

BENEFITS AND SWOT ANALYSIS OF IKNOW ESTUDENT SERVICES SYSTEM

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ABSTRACT

The implementation of new robust and complex overall systems in any area is in the very least demanding, complicated, extensive, particularized and delicate. Especially if they are planned to be designed for almost entire higher education system in a country. Inevitably at the beginning, the stakeholders in the existing processes and resources will be reluctant to radical change such as the one in the case of iKnow system implementation, setbacks can be experienced in the mentality shifts, workflow adjustments and adaptation, but also in the different starting points in different institutions for such implementations. And this is only before the beginning of usage of the system. As with any big, ERP-like software solution, the first period of implementation may be the scariest, until everyone gets on board. Then the impressions from the intuitive interface, completion of tasks from distance, the overview of many aspects, maybe never even considered before, and the usefulness of the reports will kick in. That is the point from which the added value from the iKnow eStudent Services System will start to pile up improvements in many directions and depths. This paper can serve as an introduction to the benefits, strengths and opportunities that can be expected from iKnow, and food for thought for the involved parties in the realization of the project for its weaknesses and threats. By observing the requirements for the system on one side, and the technical documentation and the software itself on the other, we can conclude that what is asked for has been delivered in the construction area, and time will show that the objectives will be reachable in the very least, if not completely, with timely implementation and proper usage.

I. GOALS OF THE IKNOW ESTUDENT SERVICES SYSTEM

The iKnow eStudent Services System has been initiated, designed and will be deployed by the Tempus iKnow Project Consortium with the aim to automate the entire system of student programs, the courses and relationships among them, the students as main participants, and most aspects of their activities and engagements during studying, all of this in European Credit Transfer System concept [1], as well as organize and computerize the administration of all other resources regarding Faculty management of student-related processes such as financials, library and learning management systems. In addition to this, the functionality in place is the integration and communication with the other existing systems in the institutions. These goals, as complex and essential as they are, were to be accomplished in several stages, among which an important milestone was the redesign and optimization of the current business processes in the Faculties and the Universities, in the direction of paperless university management and electronic workflow of activities

while managing and exploiting large number of student details. When achieving these primary goals, the implementation of the system and its proper usage should generate significantly improved quality of student services, accelerated processing time and scope of activities and rich reporting basis and prospects for the faculty and university management.

II. BENEFITS

The implementation of the iKnow system will influence all stakeholders in the higher education in Macedonia, hopefully in many positive ways. On the side of participants, we are observing the benefits for the students, the professors, the administrative staff and the university management (the latter three under the section of Faculties). On the side of institutionalized entities, we are making a distinction among Faculties, Universities and the Educational system overall, directed by the Ministry of Education and Science interrelated with other ministries and all of the universities in the country. In the following paragraph, a systematized view of benefits, reflected from the aspects of each one of them is given.

A. For the Students

One educational system should be able to guide a student through the entire process of studying, from the very beginning, when similarities among young children are the uniting component, through the process of primary and secondary education, when the individual profiling and tendencies are shown, and finally, in the higher education, when a future multitalented and multi-trained employee is educated. For this purpose, the only stable starting point is view of the student with all his/her activities, results and engagements, which can only be provided by good system of recording in place. Also, in line with this, the student should be guided with ease through the administrative processes inevitable when enrolled at faculty, in order to spend most of the time and effort studying. With the iKnow system, the students will be able to handle their affairs from distance, not necessarily traveling to complete an administrative activity. The students will also benefit from the shortened and optimized transaction time for each activity, with fewer steps of printing, buying forms, copying, filling, signing, stamping, paying, verifying, collecting, following etc. in front of the Student Services Desk or the Professor's office. In addition to this, the students will be receiving financial clearance in the same step without time delay. Here can be mentioned the reduced time and cost of activities for the students, including the time for traveling and waiting, as well as expenses for these actions. The software interface provides intuitive workflow which assists the student users when registering for exam, selecting courses in programs taking in consideration

their own profile and conditions, verifying a semester, viewing results or schedule of lectures, calculating fees and expenses in a straightforward manner, or borrowing literature from the university library. When asking for various types of certificates, diplomas, the students will be served fast and effective, with least possible administrative steps. The diploma content issued by the faculty will be broadened and delivered fast. The mobility of the students will be assisted within the university, the country and abroad, because of the uniform way of the university administrative works outlined by iKnow. The students will be able to view and update their own contact data and to have overview of all of their results, courses, seminar thesis, activities etc. in the Student File Centre organized in the iKnow software. The section for schedules of the lectures is complemented with E-ID for each student, to be used for attendance recording and other student identification needs. Europass CV is one more benefit for the students, in direction of opening doors to learning and working in Europe [2].

B. For the Faculties

A significant reduction in administrative operations overhead will be noted in the faculties, partially due to the optimization and redesign of processes that took place prior to the software creation, and partially because of the acceleration and guided operations that iKnow automatizes. The reduction of paper work and manual manipulation, along with reduction of expenditures of time and resources, may be the second most important benefit for the faculties. As mentioned earlier, the ICT based workflow management will reduce the administrative staff and professor's manual work, when following multiple prerequisites and restrictions, conditions and conditional activities. With many controls in place in the software, the human error will be significantly reduced. Another essential benefit and time and cost cutter will be the existence of electronic version of student personal file, for the administration, for the professors who can then follow, mentor and guide each student with individually tailored approach, as well as for the faculty management, since broad range of reports, basic and advanced searches and overviews will be achievable in the fastest time possible, provided that the input of data is in place. One more benefit worth mentioning is the recording of research and scientific work, seminar, diploma, master and doctoral thesis, project work, as well as many details for every performed activity. Improvement of the lecture scheduling and presence monitoring will enable the faculty management to improve the quality of the lectures and professor engagements based on real quantitative data. The most visible influence in the improvement of the administrative processes will be going on in the administration of quotas and tuition prices, programs and program revisions, members of the faculties and serving the requests for diploma/diploma supplements, confirmation letters and certificates, because here is the major shift from many steps performed in person and with paper forms and writing towards fewer steps performed from distance, with almost no paper forms and in significantly reduced time and cost for the service to be completed (student aspect) and for the service to be performed (faculty aspect). In this context is

underlined the integration and administration of financial services for clearance of the student fees in order to complete any task that requires payment and its control and verification.

If the faculties have been struggling so far with various segmented applications, from now on iKnow will provide unified overall solution for easy going usage on all sides, which will serve also for faster and cheaper communication, bulk and individual notifications to students and staff, with the implemented email interface, management of books and reading materials through the library interface, management of human resources in the faculty, import of candidate data from the enrolment module as well as content management of the lectures and projects with the e-learning center.

C. For the Universities

The Universities in Macedonia are following the European tendency for unification [3] and integration of the systems and mobility of the students, all of which are featuring the ECTS principles. In order to provide stabile and cohesive system of the faculty diversity, also recognizable when cooperating with foreign institutions, the universities must be supported with system solution such as iKnow, that will allow them to have flexible definition of the content and rules of studying, coverage of all three cycles in the higher education, equivalence of courses through the universities and appropriate administration of faculties, at the same time maintaining the benefits of faculty individual implementation. There should be integrated solution for all different sources, platforms and modules, in order for the university to be supported with all necessary reports and shaping overviews of the extensive data that the iKnow software and database can provide for contemporary university management.

D. For the Society

How will a society benefit from the implementation of a robust and complex system such as iKnow? One aspect that comes to mind is the reach to geographically scattered students, and easier communication channels for them. The provision of less paper consumption compels the system to be characterised as green solution. In terms of international improvement of the visibility and appreciation of the Macedonian society, the usage of a solution such as iKnow in the category of sophistication of student enrolment will improve the benchmark in e-Government services. The level of sophistication of the student enrolment in Macedonia is benchmarked 1 on a scale of 1-5 (5-best) [4]. This describes rudimentary access to student services and process of enrolment and handling of student affairs. This software will cover most of the system and processes and will increase the level of sophistication and sound functioning to a much higher grade [5].

E. For the Educational System

All of the above mentioned benefits from the different viewpoints are equally conveyed as benefits for the educational system as a whole. However, we would like to highlight once again the most important ones from this

viewpoint. Nowadays, every story starts and ends with ECTS principles, which will be implemented in every process that is covered by iKnow, and will increase the international connectivity and visibility of our educational system. In general, maybe the best position for overseeing and realisation of the cost cutting effects of the software implementation is the educational system, in possibility to have the general view of integration of all necessary data from different sources. When all the faculties and different universities will be managing the same system for administrative activities, the integrated unity of faculties may become a closer reality. From the aspect of data exchange and communication channels of the faculties and universities with the Ministry of Education, State Statistical Office and other institutions, it is reasonable to be said that the system will provide burden free reporting and completion of requirements.

III. SWOT ANALYSIS

A. Strengths

Not only because the handling of student administration has been on a rudimentary level so far, but also because the iKnow software architecture and functionality is on a distinguished level, the stakeholders in the Macedonian educational system will perceive many new functionalities and innovations. One portion of strengths of the iKnow system is the modularity and integration with modules and systems by providing interfaces with other systems, to MoES and other institutions, integration with the other internal systems, XML Web Services to external systems, import of candidate data from enrolment module, eMail interface, Library interface, Human Resources interface, Module for electronic payment and use of resources as well as financials. Additional web interfaces and modules are being foreseen. Another quality is the fulfilled requirement that the rules of the business logic are to be defined without changes to the application, providing consistency and scalability. Manual interventions by authorized users are given as a tool to the faculties. The user interface is easy-going, with unified rules being followed in the design, with data formatting, validations and controls in place. The system offers fast access to on-line, context dependent help and tips assistance. The authentication and identification are constructed to offer secure single point authentication towards multiple heterogeneous resources, which will optimize the traffic to the faculty, university and iKnow servers. In this line, the software contains many client-side validations, but also is designed to support two-way actions student – services and vice-versa with standalone or WEB application components given for the users. Inevitable to be mentioned in the category of strengths is the extensive auditing log as well as the carefully defined user roles and profiles. The strong reporting system that can manoeuvre the extensive data from many focal points is what will bring most improvement in the quality of the higher education, considered as basis for decision making on various grounds. The system is multilingual and multicultural, overriding the

insignificant differences among people, and unifying their efforts towards gradual and profound improvement for all.

B. Weaknesses

The Job Descriptions of the faculty administrative staff will be substantially changed – due to the changes in content, the required skills to some extent, and the workflow of the processes. The staff will have to pay a lot more attention to formal control and to the speed of service, and manoeuvre among activities in a very different electronic way rather than the familiar paper-based workflow. Extensive trainings should take place in order to ensure proper user handling of the system interfaces and possibilities.

The seminar thesis management module may result in duplication of resources using the storage capacity as well as update duplication and inconsistency. Since the LMS module of iKnow may be used, usually the professors give seminar assignments to students via that system. And students upload the finished papers in electronic form in the learning management system. iKnow provides separate module for seminar thesis management and the students will be required to use that functionality too. This means that either they would have to be uploading and communicating the seminar thesis in the LMS and in the seminar thesis module, or only in one place, which is then extraction the assignment workflow out of the LMS concept.

With further regard to the LMS concept, the iKnow LMS will provide the basic functionality for uploading lectures and presentations, but not extended to perform e-testing. For this reason, it will satisfy the necessary requirements a learning system should have, but not all of them.

The HR module was observed from the aspect of partial coverage too. It will serve completely the needs of faculties which have salary calculations directly connected to the lecture performance, but will not serve those who have complex salary calculation.

C. Opportunities

The organization of faculty administrative activities towards paperless, according legislation, initiates the question of organizing the exams in electronic way. Usually, the possibilities of Learning and Content Management Systems are used in this direction, where all courses are completely covered in electronic form and workflow. This will include lectures, assignments, forums, messaging services, quizzes and reporting and following of all of the above. The opportunity in this direction means some (and preferably in the future – all) of the courses' exams to be held in electronic way. In favour of this idea is the fact that nowadays students are good in typing (and not so good in handwriting), that some questions can be automatized and immediately checked by the systems, and the essay questions can be checked without interpretation of handwriting scabble, with electronic record kept for all of exams, which is not case so far. Reusability and interface and content opportunities are just a tip of the positivity ice-berg when using LMS for testing. Another opportunity iKnow may offer is the possibility to provide reliable connection to the World libraries, who have

the requirements of authentication, logs etc. all feasible with iKnow.

The Price list revision of faculty's services is brought up here because of the momentum of changes and cuts in costs for the faculties and the students, as well as the changes in how the fees and prepayments can work.

Because of its immense influence in the educational system, iKnow will introduce field of potentials for secondary education systems and processes to be automatized too, so that they could only be plugged-in together in a modular way in the good future for our educational system.

And last but not least, the unification of the processes in the Macedonian faculties, if decided on a highest level, may be underlying a motion in the educational system towards One State Agency (such as the Swedish National Agency for Higher Education [6]) that will take over the enrolment and placement processes and administrative activities, fees and communication, having in visor view all the students and all the institutions, and giving opportunities for greatest mobility and guidance of the students to the most appropriate programs and courses. This can be a situation in Macedonia too, after the effects of the iKnow implementation take place.

D. Threats

The iKnow concept implementation influence to the existing processes is expected to be mild to radical in different faculties, depending on their internal specific level of organization of the same processes so far. A mentality shift is also expected, which is the biggest threat of all. Employees will fear the new and unknown, some of them even technology-wise due to the age, the possible cuts in jobs and the reformulation of the job descriptions. And the acceptance of the users on the side of the faculty is of primary importance. Also, with prevalence of virtual communication, misunderstanding and ICT dependence will increase, and with this the feeling that an officer doesn't have good overview and individualized steps in his/her own work.

The professors will receive a lot of different workload with the updating of thesis lists, controls of submissions, grades, content updates etc.

The human error risk will be reduced, but still existing in a different shape, when less skilled computer users have rights to insert grades or modify entire programs with courses, semesters and other data further activity rely on as some sort of master data.

In a certain period of time, a duplication of paper and electronic data for proof and because of legislative requirements may occur. In fact, it is after a certain period of work with the new system the recommendations will be generated and put in the right context for changes in legislation and procedures.

The system provides opportunity for the applicants at faculties to open accounts, insert data by themselves and apply for a place at the faculties. The question here is at what moment in time the faculty ensures the identity of the applicant, and how are fake accounts prevented?

Another global situation may occur when applicants apply for places at different faculties at the same time, will the system create complete history for that same applicant for all

faculties or in each faculty he/she will be a new unique applicant? Or if a person applies two or three years in a role, will his/her file be updated (for example on unique PIN in the country) or he/she will be treated as new each year. This in terms of the question whether the iKnow communicates within itself with information from different faculties, and throughout the years.

Several technical questions arise as threats, such as who is going to maintain the iKnow system and whether upgrades will be taking place, who and how are the backups going to be performed, as well as with what size; whether the system has proper security for important steps such as four eyes principle or multiple authorizations or conditional activities for covering the risk of privilege misuse, abuse or accidental mistakes of authorized users; and whether contingency planning is in the scope of this project's activities.

In the process of implementation, according the scanning of faculties and universities and their current condition and systems, the iKnow involved parties have been aware of the multiple different and incoherent practices and systems existing in all different faculties and universities. It is a big threat the duration of the need to individually adjust and implement iKnow in each and every one of them.

IV. CONCLUSION

It is only through accumulation of data gathered in many stages through optimized processes and its perception from different aspects, perspectives and combinations that big steps towards improvement of an educational system can happen. The iKnow system covers all-encompassing horizon of the faculty administrative work. It enables to place the student into a focal point, so that professors can improve the quality of the lectures and the grades of the students, it enables to place the lectures, courses and programs into a focal point, so that faculty and university management can make decisions to improve the quality of education they are providing and the financials they are running. It enables to unify and integrate the faculties in an exchangeable environment among themselves and with the state institutions, being designed with consideration of realizations of best practices in the current systems, and with some of the best professionals in the software development field in Macedonia. This support coming with the know-how of developed TEMPUS partners is expected to bring new era of improvement in the Macedonian educational system.

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