

Review of Agile Project Development Technique

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1. Abstract

With the availability of numerous different project development techniques it is highly complicated for software developers and project supervisors to assess the adequacy of agile processes as well as other traditional methods to the projects and modules. This paper briefly describes the advantages, limitations as well as comparison with other popular project development techniques to the agile methodology.

2. Introduction

Agile project development focuses on early and fast production of working code and projects which involve frequent, small changes, pair programming, small iterations, rapid and long-time user feedback and involvement [1, 2]. Whereas traditional methodologies emphasize on extensive analysis before coding, development and maintenance, relatively large time spans between milestones and checkpoints, and lesser amounts of user interaction [3, 4].

Even though there is practical evidence supporting the success of both the methods, it seems like organizations are increasingly supporting the agile method because of the recurrent problem of uncertain or indecisive requirements and the development of inflexible systems that often fail to meet user demands [5].

Traditional approach does not utilize technical and management processes that simultaneously evolve and adjust to [6] needs derived from first-hand experience during development, [7] unstable software requirements and [8] variable development environment [9, 10].

The objective of this paper is to list out what exactly is the agile software development technique, situations in which it should be used or its benefits, situations in which it shall be avoided or its disadvantages and also its comparison with leading techniques.

3. Advantages of Agile Technique

There are numerous advantages of using agile project development technique over the one-shot and prototyping methods like waterfall, throw-away etc. Depending upon the scope as well as the characteristics of the project undertaken by the senior management agile method can be preferred over other methods. Few of the various factors which boost the adoption of this method when compared to others are given below. [11]

3.1 Engagement of Stakeholders

It provides various opportunities for stakeholders– before, in between, and after each run. By keeping the client in the loop in every step, the degree of collaboration between the client and team is very high, which provides more chances for the team to truly comprehend the client's needs.

3.2 Transparency

Provides a clear opportunity for customers to be involved in the project, from prioritizing requirements to recurring planning and review schedules to consistent software versions containing new features. Moreover, this assumes that clients understand that they are seeing a work in construction in exchange for transparency.

3.3 Predictable as well as Early Delivery

Involving a time-boxed, stringent schedule of certain weeks, new features are developed quickly and frequently. This even provides the certainty to release the product earlier than planned.

3.4 Predictable Costs and Schedule

Since each iteration is of constant duration, the cost can be predicted to the total work that can be done by a team scheduled time box. Combining with the estimates submitted to the client, he or she can easily understand the rough cost of feature iterations, which enhances decision making.

3.5 Scope for Change

While the team requires to stay determined on delivering to a pre-agreed set of the product's modules in each new iteration, there is often a very strong chance to constantly redefine and prioritize the entire product. New items can be planned for the future iteration, providing the option to incorporate changes within weeks.

3.6 Users Based Focus

It frequently uses user experiences with business-directed acceptance guidelines to define product capabilities. By directing features towards the needs of actual users, each of the features delivers value. This provides the opportunity to test the software after each iteration, gaining priceless feedback early in the.

3.7 Improvement in Product Quality

It breaks down the project into distinguished units so that the development team can focus not only on superior-quality development but also on testing, and incorporation. By producing frequent versions and scheduling tests and reviews during iterations, quality is enhanced by locating and mending defects at a faster pace and realising expectation levels early.

4. Drawbacks of Agile Technique

4.1 Agile development methods do not measure. Due to the integrative approach, it is difficult for some to understand the actual progress of the project. In a typical environment, upper management wants to be kept updated of the completion of each phase such as designing, coding or testing. Thus, due to the various iterations, it can be difficult to understand if the project is on the right track.[12]

4.2 Agile management methods fail at handling large teams well. The approach is appropriate only for small to medium-sized teams.

4.3 Highly motivated and skilled individuals are required for agile development, which may not always be available. Only highly efficient and experienced programmers are capable of taking the kind of decisions required during the development process. Hence it has no place for novice programmers, unless they work with the experienced ones.

4.4 It is difficult to set the budget and effort at the starting of the project because initially the project scope is not defined. Many meeting with the stakeholders may be required.[13]

5. Differences between Traditional and Agile development methods

The table below illustrates some of the fundamental differences between traditional software and agile approaches for project management. [13]

TABLE 1

S. No.	Traditional	Agile
1.	Depends on tools and processes.	Depends on the cooperation and the understanding of the team and its management.
2.	Work documents measure each activity.	Software is used to measure the progress of the project.

3.	The client is not constantly involved.	Active client involvement is required.
4.	Not allowed to vary during the course of the project.	Allowed to vary during the course of the project.
5.	Does not allow the extradition continuously working for the customer.	Permits the extradition continuously working for the customer.

6. Comparison of various Agile Techniques

A comparison of the most commonly followed Agile Project Development techniques are given below. Numerous other techniques exist but the following have been chosen based upon higher popularity. [14]

TABLE 2

S. No.	Parameters	Scrum	DSDM	Crystal	ASD	XP
1.	Process type	Several releases	Not Specified	Incremental	Incremental	Incremental
2.	Process Period	30 days	Variable	Variable	Variable	2 weeks
3.	Development Speed	Fast	Very Fast	Fast	Very Fast	Very Fast
4.	Type of project	Short term	Small/ Medium	Variable	Large/ Complex	Variable
5.	Special feature	Flexible, Adaptable	Flexible, Fast, Collaborative	Fast, Collaborative	Rapid, Iterative	Flexible, Simple design

7. Conclusion

This paper reviews agile project management techniques and elaborates their benefits and disadvantages. It describes how agile development has an edge over the traditional methods. The goal of this research is to gain a deeper insight into the approach of agile software development and differentiate it from the traditional approach. Typically, the traditional approach, cannot change during the project while agile is quite dynamic and changes according to the needs and requirement. It also handles risk management, budget and scope to create quality products such that the success rate of projects is high. The paper also draws a clear differentiation between various agile techniques commonly used these days.

References

[1] K. Beck, M. Fowler, Planning Extreme Programming Applied, Addison-Wesley, Boston, MA, 2001.

- [2] A. Cockburn, Agile Software Development, Addison-Wesley, Boston, MA, 2001.
- [3] R. Boehm, Turner, Balancing agility and discipline: evaluating and integrating agile and plan-driven methods, in: Proceedings of the 26th International Conference on Software Engineering [ICSE'04], Edinburgh, Scotland, 2004, pp. 718–719.
- [4] D. Turk, R. France, B. Rumpe, Assumptions underlying agile software development processes, Journal of Database Management 16 [4] [2005] 62–87.
- [5] D.E. Avison, G. Fitzgerald, Where now for development methodologies?, Communications of the ACM 46 [1] [2003] 79–82
- [6] Ambler, S. Agile Modeling: The Official Agile Modeling [AM] Site. <http://www.agilemodeling.com>. Visited September 18, 2001.
- [7] Aoyama, M. Web-Based Agile Software Development. IEEE Software, November/December 1998.
- [8] Auer, K., Miller, R. Extreme Programming Applied. Addison-Wesley, 2002.
- [9] Dan Turk, Robert France Bernhard Rumpe, Limitations of Agile Software Processes, Cornell University Library 22 Sep 2014
- [10] Leo Vijayasarathy, Dan Turk Drivers of agile software development use: Dialectic interplay between benefits and hindrances, Information and Software Technology August 2011
- [11] Segue Technologies: 8 Benefits of Agile Software Development Site. <http://www.seguetech.com> August 25, 2015
- [12] Overview of Agile Management & Development Methods, Addicam.V.Sanjay Site. http://projectperfect.com.au/downloads/Info/info_agile_programming.pdf
- [13] Agile Project Management: Brief Review, Haifa Mohammed and Abdul Rauf, <http://www.inse.org/vol3/195-E16.pdf>
- [14] An Examination and Evaluation of Agile Methodologies for Systems Development Site. <http://scialert.net> June 4, 2014