

Design of Employee Archive Application using Extreme Programming Model at PT. PLN Persero Wilayah Suluttenggo

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Abstract: The purpose of this study is to design and build an employee archive application of PT. PLN Suluttenggo Regional Corporation. The software built in this study uses the extreme programming model approach. The results, this application is able to present a series of benefits in the dossier filing process at PT. PLN (Persero) Suluttenggo region. This archive application system is able to increase the effectiveness of data usage, ease data access, facilitate employees in reviewing dossiers, while providing security as a function as manual data back-up.

1 INTRODUCTION

Every government or private agency has its own archive management system, whether it is a centralized model, decentralization or a mixed archive management model (Bountouri, 2017). The principle of centralization in archive management is characterized by a centralized archive storage model on a particular unit or central filing (Bhandarkar et al, 2016). This means that all archives of all units within an agency/office are stored centrally in one particular place/unit. In other words, under a centralized system, all files in the organization are submitted in one place. In contrast, the archive management system with the principle of decentralization is marked by the authority of each unit / department to manage and store archives. This means that filing is carried out in each department independently. The combination of these two principles, decentralization and centralization, can be referred to as the mix approach to managing archives.

PT. PLN (Persero) in the Suluttenggo region as the main object of this research, manages its archives with a centralized principle, as well as managing personnel dossiers. According to The Great Dictionary of the Indonesian Language, dossiers are defined as all documents or files regarding a case or affair (Sugono, 2008). This dossier contains various

personnel data that are arranged chronologically, consisting of; application data, family data, education data, personnel tax and emoluments data, award data, penalty data, assignment data, job data, rank data, and personnel specific data.

The dossier filing system at PT. PLN (Persero) in the Suluttenggo region is considered not effective and efficient. PT. PLN (Persero) in the Suluttenggo region has a total of 1557 personnels, consisting of 1367 men and 190 women. With a large number of personnels, the company currently does not provide backup media to support the personnel data which is still in the form of hardcopy documents. Storage of personnel dossiers is done manually using a shelf, which is arranged based on the personnel's birth year. Each shelf consists of several orders-maps and each order-map contains archives of different personnel.

Conventional/manual storage system causes the archive/data search process to be excessive time consuming (Krisnanda et al., 2018) and has a high complexity. The conventional/manual system has an impact on the low effectiveness of data usage and access, and increases the potential data loss or data damage due to no back-up. Therefore a system to store and manage records of personnel dossiers effectively and efficiently becomes necessary. Through this research, the requirements required to build an archive management software for personnels

of PT. PLN (Persero) in the Suluttenggo region, will be reviewed and designed meticulously.

This research sought to documenting the building process and carry out continuous testing in software engineering. Through this research, a specific software will be developed for PT. PLN (Persero) in the Suluttenggo region, which serves to backup archival data, which are safer and more accessible to personnel's.

2 METHODS

The software built in this study uses the extreme programming model approach. That is an approach in software development to improve and simplify a project to become more flexible (Anwer *et al.*, 2017). According to Pressman, the extreme programming model framework is divided into four main activities, namely; planning, design, coding and testing (Pressman, 2001). These four activities will produce a software based on the extreme programming model concept as shown as Figure 1.

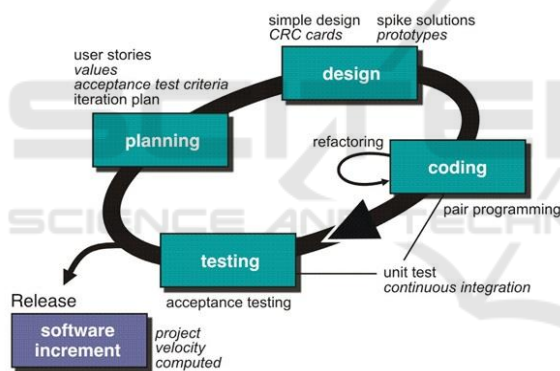


Figure 1: Extreme Programming Framework.

1. Planning

Planning is focused on getting an overview of the features and functions of the software to be built. Planning activity begins by collecting the images or stories given by the client, which will be the basic description of the software. A series of images or stories are collected in an index, where each point has its own values and priorities. Then the application development team will determine the estimated time and costs required for each index. After all needs are met, the XP team will determine the workflow of software development before starting task development. During the software development process, clients can evaluate plans for software design. The XP team will take into consideration, when the client

wants to make certain changes (from the plan), before changing the features and functions of the planned software.

2. Design

Design process aims to set the logic patterns in the system. A good application design is able to reduce dependence between each process on a system. If one of the features of the system fails, it will not collapse the system as a whole. The design phase in extreme programming can be considered as a technical guide in building software based on the results of the planning phase. In XP, the design process occurs before and after the coding activity takes place. That is, design activities are carried out continuously during the application development process.

3. Coding

After completing the basic overview of the software and compiling the overall application design, XP recommends the creator team to prepare a test unit module to test the features and functions of the software, in accordance with the description and visualization expected by client. After the various test units have been completed, the team activities continues to the intensive writing of programming code (coding). XP applies the concept of Pair Programming where each task of a module is developed by two programmers. XP perspective assesses 2 people will be faster and better in solving a problem. Furthermore, the completed application module will be combined with the main application.

4. Testing

Although initial testing/trials have been carried out at the coding stage, XP requires testing of the entire application system. XP strictly requires to keep checking and fixing all problems that arise, even if it's just a small problem. Furthermore, each developed module will be tested first with a previously designed unit test module (Sasmita, 2014), until it truly shows satisfying performance.

3 RESULTS AND DISCUSSION

Employee personal data for special needs. Prototype design of dossier application system at PT. PLN (Persero), especially in the Suluttenggo region performed with extreme programming model approach. Figure 2 shows the following stages:

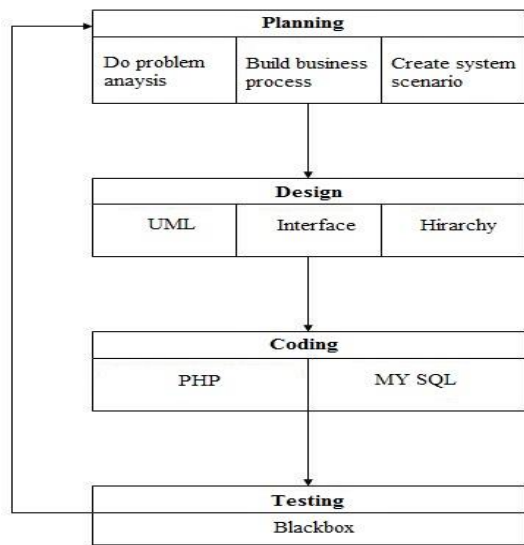


Figure 2: Extreme Programming Phase.

An explanation of the stages of the extreme programming model in this study, consisting of the phases of planning, design, coding and testing.

1. **Planning :**
This is the most crucial stage, must be able to capture and understand user criteria, as well as software development planning. At this stage there are three things that need to be done, namely; do a problem analysis, build a business process, and the last is to make an iteration plan.
2. **Design :**
The design and work plan is followed by the development of application design which is detailed in three stages, namely making Unified Modeling Language (UML), interface and hierarchy.
3. **Coding :**
This phase is preparing a unit test that is used as a reference for programmers to create applications. This application system development process is done using the PHP programming language and MySQL database.
4. **Testing :**
At this stage the testing was carried out using the Blackbox software testing.

The design results of personnels dossier application system at PT. PLN (Persero) Suluttenggo region, presented in the following details:

1. Login interface design

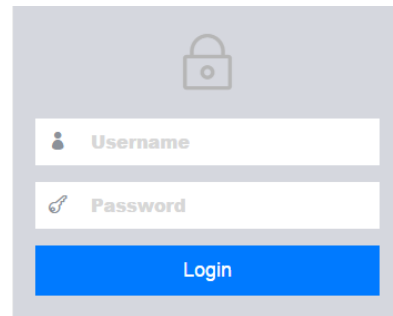


Figure 3: Login interface design.

Figure 3 shows user interface logins appear before users manage and view data in the application. The login process serves to verify every user who will access the application. Users can login only if they are registered as verified users in the system.

2. Home Interface

After logging in, the user will be directed to the home page. Figure 4 and Figure5 show the home interface. The home page contains information about storing dossiers and information about PT. PLN (Persero) Suluttenggo region.

3. Dossier Data Display

Personnels dossier application system is built to meet user needs, therefore the dossier data Figure 6 shows an example of a list of data displays related to employee application data in the company.



Figure 4: Home Interface

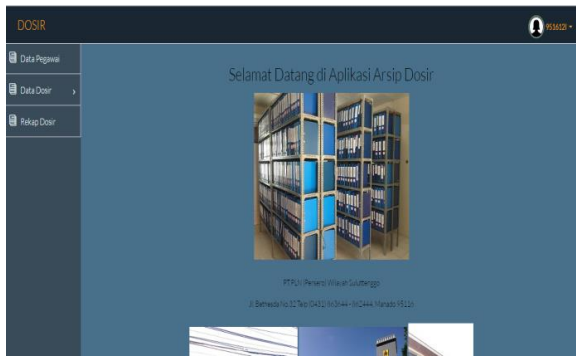


Figure 5: Home User Interface

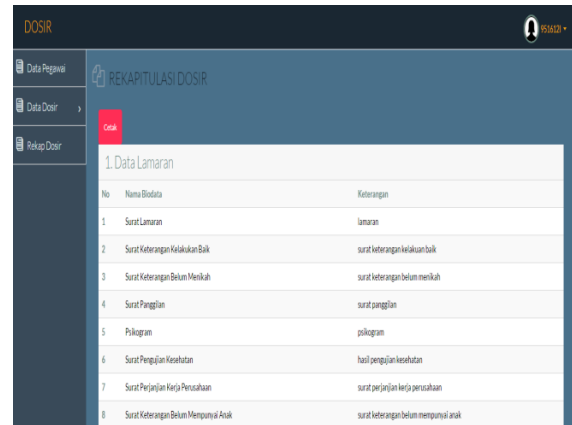


Figure 7: Dossier Recapitulation Report

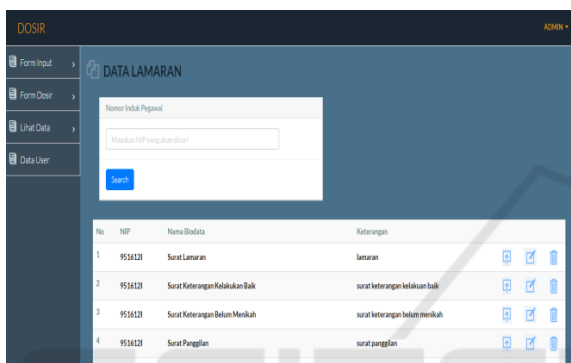


Figure 6: Dossier Data Display

The download feature serves to speed up the access to dossier data in the company, compared to the manual system that is currently still used. Of course this feature will increase the speed of access to data, in a much easier way.

4. Display of Dossier Recapitulation

Besides giving users access to download dossier data, this application also provides an option for users to print dossier recapitulation reports. Recapitulation of dossiers contains a series of data personnel, ranging from application data to current identity data as shows in Figure 7. This feature serves to show what data has been submitted by employees to the company. Furthermore, the dossier recapitulation report can only be printed by the data owner.

This dossier recapitulation feature provides easier access for personnel of PT. PLN (Persero) in reviewing the completeness of their personal data. On the other hand, it also makes it easier for companies to review data, or manage

4 CONCLUSION

Dossier application system developed in this study is able to present a series of benefits in the dossier filing process at PT. PLN (Persero) Suluttenggo region. This dossier application system is able to increase the effectiveness of data usage, ease data access, facilitate employees in reviewing dossiers, while providing security as a function as manual data back-up.

PT PLN (Persero) Suluttenggo application system dossier can now be used by users. This dossier application system development process applies the extreme programming model, with four phases: 1) In the planning phase, researchers conduct problem analysis related to research, then build a business process and create a iteration plan; 2) In the design stage, researchers make UML design consisting of use case diagrams, class diagrams, activity diagrams and sequence diagrams, followed by user interface design and create a hierarchy of processes; 3) In the coding stage, researchers implemented coding with the PHP programming language and MySQL database, and 4) In the final phase, researchers applied software testing through blackbox software.

This research has several limitations, especially in the absence of several features in the system. Therefore, several suggestions were issued to complement the shortcomings, while increasing the development of Dossier application system in subsequent studies: Improve the efficiency of the search algorithm; Improve monitoring capabilities by

adding log access features for user activities in the system; Add historical features to store deleted data.

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