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Applying Agile Methodologies on Large Software Projects

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Abstract: **Agile is suitable for Small projects as contrasted with the large projects. There is some problem in the execution of large projects. Large Projects are not easy to execute. When we use agile methodologies, Large projects are very difficult to implement. To construct a product framework by utilizing agile methodologies we found that the large projects need more practices as compare them with Small projects.**
In this paper, I will present an arrangement of latest and changed development practices, which will help in building up a large project. The Agile Framework for Large Projects (AFLP) was connected to four industry cases. The AFLP gives a structured approach to programming associations to adopt agile practices and evaluate the outcomes. The system incorporates an extended Scrum procedure and agile practices, which consist of agility and critical success factors in agile software projects under that chosen from the XP, Scrum and Crystal Clear.

***Keywords*: Agile Methods (Scrum), Large Software Projects, Industrial Case Study.**

1. INTRODUCTION

There are some problems with the Large Software development Projects that need to be sort out. In this paper, Assume that a large project and its development team is between 50 and 100 people including Developers, testers, managers and Business analysts. Many of them do not provide their estimated results. Here, I depict new and modified agile development practices. Some of which we have used for different projects at different companies. By Using this set of development practices along with the agile development practices will add to the success of the large project. At this point, many of these practices have been used once or twice successfully, so use them as your own caution.

2. BACKGROUND

This segment briefly reviews the following two concepts:

Large software projects and agile methods. First, we describe an overview of large software projects and software engineering approaches in a large project environment. We then summarize the available agile research to justify the need for this study and then state the purpose of this research.

2.1 Large Software Projects:

There are some components that figure out if we should characterize a task as large.

A Large project usually:

* Complete in twelve months or may be less in duration
* May or may not include low maintenance work
* Divide a large project into sub projects to complete it within time
* Assign a separate module to each manager within team

- Involves a large number of skill areas
- Has a single goal and a feasible solution.
- doesn't need for automated solutions from the external project sources
- has no political implications
- produces straightforward/direct deliverables with interdependencies among skill areas
- has available funding.

Given this definition, here described five challenges to large projects that make traditional approaches ineffective, such as:

- Planning
- Priority
- Experienced project teams
- Project manager will be answerable for multiple functions
- Make use of standard project management tools and process for large projects.

2.2 Use of Agile Practices on large projects:

There was an idea that agile only works for small projects, may be for the most straight-forward events, routine and artifacts of the framework. But by using SCRUM we can use Agile Methodologies in the large projects.

2.3 Agile Methods and Large Projects:

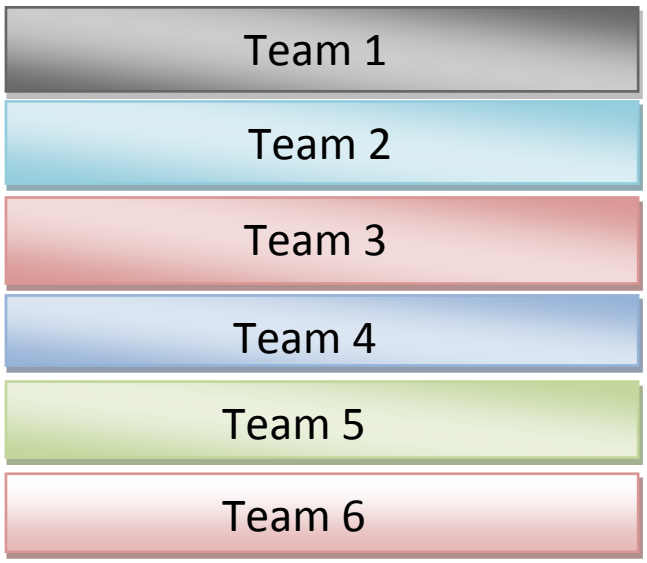
In modern years, agile methods in common, and Scrum and XP in particular, have gained increasing popularity all over the world, and have proven to be effective. Agile methods are lightweight approach to the traditional methods, and are based on the four wide processes of using iterative development, customer feedback, large software development teams, and flexible software technologies.

Some of the agile methods included Extreme Programming (XP), Scrum, Feature Driven Development (FDD), Dynamic Systems Development Method (DSDM), Lean Development, Crystal Methods, and Adaptive Software Design (ASD).

2.4 Scrum of Scrum:

Suppose we have a large project and we want it to complete within time as the time required for small projects. That's why here we use one of the Agile methodology i.e., Scrum on the large project.

In Scrum of Scrum, we divide our project team into multiple sub teams. Each sub team must have one or more expert developers respecting the limit of 9 people per team. To make this example easier, let us assume that we have a project team of 90 people. In this situation, we now have 10 teams of 9 people each. Shown in the following figure.



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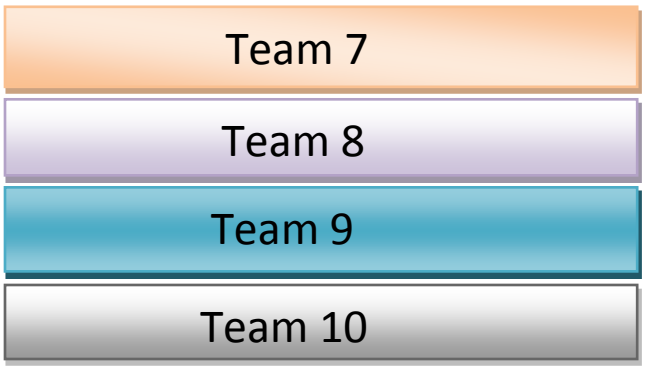
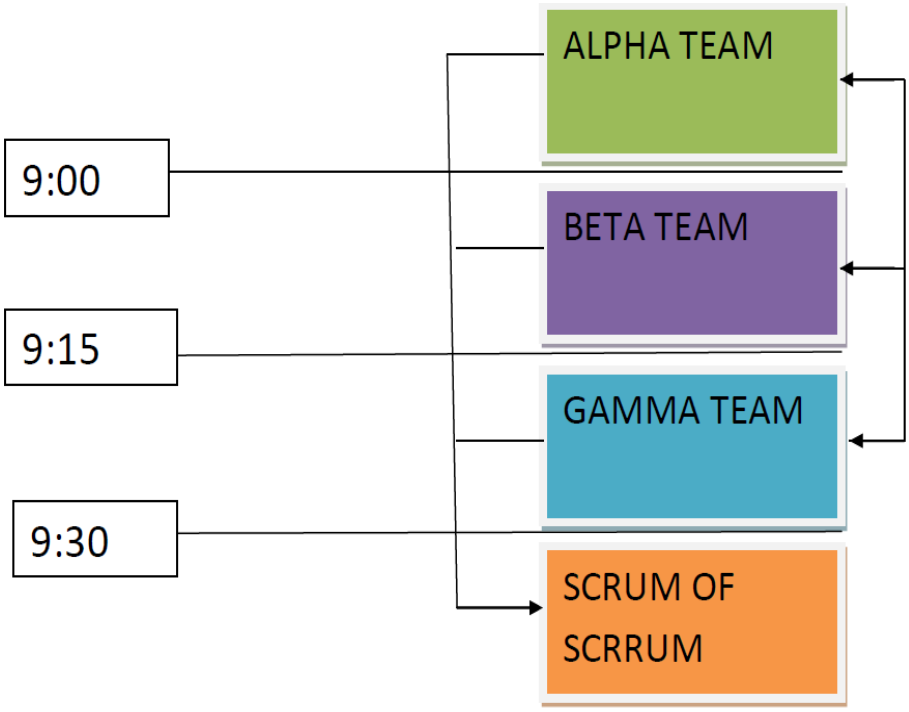


SCRUM of SCRUM on large projects"

Dividing a team into sub teams is a good approach. We assign each team with a specific task. If a problem occur in the project then the whole project will never effected by it. Only the specific part will be affected and the teams on that part will sort its problem. By using this methodology, we can save time as well as complete the large project within time.

2.5 Scrum-Daily Meeting:

Scrum also included Daily meetings. By this, you can identify risks and also find specific skills. According to the following figure, it depict that there are 3 teams, Alpha, Beta and Gama. These three teams do daily bases meeting of 15 minutes as shown in the fig. and identify if there is a problem/risk in any module and find out specific skills. If there may be the occurrence of some risk then they find out its solution.



SCRUM OF SCRUM (DAILY MEETING)

2.6 Scrums of Scrums of Scrums:

Scrum of Scrum is a specific model. And whenever needed we can apply it to other levels of projects. For example, Assume that a project of 100 people; in this case you have 10 teams of 10 people. However, 10 teams are more than recommended number of 9. Then you can create another team at the higher level Means "Scrums of Scrums of Scrums" as shown in the following figure.

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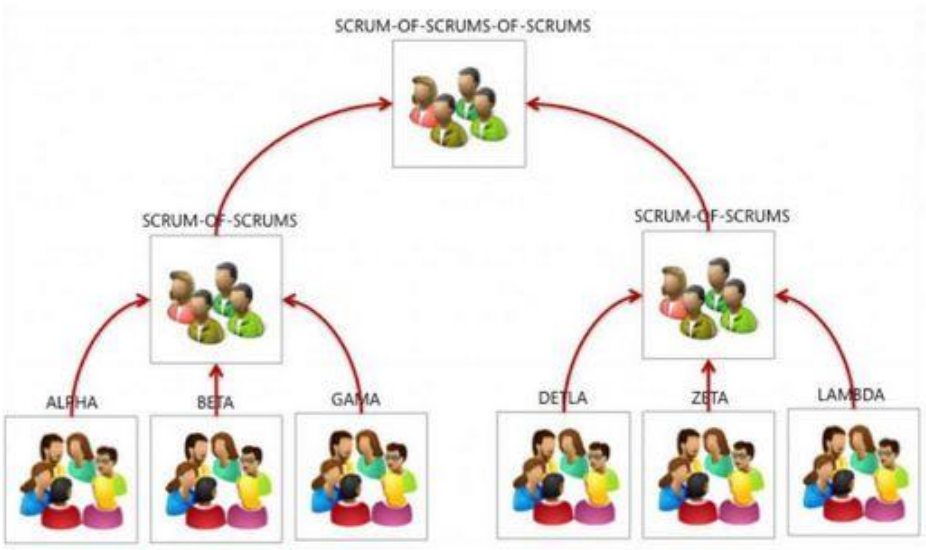
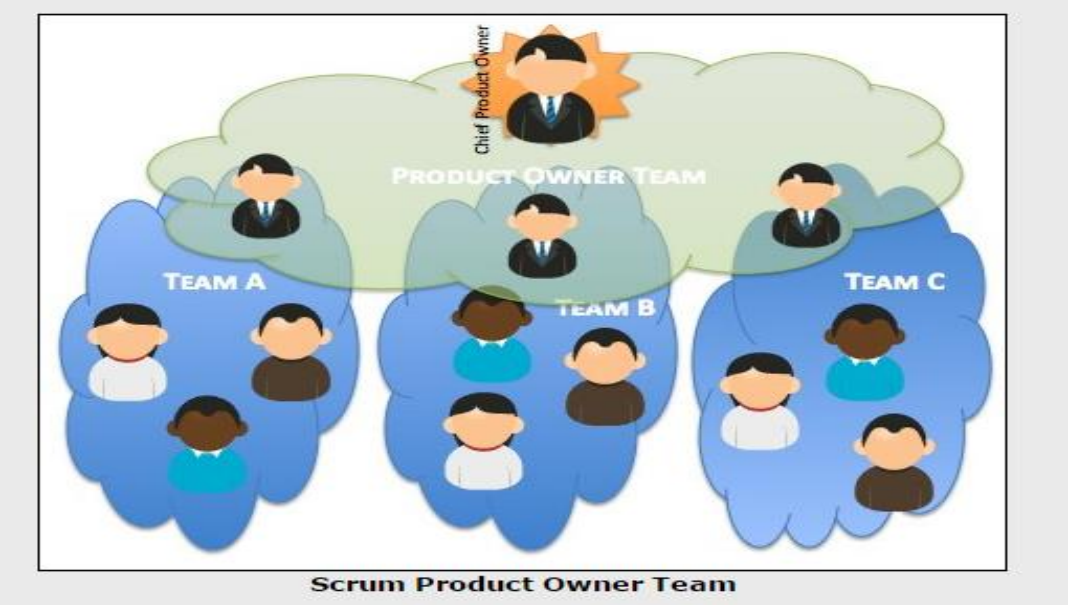


2.7 Scrum Product Owner Team:

There must be proper communication between Scrum Product owner and the team. One of the Scrum product Owners should be assign the role of the "Chief Product owner". One Scrum product owner must be exist per team. Chief product owner will be responsible that the project is developed in a specific fashion or not.



Scrum Product Owner Team

3. AGILE FRAMEWORK FOR LARGE PROJECTS

The main challenge for the organization is how to apply the most suitable agile practices to its specific product development context. The Agile Framework for Large Projects (AFLP) uses Scrum as the backbone which provides a structured process that guides software organizations in adopting agile practices.

3.1 AFLP Overview:

The AFLP framework consists of two components:

The AFLP process that helps to build the correct products

The AFLP practice pool that helps to determine the techniques and tools to build the products correctly.

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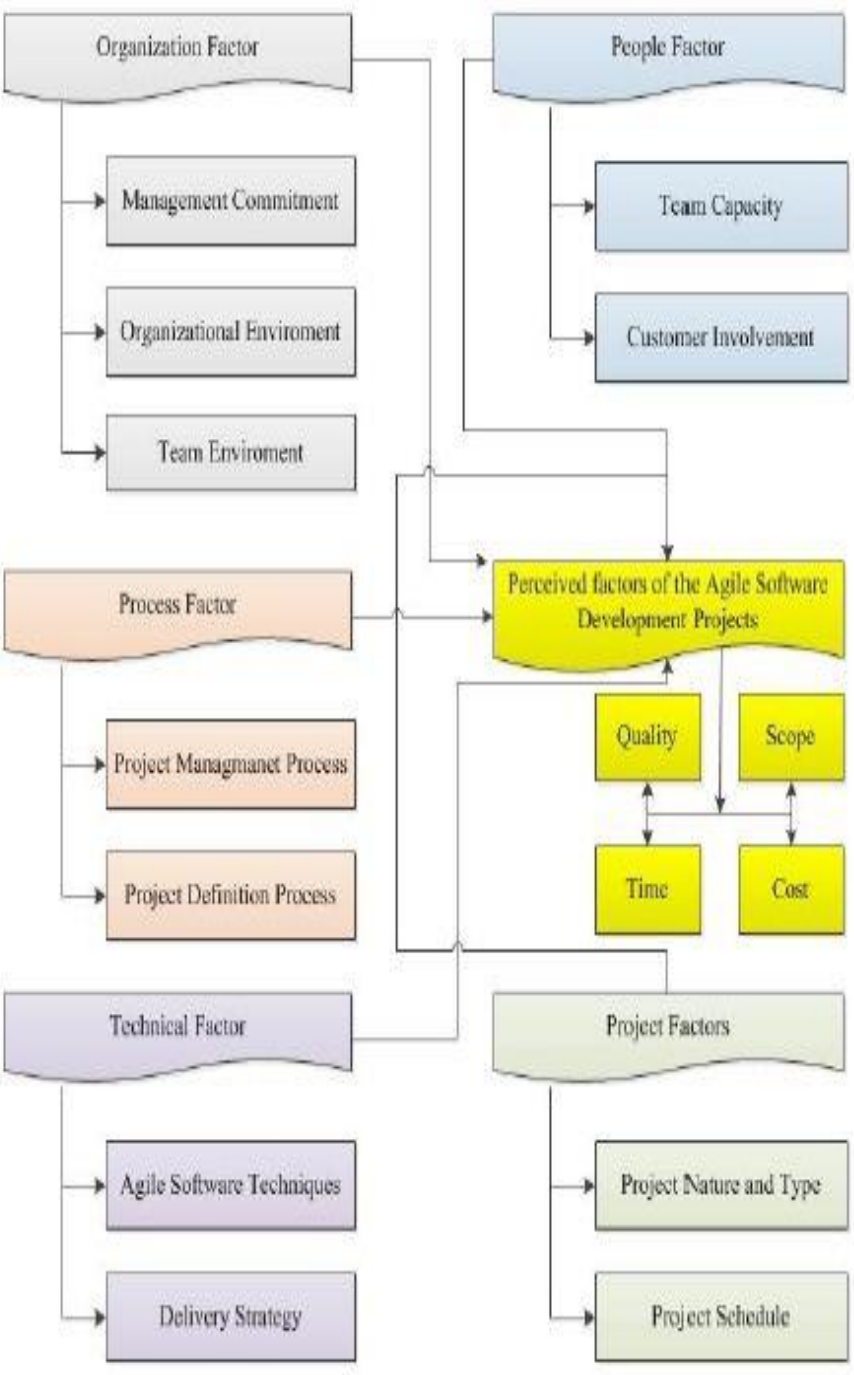
3.2 Factors affecting on Project:



3.2 The AFLP SURVEY Process:

I have surveyed four different companies to collect data through Questionnaires technique. The final Questionnaire consists of fifteen questions. In which ten questions were used to analyze the result about which agile methodology is best for Large Projects. And other five questions were companies' personal information. Their response was that the agile methodology i.e. Scrum is most suitable for large projects. Because Scrum does daily meeting with the whole team. And it takes same time as the time taken by small projects. Its result can be shown through this graph.

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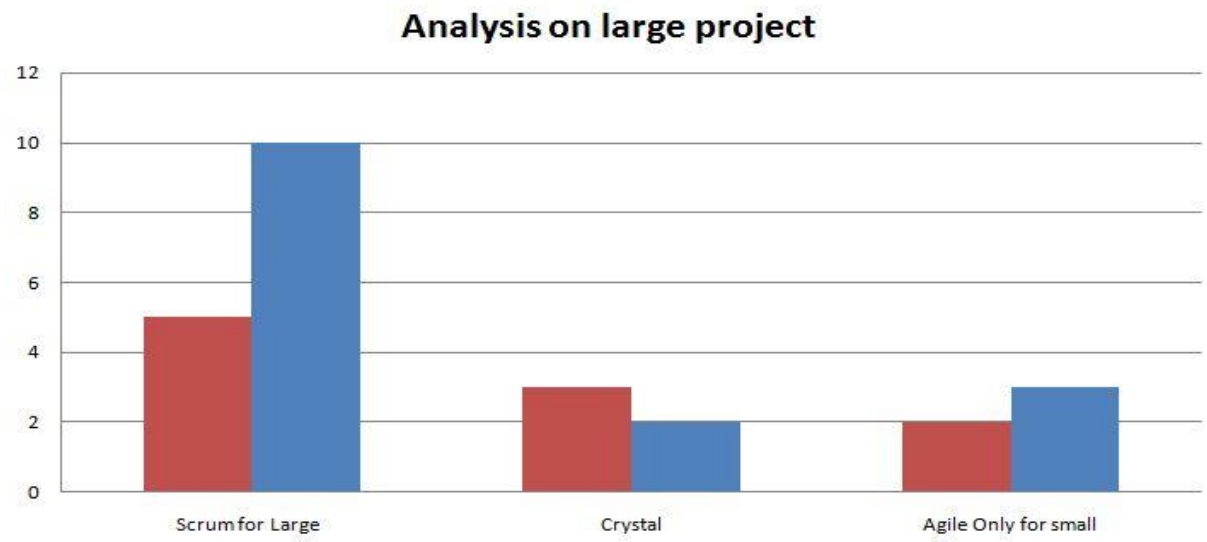

4. CONCLUSION

In large organizations, project management methods have been developed from industry Practices. And it was proved through Surveying of four different software companies that Scrum is best for large software projects. Because we divide a large project into sub projects, if any problem occur in any of its module then it will not affected on the whole project. Large projects using Scrum takes almost same time as the time taken by small projects.

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