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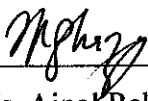
**A KNOWLEDGE BASED SYSTEM:
AN EXPERT DIRECTORY FOR E&P BUSINESS**

by

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A dissertation submitted to the
Information & Communication Technology Programme
Universiti Teknologi PETRONAS
in partial fulfillment of the requirements for the
BACHELOR OF TECHNOLOGY (Hons)
(Information and Communication Technology)

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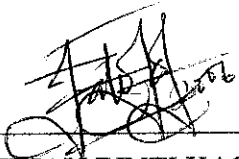
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November 2006

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



FATIMAH BINTI KASIM

ACKNOWLEDGEMENT

In the name of Allah, the Most Beneficent, and the Most Merciful

First and for most, I would like be thankful to Allah s.w.t who has made my final year project run smooth and successful during my final year in UTP.

I would like to thank Ms Ainol Rahmah Shazi Bt Shaarani who is my supervisor for her willingness to taught and guide me for my final year project. She has never failed to keep my spirit high in completing this project. I hope that she will continue doing that to her new final year students.

Next, my big gratitude goes to Ms Che Zan Hj Yassin, En Rozaidee Harun and En Azrul Ariffin Abd Rahim from the Knowledge Management Section, Petroleum Management Unit (PMU) who has assist me in completing this project by giving guidance and help.

To Bunyami Shafie, Aini Fadhilah M Afifi, Ilya Idayu Murat, Ilina Fazlin Ishak, and other friends and family, a special thank you for them for their support and love, valuable advices and their understanding of me. Without them, I might not be where I am right now.

ABSTRACT

The purpose of this report is to present the initial proposal of the author's final year project entitled "A Knowledge Based System: Expert Directory for E&P Business". In these present days, knowledge has become a key resource. Many top organizations have changed their way of doing business in the past and develop the foundations of characteristics for success. The birth of knowledge management grew from recognition of the difficulty of dealing with the complexity in finding the right information and dealing with the complexity in achieving the demands of the sophisticated customer. Awareness came to organizations when they started to realize the value of knowledge and information, followed by searching for the ways to create, store, integrate, share and make available the right knowledge to the right people at the right time. This is all what the system is all about, to make it easier for users to find what they need in one system; to cut short the time for finding the needed resource as well as to add efficiency in finishing any projects within organization. The first part, of this report will discuss on background study, problem statement, and the objectives and the scope of the project. To support the research, a literature review and theory will be included in the picture showing the path of prior research and how existing studies in various areas are linked to this project. The methodology in completing this project will be based on incremental development and extreme programming. The conclusion summarizes the proposed idea and findings to inform readers on author's current phase on project development.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND STUDY

The Expert Directory System is a system that gives a main focus in distributing knowledge in an efficient way for people in an organization. Other main purposes will be to share best practices and lessons learnt among team projects and colleagues. The system will also have user keying in their personal information into the system so that others can view what expertise the people in the organization have and post question or collaborate with regards to the issue in the E&P sector. The system will prove to work successfully when main functions of the system work correctly and the value that it added in achieving any E&P projects objectives. A search function will be included to the system so that user can specify what they are trying to look for whether it is information on people or projects.

Knowledge management initiatives have played part in making operations more efficient and effective in the oil and gas industry. For example, when oil and gas companies have been faced with new technology, outsourcing, new business partner, the knowledge management team will provide them support through technology and knowledge transfer and asset management.

1.2 PROBLEM STATEMENT

1.2.1 Problem Identification

We rely a lot on usage of staff database to store information and this database is usually confidential being owned by the HR group. Sometimes, in a company, staff hardly knows each others' background, knowledge and their expertise. In the E&P(Exploration and Production) business, especially PETRONAS, a lot of projects rely on the experts and the knowledge that those experts possess. It is hard to start a new project in the E&P area because the group project always have to start from scratch because the resources and the knowledge they need to build the project is not available.

Sometimes, the email is not a proper tool to discuss something because at a fixed time, email deletion will be done and this action will also cause deletion of discussion being made in email. It is important to keep a discussion as it can be made as a reference while completing a project.

When a project is completed, a lesson learnt review should take place whereby all group members discuss what went well, what did no go well, recommendations, next step, etc. Thus, it is important to capture lessons learnt so that others can learn from past mistakes and successes made in the project so that they can avoid mistake and repeat successes. It is also essential that the lesson learnt review be done in the E&P projects because of their extremely high cost and high risks.

As we all know, people are the one who makes an organization successful. When people leave an organization, they take the wealth of knowledge about their jobs with them. Knowledge management seeks to secure the learning experiences, as well as the work products, of the individuals who comprise an organization.

1.2.2 Significance of the Project

As a solution, an integrated online web based system should be built to enable staff of the E&P business to share their knowledge and expertise in past projects. The knowledge management system is a system that will facilitate the submission of and access to reusable documents, lesson learnt, discussion, etc. It could make it easier to transfer experience and knowledge over time in an organization that has a huge number of staff. Sharing knowledge is important in the sense that it would be easier for staff and top management to find out who had a specific type of experience, who has participated in which project, etc.

The system should allow staff or a group project to collaborate in a more efficient way. Management trainees can post a topic on a question and discuss it with the experts. Instead of using email for discussion, the usage of this system will be more efficient because the discussion can be kept in the database and can be viewed whenever necessary. It could also reduce face-to-face meeting or the hassle to make an appointment with managers to discuss about things that are less important. This part of the system can help staff to be more ready in a meeting or discussion when they know the problems incurred discussed in the discussion part.

The lesson learnt review part will have the objective to use the past knowledge in not repeating the same mistakes again and hence improve the abilities of an organization in managing projects successfully and is also applicable for other types of projects. The lesson learnt review will include answers to questions such as: what went right?, what went wrong?, etc. in the E&P projects. Lesson learnt review is the broad dissemination of information about work practices that will discourage the use of practices that lead to undesirable outcomes and encourage the use of practices that lead to desirable outcomes. Reviewing lesson learnt will help staff to enhance processes in projects and avoid making mistakes as mistakes in this business means losing lots of money thus leading to loss.

Overall, there will be five parts in this system: the expert section, past projects, discussion, ideas and suggestion, and lesson learnt review part. On each part, the search function shall be included to make ease for user to search anything that is useful for them. Research study will also include why knowledge management and information management is important in order to become a successful organization

1.3 OBJECTIVES AND SCOPE OF STUDY

As for this expert directory system, there were several objectives that the author tried to achieve and to prove that it is a very useful knowledge management tool. The objectives are as follows:

- To build a system that is capable to store information on staff that includes their background and expertise so that other staff that needs any help in projects or tasks can use this system to find the person that can answer their question.
- To have the discussion tools, as is like a forum that can allow discussion and store it in an appropriate database.
- To share on past projects, lesson learnt review and best practices so that knowledge can be kept and enhanced in the future.
- To have the search function to find information in each tools or functions.

The scope of study of this project will focus on the Exploration and Production (E&P) business and all the relevant issues with regards to projects, subject matter expert (SME), best practices all around the world or within the organization itself, and lesson learnt captured in previous projects.

CHAPTER 2

LITERATURE REVIEW AND THEORY

2.1 THEORY ON KNOWLEDGE MANAGEMENT

First, let us define what knowledge management is all about. Nonaka defined knowledge management as justified true skill, a dynamic human process of justifying personal belief and skill towards the truth (Nonaka, 2000). Leonard-Barton (1992, 1995) stressed the importance of knowledge with successful innovations with views of activities in an organization. Knowledge management became part of visualizing and cultivating knowledge and ways to leverage on other people's expertise as well as organization's intangible intellectual assets for more value.

With knowledge management, organizations can create and utilize the best possible capital hidden in people's brain through tools for measuring intangible assets. According to Boisot, (1998), knowledge management in his view is to manage knowledge assets as a social learning process. Capabilities, technology and competence are the representations of the knowledge assets operating in different levels of an organization but it is specialized interpersonal social relationship that reinforces the importance of the assets.

To manage knowledge efficiently, organization needs to have a highly flexible and adaptable organizational structure. Prahalad & Hamel (1990) have suggested that in the present environment, organizations should be structured on the basis of core competencies because these structures can sustain high level of environmental uncertainty and chaos. With these theories we can say that, generally knowledge management is thus a process of facilitating knowledge-related activities, such as creation, capture, transformation and use of knowledge (Bhatt, 2000). To integrate diverse sets of tasks and implementation of powerful information systems, such as

Internet and intranets, the management processes will include a range of activities ranging from learning, collaboration and experimentation.

Knowledge sharing is important and critical for those organizations which are large and geographically scattered in different location (Bhatt, 2002). By sharing knowledge, organizational members can increase their knowledge and thus create “organizational knowledge”. Knowledge that is internalized within organization is not produced by organizational members alone, but created through the interactions held amongst them (Nakamori, Li & Go, 2002).

Individual knowledge, if not shared with others, will have very little effect on the organizational knowledge base. One of the most important tasks for management is to facilitate the process of interactions between employees and make them sensitive towards environmental stimuli so that their individual knowledge is internalized to contribute to the organizational knowledge base (Nonaka, 1994).

There are three major forces that have combined to attract organizations to knowledge management (Sharp, 2003): the increase of knowledge dominance as a basis of organizational effectiveness, failure of financial models to represent the dynamics of knowledge and the failure of information technology which stands by itself in order to achieve organizations’ benefits. The failure of information technology, in the author’s point of view, happens when organizations fail to rationalize the need of company in term of users using the technology and the failure to combine it with the knowledge management concept itself. The combinations of at least two of the following factors were the reasons why knowledge management solutions have been achieved successfully: communication within the organization, collaboration and teamwork, commitment by employees to the practice of KM, innovative corporate culture and the application of appropriate technology (Sharp, 2003).

Methodologies, techniques and tools are the central to process and information system and process development. Comprehensive methodologies that use step-by-step approaches guide the development of a system or process. Techniques are specific processes used in conjunction with one or more methodologies that result in

comprehensive deliverables. Tools are computer programs that facilitate the implementation of techniques within the overall guidelines of any particular development methodology (Niessen, M., Kamel, M. Sengupta, K, 2000.).

2.2 ONTOLOGY

The subject of ontology is the study of the categories of things that exist or may exist in some domain. The product of such a study, called an ontology, is a catalog of the types of things that are assumed to exist in a domain of interest D from the perspective of a person who uses a language L for the purpose of talking about D . The types in the ontology represent the predicates, word senses, or concept and relation types of the language L when used to discuss topics in the domain D . By itself, logic says nothing about anything, but the combination of logic with an ontology provides a language that can express relationships about the entities in the domain of interest (Sowa, 2005).

The Artificial-Intelligence literature contains many definitions of ontology; many of these are different from one another. However, in general an ontology is a formal explicit description of concepts (sometimes called classes) in a domain of discourse, properties of each concept describing various features and attributes of the concept, and restrictions on slots (sometimes called roles or properties). An ontology together with a set of individual instances of classes constitutes a knowledge base (Noy & McGuinness, 2000).

From the above review, the author has agreed that knowledge management is important in order for an organization to be more successful in projects and guidance for better decision making. However, integration of knowledge management with information technology based system will makes it even better in terms of keeping projects online, discussion among staff and sharing lesson learnt. Individual expertise in an organization is as asset and organization should manage this expertise carefully to make the best out of it. Therefore, management should create an environment that

encourages its employees to collaborate and share knowledge thus creating an organizational knowledge through individual interactions.

CHAPTER 3

METHODOLOGY

3.1 PROCEDURE IDENTIFICATION

The author has decided to adopt the Iterative and Incremental development methodology for prototyping. Iterative and Incremental development is a software development process, as opposed to more traditional waterfall model. It is especially known as a part of Extreme Programming. The basic idea behind iterative enhancement is to develop a software system incrementally, allowing the author to take advantage of what was being learned during the development of earlier, incremental, deliverable versions of the system. Learning comes from both the development and use of the system, where possible. Key steps in the process were to start with a simple implementation of a subset of the software requirements and iteratively enhance the evolving sequence of versions until the full system is implemented. At each iteration, design modifications are made along with addition new functional capabilities. Each iteration of the system brings the system closer and closer to the real needs of the users.

One of the most positive aspects of the Iterative development process, is that it addresses the problem of not knowing where you really are until you start trying to integrate the parts (fairly far into the project), only to find out that things do not fit together quite as well as you thought they would. An iterative approach addresses certain kinds of risks sooner by implementing and integrating risky components earlier in the process. The reason this reduces risk is that you can really only know whether you have mitigated a risk after you have actually tried to build something and put the pieces together.

Some differences between Waterfall Model and Incremental Development:

Waterfall	Incremental
<ul style="list-style-type: none"> • Risk adverse 	<ul style="list-style-type: none"> • Actively attack risk
<ul style="list-style-type: none"> • Delays integration and testing until the last part 	<ul style="list-style-type: none"> • Continuous integration and testing in every stage
<ul style="list-style-type: none"> • Nothing runs or workable until at the end stage 	<ul style="list-style-type: none"> • Something runnable is produced at every incremental
<ul style="list-style-type: none"> • Difficulties at the end of the project 	<ul style="list-style-type: none"> • Difficulties at the start of the project

Table 3.1: Differences between Waterfall and Incremental development

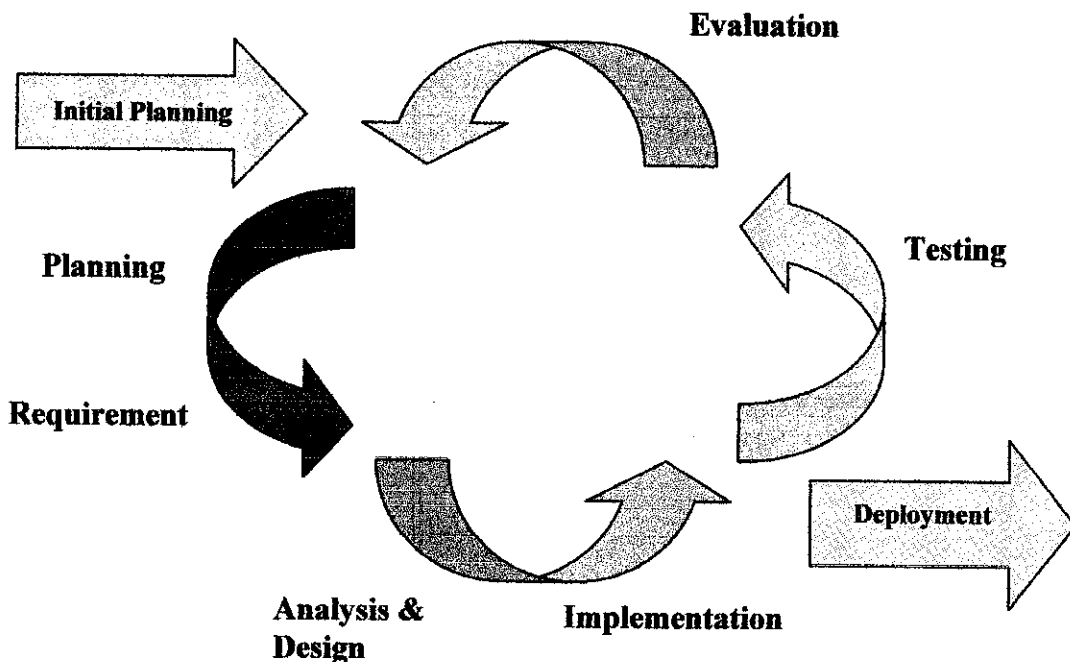


Figure 3.1: Iterative and Incremental Development Model

From Figure 3.1, we could see that after an initial planning of a project, a requirement list will be made based on client's specification. After fully understand the requirement of the project, the developer will do analysis and design the system according to the requirements. After the system design and analysis has been performed, the implementation of the project will be done followed by testing evaluation and these steps will be repeated until it is ready for deployment and has met user's requirement.

3.2 TOOLS USED

In developing this project, few tools for designing, coding and databases will be used.

3.2.1 Tools for designing

The author will be using Macromedia Dreamweaver to make designs for the Expert Directory system with help from Adobe Photoshop for the design of buttons, images and others. Ease of viewing as design is completed is the reason why the author chose to use these tools. The basic knowledge that the author's have on Macromedia Flash will also be used to add on interactive icons or make the system look more interesting.

3.2.2 Programming Languages

The author will use the PHP scripting language to create this system. It is a good opportunity though to learn new things considering that the author has come across this type of programming language. This programming language will contribute to the development of the search function for the Expert Directory System.

3.2.3 Database

For storing of information, the author will utilize MySQL system for database. MySQL language provides better storage and is easy to use as the author is not so familiar with other database.

3.2.4 Server

Apache HTTP Server is an open source web server for UNIX system, Microsoft Windows and other platforms. It is the most popular server in use and has been made as a reference for other servers design. Apache server is also supported by several Graphical User Interface (GUIs) that gives easier configuration of the system.

3.2.5 Others

In order to ease the development of the system, the author used 'Appserv Open Project for Windows 2.4.4'. This software will automatically start the Apache and MYSQL application and the author used phpMyAdmin for database storage.

CHAPTER 4

RESULT AND DISCUSSION

4.1 IMPORTANCE OF ONTOLOGY

Ontology is a formal description of concepts in domain of classes, properties of each class describing various features and attributes of the concept and restrictions on those properties. An ontology with a set of individual instances of classes constitutes a knowledge base.

The outcome of this project will be the system based on the ontology that will be developed later. Ontologies have become common in the WWW (World Wide Web) and it has ranges from large taxonomies categorizing websites to categorization of products for sale. Ontology defines a common vocabulary for researches who need to share information in the domain. Of course there is no standard way in developing ontology, but it has so many different propriety ways.

The reason why we develop ontology is to make software become more efficient and adaptive because it allows:

- Sharing of common understanding on structure of information among people or software agents
- Reuse of domain knowledge
- Making domain assumptions explicit
- Separation of domain knowledge from operational knowledge
- To analyze domain knowledge

4.1.1 Sharing of common understanding on structure of information among people or software agents

This is the main objective in the creation of ontology. For example; if websites of medical information and medical e-commerce publish the same ontology, then computer agents can extract and aggregate information from these sites. Information retrieved could be used to answer user queries or can be made input for other applications.

4.1.2 Reuse of domain knowledge

For example, if one group of researches develops ontology on surgery in detail, then others can reuse it for their domains. If we need to build a large ontology, we can integrate several existing ontologies to describe other portions of the large domain. We also can reuse a general ontology and describe our domain of interest by extending it.

4.1.3 Making domain assumptions explicit

If our knowledge about domain changes, then the implementations of ontologies will make it possible to change these assumptions easily. Explicit specifications of domain knowledge are useful for new users who must learn what terms in the domain mean.

4.1.4 Separation of domain knowledge from operational knowledge

This is another use of ontologies. We can describe a task of configuring a product from its components according to a required specification and implement a program that does this configuration independent of the products (McGuinness & Wright, 1998). We can develop ontology of PC-components and apply it to configure PCs.

4.1.5 To analyze domain knowledge

Formal analysis of terms is extremely valuable when we want to reuse existing ontologies and extending them. Ontology is developed to define a set of data and their structure for other programs to use.

4.2 DEFINE CLASSES AND CLASS HIERARCHY

There are several possible approaches in developing a class hierarchy (Uschold and Gruninger, 1996):

- **Top-Down** – this process will starts with the definition of the most general concepts in the domain and subsequent specialization of the concepts. In this system, the author will start creating the main function that will resemble the classes for the ontology.
- **Bottom-up** – this process start with the definition of the most specific classes, the leaves of the hierarchy and grouping of these classes into more general concepts.
- **Combination** – development process is a combination of top-down and bottom-up approach. We define the most important concept first and then generalize and specialize them appropriately.

4.3 DEVELOPMENT OF ONTOLOGY

With the basic knowledge of ontology, the author has developed ontology in form of protégé-like. It will start with introduction of the five classes for the ontology. They are: Expert Details, Projects, Lesson Learnt Review, Idea and Suggestion and Discussion.

For the Expert Details class, it will have attributes under it that includes employees' name, position, department, contact number, qualification, email, and hobby. Next the Project class will have the entire projects category in Exploration and Production (E&P). The Lesson Learnt Review will have the attributes of title, description, venue, key success and failures and also actionable recommendation. Both Discussion and Idea & Suggestion part will have topic, but the Idea & Suggestion part will focus more on the observation, impact and suggestion on any topics discussed.

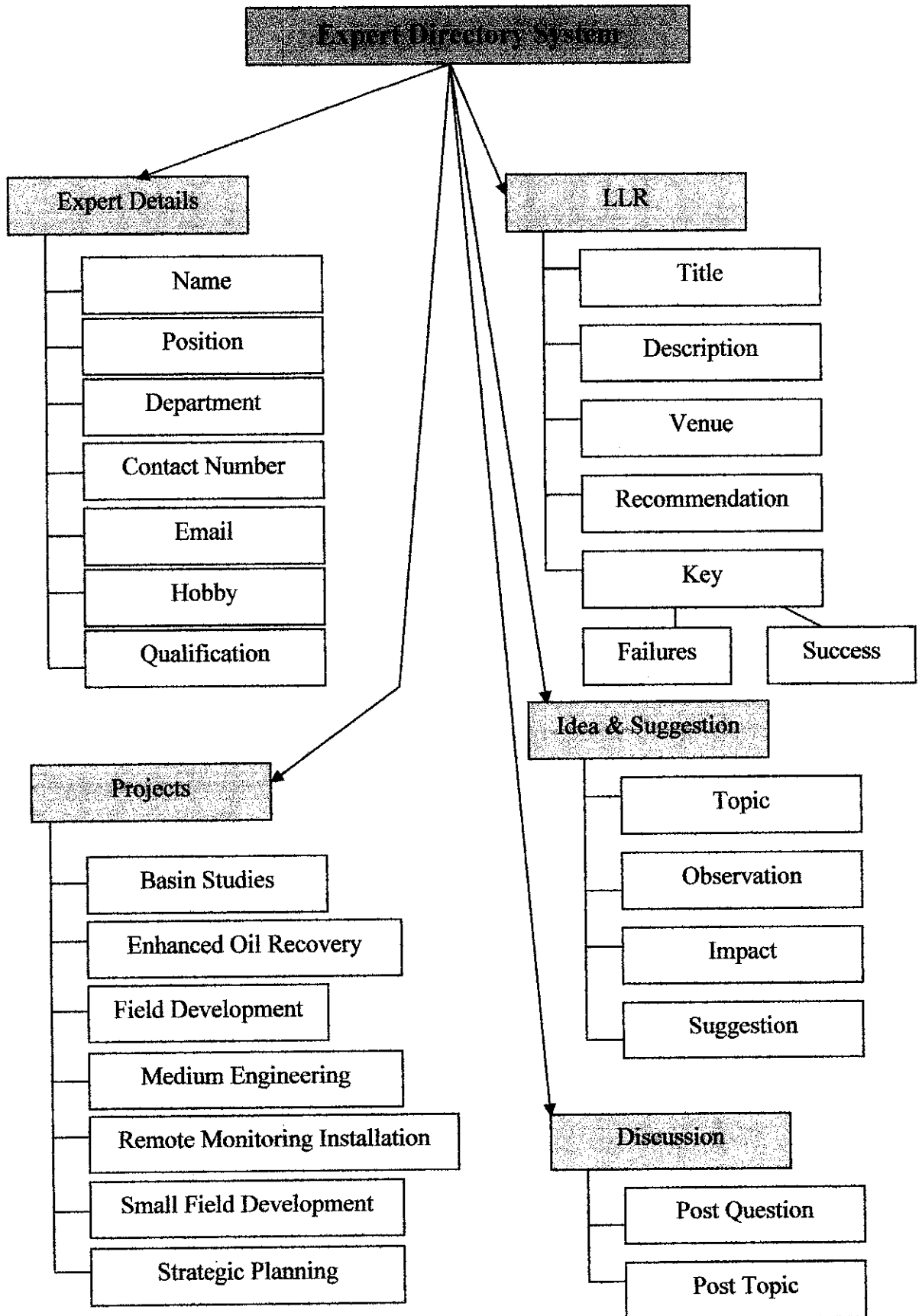


Figure 4.2: Ontology of the Expert Directory System

4.4 DEVELOPMENT OF USE CASE DIAGRAM

Use case diagram is used to identify the primary elements and processes that form a system. The primary elements are termed as *actors* and the processes are called *use cases*. The use case diagram shows which actors interact with each use case. Use case diagram define the requirements of any systems being modeled and that can be used to write test script for the modeled system.

An actor in a use case diagram interacts with a use case. Actor portrays any entity that performs certain roles in a given system. The different roles the actors represent are the actual business roles of users in a given system. In the Expert Directory System, there will be two main actors that will be using the system. They are: normal user and system administrator.

A use case in a use case diagram is a representation of distinct business functionality in a system. In the expert directory system, the normal user can perform the function add data, edit data, delete data, search data, upload file and perform discussion with colleague or experts. As for the administrator, they can maintain the Expert Directory System, check for problems and repair them.

A system boundary of the use case diagram defines the limits of the system. The system boundary is shown as a rectangle spanning all the use cases in the system.

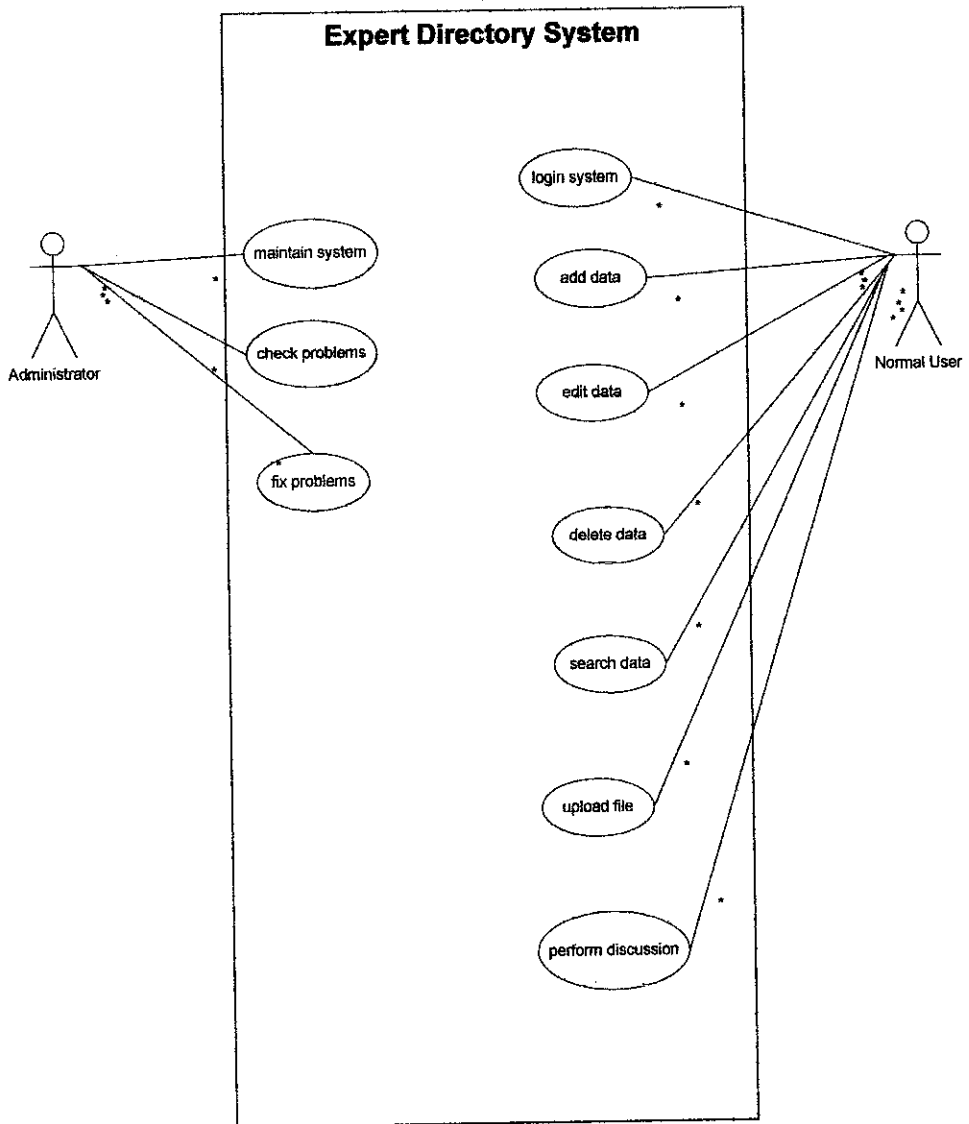


Figure 4.3 Use Case Diagram for Expert Directory System

4.4 DEVELOPMENT OF CLASS DIAGRAM BASED ON THE SYSTEM

Organizing a class diagram will help the author to build a better mental model thereby gaining more information about the system that is under construction. By according to the ontology developed by the author in order to develop the system, a class diagram is build to illustrate a better view for the system.

Each of the five classes (as stated before) will have its own attribute and relevant operation. Operations will include adding of data, saving it, editing, deleting, and uploading attachment.

The first class, the Expert Details will include name, position, and department and so on. There might be experts that have been involved in E&P projects thus this will connect the Expert Details class with the Project class. Whenever a project is completed or has finished certain phase, a lesson learnt review shall be conducted in order to see whether the objectives of the project has been accomplished or not with future recommendations. Each experts can also post a question to the Discussion thread and propose ideas that involves their section or department in the Ideas & Suggestion part.

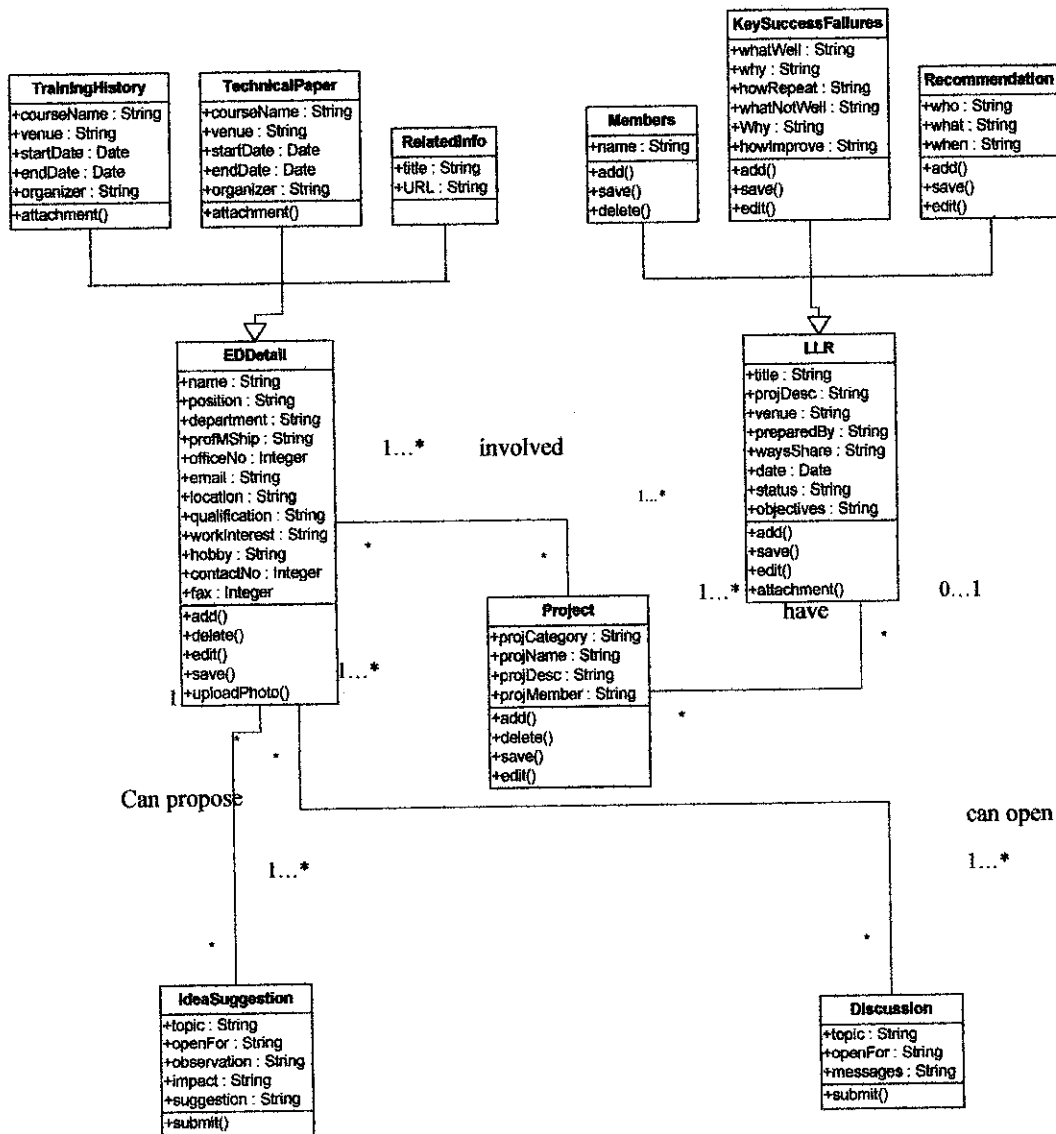


Figure 4.4: Class Diagram for the Expert Directory System

4.5 ENTITY RELATIONSHIP DIAGRAM (ERD) FOR THE EXPERT DIRECTORY SYSTEM.

Figure below shows the ERD for the system to show the relationship between each entity.

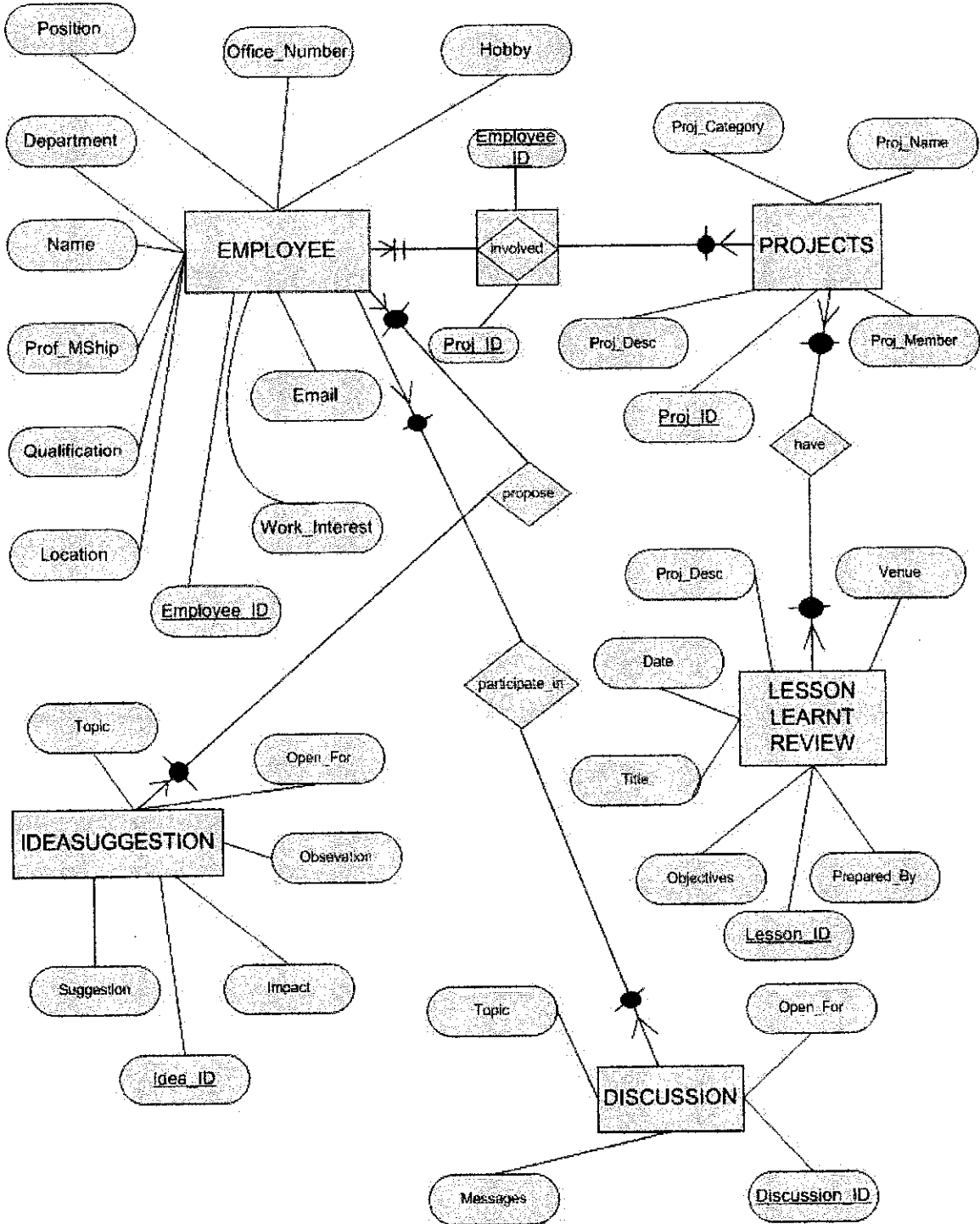
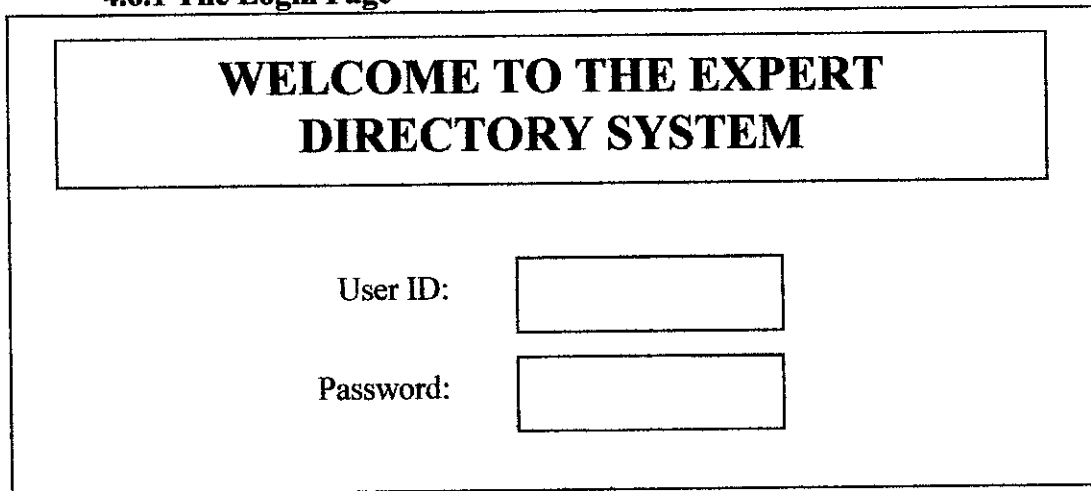


Figure 4.5: ERD for Expert Directory System

4.6 THE EXPERT DIRECTORY SYSTEM INTERFACE

4.6.1 The Login Page

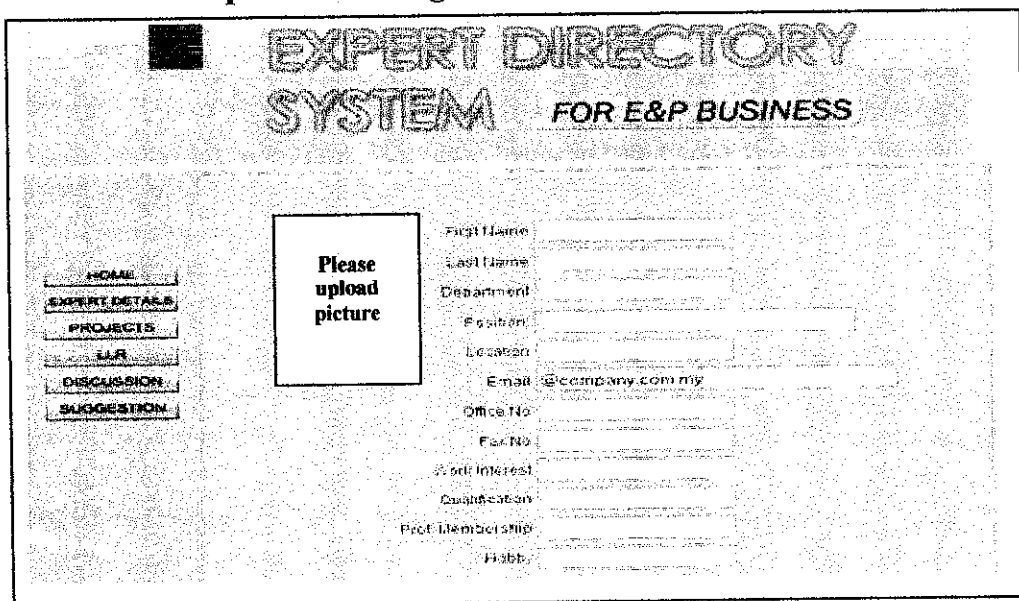


The screenshot shows a login page with a central header box containing the text "WELCOME TO THE EXPERT DIRECTORY SYSTEM". Below the header, there are two input fields: "User ID:" followed by a rectangular box, and "Password:" followed by another rectangular box.

Figure 4.6: The Expert Directory Login Page

For every user and administrator, they will have to own a user id and password to enter into the system. The username and password for the normal user will be provided by the administrator.

4.6.2 The Expert Details Page



The screenshot shows the "Expert Details" page. At the top, it says "EXPERT DIRECTORY SYSTEM FOR E&P BUSINESS". On the left side, there is a vertical menu with buttons for "HOME", "EXPERT DETAILS", "PROJECTS", "LLP", "DISCUSSION", and "SUGGESTION". In the center, there is a box that says "Please upload picture". To the right of this box is a form with the following fields: "First Name", "Last Name", "Department", "Position", "Location", "Email" (with a pre-filled value "company.com.np"), "Office No", "Fax No", "Word Interest", "Qualification", "Prof. Membership", and "Hobby". Each field has a corresponding input box.

Figure 4.7: The Expert Details page

The expert details page will have the user to input their name, department, position, email, location, office number, qualification, membership and hobby. They can also upload their picture so that others can recognize not only their details but also their faces. The data will be stored in the database when users submit their information.

4.6.3 The Projects Submission Page

The screenshot displays a web form for submitting project information. On the left side, there is a vertical navigation menu with buttons for HOME, EXPERT DETAILS, PROJECTS, LLR, DISCUSSION, and SUGGESTION. The main form area contains the following fields:

- Project Name: A text input field.
- Project Category: A dropdown menu with "Basin Studies" selected.
- Project Description: A large text area.
- Project Members: A list box with five entries, each preceded by a number (1-5) and a plus sign.
- Project Location: A text input field.
- Start Date: A date input field with the placeholder "dd/mm/yyyy".
- End Date: A date input field with the placeholder "dd/mm/yyyy".

A "Submit" button is located at the bottom right of the form.

Figure 4.8: The Projects Submission Page

For staff that has been involved with E&P projects, they can input their information in this page. They should enter the name of the project, project category, whether it is basin studies, enhanced oil recovery, field development, medium engineering, remote monitoring installation, small field development or strategic planning. Project members, project location and the project life (start and end date) should also be filled in.

4.6.4 The Lesson Learnt Review (LLR) Page

Lesson Learnt Title

Description

Objectives

Prepared by

Date (dd/mm/yyyy)

KEY SUCCESS

What went well?

Why?

How can we repeat it?

HOME

EXPERT DETAILS

Figure 4.9: The LLR Submission Page

There are 4 parts in the lesson learnt review page. The first part will be the title, description, objectives, and the date of the lesson learnt. Lesson learnt might come from projects and activities relevant to the staff. The second part consists of the key successes that contribute to the project. It has the questions like: 'what went well?' 'why?' and 'how can we repeat it?' The third part consists of the key failures and question such as 'what did not go well?' 'why?' and 'how can we avoid in the future?' should be answered by the user in order to understand why projects didn't go well as planned. The fourth and the last part are the recommendations part that user need to feel in on 'what could be immediately applied?' and 'what need further review?'

4.6.5 The Idea and Suggestion Page

HOME
EXPERT DETAILS
PROJECTS
LLP
DISCUSSION
SUGGESTION

Topic
Observation
Impact
Suggestion

Submit

Figure 4.10: The Idea & Suggestion Submission page

If users or employees as any comment and suggestion to be made, they can use this page to do so by filling in the topic for discussion, observation, impact and suggestion to overcome any problems relevant to the topic.

4.6.6 The Discussion Page

EXPERT DIRECTORY SYSTEM FOR E&P BUSINESS

HOME
EXPERT DETAILS
PROJECTS
LLP
DISCUSSION
SUGGESTION

Topic
Message

Submit

Figure 4.11: The Discussion Submission Page

The discussion page is part of the Expert Directory System that gives user or employee the right to ask question regarding projects or any activities relevant.

4.7 THE EXPERT DIRECTORY FLOWCHART

Because flowchart tends to be big and confusing if misread, the author has decided to break the flowchart into its five main functions. First, the author will explain the flow for Expert Details Page.

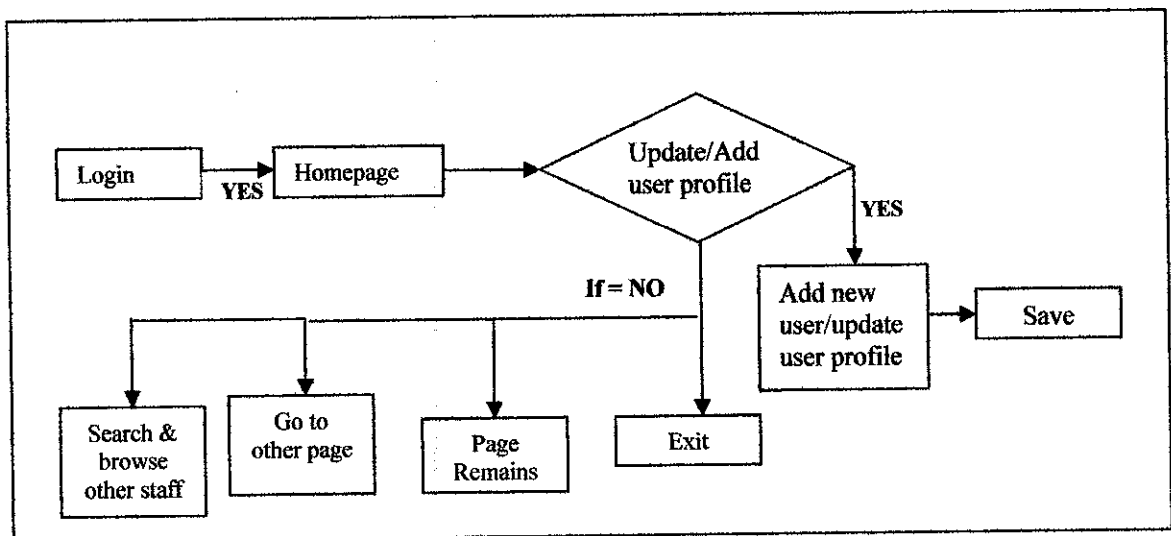


Figure 4.12: The flow for Expert Details Page

If user has successfully login to the system, they will be directed to the homepage and from there they can update or add their user profile and save it. Or else they can go to other page or exit the system.

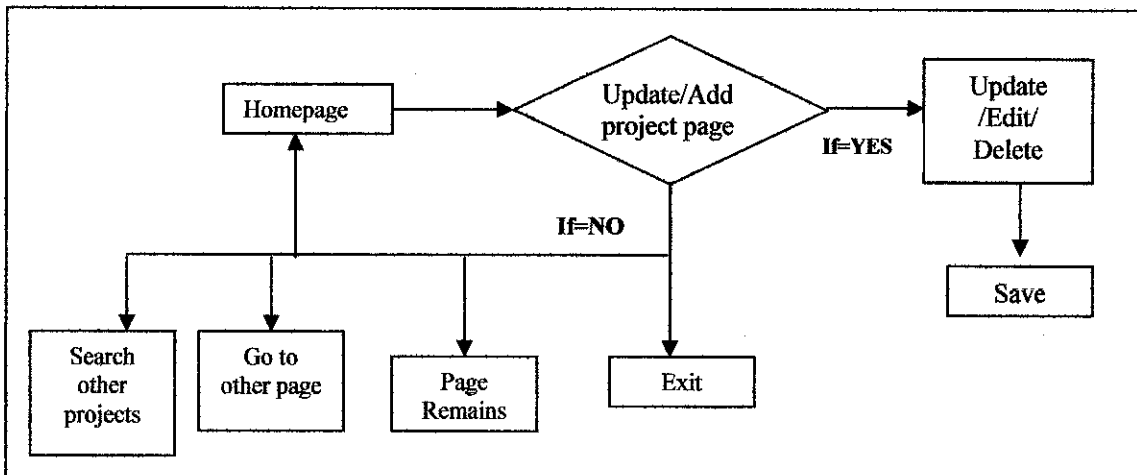


Figure 4.13: The flow for Projects Page

Assuming that the user has successfully entered the system, they can go into the project page and can add new project or edit existing project. They can also perform a search and browse for past projects.

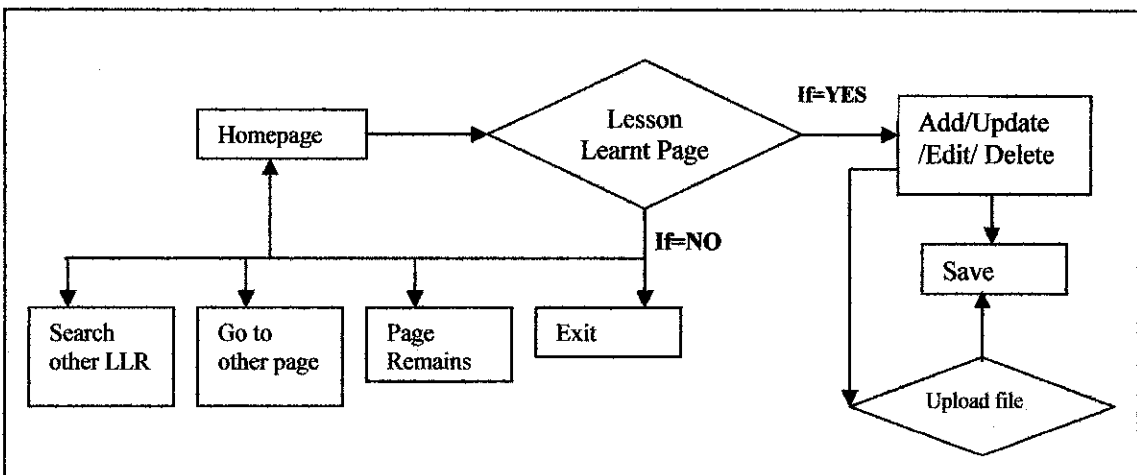


Figure 4.14: The flow for Lesson Learnt Review Page

The same concept also applies to the lesson learnt review page whereby user can add, edit and delete lesson learnt and can also upload file that is relevant to the lesson learnt or projects.

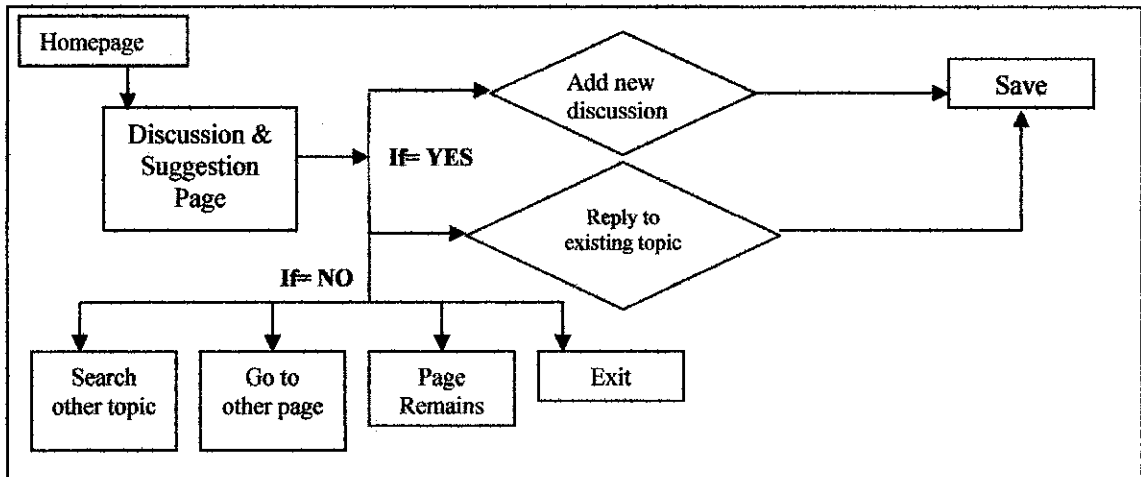


Figure 4.15: The flow for Discussion and Suggestion Page

Figure 4.15 can show both the flow for suggestion and discussion. User can either reply or add new discussion or idea into both pages. After that, they can save it and go to other pages or exit the system.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 RECOMMENDATIONS

After completing this project, the author has found out that there are several recommendations that can be done in order to make the system more efficient and user friendly.

- The interface of the system should be more user-friendly and have the corporate look.
- To connect the system to mobile device. For example when a user sends a discussion topic to the discussion submission page, the expert who is supposed to answer the question can receive a reminder from his or her mobile device.
- Training should be done with focal points of each sections or departments and hence can help others new to the system to use it widely.
- To embed more interactive icons to the website so that it won't look dull.

5.2 CONCLUSIONS

If we look in more general view, we can see that the foundation of the development of the Expert Directory System not only will help in the E&P business but also to other business worldwide. The system is however is merely a tool for capturing and sharing the knowledge within an organization. The people of an organization are actually the one that will drive this system to success if they use it efficiently.

The system will have 5 main parts; the expert details which include information about staff and their expertise, collaboration tools, capturing and sharing lesson learnt and best practices, ideas and suggestion and past projects.

The research will be more concentrating on why knowledge management is important and its substances and roles in an organization. The end result of this project hopefully will be used and deployed in an E&P business thus bringing successful project along with other knowledge management project.

Reference:

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APPENDIX A

APPENDIX A: DATABASE OF EXPERT DIRECTORY SYSTEM

Table	Action	Records	Type	Size	Overhead
<input type="checkbox"/> discussion		1	MyISAM	2.1 KB	-
<input type="checkbox"/> expertdetail		11	MyISAM	6.4 KB	-
<input type="checkbox"/> idea		1	MyISAM	2.1 KB	-
<input type="checkbox"/> ltr		0	MyISAM	3.6 KB	1,588 Bytes
<input type="checkbox"/> login		1	MyISAM	2.0 KB	-
<input type="checkbox"/> projects		8	MyISAM	5.6 KB	-
<input type="checkbox"/> staff		5	MyISAM	2.2 KB	-
<input type="checkbox"/> tbl_forum		8	MyISAM	2.6 KB	-
<input type="checkbox"/> tbl_register		3	MyISAM	2.2 KB	-
<input type="checkbox"/> tbl_replies		5	MyISAM	2.2 KB	-
10 table(s)	Sum	43	-	31.0 KB	1.6 KB

Check All / Uncheck All / Check overheaded
 With selected:

Tables in Expert Directory Database

Field	Type	Attributes	Null	Default	Extra	Action
<input type="checkbox"/> exp_id	int(10)		No		auto_increment	
<input type="checkbox"/> exp_first	varchar(40)		No			
<input type="checkbox"/> exp_last	varchar(40)		No			
<input type="checkbox"/> exp_position	varchar(40)		No			
<input type="checkbox"/> exp_section	varchar(50)		No			
<input type="checkbox"/> exp_dept	varchar(50)		No			
<input type="checkbox"/> exp_email	varchar(50)		No			
<input type="checkbox"/> exp_no	int(12)		No	0		
<input type="checkbox"/> exp_fax	int(12)		No	0		
<input type="checkbox"/> exp_interest	varchar(50)		No			
<input type="checkbox"/> exp_qual	varchar(50)		No			
<input type="checkbox"/> exp_prof	varchar(50)		No			
<input type="checkbox"/> exp_hobby	varchar(50)		No			
<input type="checkbox"/> exp_location	varchar(40)		No			
<input type="checkbox"/> exp_photo	varchar(50)		Yes	NULL		

Check All / Uncheck All / With selected:

Attributes of Expert Details Table

Field	Type	Attributes	Null	Default	Extra	Action					
<input type="checkbox"/> proj_id	int(10)		No		auto_increment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_name	varchar(50)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_category	varchar(70)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_desc	varchar(200)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_member	varchar(200)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_location	varchar(70)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_start	varchar(20)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> proj_end	varchar(20)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Check All / Uncheck All With selected:

Attributes of Project Details Table

Field	Type	Attributes	Null	Default	Extra	Action					
<input type="checkbox"/> llr_title	varchar(50)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> llr_desc	varchar(100)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> llr_obj	varchar(200)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> llr_prepare	varchar(50)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> llr_date	varchar(12)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> suc_what	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> suc_why	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> suc_how	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> fail_what	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> fail_why	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> fail_how	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> recom_what	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> recom_who	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> recom_when	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> recom_review	varchar(250)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> recom_id	int(10)		No		auto_increment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Attributes of Lesson Learnt Review Table

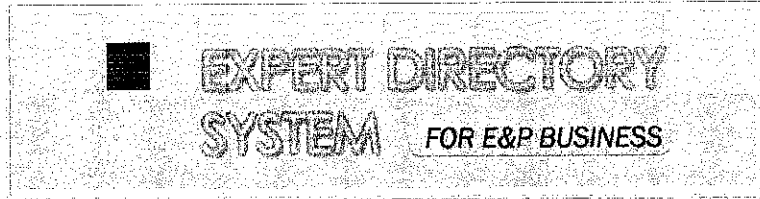
Field	Type	Attributes	Null	Default	Extra	Action					
<input type="checkbox"/> forum_id	int(9)		No		auto_increment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> date_posted	date		No	0000-00-00		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> topic	varchar(255)		Yes	NULL		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> email_address	varchar(255)		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> message	text		No			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> views	int(9)		No	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Check All / Uncheck All With selected:

Attributes of Suggestion and Discussion Page

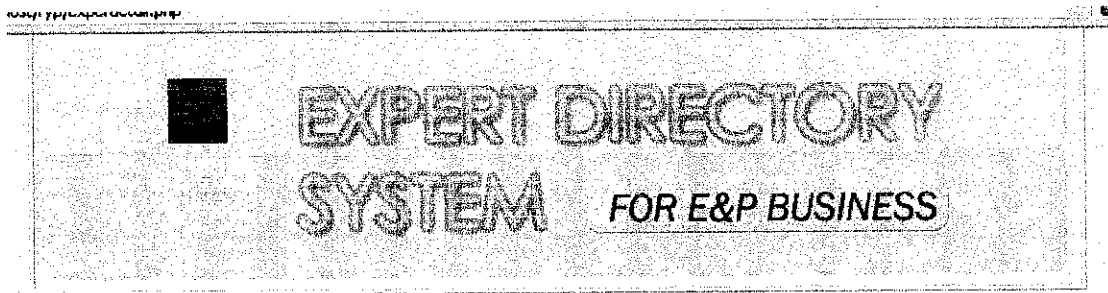
APPENDIX B

APPENDIX B: EXAMPLE OF THE SYSTEM INTERFACE



Username: *	<input type="text"/>
Password: *	<input type="password"/>
Remember me: <input type="checkbox"/>	
<input type="button" value="Login"/>	

Login Page for Expert Directory System



HOME Expert Detail Projects LLR Suggestion Log Out	First Name	<input type="text"/>
	Last Name	<input type="text"/>
	Position	<input type="text"/>
	Section	Data Mgmt <input type="button" value="v"/>
	Department	Data Mgmt & Capability Development <input type="button" value="v"/>
	Email	<input type="text"/>
	Office No	<input type="text"/>
	Fax No	<input type="text"/>
	Interest in working field	<input type="text"/>
	Qualification	<input type="text"/>
	Professional Membership	<input type="text"/>
	Hobby	<input type="text"/>
	Location	<input type="text"/>
	Upload Photo	<input type="text"/> <input type="button" value="Browse..."/>
<input type="button" value="Clear"/> <input type="button" value="Insert record"/>		

mIRC - [prin... 4 Microsoft ... 2 Internet ... syahmad_put... 3 Windows ... 81 Mandy M...

Insert Data for Expert Detail Page

EXPERT DIRECTORY SYSTEM FOR E&P BUSINESS


Total result found: 3

- [HOME](#)
- [Expert Detail](#)
- [Projects](#)
- [LLR](#)
- [Discussion](#)
- [Log Out](#)

Staff ID	First Name	Last Name	Position	Section
4076	Fatihah	Kasim	Executive Knowledge Mgmt	Data Mgmt
5799	fatihah	kasim	Executive Knowledge Management	Data Mgmt
5801	fatihah	tokey topup	boss topup	Data Mgmt

Search Function for Expert Detail (applies to LLR and Projects as well)

- [HOME](#)
- [Expert Detail](#)
- [Projects](#)
- [LLR](#)
- [Discussion](#)
- [Log Out](#)



Staff ID:	5799
First Name:	fatihah
Last Name:	kasim
Position:	Executive Knowledge Management
Section:	Data Mgmt
Department:	Data Mgmt & Capability Development
Location:	Level 22, Tower 2
Email:	mira@yahoo.com
Office No:	3789078
Fax No:	323315262
Work Interest:	upstream activities
Qualification:	Bsc. Hons. Civil Engineering
Professional Membership:	SPE NACES
Hobby:	travelling

[Edit](#) [OK](#)

Data that has been inserted can always be updated

EXPERT DIRECTORY SYSTEM FOR E&P BUSINESS

HOME Expert Detail Projects LLR Discussion Log Out	Project Name	<input type="text"/>
	Project Category	Basin Studies <input type="button" value="v"/>
	Project Description	<input type="text"/>
	Project Members	1. 2. 3. 4. 5. <input type="button" value="v"/>
	Project Location	<input type="text"/>
	Start Date	<input type="text" value="dd/mm/yyyy"/>
	End Date	<input type="text" value="dd/mm/yyyy"/>

Insert Project Page

- [HOME](#)
- [Expert Detail](#)
- [Projects](#)
- [LLR](#)
- [Discussion](#)
- [Log Out](#)

Lesson Learnt Title:	<input type="text"/>
Description:	<input type="text"/>
Objectives:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
Prepared By:	<input type="text"/>
Date: ddmmyyy	<input type="text"/>

KEY SUCCESSES

What went well?:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
Why?:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
How can we repeat?:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>

KEY FAILURES

What did not go well?:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
Why?:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
How can we avoid in the future?:	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>

ACTIONABLE RECOMMENDATIONS

What could be immediately applied?	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
Who:	<input type="text"/>
When:	<input type="text"/>
What need further review?	<ol style="list-style-type: none"> 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>

Insert LLR Page

[Post New Topic](#)

[Search Topics](#)

Date	Topic (click topics below to view)	User Name	Views	Replies
13th Oct 2006	hari ni sgt surwi	bunyami	2	1
11th Oct 2006	How about gathering after lunch	mayur	4	1
11th Oct 2006	Terengganu Offshore	mayur	1	0
10th Oct 2006	Terengganu Offshore	mayur	3	0
02th Mar 2006	mayur lol	mayur	3	1
02th Mar 2006	mayur lee	mayur	0	0
15th Jan 2006	test6	mail@thewebdrivers.com	0	0
15th Jan 2006	Law admin	CraterLake Staff	3	0

Powered by [The Web Drivers](#)

Discussion and Suggestion Page

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[Search Topics](#)

How about gathering after lunch - mayur

maybe at 2.30?

Re: How about gathering after lunch - mayur - (13th Oct 2006)

fine with me

Post Your Reply

Message

User can Post New Topic or Reply on Existing Topic