A Study of Applying Extreme Programming Method in Mobile Game Development Environment

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Abstract

When performing a project, the most important thing is building a result with planned quality within development period. Particularly, if the project is delayed or has no good quality in the case of the mobile game development project which is sensitive to the release time and quality, it is immediately connected to the failure of the project. Extreme Programming is a methodology that divides the development cycle into smaller units for reducing the risk factor of the project in which the development period is important. In this paper, we suggest the Expanded Extreme Programming for mobile game development environment in which the development period and quality are important

1. Introduction

When carrying out the mobile game development project, the most important thing is completes the initial plan to be the high quality product within the planned period. And in ordinary case, while performing a project, new ideas come out and due to this reason, the project development plan is changed.

The factor changing the development schedule of the mobile game development project is a little different from the general application development project. In the former case, it has all risk factors that a latter has and it has additional risk factors at the same time.

The reason is due to the feature of the content development project. The period for mobile game project is shorter than other application development project because the life cycle of mobile game content is

very short. The most important feature for mobile game project is the quality because the quality is connected to the money directly. Mobile game developers have to keep the project period and to make high quality game content at the same time.

In this paper, we use the traditional method which using control variables that is the cost, the time, the quality, and the range[1][5]. We use an existing method which makes the whole quality to be good by reducing the range of the quality test at the same time. Based on these methods, we suggest a new technique which complements the disadvantage of Extreme Programming and expands Pair Programming technique.

2. The Study

Extreme Programming was developed for a project which is sensitive to development duration. It divides the unit of development cycles smaller than traditional method. It uses Pair Programming technique which uses two programmers in order to build a same product in a same development environment.

2.1. Extreme Programming

Extreme Programming is a software engineering methodology from the agile software development techniques[2]. The goal of Extreme Programming is to reduce the risk of frequent change. In traditional development methods, the requirements for an application are determined at the beginning of the development period and generally fixed from that point on. This means that the risk of changing the requirements at a later level will be bigger.

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Extreme Programming reduces the risk of change by using some values, principles and practices. By applying Extreme Programming, an application development project should be more flexible with respect to changes.
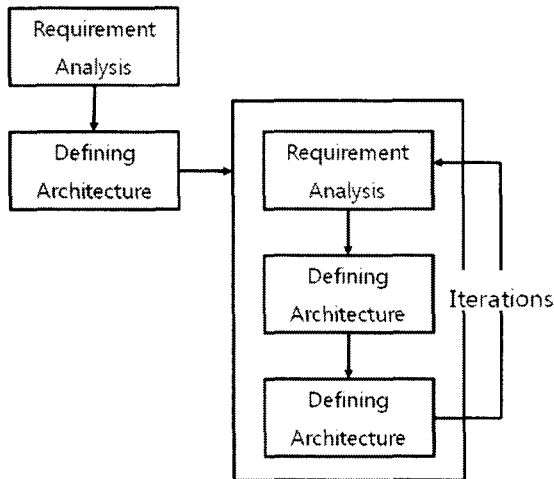

Figure 1. ooCBD

Comparing Figure 1 with Figure 2, the traditional ooCBD method has feedback in developing level only, has no customer portion, and has longer unit of development cycles.
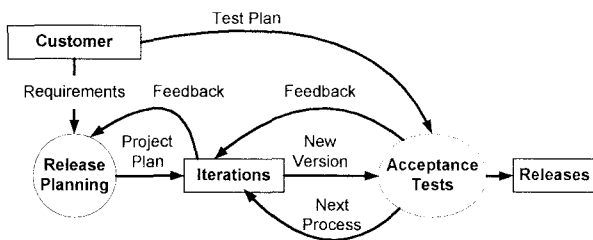

Figure 2. Extreme Programming

However, Extreme Programming has several potential drawbacks, as compared to more document-based methodologies, including problems with unstable requirements, no documented compromises of user conflicts, and lack of an overall design spec or document[3].

2.1. Pair Programming

Pair Programming is a software development technique in which two programmers work together at one Computer[4][6]. One types in program code while the other reviews each line of the code as it's typed in.

The person typing is called the driver. The person reviewing the code is called the observer. The two programmers switch their roles with a necessity. While reviewing, the observer also considers the strategic direction of the work, coming up with ideas for improvements and likely future problems to address. This frees the driver to focus all of his attention on the "tactical" aspects of completing the current task, using the observer as a safety net and guide.

Traditional Programming   Pair Programming

Figure 3. Traditional and Pair Programming

Remote pair programming also known as virtual pair programming or distributed pair programming, is the practice of pair programming where the two programmers comprising the pair are in different locations, working via a remote pair programming IDE plug-in. Remote pair programming might be useful to do pair programming with offshore teams or in a projects with distributed contributors.

3. EXP for MGD (Expanded Extreme Programming for Mobile Game Development)

In the case of mobile game development environment, not only development period but also product quality is very important. Additionally, communications between the developing activities (planner, designer, programmer, etc) are very important to succeed in a mobile game development project. We introduce an expanded method which is good for a mobile game development project. It is based on Extreme Programming.

3.1 Expanded Extreme Programming for Mobile Game Development

Because the feature of mobile game development process, the project schedule could be postponed or shorten. It is due to that the main requirement for Mobile game content is depend on market trend or marketing strategy. In another word, game content is not application software but entertainment product, so game developer can't avoid the risk like changing project schedule or stopping whole project.

But, company has to take the most gain in any case. In this situation, the best solution is that developer prepares the whole resource which is done up to that time. The resource (plans, designs, and modules) could be reused for next or other project.

Traditional Extreme Programming focus on how to reduce development cycle mainly, doesn't concern about documentation which is important in other software development method.

We added some documentation mechanism into traditional Extreme Programming architecture. Added documentation processing point is noted by book-shaped icon in Figure 4. Developers make documents which represent the results cover their works up to that time at each these book-icon points.
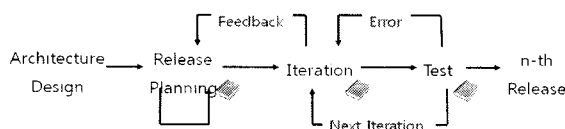

Figure 4. Documentation mechanism added Extreme Programming process

The benefits which can be gained by using the documentation are presented below.

The first, It can reduce extreme risk like stopping the project itself. The results of n-th iteration with Document could be reused on other project.

The second, It improves the understanding of the development activities for the whole project and the current status. So it can reduce the number of feedbacks performed for cross-misunderstanding between the activities.

The third, it produces the semi-done result, and this result can be used for any iteration, and even can be used for the next project.

3.2 Expanded Pair Programming for Mobile Game Development

Two programmers work together on common development environment in Traditional Pair Programming. In mobile game development environment, Planner works together with planners, with designers, with programmers. Programmer works together with planners, with designers, with programmers. The point is that the kind of work and the number of coworker is not a matter in mobile development environment.

We represent traditional game development process in figure 5. All activities (designer, artist, and programmer) are work within their own area in the diagram. This method is good for big and complicate

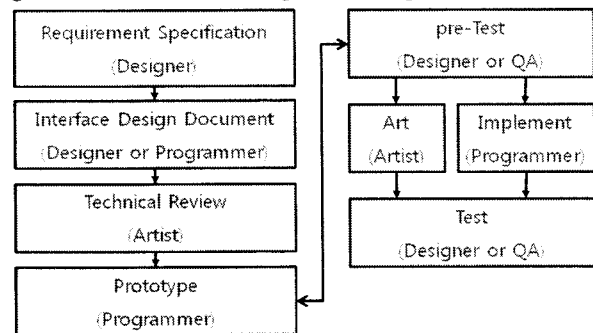project which needs divided section for developers to give certain understanding and fixed plan.

Figure 5. Traditional Roles in Game Development Process

Many people can work together on the common development environment in Expanded Pair Programming. Especially, working area of developers is no problem even though the coworkers don't have related working area at all. These structures are represented in figure 6.
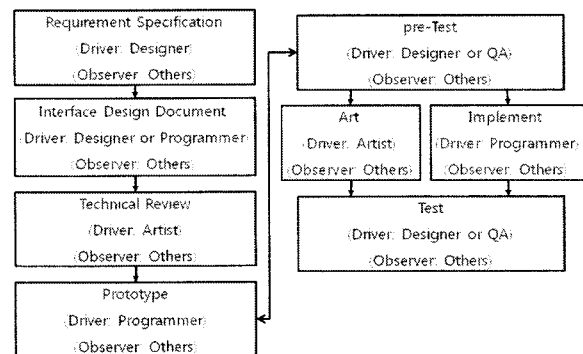

Figure 6. n-Roles in Game Development Process

n-Roles model gives multiple paradigm and prediction for one's own working area. Observers not remain with driver through a process level. If some observer does not work his own job until his driver finish the work, whole project process will be jammed up.

4. Results

Adding documentation-process make developers uncomfortable, even they feel heavy responsibility. But, it can be overcome by using a tool which helps the developer to make simple but regular documents during they concentrate on his own job.

The developing method which does not care about working area and does not care about the number of coworkers is common for a real mobile game

development environment. We just have to make developers understand that coworkers have some responsibility which is different according to the gravity of developers.

5. Conclusions

In this paper, we apply the Traditional Extreme Programming to mobile game development environment. Actually, developer uses existing software developing methods or slightly changed methods in mobile game realm. We need to make a software developing method which is good for mobile game development. And the method is needed to be a formal one to avert from confusion of variation.

This kind of research is on the beginning stage, and started right now. So we have many tasks around this subject. From this paper, our research will grow up.

Including us, there are so many researchers who study new realm in the world. I wish all of them to make achievement.

6. References

[1] Kent Beck, "Extreme Programming Explained: Embrace Change", Addison-Wesley, 2000.

[2] Kent Beck, "Extreme Programming Explained: Planning", Addison-Wesley, 2001.

[3] Alistair Cockburn, Laurie Williams, "the Costs and Benefits of Pair Programming", XP2000 Conference, 2000.

[4] Ron Jeffries, "Extreme Programming: Installed", Addison-Wesley, 2001.

[5] Jae-Won Gong, Woo-Gon Shim, In-Sup Paik, "A Study of Applying Extreme Programming Method in Korean Software Development Environment", KIISE Conference, 2001.

[6] Laurie Williams, "Building Pair Programming Knowledge through a Family of Experiments", Proceedings of ISESE'03