

## Monitoring System Prototype Design at The Project Management Units

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### ABSTRACT

Project Management Unit of ERP (Enterprise Resource Planning) serves to limit, planning, forecasting, scheduling, organizing, directing, controlling, and closing projects. Technological development monitoring system and growing can be used to assist management in monitoring to ensure all activities conducted goes according to plan. The technology can be used as a media monitoring include web-based technology. The method used is by direct observation in ERP Project Management Unit, analyzing procedures and processes on the system is running, as well as describe the procedure using UML. To support the accuracy of the data, the research conducted by the method of literature, by searching for relevant information from various books and browsing the Internet. I also conduct experiments or in practice in the design and manufacture of prototype applications Project Management Monitoring System. The benefits of this research is to produce a new system in the form of application Project Management Web-based Monitoring System is capable of supporting high mobility of employees to report any activity that has been, is being, or will be done in realtime. The report was subsequently used as a basis for analyzing the shortcomings of the activities that have been done so that management can do forecasting activities that will be implemented in the future. From this research, the expected performance of the ERP Project Management Unit in monitoring projects can be more effective, efficient, and optimal.

**Keyword : Project Management; Enterprise Resource Planning (ERP); Monitoring**

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### 1. INTRODUCTION

Today the development of monitoring system technology is increasingly advanced and developing (Al-Khafajiy et al., 2019; Kumar, S, 2022), so that it can be used to assist management in monitoring to ensure that every activity carried out goes according to plan (Polyakova, A et al., 2019; Haasnoot, M et al., 2018; Marbouh, D et al., 2020; Cheng et al., 2020). Technologies that can be used as monitoring media include web-based technology and mobile device technology or Android-based smartphones (Papatungan, I et al., 2020; Susilawati, H et al., 2019; Işık, M. F et al., 2018; Christanto, F. W., & Suprayogi, M. S, 2018). Web-based technology has been known to have many advantages, one of which is that it can be accessed through various types of media and also different operating systems (Stawarz, K et al., 2019; Xu et al., 2020).

The tight schedule of activities is one of the obstacles for management in monitoring every activity carried out (Yiu, N, 2019). Not infrequently, employees have to take official trips out of town or even abroad to take part in various work-related activities. This causes the reporting process to be delayed, and not up to date, and the performance of the ERP Project Management Unit (Enterprise Resource Planning) in carrying out the monitoring activity process is less than optimal (Faghihi V., 2022; Chethana S, 2022). In general, the functions of the ERP Project Management Unit are scooping, planning, estimating, scheduling, organizing, directing, controlling, and closing projects (Battistello et al., 2021; Mohapatra, H., & Rath, A. K., 2020).

The report is then used as the basis for analyzing the shortcomings of the activities that have been carried out so that management can forecast activities that will be implemented in the future. Thus, it is expected that the performance of the ERP Project Management Unit can be more effective, efficient, and optimal (AboAbdo, S et al., 2019; Supriyono, S., & Sutiah, S., 2020).

Based on the description above, the author tries to research and design a project management application prototype that can later be used in building an Enterprise Resource Planning (ERP) project management unit application.

## 2. RESEARCH METHOD

At this stage, the steps of research activities are described, and this framework is the steps that will be taken in solving the problems discussed.

### 1. Planning

In doing a job requires good planning, an activity planning will determine the success of a job. In developing the system, detailed planning is needed so that the objectives are achieved.

### 2. Data collection

This is done by studying, collecting, and summarizing reference books related to the preparation of research reports to obtain the necessary data and information. The references are taken from various sources.

### 3. Analysis and design

At this stage, an analysis of existing problems is carried out and analyzes all needs so that solutions are obtained in solving these problems. This stage of analysis begins with field observations. After obtaining the next problem is the analysis of system requirements and system design. At this stage of analysis using the OOAD (Object-Oriented Analysis and Design) method. For system business process design, UML (Unified Modeling Language) is used.

### 4. Conclusion

After all the stages are done, the next step is to conclude from the beginning of the process until the system prototype design is created. At this stage, documentation of the entire series of activities is also carried out by making it into a report.

## 3. RESULTS AND DISCUSSION

### A. Results of Problem Analysis

Based on the analysis that has been done on the project management monitoring system currently running on the ERP Project Management Unit, the authors found the following problems:

1. The project management monitoring system that is currently running is still semi-computerized, meaning that there are still manual activities such as recording activities carried out and reporting processes that are still being carried out by correspondence using official paper media.
2. The project management monitoring system that is currently being implemented is still not running effectively and efficiently, because the activity reports sent by each sub-unit use different formats. In other words, no standard reporting format has been set. This adds to the work of the Project Management Administration Staff in compiling reports on sub-unit activities.
3. The project management monitoring system that is currently being implemented is still not running quickly and accurately, because each reporting process requires checking and approval in the form of signatures or initials from each Sub Unit Manager, Project Management Administration Head, or ERP Project Management Head. This requires a lot of time so that the activity reporting process becomes hampered, and not up to date, and the performance of the ERP Project Management Unit in carrying out the activity monitoring process is less than optimal.
4. The current project management monitoring system does not work live, so it does not support the high mobility of employees to report activities that have been, are being, or will be carried out in real-time.
5. The risk of inaccurate data, because the recording process is still manual often makes the staff on duty forget to record the data activities carried out.

### B. Problem Solving

To overcome the problems encountered in the process of monitoring activity and making reports, the authors propose alternative problem solving as follows:

1. Designing a web-based Project Management Monitoring System so that the process of monitoring and reporting projects can be done computerized and reduce the use of paperless.
2. Designing a web-based Project Management Monitoring System that is able to work live, so that each staff can report on every activity from the sub-unit anytime and anywhere. Managerial parties are also able to monitor projects in real-time without having to be in the office. Thus, it is expected that the project management monitoring process can run quickly, accurately, and optimally.
3. Determine the standard reporting format on the system. Reports sent by each unit use the same format, so the project management monitoring process becomes more effective and efficient.

### C. Design System

#### 1. Use Case Diagram System

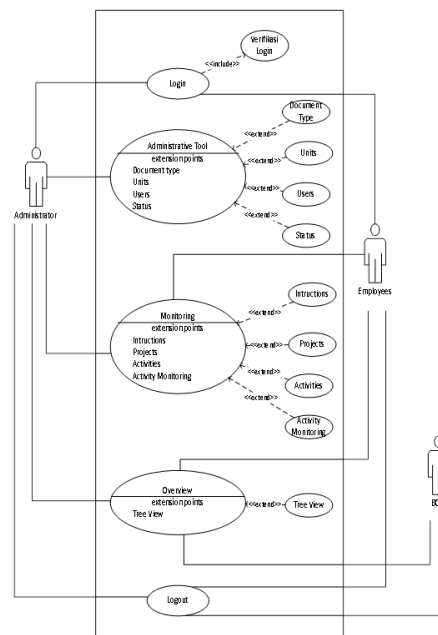


Fig 1. Use Case Diagram System Design

In Figure 1 presented, the Administrator performs the login process, the system then performs login verification. After a successful login process, the Administrator creates master data of Users, Units, Document type, and Status.

Employee logs in using the username and password that have been created by the Administrator, the system will verify the login. After the login process is successful, the Employee inputs monitoring data in the form of Instructions, Projects, Activities, and Activity Monitoring. The data that has been inputted is automatically saved into the database.

Similar to Employees, BOD (Board of Directors) also performs the login process using the username and password that have been created by the Administrator. After the verification process is successful, the BOD can perform an overview in a tree view or a table that displays project management monitoring system data.

## 2. Activity Diagram Administrator

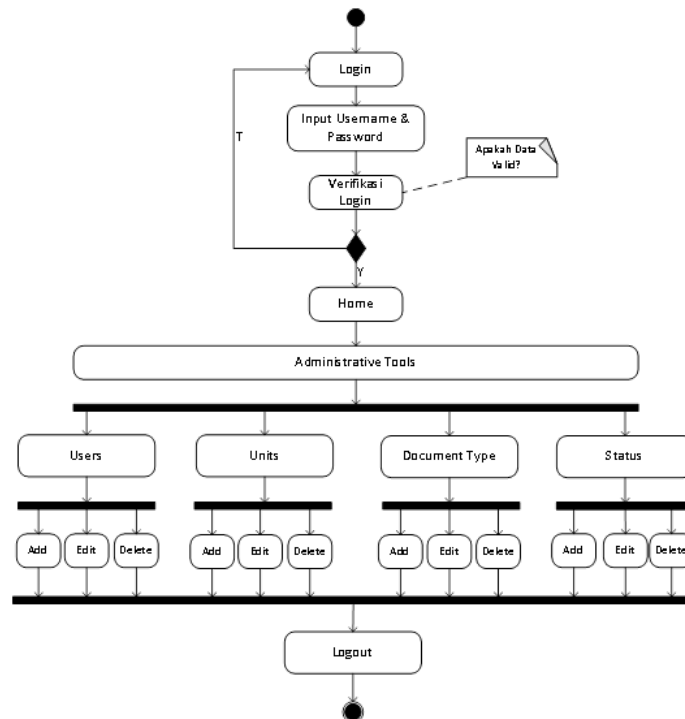


Fig 2. Activity Diagram-Administrator

Based on the activity diagram above, there are 1 (one) initial node which is the start of the activity; 22 (twenty-two) activities carried out by actors; 1 (one) decision node; 5 (five) fork nodes; 1 (one) join node; 1 (one) activity final node which is the end of the activity.

## 3. Sequence Diagram

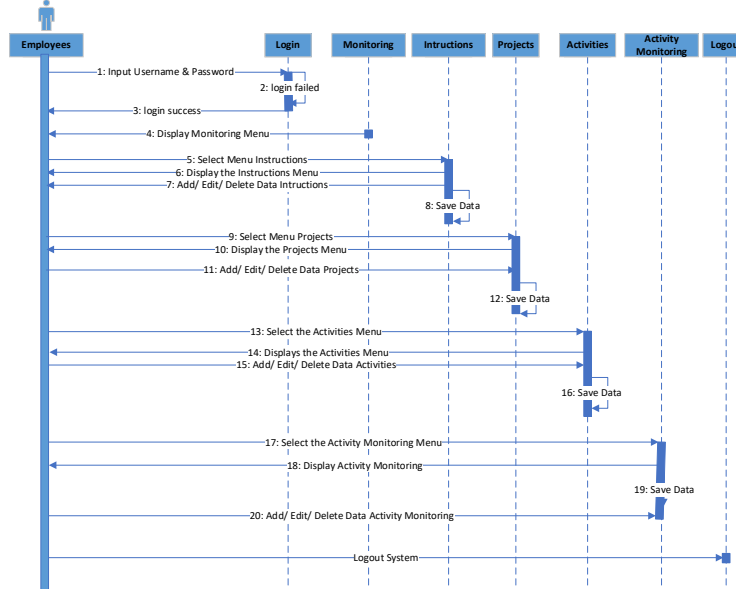


Fig 3. Sequence Diagram-Employees

In the proposed sequence diagram design for Employees, there is 1 (one) Actor, namely Employees; 7 (two) Lifelines: Login, Monitoring, Instructions, Projects, Activities, Activity Monitoring, and Logout; 16 (sixteen) Messages containing information about the activities that

occur and the activities carried out by the actor; 5 (five) Self messages representing recursive operation calls or method calls belonging to the object itself.

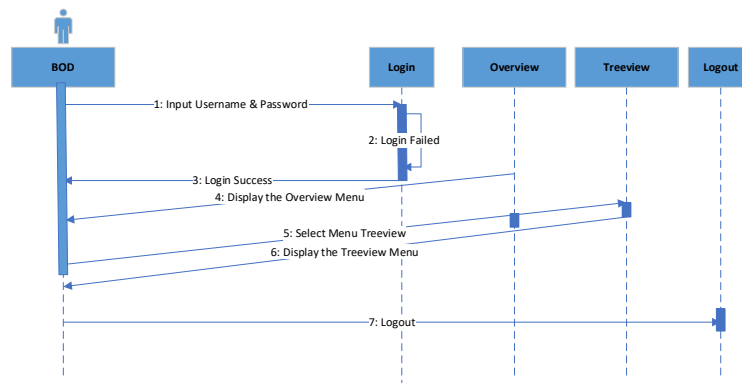


Fig 4. Sequence Diagram-BOD

Based on the sequence diagram, there are 1 (one) actor, namely BOD; 4 (four) Lifelines, namely: log in, Overview, Tree View, and Logout; 6 (six) Messages containing information about the activities that occur and the activities carried out by the actor; 1 (one) Self message representing a recursive operation call or method call belonging to the object itself.

**D. Prototype Design**

This stage is a clear picture of the complete design to the users and the website under study, as well as meeting the needs of system users. The following is a prototype or display of the Project Management Monitoring System design that was made.

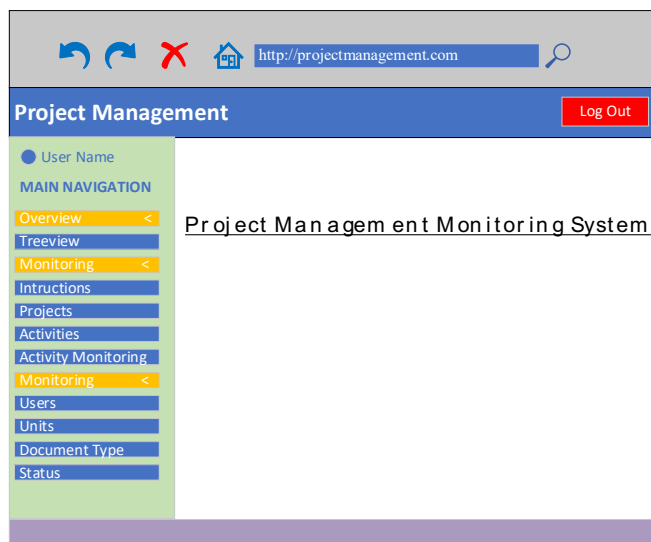


Fig 5. Home Page Prototype

Figure 5 is the main page display design. When administrators, employees, or BOD finish logging in, they will enter the main form. This main form contains the menu of the project management monitoring system.

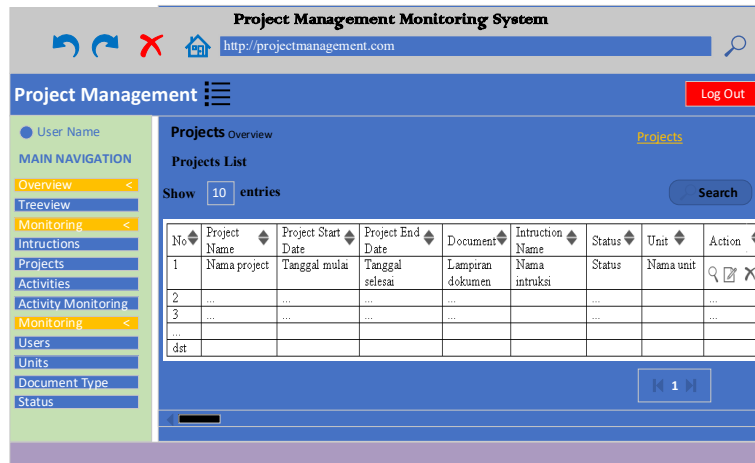


Fig 6. Projects Page Prototype

In Figure 6 is the design page for the project, where on the menu you can see a list of existing project work. The project list table contains information about the project name, project start date, project completion date, document attachments, instruction name, project status, unit name, and action (view, edit, delete).

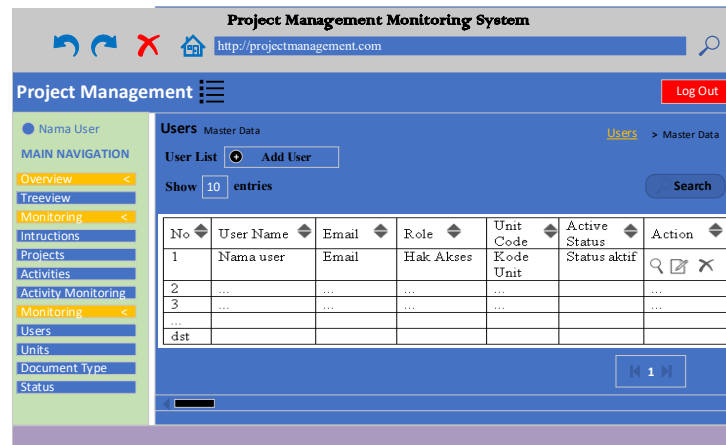


Fig 7. User Page Prototype

Figure 7. is a page design for adding users, we're on the menu you can add users. The user data contains the user's name, email address, access rights (according to the position and task), the unit code of the user, the user's active status or not, and the action (view, edit, delete).

**E. Discussion**

The design of the Project Management Monitoring System Application in the ERP Project Management Unit must pay attention to factors related to the system running within the company. In this case, the author adjusts to the wishes of stakeholders, starting from the current system analysis process, problems, and alternative solutions to problems encountered, as well as making user requirements as outlined in the elicitation. It is intended that the performance of the ERP Project Management Unit in monitoring projects can be more effective, efficient, and optimal.

In designing this system the researcher designed a number of inputs to the program such as testing examples on each menu and sub-menu. If the data input is incomplete, the system will display a message that provides information about deficiencies or errors in data input. This is very helpful for application users if later this design is implemented into a system so that users can provide input according to the data required by the system for further processing to produce useful information for project management monitoring.

### 3. CONCLUSION

The conclusions from this research:

1. The project management monitoring system that is currently running is still semi-computerized, meaning that there are still manual activities such as recording activities carried out and reporting processes that are still being carried out by correspondence using official paper media.
2. The project management monitoring system that is currently being implemented is still not running well, because the activity reports sent by each sub-unit use different formats. In other words, no standard reporting format has been set. This adds to the work of the Project Management Administration Staff in compiling sub-unit activity reports.
3. This application design can also provide positive input and added value for management by producing a monitoring overview of the entire project being implemented as a follow-up to the instructions or directives given. From the results of this overview, Management can analyze the strengths and weaknesses of the projects that have been implemented so that Management can forecast the activities that will be implemented in the future.

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