Workshop Agile Methodologies Experience

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Virtuelles Software Engineering Kompetenzzentrum

Workshop Agile Methodologies Experience

21. Oktober 2002

Technische Universität München
Institut für Informatik
Software and Systems Engineering
Prof. Dr. Manfred Broy,
ViSEK und NAME

München, 21.11.2002

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1 Einleitung

Softwareentwicklung ist derzeit geprägt von immer komplexeren und gleichzeit schneller zu realisierenden Softwaresystemen. Traditionelle und objektorientierte Prozessmodelle können dem Effizienz- und Kostendruck oft nicht mehr standhalten. In einigen Anwendungsdomänen werden deshalb verstärkt so genannte „Agile Methoden“ eingesetzt. Dies stellt Entwickler und IT-Entscheider in Unternehmen vor große Herausforderungen. Welche Vorgehensweise soll gewählt werden? Was soll stärker gewichtet werden: die anfallenden Kosten, „Time-to-Market“ oder die Qualität der Software? Ist die entwickelte Software wandlungsfähig und kann sie bei Bedarf angepasst werden? Wie wartungsfreundlich ist die Software? Wird mein Produkt rechtzeitig zur Markteinführung fertig und wird der Kostenrahmen eingehalten?

Was sind für Sie die Erfolgsfaktoren agiler Softwareentwicklung?

Die Technische Universität München hat deshalb im Rahmen der Initiativen ViSEK und NAME zu dem Workshop „Agile Methodologies Experience“ am 21. Oktober 2002 eingeladen. Der Workshop war gedacht als ein **Diskussionsforum** für den Erfahrungs- und Wissensaustausch im Bereich Softwareentwicklung mit Agilen Methoden. Ziel war es zentrale Herausforderungen zu identifizieren und Lösungsansätze zu diskutieren.

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3 Programm

	Begrüßung
9:30	**Vorstellung des Programms, Zieldefinition** Dr. Bernhard Rumpe, Technische Universität München
9:45	**Begrüßung** Prof. Dr. Manfred Broy, Technische Universität München
	Kennenlernen der Teilnehmer und Thesen-Sammlung
10:00	**Kurzvorstellung der Teilnehmer mit Background und vertretenden Thesen zum Themenbereich** • ca. 5 Minuten einschließlich kurzer Fragen • Ziel: Sammlung interessanter Fragestellungen und Lösungsansätze zur späteren Diskussion
ca. 11:00	*Kaffee-Pause*
11:20	**Fortführung der Kurzvorstellung**
	Zukunftstrends
12:00	**Agile Programmierung bei imbus AG** Dr. Klaudia Dussa-Zieger, Dr. Johannes Trost, imbus AG
12:20	**The Future of Software Development** Michael Kircher, Siemens AG
12:40	**Agile Software Development with the UML** Dr. Bernhard Rumpe, TU München
13:00	*Mittagspause*
	Projektmanagement
14:00	**Scaling Agile Processes** Jutta Eckstein, Objects in Action
14:20	**Thesen zu Extreme Programming** Prof. Dr. K.-R. Moll

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14:40	**Agile Software-Entwicklung erfordert einen Kulturwandel** Christiane Stutz, sd&m research
15:00	*Kaffee-Pause*
	Erfahrungen
15:20	**The Use of XP in the Caruso Project** Dr. Hubert Baumeister, LMU München
15:40	**XP At An International Company** Manfred Lange, Gemplus
16:00	**Be Pragmatic and Play to Win** Holger Breitling, it-WPS GmbH
	Abschlussdiskussion
16:20	**Diskussion**
17:00 Ende	

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4 Identified Problems and Statements

This section was deliberately written in English, as it is also used in the European NAME project. The following statements have been collected during the workshop in form of German headwords. They where translated into English, rearranged into categories, and extended to full sentences only afterwards. The workshop participants had the possibility to rate the originals with respects to three dimensions:

- Importance - ✕
- Agreement - ↑
- Disagreement - ↓

These dimensions are listed after each statement/question. A number of questions could have been listed in more than one category. In such cases, we listed them, where they fitted best. The questions and statements of each category are preceeded by an introductory text, that was as well added after the workshop.
Please note, that very specific techniques or methods were addressed in some parts of the workshop. But to some extent the general ideas and assumptions of Agile Methods have been discussed, too. Interestingly, participants either referred to Agile methods in general or to its most prominent representative Extreme. With one exception, no other agile method was explicitly discussed in the workshop. In the following we use XPAM as an abbreviation for Extreme Programming/Agile Methods in general.

Enterprise management and project planning

One major block of questions dealt with management issues. This includes the highly unanswered question, how to support the top management in deciding whether to use XPAM techniques in projects or not. In particular: Where are the limits of XP and when to use a traditional approach? During the discussion this also lead to the issues of how to build contracts and how to plan XPAM projects as well as the benefits of risk detection and management in XPAM.

- What is an appropriate assistance for top management for deciding, whether or not to use Agile Methods? (importance 1) ✕
- How to define contracts for XP projects? (importance 2) ✕✕
- The costs of retraining programmers; is this a risk for a company? (disagreement 4) ↓↓↓↓
- Planning and contracting become more difficult with XP (disagreement 1) ↓
- Initially the complete process is not yet known.
- Is the freedom of programmers in XP projects really of interest and helpful for the project?
- XP achieves risk minimization (importance 3, agreement 4, disagreement 2) ✕✕✕↑↑↑↑↓↓
- XP recognizes problems faster (importance 1, agreement 2) ✕↑↑
- What about Agile Methods in large projects greater than 40 persons? (importance 1) ✕
- How to use XP in distributed projects? (importance 1, disagreement 2) ✕↓↓
- XP can be a method for open source development (importance 2, disagreement 1) ✕✕↓↓

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- Which kind of projects is XP good for? Where are the limitations? (importance 2) ✕✕
- The XP movement kills itself through trying to apply XP on every kind of project (disagreement 3) ↓↓↓

Credibility of XPAM and software engineering data?

One of the basic assumptions of XP is that with the use of XP techniques it is possible to considerably flatten the curve of lately detected errors from being exponential to even less than linear. This assumption contradicts measurements on traditional approaches in the last three decades. This raises questions, how far XP related statements are credible and how much data has been gathered on these topics so far. Although there is an indication that much of the data gathered is outdated due to technology advancements and therefore doesn't apply to XP, there is no statistical evidence given so far.

- How responsible are the statements, that are currently been made about XPAM?
- Are changes in programs really cheap and therefore does the one of the basic XP assumptions really hold? (importance 3) ✕✕✕
- Does XP deny experiences or knowledge of traditional software development approaches, if so which ones? (disagreement 2) ↓↓
- The reported industrial experiences, how objective are they? (importance 1) ✕
- As technology and methodology have greatly advanced, are the data gathered on earlier projects still valid? For example, does the exponential growth of undetected errors still hold?
- There is no single optimal process; XPAM doesn't change this (agreement 4) ↑↑↑↑
- Comparison of XPAM to other development methods and processes in unperfected, i.e. real, environments is needed (importance 2) ✕✕
- Is pair-programming assessed in industrial context? (importance 1, disagreement 1) ✕↓
- Is pair-programming difficult to use over long periods? (importance 1) ✕

Quality and efficiency

XP defines four variables: cost, time, quality and scope. An increase in efficiency reduces cost and time necessarily. Furthermore, defining the scope properly (as small as possible) also increases efficiency. But, quality and efficiency are to some extent contradicting goals. An increase in quality comes at a price: more time necessary to implement the same functionality. On the other hand, having an efficient process at hand for all activities of the project, by e.g. focusing on small and compact functionality also leads to a more efficient quality management. An unsolved question seems to be, how to measure quality, whether XP will increase quality or whether there are application domains, where a loss in quality in favour of efficiency is acceptable.

- How to insure customer satisfaction (importance 2) ✕✕
- Customers are (at the beginning) prepared to accept prototypes/results with lower quality (disagreement 1) ↓

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- XP focuses on efficiency and therefore uses tools depending on project-specific situations (importance 1) ✕
- Efficiency is important (importance 6) ✕✕✕✕✕✕
- The number of lines of codes (LOC) is not necessarily shorter in XP, than in traditional approaches. This can be compared to the famous Goethe citation: “ I’ll write you a long letter, because I don’t have the time to write you a short one” (importance 1, disagreement 4) ✕↓↓↓↓

Usability and adaptability

XP was published in its initial version in “Extreme Programming Explained” by Kent beck (although the first publications on XP go back to 95 already). Since then XP has seen quite a number of suggestions for improvements, extensions and adaptations, both in books and in public discussions on web-sites. In fact, there is no clear, standardized definition of a current version of XP, but the freedom to adapt XP to project specific needs wherever necessary. Other Agile Methods encourage similar approaches of flexible adaptation of the process and the techniques used. This raises the following questions on possible and necessary improvements of XP.

- XP programming has its position in the portfolio of software development. Which one? (importance 2, agreement 2) ✕✕↑↑
- XP is of interest as it is driven by practical experience (agreement 3) ↑↑↑
- What kind of improvement does XP need and what not?
- How does XP and technology interfere? (importance 1)✕
- How to combine respectively what is the relationship between XP and the UML? (importance 1) ✕
- What about test first approaches in the context of frameworks and components? (importance 1) ✕
- XP is a good bottom line to start, but needs to be adapted (a process is a template) (importance 1, agreement 1) ✕↑
- What are the advantages of Agile Methods?
  - Agile Methods make the project faster and therefore cheaper (importance1,disagreement 2) ✕↓↓
  - It improves feedback and requirements elicitation (importance 1, agreement 1) ✕↑
  - It results in same quality as traditional projects (importance 1, disagreement 1) ✕↓

XP and social aspects

Although XP covers a number of rigorous technical practices, there are also a number of practices that address the human factor involved in development projects. The social aspects of projects, the background, motivation and learning curve of team members are crucial for XP projects.

- XP focuses on people. Culture becomes a central aspect (importance 1, agreement 2) ✕↑↑↑↑
- XP enforces a cultural change (importance 1, agreement 1) ✕↑

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- Currently programmers love XP. Therefore, they are better motivated producing better results. But is this an advantage of XP-techniques or do the seemingly good project results simply come from better motivated XP-teams?
- Scepticism against XP can quickly be overcome (agreement 1) ↑
- How important is it that programmers are still interested and motivated for new approaches?
- Do optimal project teams exist? (importance 1) ✕
- How does XP work with average programmers, respectively a bandwidth of good and bad programmers? (importance 1) ✕
- XP participants need communication skills and team skills (importance 2, agreement 1) ✕✕↑
- XP has problems with gurus (disagreement 2) ↓↓
- XPAM should not be learned from studying books (agreement 1) ↑
- How to introduce XP? (importance 3) ✕✕✕
- What about the acceptance of the test first approach? (importance 1) ✕

XP and its techniques

A number of controversies dealt with specific techniques and practices in XP. Among them, pair-programming was discussed in greater detail. The question, how to deal with missing documentation was raised several times, such that this topic is summarised in a category on its own below.

- XP techniques work well
- Parts of XP have already been used earlier (importance 1) ✕
- XP is combinable with verification techniques (agreement 1) ↑
- Is refactoring useful for database evolution? (importance 1) ✕
- Ideas for tools?
- Pair-programming is very useful for the integration of newcomers into existing projects and technologies (agreement 3) ↑↑↑

Documentation

As already mentioned, the question of how much and what kind of documentation is necessary in a software project has been raised several times and identified as important. It can be seen as a fact that the explicit abandonment of documentation is a major source of efficiency, as the documentation neither needs to be written, nor its quality assessed, nor adapted together with refactorings of the implementation. However, when and where documentation is necessary for a successful project lead to interesting discussions and some disagreement.

- Is missing documentation problematic? (importance 1) ✕
- Code is more important than documentation (importance 1, agreement 3, disagreement 2) ✕✕↑↑↑↓↓
- Projects without documentation can not work (importance 1, agreement 1) ✕↓
  - It is an art to document the right things and the proper abstraction? (importance 1, agreement 1) ✕↓
  - Different kind of documentations are to be distinguished (importance 1) ✕

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    - What is essential, necessary, and useful?
- What are the goals of documentation: maintenance or external certification? (importance 2) ✕✕
- Documentation is vital for changes and running the system
- What if customers need or want documentation for example for maintenance or quality management?
- What if documentation is enforced by government?
- In XP the customer decides about the kind and amount of documentation, but is guided by the developer (agreement 2) ↑↑
- MDA (Model Driven Architecture by the OMG is officially unrelated to Agile Methods, but shares some characteristics) doesn't work because of framework interactions (disagreement 1) ↓

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5 Summary and Outlook (by the organizers)

Summarizing the workshop, we uncovered a lot of interesting questions. Some of these questions still need thorough investigations before they can be answered in a sound way. In particular quantitative answers far beyond personal “feelings”, beliefs, and anecdotal stories are required.

For quite a number of questions, such as project planning issues or how to introduce XP, the experts claim to have good answers at hand. However, these answers are either not believed by the participants of the workshop (and hence larger parts of the industry) or not yet disseminated. Therefore, a larger part of the work in XP would be to disseminate reliable information beyond some myths that have already been built around XP/AM.

A third larger block of the questions raised deals with the deficiencies of XP and maybe other agile methods. Assuming that XP has its position in the portfolio of software development techniques, the question arises, how big this place is and by which techniques it can even be used in a wider project area. This gives raise for a lot of methodological as well as technical issues that still have to be tackled. Among them are the questions how to integrate advantages of both, traditional and agile techniques, whether and how to use modelling techniques in agile methods, how to better assist testing and refactoring, as well as how to use large-scale refactoring for software evolution.

The participants and the organizers have perceived the workshop as highly fruitful and are looking forward to new challenges in this area.

6 Slides of the Presentations

Siehe Anhänge. / See Attachments.

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