THE IMPLEMENTATION OF KNOWLEDGE MANAGEMENT SYSTEMS ON PROJECT AT CV. PRIMA GALFINDO SEMESTA

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ABSTRACT

CV. Prima Galfindo Semesta (PGS) is a construction company. The projects are managed by welder employee, fitter, and painter, with contract status and regular employee. Contract employee cause the knowledge that owned by employee during working at CV. PGS is comes out by the employee which already out of contract. That matter cause a loss of project knowledge that will be use in another times as a solution to overcome the problem of project. Inadequate mechanism can cause CV.PGS employee are not do sharing knowledge activity maximally, so it cause a knowledge which owned by each employee are not integrated.

Things about the project knowledge in order to managed properly and sharing knowledge activity can be done optimally by all employee at CV.PGS, then it needed an information systems, the knowledge management systems (KMS). This KMS system is built using methodology phase 1 to phase 2 and stage 2 to stage 7 from phase 1 to phase 3 and stage 1 to stage 10. The method that was used at finding the best solution in resolve the project issues is case based reasoning (CBR) method with stages; retrieve, reuses, revise, and retain. The calculation of project defect detection was used the similarity equation which has weight and similarity value.

Based on black box test results and beta test that has been done, it can be concluded that the system was already passed the functionality test and able to helped CV.PGS employee at finding a solution to solve the project problems and do sharing knowledge activity between employee maximally.

Keywords: knowledge management systems (KMS), 10 steps KM road map, case based reasoning (CBR).

1. INTRODUCTION

CV. Prima Galfindo Semesta (PGS) is a construction company which was founded in 2010 by Mr. Parjito as managers working on the type of work oil gas service & handled by the welder, fitter, painter and helper. CV. PGS using system contracts for its officers with contractual agreements between the work period is 6 months or per job. Employees of CV. PGS have knowledge that relates to projects based on their field of each gmasing obtained from various sources, namely, training and work experience module standard operational procedure (SOP). The training was held by the client followed by a supervisor, welder, fitter and painter while at new employee part welder, fitter, painter and helper of the knowledge obtained from the SOP module is provided directly by the supervisor. Supervisors are knowledgeable of scheduling, the cause of and countermeasure against damage or defects in the field of welding, painting and setup as well as knowledge owned by the welder, fitter, painter. Welder have knowledge of project design, knowledge of materials, steel pipes and pengelasanya techniques. Fitter has knowledge of project design, knowledge of materials, steel pipes and penyetingannya techniques. Painter had knowledge of the material paints, painting techniques and helper have knowledge needs of supervisors, welder, fitter, painter. The knowledge possessed by the employee is not stored by the company, thus making the knowledge carried out by employees participate out of the company.

Based on interviews with Mr. Parjito as founder and Manager CV PGS, companies have yet to manage well the knowledge owned by employees during work on the CV. PGS causing the missing knowledge brought by employees who have been out of the company because the employees did not keep his knowledge in the company. This resulted in knowledge in the form of a solution to resolve the Affairs of the project should go back to search. For example, pin hole defect in welding, the welder's officers did not have a solution to address the problems that affect them while working in field should ask employees experienced welder or to the supervisor to find the solution in addressing the problems of those on a case/case before.

The mechanism nor the media are inadequate in their knowledge-sharing activities cause the employees do not utilize the maximum knowledge sharing activities, so that the knowledge that not every employee owned equally. For example, at the time of the development of the project was transferred from the old to the new employees employees can make employees have to spend more effort to understand the concept of development of the project

both in terms of the structure of the framework, the methods used or the material being used.

Based on the results of the interview which has been exposed then it can be inferred that knowledge is an asset or wealth is important for the company, because the development of a company is not separated from knowledge possessed by his officers. Therefore it needs a knowledge management information systems that help employees find the best solution to address the problems related to the project and help the employees do a sharing of knowledge.
It is therefore the intention of writing this final task is to build a knowledge management system on the project in the CV Prima Galfindo Semesta. As for the goal that will be achieved in the research and development of knowledge management system are:

1. Helps employees find best solution-based cases, based on the case of previous projects to address the problem in the current project.
2. Helps employees perform activities of sharing knowledge in a knowledge exchange information between project employees.

2. CONTENTS RESEARCH

2.1 The Cornerstone Of The Theory

The cornerstone of the theory of enacted in order for the research to have a solid foundation. The cornerstone of the theory on the writing of thesis explains about the theories related to the application of knowledge management system on the project in the CV Prima Galfindo Semesta.

2.1.1. Knowledge Management System (KMS)

Knowledge management systems is the use of modern information technology to sisematisasi, improving and speeding up the management of knowledge within and between organizations [1]. The main purpose of the knowledge management system is to support the dynamics of organizational learning and the effectiveness of the organization. knowledge management systems applied to manage the knowledge described as personal information related to facts, procedures, concepts, interpretations, ideas, observations, and assessment.

2.1.2. Methodology 10 Step Knowledge Management System

Knowledge Management is an activity in the knowledge management. Formulating a conceptual framework as well as a framework for the application of knowledge management in public companies it takes 10 steps map travel from the application of knowledge management. 10 steps that includes identification of the knowledge of the Organization, what it takes to design, develop and organize an integrated knowledge management systems with business strategies on top of existing infrastructure capabilities, to select and conduct cultural and organizational changes that make knowledge management to function properly in an organization, as well as evaluate the effectiveness of the role of knowledge management and the application of his contributions against the return of investment (ROI) of an enterprise [2]. 10 step methodology of knowledge management system is illustrated through figure 1.

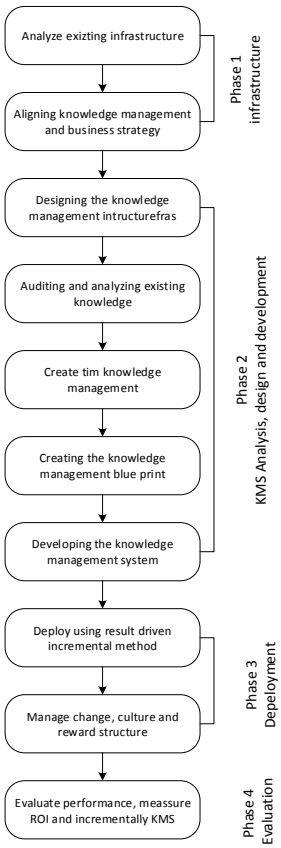


Figure 1.10 Step Knowledge Management Road Map

2.1.3. Case Based Reasoning (CBR)

Case Based Reasoning (CBR) is a technique of solving problems based on knowledge past experience [3]. Type the description of the CBR as a circular process which consists of the four Res [4]:

1. Retrieve

Get similar cases compared with the collection of cases in the past. Begins with the stages of recognising a problem and ends when the case to search for a solution has been found to be similar to the existing case. Stages on the retrieve these among others:

a. Identifiksai problem
b. start the matching
c. Selection

2. Reuses

Reuse of existing cases and try to solve a problem right now. Reuses a case in the context of new case focused on two aspects: the difference between the existing cases with a new case and which parts of the basic case that can be used for reuses existing case: reuses solution of existing cases (transformatial

reuses) or method reuses existing cases to make a solution (derivtional reuses).

3. Revised

Amend and adopt the solution offered if necessary. There are two tasks of this stage are:

a. evaluation of the solution is how the results obtained after comparing the solutions with the actual circumstances. This is usually beyond the stage of system of CBR. On the stage of this evaluation often requires a long time depending on what application is being developed.
b. fix the error is perbaukan a case includes the introduction of a solution that made mistakes and take or make an explanation of the error.

4. Retain

The last solution is retained as part of the new case. At this stage it occurs a process of merging of the solution of the case of the new right to knowledge that already exists.

A search on this system using similarity (problem, case) as follows:

$$Similaritu\,(T,S) = \frac{[(S_1 * W_1) + (S_2 * W_2) + (S_3 * W_3) + \cdots + (S_n * W_n)]}{W_1 + W_2 + W_3 + \cdots + W_n} \quad (1)$$

Where:
S = value simiaritas
W = weighting value

2.2 Research Methodology

2.2.1 Phase 1 Evaluation Infrastructure

Phase 1 evaluation infrastructure, there are two stages of activity, i.e. the stage of analyzing infrastructure and aligning knowledge management with business strategy. Infrastructure analysis stage is the first stage in the step 10 knowledge management methodology road map which undertake activities identify infrastructure is available, to evaluate and propose the appropriate infrastructure for the implementation of knowledge management consists of network analysis, analysis of the hardware, software and analysis analysis of the user.

a. Stage 1 Infrastructure Analysis

The condition of the network, hardware, software and users that exist today in the CV Prima Galfindo the Semesta in General already meet the minimum requirements for the application of the knowledge management system.

b. Stage 2 Tuning Knowledge Management With Business Strategy

Alignment of knowledge management with business strategy using SWOT analysis. Based on the results of the SWOT analysis that has been done, there are a number of challenges to be faced by CV. Prima Galfindo, namely:

1. The development of information technology is very quick.
2. Turn employees which led to the loss of assets (capital) of the company in the form of project knowledge.
3. Knowledge sharing Activities are not carried out with the maximum.

2.2.2 Phase 2 Analysis Of Knowledge Management System, Design and Development

This second phase, i.e. the analysis of knowledge management system, the design and development consists of five phases i.e. phase to 3 phase up to 7 out of 10 step knowledge management system. The third stage is to design the architecture of knowledge management and knowledge management knowledge management mengintegrasik project with infrastructure. The fourth stage of the knowledge audit and knowledge analysis stage five formed a team of knowledge management. The seventh stage, namely the development of a knowledge management system by making use of information technology.

a. Stage 3 Designing The Architecture Of Knowledge Management System And Integrating Knowledge Management

Knowledge management knowledge managament at project with infrastructure can do the development architecture model knowledge management against the proposed infrastructure resulting from the analysis already done.

b. Stage 4 Audit And Analysis Knowledge

This stage is the process of perhitnungan method of CBR. Equation method on the diguanakn this similaritas value includes the CBR and the value weights. The value of similaritas has a value of 1 for the same damage factors and a value of 0 is given to factor the damage that are not the same. Weighting value is provided as an overview of how important the damage factors in the determination of solutions of the same case. The value of the weights used are the direct weight or the giving of value weighting is directly provided by experts with an interval value of weights consists of odd numbers 1, 3 and 5.

1. Retrieve

Matching is done by selecting factors damage parts of the welder (las) by checkbox. Penelusuranan on this system using similaritas (problem, case). Comparison of keruskaan factor and value weighted pad base case with the new cases. Perihtungan similaritas based on the degree of similarity of the new case against a base case. The results of the analysis of the system issued a recommendation in accordance with the damage factor solution selected by the user. The result of the calculation on the new cases against the base case is K001 = 0.250, K002 = 1, k003 = 0250, k004 = 0.125 and k005 = 0.125.

2. Reuses

The case that has the lowest similarity weighting is a case ID and ID k004 k005, have a degree of similarity of 0125 or 12.5%, then ID and ID k001 k003 has the level of similarity of 0250 or 25%. Case

ID k002, have the greatest degree of similarity that is 1 or 100%.

Case ID k002 wide bead that has the highest degree of resemblance. Perhitugan results with weights indicate the level of similaritas 100% the result was the highest level of similaritas with the ID of the base case, so the solution for new cases continued to be administered directly by using the solution ID k002.

3. Revise

The case that did not exist in the base case will be processed under the revised or new cases where the revision revised to update the base case that there has been conducted by the supervisor. Therefore, the case of the revised stage because the case already exist in the base case.

4. Retain

The process of storing new cases i.e. retain, old cases as well as cases where the base the base case the repaired data will be saved as project knowledge.

c. Stage 5 Design The Knoweldge Management Team

Team member KM consists of 3 people, where each part is represented by 1 employees experienced the longest period of his work with a minimum working period in CV Prima Galfindo Semesta for the two years that can be diihat in Figure 2.

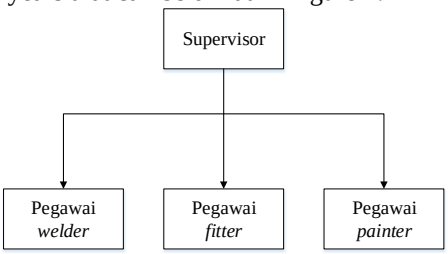


Figure 2. The Team Knowledge Management (KM) CV. Prima Galfindo Semesta

d. Stage 6 The Making Of *Blue Print Knowledge Management*

Blue print design KMS in CV. Prima Galfindo Semesta include human resources, system configuration, process knowledge and analysis of the architecture of KMS.

2.3 Data Base

The design of data using entity relationship diagrams. Relationships between entities in the knowledge management system on the CV. Prima Galfindo Semesta has 11 entities which can be seen in figure 3.

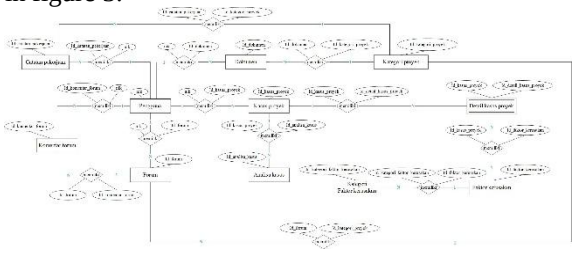


Figure 3. Entitas Relationship Data KMS CV. Prima Galfindo Semesta

2.4 Context Diagram

Context diagram are diagrams that consist of a process that illustrates the scope of a system there are two users chat using the supervisor and employee. A context diagram of the knowledge management system of CV. Prima Galfindo Semesta to be built can be seen in figure 4.

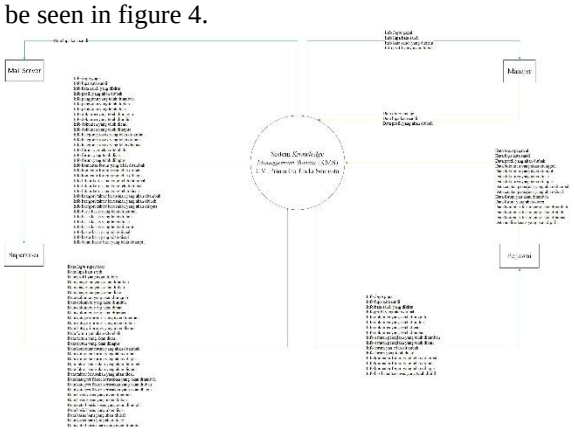


Figure 4. Context Diagram KMS CV. Prima Galfindo Semesta

2.5 *Data* Flow Diagram (DFD)

Data flow diagram is a model of the system to describe the Division of the system into smaller modules. DFD level 1 CV PGS can be seen in figure 5.

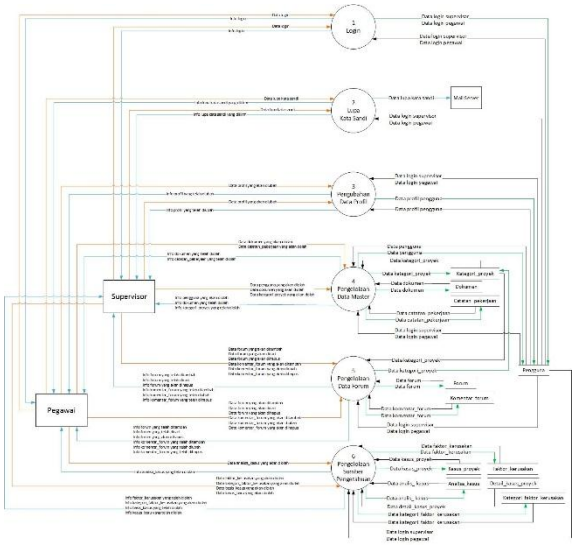


Figure 5. DFD Level 1 KMS CV. Prima Galfindo Semesta

2.6 Diagram Relation

Diagran relation is used as a liaison relationship of two or more tables on the system. The table accommodates or contain data that exists on the system. Diagram of relation on CV Prima Galfindo KMS Hosts can be seen in figure 6.

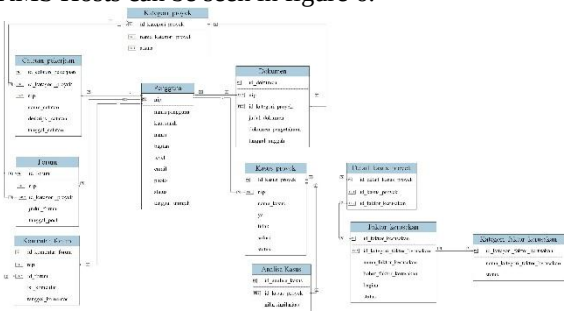


Figure 6. Diagram Relation KMS CV. Prima Galfindo Semesta

2.7 The Design Of The Menu Structure

The design of the structure of the menu is the menu structure designed in General. The design of the menu structure on a knowledge management system for CV Prima Galfindo Semesta can be seen in figure 7.

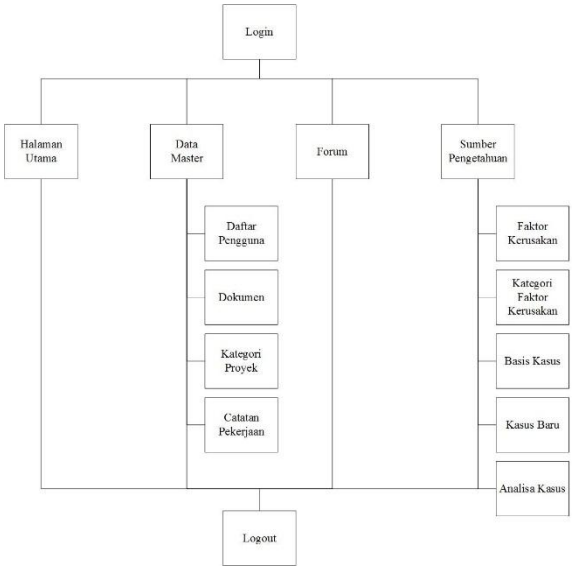


Figure 7. The Design Of The Menu Structure

2.8 Design Interface

The design of the interface is a form of display of the program that will be created for the needs of system interaction with the user. The design of the interface analsa cases and case analysis results can be seen in figure 8 and figure 9.

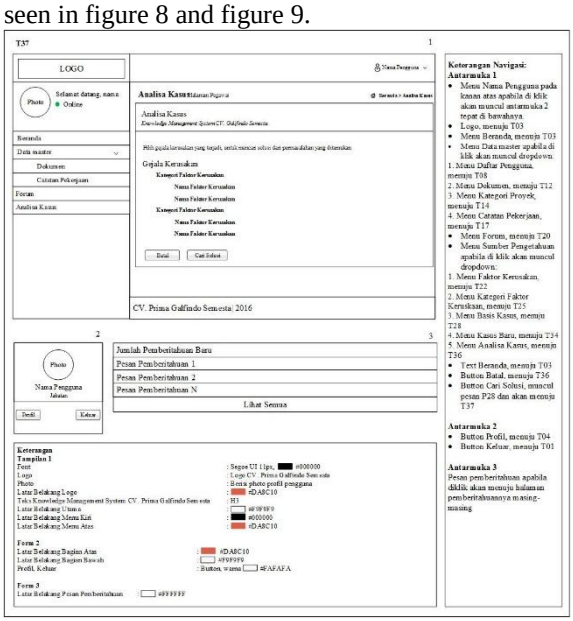


Figure 8. T37 The Design Of The Interface Anlisa Case

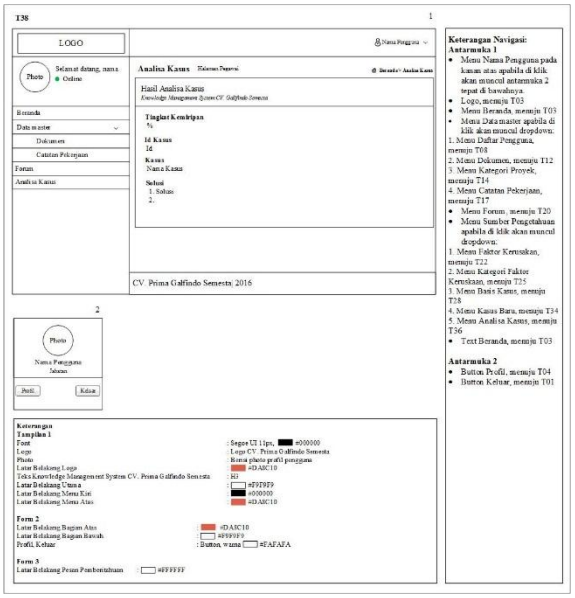


Figure 9. T38 The Design Of Interface Analysis Cases Result

2.9 The Design Of The Semantic Network

The design of the semantic network is an overview of the design of the interface based on DFD. The design of the semantic network KMS CV. Prima Galfindo Semesta can be seen in figure 10.

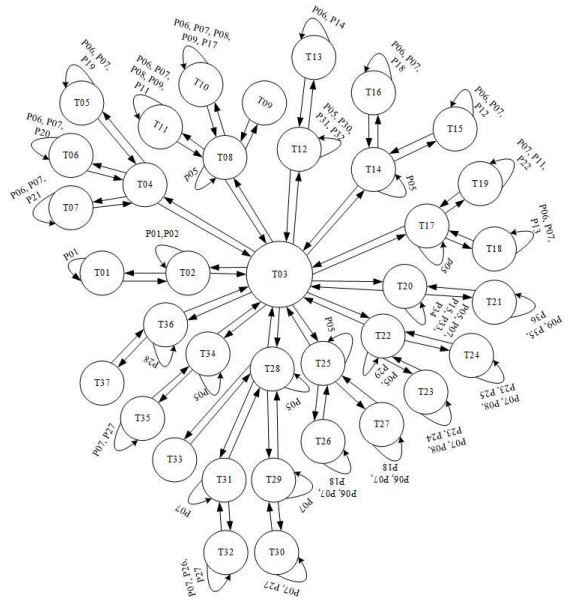


Figure 10. The Design Of The Semantic Network KMS CV. Prima Galfindo Semesta

2.10 Procedural Design

Procedural design is a chart that illustrates the workflow in a procedure that combines each other that make up the system. Procedural design consists of procedural login, add data, modify data, delete data, data upload and download data. procedural CBR can be seen in figure 11.

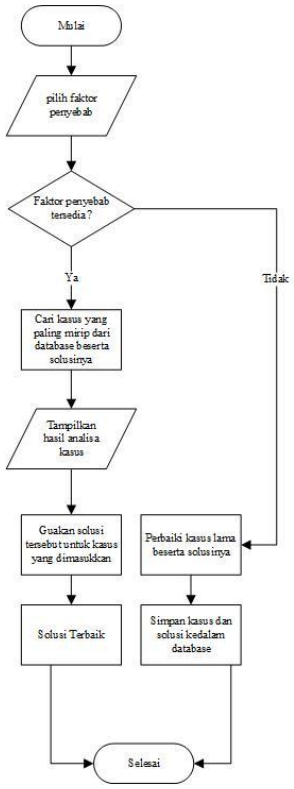


Figure 11. Procedural Design Case Based Reasoning KMS CV. Prima Galfindo Semesta

2.11 Testing System

Testing is used to test the new system is a black box testing methods. Black box testing is focused on testing the functional requirements for information systems. Testing will be done is by way of a test system, built in black box and beta. Testing development knowledge management system CV Prima Galfindo Semesta using test data based on data provided from some of the data that has been provided.

1. Black Box Testing

Black box testing is focused on functional software requirements are built. Testing knowledge management system CV Prima Galfindo Semesta is done in each section for possible errors occurred. Testing the login data can be seen in table 1 and testing analysis of the cases in the table 2.

Table 1 Testing The Login Data

Kasus dan Hasil Uji (Data Benar)			
Data Masukkan	**Yang Diharapkan**	**Pengamatan**	**Kseimpulan**
Contoh masukan NIP : 2212008 Kata Sandi : supervisor	Mengisikan data *login* yang sudah terdaftar	Data *login* benar dan pengguna akan masuk ke masing-masing beranda yang telah	[√] diterima [ ] ditolak

		ditentukan oleh sistem sesuai dengan tipe level pengguna..	
Kasus dan Hasil Uji (Data Salah)			
Data Masukkan	**Yang Diharapkan**	**Pengamatan**	**Kseimpulan**
Contoh masukan NIP : 11111 Kata Sandi : abc123	Muncul pesan "NIP dan Kata sandi salah. Silahkan ulangi lagi"	Muncul pesan "NIP atau Kata sandi yang anda masukan salah. Silahkan ulangi lagi"	[√] diterima [ ] ditolak
Kasus dan Hasil Uji (Data Kosong)			
Data Masukkan	**Yang Diharapkan**	**Pengamatan**	**Kseimpulan**
Contoh masukan NIP : Kata Sandi :	Muncul pesan "NIP dan Kata sandi salah. Silahkan ulangi lagi"	Muncul pesan "NIP atau Kata sandi salah. Silahkan ulangi lagi"	[√] diterima [ ] ditolak

Table 2. Testing Analysis Case

Kasus dan Hasil Uji (Data Benar)			
Data Masukkan	**Yang Diharapkan**	**Pengamatan**	**Kseimpulan**
Contoh masukan Nama faktor keruskan : lingkungan lembab	Menghasilkan hasil analisa kasus	Menampilkan hasil analisa kasus	[√] diterima [ ] ditolak

Based on the test results to the case sample test has been done on knowledge management system of CV. Prima Galfindo Semesta this gives the conclusion that the process is in compliance with the expected. The filtering process in the form of error message that comes up is enough. Functionally the system can already be deemed to meet the needs of the expected.

2. Beta Testing

Beta testing is testing the direct surroundings. The user to make assessment of the software using the method of interview. From the results of the interview then the conclusion can be drawn if the software has been built according to the purpose or not. The following questions for employees in the employee section of the welder Mr Setiawan Bahar can be seen in table 3.

Table 3. Interview Clerk

Pertanyaan	**Jawaban**
1. Apakah sistem ini sudah mengelola dokumen dengan baik?	1. Bapak Setiawan Bahar mengatakan mengolah dokumen pada sistem sudah baik
2. Apakah sistem ini sudah mengelola forum dengan baik?	2. Bapak Setiawan Bahar mengatakan pengelolaan forum sudah baik
3. Apakah sistem ini sudah mengelola catatan pekerjaan dengan baik?	3. Bapak Setiawan Bahar mengatakan pengelolaan dalam mencatat pekerjaan sudah baik
4. Apakah sistem ini sudah mengelola analisis kasus dengan baik?	4. Bapak Setiawan Bahar mengatakan sistem ini sudah baik dalam mengelola analisa kasus baik.
5. Bagaimana menurut anda penggunaan bahasa pada sistem ini?	5. Bapak Setiawan Bahar mengatakan bahasa yang digunakan mudah dimengerti..
6. Bagaimana pendapat anda mengenai kemudahan dalam penggunaan sistem ini?	6. Bapak Setiawan Bahar mengatakan sistem ini mudah digunakan.
7. Bagaimana pendapat anda mengenai tampilan pada sistem ini?	7. Bapak Setiawan Bahar mengatakan tampilan sistem sudah bagus

Conclusion based on the results of the interview with Mr Setiawan Bahar that systems built to level an employee already pretty good welder parts and already meets the needs of the user.

Based on beta testing that has been done before, it can be concluded that the system in terms of functionality already meet the kebutuhkan employees based on objective research. Display of the system as a whole is already said to be good.

3. CLOSING

3.1 Conclusion

Based on the analysis and discussion of description of testing has been done, then a conclusion can be drawn towards knowledge management system on the project in the CV Prima Galfindo Hosts the following:

1. Knowledge management system on the project in the CV Prima Galfindo Semesta is enough help employees in conducting sahring knowledge to gain new knowledge from other employees where employees who have less knowledge related projects get extra knowledge so that every employee does not have trouble one of the work's development projects.
2. Knowledge management system on the project in the CV Prima Galfindo Semesta is enough help employees in pencarin the best solution to problems related to the project, where the solution was obtained based on previous similar cases have occurred in the company, so that the problems experienced by the project officers quickly resolved without disturbing other employees.

3.2 Suggestion

Based on the results that have been achieved in building the knoweldge management system on a project in the CV Prima Galfindo Semesta, things to expect in the future could be developed more broadly include:

1. data usage cases a wider project on all fronts so that it can be used by all areas and can increase the accuracy of the search process is the best solution.
2. Connectedness forum with an analysis of the case, so that the discussion on the forum may be the best solution..

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