Knowledge Management: An Implementation Of K-Portal In Fiit, Unisel

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ABSTRACT:

The culture of knowledge sharing in the organization play a vital role as to ensure the knowledge is shared among the faculty staff. Knowledge sharing culture contributes to a positive working environment. Currently, there is no platform for the Faculty of Industrial Information Technology (FIIT), Unisel academic staff to share knowledge among them. As it is done manually, the sharing process is through common meeting or by any offline discussions. There is no repository for future retrieval. However, with open source solution the development of knowledge based application may reduce the cost tremendously. In this paper we discuss about the domain on which this knowledge portal is being developed and also the deployment of open source tools such as JOOMLA, PHP programming language and MySQL. This knowledge portal is evidence that open source tools also reliable in developing knowledge based portal. These recommendations will be useful to the open source community to produce more open source products in future.

Keywords: *Knowledge management, Portal, Content Management, JOOMLA (Barclay & Murray, 1997)*

1. Introduction

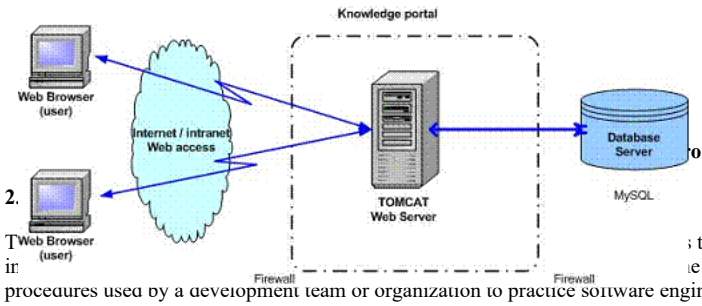
The need of knowledge management in the organization is to create alternative way to access the information from the staff (Barclay & Murray, 1997). The aim of knowledge portal is to provide views onto domain specific information on the World Wide Web, thus facilitating their users to find relevant, domain specific information (Staab, 2001). Hence, to develop a portal, we need reliable software, knowledge and technical skill. Purchase suitable software that suits our needs will require money and time consuming. But not many organizations has sufficient budget for it. Therefore, Faculty of Industrial Information Technology (FIIT), University Industry Selangor have decided to develop knowledge portal using open source tools. Open source software can be defined as that is made available freely to all and many of them voluntarily contributes developing software for the organization (Hippel & Krogh, 2003). This portal can be accessed from any computer clients connected to the internet. The purpose of this knowledge portal is to be a catalyst centre of knowledge information within the FIIT, UNISEL. It is hope that the portal will increase the efficiency and productivity of the faculty by eliminating manual and offline knowledge sharing.

1.1. Domain Analysis

A portal is a Web-based application that acts as a gateway between users and a range of different high-level services. Before developing the knowledge portal, we need to understand the domain or the boundary for the portal being developed. Here, the domain is higher learning institute (HLI) and focusing on knowledge sharing information in FIIT. The traditional ways of sharing information or knowledge in FIIT are as listed below:-

- Faculty Meeting
- Informal discussion
- Faculty Activities
- Email
- Chatting – Yahoo Messenger, Skype and others
- Mobile device – SMS
- Document Sharing
- Pen/Thumb drive, CD, external hard disk

The entire communication channel as said above did not have any repository for future retrieval. These knowledge is only available at current time and may be lost or damage in future. The proposed knowledge portal is been developed in web based environment which can be accessed via internet or wireless connection. Figure 1 show the environment, where the knowledge portal resides.



2. **onment**

T ; through investigation, analysis, design,
ir e documented collection of policies, processes and procedures used by a development team or organization to practice software engineering is called its software development methodology (SDM) or system development life cycle (SDLC) (Chapman, 2004). In developing a software, the methodology used need to be defined and the best technique have to be selected. Among the software methodology available are Agile Software Development, Extreme Programming, Joint Application Development, Waterfall, Spiral, Rational Unified Process (RUP) and etc (Chapman, 2004). Here, RUP have been chosen due to the advantages by this technique. In RUP, we divide the features in iterative approach. The most important features will be delivered first continued the less importance features. Figure 2 below depicts the RUP process.

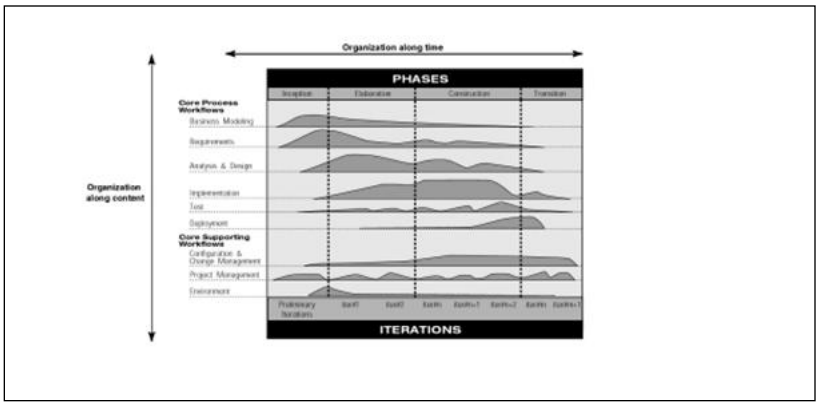


Figure 2: RUP Process (Rational Software Development Company, 1998)

3. Software Requirement

For any development the tools and techniques selection for development is a challenging task to complete. During the requirement phase, K-Portal team already decided to use content management system to develop this portal based on 2 factors; Time constraint and resource allocation. The time allocated to develop this K-Portal is very limited and we are lacking of resources in terms of human and hardware. Content management system also enable non technical user with no knowledge on computer programming, graphic imaging tools, or markup language like HTML to add new material to a website or modify the existing contents as and when required in an intuitive and real-time fashion (Abaxi-Bexheti, 2008). All this factors need to be considered when we choose to use content management system as our tools of development. These factors can be illustrated as in figure 3.

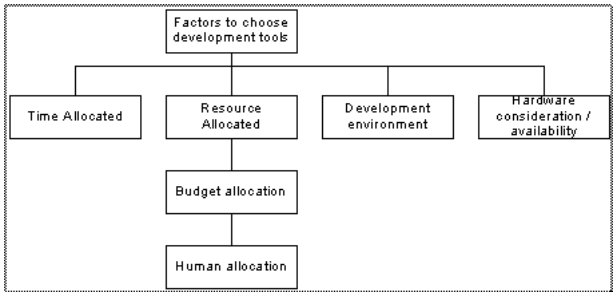


Figure 3: Factors To Choose Development Tools

After we consider the above illustrated factors, we come across with many content management systems that provide more or less functionality alike. The comparison between open source CMS application that available in market as listed down in Table 1.

Table 1: Web Content Management System Comparison (Austin, 2010)

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	Programming Language	Database	Web Server	FTP Support	UTF-8 Support
Joomla	PHP	MySQL	Apache	Provided as a free add-on	Limited support available
Drupal	PHP	MySQL, PostgreSQL	Apache, IIS	Limited FTP support	Available
Mambo	PHP	MySQL	Apache, IIS, any PHP-enabled web server	Not available	Available
Open CMS	Java 1.4	MySQL, PostgreSQL, Oracle, MSSQL	Tomcat, Apache	Not available	Available
PHP Nuke	PHP	MySQL, PostgreSQL, mSQL, Interbase, Sybase	Apache, IIS	Not available	Not provided
Plone	Python	Zope	Apache, IIS, Zope	Available	Available
TYPO3	PHP	MySQL, PostgreSQL, Oracle, MSSQL	Apache, IIS	Available	Available
WordPress	PHP	MySQL	Apache, mod rewrite	Available as a free add-on	Available
Xoops	PHP	MySQL	Apache, IIS	Available	Limited support available

After considering the differences between the open source web CMS, we have decided to use JOOMLA as our development tools for knowledge portal. Availability of support and stability of the tools itself become a reason for our decision. JOOMLA as open source web CMS contain PHP as programming language, MySQL as a database and Apache Tomcat as a web server.

4. System Architecture

Architecture of a system always depends on development tools. JOOMLA architecture being utilize in K-Portal development based on reason JOOMLA is main development tools for K-Portal. JOOMLA architecture also known as 3-tier architecture (North, 2009). It does consist of 3 layers: Extension layer, application layer and framework layers. Utilization of these 3 layers in K-Portal will be discussed in the next section.

4.1. Extension Layer

Extension layer consist of modules, components and templates. K-portal were developed using appropriate modules and components. All this modules and components simplified in the figure 4.

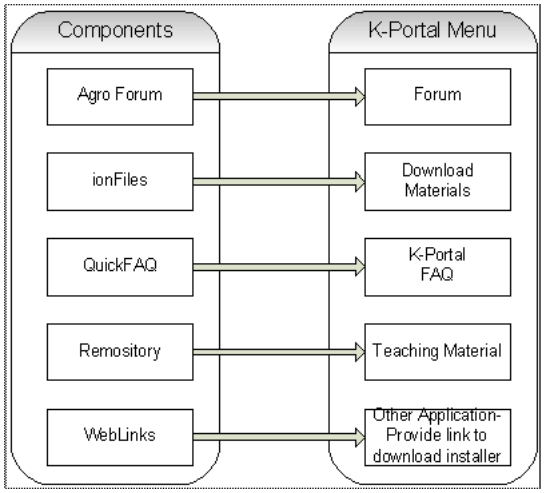

Figure 4: Components In K-Portal

4.2. Framework Layer

Framework layer consists libraries and plugins. Libraries are required by the Framework or are installed for use by third-party developers. Meanwhile, plugins extend the functionality available in the Framework. Remository component used in k-portal come with plugin such as audio and video features. This plugins are disabled because of space unavailability issue.

4.3. Application Layer

The middle application layer consists of applications that extend the Framework JApplication class. Currently there are four applications included in the Joomla distribution. JInstallation, JAdministration, JSite and XML-RPC. JInstallation is responsible for installing Joomla on a web server and is deleted after the installation procedure has been completed. JAdministrator is responsible for the back-end Administrator. JSite is responsible for the front-end of the website. Meanwhile, XML-RPC supports remote administration of the JOOMLA website.

5. FIIT K-portal Features

FIIT knowledge portal developed with an intention to encourage knowledge sharing culture among academic staff. At the same time this knowledge portal will help in academic staff to discuss topics regarding the research interest group. This knowledge portal can be a platform for them to communicate and share their ideas regarding the subject they teach and also the research that they involve. The arrangement of the menu item in portal shows the realization of the above said objective.

The contents of portal are shown in Table2.

Table 2: FIIT K-Portal Features

Features	Description
Registration	- Faculty member will be registered by web master. - Web master will deal with admin to get details about staffs.
Paper Presented	- Paper that already presented by faculty member either internal or externally will be published here for knowledge sharing and acknowledgement by others faculty member.
Conference	- Provided list of web links to upcoming academic and research events either local or international events.
General Information	- Other unregistered user can view this page which contains UNISEL website and FIIT WEBSITE. - They can also retrieve some information about FIIT K-portal itself.
News/Announcement/Event	- Latest information regarding any faculty activities provided by Dean's PA and will be upload by K-portal web master.
Collaboration	- In this column, any information that relates with Industrial Training and Industrial Collaboration Program will be updated here by K-portal web master. - All info regards industrial training and industrial collaboration program will be given by person in charge.
Other application	- It contains link to other application. - This link can be divided to four types; Freeware, Shareware, Public domain and Open source.
Download Material	- All FIIT internal forms template can easily be uploaded here.
Teaching Material	- Lecturer's can retrieve a complete lecture's note, assignment, quizzes, exam questions and schemes, etc. - All information will be put accordingly in a different folder by program, course subject and semester.
Help	- It contains guideline on how to use the FIIT K- portal

6. Result

Below in Figure 5, is the main page of K-portal being developed using open source application. K-Portal is a knowledge portal for faculty community which enable the all the staff including dean, lecturer, HOP to meet, to interact and to share the knowledge regardless time and place. The portal is built based on the need of the faculty community and provides a cost effective platform for the FIIT staff. It has been tested through the pilot implementation and shows a good response of how ICT can be leveraged in improving how we enable the knowledge sharing and it's a timely as knowledge is becoming important for our teaching, research activity and yet serves as knowledge platform. It is hoped that K-portal will continue to grow and in the long run it gives a positive impact. It could be used to access updated information for better sharing culture.

Therefore, K-Portal would increase knowledge capturing and retrieval skills and knowledge and would also narrow the gasp among the faculty members either existing or new staff

Figure 5: Main Page Of K-Portal

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