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PROJECT BASED ONLINE MEETING APPLICATION FOR SOFTWARE DEVELOPMENT COMPANY

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Abstract: *Development methodology in software development companies becomes the most important component to drive and standardize the development process. Several methodologies used for developing software project, like project based development, required periodic meetings besides the developing and production times. These meetings were supposed to be held frequently in purpose to determine which steps should be taken or even possible to be done, reporting, problem solving, and proposing features. Yet, those meeting's aims have not been facilitated by existing discussion medias. Most existing discussion medias were not built for this methodology. So that, this condition makes this development methodology users, find their difficulties to either holding discussions or even collaborate.*

The purpose of doing this research is a respond to those difficulties, by creating a real time meeting media that can facilitates project based development method. The application uses the scrum development as the meeting pattern, because scrum itself is a project based development methodology. Moderation stuffs have been added to support the meeting process. This meeting media can be able to held daily meetings and collaboration based on each project. The collaboration consists of features proposing, voting, chatting, and file and code sharing. While the daily meeting consists of problem solving, reporting, and other collaboration features as mentioned above. This media also can save activities history for each meeting, listed and sorted by each development step, that can be used for completion tracking of a project. Therefore, with this media, project based development methodology meetings can be facilitated.

Keyword : *Project Based Development Method, Scrum, Collaboration*

Development Methodology is the most important thing that need to be considered seriously in a software development company, in an attempt to maintain company's life cycle and development performance (Dennis, 2007). With methodology, the development models and phases can be standardized into a development requirements, that can ensure the software's life cycle to be maintained for both before and after development periods. It can force software developers to fulfill some development requirements as stated by the methodology, like codes documentations, flow analysis, maintaining tools, etc. But if a software development company, in its production phases, not implementing even one methodology, it will reduce the product assurance to be completed even maintained well (James, 2007).

In the middle of development periods, required by development methodology, there must be several actions done by the project's components, like feature completions, progresses and problems reporting, documentations, and so on so forth (Pressman, 2002). Those stuffs must be presented by each personnel to determine whether or not the project development is well run. The determination itself, if the development steps are running properly, will depends on some completion evaluations. Therefore, the project leader's responsibilities are to supervise each

activity done by the team, to ensure that the team will always obeys the development patterns, and to responsible for the each production period's results. These problems also occurred in Garasilabs Manivesta, as a software development company.

As the conditions mentioned above, each development periods needs a media that can help the team to collaborate together, discussing some matters about the current project because it is very important for each development team to have a meeting, in terms of solving problems, sharing their knowledge, or even voting (Sampebu, 2010). These conditions requires any meeting held by each team, be referred to its current project. Those mentioned collaborative activities, should be facilitated by this media. Even any activities and changes done in each meeting must be stored and can be called every time it's needed. Then, those stored data should be able to be generated as project summaries that can enable the team leader to oversee and monitor the project's completion histories.

As some problems mentioned above, it is very urge to build a software, that can facilitates those collaborating stuffs. This application should be driven by each project. The application should be implement some section separations to several main activities and purposes, like voting, chatting, proposing ideas, etc, have to be implemented also that meant to simplify and cluster each activity and will ease the team to differentiate between the main ideas and common interactions. Furthermore, this is a real time application, that can enable all personnel to tuned to the same room with same things to be displayed. This application stores every meeting activities. This application should be able to handle the distributions of project timeframe periods, also can display and make summaries for each distributed development periods of each projects

This collaborating media is supposed to help the software production team to develop their products well, depends on the methodology and their developing pattern. Otherwise, with this application, the development flows can be maintained on the right track, so that the product life cycle can be as reliable as the increased development performance.

METHODOLOGIES

Knowing Development Methodology

Knowing Application Requirements

Much of the focus of the developing software is to determine the exact requirements and capabilities of that software. Those two are the determinant to what kind of application that should be made. The narrative explanations as mentioned above, has clearly explained about what kind of requirements that should be implemented. The application requirements, can be represented by table 1 instead

Table 1. Application Requirements

Requirements	Explanations
Project Based Meeting	Meeting process takes a current project as a topic
Periodicaly Developing time	Distribute and split the development time from the entire project timeframe
Can be maintained and Developed Further	Well documented and well maintained even after the developing time
Customer's needs driven the development	Customer is the project owner
Project Tracking	History of each project's meeting, that represent reporting, completion, problem solving, etc

Knowing the Meeting Fundamental

As stated by Sampebu (2010), meeting is a media to facilitate and gather some people to collaborate, sharing, and opinion about some stuffs, problems, or jobs, which is expected to achieve agreement, solvency, and a statement. The meeting have to be well planned to reach the expected goals. Some important considerations to held a meeting are to find topics, schedules, preparing meeting place, and even at the end of each meeting, there must be some written meeting minutes that includes the meeting summaries.

There are many development methodologies used by software development processes in the universe as stated in Dennis & Tegarden (2007), as mentioned in the following

a. Structured Design

This method is a step-by-step approach to the SDLC that moves logically from one phase to the next. Each step must be followed and resolved carefully, then the phase can be moved to the next phase. This development design, consists two other methodologies.

1. Waterfall Methodology
2. Parallel Methodology.

b. Rapid Application Development

This method is required the analysts use special techniques and computer tools to speed up the analysis, design and implementation phases. The main idea of this development method is to speed up production time of the previous development method, structured design, by decreasing the use of documenting requirements. That would make this method is having a problem with the customer's needs. Also there are some methodologies using this method.

1. Phased Development
2. Prototyping
3. Throwaway Prototyping

c. Agile Development

Based on the agile manifesto that emphasis to focus on the developers on the working conditions of the developers, the working software, the customers, and addressing changing requirements instead of focusing on detailed systems development processes, tools and documentations. there are some methodologies related with this method, Extreme Programming and Scrum

1. Extreme Programming
2. Scrum

Determine where the application goes to

The next thing to concerned is to determine which development methodologies that is most suitable and reliable to be used as the application's pattern. As stated in Dennis & Tegarden (2007), there are many concerns on choosing the appropriate development methodology

1. User Requirements
2. Familiarity with Technology
3. System Complexity
4. Reliability
5. Schedules

Then the comparison by those concerns on each development methods is shown bellow

Table 2. Development Methodologies Comparison

Methodology							
Concerns	Waterfall	Parallel	Phased	Prototyping	Throwaway Prototyping	XP	Scrum
User Requirements	Poor	Poor	Good	Excelent	Excelent	Excelent	Excelent
Familiarity With Techs	Poor	Poor	Good	Poor	Excelent	Good	Good
Complexity	Good	Good	Good	Poor	Excelent	Good	Good
Reliable	Good	Good	Excelent	Poor	Excelent	Excelent	Excelent
Schedule	Poor	Poor	Excelent	Excelent	Good	Excelent	Excelent

Based on that comparison, the application will implement the scrum development methodology as its collaboration and meeting flows. The requirements as mentioned and presented by table 1, compared with the methodology comparison presented by table 2, shows that Scrum methodology is the most suitable development methodology to be used. This can be explained by some requirements that can be excellently handled by scrum. Those requirements are

1. Periodically Developing Time
2. Maintained and Developed Further
3. Customer's needs

Scrum itself is one of agile development methodologies that requires frequent meeting, called scrum meeting, in the middle of its each development's period (Dennis, 2007). These daily meetings are intended to deliver some completion reports, tell to the others about what have been accomplished, knowledge sharing, what will be done by tomorrow, and even to solve some issues together. Essentially, the scrum meeting's purposes are to reconsider stuffs and consolidation for each development period done by the team.

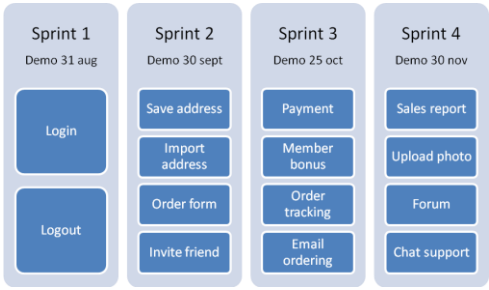

Figure 1. Sprint Example

Scrum is also doing separation toward project's development timeframe that includes some features came from customer wishlists, bugs, upgrades, etc. These divided development timeframes can be called sprint, whereas those features that included inside of each sprint, called by backlogs. Sprint itself, on each day until the end of its period, a meeting must be held to do some reporting and consolidations, while this daily meeting can be called scrum meeting. Scrum meeting is a short meeting, usually done in the earliest working hour. During the scrum meeting, each personnel must come prepared with some updates from tasks and even better if they have some ideas to be proposed for the next days.

Developing the application

Relying on those mentioned explanations about meeting, scrum development methodology, and also application requirements, the application development can be commenced.

The first step is to designing the flow of meeting processes depends on scrum methodology. This will begin with initiating a project. This project must be fully descriptive, not too long description, but just simple and clear description. With the descriptive explanation, the main idea of the initiated project will be easily understood by the team, so that the project socialization would be successfully done. The application can be able to store the project title and explanation since the first time creating it.

After the project has been initiated and socialized to the team, the next step to be done is to determine, when will the project development began. The kick off development will be initialized by the first sprint for the current project. Sprint meeting must be started then, before the project development started. Sprint meeting can be facilitated by this application. In the sprint meeting, there are several actions that have to be done. They are proposing ideas and voting on them, collaborating actions such as giving comments to the others or self ideas and file sharing, chatting, sprint backlogs selection, and starting sprint. Idea that has been proposed and selected, will be moved to backlogs, then the backlog will be used by the sprint itself.

The idea of these processes will be shown by the following figure 2.

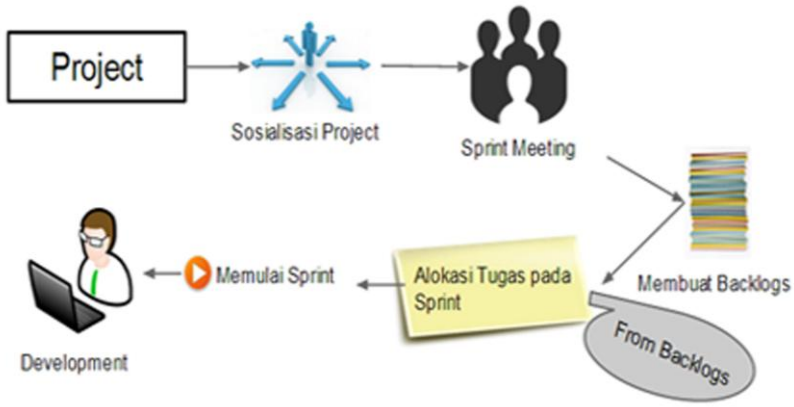

Figure 2. Sprint Meeting Flow

After the sprint starting, the development start. Now each day after the sprint started, the scrum meeting must be commenced. Report, problem solving, and also other collaboration activities, will be done here. With this meeting, each project can even has its own historical reports consist of activities done such as task status changes, impediment solving, and chatting. The idea of these processes will be shown by the following figure 3.

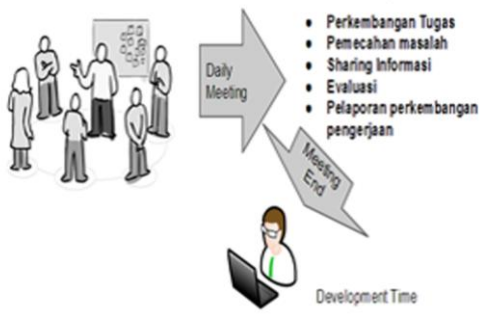

Figure 3. Sprint Meeting Flow

In the next step, a diagram block, that explaining how the recording process of meeting history will generating summaries of existing processes like, voting, chatting, and some other collaboration activities. Those histories are summarized then can be able to be generated to a meeting logs, based on each project.

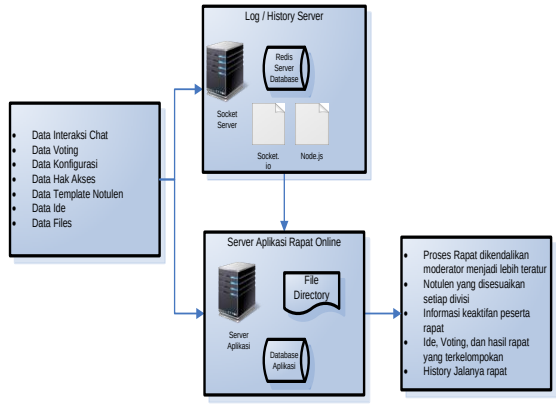

Figure 4. Diagram Block

The diagram block presented by figure2, also explained that the application will now having a project moderator that can control and supervise each meeting process. This can make each meeting process well running, because each personnel activities are limited and controlled by project moderator.

The next development step is to make a system use case that can present what kind of features that must be implemented by this application. Other than that, the use case can show which personel who can use this application.

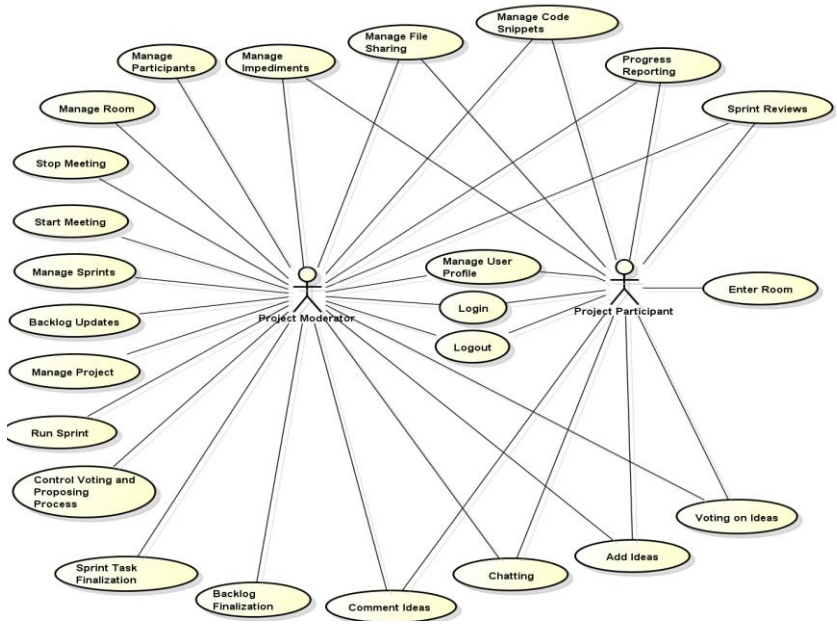

Figure 5. Use Case Diagram

In that usecase, there are 2 actors that use the application, they are project moderator and project participant. The usecase technically explained the function of each actor. Project moderator can do all moderations function that can control the whole meeting process, do meeting result finalization such as backlogs, sprint tasks, and sprint, also can be acted like the participant. While the project participants are also be able to do some activities, except moderation functions.

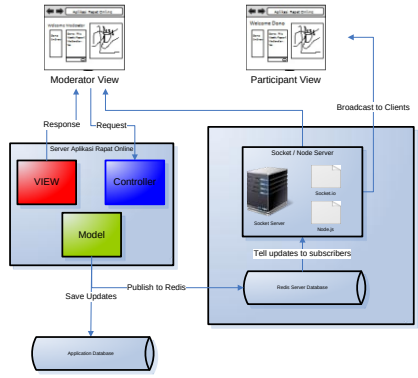

Figure 6. Login Page

RESULT AND IMPLEMENTATION

Application Architecture Design

First thing to be explained is about application architecture design. This application used MVC (Model – View – Controller) tools, for the main application and using socket programming, for backend and to handle the real time stuffs. There are two separated server that running in the same time, the first one is the machine that runs main application, while the second is for broadcasting informations to clients.

Application Developing Tools

Next is about several engineering tools to develop the application. This application will next built on UNIX based operating system, LINUX. This operating system is an open source operating system that can be customized and managed freely, as stated by Levine (2004), so that it can help the application do some stuffs related to the server administration. While the backend tool, used to handle realtime data transimisions is node.js (Rauch, 2012). The application will be developed with Ruby with its framework Rails (Matsumoto, 2008).

The data storage has divided into two categories.

1. Main data application.

This data storage is using PostgreSql. The main data is using the common SQL because it is not fastly needed and accessed frequently by the user. This data would be used to keep some data such as, project details, sprint lists, users, etc.

2. Fast transfer data application.

This data storage is using a noSQL database, redis. This data is using the noSQL database because it is faster that the SQL database, because it's not using the SQL to access their storage. This data is fastly needed and accessed frequently by the user. This data would be used to keep some data that such as, moderation rules and chatting.

Application User Interface Designs

User Interface design is the one of important things that needs to be concerned when we developing a software product (Krug, 2014). The design must be pretty straight forward and using some design standard that can ease the user experience (UX).

Before using the application, users have to be logged on or registered first. So, the login UI design, can be shown by the figure 7

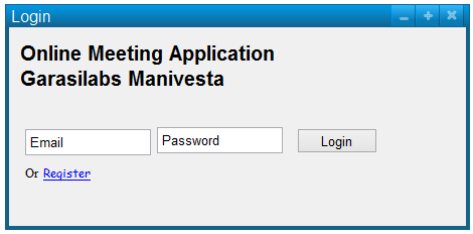

Figure 7. Login Page

After being logged on, users then redirected to the lobby page. Lobby itself consists of Project and Room lists, as shown by Figure 8.

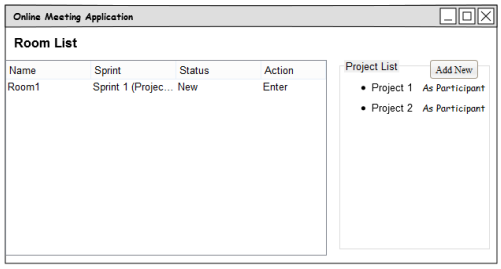

Figure 8. Lobby

After getting to the lobby, users can enter one of many rooms listed, by clicking on the "enter room" button. After users joining the room, they would be shown the meeting room with its sections, as shown by Figure 9.

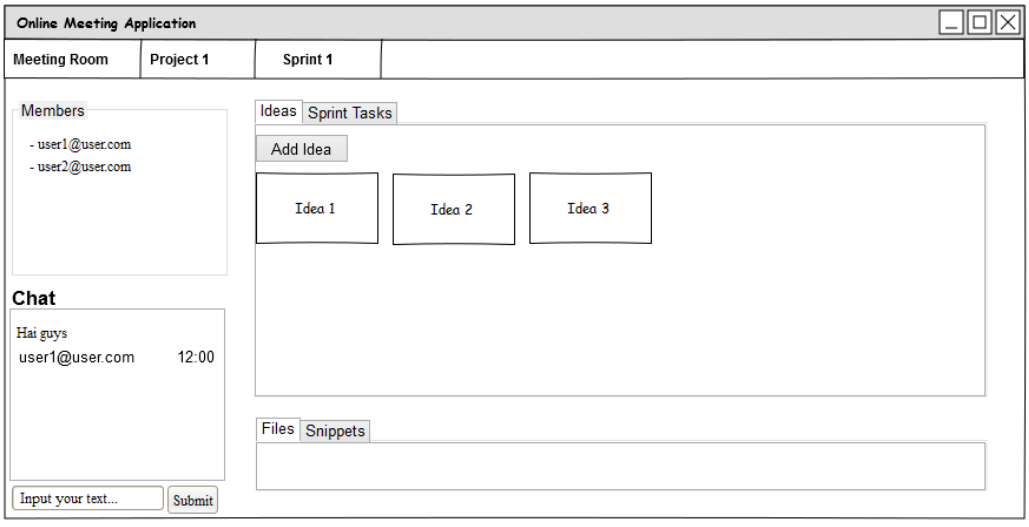

Figure 9. Meeting Room Page

There's a "Add Idea for Backlog" button used by users to propose their ideas. After clicked, there will be poped up window filled with ideas' form and after submitted, the data of just created idea would be broadcasted among participants.

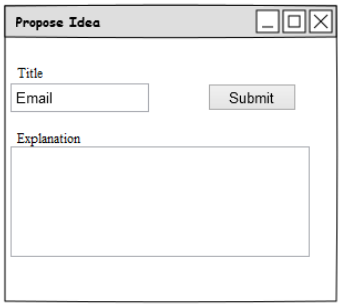

Figure 10. Propose Idea Form

Then, the created idea, can be voted or commented, by pushing the "view" button on each idea box. This would trigger an AJAX pop-up windows, filled with ideas' details and comment.

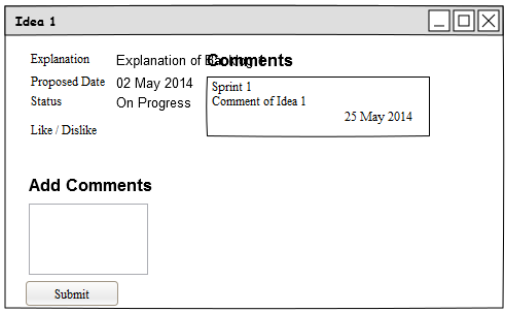

Figure 11. Idea Detail

The next important thing is the project summaries. It will generated by each day scrum meeting and sorted by sprint and date.

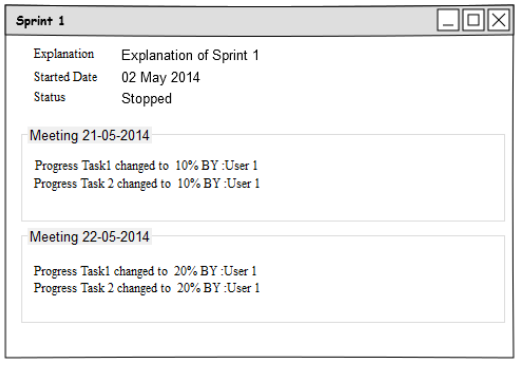

Figure 12. History and Summary

CONCLUSION

Meeting online application that has been built, can facilitate the meeting activities such as, run sprint meeting, providing meeting media that differentiate each activities like proposing ideas and voting, moderation feature that can handle the meeting control, code documentation, problem solving collaboration, backlog storing, sharing, and generating project summaries.

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