A Study of Documents Management System Based on Web, Case Study: University

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Technical University of Sofia
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A STUDY OF DOCUMENTS MANAGEMENT SYSTEM BASED ON WEB, Case study: UNIVERSITY

Besart Prebreza, PhD Cand.
dept. Computer Systems

Technical University of Sofia
Sofia, Bulgaria
besart.prebreza@gmail.com

Daniela Gotseva, Prof.Dr
dept. Computer Systems

Technical University of Sofia
Sofila, Bulgaria
dgoceva@tu-sofia.bg.com

Plamen Nakov, PhD Cand.
dept. Information Technology in Industry
Technical University of Sofia
Sofila, Bulgaria
plamennkv@gmail.com

***Abstract*— Nowadays, security access technology has reached a high point of development and research, although more may be deemed to be researched in this field. The aim of this project is to be developing a web application tool for Document Management, to simplify application procedures for students in diploma subject trying to help them increase the impact of their work. Given that the students to have so far applied for the thesis in classical way, despite the advancement in information technology and digitizing time, the aim has been to build this online application which will facilitate the application for thesis. Applying online will be more functional than the current application, which enables you to choose mentor online. Also based on finding shortcomings in the current application as the master thesis: Ways of physical access, greater engagement of professors and students, the way of communication student/mentor this has been one of the main reasons to develop this application. We have used laravel and other relevant of the PHP and MySQL ecosystem as framework.**

Keywords*— *Document Management System, Database Management System, World Wide Web, Electronic documents management, The HyperText Markup Language

I. INTRODUCTION

A. *What is a recommendation system?*

Web Engineering is progressively emerging as a new discipline to address the unique needs and Challenges of web-based systems development. Since 1998, When the first Web Engineering Workshop Was Held in Brisbane, Australia, in Conjunction with the WWW Conference, there have been series of workshops and special tracks at major international conferences (WWW conference 1999-2005, 1999-2001 HICs, Seke 2002 and 2003 and others), and a dedicated annual International Conference on Web Engineering (ICWE) from 2002 to 2005 [1].Web engineering is the way of Developing and Organizing knowledge about web application development and That Applying knowledge to develop web applications, or to address new Requirements or Challenges. Also it is a way of managing the complexity and diversity of web applications. Web engineering is a multidisciplinary field and Includes contributions from various fields:
Systems and analysis design, engineering software, hypermedia / hypertext, Requirements engineering, human-computer interaction, user interface, information engineer, information and indexing and retrieval, testing, modeling and simulation, management project, and graphic design and presentation of developer. A web based system is like a live system. As a garden continues to grow, change, and grow. A sound infrastructure needs to swear in place to support the growth of a web-based system in a controlled, yet flexible and Sustainable way [2]. Web engineering helps to create an infrastructure That Will Allow the evolution and maintenance of a web system and support the creativity of the web. So the essence of Web engineering is to successfully manage the variety and potential complexity of web application, to avoid potential failures that could have this serious consequence.

II. LITERATURE REVIEW

A. *Web Architecture*

Web Engineering is the path of developing and organizing knowledge about web application development, applying that knowledge to develop web applications, or to address new requirements or challenges. It is also a way of managing the complexity and diversity of web applications. A web application includes four levels, a web browser on the client side to make the presentation of data encoded in HTML, a web server program that generates data presentation, an application server program that calculates business logic, and a database of data program - server. Three types of server software can compete on the same or different servers [2]. The web browser can run on most operating systems with limited hardware or software requirements. They are interfaces for users to interact with web applications. The web server is primarily for receiving requests, documenting and submitting data from web browsers via the HTTP protocol on top of the TCP / IP layer of the Internet. The main function of the web server is to fill the HTML file for web browsers [3]. If the user is looking in the existing file, it will be viewed on a server hard disk and then return the answer immediately to the user.

B. *Document Management System*

Beginning in 1980, a number of developers began developing software to manage web-based documents. These systems are treated with paper documents, which not only include printed and published documents, but also photographs and prints. Later the developer began to write a second type of system that could manage electronic documents, i.e. all those documents, or files, created on computers and often stored in local files (folders) of the users system. Previously electronic document management (EDM), systems managed one type of file, or a limited number of file forms. Many of these systems later became

known as 'image document systems', because they focused on capturing, storing, indexing, and restoring the image file format. EDM systems evolved to the point where they could manage any type of file format that could be stored on the network. Applications grew to include electronic documents, collaboration tools, and security, work and audit skills. Document Management System - is a system based on software in the case of digital document management used to manage documents and reduce physical copies. The term has some overlap with the concepts of content management systems [5]. It is often seen as a component of content management, related to digital asset management, document imaging, and work systems and for data management systems.

C. Various applications

1) 2.3.1 FileHold - FileHold is a software document management company. FileHold reorganizes the electronic work of documents by creating the order and rules for the course, documents through their life cycle, including their creation, review and approval. The workflow is flexible, imposing the discipline that businesses need to stay organized. As part of the work, the user can add comments, make changes to documents and finally collect authorizations, so that important documents are easily approved (Filehold) [5]. It can be deployed on dedicated hardware or virtual server using Microsoft SQL Server and Windows technology, or it can be installed in any private or public cloud and is available on a monthly basis for SaaS users. FileHold desktop is closely integrated with Microsoft Office and various mobile devices are fully supported.

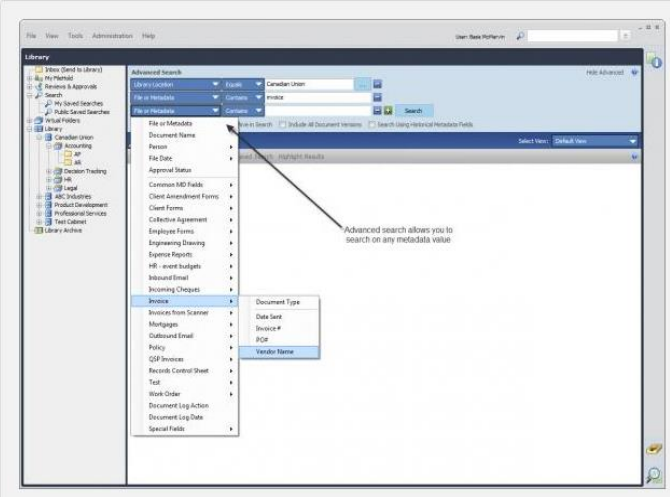

Fig. 1. Software Document Management – FileHold

2) LogicalDOC - LogicalDOC is an electronic enterprise management system, a document that is extremely useful for small and large companies. It is a valuable tool in knowledge management processing that offers flexibility and low cost, alternative to other applications. The company uses the management system to facilitate intelligent and efficient management of its resources. This leads to significant productivity increases. This system allows universal access to information and knowledge generated within the organization [1] [2]. LogicalDOC is easy to use to manage your company documents. One of the main goals is the case study of everyday life. LogicalDOC is a document management application with a web-based interaction that allows the following actions: sharing, assigning security roles, auditing, and retrieving enterprise and registry documents. LogicalDOC allows users to easily collaborate and communicate [2].

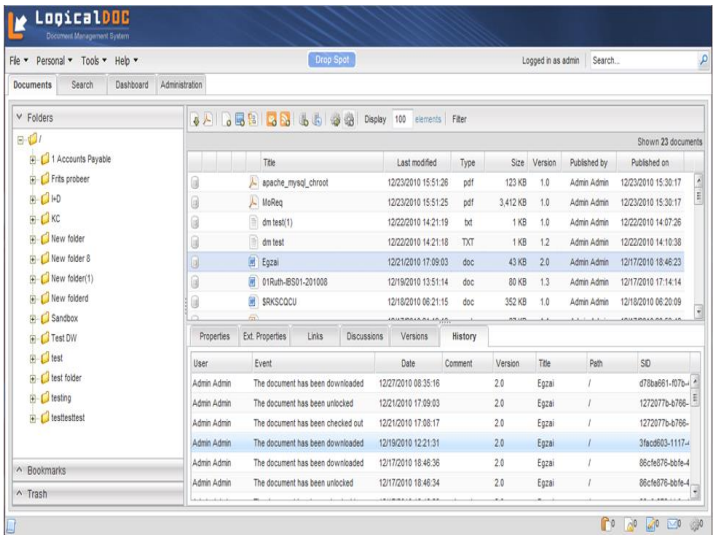

Fig. 2. Software Document Management - LogicalDOC

III. System Design

A design phase, started after the analysis process for each iteration, is done. This chapter, the same as the analysis chapter, describes the plan design phase, the solution for implementing the collected requirements. The system architecture is designed first. Furthermore, the design of the database is formulated together with the tables, which are identified and presented. Finally, a detailed description of the system is given.

A. System Architecture

Web-based document management is created using the client-server paradigm. Since systems, software has many views and only representation to describe how the application should work is show in the figure. The figure shows the system uses the client-server paradigm. It deals with the distribution of software components such as processes, objects, components and subsystems, inserting these components into the database and the web server, taking into account non-functional requirements: usability, security and system performance [6]. To clients whose requests have been executed by web servers, the server responds to their requests. If this mechanism is used and if any problem occurs, or for other circumstances, it is necessary to distribute the server to many machines, it can be done easily [6]. What functionality belongs to the server, and what functionality to the clients, is very clear if the client-server paradigm is used.

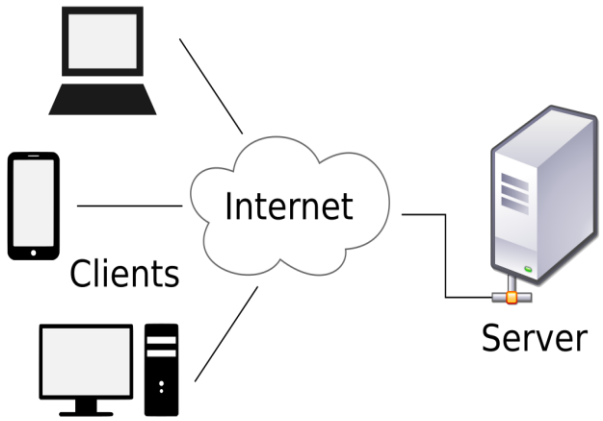

Fig.3. Client-Server Model

B. *Identify appropriate technologies and programming languages*

As stated above, this system is a web application. With the system of being an internet application, a number of suitable technologies have been selected based on many criteria such as available literature, web browser compatibility, popularity, ease of use, performance and reliability.

1) PHP - PHP is popular and widely used for the general purpose 'Programming Language' that is especially suitable for web development. PHP provides access to important functionality with a relatively small amount of code, using its large library of libraries and extensions. These libraries have been fully tested and are very reliable [7]. PHP was choose for these reasons:

- Free;
- Open Source;
- Fast;
- Easy to use;
- Extensively documented;
- Reliable;
- Independent platform;
- Large community.

JQuery- is free JavaScript software designed to provide web page interaction, applications and advanced effects to the user.

2) MySQL Database - As stated earlier, the use of data for this system is the main objective. The decision was made, given the most popular - open source databases. With minimal changes to the code, the DBMS can be changed. Choosing a DBMS cannot play any role in the operation of the system, as all DBMSs must have the functionality that our system expects to have. MySQL was the clear choice since a database had to be used for system development. MySQL was chosen because it is free, open source, and very popular in web development. MySQL syntax is very similar to other DBMSs and supports all the functions needed for the IMC application page [8].

3) Bootstrap - Bootstrap is a front-end tool for web application development. HTML and CSS are a collection of bootstrap. It uses some of the latest browser techniques and provides us with various topographies, buttons, tables, formats, navigation, etc. Bootstrap is built with SAAS, which is pre-processor that offers more power and flexibility than CSS. There are several benefits to using bootstrap. First, it is easy to implement, it is convenient sense that you can make it your own, save your time using ready-made pieces of code. Lastly, it is responsive, if you switch from laptop to tablet or phone, Bootstrap adapts to changing platforms quickly and efficiently [9].

4) Other Software Development Tools - To assist with scripting, code, database management, control, versioning, and debugging, a number of software development tools were used during the development of this project. To develop any software, without any tools, like the ones I will describe, requires more effort. In addition to providing the functionality that aids the code writing process, the use of these tools enhances the quality of the software. The code is highly readable, the database management is faster and the final software contains fewer bugs .

- PHPMyAdmin - is a graphical user interface that creates a database management for MySQL. PhpMyAdmin was used to create and maintain the database during the project.
- XAMPP - is an open-source platform, which contains a web server installed on localhost. This package was developed by 'Apache friends' and consists mainly of Apache HTTP Server, MySQL Database and PHP and Perl programming language script interpreters.

5) PHPWord - PHPWord is a purely written library in PHP that offers a range of classes to write to and read from another 'file format' document. The current version of PHPWord supports Microsoft Office Open XML, Oasis Open Document Format for Office Application (OpenDocument or ODF), and Rich Text Format (RTF) [10]. PHPWord is an open source project, permitted under the terms of LGPL version 3. PHPWord is intended to be a high quality software product, including continuous integration and unit testing [10].

6) Laravel Framework - Laravel is a web application framework that seeks to facilitate the development process by simplifying the repetitive tasks used in most of today's web applications, but is not limited to routing, authentication, caching, and sessions. [11] [12].
You can start building a Laravel app in minutes. It is always a fun process. Laravel gives you the right tools and good ideas to help you build your site faster, more consistent and very easy to maintain. What can you create using Laravel? From blogs, CMS (Content Management System), e-Commerce solutions, large-scale business applications, social sites and more [12].

7) User interface system - Perhaps the most important part of this application is the user interface. Users interact directly with the user interface to publish the topic proposal, which he can choose in any language he wants to apply for

the topic, also the professor can look at the topics and forward to the student with the suggestions he has made. Different types of 'User Interface Prototype', these Prototypes are used in order to get from future users their knowledge to make the website more usable and much more visible. The final systems of the interface are shown in the implementation section and for the appendices.

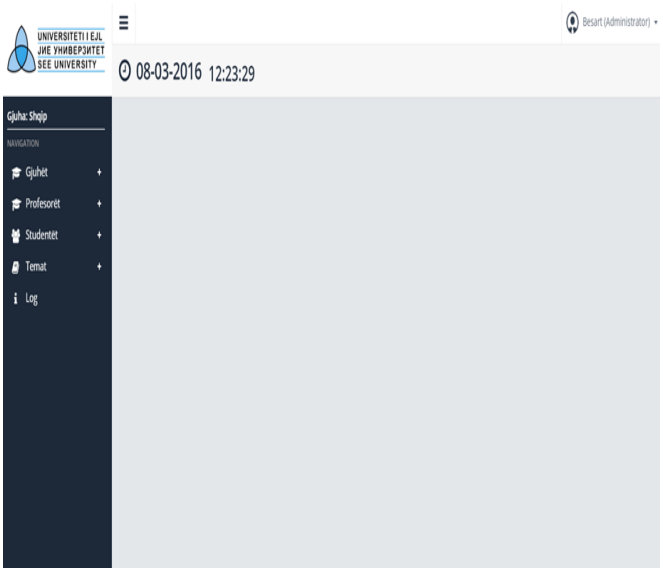

Fig.4. Home Administrator

```
public function save ($ CreateStudentRequest request)
 {
       $ Student = new User ();
       $ Student '> FIRST_NAME = $ request-> get ('
FIRST_NAME ');
      $ Student '> LAST_NAME = $ request-> get ('
LAST_NAME ');
       $ Student '> email = $ request-> get (' email ');
    $ Student '> password = Hash :: make ($ request-> get ('
                        password '));
       $ Student '> roles = User :: ROLE_STUDENT;
       return $ student '> save ();
 }

public function update (UpdateStudentRequest $ request, $
id)
 {
    if ($ this-> studentsRepository-> update ($ request, $ id)) {
    return redirect () -> action ( ' StudentsController @ index
') ->    with ( 'success', trans (
'labels.student_updated_successfully'));
 }
```

Fig. 5. Code Administrator

This is the first page when the visitor enters the website. Starting with the choice of language, to look at the professors, to look at the project - proposals for a topic published by the students.

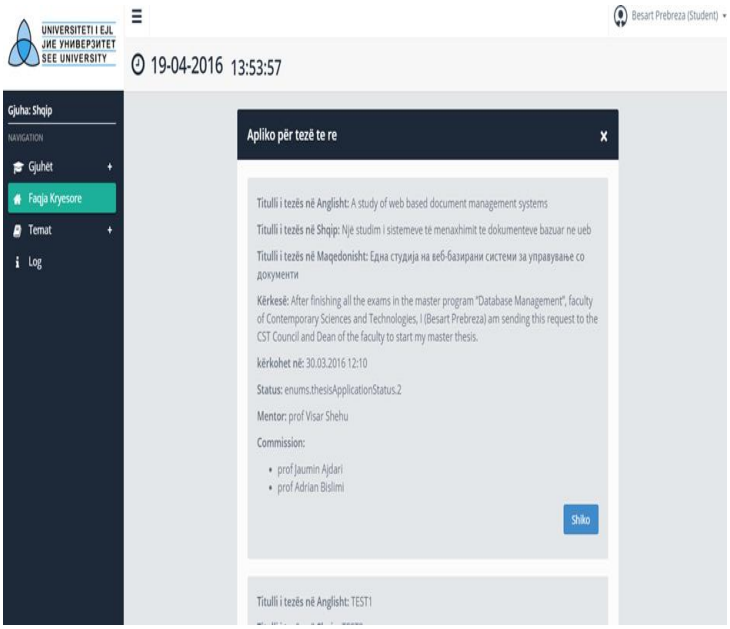

Fig.6. List of Project – Proposal

```
</ Div>
   <H3 class = "panel-title">

        {!! trans
('labels.thesis_applications_waiting_for_mentor_confirm     ation')
!!}

     </ h3>
 </ Div>


public function __construct ($ thesisApplicationsRepository
thesisApplicationsRepository)
 {
                $ This-> = $ thesisApplicationsRepository
                      thesisApplicationsRepository;
 }

 public function changeLanguage ($ language)
 {
              if (! in_array ($ language [ 'en', 'en', 'mk'])) {
                        $ Language = 'en';
 }
  return redirect () -> back () -> withCookie ( 'local', $     language);
 }
```

Fig. 7. Sample Code Professor

The page in the figure shown shows the content within the website, especially the events which are very important for this group, because any work they are going to do has to be presented, and the best way for people to see their work is by getting part in the event. Events have title, description, date and author. If the web visitor wants to read more he can do so by clicking on it, where a form will be presented which is the same for all events.

IV. Conclusions

Now the application for the proposal for thesis is traditional. The student applies through the administration and the student must choose the mentor if the professor agrees with the student's thesis. With the application we created then the student applies online for the diploma topic and the system automatically makes the recommendation of the mentor and the committee for that topic.

During our project, we clarified the implementation of an application which will enable the student to apply online for a diploma thesis. We have also seen similar document management systems, we have seen more about project management, which has been pursued to complete the system and the overall dissertation. Furthermore, a project schedule showing the time that has been used to complete the various tasks during project development is presented. The collected requirements and methods are presented, followed by a brief, proposed description. Whereas three different ways were used to collect the requests: 'from discussion with prospective users', 'from literature review', 'from similar systems', while the design is shown in two points of view: 'engineering' and 'simple point of view of the first reader'. Thus, we have shown some of the most suitable technologies and programming languages, along with the reasons why they are chosen, user interfaces and some code samples. The aim of this project is 'To develop a web-based Document Management application tool, to facilitate student application procedures for the diploma thesis, trying to help them increase the impact of the work of them '. Given that students have so far applied for a thesis in a classical way, despite the advancement in information technology and the time of digitalization, the aim has been to build this online application, which will facilitate the application for a thesis.

Acknowledgment

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