Managing Commitments and Risks: Challenges in Distributed Agile Development

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Abstract

Software development is always a challenging undertaking and it requires high commitments from individuals who participate in it. Software development often involves new technology, challenging or unknown requirements, and tight schedules – making it particularly prone to several types of risk. These challenges are even more paramount in agile development and in distributed development, where the need for efficient information sharing is important, yet the distributed development makes it very difficult.
This tutorial uses innovative and new learning methods to explore and to learn about these challenges and how to deal with them. The tutorial is partially based on presentations given by authors, but a major element in the tutorial is the case study that is introduced and in which will involve all the participants. The learning in the tutorial is strongly facilitated by participants' discussions and the insights generated in concrete problem solving situations.

1 Introduction

Many of the practical challenges in software engineering are not limited to technological issues. Managerial issues, communications, personnel relationships, and competence management often have a substantial impact on a software project's success. This tutorial explores and studies these issues of software management from three specific perspectives: how commitments are made and managed, how the risks are managed, and what are the specific challenges in agile software development, in context of distributed software development.

Commitment management has been proposed to be an important element both at the level of individuals and attitudes as well as how commitments are defined and managed at the project or program level [Höglund *et al.*, 2000; Kontio *et al.*, 1998]. The definition and specification of commitments seems to be sensitive to the situation at hand: in a very stable situation it might be possible to define all the commitments explicitly, while in more dynamic projects some commitments are better left initially open and defined later in the project. The traditional view of trying to specify and freeze everything in the beginning is neither realistic nor effective in all situations [Kontio *et al.*, 1998].

Risk management has become a recognized project management practice in the software engineering field. However, it seems that not all organizations are systematically applying risk management methods [Ropponen *et al.*, 2000]. Furthermore, it has also been argued that many of the methods in-use contain substantial biases and are based on unsound assumptions, such as ignoring stakeholder interests, use of mathematically unsound methods to calculate risks, and incomplete assessments of loss impacts [Kontio, 2001]. Thus, more effective and sound methods for software risk management should be introduced and used.

The agile software process has become a hot topic among consultants, practitioners and researchers [Anon., 2002; Cockburn, 2001; Martin, 2001] through concepts like Extreme Programming [Beck, 1999] and SCRUM [Schwaber *et al.*, 2001]. A number of case studies and reports are available indicating that the agile approaches seem to provide substantial benefits for small teams and projects. While many of the consultants and books specializing on agile methods give some guidelines regarding how to manage agile projects, there are many practical issues, especially in larger project contexts, that are not obvious or known [Abrahamsson *et al.*, 2003]. Furthermore, most practitioners are just taking their first steps in managing agile software development.

2 Description

The tutorial aims at sharing best practices in commitment and risk management in agile development area; identifying challenges and solutions; helping

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participants establish contacts with each other; and exploring new ways of learning. After the tutorial, the participants will have a better understanding and appreciation of these challenges through their reflection and the sharing of their own experiences.

The tutorial is based on interactive discussion and involves role-playing. All participants take part in working groups in solving the problem that is presented to them. The participants are all presumably employees of a company ("Mobile Widget Inc.") and are spending time together to resolve some problems in their agile software development process. Participants are assigned to teams based on the specific preferences they indicate prior to tutorial. The problem scenarios are the following:

- Distributed agile software development
- Organization of daily work and meetings
- Organization of pair programming teams
- How to introduce agile development into a project
- Preparing a business case for the use of XP
- Architectural design in agile development
- Risk management in agile development

The workshop uses quite unconventional methods to encourage and facilitate learning and discussion. The workshop is based on using teamwork, role-play and acting as a way to promote discussion and make the management situations concrete for discussion and analysis. We have used this approach earlier with success at the 2002 European Conference on Software Quality and ICSE 2003 and believe that the format combines fun and intellectual challenge in a unique, engaging, and powerful manner.

The tutorial is targeted mainly for software project and program managers, software engineers, and researchers in software engineering.

3 Presenter Backgrounds

Dr. Jyrki Kontio is a professor of Software Product Business at Helsinki University of Technology. His prior work experience includes 15 years at Nokia Corporation in various positions. Between 1994 and 1997 he was a senior researcher at the Experimental Software Engineering Group at University of Maryland. His research interests include software business models and strategies, risk management, process management, COTS evaluation, and requirements engineering. His web site is at http://www.soberit.hut.fi/~jkontio/

Magnus Höglund, M.Sc. in Computer Science and Engineering, is a Sales Director working with customer integration and business development at TietoEnator. He also gives seminars, workshops, courses, and conference speeches on topics such as project management, software metrics, and commitment management. He is a co-author of the book "IT Measurement – Practical Advice from the Experts", Addison-Wesley 2002. Magnus has a background as software engineer, test manager, software metrics specialist, and Managing Director. Before joining TietoEnator he was an R&D engineer at Ericsson.

Jan Rydén, M.Sc. in Embedded Systems, is a Sales Director working with customer integration and business development at TietoEnator. He also gives seminars, workshops, and conference speeches on topics such as telecom trends and commitment management. He has experience from hardware development, project management, R&D line management, and being a Managing Director.

Dr. Pekka Abrahamsson is a senior research scientist at VTT Technical Research Centre of Finland. He received his PhD on "The role of commitment in software process improvement". He has coached several agile software development projects in industry and authored actively on the topic. His professional experience involves 5 years in industry as a software engineer and a quality manager.

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