Designing an online publication system for Malaysian universities

Foad Marzoughi *
Faculty of computer science and information system
UTM (University Technology of Malaysia)

Mohammad Mehdi Farhangian *
Faculty of computer science and information system
UTM(University Technology of Malaysia)

ABSTRACT
This paper presents an online publication system that helps authors and journals to handle the publication process in an effective process. This system follows Unified Process that all the phases including analysis, design, and implementation and testing performed and described with details. The system implemented by using various tools and programming language. Also, the results of tests have a positive feedback

.

Keywords
Online Publication, Unified modeling language, rational unified process

INTRODUCTION AND BACKGROUND

Electronic publishing has been defined as non-print material produces digitally. Electronic publishing is used for a variety of digitally produced materials including bulletin boards , news groups , mailing lists , CD-ROM based media and websites (Johnson and Cook 2000). According to Tonta in 1997 electronic publishing can be classified to six main groups that are e-bulletin , e-magazines , Web pages, new archives , discussing lists and e-journals .E –journals can be grouped as originally is printed , in addition electronically .

Developing a system for authors is a sophisticated task. It requires remarkable skills in programming and knowledge in data base systems. This paper presents a solution for developing an online publication system.

Electronic publishing can be viewed as new opportunity for sharing knowledge and create values for education and research in different ways including paper, thesis, book and so on . Online publication provides a system that store, archive, update, collect and share these scholarly works. This online publication brings many advantages for librarians, university press, and technologist and so on. In traditional method , providing a platform for making accessible all the scholarly works and sharing them is not a simple task.

The system development life cycle (SDLC) is the process of understanding how an information system (IS) can support business needs, designing the system, building it and delivering it to users (Dennis Allen 2005). The Unified Process approach is selected for developing online application .the details of how Unified Process is applied and its life cycle is presented in following sections

REQUIREMNTS

For understanding user requirements and feasibility of system, requirement workflow is needed. After analyzing carefully the current system and user requirements, business needs are summarized as follows: Using the web, authors should be able to upload the details of the publications which are in the front page, title page, table of contents, and paper work. Each faculty should be able to search for the publications, identify the number of publications which are published by the authors whereby the performance of the academician and department can be evaluated. Establish the impact factor of the journal. (How many paper that cited the publication?) Identify the organization of the publication such as IEEE, Scopus, and Web of science and so on.

For determining weather to precede the online publication in University Technology of Malaysia a detailed feasibility analysis is developed. Three techniques of feasibility

*-first authors with equal contribution

including technical feasibility, organizational feasibility and economical feasibility are developed and showed that processing the system is feasible. The most important element of feasibility is performing economic feasibility analysis or cost-benefit analysis. That all the tangible and intangible of costs and revenues calculated. By this analysis, the Return on Investment of project is calculated that is equal to 2.26195. And Break-Even Point is determined that will occur in second year.

On of the important part of project management is assessing and addressing the risks associated with developing a project. A detailed risk analysis is developed for online publication shown in table 1

#	Technology Risk	Probability	Potential Impact on the project	Way to address the risk
1.	Server Down	High	Serious	
2.	Software and Hardware malfunction	Low	Tolerate	
3.	Database Corrupt	Moderate	Serious	Prepare backup regularly
4.	Low speed of internet	Low	Tolerate	
#	People Risk	Probability	Potential Impact on the project	Way to address the risk
1.	Programmer inexperience in PHP	High	Catastrophic	Backup Programmer
2.	Staff turnover	High	Catastrophic	Provide training
#	Organizational Risk	Probability	Potential Impact on the project	Way to address the risk
1.	Management Restructure	High	Catastrophic	Prepare a briefing document for senior management showing how the project is making a very important contribution to the goals of the business
2.	Financial problem	Moderate	Serious	Manage the problem in advance
#	Requirement Risk	Probability	Potential Impact on the project	Way to address the risk
1.	Unexpected of changes requirement	High	Serious	Meeting with the project Champion
2.	Customer failed to understand design requirement	Low	Tolerate	Training provided to users
#	Estimation Risk	Probability	Potential Impact on the project	Way to address the risk
1.	Underestimate software size	High	Serious	Prepare a briefing with the customer what the right software can be used.
2.	Tight Deadline	High	Catastrophic	Start earlier and follow the schedule accordingly

TABLE 1. RISK ANALYSIS

For a deep understanding of requirements , a problem analysis of current system is needed. In this case a Root Cause Analysis is selected that is depicted in figure 1

FIGURE 1. ROOT CASE ANALYSIS

For gathering information of requirements JAD-session hold by inviting several experts with experience in publication. Besides, Authors, reviewers, administrator and editors were interviewed.

Analysis and design

After understanding the requirements, the way of analysis is paved. According to requirements, Online Publication System will be running in a system with client-server architecture. In this architecture depicted in figure 2 clients is responsible for presentation logic while the server is responsible for the data access logic and data storage.

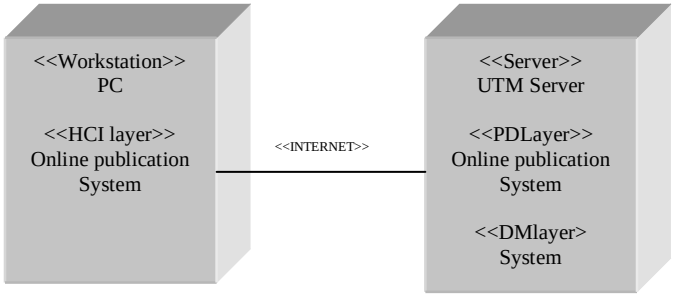

Figure 2 . architecture of system

use case diagram is depicted in figure 3

FIGURE 3 . USE CASE DIAGRAM

To provide further detail of functionality of information system, activity diagrams is depicted in figure 4

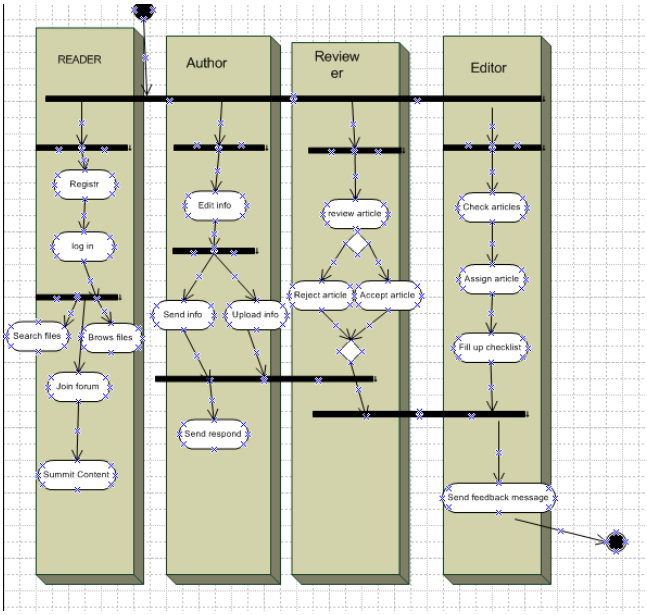

FIGURE 4. ACTIVITY DIAGRAM

In this system many features are considered such as registration and log in function that determine the access level of registered and unregistered users. Also, this function collects information of users including username, password, phone number and e-mail. A focused search and brows mechanism is designed for readers to access all the scholarly data in the system. A discussion function is designed for sharing users' knowledge. A submission function is provided for uploading and downloading the files and it manipulate the interaction among users, viewers and editors.

In this system, both registered and unregistered readers can read overall information. Registered readers can read and download the articles. Readers are able to make and join forums and discus together. In this system, authors are able to upload their articles and a progress report clarify situation of articles that submitted in this system. Authors can handle their publications according to instruction in the system. Authors can be awarded of the rejection or acceptance of their scholar works and responds to the editors. After submission of articles, the articles will be queued and the newest one will be marked .Then, editors assign the articles to reviewer for judging about articles. the reviewer will be selected based on their experts and their knowledge background. The reviewer put their comments about each article and they send it to editors. Editors send the progress report and results to the authors. The reviewers evaluate each article and provide required recommendation for each of them.

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For showing the classes and the relationship among classes the class diagram is depicted in

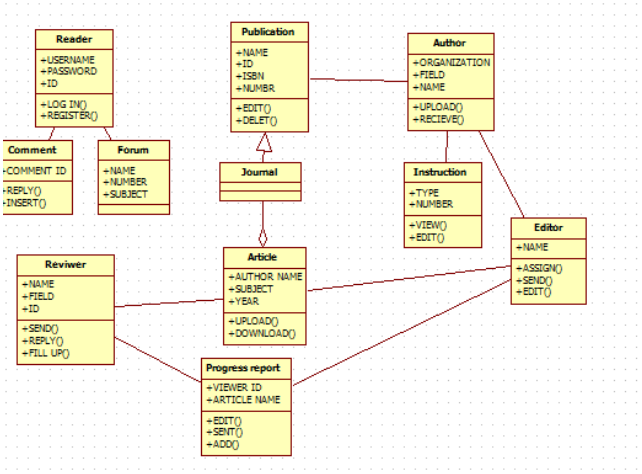

Figure 5:Class Diagram

In design phase, the blue print system is created based on previous phases. Because of flexibility of system and internal personal skills, Custom Development is selected as design strategy.

A well-designed user interface is important to improve usability; figure shows Windows Navigation Diagram (WND) for the online publication system.

The WND is depicted in figure 6

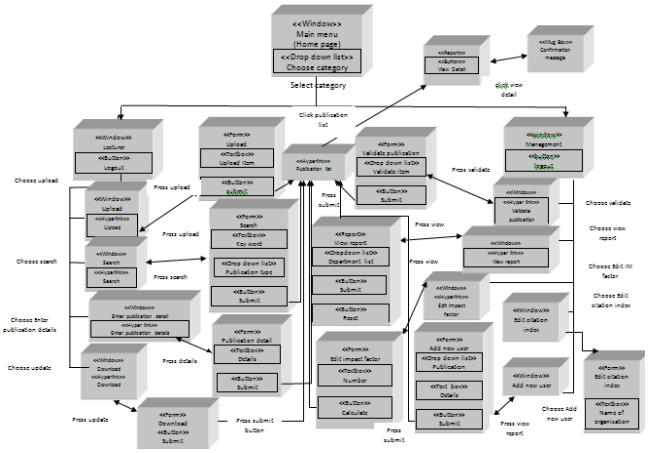

FIGURE 6. WINDOWS NAVIGATION DIAGRAM

Implementation and testing

In this phase the initial blue print is translated into codes. Several programming language is used in implementation phase including JAVA, PHP, XML and SQl. Several tools and open source soft wares are used including MAVEN, spring framework, Lucence, Table layout, J2SDK, J2ME, PHP my admin and so on. The testing is performed through the whole development lifecycle of project. Unit test used black-box testing on the CRC cards, class diagrams and contracts for all components. Integration testing is used for Web interface and system management components. From the developers' perspective, an evaluation has been carried out, two developers who actually developed the proposed system and 6 independent developer asked to imply their opinion about this system. This trial has been based on four criteria namely appropriateness, preciseness, expressiveness, and analyzability .acceptance test conducted in two stages, alpha and beta. We delivered it to 30 people with different experience including authors, editors and students and their feedback was 70 % positive.

the architecture of search system changed completely because of user requirements. The architecture of focus search engine is depicted in figure 7

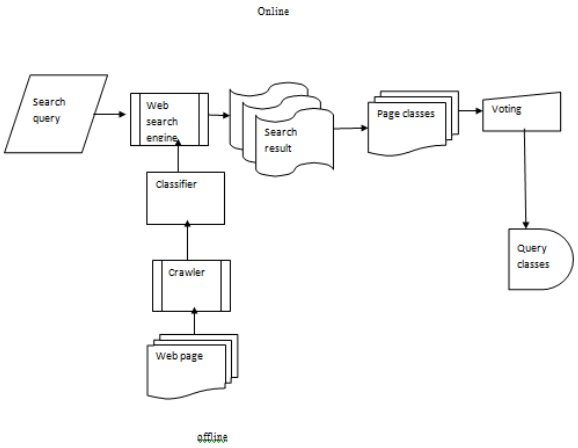

FIGURE 7. ARCHITCTURE OF SEARCH ENGINE

The following components, frameworks and applications are utilized for implementing search engine in tourism portal:

Spring framework: is an open source application framework for Java platform. The version used is 3.0.2. The core features of the Spring Framework can be used by any Java application. There are extensions for building web applications on top of the JAVA EE platform. The spring framework is used because it supports DI and IOC concepts.

Maven: is a software tool for Java project management and build automation. Maven uses a construct known as a *Project Object Model* (POM) to describe the software project being built.

Apache tomcat: is an open source servlet container developed by the Apache Software Foundation (ASF). In this system is used for showing interface.

log4j logging framework (version 1.2.9): In case of problems with an application, it is helpful to enable logging so that the problem can be located. With log4j it is possible to enable logging at runtime without modifying the application binary. The log4j package is designed so that log statements can remain in shipped code without incurring a high performance cost. To debug a misbehaving configuration use the Java VM Property -Dlog4j.debug which will output to standard out.

Apache Lucene is a high-performance; full-featured text search engine library written entirely in Java.in this system standard lucence is used.

In search engine by calling core, system start to index and the results will be inserted in to repository. Core module is always resident and the process of searching is hieratical.

Conclusion

For developing an online publication system, this project is carried out. All the software project life cycles including Requirements, Analysis, Design, implementation and testing are performed carefully. more over, this system provide a focus search engine , this paper propose a Semantic Web framework that eases the deployment of semantic search engines in online publication. In the future, it can be extended to all the Malaysian universities and it can provide a framework for sharing knowledge in online publication in all the universities in Malaysia

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