

Exploring the Role of the Manager in Agile Projects

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Abstract

The manager's role is one of great importance and responsibility in software projects. With the advent of Agile methodologies, this role has undergone drastic changes. There is lack of consensus in the software industry about the role of the Agile manager and there is acute lack of substantial research in the area. Our research explores this important role and aims to make it better understood through study of real life managers in Agile projects. We also aim to understand the challenges faced by Agile practitioners while adopting and practicing Agile methodologies and collate the strategies used by them to overcome these challenges. In this paper, we describe our research method, present our preliminary findings, and discuss the challenges faced in conducting our research.

Keywords: Agile Methodologies, Software Development, Project Management, Grounded Theory

1. Introduction

Agile methodologies are becoming popular in the software industry [3]. Agile methodologies advocate changes not only to the process of software development, but also revamp the traditional roles in software projects. One such role that has undergone drastic changes is that of the manager. The manager in Agile projects is a very important role [1] and needs to be better understood. There is lack of consensus in the software industry about the role of the Agile manager [1, 2, 3]. Similarly, there is lack of any substantial academic research on the topic. Using the qualitative research method called Grounded Theory [19], we will:

- explore the role of the manager in Agile projects.
- understand the challenges faced by managers working in Agile projects.
- collate strategies they use to overcome these challenges.

We are confident that this will benefit not only the Agile managers to better understand their role and responsibilities, but also provide them with a well informed set of strategies to overcome some common issues. It should also help other members of Agile teams such as the developers and testers as well as customers

and stakeholders to better understand the role of the manager and thereby benefit the process of software development using Agile methods.

I enrolled into the PhD program in February 2006 and am currently into the second year of research, as I had suspended my studies for few months. I have a Bachelors degree in Computer Science from Louisiana State University, USA and completed my first year of Masters at Victoria before being accepted into the direct PhD program. Presenting at ACDC 2009 will be a great opportunity to receive feedback on my research and learn from the experiences of other researchers. I seek advice on these areas of my research: Agile project management, Agile methodologies, and Grounded Theory.

2. Agile Methods

The late 1990s and early 2000 saw the emergence of Agile software development methods [8] that advocated rapid feedback and change. Agile methodologies follow rapid-iterative and incremental style of development that dynamically adjusts to changing requirements and enables better risk management. They are characterized by collaborative and self-organizing teams and continuous customer feedback. A typical Agile iteration is represented below in the figure below.

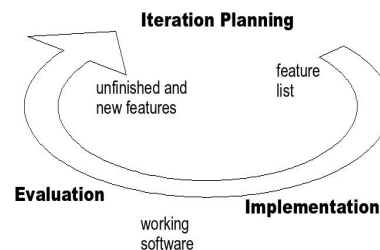


Figure 1. An Agile Iteration [9]

There are various flavours of Agile, such as Scrum [17], eXtreme Programming [4], Crystal Clear [6], FDD (Feature Driven Development) [16], DSDM (Dynamic Software Development Method) [18], and Adaptive Software Development [12]. The de-

velopers of some of these Agile methods got together and wrote the Agile Manifesto [10] in 2001. Scrum and XP are considered to be the most widely used Agile methods in the world [21].

2.1 The Agile Manager

The manager's role is one of great importance and responsibility in software projects [1]. With the advent of Agile methodologies, this role has undergone drastic changes. The various flavours of Agile have defined their own manager roles. Scrum has the Scrum Master and Product Owner roles while XP has the Coach. Other mixed methods and home-rolled versions of Agile have different definitions of the manager's role.

Sanjiv Augustine notes that with the exception of Scrum, most Agile methodologies do not clearly define the role of manager [2]. Lyssa Adkins and Michael Spayd also acknowledge that there is a lack of consensus in the industry about the role of the Manager [1]. Along similar lines, Henrik Kniberg [13] notes that the role of the manager in Scrum has undergone changes and these changes need to be addressed.

It is evident that there is no clear definition of the role of the manager in Agile projects in the software industry. Similarly, there's an acute lack of substantial academic research on the subject. Michael Coram and Shawn Bohner have studied the impact of Agile methods on software project management [7] and touched briefly on the project manager role in Agile. They noted that the project manager is a much more *involved role* and that *project managers in Agile processes are responsible for tracking progress and making business decisions*.

3. Research Method

We are using the qualitative research method called Grounded Theory [19]. Qualitative research methods are considered appropriate when there is little knowledge of the phenomenon under investigation [19], which is the case with the role of the manager in Agile projects [1, 2, 13]. Furthermore, Grounded Theory is being increasingly used to study the social nature of software development teams. Cockburn [5] used Grounded Theory to research the relationship between people and methodology as a part of his doctoral thesis. More recently, Martin, Biddle and Noble (role of on-site customer in XP) [15], and Ferreira, Noble and Biddle (interaction designer and Agile development) [9] and Whitworth and Biddle [22] have used Grounded Theory to explore social aspects of Agile teams.

Grounded theory is different from other research methods in that it does not test a hypothesis but rather allows the theory to emerge from the data [19] and is called *emergent theory*. Using Grounded Theory we aim to generate theory that will assist practitioners to better understand their situation.

Grounded Theory involves following a number of systematic steps towards building a theory. The first step is to identify the area of interest and formulate research questions. According to Grounded Theorists [19], research questions may be derived from suggested or assigned research problems, technical literature, and personal and professional experience. *All of these factors were*

influential in assisting my choice of research questions as laid out in the introduction.

The second step is data collection. After gaining Human Ethics Committee approval, I conducted semi-structured, face-to-face interviews using open-ended questions. The third step is *Coding*, which is the categorization, interpretation, and analysis of data. The last step is comparing data from one group with another and is called the constant comparative method. We have modified subsequent interview questions to focus on the common categories identified during analysis. *Sorting* involves arranging the categories according to their properties. We carried out this step using cards which are easy to carry and arrange.

There are various versions of Grounded Theory and we have chosen to follow the Glaserian version, because there are more resources available. Our aim is to generate a *substantive theory* which is based on substantive or empirical area of sociological inquiry, rather than *formal theory* which is derived from formal or conceptual areas of study. We will be conducting more interviews and analysis as we progress through our research and work on the emergent theory.

4. Preliminary Results

The following table shows the distribution of the participants on the basis of the country of their work location.

Participants Work Location	Number of Participants
India	8
New Zealand	3
United States	3
United Kingdom	1
Canada	1

Table 1. Distribution on basis of Participants' Work Location

So far we have conducted sixteen interviews and analyzed four initial interviews conducted in New Zealand. We presented our preliminary findings at Agile 2008 [11] last August. These results are discussed below. The remaining interviews will be transcribed and analyzed in the coming months. The participants were practicing Agile coaches and Scrum Masters with experience in using mostly XP and Scrum. Due to privacy and ethical considerations, we will limit our identification of the interviewees to the codes: P1, P2, P3, and P4.

4.1 Adoption Issues

Our preliminary results focus on the challenges of Agile adoption with the customers. We have identified Awareness and Adoption as two main problems faced by software development firms that practice Agile methodologies.

Its a more awareness issue really. I have never had anybody say know what we have done traditional before and we tried Agile, assuming the Agile was done properly, they never said Oh I much

prefer traditional waterfall. No, no, no its never happened! So it really is an awareness issue. [P2]

4.2 Solution Strategies

Agile practitioners use different strategies to overcome the issue of adoption. The first one is *Spreading Awareness* about Agile practices through workshops, events, conferences, articles, papers, blogs, and even word of mouth.

The second strategy used to convince customers is *Communication with customers* about the advantages and disadvantages of using Agile. One of our research participants shared the following,

"The bit that works is that getting people into a room together and discussing the pros and cons...And going through the actual manifesto and the principles that guide it. And when you talk through those principles, and you do them right...almost everyone in the room they're nodding at those." [P4]

Communication is used as a tool to focus on the client's interests and highlight the benefits of adopting Agile methodologies. Some of the benefits sighted, include more involvement with their projects and better customer control over project via continuous and rapid feedback opportunities.

Some Agile practitioners harness their *Previous Success* with Agile projects to convince new clients. Their successful execution of Agile projects lends trust to their company name. Also, practitioners cite other global success stories and the history and success of Agile methodologies in general.

Agile adoption can be either a conscious decision or a more subtle process. A renowned Agile coach disclosed that their first experience with Agile was using small adoption steps and a *Problem Based Approach*. They had evaluated the situation where they were having a problem tackling a given issue in the traditional way, then looked into their Agile toolkit to find a solution to that particular problem.

We just started to do small adoption steps like we've got a real problem doing 'A' then we could use this technique and this is how it might help. so very much a problem based approach to doing Agile. So when I started it was a very non-Agile space, when I left it was Agile kind of project [P1]

Another interesting strategy used to help the adoption of Agile is *Iterative Billing* procedures. As one of the participants disclosed,

"A lot of times what we do to get people more confident is to say we'll only bill you on iteration by iteration basis, so they know they only have to pay for this thing in chunks rather than sign off at the beginning to a much larger project. Money thing comes in as well in terms of features that they may want done." [P2]

According to P2, the customers come to realize that if they want more functionality built into their system, all they have to do is buy another iteration (or *sprint*, in case of Scrum). This allows the customers to be more confident about the new process because they know that their financial risks are covered in this way.

5. Discussion

We have come across several issues while conducting our research so far. Although they are not the main concerns of our re-

search, they may effect the way we carry out our research and the subsequent findings. Through this doctoral consortium, we hope to receive feedback and advice from the wider research community to help us address these issues properly.

5.1 Measuring Agile

As a researcher studying a social aspect of Agile methodologies, I am faced with the fundamental question of defining *Agile* and also making sure that the data I am collecting is indeed coming from sources that adhere to Agile principles. It is not my aim nor within the scope of the research to judge how the Agile methodologies are being applied, but rather to simply gather enough information to make sure that my data sources qualify as Agile so that I can include them in my study.

The Nokia test is an interesting checklist used to measure Agile practices. It was created by Bas Vodde in 2005 and later modified by Jeff Sutherland [20] to include Scrum specific practices. It consists of questions focusing on iterative development, testing, Agile specification and other questions specific to Scrum development. I am working on developing a similar, more generalized checklist for measuring Agile. It should help me select my research participants based on how well they fit the criteria.

5.2 Defining the Term Manager

Since there are wide differences in the titles of the various managerial roles in Agile methodologies, it is important to consistently use a single definition for the term 'Manager' in our research.

For the purpose of our research we use the definition provided by Sanjiv Augustine in his book *Managing Agile Projects* [2] for defining the *Manager* in Agile Projects or *Agile Manager* as *those individuals responsible for building and leading teams and accountable for their success and failure*.

Managers or Agile Managers include titles such as Scrum Master from Scrum [17], Coach from XP [4], and other managerial titles used in different Agile organizations that fit our definition of the Manager/Agile Manager.

5.3 Finding Agile practitioners

Finding participants for the research can prove to be a real challenge, specially if the research topic revolves around a relatively new practice. Initially, we struggled to find Agile practitioners in our geographical area. It was after an event organized by Agile enthusiasts in Wellington, that we got the opportunity to connect with some Agile companies.

Established Agile groups and organisations provided the platform to connect with prospective participants. By joining the Agile Software Community of India's user group, I was able to get access to many Agile practitioners in India. It was encouraging to find them willing to help with research in the Agile field. Finally, I also searched on the internet extensively for companies with an Agile model of working and contacted them directly.

5.4 Complex Adaptive System (CAS)

Augustine [2, 3] suggests a CAS-based Project Management Framework by relating CAS principles to Agile project management practice. We will attempt to understand this concept in greater detail and explore how the concepts from CAS may aid in better understanding and practicing Agile project management.

5.5 Exploring Impact of Cultural Aspects

We are aware that our participants belong to different ethnic and organizational cultures and that this may have an impact on the research findings. Culture has been identified as one of the three most important success factors in Agile project management [14]. Lindvall et al. note, *To be Agile is a cultural thing. If the culture is not right, then the organization cannot be Agile.*

We strongly believe that more interviews and interactions with experts in different software industries around the world will lend greater depth and dimension to our research. However, we are aware that cultural diversity of participants is likely to impact the research results. Therefore, we will try to explore the cultural differences in the adoption and practice of Agile methods in our research analysis.

6. Future Work

We are currently analyzing previously conducted interviews. We plan to interview more practitioners during 2008 and early 2009. We expect to devote the rest of 2009 to coding and analysis of data collected through interviews. We may need to conduct follow-up interviews in New Zealand and India, which will help us validate our theory and also bridge any gaps that may arise during the analysis of data. We will work on developing theory from the collected data and finish writing our thesis report by February 2010.

7. Conclusion

Based on our initial four interviews, we have identified *Adoption* and *Awareness* as two main issues faced by Agile practitioners. Further analysis has suggested large variations in the theoretical concepts of Agile project management and the actual practice of the same. Depending on the categories that emerge from the analysis, we will modify our interview questions to focus on these categories in future interviews.

We are confident that our research will benefit not only Agile managers to better understand their role and responsibilities, but also provide them with a well informed set of strategies to overcome some common issues. It should also help others in the Agile team such as the developers, testers, customers, and stakeholders to better understand the role of the manager and thereby benefit the process of software development using Agile methods. Our research will also serve to encourage further studies on different aspects in the important area of Agile project management.

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