Preface

This book presents agile methods (AMs) and open source development (OSD) from an unconventional point of view. Even if these two worlds seem very different, they present a relevant set of similarities and dependences that are identified and analyzed throughout the book.

The book is organized in four sections. The first one introduces and compares the agile and the open source (OS) movements analyzing their evolution, their main values and principles, and their organizational models. The second section focuses on some specific practices that are very relevant for both agile and OS movements (testing, code ownership, and design), and presents two success stories of integrating such worlds into a single and successful development process. The third section focuses on empirical studies. It introduces a framework for the collection and the comparison of empirical evidences and a set of empirical studies performed on agile and OS projects and teams. The chapters of this section focus on single aspects of the development process and present data collected in different kinds of experiments performed in different contexts. The last section aims at presenting topics relevant for industrial adoption, such as methodologies for selecting OS solutions to adopt in companies (agile and not) and presents a catalog of OS tools that are widely used in agile development. Since the large number of tools available may confuse practitioners and researchers interested in experimenting some of the techniques presented, the section aims at describing assessment methodologies and providing a reference set of tools from which people can start.

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This book is organized as follows:

- Section 1 makes a comparison between AMs and open source software development (OSSD) investigating the founding principles.
- Section 2 focuses on a specific subset of practices through a deeper analysis based on empirical evidences.
• Section 3 presents a set of empirical evaluations performed in different settings to verify the effectiveness of specific practices.
• Section 4 investigates industrial adoption of OS and tools available for the agile development.

Section 1 includes the following chapters:

• **Chapter 1:** Historical Evolution of the Agile and Open Source Movements
  o The Win-Win Spiral Software Development Model
  o The XP Software Development Model
  o The Cathedral and the Bazaar
  o References

• **Chapter 2:** The Agile Manifesto and Open Source Software
  o Individuals Over Processes and Tools
  o Working Software Over Comprehensive Documentation
  o Customer Collaboration Over Contract Negotiation
  o Responding to Change Over Following a Plan
  o References

• **Chapter 3:** Values and Software Practices
  o Values in Agile and in Open Source
  o Principles in Agile and in Open Source
  o Software Practices in Agile and in Open Source Development
  o References

• **Chapter 4:** Models of Organization
  o Culture, People, Communication
  o Goals of Organization Models for AMs and XP
  o Organization
  o References

• **Chapter 5:** Coordination in Agile and Open Source
  o Interdependencies and Coordination Mechanisms
  o Coordination and New Software Development Approaches
  o References

• **Chapter 6:** Other Agile Methods
  o Crystal
  o DSDM
  o LSD
  o References
Section 2 includes the following chapters:

- **Chapter 7:** Testing
  - Introduction
  - Adoption of Test First in Open Source Development
  - Example: JUnit
  - References
- **Chapter 8:** Code Ownership
  - Introduction
  - Adoption of Code Ownership in Open Source Development
  - References
- **Chapter 9:** Design Approaches
  - Introduction
  - Adoption of Big Upfront Design in Open Source Development
  - References
- **Chapter 10:** Case Studies
  - The Eclipse Development Process
  - The Funambol Development Process
  - References

Section 3 includes the following chapters:

- **Chapter 11:** A Framework for Collecting Experiences
  - The Experience Framework
  - Data Collection
  - Data Analysis
  - Example of Application
  - References
- **Chapter 12:** Improving Agile Methods
  - Case Studies
  - References
- **Chapter 13:** Effort Estimation
  - Effort Estimation Models
  - Comparative Analysis
  - References
- **Chapter 14:** Discontinuous Use of Pair Programming
  - The Study
  - Results
  - References
Chapter 15: Requirements Management
  ○ The Study
  ○ Results
  ○ References

Chapter 16: Project Management
  ○ The Study
  ○ Results
  ○ References

Section 4 includes the following chapters:

Chapter 17: Open Source Assessment Methodologies
  ○ OSMM from Cap Gemini
  ○ OSMM from Navica
  ○ QSOS
  ○ OpenBRR
  ○ References

Chapter 18: Adoption of Open Source Processes in Large Enterprises
  ○ The Study

Chapter 19: Trust Elements in Open Source
  ○ Trustworthy elements
  ○ Trustworthy elements in companies
  ○ References

Chapter 20: Overview of Open Source Tools for Agile Development
  ○ Introduction
  ○ Version Control Tools
  ○ Automated Build Tools
  ○ Continuous Integration Tools
  ○ Issue Tracking Tools
  ○ Synchronous and Asynchronous Communication Tools
  ○ Project Management Tools
  ○ Testing Tools
  ○ Tools to Support Specific Agile Practices
  ○ Measurement Tools