## Contents

### Part I Security and Privacy

1. **GeneCloud: Secure Cloud Computing for Biomedical Research** .......................................................... 3  
   Martin Beck, V. Joachim Haupt, Janine Roy, Jan Moennich, René Jäkel, Michael Schroeder, and Zerrin Isik

2. **Sealed Cloud – A Novel Approach to Safeguard against Insider Attacks** ...................................................... 15  
   Hubert A. Jäger, Arnold Monitzer, Ralf Rieken, Edmund Ernst, Khiem Dau Nguyen

3. **Side Channels in Secure Database Outsourcing on the Example of the MimoSecco Scheme** ............................. 35  
   Matthias Huber and Gunnar Hartung

4. **ReDS: A System for Revision-Secure Data Storage** ................................................................. 49  
   Tobias Pöppke and Dirk Achenbach

5. **Automatic Data Protection Certificates for Cloud-Services based on Secure Logging** ................................. 59  
   Thomas Kunz, Annika Selzer, Ulrich Waldmann

6. **A Trust Point-based Security Architecture for Sensor Data in the Cloud** .................................................... 77  
   Martin Henze, René Hummen, Roman Matzutt, and Klaus Wehrle

### Part II Software Engineering and Software Quality

7. **Quality Analysis Approaches for Cloud Services – Towards a Framework along the Customer’s Activity Cycle** 109  
   Jan Wollersheim and Helmut Krcmar
8 A Model-based Software Development Kit for the SensorCloud Platform ................................................... 125
Lars Hermerschmidt, Antonio Navarro Perez, and Bernhard Rumpe

9 TRESOR – Towards the Realization of a Trusted Cloud Ecosystem ....................................................... 141
Sebastian Zickau, Mathias Slawik, Dirk Thatmann, Sebastian Uhlig, Iwailo Denisow, and Axel Küpper

10 Towards Reliability Estimation of Large Systems-of-Systems with the Palladio Component Model ................ 159
Fouad ben Nasr Omri and Ralf Reussner

Part III Platforms, Middleware and Integration

11 Data Protection in the Cloud – The MimoSecco Approach ............... 177
Jonas Lehner, Andreas Oberweis, and Gunther Schiefer

12 Secure Database Outsourcing to the Cloud Using the MimoSecco Middleware ................................................ 187
Matthias Gabel and Gerald Hübsch

13 SensorCloud: Towards the Interdisciplinary Development of a Trustworthy Platform for Globally Interconnected Sensors and Actuators ....................................................... 203
Michael Eggert, Roger Häußling, Martin Henze, Lars Hermerschmidt, René Hummen, Daniel Kerpen, Antonio Navarro Pérez, Bernhard Rumpe, Dirk Thißen, Klaus Wehrle

14 Testbed for the Sensor Cloud ........................................ 219
Gregor Büchel, Henning Budde, Maria Bunina, Sven Elbrandt, Martin Fehre, Georg Hartung, Tobias Krawutschke, Andreas Lockermann, Thomas Partsch, Daniel Scholz, Andre Schüer, and Lothar Thieling

15 An Architecture for Trusted PaaS Cloud Computing for Personal Data ....................................................... 239
Lorena González-Manzano, Gerd Brost, and Matthias Aumueller

16 Privacy-Preserving Cloud Computing for Biomedical Research ........ 259
Martin Beck, V. Joachim Haupt, Janine Roy, Jan Moennich, René Jäkel, Michael Schroeder, and Zerrin Isik

Part IV Social Aspects, Business Models and Standards

17 Designing a Business Model for a Cloud Marketplace for Healthcare ....................................................... 285
Nicolai Hanner, Tatiana Ermakova, Jonas Repschläger, and Ruediger Zarnekow
18  SensorCloud: Sociological Contextualization of an Innovative Cloud Platform ................................. 295
    Michael Eggert, Daniel Kerpen, Kirsten Rüssmann, and Roger Häußling

19  Cutting Through the Jungle of Cloud Computing Whitepapers: Development of an Evaluation Model ................................................. 315
    Pascal Grochol, Stephan Schneider, and Ali Sunyaev