Software Engineering on Daily Activities and Fuel Consumption Report at PT. Energate Prima Indonesia

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Abstract

Software engineering is a field of science which explores device development techniques focusing on the principle of engineering which aims to achieve the objectives of a device that is valuable, efficient and effective in accordance with the needs of users. The probblem that occur in the process of daily activities and fuel consumption report of PT. Energate Prima Indonesia is still conducted conventionally, there is no information system that can support business processes efficiently, lack of security, the reporting process is considered slow for users. The purpose of this research is to develop the software engineering in Daily Activities and Fuel Consumption report at PT. Energate Prima Indonesia. In an effort to help business processes based on user needs. In the software process that is built in this research, used the Spiral model process. The spiral model is the right process to be implemented in the construction of software systems for the Daily Activities and Fuel Consumption Report at PT. Energate Prima Indonesia the stages of the spiral model used in this study are 1. Planning 2. Risk Analysis 3. Engineering 4. User Evaluation. The results of the development software engineering system in daily activities and Fuel Consumption Report at PT. Energate Prima Indonesia has evaluated the results of engineering based on user needs and then performed Software testing using the Black BoX method.

Keyword- *RPL, Spiral Model, System*

Abstrak

Rekayasa perangkat lunak merupakan suatu bidang ilmu yang mana mendalami teknik pengembangan perangkat berfokus pada prinsip reakayasa yang bertujuan untuk mencapai tujuan suatu perangkat yang bernilai, efisien dan efektif sesuai dengan kebutuhan pengunan. Permasalahan yang terjadi pada proses daily activities dan fuel consumption report PT. Energate Prima Indonesia masih dilakukan secara konvensional, tidak adanya sistem informasi yang dapat menunjang proses bisnis secara efesien, kurangnya tingkat keamanan, proses laporan dinilai lambat bagi pengguna. Tujuan dari penelitian ini adalah membangun rekayasa perangkat lunak Daily Activities dan Fuel Consumption report Pada PT. Energate Prima Indonesia. Dalam upaya membantu proses bisnis berdasarkan kebutuhan pengguna. Pada proses perangkat lunak yang dibangun penelitian ini menggunakan proses model Spiral. Model spiral merupakan proses yang tepat untuk diimplementasikan pada pembangunan rekayasa perangkat lunak sistem Daily Activities dan Fuel Consumption Report Pada PT. Energate Prima Indonesia Tahapan-tahapan model spiral yang digunakan pada penelitian adalah 1.Perencanaan (Planning) 2. Analisis resiko (Risk Analysis) 3.Rekayasa (Engineering) 4. Evaluasi Pemakai (Customer Evaluation).hasil dari pembangunan rekayasa perangkat lunak sistem Daily Activities dan Fuel Consumption Report Pada PT. Energate Prima Indonesia telah dilakukan Evaluasi terhadap hasil rekayasa Berdasarkan Kebutuhan Pengguna dan kemudian dilakukan Pengujian Perangkat Lunak dengan mengunak metode Black BoX.

Kata kunci- RPL*, Model Spiral, Sistem*

1. INTRODUCTION

The Development of software or information technology in a company, it can be able to help the business process of a company's business efficiently and can increase the company's productivity performance so that companies that develop technology can compete globally. The development of software engineering previously explained the relationship of relations to the needs and architecture. The software requirements obtained were applied to software architects in order to develop architectures that meet the needs as targeted [1]. Software requirements engineering is an important thing in the device engineering process flow [2].

Software engineering method is a discipline that discusses all aspects of software production, starting from the initial stages of finding information, analyzing all user needs, defining user needs, prototype development design, evaluation systems [3]. Meanwhile according to [4] the software engineering research method has a sequence and stages that are systematic and structured.

PT. Energate Prima Indonesia is a company engaged in the field of port services (Terminal Coal) located in the Penambat village of Penukal Abab Lematang Ilir Regency. In addition, PT. Energate Prima Indonesia and also engaged in providing access to the port, from Dewa Sebane Village to Perambat Village in Penukal Abab Lematang Ilir Regency, South Sumatra Province, making new roads from Jetty Harbor to Perambat Village is a project of PT. Energate Prima project. In Figure 1. a map of PT Energate Prima Indonesia's new road project is explained.

Figure 1 Map of Pt Energate Prima Indonesia'a New Road Project

According to Merianto as the Fuel Admin, there are currently 18 units of heavy equipment, 9 units of generators, 16 units of dump trucks and 6 units of light vehicles (LV) for company operations, which are involved in the project of making new roads and maintenance of special roads for PT. Energate Prima Indonesia, So that the reporting of daily activities and the use of fuel for the new road construction project of PT. Energate Prima Indonesia and existing road maintenance activities are needed to be able to monitor project activities and report on the use of fuel oil continuously. The following diagram shows the use of fuel oil at PT. Energate Prima Indonesia for 2017 with a total fuel consumption of 681,092 liters.

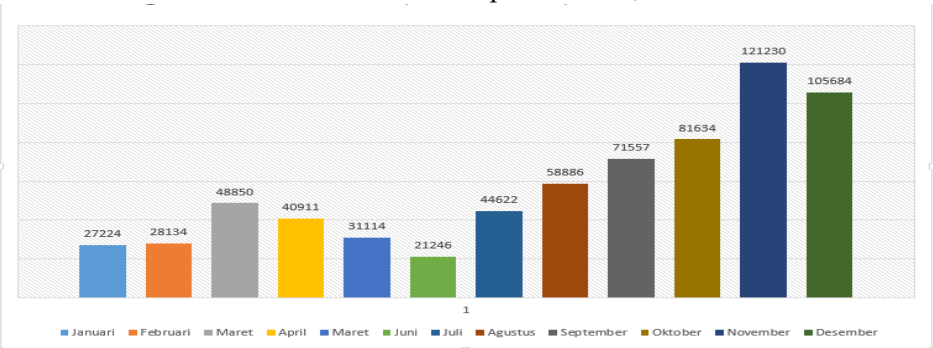


Figure 2. Fuel Usage Diagram for 2017 Period

So far, PT. Energate Prima Indonesia records daily activities and fuel used, using Microsoft Excel. But in the recording process, the authors see the limited knowledge of the admin fuel on the formula (formula) in Microsoft Excel so that the use of Microsoft Excel for recording daily activity reports and fuel consumption becomes less the maximum and the number of sheets that must be input makes the process of recording slow, it also often results in errors when entering data and data storage is not yet efficient because it is still stored in the form of computer files so that if the computer is damaged the files will also be damaged and can not be accessed if you do not have softcopy of the report file. In addition to the obstacles in recording reports, constraints of the slow submission of data from the field in this case by foreman (field supervisor) becomes the thing that makes the recording of reports on daily activities of the project and the use of fuel oil is not on time. So we need an application that can facilitate the process of recording and make storage more efficient and effective and provide ease of sending data from the field.

Based on the problems above, the authors took the initiative to provide a solution by building "Daily Activities Software Engineering and Fuel Consumption Report At PT. Energate Prima Indonesia Website Based" Daily activities engineering software that was built using the Spiral Model, Spiral Model is very suitable to be applied for system development that focuses on evaluation and risk analysis [5]. The results achieved in accordance with the work program and the accuracy of the required software engineering needs, the system achieved will be evaluated and improved to the expected point.

2. RESEARCH METHOD

2.1. System Development Method

System Development Method in this study using the spiral method which consists of four stages can be seen in Figure 3.

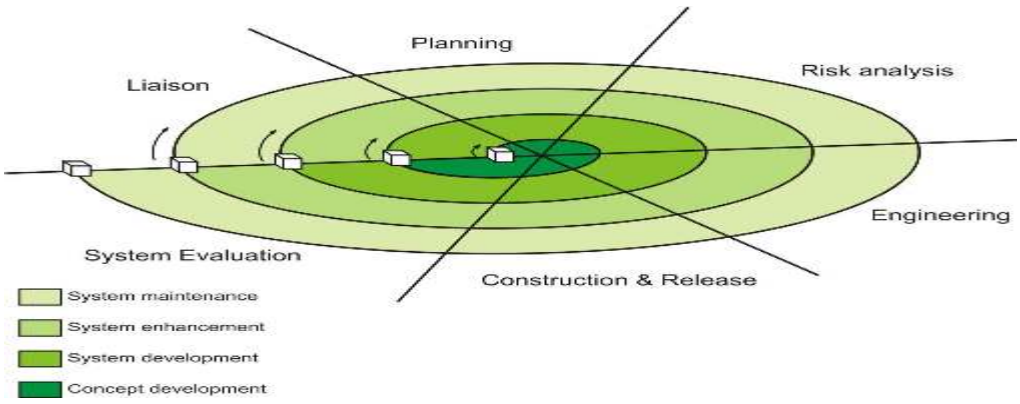


Figure 3 Spiral method

It is a software process model that combines the repetition form of the prototyping model with the control and systematic aspects of the linear sequential model, with the addition of a new element, namely risk analysis [6]. This model has four important activities [7] here it is:
The stages used in the study are as follows:
1. Planning (Planning)
2. Risk Analysis.
3. Engineering (Engineering)
4. User Evaluation (Customer Evaluation)

2.2 *Framework*

The framework in this study can be seen in Figure 4. below:

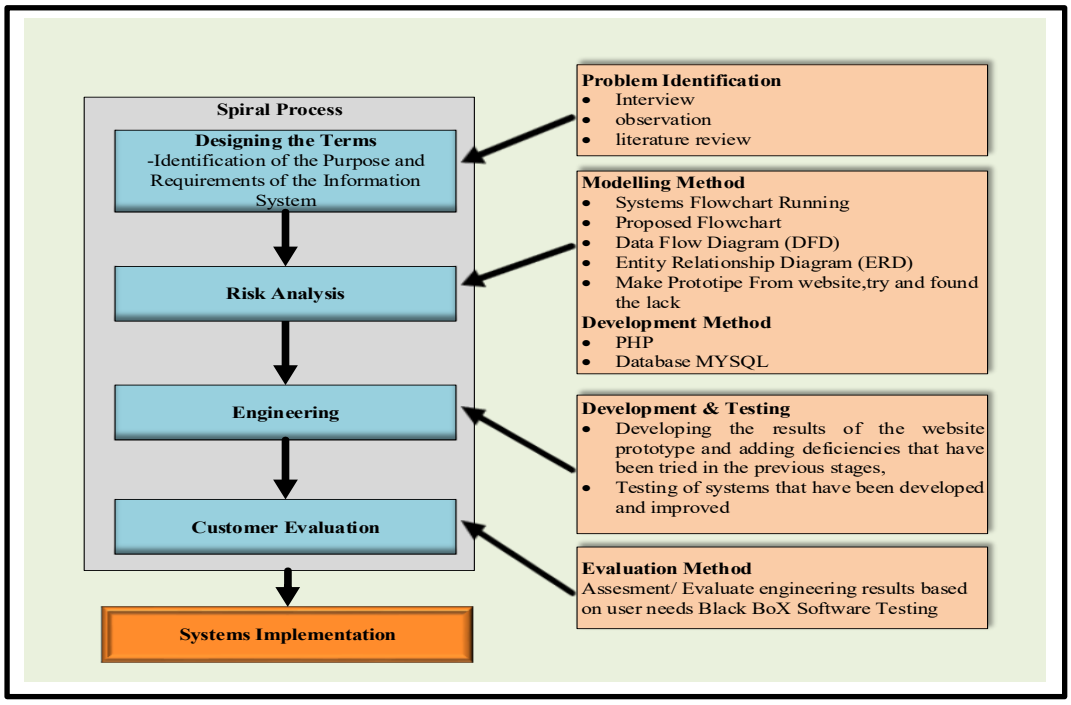


Figure 4 Framework

2.2.1. Planning (Planning)

In the process of identifying the goals and requirements of the system the researcher identified the problem with the method:

1. Interviews with related parties Studying business processes that occur.
2. Observation of the course of business processes to get a detailed picture in the field in order to get clear data.
3. Literature studies Researchers are embarrassing about gathering the need for supporting theories.
4. fter the identification is frozen then the identification results are referred to in the process of determining objectives, alternatives, and limitations in the process of developing the Software Engineering Daily Activities and Fuel Consumption Report at PT. Energate Prima Indonesia.

2.2.2. Risk Analysis

In the process of risk analysis is obtained from the data that has been done in the planning process, then carried out the Risk Analysis stage using the modeling approach as follows:

1. Running System Flowchart
2. Proposed System Flowchart
3. Data Flow Diagrams (DFD)
4. Entity Relationship Diagram (ERD)

After modeling, proceed with making a prototype which is then tested and reviewed the shortcomings of the system. The Development Method used with the PHP programming language and MYSQL database [8].

2.2.3. User Evaluation

In this process, development & testing is done, then develop the results of the system prototype software engineering and add deficiencies that have been tried in the previous stage n, then researchers do testing of the system that has undergone development and improvement.

Methods of evaluation of engineering results based on user needs and carried out Black BoX Software Testing [9].

3. RESULTS AND DISCUSSION

3.1 Proposed Procedure

The proposed procedure in the modeling of the Engineering activities of daily activities and fuel consumption report on Pt. Energate Prima Indonesia. Can be seen in figure 5-8.

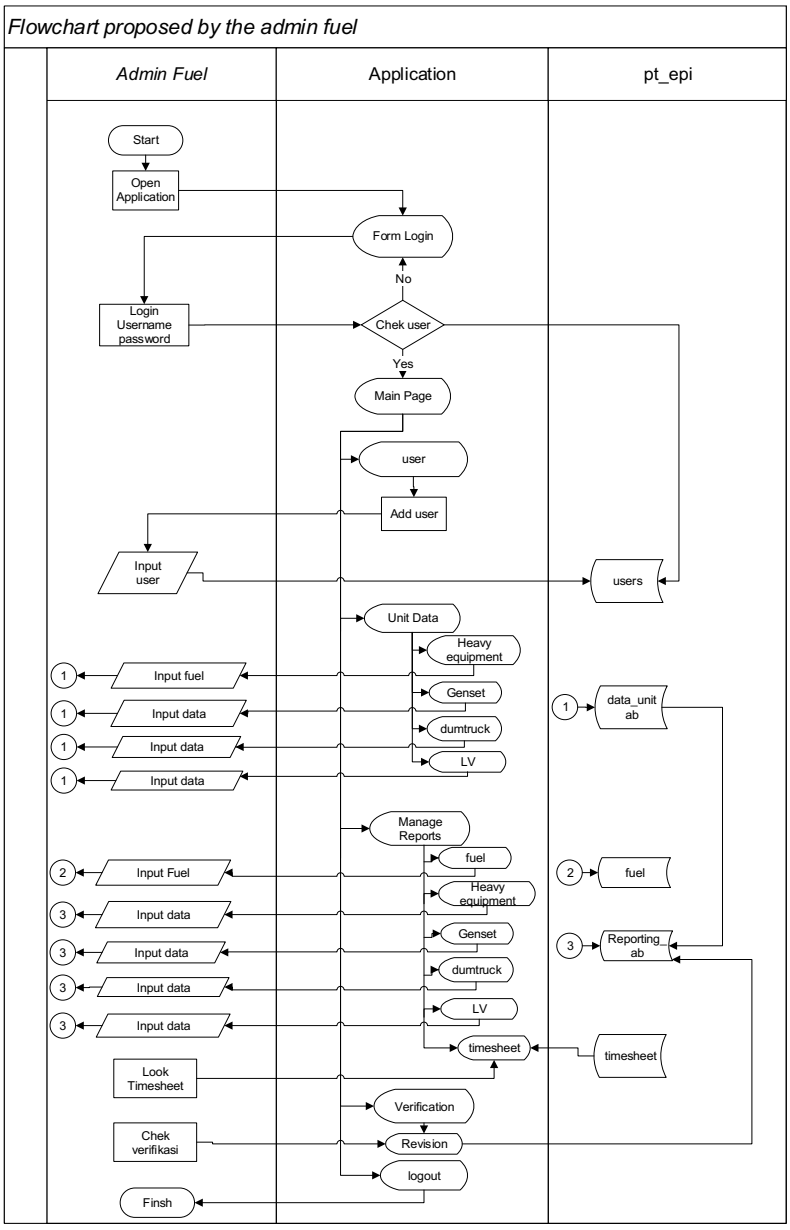


Figure 5 Proposed Flowchart Admin Section

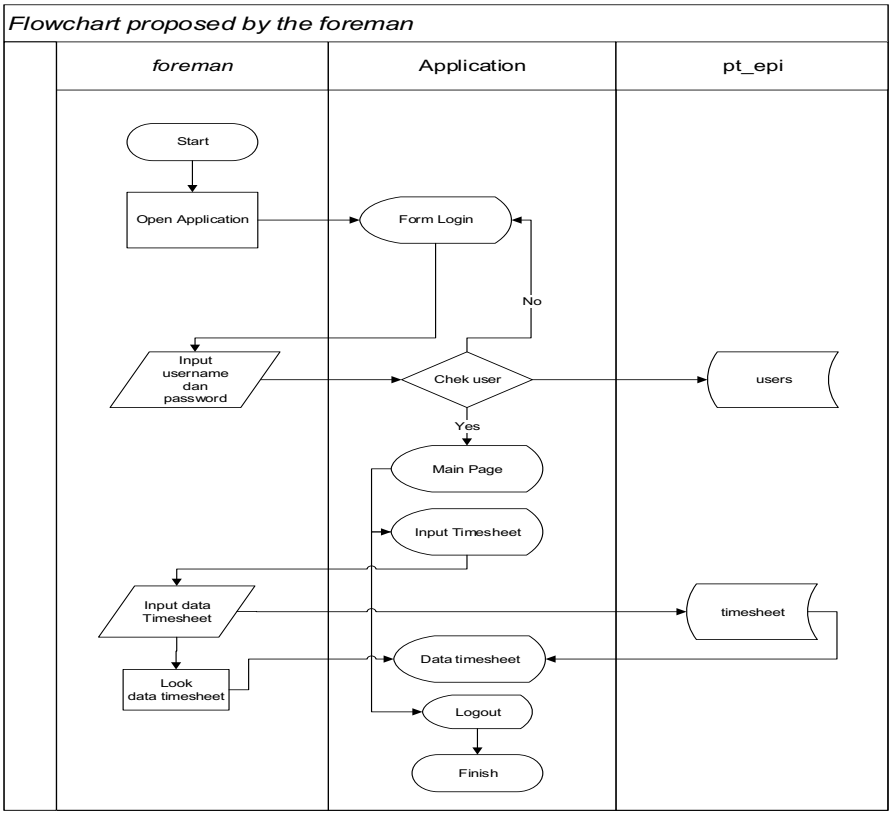


Figure 6 Flowchart Proposed Foreman Section

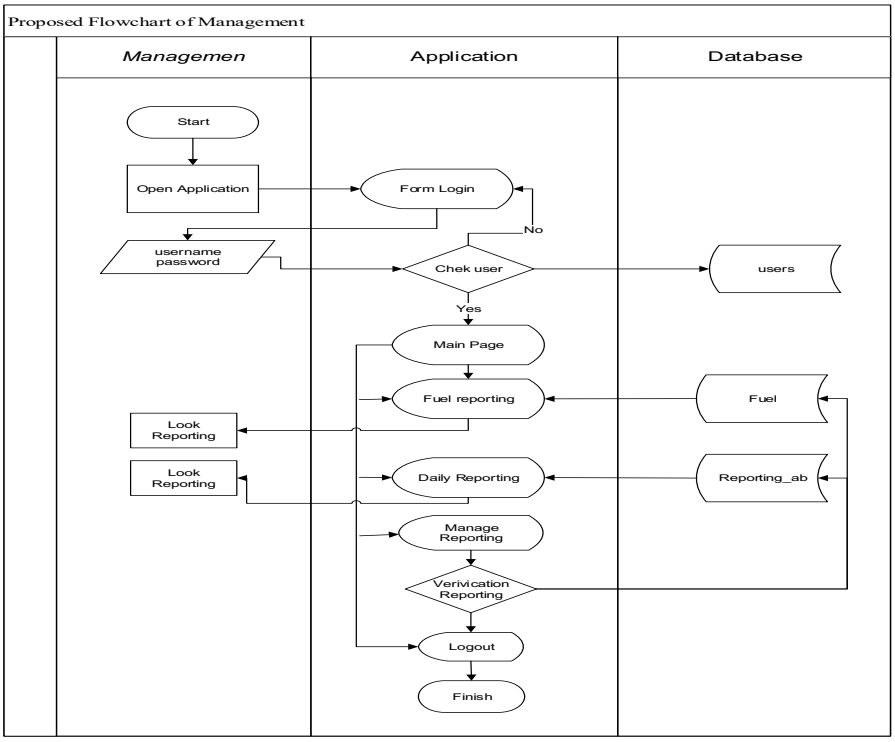


Figure 7 Proposed Flowchart of Management

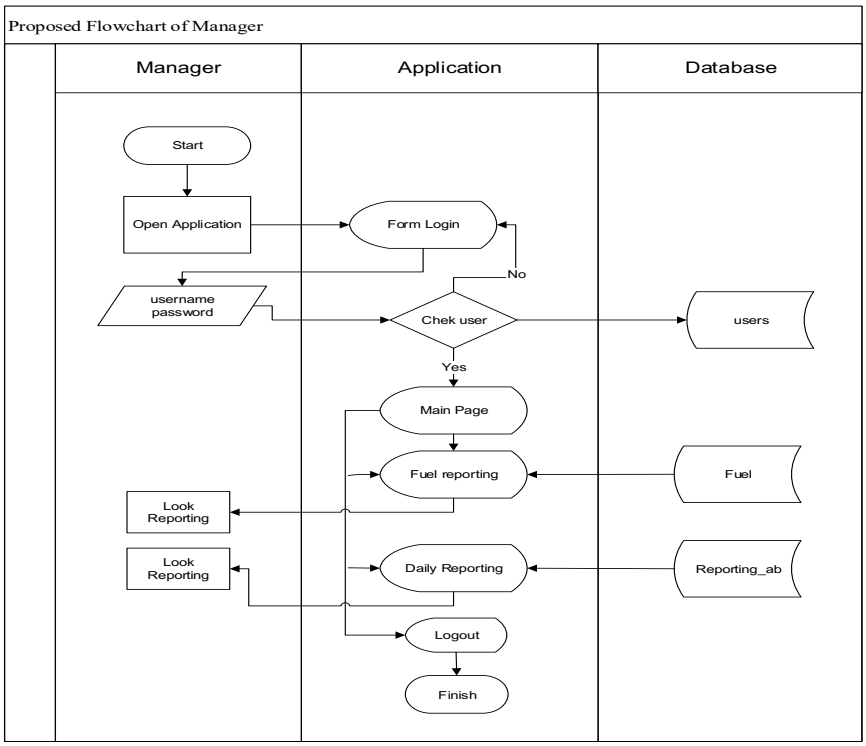


Figure 8 Proposed Section Manager Flowchart

3.2 Data Flow Diagrams

Data flow diagrams on modeling Engineering activities of daily activities and fuel consumption report on Pt. Energate Prima Indonesia.

1. Context Diagram

Context diagram is a diagram that illustrates a large part of the flow of data flow Data Flow Diagrams Software engineering daily activities and fuel consumption report on pt. Energate prima Indonesia, can be seen in Figure 9.

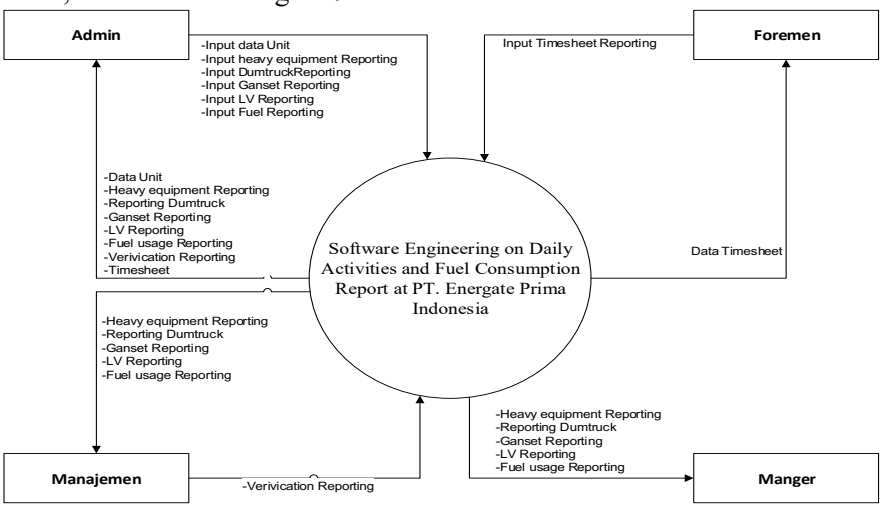


Figure 9 Context Diagram

2. Level 0 diagram

Level 0 diagrams are a description of the whole main process in more detail than context diagrams. The level 0 diagram can be seen in Figure 10.

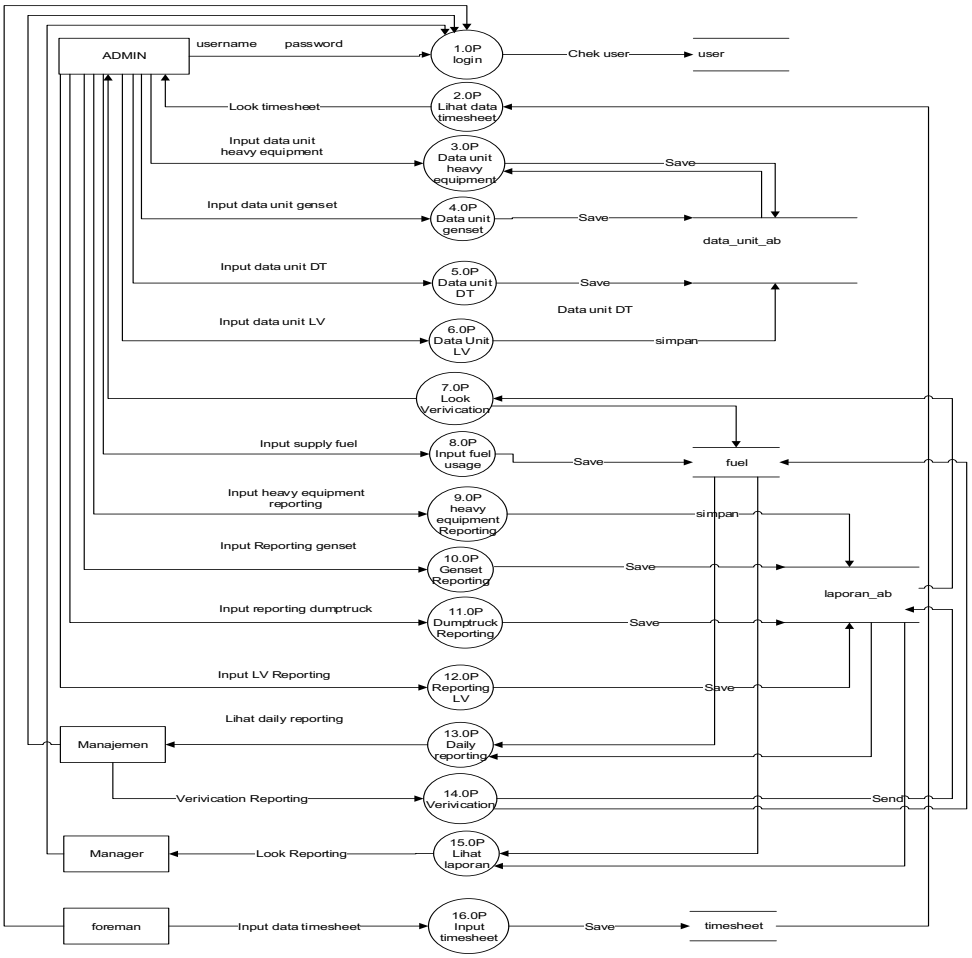


Figure 10 Data Flow Diagrams

3.3 Entity Relationship Diagram (ERD)

The following is a picture of the Entity Relationship Diagram (ERD) which contains the components of the entity set and the set of relations Software engineering daily activities and fuel consumption report on Pt. Energate Prima Indonesia, can be seen in Figure 11.

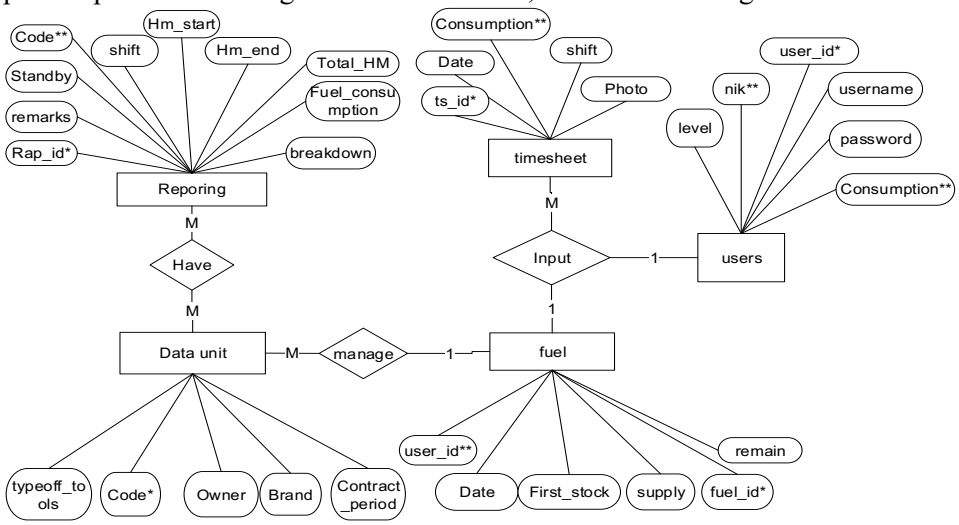


Figure 11 Entity Relationship Diagramsa

3.4 Development

In the construction of software engineering daily activities and fuel consumption report on Pt. Energate prima Indonesia. Using the PHP programming language. And the MySQL database. The results of the development can be seen as follows:

3.5 Main Page Display

This view contains the home menu, users, data units, daily reports, verification, and logout. Display the main page for Admin as shown in Figure 12.

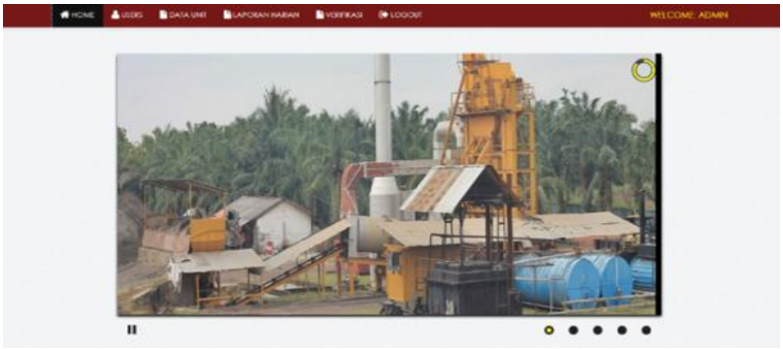


Figure 12 Display the Admin main page

3.5.1 Display Unit Data Menu for Admin

This view contains submenus for adding heavy equipment, generator sets, dumptruck and LV data units. The display unit data menu as shown in Figure 13.

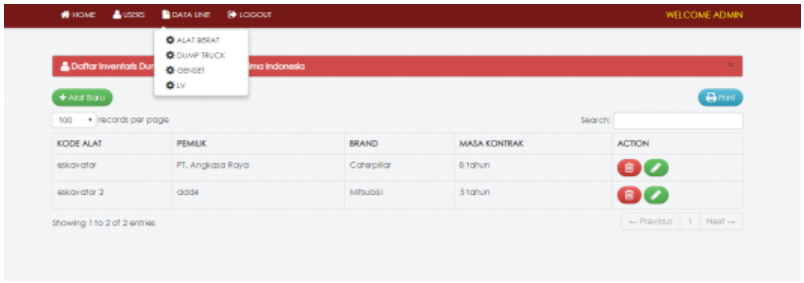


Figure 13 Display unit data menu

3.5.2 Daily Report Menu Display

This view contains a list of daily reports that have been input and sub menus for inputting daily reports. The daily report menu display as in figure 14.

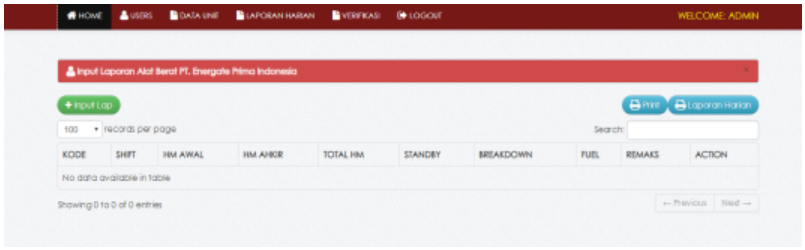


Figure 14. Display of daily reports

3.5.3 Display Report Input Menu

This view contains a form for inputting daily reports. The daily report menu display as in figure 15.

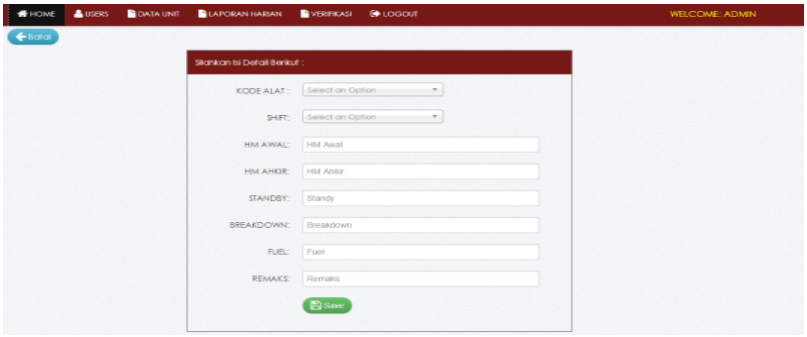


Figure 15 Display daily report

This view contains a form for inputting fuel usage reports. The daily report menu display as in figure 16

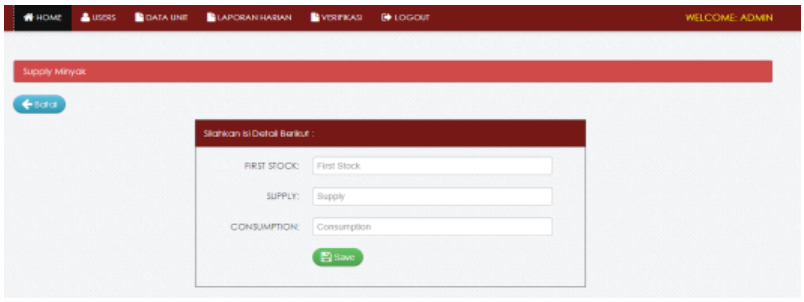


Figure 16 Display of daily reports

3.5.4 Verification View

This display is to see whether the reports that have been input need to be revised or not The daily report menu displays as shown in Figure 17.

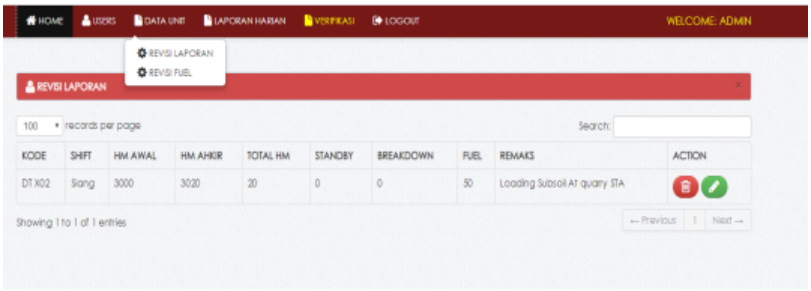


Figure 17 Display print fuel report

3.5.5 Display Timesheet Input for Foreman

This view contains a form for inputting timesheet data. The daily report menu display as shown in figure 18.

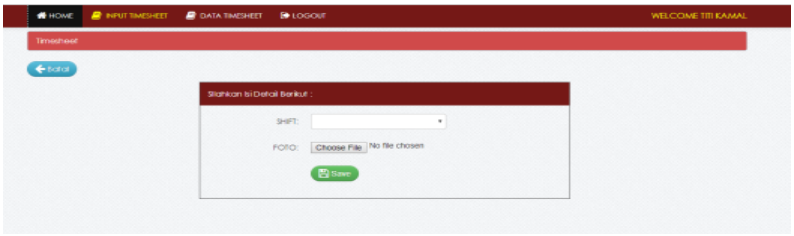


Figure 18 Display timesheet input

3.5.6 Daily Report Menu Display

This view contains a list of daily reports that have been inputted by the admin. The daily report menu display as shown in figure 19-23.

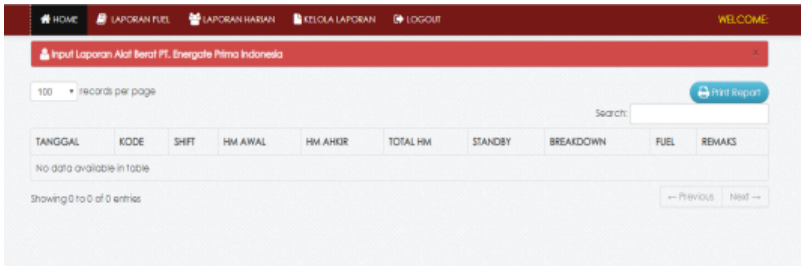


Figure 19 Display of daily reports.

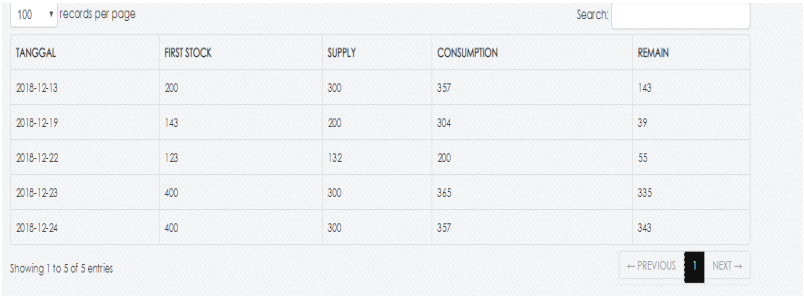


Figure 20 Daily report display

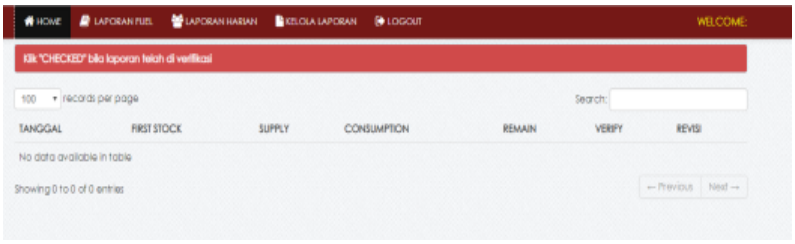


Figure 21 Manage Report display

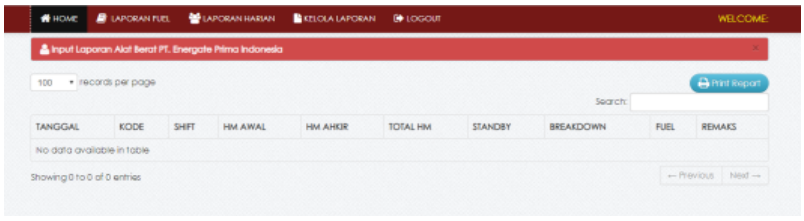
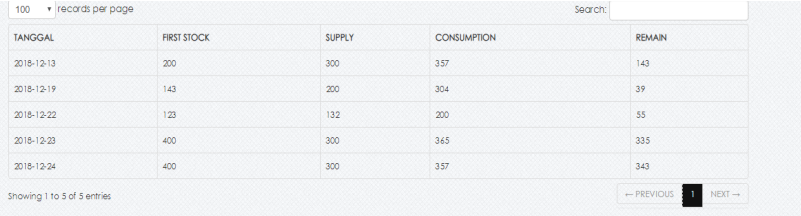


Figure 22 Daily report display


100 records per page Search:

TANGGAL	FIRST STOCK	SUPPLY	CONSUMPTION	REMAIN
2018-12-13	200	300	357	143
2018-12-19	143	200	304	39
2018-12-22	123	132	200	55
2018-12-23	400	300	365	335
2018-12-24	400	300	357	343

Showing 1 to 5 of 5 entries ← PREVIOUS 1 NEXT →

Figure 23 Fuel report display

4. CONCLUSION

Development sytems of the Daily Activity and Fuel Consumption Report use a spiral model process, with stages: 1. Planning 2. Risk Analysis 3. User Evaluation 4. User Evaluation (Customer Evaluation). The modeling method applied: 1. Running Flowchat Systems 2. Flowcharts 3. Data Flow Diagrams (DFD) 4. Entity Relationship Diagrams (ERD). The system development uses PHP programming language and MYSQL database development. Method of Evaluation of engineering results based on user needs and carried out Software Testing using Black BoX testing. Software Engineering for the Daily Activity and Fuel Consumption Report at PT. Energate Prima Indonesia has been periodically evaluated by users and then tested by using the Black Box software. So that a system of Daily Activity and Fuel Consumption Report was developed at PT. Energate Prima Indonesia a complete and effective system that can be implemented.

5. SUGGESTIONS

The suggestions are in the software engineering daily activity and fuel consumption report at PT. Energate Prima Indonesia can be developed into a realtime system in the recording of field activity reports with a Barcode scan system.

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