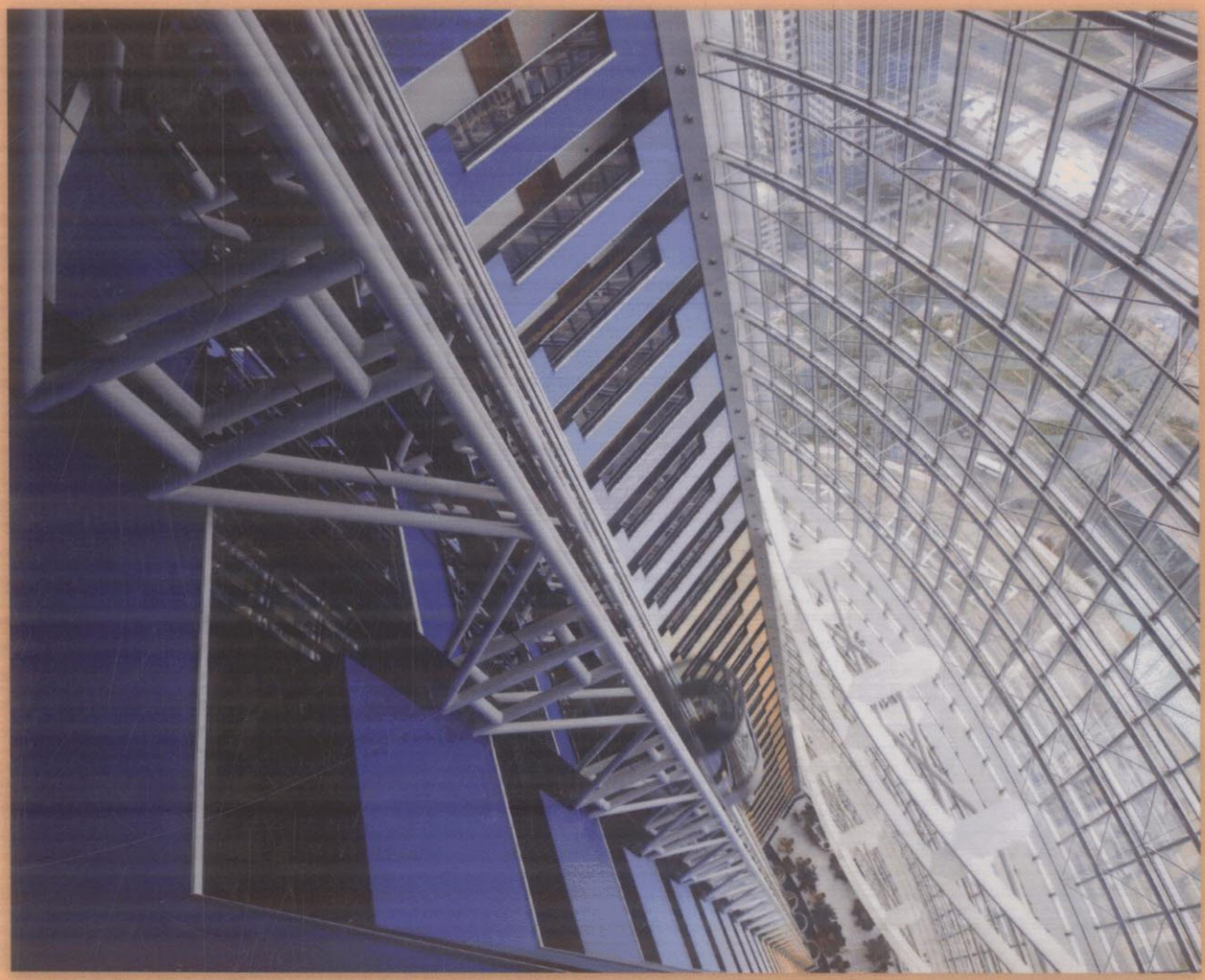
PREMIER REFERENCE SOURCE

Engineering Reliable Service Oriented Architecture

Managing Complexity and Service Level Agreements



Nikola Milanovic

Table of Contents

Foreword xiii

Preface xv

Section 1
Service Level Agreements

Chapter 1
Design of Quality Aspects in Service Oriented Architecture through Service Level Agreements: The Streaming Case Study 1
Marco Massarelli, Universitá degli Studi di Milano-Bicocca, Italy
Claudia Raibulet, Universitá degli Studi di Milano-Bicocca, Italy
Daniele Cammareri, Universitá degli Studi di Milano-Bicocca, Italy
Nicolò Perino, University of Lugano, Switzerland

Chapter 2
Flexible and Dynamic SLAs Management in Service Oriented Architectures 22
Giuseppe Di Modica, Università di Catania, Italy
Orazio Tomarchio, Università di Catania, Italy

Chapter 3
Quality of Service Monitoring, Diagnosis, and Adaptation for Service Level Management 41
Guijun Wang, Boeing Research & Technology, USA
Changzhou Wang, Boeing Research & Technology, USA
Haiqin Wang, Boeing Research & Technology, USA
Rodolfo A. Santiago, Boeing Research & Technology, USA
Jingwen Jin, Boeing Research & Technology, USA
David Shaw, Boeing Research & Technology, USA

Chapter 4
Supporting Service Level Agreement with Service Discovery 59
Andrea Zisman, City University, UK

Chapter 5
Configuration of Non-Functional Properties in Embedded Operating Systems: The CiAO Approach 84
Wanja Hofer, Friedrich–Alexander University Erlangen–Nuremberg, Germany
Julio Sincero, Friedrich–Alexander University Erlangen–Nuremberg, Germany
Wolfgang Schröder-Preikschat, Friedrich–Alexander University Erlangen–Nuremberg, Germany
Daniel Lohmann, Friedrich–Alexander University Erlangen–Nuremberg, Germany

Chapter 6
Adding Semantics to QoS Requirements 104
Ester Giallonardo, University of Sannio, Italy
Eugenio Zimeo, University of Sannio, Italy

Section 2
Service Composition

Chapter 7
Selective Querying for Adapting Hierarchical Web Service Compositions 125
John Harney, University of Georgia, USA
Prashant Doshi, University of Georgia, USA

Chapter 8
Aggregating Functional and Non-Functional Properties to Identify Service Compositions 145
Eduardo Blanco, Universidad Simón Bolívar, Venezuela
Yudith Cardinale, Universidad Simón Bolívar, Venezuela
María-Esther Vidal, Universidad Simón Bolívar, Venezuela

Chapter 9
Web Services Composition Problem: Model and Complexity 175
Fahima Cheikh, Université de Toulouse, France

Chapter 10
Specification of Non-Functional Requirements and their Trade-Offs in Service Contracts in the NGOSS Framework 199
Xiaoqing (Frank) Liu, Missouri University of Science and Technology, USA
Nektarios Georgalas, British Telecom GCTO, UK

Chapter 11
Applying Concept Reuse for Adaptive Service Composition 212
Onyeka Ezenwoye, South Dakota State University, USA
S. Masoud Sadjadi, Florida International University, USA

Section 3
Reliability and Fault Tolerance

Chapter 12
Prediction of Non-Functional Properties of Service-Based Systems: A Software Reliability Model 236
Adel Taweel, King's College London, UK
Gareth Tyson, King's College London, UK

Chapter 13
Model-Based Methodology and Framework for Assessing Service and Business Process Availability 257
Nikola Milanovic, Model Labs - Berlin, Germany
Bratislav Milic, Humboldt University, Germany

Chapter 14
Complexity Analysis at Design Stages of Service Oriented Architectures as a Measure of Reliability Risks 292
Muhammad Sheikh Sadi, Curtin University of Technology, Australia
D. G. Myers, Curtin University of Technology, Australia
Cesar Ortega Sanchez, Curtin University of Technology, Australia

Chapter 15
Design and Deployment of Service Oriented Applications with Non-Functional Requirements 315
László Gönczy, Budapest University of Technology and Economics, Hungary
Dániel Varró, Budapest University of Technology and Economics, Hungary

Chapter 16
Dependability Assessment of Service-Oriented Architectures Using Fault Injection 340
Nik Looker, Durham University, UK
Malcolm Munro, Durham University, UK

Compilation of References 360

About the Contributors 389

Index 397