Electronic Document Tracking System (EDTS): A Prototype

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Abstract. With rapidly-changing technology and increasing emphasis in managing information properly, Electronic Document Tracking System (EDTS) has been developed as a solution system to improve the efficiency of retrieving the document online at anytime and tracking the movement of documents in and out of Faculty of Office Management and Technology (FOMT) in University Technology MARA, Malaysia. FOMT have tried to improve document handling and use through the application of information technology. EDTS was developed within windows environment using Open Source tools such as PHP and MySQL. The application relies on TCP/IP and internet to support server and client communications.

Keywords: Electronic Tracking System, Tracking System, Web Tracking System.

1 Introduction

This project is aimed to develop Electronic Document Tracking System through the web for Faculty of Office Management and Technology, UiTM. To do this, a number of forms available were employed to staff accessible locations throughout the Faculty of Office Management and Technology, UiTM. This project is becoming more crucial as the university steps up the utilization of paperless society to help staff especially delivering, maintaining and managing all documents efficiently towards excellence service quality.

The current condition for document management is managed manually by administrative staff of Faculty of Office Management and Technology, UiTM.

This project explores the scope and importance of EDTS in detail and illustrates how it expands our view of information management. It is designed to help structure the field by approaching it from three perspectives: technologies that are making EDTS possible, the application areas in which business value is being realized, and the roles and responsibilities of several personnel that will be involved in maintaining EDTS. The project suggests what administrators can do now to begin preparing for this major advancement in information management.

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The roles of the EDTS are: Each document can be logically registered, preserved, retrieved and renewed at high speed while tracing the required documents or files. Thus, efficiently performing an office work, reducing a volume of consumed paper and minimizing a work space in an office.

Improvement of functions and operations in the electronic document filing systems are been required with the spread of the system in many offices to assist the university community in the use of information technology.

1.1 Significance/Benefit of the Project

In general, the significant or benefit of this project is to manage the documents in Faculty of Office Management and Technology, UiTM through web-based application which enable the users ease in retrieving the documents.

Table 1. Substantial benefits the FOMT can expect to reap form the use of EDTS

Problem/Issue	EDTS Impact
Missing or lost files/documents.	Electronic files, if indexed and backed-up properly, will not get lost.
Take long time to retrieve required documents (lost documents).	The documents will be linked to cases as soon as they are scanned and indexed. Available to users immediately.
File available to only one user at a time.	Electronic files are available to multiple users at the same time.
Documents are copied to circulate.	The need for extra copies will be eliminated.

1.2 Object Modeling Technique (OMT) Methodology

EDTS was developed by using Object Modeling Technique (OMT).OMT is one of the most popular object-oriented development techniques developed by Rumbaugh et. al. According to Teo Xiu, X. [30], it is primarily used by system and software developers supporting full life-cycle development, targeting object-oriented implementations and has proven easy to understand, to draw and to use.

There are five main phases in OMT methodology namely analysis, system design, object design, implementation (programming/coding, installation) and testing as shown in Figure 1.

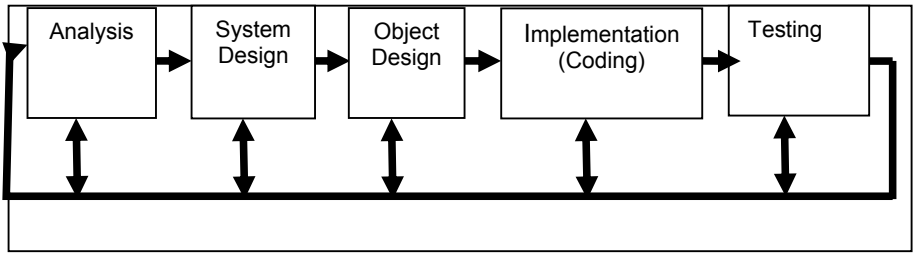

Fig. 1. OMT phases. (Source: [30]).

2 Analysis of Current System

This section will discuss about the data collection on current system of FOMT Electronic Document Tracking System which currently handled manually by the administration staffs. Issues regarding the current system were analyzed and explained with more detailed.

Category of Document
Type of document to or from the faculty includes memo, circulation, letter from outside organization or other department and others.

Current Document Management and Tracking System
The users of the documents consist of all staffs in the faculties and students. Two major transactions involved in the current system namely user record and manage the document received and user request for document. Each copy of the document needs to be kept in a file for future references.

Users Roles And Responsibilities
The roles and responsibilities of the related users that using this system are as follows:

Sender
The sender of the document can be categorized into three category namely staff (academic/administrative staffs), users from others organizations/departments and students.

Receiver
The receiver of the document can be categorized into two category namely staff (academic/administrative staffs), and students.

Current System Scope
FOMT is a faculty that has around 50 academic staff and 20 administrative staff who will be responsible for the document in and out to/from the faculty.

For this project, the OMT methodology with UML notation is used in order to analyze the system. The scope of the Electronic Document Tracking System in FOMT has been analyzed and is shown by using a use case diagram. Figure 2 shows a use case diagram of the current system of the Electronic Document Tracking System.

The description of the use case diagram is listed in the Table 2 below.

Table 2. Use case descriptions

Send document	The faculty will receive document from sender either from own staff or outside organization.
Record document	The staff (system) that responsible for the document will record the document and keep the document in a respective file.
Request for document	The receiver will request for the document and the staff responsible need to make sure that the documents are in a files for easy retrieval and can be access easily.

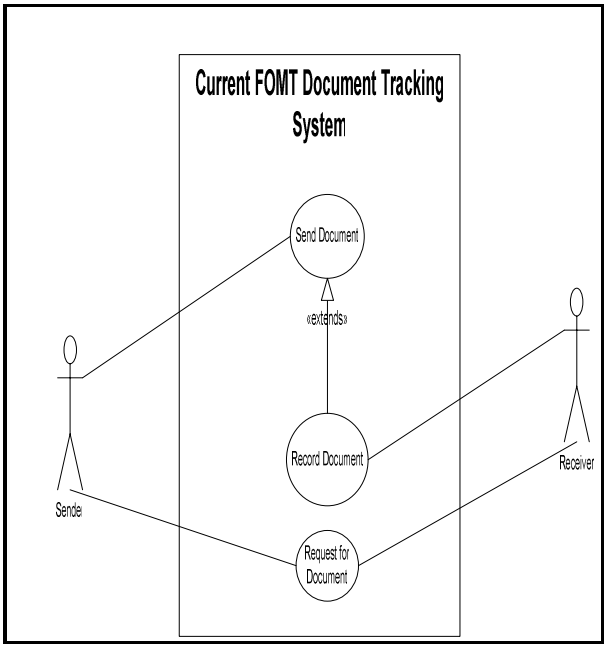

Fig. 2. Use case diagram showing the current document tracking and management system in FOMT

2.1 Issues and Challenges of Using the Current System

The current system used in order to record and tracking the document from the respective files faced many problems especially when the document needs to be retrieved in a short time.

Current system used generates some problems or issues that become as challenges for the management of the document. The issues or problems that related with the current system include:

More Space Needed To Kept A Copy Of The Document In A File, More Time Needed To Search And Retrieve Document Use A Lot Of Papers, Very High Cost For Papers, Ink To Make A Copy Of The Document, Missing Document Or Misplaced ,Duplication Of Document In Different File, No Sharing ,Separation And Isolation Of Documents,

2.2 Propose Electronic Document Tracking System through Web

All these issues and problems need to be solved to make sure every sources and information can be used effectively. Therefore, a systematically computerized or online document system need to be developed for benefits of all users namely the staffs of the faculty. The current practices of handling or recording the documents has to be automated with the availability of higher technology and higher specification software in the market.

3 Analysis of Document Tracking System

Analysis phase is an important phase in OMT methodology in developing a system. During analysis stage, information about a problem domain is captured. OMT allows a lot of flexibility as to what information to capture in the models and how to represent that information. The models are explained according to scope of the process of the system. The process of the current system is done manually and the issues occurred discussed in the previous chapter.

3.1 User Requirements

User requirements are the output from the process of collecting data and analyzing information about the part of the organization that is to be supported by the database application. The user requirements for this system are as follows:

User need to login to access into the system, user can retrieve the document through the system, user can change password of the system, user can change type of users by using the system. user can upload the document through the system. user can change the details of the documents for accuracy of document and indirectly easy for searching, user can delete document which are outdated to save space in the database, user can search for document according to different field and user can register to get their username and password.

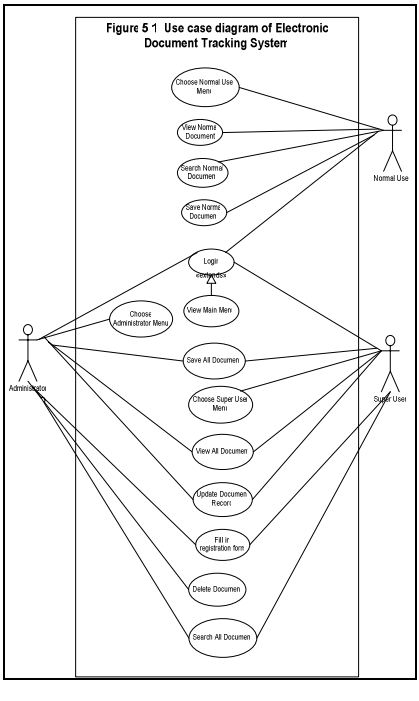

Fig. 3. Use Case diagram of the system develop

3.2 Object Model

The object model is the most important model. It identifies the object classes in the system and their relationships, as well as their attributes and operations. It represents the static structure of the system. The object model is represented graphically by a class diagram. The object model describes the data structure that the dynamic and functional models operate on.

In addition, the operations in the object model correspond to events in the dynamic model and functions in the functional model. The OMT identifies the following for the system such as identifying objects and classes and prepare a data dictionary.

3.3 Identify Use Cases of the System

Figure 3 showing a use case diagram of the electronic document tracking system that consist of three actors namely super user, normal user and administrator.

4 Implementation

This section will discuss the design and implementation of the prototype system namely FOMT Electronic Document Tracking System. It will give an overview of object form related to the system, the architecture of the web application, and the prototype system architecture

In this phase, output of the design will be transferred in source code. Any programming language whether using object approach or not can be used during programming language process. For this FOMT Electronic Document Tracking System, PHP is used as a programming language with MySQL database.

4.1 FOMT Electronic Document Tracking System Programme

The programs of the system are as follows:

- Object Form for Recording/Uploading, Searching /Viewing, Updating And Deleting Document.
- Object Form for Registering New User, Searching/Viewing, Updating And Deleting User Details.

4.2 The Prototype System Architecture

The prototype model proposed in this project can be implemented on several other platforms. However for the purpose of this project, the prototype was developed using the relational database in the web environment.

This project chooses Apaches as the web server. Apache web server is one of the two-web servers that dominate the market. The other is Microsofts's IIS. Apache server is an open source, anyone with the skill can write code that extends the functionality of Apache [11].

For the middleware, this project chooses Hypertext Preprocessor (PHP). PHP will most often run as an Apache extension, known as the Apache module. PHP belongs to

a class of languages known as middleware. This language work closely with the web server to interpret the requests made from the World Wide Web, process these requests, interacts with other programs on the server to fulfill the request, and then indicate to the web server exactly what to server to the client's browser. PHP is a cross-platform and it will run on Windows 2000/NT and UNIX and with both IIS and Apache. PHP also works on Netscape, Roxen and other wide variety of systems. For the database, MySQL is chosen because it is free. MySQL will be extremely fast for small-to-medium-sized databases.

There are three types of actors that will use the system. The actors are the users that consist of the administrator, super user and normal user. The system architecture contains two main subsystems and one relational database. The two main subsystems are the Document Tracking System (involve the process of Recording/Uploading new document, searching/viewing, updating document details and deleting document) and User Registration (involve the process of register new user, search, update and delete user) as discussed in chapter six. The relational database, which is used to store the information, is MySQL. The subsystems will interact with the relational database when storing or retrieving information. The actors will also interact with the systems and its architecture.

5 Conclusions and Recommendations

This section reviews the overall progress of this project. It includes the advantages, problems and limitations encountered during the development of the prototype of FOMT Electronic Document Tracking System. Recommendations for future enhancements will also be discussed.

5.1 Conclusions

As for the conclusion, this system is one of the major systems that the organization must have to handle the management and tracking of documents. It gives many benefits and helps the top level management to retrieve the document easily at anytime and anywhere with the support of the Internet connection.

One of the major roles played by administrative staff mainly the Personal Assistant is to provide and manage the documents in and out to/from the faculty. Therefore, it is very important to make sure the best way is applied in order to gain competitive advantage and effectiveness or efficiency in managing or handling the documents.

This prototype system could be useful because of the use of an open source package and it is also hoped that this project would enhance the organizations management information systems and the development of an effective FOMT Electronic Document Tracking System.

5.2 Recommendations

In order to overcome the limitations mentioned above, several suggestions are recommended.

The system can be extended to include other processes such as updating the document online where user can edit the document and save the updated copy in the

system to enhance the EDTS. More reliable test should be created in order to validate the accuracy and correctness of the developed system model.

This project has achieved the target, which is to generate a web-based system model for managing the document in and out to/from the faculty or organizations. Its will become the major advantage of this system because the organization will work with documents everyday and all activities done need documentation. Several suggestions for the enhancement of this system have also been recommended for the future development of this project.

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