The Development of Website Based Jobdesk Document Management System using Agile Method at PT. Pupuk Kujang

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The Development of Website Based Jobdesk Document Management System using Agile Method at PT. Pupuk Kujang

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ABSTRACT

Ineffective storage and not recorded neatly are the reasons for making this system. Taking the name Jobdesk itself was chosen because it is a system that aims to make it easier for employees to send Jobdesk document information and can help the input process digitally. This system is also made not limited only to admins and employees, admins can also create new users and give access to the employees who have positions related to this application. This system has been implemented in accordance with the request from the development department and organization of PT Pupuk Kujang. This system is made based on a website using php language with CodeIgniter 3 framework.

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1. INTRODUCTION

Information Technology is a branch of science in the field of computer science that can provide many alternative solutions for the development of management and automation of data traffic processes in various fields of work. One of the fields that can be implemented with information technology is the field of web engineering. Web engineering is a subdiscipline of software engineering that helps provide methodologies for designing, developing, maintaining, and engaging web applications [1]-[7].

Information system development is defined as an activity to produce a computer-based information system to solve organizational problems or take advantage of opportunities that arise [8]. As the development of the internet is increasingly widespread, the use of websites is increasing. Its development is very rapid in various life activities and provides opportunities to be used appropriately [9]. The rapid development of websites has made people want to create their own websites and develop them so that they can facilitate their activities. So it is the case with PT. Pupuk Kujang where in one of its applications a redevelopment was carried out which aims to make it easier for users to use the application.

Document management system is a system designed to manage quality document information electronically which is managed in an integrated database. This data is obtained from a company or institution from the lower to the upper classes, and can also be accessed by several users who have the rights to access the document [10]. Document management system that is the center of mail archives will always exist in every company or agency, one of which is at PT. Pupuk Kujang where the need for letters will continue to increase and grow over time. One of the issues raised is regarding Jobdesk documents that are still used within the company. However, the operational process has not utilized a computerized system in supporting the performance of the Jobdesk input process. With many documents, there are several problems exist, such as the input of documents that are still done manually, which is still using paper so that the process of searching for Jobdesk document files is inefficient in terms of time. File storage also uses storage that has the risk of documents can be damaged and lost if used for the long term.

Currently, the research related to the development of correspondence archival information systems has been applied in many cases, one of which is in the UPT forest management unit (KPH) [4]. The research shows that the correspondence archival information system has succeeded in overcoming conventional mail archival problems, letter documentation becomes standardized, neater, and well arranged, so that if at any time you want to find mail archives, the letter can be found easily.

Therefore, a computerized system is needed to support a need in Jobdesk document storage. It is because over time, the company must also always update everything that still uses a manual system to become a computerized system following existing developments. So, through this research the author designed a system or application that can help data managers in the relevant departments in inputting documents, assist leaders in analyzing data and provide data when needed.

2. METHODOLOGY
2.1 Data Collection

In analyzing and designing this document management system, we use literature research techniques, interview techniques and observation techniques as data collection methods.

2.1.1 Literature Research

To obtain a theoretical basis related to this research, we conduct literature research by finding literature, books, websites and supporting references related to the system to be developed and supporting theories proposed.

2.1.2 Interview Technique

To collect the information, data collection using interview techniques about the situation and needs with one of the stakeholders in Pupuk Kujang Cikampek Information Technology Service Business Partner (IT PKC) regarding the system designed.

2.1.3 Observation Techniques

The observation techniques were carried out and the data collection process were carried out in the Business Partner of Information Technology Services of Pupuk Kujang Cikampek (IT PKC).

2.2 Software Engineering Method

The agile method was chosen as an object in this study because it offers flexibility [8]. In Agile, a project is attached with uncertainty. This situation forces a project to change all the time. When the market changes, regulatory changes or when feature changes if products start to "go live". Agile manages to embrace this uncertainty well. By breaking a project down into smaller chunks, Agile makes it easier to prioritize and add or remove features even when the project is halfway through. It is something that is very unlikely to be seen in projects that use traditional waterfall methodologies [14]. Agile has the advantage of increasing customer satisfaction ratios. Customer can review about software that was made earlier. It can reduce the risk of non-technical software implementation failure. The amount of loss, either materially or immaterially, is not too large in the event of failure [15].

Agile principles prioritize customer satisfaction through early and sustainable results in creating quality software and being open to changing requirements, even when agile programmers are in a late work phase. This process is utilized by agile teams as a competitive advantage they offer to customers. Agile uses an efficient and effective method of delivering information to the development team through face-to-face conversation. The main measuring tool in seeing the progress that occurs is to see or compare with the current running system. Processes in Agile create continuous development. Sponsors, developers, and users must work together to maintain this fast and continuous program without limits constantly. Continuous attention to technical excellence and robust design is part of the Agile methodology. The simplicity of the art of maximizing the efficient use of resources (reducing the number of idle workers) is important. The best architecture, optimal requirements, and design arise from the organization are called the "self-organizing team". Agile teams will always do their job effectively, always adapting, adjusting, and "fine-tuning" according to their behavior [14].

Figure 1. Agile Development Process

2.2.1 Requirement Analysis

At this stage, the process is to obtain information about the system so that the development of information systems will be made according to the needs.

2.2.2 Planning

At this stage, system planning is carried out to be developed by collecting data on users in the form of direct interviews to get what is needed by users, then a thorough design will be carried out using UML tools and user interfaces by system developers.

2.2.3 Coding

At this stage, the programmer implements the development of the system according to the existing design. The development of this system is web-based using PHP programming language and using CodeIgniter 3 framework.

2.2.4 Testing

At this stage, system testing is carried out to prevent bugs in the system or system failure and validate input and output as expected using black-box testing.

3. RESULTS AND ANALYSIS
3.1 Requirement Analysis

In agile software development, the first stage is needed analysis, where in research needs analysis is carried out with 3 techniques.

3.1.1 Literature Research

This study conducts literature research using literature in the form of company report notes and information system development needs are from company data from the previous reports.

3.1.2 Interview

This study conducted an interview with one of the stakeholders at Pupuk Kujang Cikampek Information Technology Service Business Partner (IT PKC) to collect data and information about the existing system and analyze the information needs of the system to be developed.

3.1.3 Observation

The results of the observations and data collection processes in the Business Partner section of Pupuk Kujang Cikampek Information Technology Services (IT PKC) have several things that will be developed, namely:

Table 1. Observation

A.	Admin Page	
No	Planning	Action Actors
1.	Login admin	Input username and password
2.	Logout	Select logout
3.	View Submission	Search Document
		Delete document
		Edit document
		Create Revisions
4.	E-Dokumen	Search Document
5.	Users	Search User
		Delete User
		Add User and Input Data User
		Reset Password
B.	Halaman AVP	
1.	Login Avp	Input Username and Password
2.	Logout	Select logout
3.	Submissions	Search Dokument
		Add Dokument and input Data Dokument
		Delete Dokument
		Edit Dokument

C.	Halaman VP	
1.	Login Vp	Input Username dan Password
2.	Logout	Select logout
3.	Submissions	Edit Dokumen
		Approval
		Publish / Upload

3.2 Planning

The second stage of the agile development method is planning. At this stage, a picture production of the system that will be created using UML. Besides that, to plan the best results for the Jobdesk application, several discussions were held with the client to determine a user-friendly interface. Since not everyone has an IT background, the client wanted a display that anyone could use. Besides that, the Jobdesk application itself already has a guidebook, so if users are confused about how to create a document, they can read the guide first.

3.3 Use Case

Use case diagrams are interactions between actors and systems in forming a system on a regular basis. In this Jobdesk application there are several actors including Admin, Avp, Vp, Spi, Kp and User. The actors are made based on the position level at PT. Pupuk Kujang and has its own functional duties in this application so that this application can run properly according to the main purpose of the Jobdesk application.
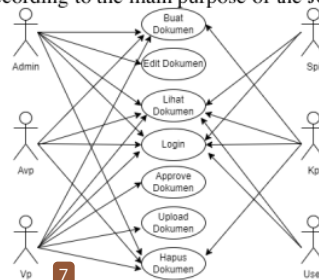

Figure 2. usecase diagram

3.3.1 Activity Diagram

Activity diagram is a diagram that describes the activities of system users from all menus in the designed system. This activity begins with the AVP user to create a Jobdesk document then the admin will review the suitability then make a revision if there is a revision and finally the VP user will approve and publish the document.
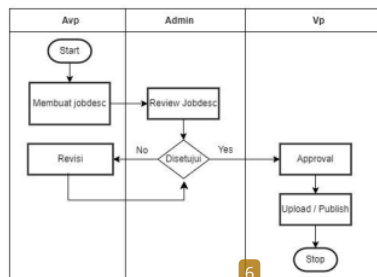

Figure 3. Activity Diagram

3.3.2 Sequence Diagram

Sequence diagram describes an object in a use case by describing the object's lifetime and the messages sent and received between objects. Figure 4 explains the sequence diagram of the Jobdesk application itself. It is starting from the sequence of time needed during the initial process of creating documents then reviewing the suitability of documents until ending with approval and uploading documents.
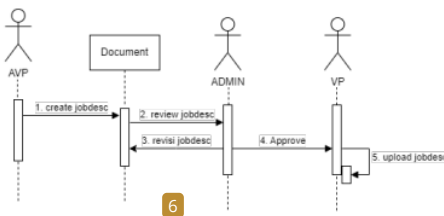
Figure 4. Sequence Diagram

3.3.3 Class Diagram

Class diagrams are UML diagrams that describe the classes in a system and their relationships with each other as well as their attributes and input operations. In this application there are several classes including Users, Notifications, Documents, Sto, New_log_document_view, and Templates. These classes are connected to each other to produce a Jobdesk application system that is good and perfect in its use.
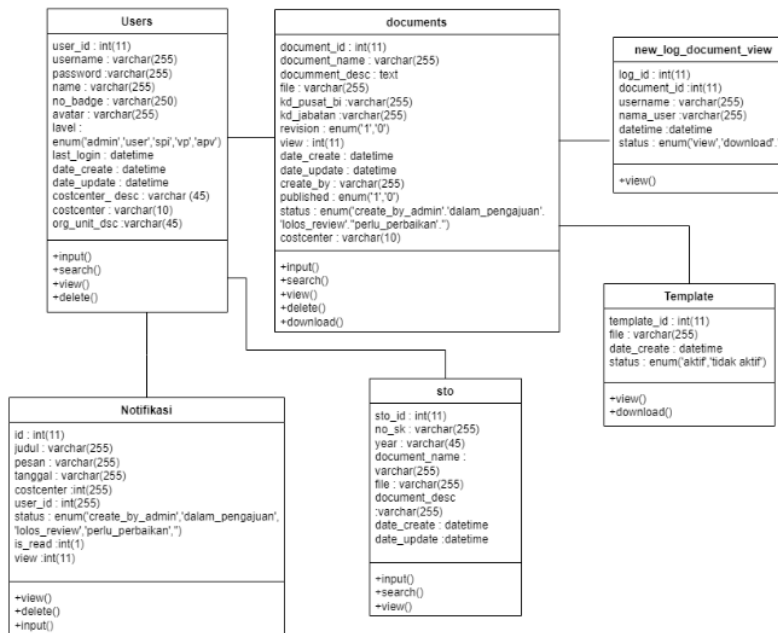

Figure 5. Class Diagram

3.3.4 Flowchart

A flow chart is a chart with special symbols to describe the process in order and detail, as well as the relationship between the process and other processes in the program. So that this flowchart can easily explain the flow of a system, from the beginning to the end. The beginning of the flow of the Jobdesk application is to input no badge and password and then start making Jobdesk, then it will be reviewed if there are revisions. It will be continued to edit the revisions first, if appropriate, it will be approved and uploaded then finished.
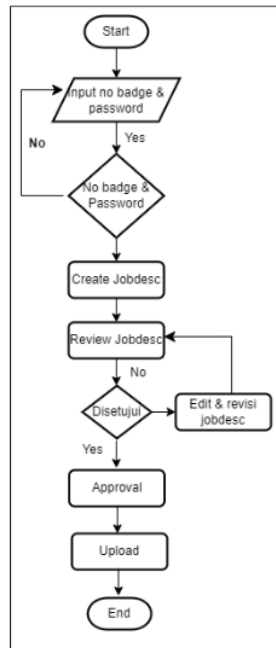
Figure 6. Flowchart

3.4 Coding

The stage after planning is coding. At this stage, it carries out the implementation of the design that has been made in the previous stage. Implementation of these designs is into the form of applications. Here is what the menu looks like from the jobdesk application created.
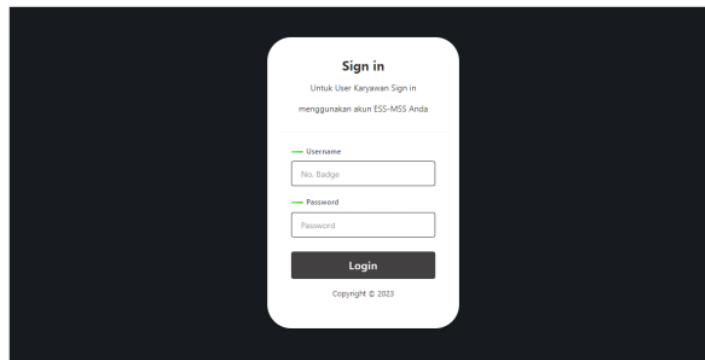

Figure 7. Login

Figure 7 is the display of the login page before entering the application. Users can fill in by entering the employee's no-badge as the username and password that was created before. After logging in, the user will enter according to his level. Figure 8 is the display of the AVP user whose job is to create a new document by clicking submission on the sidebar menu then clicking the add document button to create a new document.
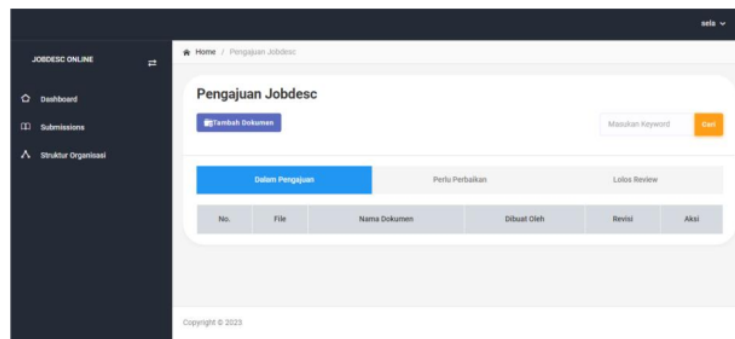
Figure 8. Submission

On the add document page, a form will appear where AVP users fill in the form based on real data from the document to be created. The form is in the form of document name, document description, document options, document purpose, cost center code, position code, cost center code and add files. When everything is filled in, click save then the document will appear on the submission page.
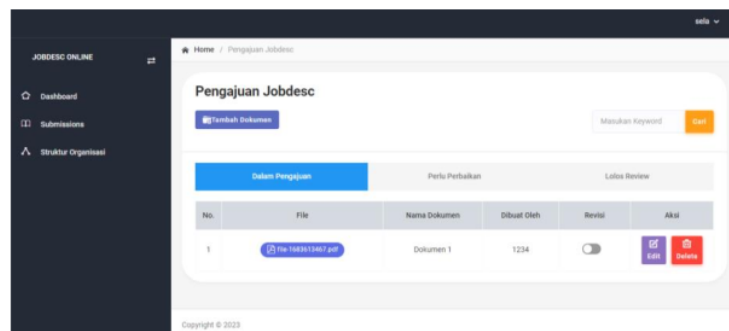

Figure 9. Form 1

Figure 10. Form 2

Figure 11. Document has been created

Furthermore, documents that have been created by AVP users will also appear in the admin user. Then the admin will review the document, if it is not appropriate then the admin will provide revisions and move the document to the part that needs improvement and will automatically be sent to the AVP user to correct

according to the revision from the admin. Figure 12 is an example if the document has revisions, and if you want to see the contents of the revisions click the revision button in the action section.
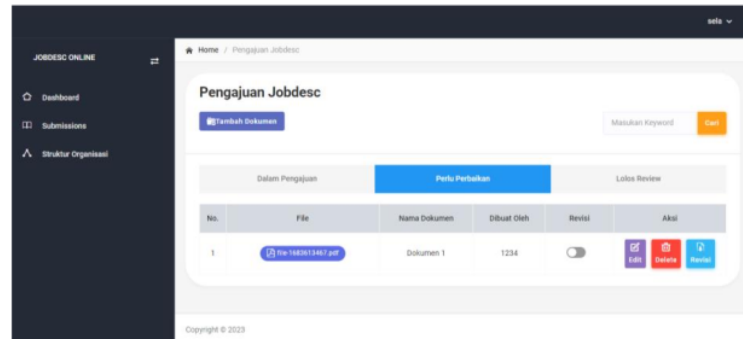

Figure 12. Revision

Figure 13 is a display of the revision contents which contains files, revision messages and actions, where in the action, the user can delete if the document has been revised so that it looks neatly which documents have been and have not been revised.
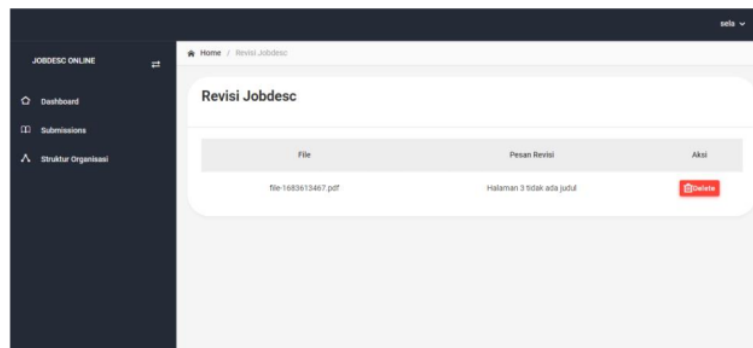

Figure 13. Revision Message

If the revision has been corrected then the document will be sent back to the admin for re-check. If it is appropriate, the admin will change to the pass review section and will automatically be sent also to the VP user where later the VP user will submit and publish the document.
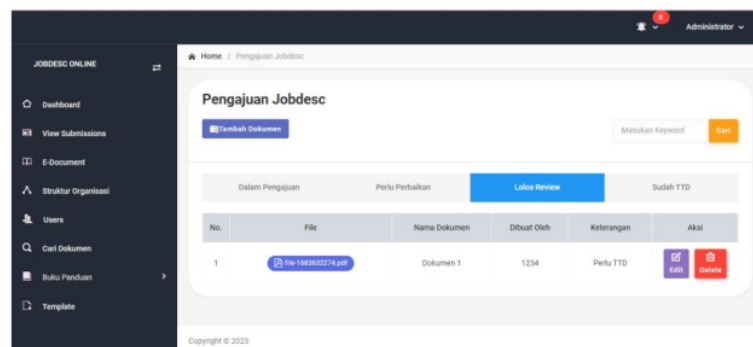

Figure 14. Pass Review

Figure 15 is a view of the VP user to submit documents. There is a Submit button that functions to create a digital Qr-code. Then there is a sliding button that functions to publish or submit documents
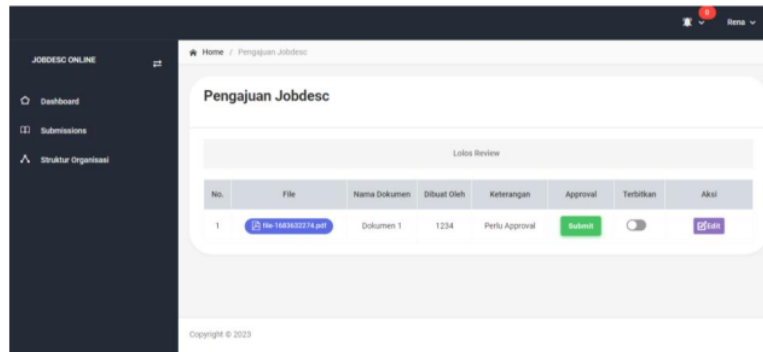

Figure 15. Approval

Before the VP user publishes a document, the document must first be given a digital signature in the form of a QR Code from the VP user badge number which will automatically be saved on each page of the document. After there is a QR Code, the VP user can immediately issue the document. Figure 16 is an example of a document that already has a QR Code.

Figure 16. Qr Code

3.5 Testing

After the system is implemented, then the system is tested to find out whether the facilities in the system produce the output as expected by the user based on the input which is carried out using the black-box testing method to test system functionality [13]. The results of this test are carried out by parts of the admin, avp, vp which will determine whether the system designed is according to what is needed and whether its functionality can be executed according to the data that has been provided

Table 2. System Testing Results

No.	Tested pages	Action Actors	System Reaction		Functional number of successful systems	Persentase (%)
			True	**Wrong**		
A.	**Admin Page**					
1.	Login admin	Enter username and password	Enter the admin dashboard page	Will return to the login page and there is a description (incorrect username and password)	2 of 2	100 %
2.	Logout	Choose the logout menu	Will logout or leave the system and return to the login page	Do not logout	1 dari 1	100 %
3.	View Submission	Document search	Will display the document data you are looking for	Document data sought not found	2 of 2	100 %
		Delete documents	The document will be deleted	Documents are not deleted	1 of 1	100 %
		Edit documents	Documents will be updated	Document not updated	7 of 7	100 %
		Making Revisions	Revised documents will show the revision message	The revised document does not show the revision message	2 of 2	100 %
4.	E-Dokumen	Document search	Will display the document data you are looking for	Document data sought not found	2 of 2	100 %
5.	Users	User search	Will display the user data that is sought	The user data you are looking for is not found	4 of 4	100 %
		Delete documents	The document will be deleted	Documents are not deleted	1 of 1	100 %
		Add a user by entering all user data	Users will increase	Displays an error message if data is missing	8 of 8	100 %
		Reset Password	User password will be reset	In accordance	1 of 1	100 %
B.	**Halaman Avp**					
1.	Login Avp	Enter username and password	Enter the avp dashboard page	Will return to the login page and there is a description (incorrect username and password)	2 of 2	100 %
2.	Logout	Select the logout menu	Will log out or exit the system and return to the login page	Not logging out	1 of 1	100 %

3.	Submissions	Document search	Will display the document data you are looking for	Document data sought not found	2 of 2	100 %
		Add documents by entering all document data	Documents will be added	Displays an error message if data is missing	8 of 8	100 %
		Delete documents	The document will be deleted	Documents are not deleted	1 of 1	100 %
		Edit documents	Documents will be updated	Document not updated	7 of 7	100 %
C.	**Page Vp**					
1.	Login Vp	Enter username and password	Enter the vp dashboard page	Will return to the login page and there is a description (incorrect username and password)	2 of 2	100 %
2.	Logout	Select the logout menu	Will log out or log out of the system and return to the login page	Not logging out	1 of 1	100 %
3.	Submissions	Edit document	The document will update	Document not updating	7 of 7	100 %
		Approval	The document will get a QR Code on every page	Document does not get QR Code	1 of 1	100 %
		Publish / Upload	The document will be published / uploaded to the admin E-Document page	Document not published / uploaded to admin E-Document page	1 of 1	100 %

In the results of testing by admin, avp and vp have been carried out using a black-box, and the functionality of this system has not found errors or bugs. The testing process that has been carried out by admin, avp, vp based on the data provided by the functional application has proven that the data shows that the system application that has been designed is 100% successful in every existing functional test. To be able to maintain the stability of the function of this application, clear procedures and user limits are needed. The results of the successful design of this information system can be used to facilitate the process of submitting a manual jobdesk to submit a jobdesk with an information system that is realized right directly to the admin page for a jobdesk review to the vp section for the approval and publish process.

4. CONCLUSION

This research succeeded in making a job description document management application starting from the submission of the proposed document until the document is approved and published to be known by all employees in need. Agile software development methods can be used in this research by utilizing the CodeIgneter 3 frame work. According to the agile stage in this application, testing has been carried out with the blakbox testing method with the results that all functions made are appropriate and feasible to be implemented at PT. Pupuk Kujang.

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