study Examples**

### **2.1 How Case Study Examples Are Used**

Style Characteristics

Relationship to Abstract Content

Code Samples

### **2.2 Case Study Background: NovoBank**

Technical Infrastructure

Automation Solutions

Business Obstacles and Goals

Future IT Roadmap

### **2.3 Case Study Background: SmartCredit Co**

Technical Infrastructure

Automation Solutions

Business Goals

Future IT Roadmap

## **PART I: FUNDAMENTALS**

### **CHAPTER 3: Fundamental SOA Concepts**

3.1 Basic Terminology and Concepts

# **Table of Contents**

## 3.2 Further Reading

## CHAPTER 4: Basic Java Distributed Technologies

### 4.1 Java Distributed Computing Basics

### 4.2 Java Distributed Technologies and APIs

### 4.3 XML Standards and Java APIs

### 4.4 Building Services with Java Components

### 4.5 Java Vendor Platforms

## CHAPTER 5: Web-Based Service Technologies

### 5.1 SOAP-Based Web Services

### 5.2 REST Services

## CHAPTER 6: Building Web-Based Services with Java

### 6.1 JAX-WS

### 6.2 Java Implementations of WS-\* Standards

### 6.3 JAX-RS

## PART II: SERVICES

## CHAPTER 7: Service-Oriented Principles with Java Web-Based Services

### 7.1 Service Reusability

### 7.2 Standardized Service Contract

### 7.3 Service Loose Coupling

### 7.4 Service Abstraction

### 7.5 Service Composability

### 7.6 Service Autonomy

### 7.7 Service Statelessness

### 7.8 Service Discoverability

## CHAPTER 8: Utility Services with Java

### 8.1 Inside the Java Utility Service

### 8.2 Utility Service Design and Implementation

# **Table of Contents**

8.3 Utility Service Types

## **CHAPTER 9: Entity Services with Java**

9.1 Inside the Java Entity Service

9.2 Java Entity Service Design and Implementation

## **PART III: SERVICE COMPOSITION AND INFRASTRUCTURE**

## **CHAPTER 10: Task Services with Java**

10.1 Inside a Task Service

10.2 Building Task Services

## **CHAPTER 11: Service Composition with Java**

11.1 Inside Service Compositions

11.2 Java Service Composition Design and Implementation

11.3 Service and Service Composition Performance Guidelines

## **CHAPTER 12: ESB as SOA Infrastructure**

12.1 Basic Traditional Messaging Frameworks

12.2 Basic Service Messaging Frameworks

12.3 Common ESB Features Relevant to SOA

## **PART IV: APPENDICES**

### **APPENDIX A: Case Study Conclusion**

A.1 NovoBank

A.2 SmartCredit Co

### **APPENDIX B: Service-Oriented Principles Reference**

### **APPENDIX C: SOA Design Patterns Reference**

### **APPENDIX D: The Annotated SOA Manifesto**

### **About the Authors**

Thomas Erl

Andre Tost

# **Table of Contents**

Satadru Roy

Philip Thomas

About the Foreword Contributor

Mark Little

About the Contributors

Raj Balasubramanian

David Chou

Thomas Plunkett

Index