



THE POSSIBILITY OF APPLYING THE MANAGEMENT SYSTEM OF ELECTRONIC DOCUMENTS IN EDUCATION STUDENTS IN SERBIA

Milica Bokonjic¹ Svetlana Curcic², Biljana M. Bojovic³

¹Directorate of IT, Sector for application software, Post of Serbia, Katiceva 14,
11 000 Belgrade, Serbia

²Faculty of Pedagogical Sciences, University of Kragujevac, Milana Mijalkovica 14,
35 000 Jagodina, Serbia

³Faculty of Science, University of Kragujevac, Radoja Domanovica 12, 34 000 Kragujevac, Serbia

ABSTRACT

Educational institutions, as well as public institutions, have a legal obligation of keeping and archiving various documents related to the educational process and for the functioning of the institutions. Such documents include student activities, applications, student correspondence, personal documents, special records related to education, transcripts, test scores, student work, tutorials, books and various other documents related to education. A large number of documents, from different educational institutions, require clear defined process of sorting documents, their archiving and distribution of documents in whole or in part, depending on current needs. The aim of this study was to explain the application of the system for management of electronic documents – ALFRESCO, in education students, future teachers of biology and ecology.

Key words: E-education, management system, keeping documents, alfresco

INTRODUCTION

Educational systems are facing many challenges through a tremendous amount of emails, as well as paper and electronic documents that are being managed on a daily basis. Such documents include student activities, applications, student correspondence, personal documents, special records related to education, transcripts, test scores, student work, tutorials, books and other documents related to education. Electronic document management

system (EDMS) helps the education system to respond and meet all the requirements and needs students and teachers have [1, 2]. EDMS increases productivity and facilitates compliance by digitizing, standardizing and automating business processes [3].

One of the many possibilities for improving the education process is to connect with other segments of society through the constant application of modern and quality solutions. Introducing a system of electronic document management is one way of faster and better harmonization of new businesses with existing ones [4]. Technological development in any human activities is in close interaction with the development of all education processes [5]. For this reason, the modernization of this area means that like the other service activities, conditions on the market had completely turn, and now require a new approach in the organization.

The development of information and communication technology is increasing economic potential, which consequently leads to the necessity of raising education at higher level. The implementation of modern IT solutions in the education system represents the basis for the progress of other areas of business and foundation of modernization, in response to numerous requirements of market economy [6]. The starting principles that must be met when moving to a new organization of the system, related to data and information, include information management, security of information and data, transparency of data flows and control of data and documents.

Educational institutions, as well as public institutions, have a legal obligation to keep and archive various documents related to the educational process and the functioning of the institutions themselves [7]. Formats that are usually represented in the paper documentation are student records that the higher education institutions mainly make, as well as various agreements, decisions, recommendations, mail in paper form, project documentation, etc. In addition to these physical formats, there are also electronic documents in various formats, as well as audio and video recordings, etc. A large amount of documents from different business aspects of an educational institution requires clearly defined process of their sorting, archiving and distribution in whole or partially, depending on current needs.

MATERIAL AND METHODS

Practical applications of document management systems in e-education are possible using Alfresco system. This system provides most functions required for distance learning, as well as student-teacher interaction. In addition to teaching and writing research papers, the

teaching staff works on various projects. This produces significant amount of documentation that should be kept and stored somehow. Implementation of the Alfresco system will enable storage of all content related to the department, in electronic form, at one place. It will enable fast and easy search of all documents, as well as document preview without the need to download a document to your computer [8].

One of the most important functions of Alfresco document management system is search functionality [9]. It is very important that the student or the teacher can quickly and easily find the desired material, and be able to focus on document instead on the request.

The possibility of applying the system Alfresco is given to the case of the Institute of Biology and Ecology, Faculty of Sciences and Department of Natural Sciences, Faculty of Pedagogical Sciences, University of Kragujevac.

RESULTS AND DISCUSSION

Classification of documents

In e-education students of biology and ecology, user usually manages documents such as student work, teaching literature and administrative documents etc. Document types may vary depending on the subject or teaching activities, but in most cases you can say that these are some of the five major classes of documents. In this regard, the classification of documents will have a similar structure. Each of the types of documents will have their metadata, which will closer describe every document, and index, so the document can be found later easy and quickly, using the advanced search (Tab. 1).

Table 1. Document metadata

| Student activities | Teaching materials | Administrative documents | Conference | Journals /monographs |
|--|---|---|---|--|
| Title | Title | Title | Title | Title |
| Document type (Word, PDF, TEXT, Video...) | Document type (Word, PDF, TEXT, Video...) | Document type (Word, PDF, TEXT, Video...) | Document type (Word, PDF, TEXT, Video...) | Document type (Word, PDF, TEXT, Video...) |
| Description | Description | Description | Description | Description |
| Authors | Authors | Authors | Authors | Authors |
| Type of activity (seminars, thesis, master, | Type of activities (books, scripts, tutorials) | Type of documents (projects, reports, letters) | Type of conference (national, international) | Type (national, international, monographs) |

| | | | | |
|---------------|--|---------------|------------------|---------------------|
| dissertation) | | | | |
| Index number | | Posted by | Title on English | Category (MSO, M21) |
| Field | | Received from | Conference title | ISSN |
| Key words | | Date | Date of event | Impact factor |
| | | | Place | Page number |
| | | | | Start date |

Manage user accounts and access rights

Teachers and students both participate in functioning of the system for document management in e-education. Because of that, the system must be adjusted in a way that anyone can not access all of the documents. Students will have only access to their documents and teaching materials, and teachers will have access to all of the documents, but will be prevented from accessing the system folders and files, which will have access only to the system administrator [10]. Students will have access to their documents and the possibility to add new documents, but they will not be able to delete documents.

Logging in

When you start Alfresco in one of the browser, log in page appears. Alfresco has option to choose between different languages in which the system will be displayed. In this case, user has the choice between Serbian in the Latin or Cyrillic (Fig. 1).

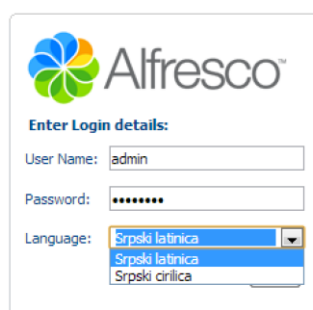


Fig. 1. Login page

When the installation of the system does not have option for desired language (in this case Serbian) as the language for the display, there are packages that can be downloaded from the Internet and "Inserted" into the system. All files downloaded from the Internet needs to be copied to folder (assuming that Alfresco is located directly in the root of the C partition):

```
C:\Alfresco\tomcat\shared\classes\Alfresco\messages
```

We also need to make changes in the XML file, which is located at

```
C:\Alfresco\tomcat\shared\classes\Alfresco\extension
```

and named web-client-config-custom.xml.

Following code needs to be inserted in languages section of this XML:

```
<config evaluator="string-compare" condition="Languages" replace="true">
<languages>
<language locale="sr_RS">Srpski latinica</language>
<language locale="sx_RS">Srpski cirilica</language>
</languages>
</config>
```

Creating a space

It is necessary to organize spaces and subspaces (folders and sub folders) to make better organization of the documents. This way access to documents can be monitored and kept through system can be easy. Created folders are: teaching materials, student papers, administrative documents and scientific papers. To Figures 2, 3 and 4 shows a way of creating a space and the look of your desktop administrator after logging.

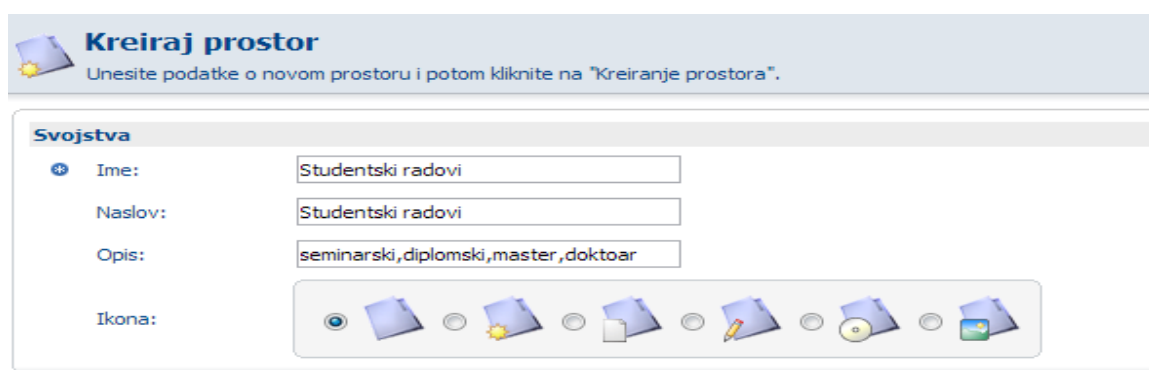


Fig. 2. Creating space in alfresco explorer

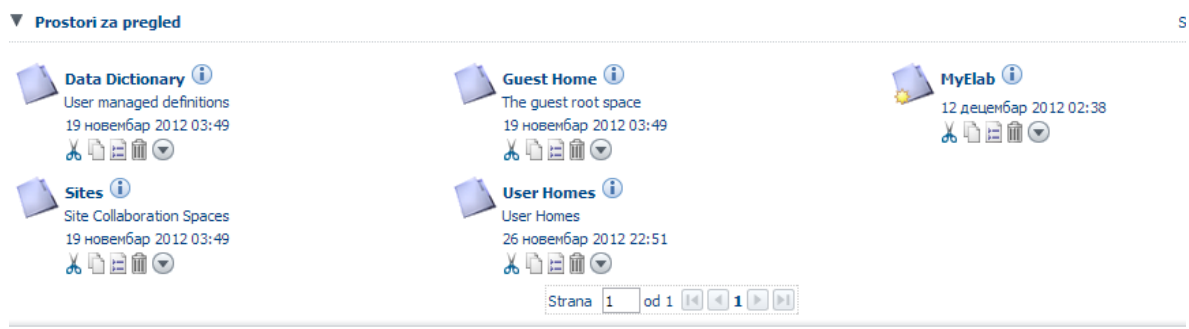


Fig. 3. Administrative space

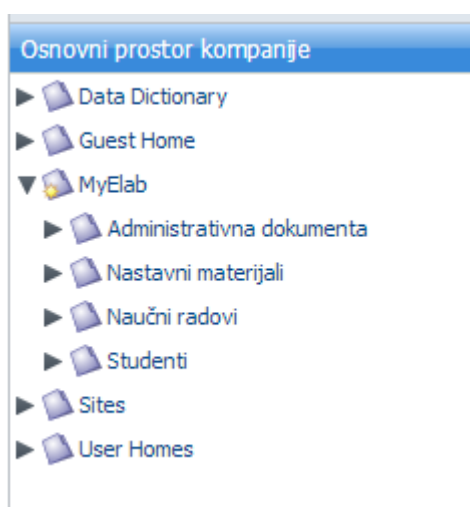


Fig. 4. Navigation of administrative space

Adding content and modification of metadata

To add metadata it is necessary to change the two system files in Alfresco. Location of these files is: C:\Alfresco\tomcat\shared\classes\Alfresco\extension, and files that need to be changed are web-client-config-custom.xml and customModel.xml. The first file is necessary to define Content Wizard, and it defines a new option that will be available while uploading content (whether it comes to teaching materials, student works, etc.). Each of this option will also have specific metadata. Figure 5 shows the layout of the interface when adding new content and appearance metadata that are shown in the code.

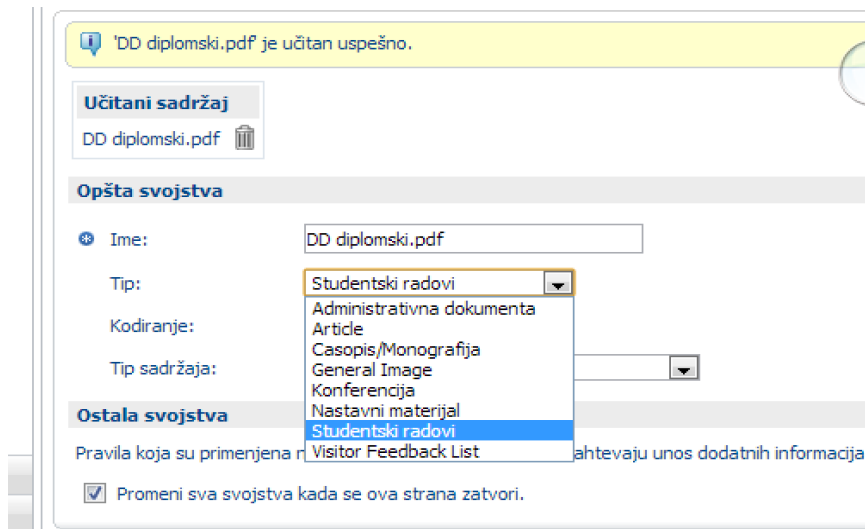


Fig. 5. Adding content and display of interpolated types

Search

The system search in a document management system is very important. The more precise and simpler search, allow to user to easier find the documents. In Alfresco, there are already defined system Search folders that search for content type, title, date, and the like. Since the amount of the documents in educational system is huge, if the user does not know the exact title of the document, but only the folder that it is in, it can make it difficult to find it [11]. Because of this, there is a possibility to modify a system and add new Search options (advanced search). On Figure 6 we can see simple and advanced search.

Pogledaj:

▼ Prikaži mi rezultate za

Sve stavke

Nazivi fajlova i sadržaja

Samo nazivi fajlova

Samo nazivi prostora

▼ Pogledaj na lokaciji

Svi prostori

Navedite prostor:

Kliknite ovde da selektujete prostor

Uključite podređene prostore

▼ Prikaži mi rezultate po kategorijama

Kliknite ovde da selektujete kategoriju

Uključi potkategorije

▼ Dodatne opcije pretrage

Tip foldera:

Tip sadržaja:

Format sadržaja:

Naslov:

Opis:

Autor:

Datum modifikacije:

Od:

Do:

Datum kreiranja:

Od:

Do:

Fig. 6. Options of search content

Advanced search is very helpful in proper functioning and increasing productivity of students and teachers. If there are no folders where you keep certain types of documents, and some of users do not keep working in the right folder, this work is impossible to find over time. If the teacher needs some urgent matter, and knows only that it was a script and that he/she was the author, he/she can easily select only the scripts from the system which he/she wrote as the author, and it will be easy enough to find it. Good search of the documents provides better performance to all users, because it is important to focus on the content of the necessary documents, and not on a query [12].

Administration of users and user groups

For document management system to function, it is necessary to create users of that system, assign them to groups and give them access privileges. In e-education, there are two groups of users, students and teachers. Each user will have own profile, nickname and password through which he/she will be able to access the system. All students will be grouped into a group of students, while teachers be in a group of teachers. The need for

separate groups exists, because there will be operations, that should only be available to one group of users, or content, that should only be visible to specific group or user. Creating user groups is similar to adding new users (Fig. 7).

Prvi korak - svojstva osobe
Unesite informacije o ovoj osobi.

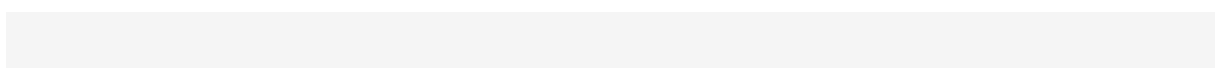
Svojstva osobe

| | | |
|---|----------|--|
| * | Ime: | <input type="text" value="Aleksandar"/> |
| * | Prezime: | <input type="text" value="Milić"/> |
| * | E-mail | <input type="text" value="milic@elab.rs"/> |

Fig. 7. Adding users and filling of basic information

CONCLUSION

Both teachers and students can benefit from all of these functionalities of the electronic education system. This can also resolve the problem of documentation located in various locations. When all the materials are available, it is easier to focus on the work, whether it is teaching, learning or writing papers. We think that such a system would bring much benefits, especially if was used on the whole university, and if students had access to all their papers and materials related to each course. It would certainly contribute to better organization and therefore would increase student productivity. Given the development of information science at the present time, importance of document management systems is inconceivable, not only in business companies, but also in any sector of the economy, especially in educational institutions, which should enable more efficient education and better functioning of teaching process.



REFERENCES

1. K. ROEBUCK. Document Management System (DMS). (2010)
2. E. DAHLSTROM, D.C. BROOKS, J. BICHSEL. The current ecosystems in higher education: student, faculty and IT perspectives, Educause Center for Analysis and Research, Louisville, Co:ECAR. (2014) <http://www.educause.edu/ecar>
3. D. McINTOSH. Vendors of Learning Management and E-learning Products. (2015) <http://www.trimeritus.com/>
4. Electronic Document Management System Technologies http://sos.georgia.gov/archives/pdf/records_and_information_management_services/e.pdf
5. S. STRBAC, B. GRGUROVIC, G. MILOVANOVIC-BRAKOVIC. Document management systems in education, IX International Conference on E-commerce, Palic. (2009)
6. M. ROSA, C. SARRICO, A. AMARAL. Implementing Quality Management Systems in Higher Education Institutions, Quality Assurance and Management. 129-137. (2012)
7. D. DJOKIC. Model portals for intelligent management of electronic documents.[dissertation]. [Belgrade]: Faculty of Organizational Sciences, University of Belgrade. (2012)
8. P. MAJMUDAR, M. SHARIFF, V. CHOUDHARY, A. BHANDARI. Alfresco 3 Enterprise Content. (2009)
9. J. POTTS. Alfresco developer guide. Packt Publishing. (2008)
10. S. VUJCIC. One solution software system for archiving and manipulation documents and based on open source software, Infotech-Jahorina, 421-425. (2007)
11. Management Implementation. Packt Publishing. (2012)
12. G. CLEVELAND. Overview of Document Management Technology. (2012) <http://www.ifla.org/VI/5/op/udtop2/udtop2.htm>