

Systematic Mapping of Workshops for Learning Agile Software Development Principles

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Abstract. Agile software development is aimed at minimizing overall risk and encouraging rapid and flexible response to specification changes by using an iterative process. There are many workshops for learning agile software development principles (hereafter “agile principles”) such as the collaboration with customers and software working. These workshops are usually introduced on the Internet websites. Due to high number and variety of available workshops, it is preferable to grasp the trend of workshops. In this paper, we survey the trend of agile development workshops by utilizing the Systematic Mapping technique. By the survey, we reveal the recent trend of workshops for learning agile principles available on the Internet. Moreover we represent these recent workshops for learning agile principles in detail.

1. Introduction

With the emergence of information society in recent years, the scale and complexity of software have increased, and changes in demand due to advances in technology development happen frequently. In the waterfall model, it is difficult to respond quickly to change requests, and budget overrun and delivery delay problems are known to occur [1][2][3].

In order to avoid these problems, an agile process is often used as the development process. Agile development is aimed at minimizing overall risk and encouraging rapid and flexible response to specification changes by using an iterative process. In recent years, efforts have shifted from looking at agile development as a methodology (doing agile) to looking at it as a style of working where the developers adhere to its founding values (being agile) [9]. However, the prevalence of agile development is still low, and lack of knowledge may be one of the causes. Workshops are effective at learning the human and social factors of software engineering [4].

Figure 1 shows essential components and their relations in typical workshops [5]. Workshops are intensive interactive and collaboration works requiring proactive participation and experiences of participants, and expected to result in sharing findings and creations, and learning.

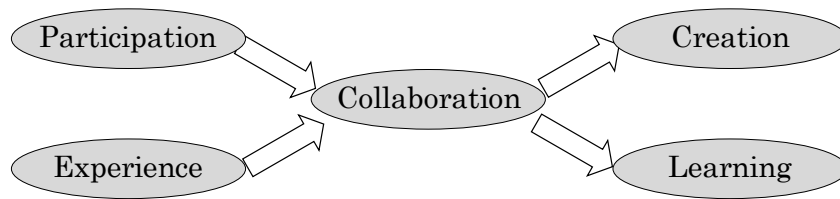


Fig. 1. Components of typical workshops (taken from [5])

There are many workshops for learning agile development principles (hereafter “agile principles”) such as the collaboration with customers and software working [10]. These workshops are usually introduced on the Internet websites such as [6][7]. Due to high number and variety of available workshops, it is preferable to grasp the trend of workshops. According to the above-mentioned background and problems, we specify the following research questions (RQs).

- RQ1. Do web sites include information on workshops related to agile principles?
- RQ2. To what kind of implementations of agile development and principles do the web sites contribute?

To address these research questions, we survey the trend of agile development workshops by utilizing the Systematic Mapping technique [8]. The main contributions of this paper include: ¹

- We reveal the recent trend of workshops for learning agile principles available on the Internet by the survey based on Systematic Mapping. In recent years, the number of workshops on management and customer has increased significantly. We also confirmed that the ratio of the number of workshops on agile methods to that of workshops on agile behavior remains low.
- We represent these recent workshops for learning agile principles in detail. For example, a workshop titled “Project role playing” has been held in 2012; the workshop was about learning software development project process and management by conducting role playing activities so that the workshop is classified into the type as “Management”.

Reminder of this paper is organized as follows: In section 2, we describe background including Systematic Mapping and agile software developments. In section 3, we show the recent trend of workshops for learning agile principles by using Systematic Mapping. In section 4, we describe related work. And finally in section 4, we summarize this paper and suggest future works.

2. Background

In this section, we briefly explain workshops for learning agile development principles and the Systematic Mapping technique.

2.1 Agile Software Development and Workshops for Learning

¹ The preliminary result of Systematic Mapping of workshops for learning agile principles is presented in our previous paper [11]. The difference between [11] and this paper is that this paper clarifies theory and concepts of workshops in general, and detail of the workshops for learning agile principles found during the Systematic Mapping process.

Agile software development is aimed at minimizing overall risk and encouraging rapid and flexible response to specification changes by using an iterative process. To let software engineers, students, and related stakeholders learn agile principles, workshops are held frequently.

For example, the website [6] introduces various workshops such as the workshop titled “You Are Not in Control”. In the workshop, participants in two teams create as many paper airplanes as possible. Participants of the first team are requested to create airplanes without having any roles or responsibilities; it led to form a self-organizing team, which is one of agile principles. On the other hand, subjects of the second team are requested to have fixed roles (designer and implementer) while creating airplanes. Through this workshop, participants can understand the agile team.

2.2 Systematic Mapping

Systematic Mapping is a defined method to build a classification scheme and structure a software engineering field of interest [8]. The process of System Mapping composed of the following six steps:

- (1) Definition of Research Question: Define research questions. This is used for screening and analyzing papers and/or web sites that include information related to research topics.
- (2) Review Scope: Define the search scope of target papers and/or web sites.
- (3) Conduct Search: Define the search engine and search keywords.
- (4) Screening: Define the screening of papers and/or web sites
- (5) Keywording using Abstracts: Classify the paper and/or web sites that passed the screening into several groups.
- (6) Data Extraction and Mapping Process: Summarize the results of the above steps in the form of a matrix figure to show the trend of the papers and/or web sites.

3. Systematic Mapping for Agile Workshops

We analyze what kinds of agile development workshops are popular using Systematic Mapping. We applied this method with a screening step to analyze workshops according to the above-mentioned six steps: (1) Definition of Research Question, (2) Review Scope, (3) Conduct Search, (4) Screening, (5) Keywording using Abstracts, and (6) Data Extraction and Mapping Process.

3.1 Definition of Research Questions

The first step in Systematic Mapping is to define research questions. This is used for screening and analyzing web sites that include information on workshops related to agile principles, which we found on Google using certain keywords.

We set two research questions (RQs) as mentioned in the introduction.

- RQ1. Do web sites include information on workshops related to agile principles?
- RQ2. To what kind of implementations of agile development and principles does the web sites contribute?

3.2 Review Scope

In the second step of Systematic Mapping, we define the search scope of web sites in four steps. Firstly, we use the top thirty Japanese web sites displayed on the Google search engine. Secondly, we use different series of workshops that are held regularly. Then, we only use web sites that are directly relevant to workshops that contribute to the learning of agile principles. And finally, if two or more web sites include the same workshops, we only use one of them.

3.3 Conduct Search

Thirdly, we define the search engine and search keywords. In this Systematic Mapping, we use the Google search engine because it is one of the most commonly used search engines worldwide. We search for workshops with the keywords “Agile workshop” OR “Agile study group.”

3.4 Screening

Next, we define the screening of web sites according to the workshops they are about. We only include workshops which contribute to the learning of agile principles, and which describe each behavior of agile development, because the purpose of this study is to analyze the effectiveness of workshops in learning agile principles. We exclude workshops that introduce other workshops on agile development. We also exclude workshops that develop some concrete software systems with agile development as introductory courses.

3.5 Keywording using Abstracts

We then classify the 146 workshops that passed the screening into three groups: year facet, method facet, and behavior (practices and tools) facet. These three facets are shown in Fig. 4 later. Fig. 2 shows the list of these selected workshops with workshop titles, classifications and URLs.

For example, as shown in Fig. 2, a workshop titled “Project role playing” has been held in 13th October 2012. The workshop was about learning software development project process and management by conducting role playing activities so that the workshop is classified into the type “Management”.

As another example, a workshop titled “Good circumstances in projects” has been held in 24th April 2007. The workshop was about exploring what are good (or poor) circumstances and attitudes in development project teams so that the workshop is classified into the type “Team”.

Date	Workshop title	Classification	URL
26-Oct-12	Current analysis by mapping	Team	http://blogs.yahoo.co.jp/nagova_agile_study_group/36859568.html
13-Oct-12	Project role playing	Management	http://kokucheese.com/event/index/56300/
5-Oct-12	Mindmap and agile	Management	http://connpass.com/event/1120/
28-Sep-12	Requirements analysis and agile	Management	http://postudy.doorkeeper.jp/events/1741
26-Sep-12	Inception deck	Management	http://blog.livedoor.jp/ryu22e/archives/65710181.html
...			
26-Sep-08	Agile introduction	Agile Manifesto	http://blogs.yahoo.co.jp/nagova_agile_study_group/17033545.html
23-Aug-08	Facilitation graphic experience	Management	http://blogs.yahoo.co.jp/nagova_agile_study_group/15127510.html
8-Feb-08	XP introduction	Agile Manifesto	http://blogs.yahoo.co.jp/nagova_agile_study_group/2261403.html
12-Dec-07	Project facilitation and agile	Management	http://blogs.yahoo.co.jp/nagova_agile_study_group/370563.html
24-Apr-07	Good circumstances in projects	Team	http://mnishikawa.net/pfp/wiki/index.php?%B4%D8%C5%EC%A5%EF%A1%BC%A5%AF%A5%B7%A5%E7%A5%C3%A5%D7%A1%F45

Fig. 2. List of selected workshops with titles, classifications and URLs (excerpt)

3.6 Data Extraction and Mapping Process

We summarize the results of the above steps in Fig. 3, and show the obtained structure of Systematic Mapping in Fig. 4 to show the trend of workshops. Most notably, in recent years, the number of workshops on management and customer has increased significantly. We can also see that the ratio of the number of workshops on agile methods to that of workshops on agile behavior remains low.

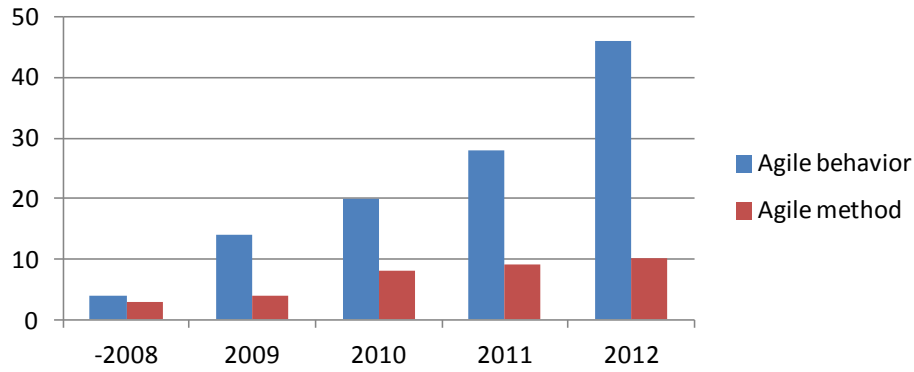


Fig. 3. Number of search hits by year facet and agile behavior or agile method facet

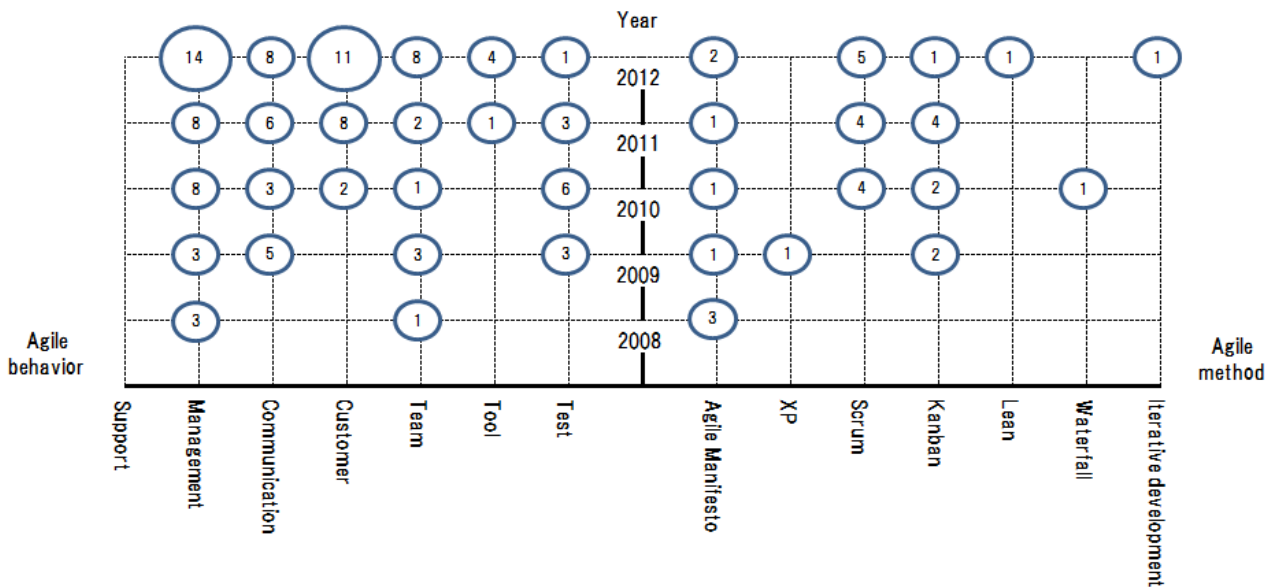


Fig. 4. Result of Systematic Mapping of 146 workshops

4. Related Work

Ali suggests some measures that can help improve software engineering education to better prepare software engineering students for professional careers [12]. In order to better equip software engineers for these roles, software engineering education has to be constantly reviewed and innovations must be introduced. Similarly, agile development education also needs to be reviewed, and innovative learning methods must be introduced. We suggest workshops as an effective tool for agile development education and analyze their effectiveness.

Mori has presented design processes of workshops for learning [13]. Mori elucidates the differences between an inexperienced and a veteran workshop facilitator. In our study, we refer processes of workshops for learning written by Reina Mori.

Layman et al. describes an initiative at North Carolina State University in which the undergraduate software engineering class was restructured in layout and in presentation [14]. The change was made from a lecture-based course that followed the waterfall method to a lab-oriented course emphasizing practical tools and agile development. Layman examined the new course layout for learning software engineering, but we examine especially workshops for learning agile principles.

5. Conclusion and Future Work

To clarify the trend of workshops for learning agile software development principles, we conducted a survey employing the Systematic Mapping technique. By the survey, we revealed the recent trend of workshops for learning agile principles available on the Internet. Moreover we represented these recent workshops for learning agile principles in detail.

We confirmed that in recent years, the number of workshops on management and customer has increased significantly. We also confirmed that the ratio of the number of workshops on agile methods to that of workshops on agile behavior remains low.

The trend revealed and the above-mentioned findings could be utilized for further development of necessary workshops. Moreover the trend and the findings could be utilized for consideration on taking existing workshop; participants could refer to the Systematic Mapping result to understand the scope and characteristic of workshop under consideration.

Our future works include the further survey by increasing the number of web sites and workshops including workshops held in other countries except for Japan, and the analysis of the educational effectiveness of each workshop.

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