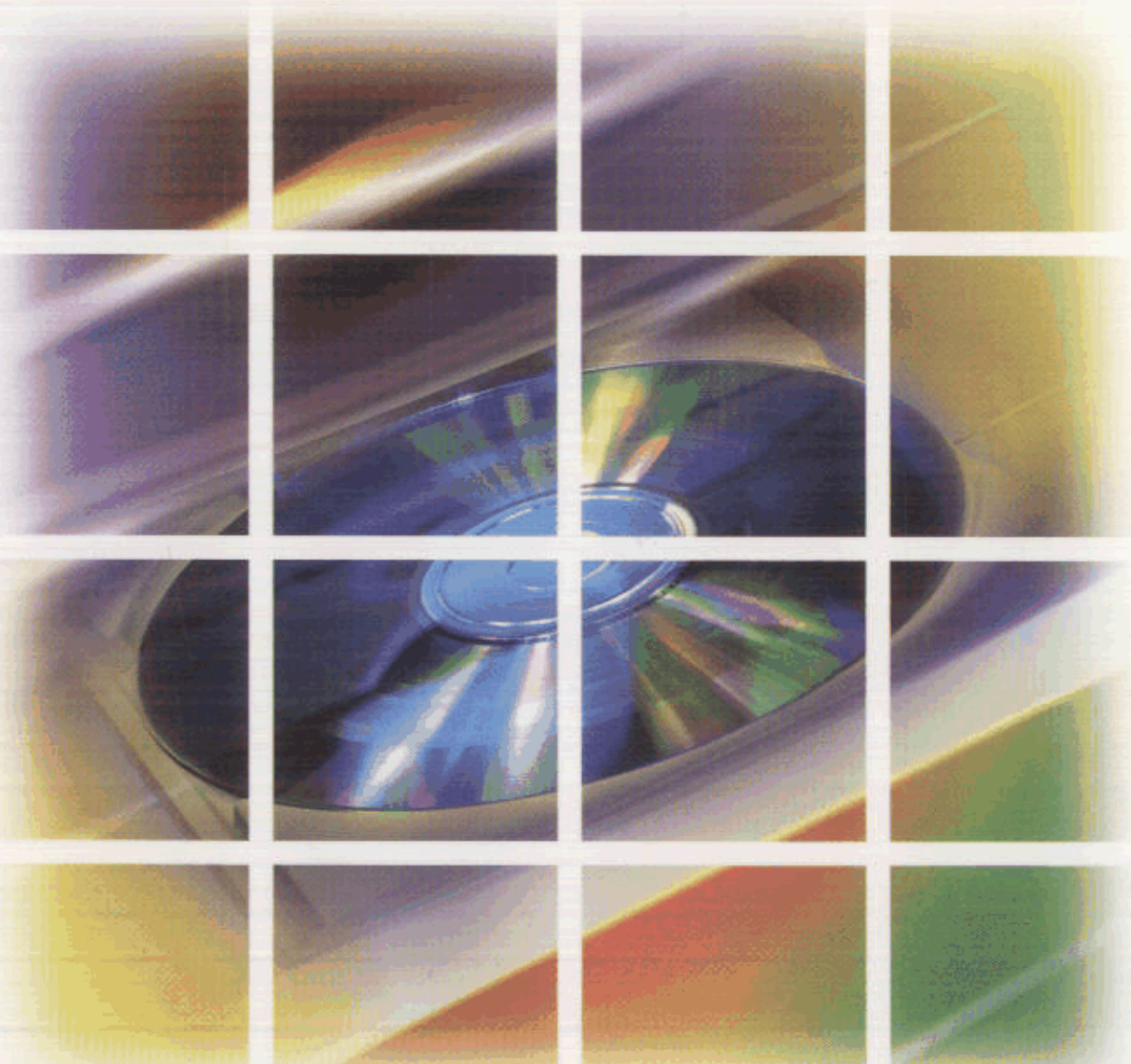


PREMIER REFERENCE SOURCE

Agile Software Development Quality Assurance



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Section I **Introduction: Agile Methods and Quality**

Chapter I

Agile Software Methods: State-of-the-Art / <i>Ernest Mnkandla and Barry Dwolatzky</i>	1
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This chapter provides a review of the state-of-the-art of agile methodologies. However, it focuses primarily on the issue of quality and quality assurance, reviewing the benefits that agile methods have brought to software development. An analysis framework is used for systematically analyzing and comparing agile methodologies and is applied to three of them.

Chapter II

Agile Quality or Depth of Reasoning? Applicability vs. Suitability with Respect to Stakeholders' Needs / <i>Eleni Berki, Kerstin Siakas, and Elli Georgiadou</i>	23
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Following the presentation of the previous chapter, the agile information systems development process is discussed here and its quality characteristics are analyzed in detail. One important issue is raised: how suitable and applicable are agile methods when applied on different organisational and national situations? The text provides arguments on the basis of the authors' experiences from various European countries differing in their academic and work values, and information systems development industrial practices.

Chapter III

What's Wrong with Agile Methods? Some Principles and Values to Encourage Quantification / <i>Tom Gilb and Lindsey Brodie</i>	56
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In this chapter, arguments are provided in favour of the quantification of agile processes to reinforce quality assurance procedures. Measuring requirements, design artefacts, and delivered results provide the basis for sound quality estimation. The text discusses in detail the benefits of quantification and

proposes the quantification approach Planguage. Interesting results from Planguage application in the context of a Norwegian organization are given.

Section II

Quality within Agile Development

Chapter IV

Requirements Specification using User Stories / *V. Monochristou and M. Vlachopoulou*..... 71

In this chapter, the authors describe a number of approaches for managing user requirements (namely software requirements specification, use cases, interaction design scenarios). Requirements are subject to constant changes in modern software development and the text shows how agile methods promote the involvement of customers/users in the process of requirement modification. The tool for assuring requirements quality are user stories and is thoroughly discussed and illustrated in this chapter.

Chapter V

Handling of Software Quality Defects in Agile Software Development / *Jörg Rech*..... 90

This chapter discusses refactoring, an agile procedure during which, among other activities, quality defect removal takes place. Because of time constraints, quality defects can not be removed in just one refactoring phase. Documentation of detected quality defects is therefore necessary and the text proposes a process for the recurring and sustainable discovery, handling, and treatment of quality defects in software systems. The process is based on an annotation language, capable to register information about quality defects found in source code.

Chapter VI

Agile Quality Assurance Techniques for GUI-Based Applications / *Atif Memon and Qing Xie*..... 114

This chapter proposes a process-based approach for assuring quality while developing in agile mode. The authors propose a new concentric loop-based technique, which effectively utilizes resources during iterative development. It is based on three types of testing, namely crash testing, smoke testing, and comprehensive testing. The overall approach is illustrated on the development of graphical user interfaces. The GUI model used to implement the concentric-loop technique is given in detail.

Section III

Quality within Agile Process Management

Chapter VII

Software Configuration Management in Agile Development / *Lars Bendix and Torbjörn Ekman* 136

Because of the frequent changes, multiple iterations, and software versions that occur in agile development, software configuration management is a crucial activity. This chapter discusses the additional requirements for software configuration management with respect to the traditional development. Typical agile activities for configuration management are described along with general guidelines. It is argued that an agile project can assure better quality according to the agile method and configuration management it applies and the project particular context.

Chapter VIII

Improving Quality by Exploiting Human Dynamics in Agile Methods / *Panagiotis Sfetsos and Ioannis Stamelos* 154

This chapter explores the management of the human resources that are involved in agile development. Because evidently human factors are critical for the success of agile methods, there is an urgent need for managing agile people effectively both at the corporate level and the project level. First part of the chapter proposes and discusses a model for personnel management based on the well-known People-CMM assessment and improvement model. In addition, the chapter proposes a model for allocating and rotating developers in pairs while pair programming. The model is based on the fact that different types of personalities and temperaments allow pairs that produce better quality results.

Chapter IX

Teaching Agile Software Development Quality Assurance / *Orit Hazzan and Yael Dubinsky* 171

This chapter differs from the rest of the book in the sense that it deals with the education of software engineers and managers to form a culture for agile quality assurance. The text proposes a teaching framework focusing on the way quality issues are perceived in agile software development environments. It consists of nine principles, which can be adjusted according to different specific teaching environments. The teaching framework is based on the differences between agile and traditional software development. Overall, this chapter provides a particularly useful tool for instructors of Agile Methods.

Section IV

Agile Methods and Quality: Field Experience

Chapter X

Agile Software Development Quality Assurance: Agile Project Management, Quality Metrics, and Methodologies / *James F. Kile and Maheshwar K. Inampudi* 186

This chapter examines one of the hottest issues in modern software development, namely the adoption of agile methods by highly disciplined and highly structured software development environments. It appears that up to now, agile methods have been applied mostly to non-critical projects. The text describes how one IBM software development team has applied simultaneously several individual agile development techniques. The authors report encouraging results, stating that they obtained increased quality in shorter than normal time. Throughout the chapter, it is shown that the adoption of individual agile techniques can be achieved with no additional risks.

Chapter XI

Test-Driven Development: An Agile Practice to Ensure Quality is Built from the Beginning / <i>Scott Mark</i>	206
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This chapter describes the practice of test-driven development and the benefits it brings to quality assurance in an agile organization. The practice is illustrated through details of two real development projects in an industrial setting. The author gives an industry practitioner’s perspective and discusses various practical considerations about the adoption of the practice. Overall, it is claimed that test-driven development is well accepted by practitioners and is a successful quality assurance technique.

Chapter XII

Quality Improvements from using Agile Development Methods: Lessons Learned / <i>Beatrice Miao Hwong, Gilberto Matos, Monica McKenna, Christopher Nelson, Gergana Nikolova, Arnold Rudorfer, Xiping Song, Grace Yuan Tai, Rajanikanth Tanikella, and Bradley Wehrwein</i>	221
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In this chapter, the experience of another large company, namely Siemens, with agile methodologies is reported. The authors report that Siemens has applied agile processes in several projects with varying characteristics. They also report that significant quality achievements have been observed. The text discusses briefly project quality goals and practices and summarizes the lessons learned from successes and failures while working for quality assurance in their projects. This chapter is important because it shows how a large company pursues quality assurance results when applying agile methods.

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