

# Application of Agile Project Management in Software R&D Management of M Enterprise

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**Abstract:** With the rapid development of information and network technology, the scale and complexity of software are becoming larger and larger, and the traditional software development process has become increasingly difficult to cope with the rapidly changing market. In the fierce market competition, more software development teams begin to use lightweight agile management methods to replace the traditional software project management process. Due to the incremental nature of agile methods and their emphasis on communication and people-centered values, some conventional software project management processes and methods cannot be applied. First of all, through the analysis of the current situation of software management projects and the quality problems in the agile process, the direction of quality improvement is clarified.

**Keywords:** Agile Project Management; Enterprise software; R&D management.

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## 1. Introduction

With the rapid development of computer and Internet technology, software project management has also encountered some new problems. Customers generally expect software teams to respond to customer needs faster, release software products more efficiently, and interact with users more actively. In the face of these new opportunities, software enterprises are constantly relying on technological innovation, and more expect to seek innovation from project management. Therefore, as one of the new methods to break through the traditional software management, agile management method is gradually activated by major software companies and widely used in software project management.

## 2. The role of agile project management in enterprise software R&D management

Software project management is an event [1] that analyzes and controls project personnel and promotes the successful completion of products, processes, progress and quality of software projects at predetermined costs. In addition to uniqueness and timeliness, limitations and basic characteristics of various uncertainties, software projects are also inviolable, characterized by rapid development, demand volatility, complexity and bottleneck of production efficiency. It is these characteristics that separate software project management from traditional project management. In history, many large and small software projects ended in failure. It is believed that software project errors are caused by a variety of factors, with more technical problems, but in the final analysis, it is still a management problem. Due to poor management and various problems, improving the software development process has become a key in software project management.

The agile management method is completed by a series of agile management processes. In order to replace the milestones in the traditional way, the project evaluation, preliminary design stage and other solidification processes are described in detail. As far as agile management is

concerned, customer demand is such a process, that is, a general view of the development cycle. The team can use methods that customers can understand, such as case prototypes, physical models and diagrams, to discuss and suggest with customers, step by step and complement each other. Agile methods focus on conducting, reviewing and other methods in the form of review meetings to adjust the process appropriately, so as to continuously improve the process. In this way, compared with traditional methods, agility can be achieved: better use case coding, better test case coverage, functional test automation, continuous integration, and better agile project management and software development practices. To put it simply, agile methods are the attitude of advocating agile methods, embracing change, welcoming change, changing growth, self-improvement, emphasizing people first, mutual respect, strengthening communication, continuous iteration, and continuous integration.

## 3. Current Situation of Agile Project Management in M Enterprise Software R&D Management

The software project management of M Enterprise implements the project manager responsibility system, that is, the project manager is fully responsible for the requirements, quality and control of the project. The software project management model is a traditional waterfall management model, which is developed from top to bottom step by step. The whole process consists of demand collection and analysis, system design, code writing and testing, trial operation and official operation. After each link, you should give feedback and prepare relevant documents. If you need to modify the code or add new requirements midway, you need to stop the current work and restart the requirements analysis. The work of each stage can be successfully completed before entering the next stage, and the work order of each stage shall not be reversed. The waterfall model highlights the transformation from demand analysis to software system design, from software system design to program coding, from program coding to system testing, from system testing to product

delivery, and has carried out research and development according to this general process. However, in the process of implementing the waterfall development model, many problems are often found, which have caused unpredictable harm to the entire project.

## **4. Application of Agile Project Management in Software R&D Management of M Enterprise**

### **4.1. Build an agile working environment**

According to the framework established by the team, the previous waterfall team was dissolved. Each team selected members from the old development team and test team to form a new team. In the past, teams were usually surrounded by developers and testers sat on the ground. Now, we need to organize selected developers and testers into a group to sit and execute projects. Take agile deployment as the starting point, improve the office environment, and let the team work and live together. On the one hand, team members have known each other for a long time and gradually understood each other's ideas and views. Therefore, using agile methods can improve team cohesion. On the other hand, it ensures smooth team communication. The members of this project are mostly R&D teams, and the politics and disputes in many offices have declined. There are also many less intrigues, laying a trust foundation for the use of agile methods and creating a good team atmosphere [3]. Helping team members solve various difficulties and reject other projects can enable team members to focus on the current project and ensure that team members and their priorities will not be changed during the development cycle.

### **4.2. Agile Training**

As agile method is a relatively new form of software development in China, most project members have never touched this method. In the early stage of agile method implementation, teams will inevitably have problems of one kind or another. Agile methods are a dynamic process. As time goes by, team members' understanding and mastery of agile methods will continue to improve [4]. If the team members have problems at the beginning of implementing this method, they must solve them in a timely manner. Therefore, project managers should adopt agile methods to comprehensively train the project team at each stage of the project implementation process.

#### **4.2.1. Concept training**

Before implementing agile methods, enterprises can employ external training institutions to provide all members of the project with agile method training on the same day after two months of training. The training content covers the background and basic concepts of agile methods, the role of team members, work content and implementation process.

#### **4.2.2. Case Studies and Trials**

When the agile research and theory were understood, the team members read the relevant books, studied the use cases of agile methods, and were guided to experiment by the tutor. There is no doubt that the initial stage of implementing projects with agile methods is a painful transition period, during which no formal training has been conducted. It is hoped that the team can learn and achieve better results only after the implementation experience.

#### **4.2.3. Physical exercise**

The project tries agile methods for one month, and the enterprise can hold formal practical training for the team, which can solve some practical problems encountered by the team in the implementation of agile methods. Under the framework of special training, the basic idea of agile method is rarely involved, but the combination of specific practice and actual cases is used to discuss and study some practical problems existing in the project team.

### **4.3. Team building in agile projects**

Until the project can formally implement agile methods, it is very important to determine the role of each project member in implementing agile methods. According to the role, responsibilities and characteristics of the organization structure in the initial stage of the project, the role during the project implementation is defined as follows:

#### **4.3.1. Product Director**

Have a deep understanding of the whole process of product market, product planning and product development, and be able to quickly be competent for the important work of the product leader, product planning, monitoring and overall planning of the whole project.

#### **4.3.2. Product Advisor**

The product consultant who directly contacts with the customer can fully understand the customer's business background and needs, so as to be competent for the role of customer representative of agile methods.

#### **4.3.3. Developers and testers**

These developers are naturally part of the agile team. Product release personnel and database administrators participate in the R&D team as developers. According to the division of product functions and the characteristics of team optimization, the project team has established several teams, each composed of several people, to undertake various product function development tasks.

#### **4.3.4. Business Analyst**

With a deep understanding of the product business environment and excellent documentation skills, the product leader plays an important role in any team. You will be directly guided by the product owner.

#### **4.3.5. Project manager**

With strong project management, personnel management and communication skills, it can play a supervisory role in an agile way, undertake customization and lead the team to handle daily affairs.

### **4.4. Project process improvement**

With reference to the standard agile management framework, the whole process of the project consists of seven activities: obtaining the initial product list, sprint plan, activity plan, sprint implementation, sprint review, sprint review, holding regular meetings every day and checking every day. The following six events are all sprint events. Sprint activities represent repetitive activities. The best sprint cycle is 2 weeks to 1 month, depending on the project situation. First, the product manager explained the requirements faced in the sprint plan activity to the team members. If you encounter any problems, please directly ask them questions at any time. The product manager is responsible for explaining what the sprint plan is. Everyone's needs should be communicated with experts, and then the product needs should be broken down into smaller scale work

through the product manager and R&D members. Finally, it is up to each development member to decide what they want to accomplish in the sprint phase. From the perspective of the whole implementation process, the daily regular meeting can enable everyone to discuss the achievements made in the past, what work to do today, issues needing assistance, and track and disclose the progress of the project through daily inspection and review.

#### **4.5. Improve agile project management system and guarantee system**

##### **4.5.1. Improve the awareness of agile project management**

First, the application of performance appraisal system, the establishment and implementation of management responsibility system, and the formulation of performance appraisal objectives. Among them, the most important indicator for assessing the company's performance is the implementation possibility of the project. The assessment is detailed according to the requirements of performance assessment indicators, and implemented to specific departments and teams. The second is to strengthen the staff's awareness of agile management. From different aspects of the organization, including sprint review and sprint planning meetings, the product leader needs to update the current project progress to the members of the project team and explain the significance of everyone completing the project on schedule. Use the internal communication channels of the enterprise, such as the company's intranet, news magazines, expert forums and other channels to promote agile project management, encourage employees to actively participate in the discussion and development of the agile management system, and strengthen employees' agile awareness and implementation.

##### **4.5.2. Establish appropriate supervision and incentive mechanism**

The key to the successful operation of the company's management system lies in effective monitoring. In the process of agile management, M Company must establish a full monitoring mechanism to monitor its progress. The transparency and accuracy of information at all levels in the software R&D project of M Company is the key to ensure that the project can be completed on schedule. A project

management team is established. The product leader is the first responsible person for agile management, and every project manager is a member of a team. It is incumbent on each project team to lead and supervise its own tasks. If there is a common problem, the project manager will first use the resources within the team to solve the problem, or rely on the manager to solve it. If the problem cannot be solved, contact the project manager to solve the problem. In project human resource management, incentive is at the core. Under the agile R&D mode, incentive is also crucial. The R&D team should pay more attention to the self-confidence and self-management of its members. If the project can be completed on schedule or ahead of schedule, the product leader will reward the project team. An incentive mechanism for project team members should be established at an appropriate time to better motivate the team [5].

## **5. Conclusion**

Agile methods have a process of continuous accumulation. Good methods should be constantly reviewed and practiced, and constantly improved. Only with constant practice can agile methods be more effective. It is believed that agile management methods will play a greater role in the future development process and contribute to the success of more enterprises.

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