Enhancement of XP for Cloud Application Development

Sara Tariq, Muhammad Mohsin Nazir, Farhat Saleemi
Dept. of Computer Science, LCW University Lahore Pakistan
Email: mohsinsage@gmail.com

ABSTRACT

The objective of this paper is to suggest some new concepts into the existing models of cloud software development and developing a suitable methodology for customer satisfaction. The objective is to make every team member familiar about the various features of the system to be developed using processes from extreme programming approach in cloud application development. By combining some core practices from “XP” and “XP2”, separate emphasis is made on external and internal activities for cloud application development. After the organizational focus on the proposed techniques, it clarifies to the customers about the uncertainty problems and motivates them for further exploration of the aforementioned technique. It further recognizes the problems that are inherent in the processes, analyze and describe them with suggestions for their solutions from cloud application development techniques.

Keywords: Extreme Programming (XP), Cloud Application Development.

1. INTRODUCTION

Cloud computing entail services oriented architecture. It provides great flexibility and on demand services to users and reduced information technology overhead with reduced total cost of ownership [1].

Figure 1: Flow of user and provider of cloud computing.

Cloud computing refers to both the application delivered as services over the internet and the hardware with the system software in the datacenter, that provide those services. The services are referred to as SAAS (software as a service), and datacenter is referred to as cloud [2].

2. CLOUD SERVICE MODELS

Cloud computing services are varying depending on necessities.

Figure 2: Service models of cloud.

2.1 Software as a Service (SaaS)

In Software as a Service (SaaS), application is delivered as a service to the users. Users can use the application provided by the service author, and hosted in cloud.

2.2 Platform as a Service (PaaS)

Platform as a Service (PaaS) enables consumer to deploy their own software and applications in the cloud. In that service consumer can’t access the operating systems and network. PaaS has two main purposes:

1. Delivery of application: Delivery of application execute within a cloud computing environment.
2. Development of application: All the functions that are needed to build, test, and deploy applications for cloud computing environment.

2.3 Infrastructure as a Service (IaaS)

Infrastructure as a Service (IaaS) provides computing, storage, and networking as a service.
3. PROBLEMS

Organizations list security, privacy, reliability, and operational control as key issues. In cloud application development customer can change his mind about what is wanted and needed. User requirements are continuously evolving, and team members are mostly unfamiliar about the various aspects of the system to be developed.

4. RELATED WORK

4.1 Cloud development processes

Cloud development processes framework, three broad types of processes which exist at present are:
- Waterfall Processes
- Agile processes
- Iterative processes

Most widely used agile processes in cloud application development are Scrum and Extreme Programming (XP).

4.2 Agile software Methodology

Agile software method (ASM) provides help for some key problems in software development: that software takes too much cost to develop, takes too long period for development, and sometimes does not work properly.

The most reviewers and experienced people have considered it as systematic approach. Overall research and traditional approaches has summarized that agile development should focus on four core values (Fowler and Highsmith, 2001).

- Working software over full documentation.
- Customer cooperation over contract negotiation.
- Replying to modification over plan.

Extreme Programming is a software development methodology that is most widely used in software development industry and it has been evolved in the recent past years. Extreme programming emphasizes team work and improves software projects; mostly it is implicit recommended for small projects. Our research focuses on developing a suitable methodology for customer satisfaction that how XP will be fit for their large projects and how teams and organizations always prefer customer usage on extreme programming in their projects, but customer are always confused to adopt the extreme programming.

Customers daily sit with programmers and do work with them. Because of daily meetings and acceptance test developer get right requirements of customers and they understand what customer wants, and they noted in early stages of software development life cycle (SDLC), if customers requirements are changed.

Extreme programming best suited for customer. Organizations always prefer customer use extreme programming in project but customer has confused to adopt the extreme programming. If the developers using our proposed technique then customer will be satisfied on his side.

Different types of satisfaction gaps identified by Brown and Swartz:
- Customer hopes and customer experiences gap
- Customer expectations and worker observation of customer hopes gap
- Customer experiences and worker awareness of customer experiences gap

Our main focus on customer satisfaction and feel him that Extreme Programming will be reliable in their software development process in cloud computing.

4.3 Extreme Programming

Extreme programming XP [7, 8] has highly demand in software development industry because of its lightweight methodology. It still has some rules but they are chosen to be easy to follow. At that time 31% software industries are using agile processing and 27% [2] are using XP and 4% are familiar with others. XP practices gives a right chance at right time to whole team and customer, that the product can be release with few defects. Extreme programming emphasizes team work and improves software project in five essential ways communication, simplicity, feedback, respect, and courage. The most astonishing XP rules are supportive for the customer and Programmer that at the end they can see complete reasonable picture of software. We have summarized XP rules and their activities.
5. ISSUES

a. Customer requirements are not written in permanent form because of on-site customer representatives.

On-site customer representative played very important role in project. Project fails if the on-site customer left during the project; he/she took a lot of project knowledge with her. Story cards, e-mailed cannot be easily backed up.

b. De-emphasis on analysis and design work.

Developers avoiding analysis and design work and when requirements of the project changed, developers frequently think it’s due to customers because customer didn't recognize what they wanted.

c. Project fails if developer left during project.

d. Every team member is not familiar about the various features of the system to be developed using processes

6. OBJECTIVES

- Suggest some new concepts into the existing models of cloud software development. Making the existing model more efficient adoptable and robust.
- Focuses on developing a suitable methodology for customer satisfaction.
- Make every team member familiar about the various aspects of the system to be developed and will discuss all and present solution statements for some critical problems.
- To ensure that every member develops a thorough understanding of the entire project.
- Ensure efficient and cost effective collaboration among the team members.

7. PROPOSED SOLUTIONS

The purpose of this new idea is to propose new concepts for including into the existing models for software development in cloud computing. Overcome the hurdles associated with global Software development using extreme programming.

Considers the different features of Extreme programming which is based on iterative development, and propose some new methodologies able of making the existing models more flexible efficient and robust. And make possible situations where every member of project gets a chance to work on various parts of the project.

Customer is most important in cloud computing and in extreme programming. For satisfying a customer if we emphasize some core and internal practices, it may be a combination of “XP” and “XP2” practices.[6] Probably Customer will be agree on his side that the project flow will be silently straight without any confusion.

In fact we want to explain some simpler XP methodology for software development community, by applying this they can satisfy and give assurance to customer that your project will have good fit for XP.

The XP and Revised”XP2” practices consist of the following

7.1 XP

- Planning game
- pair programming
- collective ownership
7.2 XP2

- whole team,
- weekly cycle,
- quarterly cycle,
- slack,
- On-site customer and coding standards

With the help of some core practices of XP and XP2 [6] internal and external working can be explained to customer. To evaluate whether the XP practices can help a team achieve greater success on their project and through “information page” that brings all the team members to the same knowledge level so that everyone can contribute to any part of the project.

Fig 3: Combined some “XP” and “XP2” Practices

Each project consist of two parts

- External part
- Internal part

External part

The customer involvement is necessary in this part, when developer or business analyst gathering requirements, whole team sit together with customer and gathered necessities of project. User stories are initial level
of planning game; developers gathered detail level requirements specification from customer at implementation level and fed each user story in to release planning. All details and flow of project is then send in to information page

Whole team

The whole teams have programmers and designer as well as on-site customers, which provide the requirements, sets the priorities, and push the project. Whole team discussion and communication phase introduce collective ownership at very start of the project.

- **Sit together:** All contributors such as developer, programmers, and customer to an XP project sit together as a one team. Many uncertainties can be resolved through face to face communication.
- **On-site customer:** XP encourages customer involvement, from start to end developer preferred customer suggestions, and their priorities. The customer presence more preferable during implementation stage, when developers make a small release and proved from customer, that feature has been implemented or not.

Information page

Information page is an online document which briefly contains all the information of the project. On-site customer can also access the information page and if he want to change his requirements he at the initial stages of iteration check the flow of project and ask for change.

**Concurrent Versions System (CVS)**

The addition of CVS permits all team members to view and edit the same project, or same diagram concurrently. It is a process in which team members shares their knowledge. The purpose of Knowledge sharing is to bring all the team members to the same knowledge level so that everyone can contribute to any part of the project. CVS saves all histories of the project and changes of projects requirements and even diagrams and model. With this system team member can analysis and compare change histories of diagram, and update the ongoing project.

**Internal Part**

Further stages from requirements such as designing and coding stages of coding developer gathered more details from customer, about their priorities their tools and language suggestion. Designing is also considered as internal part, design should be simple, it will be helpful for both customer and developer both can understand what the work product should be at the end stage. Coding standards should be common, the important things is code should give a looks as single and familiar.

![Fig 4: Concurrent Versions System (CVS)](image-url)
Proposed Model

Fig 5: Flow of project 40-hour week

REFERENCES


