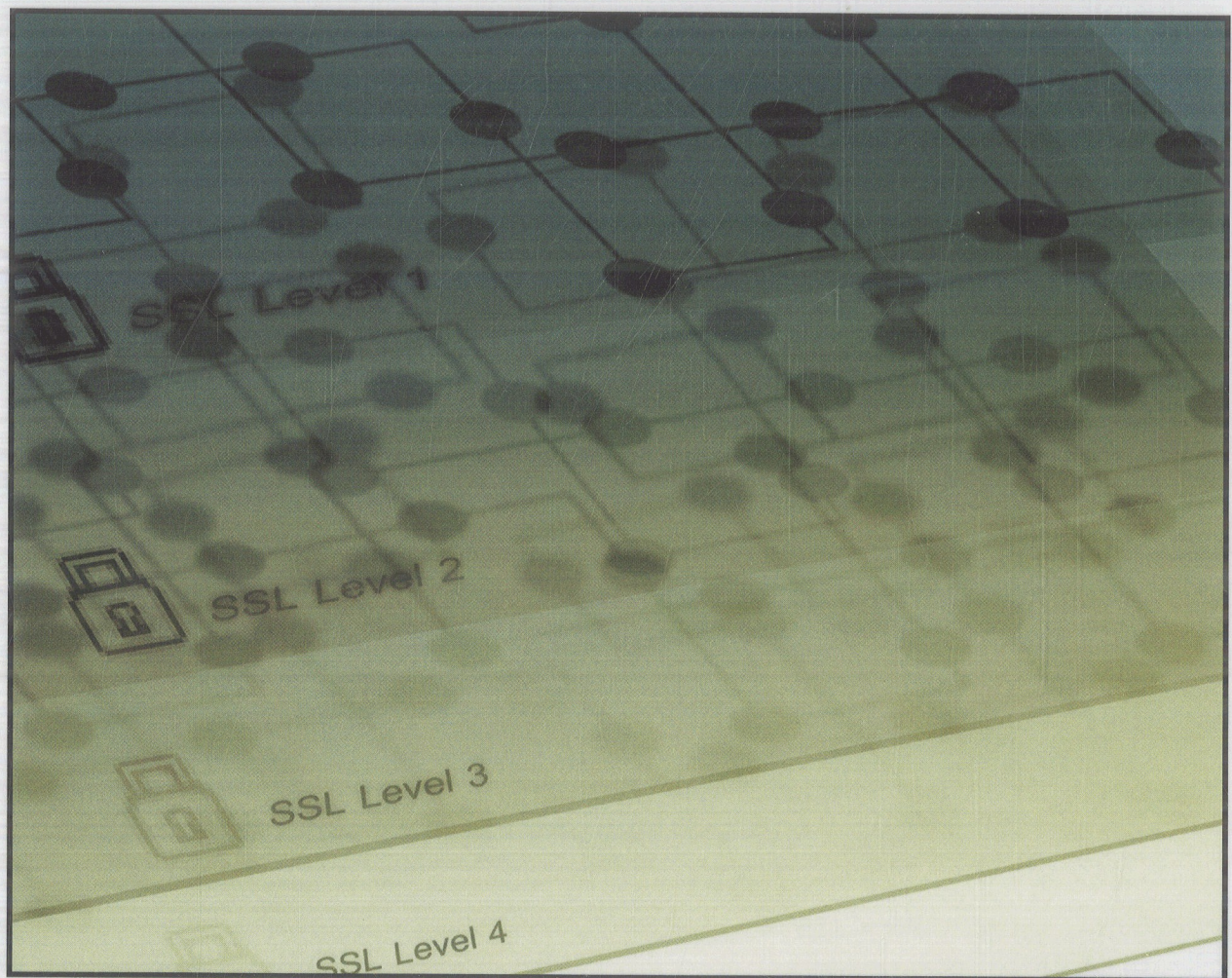


PREMIER REFERENCE SOURCE

# Web Services Security Development and Architecture

THEORETICAL AND PRACTICAL ISSUES



Carlos Gutierrez, Eduardo Fernandez-Medina, & Mario Piattini



# Table of Contents

|                             |      |
|-----------------------------|------|
| <b>Foreword</b> .....       | xv   |
| <b>Preface</b> .....        | xvii |
| <b>Acknowledgment</b> ..... | xxii |

## **Section 1** **Web Services Security Engineering**

### **Chapter 1**

|  |   |
|--|---|
| Identification of Vulnerabilities in Web Services Using Model-Based Security ..... | 1 |
| <i>Sebastian Höhn, Albert-Ludwig University, Germany</i>                           |   |
| <i>Lutz Lowis, Albert-Ludwig University, Germany</i>                               |   |
| <i>Jan Jürjens, Open University, UK</i>  |   |
| <i>Rafael Accorsi, Albert-Ludwig University, Germany</i>                           |   |

### **Chapter 2**

|  |    |
|--|----|
| Security Analysis of Service Oriented Systems: A Methodical Approach and Case Study..... | 33 |
| <i>Frank Innerhofer-Oberperfler, University of Innsbruck, Austria</i>                    |    |
| <i>Markus Mitterer, University of Innsbruck, Austria</i>                                 |    |
| <i>Michael Hafner, University of Innsbruck, Austria</i>                                  |    |
| <i>Ruth Breu, University of Innsbruck, Austria</i>                                       |    |

## **Section 2** **Web Services Security Architectures**

### **Chapter 3**

|  |    |
|--|----|
| Ontology-Based Authorization Model for XML Data in Distributed Systems ..... | 57 |
| <i>Amit Jain, University of South Carolina, USA</i>                          |    |
| <i>Csilla Farkas, University of South Carolina, USA</i>                      |    |

|   |     |
|---|-----|
| <b>Chapter 4</b>  |     |
| Secure Service Rating in Federated Software Systems Based on SOA.....     | 83  |
| <i>Nico Brehm, RepuGraph.com, Nordhausen, Germany</i>                     |     |
| <i>Jorge Marx Gómez, University of Oldenburg, Germany</i>                 |     |
| <b>Chapter 5</b>  |     |
| Forensics over Web Services: The FWS.....                                 | 99  |
| <i>Murat Gunestas, General Directorate of Security, Turkey</i>            |     |
| <i>Duminda Wijesekera, George Mason University, USA</i>                   |     |
| <i>Anoop Singhal, National Institute of Standards and Technology, USA</i> |     |
| <b>Chapter 6</b>  |     |
| Policy-Based Security Engineering of Service Oriented Systems.....        | 118 |
| <i>Antonio Maña, University of Málaga, Spain</i>                          |     |
| <i>Gimena Pujol, University of Málaga, Spain</i>                          |     |
| <i>Antonio Muñoz, University of Málaga, Spain</i>                         |     |
| <b>Chapter 7</b>  |     |
| Security Policies in Web Services.....                                    | 134 |
| <i>Deepti Parachuri, Infosys Technologies Limited, India</i>              |     |
| <i>Sudeep Mallick, Infosys Technologies Limited, India</i>                |     |

### Section 3 Web Services Security Standards

|   |     |
|---|-----|
| <b>Chapter 8</b>  |     |
| Web Services Security: Standards and Industrial Practice.....   | 152 |
| <i>Eduardo B. Fernandez, Florida Atlantic University, USA</i>   |     |
| <i>Keiko Hashizume, Florida Atlantic University, USA</i>  |     |
| <i>Ingrid Buckley, Florida Atlantic University, USA</i>   |     |
| <i>Maria M. Larrondo-Petrie, Florida Atlantic University, USA</i>                                     |     |
| <i>Michael VanHilst, Florida Atlantic University, USA</i>   |     |
| <b>Chapter 9</b>  |     |
| Security in Service Oriented Architectures: Standards and Challenges .....                            | 187 |
| <i>Anne V.D.M. Kayem, German Research Center for Artificial Intelligence (DFKI GmbH),<br/>Germany</i> |     |

**Section 4**  
**Web Services Security Threats and Countermeasures**

**Chapter 10**

- A Survey of Attacks in the Web Services World..... 212  
*Meiko Jensen, Ruhr-University Bochum, Germany*  
*Nils Gruschka, NEC Europe Ltd., Germany*

**Chapter 11**

- Threat Modeling: Securing Web 2.0 Based Rich Service Consumers..... 228  
*Nishtha Srivastava, Infosys Technologies Ltd, India*  
*Sumeet Gupta, Infosys Technologies Ltd, India*  
*Mayank Mathur, Infosys Technologies Ltd, India*

**Section 5**  
**Selected Readings**

**Chapter 12**

- Obtaining Security Requirements for a Mobile Grid System..... 247  
*David G. Rosado, University of Castilla-La Mancha, Spain*  
*Eduardo Fernández-Medina, University of Castilla-La Mancha, Spain*  
*Javier López, University of Málaga, Spain*  
*Mario Piatini, University of Castilla-La Mancha, Spain*

**Chapter 13**

- An MDA Compliant Approach for Designing Secure Data Warehouses ..... 261  
*Rodolfo Villarroel, Universidad Católica del Maule, Chile*  
*Eduardo Fernández-Medina, Universidad de Castilla-La Mancha, Spain*  
*Juan Trujillo, Universidad de Alicante, Spain*  
*Mario Piattini, Universidad de Castilla-La Mancha, Spain*

**Chapter 14**

- IPSec Overhead in Dual Stack IPv4/IPv6 Transition Mechanisms: An Analytical Study..... 273  
*M. Mujinga, University of Fort Hare, South Africa*  
*Hippolyte Muyingi, University of Fort Hare, South Africa*  
*Alfredo Terzoli, Rhodes University, South Africa*  
*G. S. V. Radha Krishna Rao, University of Fort Hare, South Africa*

**Chapter 15**

- An Approach for Intentional Modeling of Web Services Security Risk Assessment ..... 295  
*Subhas C. Misra, Carleton University, Canada*  
*Vinod Kumar, Carleton University, Canada*  
*Uma Kumar, Carleton University, Canada*

|  |     |
|--|-----|
| <b>Compilation of References</b> ..... | 309 |
| <b>About the Contributors</b> .....    | 341 |
| <b>Index</b> .....                     | 348 |