

COMPARATIVE ANALYSIS OF EXISTING SOFTWARE SOLUTIONS AND THE IKNOW E-STUDENT INFORMATION SYSTEM

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ABSTRACT

The software never benefits for itself, but always stands for a larger system that includes hardware, people, and very often organizations. This affects the demands of the software and its work. Taking into consideration the advantages and the disadvantages of the organization of the logistical system and the support in the functioning of the university educational process one question that is being asserted is if the permanent software solutions that are implemented in the Universities in Macedonia could satisfy the current needs of the teaching staff, the students, the services for European credit transfer system and the students' affairs office in an expeditious and flexible way to process the information of the students, to generate the needs lists and registers, to issue certificates for the passed exams etc.

I. INTRODUCTION

With all the technology development, faculty and university administration becomes more and more dependent on the use of information technologies. Applications have already evolved in complex systems with large number of functionalities that ease the administrative tasks for the employees in the departments of: student services, European Credit Transfer System (ECTS) services, teaching staff and also the students as university clients as well. Networking technologies have raised the standards of the implemented applications, which provide access to information placed on different locations (as with the client/server architectures), or a student access to his complete electronic record (e-record) with the benefits of: access to the information about passed exams and their score, electronic exam enrolment and other functionalities that ease and simplify administrative works for the department of student services (Fig. 1).

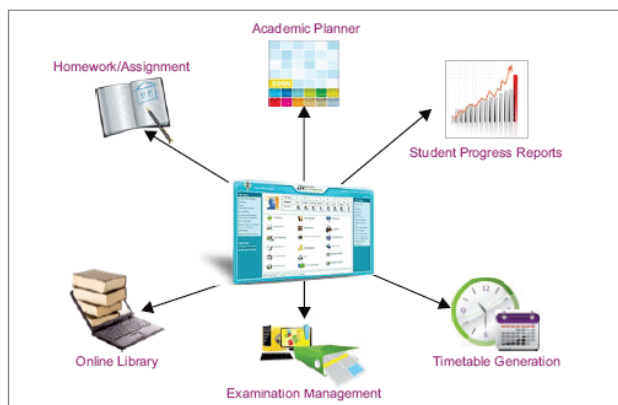


Fig. 1 Student management information system

Beside this, these technologies provide a number of means for statistical analysis of all the data contained in the students' e-record, such as: the number of passed exams in a single exam session, the number of passed exams in a semester, the number of passed exams in one year, all the passed exams by a single student, percentage of students that passed certain exam in a single session, semester or year, average students score analysis and etc.

To ease the everyday assignments of the employees in the department for student services in one hand, and to inform the students about their rights and responsibilities during their studies on the other, implementation of a new software solution for more efficient and more functional relations between students, teachers and the department of student services, has become greatly important.

The key benefits that the creation and implementation of the Innovation and Knowledge Management towards e-Student Information System (iKnow) has provided are summarized as follows: the efficiency of administration is alleviated; the students service throughput is leveraged several hundred percents; the teaching staff attains more information about the students and their record data (semester registry, exam enrolment and a lot of information about the exams, whether they are passed or not, whether the student is enrolled to an exam, when was the exam taken, what were the scores and grades of the exams as well as colloquiums passed, and so on.

II. EXISTING SOFTWARE SOLUTIONS FOR ELECTRONIC STUDENT SERVICES AT UKLO

There are a number of software solutions for electronic student services which have practical application at many faculties that are part of the University of "St. Kliment Ohridski" – Bitola (UKLO). In this paper we present two of the better standing solutions implemented at UKLO along with their main characteristics, i.e. their pros and their cons.

2.1 The software solution at the Faculty of Technical Sciences – Bitola

The software solution at the department for student services at the Faculty of Technical Sciences (FTS) – Bitola, presented in Fig. 2 is in use for around fifteen years. It is also implemented at the dispersed faculty studies in Prilep and Veles as well.

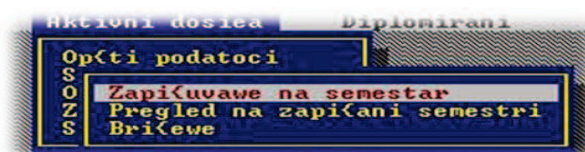


Fig. 2 Software solution at FTS - Bitola

The main characteristics of this solution are as follows:

- Easy to use with an intuitive user interface
- There are no extensive hardware requirements because the application was built and adopted to the hardware of the nineties and today it works tremendously fast with minimum hardware requirements
- Electronic exam enrolment processing, as well as printing exam reports for all enrolled students
- Exam grades recording
- Reports for student's passed exams
- Electronic registry of semesters
- Reports for all registered students
- Reports for all registered students in a single semester
- Printing certificates for passed exams
- Reports for students that fully completed the studies

Besides all the pros, this application has its cons, such as:

- Does not use networking services and does not include a web based user interface through which the users would be able to access to certain software functionalities, such as: student's access to his/her e-record, electronic exam enrolment, teaching staff electronic recording of grades, etc.
- It is not upgradable, nor it is compatible with the newer software solutions that creates huge problems when new functionalities are required.
- Since it is not upgradable, it does not provide large number of the statistical reports that are required now, or will be required in the future
- It does not support administrative work in accordance with ECTS

2.2 The software solution at the Faculty of Law – Kicevo

The software solution for the department of student services at the Faculty of Law in Kicevo (FLK), presented in Fig. 3, is developed in 2008 and it functions to this date at the Faculty of Law in Kicevo, as well as at the dispersed studies in Bitola and Struga.

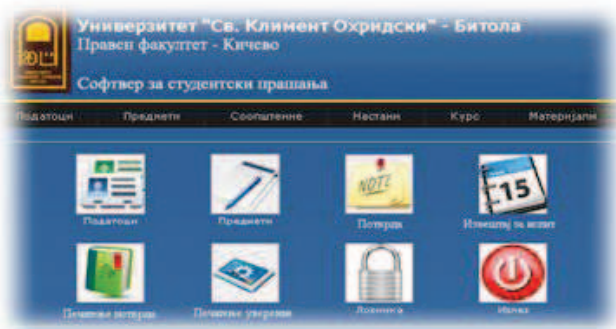


Fig. 3 Software solution at FLK

Its main positive characteristics are as follows:

- Semester and exam registry
- Grades recordings
- Issuing certificates for passed exams and student status
- Issuing certificates for graduated students
- Creating reports for graduated students
- Creating reports of issued certificates
- Technical support – the application is upgradable in accordance to the needs of the institution
- Simple process of instalment
- Ability for defining automatic backup and system restore to a certain date.

The applications cons are:

- Steeper learning curve and longer adaption time for administrators that have little or no experience in working with computers
- It does not support networking services and has no web based user interface that will offer a larger number of required functionalities

III. INNOVATION AND KNOWLEDGE MANAGEMENT TOWARDS E-STUDENT INFORMATION SYSTEMS (iKnow) AT THE UNIVERSITY OF "ST. KLIMENT OHRIDSKI"

3.1 Benefits of iKnow

For the first time at the University of "St. Kliment Ohridski" a software solution that unifies the work of all member institutions is implemented. With the help of the iKnow system (Fig. 4) the University management board gains full control over the member institutions and is able to produce variety of statistical reports.

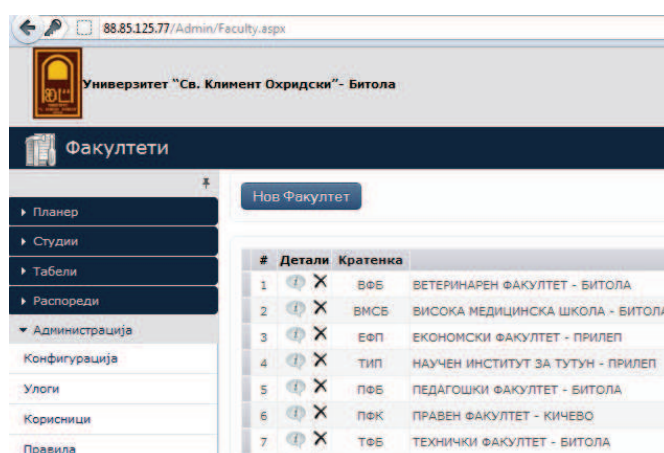


Fig. 4 iKnow software solution

iKnow is integrated web based system that provides complete students electronic record including electronic semester registry, electronic exam submission that largely helps in avoiding long queuing lines and eliminates former problems of lost students exam submission list etc. With the use of e-record complete data about student's activities is recorded and it is permanently available for the administrators when needed. These data records include: passed and failed exams and/or colloquiums, exam results, electronic announcements, constant electronic communication between students and teaching staff, electronic records of class attendance and many other functionalities that the web based part of the system offers.

Also, one more novelty worth mentioning in this analysis is the possibility for electronic payment by the means of credit or debit bank cards that enables avoidance of unnecessary crowds that often form at the bank or postal offices.

The iKnow applications provide complete Control Management System (CSM), presented in Fig. 5, through which users can gain access based on their requirements.

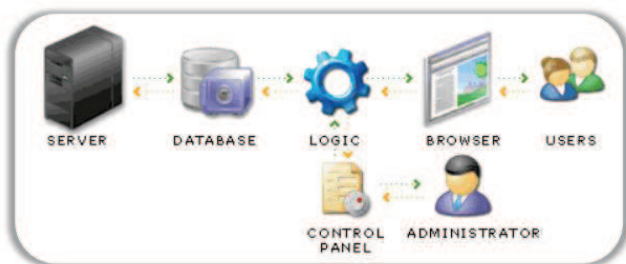


Fig. 5 iKnow Control Management System

3.2 iKnow implementation

Implementation of iKnow at the University of "St. Kliment Ohridski" is performed in two phases. In the first phase all the data that is unique for UKLO is entered, which must precede the entering of student data. In this phase, all the UKLO member institutions have to be entered along with their curriculums and therefore appropriate user account should be created. Each user receives an account that suits his/her role whether he/she is teacher, administrator or manager.

At the moment, this phase is in active state and is planned to finish by the end of May 2012, after which a period of testing of all the systems functionalities will follow.

The plans for the second phase of iKnow implementation include full use of the system for the enrolment of the new UKLO students for the academic year of 2012/2013. Afterwards, if possible, all the data from the previously used software is planned to be migrated to the new software platform of iKnow system.

IV. CONCLUSION

In this paper, properties of the interactive system are analyzed along with the process of the system engineering and some of the methods with which the organizational and

human interests affect the software system through the designing of the IT system and business process of the electronic students' affairs office. On one hand, the aim that needs to be achieved is to ease the work of the services for European ECTS and students' affairs office, to decrease the administrative work of the teaching staff, and on the other to simplify the process of studying for the students. All of this contributed to the development of the specification for the realization of a new application of more effective functioning of the students' affairs office, the services for European ECTS, the teaching staff and the students as their clients.

The production of iKnow application for the electronic students' affairs office is huge step ahead for the educational process at the University of "St. Kliment Ohridski". The main advantages of this application are:

- decreasing of the administrative work
- more effective record of the users
- using network services and internet, through which the students and the teaching staff would get access to the application and complete a given task

In the future iKnow application will give opportunity for upgrading new functionalities, integrating new modules and services, like: mobile integration, Voice Over IP (VoIP) services, online lectures, electronic exchange of documents etc., and all with one aim to improve the efficiency of the studying process, to ease the work of the students' affairs office and to decrease the administrative work of the teaching staff.

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