

DISSEMINATION AND SUSTAINABILITY REPORT E-Student Services System

UPDATED VERSION DECEMBER 2011

LIST OF ACRONYMS

EMIS	Education Management Information System
EC	Enrolment Committee
SAO	Student Administration Office
MoES	Ministry of Education and Science
AAI	Authentication and Authorization Infrastructure

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1 Document purpose

This document contains reports of implementing dissemination and sustainability strategies and action plans for realization of iKnow project (**TEMPUS project JPGR 511342**) in order to promote iKnow project results and its impact and enable conditions for long term exploitation of project results.

1.1 Scope

Dissemination is a process of making results of projects available for a target public, which has not been directly implicated in the project.


Sustainability of project results can be defined as **the result of a process** which ensures that the outputs of a project are maintained after project funding has stopped.

To define a good dissemination and sustainability we will refer to the following results: visibility, networking, policy consensus, user feedback, funding, official recognition, enabling staff with competence about the project, human resources commitment, etc.

This document will more precisely define dissemination and sustainability outputs. Outputs are results of the project activities and are defined along with target public, and resources which will realize the dissemination and sustainability goals. They may be measurable by quantification or quality indicators expressing their nature as academic products or know-how transfer.

1.2 Project Goal

The **iKnow project main goal** is establishing electronic student services instead of paper related document workflow activities.

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2 Implementation report for activities of the 1st project year

2.1 Finished tasks

Appropriate activities for dissemination (workpackage 3) started parallel to design process for workpackages 1 and 2 (electronic student services and enrolment). These included raising awareness about understanding and promotion of the concept of non-paper electronic documents and workflows, such as workshops and meetings with Rectors and Deans of different faculties. We had also realized several meetings with representatives of the Ministry of Education and with the minister himself, for the process of introducing electronic documents and its adaptation in the new Law for High Education with the concept of electronic enrolment and electronic services and dissemination of knowledge that we have acquired during our visits of EU partners. In realization of promotion activities we have included all relevant stakeholders in the process of drafting and preparing the new Law for High Education and later on in public debates and discussions.

Most of organized workshops and meetings were made to design the development of new system and to facilitate implementation. The steering committee decided that purchase of a new software should be done not separately for all beneficiary partners, but as one purchase and the same system that will be provided to be installed at all universities. Therefore this purchase had advantage over other equipment. The tendering process was realized by contractor LSBU and delivery is realized according to given timeframe. In order to realize the tendering process, the new designed system (deliveries of workpackages 1 and 2) was finished earlier and complete technical specification was produced by end of March 2011.


The main goal of dissemination activities (workpackage 3) was to raise the awareness level about the existence of the electronic services. Project web site <http://iknow.iie.edu.mk> was published in October 2010, just a week after project start. It includes updated information of all activities carried out and obtained project deliveries, and is used for web promotion.

A lot of social networks were used to promote the existence of electronic enrolment as modern distribution channel for perspective students and most used media by target group. A lot of dissemination events were organized addressing prospective students on special events - open days, university presentations etc.

Realization of exploitation workpackage 4 is ongoing to realize sustainability conditions by enabling: 1) infrastructure 2) human resources and 3) legal aspects. The complete process is supervised and final delivery will be controlled within workpackage 5. The management issues are specified in workpackage 6.

In January 2011 the new amendments for the Law for High Education have been adopted by the Parliament including implementation of the concept of electronic documents at Integrated University, after its submission by government and organized several public discussions and debates in late 2010 with active participation of project members. This will ensure implementation of our project results, since rectors/deans will be interested to obtain infrastructure that will ensure implementation of the new law for high education.

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2.2 Finished activities

The following is the list of performed activities in the first project year.

Activity 1 –25 Oct 2010 *Project web site initiated related to workpackage 3.1 realized in Skopje, MK*


Project web site <http://iknow.i.edu.mk> was published just a week after project start with initial information about the project.

Activity 2 – 08 Nov 2010 [Kick-off meeting: Planning and Scheduling; Board and Steering Committee meeting; Workshop #1 on Requirements Analysis](#) related to workpackages 6.1, 6.2, 1.1 held in Skopje, MK

The event was organized with 4sessions. The **first session** addressed **kick-off meeting**. Prof D-r Shushma Patel, LSBU UK, has given introduction for the project start as project contractor, and then all the partners presented themselves by giving short presentations. Prof D-r Marjan Gusev, UKIM MK, as project coordinator has presented Project objectives and activities, and explained overall goal and action plan with deadlines to realize the objectives. The meeting finalized with discussion where all the partners have participated in a brainstorming session how to achieve the project goal and realize objectives in efficient manner.

The **second session** was the **steering committee meeting**. Welcome note was addressed by host – Prof. Dr. Velimir Stojkovski the Rector of UKIM. This was followed by registration and declaration of quorum (UKIM and UKLO represented by Rectors; UGD, SEE, EURM, FON, ULJ and UDO have given signed letter of authorization). Prof. D-r Gusev has explained Steering committee role and responsibilities as decision making body (Steering committee meeting to be held if required quorum (>2/3) is satisfied (some members can be delegated, in that case official letter to be presented) and Votes to be evaluated by majority of present participants (>1/2). Afterwards the agenda of the meeting was approved by all participants. This was followed by discussion and decisions about equipment (SW) purchase. Proposal was raised for one solution to be implemented at all universities. The tender should be organized, published, and realized by project contractor. Three universities (UKIM, UKLO and EURM) will implement the complete solution and three other universities (SEE, UGD and FON) will implement only specific services and modules. The proposal was approved by all participants. The next discussions concerned Follow-up activities/ Any Other Business. Project management team was appointed to specify the tender documentation including technical specification. Project management team was appointed to schedule all necessary activities.

The **third session** concerned **Project Management Board meeting** and discussion about schedule of activities. A detailed plan and specification was developed and it was published on project web site. This was followed by discussion about deadlines, obstacles, schedule of next activities were all the partners have agreed for next steps and the way the objectives will be realized. The project management team has expressed need to contact the minister of education and minister of information society in order to: 1) initiate change of legislation to allow realization of e-Services and e-Documents without obligation of having paper documents in the workflow and 2) initiate realization of web services to exchange information among universities and ministry. In addition a schedule of project activities and workshops were developed by the project management team, according to the conclusions of the steering committee. They have committed to 1) develop draft technical specification by the end of December 2010; 2) to start tender procedure realization (according to LSBU procedures) by mid March; 3) to award winner and sign contract by mid May 2011; 4) to have the first delivery – module about enrolment by mid June 2011; 5) to allow 1 year for complete implementation of project.

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Activity 3: 09 Nov 2010 Requirements specification, Visits to EURM and FON related to workpackage 1.1 realized in Skopje, MK

As a follow up of the kick off meeting, Steering committee meeting and Project management meeting, the requirements specification activity started with visits to two private universities EURM and FON as members of project consortium. The meetings organized at these universities were part of analysis part of workpackages 1 and 2 and overview of current situation. The hosts have presented their facilities – lecture rooms and labs. The rectors and representatives of the owners welcomed the project participants and expressed their strong attitude to contribute in the project. All the partners have been introduced with current level of realization of student e-Services.

Activity 4: 10 Nov - 1 Dec 2010 [Drafting functional requirements specification](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 realized in Skopje, Bitola, Stip, Tetovo, MK

All domestic partners developed draft of functional requirements as prerequisite for the next workshops to be organized at SEE in Tetovo and UGD Stip scheduled in the second/third week of Dec 2010

Activity 5: 27-29 Nov 2010 [Project management meeting](#) related to workpackages 6.1, 6.2, 6.3 held in London, UK


This meeting was organized to analyze managerial matters including organization of forthcoming workshops, developing action plan and mapping timing to sequence of actions, developing schedule for realization of workshops and initial agenda for them, reporting about Steering Committee (SC) conclusions, developing appropriate documentation for responsibilities of SC, preparation draft material for further activities, financial issues. All aspects relevant to tender procedures at LSBU were discussed in details to enable one tender call for all beneficiary instead of distributing budgets for equipment to several universities. Prof. Gusev Marjan has highlighted differences in all universities and elaborated necessary activities to be performed in this project towards one integrated solution. All relevant open issues were discussed and relevant conclusions brought.

Activity 6: 6-7 Dec 2010 [Project management meeting](#) related to workpackages 6.1, 6.2, 6.3 held in Antwerpen, Belgium

This visit was organized by Tempus EACEA for managerial purposes of awarded projects. Tempus representatives organized two day workshop presenting all procedures relevant for running the project. There were a lot of interesting presentations about existing Tempus program and details for selection in this round. Several presentations also addressed future of Tempus program. The second day presentations addressed financial aspects of managing the project with a lot of questions and answers for details of calculating and claiming budgets.

Activity 7: 20 Dec 2010 [Workshop #2 - Finalization of functional requirements](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in Stip, MK

The workshop was held at Rectorate conference hall of University Goce Delcev Stip with our hosts M.Sc. Zoran Zdravev and Prof. Vlado Gicev. Welcome note was addressed by the host – Rector of UGD Prof. D-r Sasa Mitrev giving accent on the importance of this project to UGD university priorities. Gorgi Dimov, Riste Timovski, Ilija Lazarevski and Zoran Zdravev from UGD's IT department gave presentation about the solution and current state of UGD's Information System and E-Index solution. A fruitful discussion was initiated after the presentations about implementation process issues. Prof. Dejan Gorgevik, Prof. Ivan Chorbev, Prof. Anastas Misev, Prof. Ana Madevska Bogdanova and Prof. Ljupco Antovski from UKIM Skopje gave presentation about the functional requirements in corresponding project modules. Prof. Toni Stojanovski from EURM gave presentation about software requirements document for module 1.1 and Prof. Sime Arsenovski and Prof. Zoran Gacov

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from FON gave short overview of their activities and business analysis realized for the Student services solution.

Prof. Gusev Marjan has highlighted differences in all universities towards one integrated solution and the steps we are going to realize in this project. The participants have discussed the possibilities of finalizing the technical specification and scheduling of the future activities. They have concluded the following: 1) To create working groups for each module on the next workshop; 2) Each partner to delegate a participant for the working groups; 3) To organize visit to UKLO in Bitola in the third week of Jan 2011 in order to finalize the technical specification.

Activity 8: 21 Dec 2010 [Workshop #3 - Finalization of requirements specification](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in Tetovo, MK

The plenary meeting and third workshop took place on Tuesday (21.12.2010) from 10 h at the premises of the Rectorate of South East European University, in Tetovo with hosts Prof. Dr. Zamir Dika and Ass. Prof. Dr. Bekim Fetaji. Representatives from all the partners from Macedonia attended the workshop. The rector of the South East European University Prof. D-r Zamir Dika gave his Welcome message. In the first session he presented the University mission and goals and its specifics. Prof. Gusev has presented the project agreement and financial conditions along with docs presented on project management meeting organized in Brussels by Tempus management. All partners participated in discussion of all project members regarding Project and financial Management. The second session addressed Functional requirements. Presentation of Information Systems Applications Overview was given from the Head of IT Department of SEEU - Mentor Emini. He explained the current organization and information system SEE University has. Presentation of Student Services of SEE University was explained from the Director of Student Services Abaz Selmani.

Further specification, discussion and conclusions regarding the Requirements Analysis of iKnow processes for implementation at EEU were discussed from Ass. Prof. Dr. Bekim Fetaji. He discussed three 1) Module for study programs and schedules including student programs, courses, prerequisites and rules for studies, and mapping faculty staff to Courses – Catalog of studies; 2) Module for ECTS and diploma supplement including Administration of ECTS; Issuing documents and assisting mobility; Issuing other diplomas and certificates; and Assisting employment; and 3) third module including report for printing the Master Book requested by the Ministry of Education and Option for adding Digital Signature for all documents.

All the participants discussed the general requirement analyses for towards eStudent Information System iKnow.

Activity 9: 15 - 31 Dec 2010 Drafting of user requirements and technical specification related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 realized in Skopje, Bitola, Stip, Tetovo, MK

The conclusions from previous workshops concluded to establish 4 working groups. The first group was responsible for workpackage 1.1 (EM) Enrolment and migration module and Prof. D-r Dejan Gjorgjevikj was elected as leader. The second group addressed workpackages 1.2, 2.1 (CM) Core module and functions led by Prof. D-r Ivan Chorbev. The third group was working on workpackages 1.3, 1.4 (SI) Security and interface to other internal systems coordinated by Prof. D-r Anastas Misev and the final group was responsible for the workpackages 2.2, 2.3 (RE) Reporting and interface to other external systems coordinated by Prof. D-r Ljupcho Antovski. All project partners contributed in development of corresponding requirements. The results were distributed to other groups to enable drafting technical specification.

Activity 10: 15 - 31 Dec 2010 Meetings to force change of legislation and enable electronic versions of student documentation related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 realized in Skopje, MK

Meetings and lobbying resulted in setting the electronic versions of documents as part of new amendments in the Law of High education.

Activity 11: 1-31 Jan 2011 Drafting of technical specification related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 realized in Skopje, Bitola, Stip, Tetovo, MK

All working groups worked on developing a draft technical specification. The initial template was set by Prof. D-r Marjan Gusev, and all the groups collaborated in developing a consistent documentation. The result of this work was essential for organizing the next workshop.

Activity 12: 27 Jan 2011 [Workshop#4- Workshop on User interfaces](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in Bitola, MK

The fourth workshop was held at Rectorate conference hall of University St. Clement Ohridski Bitola with our hosts Prof. Dr. Pece Mitreski and Prof. Dr. Gjorgji Manceski. In session no.1 Prof. Dr. Gushev gave overview of performed activities and status report. He pointed out that four working groups performed a lot of work in creation of functional requirements and technical specifications. Prof. Dr. Dilip Patel has introduced the others with financial details and necessary docs to be prepared by partners for initiation of first installment. Out of first installment the partners will receive 30% of travel costs, staff costs, printing and publishing, other costs and overhead, while the budget for equipment will be available at LSBU for realization of forthcoming tender. All the partners should periodically (quarterly) send invoices and other docs to claim expenses.

The second session started with presentation by Working Group 1 and Prof. Stojanovski Toni about enrolment and data migration process. The next presenter was Prof. Ivan Chorbev for Working Group 2 – addressing the core module and student services. Prof. Anastas Misev has presented details about AAA (Authentication, authorization and accounting) and interface to internal systems within the Working group 3. Reporting and interface to external systems was addressed by Prof. Ljupcho Antovski in Working Group 4.


All the presenters pointed details of performed work and gave overview about next steps to be performed. The brainstorming fruitful discussions pointed several obstacles, solutions and issues to be implemented in final doc. Working group members committed to finish the first final draft document with technical specification and to send this doc to partners for expertise evaluation.

The participants have discussed all relevant issues and concluded to cancel the next meeting in Skopje scheduled for 28th since all topics were covered with discussions.

Activity 13: 04 Feb 2011 [Workshop#5-Developing technical documentation](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in Skopje, MK

This was organized internally by beneficiary partners to coordinated development of technical specification.

Working group 1 was led by Prof. D-r Toni Stojanovski, who presented the final draft. His responsibility was to add description of web services for exchange with Ministry of Education, and appropriate deadlines were set. Working group 2 was presented by Prof. D-r Ivan Chorbev who presented the version 3.5. His responsibilities were coordination with reporting modules from working group 4, and communication about finance matters with working group 3. In addition he has to add form in core module to verify the transfer from enrolment to core and deadlines were set. Two modes for payment were introduced after extensive discussion: pre- and post-paid. Working group 3 was led by Prof. D-r Anastas Misev and has deadline to finish all requirements in a week, since it has to coordinate with results from previous groups. The final group presented by Prof D-r Ljupcho Antovski was late and will have to wait for results from all other previous groups, but will still have the same deadline. All beneficiary universities are to provide report templates toward external entities – ministries, so the technical specification will be finished on time. The specification should also include EKTS reporting and Diploma supplement. FON will send specification for all the documents.

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Several deadlines were agreed among partners: delivery of technical specification in a week, Specification of the user interfaces till 01.03.2011. Team leaders to specify the workload per task and to elaborate a report who has provided sufficient output for the given task.

Activity 14: 1-13 Feb 2011 Compiling of final requirements specification document related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 realized in Skopje, Bitola, Stip, Tetovo, MK

Final documentation was compiled by Prof. D-r Marjan Gusev as set of two documents, the first prepared by Prof. D-r Stojanovski Toni for electronic enrolment and the second by prof. D-r Ivan Chorbev for electronic student services.

Activity 15: 14-16 Feb 2011 [Workshop 6 - Finalization of user requirements and user interfaces](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in London, UK

The workshop was organized by Prof. Dilip Patel as host from London South Bank University. The first day of the workshop was about the Student Information System at London South Bank University. Two presenters were Nathan and Prada German Augusto. The first presentation was about the enrolment module. In addition the UCAS system was explained in the UK and the processes how students enrol at Universities were discussed. UCAS is a system where each prospective student can apply for 5 universities and programs, and then the selection process continues.

The hosts have presented the student information software with initial value approx. 700K seven years ago, and they commented that each year they spent at least 100K on improvements. The system runs on Oracle. A lot of information is present in student records, and some are used for UK specific agencies, like HESA – higher education statistics agency. Crystal reports is a tool for reports and acts as advanced search criteria and outputs results.

The later sessions included discussions about current status of project realization, and also presentation of university facilities.


The second day of the workshop was organized for the purpose of the forthcoming tender for equipment purchase and specification of non-functional requirements for first two workpackages, as Second Steering committee meeting.

The following issues were discussed: 1) Understanding of higher education in Macedonia and approach towards EU regulations; 2) The bidder should have Macedonian presence (office or partner); 3) Recommend MS QL and .Net solutions (if other then the bidder should include the system software licensing in the price); 4) To ask for total cost of ownership for 2-3 years; 5) to define the ownership of software; 6) Source code – to be delivered or deposited somewhere with validation; 7) The bidder to embed all legal and legislative changes in SW; 8) The goal is value for money; 9) Mandatory and preferable criteria – mandatory are eliminating the others; 10) to include technical and financial capability; 11) Technical skills; 12) References to previous work; 13) Project management skills; 14) Communication strategy; 15) Milestones; 16) Risk management; 17) Payment stages; 18) Insurance liability; 19) NO VAT; 20) LSBU to draft an agreement – obligations of provider company for maintenance and ...; 21) to define timeline of delivery; 22) Agile development – to be defined – not enough funds within this project – so if the universities support; 23) Maintenance – to be specified; 24) Conflict and escalation management.

The consortium agreed to follow the plan to run the tender by the end of March, to apply until end of April, and to evaluate and to sign contract by end of May; and in August to deliver the first module for enrolment.

The representative of the procurement department described 3 ways to run the tender 1) UK framework agreement; 2) Domestic option – 5 or 6 suppliers (limited tendering process); 3) OJEU (official journal of EU)

The Steering Committee meeting brought conclusion to start the tender according to domestic option with sending invitation to several prospective bidders.

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Activity 16: 17-28 Feb 2011 Drafting of legislative document and technical specification for tender related to workpackages 4.1, 4.2, 4.3 realized in Skopje, Bitola, Stip, Tetovo, MK

This activity was mainly produced by project contractor and project coordinator. The draft versions were sent to partners to send comments and amendments, expected to be discussed on forthcoming workshops.

Activity 17: 1-2 Mar 2011 [Workshop #7 - Finalization of technical requirements](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in Ljubljana, SI

The workshop #7 "Workshop on finalization of technical requirements" was held in Ljubljana. The host was Prof. Dr. Jurij Tasic i Prof. Dr. Urbank Burnik from University of Ljubljana. The workshop consisted of 4 presentations and project management meeting. Introduction was given by Prof. Dr Urban Burnik. Professor Viljan Mahnic presented the eStudent Student Information System. Their project started in September 2001 (to change the old system built by Tempus project) in order to utilize it with modern eTechnologies. It is in operation since April 2003. They use Oracle solution. Prof.Viljan coordinated the project with help of three assistants. In total five people worked for 20 months – approx 100 man months. The presentation was followed by practical demonstration and discussions about several issues concerning realization. The benefit of using the system concerned all stakeholders: students, administration office and teaching staff. Emil Plesnik from Multimedia lab gave presentation about high school enrolment process. 4 public universities and 13 additional private institutions are functioning in Slovenia. Enrolment starts in second week in February. There are 3 application periods. The complete procedure was presented with a lot of details. The Ministry of Education honoured the IT department at Ljubljana University within the student records office to run enrolment at state level. Tomo Jarc from University IT department presented University of Ljubljana IT infrastructure. The IT dept services 5000 employees and 26 academy institutions. They use common infrastructure including Eduroam, Moodle, eStudent, SharePoint, ArnesAAI. All service modules are not connected and interoperable. The lessons learned include necessity to include definition of rules and processes. The second issue is that the project oriented solutions are best solution. Therefore they prefer service oriented business model with partners. Samo Penic presented hAvOc automated exam management system. They use a system with automatic generation of possible answers.

The project management meeting was organized in order to discuss several issues about next steps and to discuss details about on-going realization of student services and centralized solution for enrolment in Slovenia.

Activity 18: 3-6 Mar 2011 [Workshop #8 on Finalization of tender documentation](#) related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3 held in Dortmund, DE

The workshop #8 "Workshop on finalization of technical documentation" was held in Dortmund. The host was Dr. Norbert Jesse from Technical University of Dortmund. The workshop consisted of 4 sessions and project management meeting. Dr. Jesse gave welcome message to all participants followed by short introduction to the agenda and sessions. The introductory session consisted of three presentations. Heinrich Muller is vice dean of the faculty. He addressed the audience and has presented the academic organization of the university. Dr. Jesse presented the organizational structure of the administration with special accent about student services. He explained all university projects and IT tools used for student services. The presentation covered aspects and experiences of other universities and industry partners. Jan Philipp Muller from student services department gave presentation about IT based student services. The department deals with counseling, administration, exam administration, and university sports. He explained why it is necessity in realization of enrolment. The procedures for on-line enrolment and exams were demonstrated practically. The second session was about organizational aspects for university management software solutions. Peter Muessig Trapp presented Integrated Campus Management software. HIS company produces Higher Education Information System software. It is a government agency

which is funded only 1/3 by government sources and 2/3 by projects to universities. They estimate that 200-300 man days are required for roll-out phase, with fees of 700€ + 35% per man day. Dr. Gero Presser from Quinscape gave presentation: "Organizing Business: A Swiss army knife of portal systems". He explained the idea to use model based development and portable and flexible expanding the complete solution by using application store, with uploading modules and graphical modelling for assembling the application, instead of developing a new solution. The next session concerned IT solutions and implementations experience. It started with presentation of Christof Veltman from IT & Media Centre. The presentation was about IT services for services and the student life cycle. The services covered Identity management, usage of cards for certificates, authentication, authorization, and also with electronic cash for student services. The IT services for studies and teaching include application and enrolment, courses and lectures. The online support for student life cycle includes examinations, documentation, results, transcript of records, diplomas, certificates etc. Nils Joachim Bauer from Datenlotsen presented their experience and knowledge about developing a new system for student services, especially in university campus management system. 18000 project and 6000 sw development man days in university information system. 4 dimensions of campus management project: goals (strategic and operative), organization & processes, technology (functions, integration, data migration), change (partners capabilities and project methodology) – approx. 1000 man days and 3000 man days for university. It is organizational project as quoted by Karl Weick "Educational organizations as loosely coupled systems". Integrated campus management projects consist of administrative and academic processes which can be defined into two more categories mass and standard processes and individual processes. 17 universities have published tenders for campus management system. 13 universities have asked for a solution from Datenlotsen. Evolution towards an inner order, reflection and decision, integration of organizational units, and self-evaluation are 4 curses in realizing a project.


The final session was dedicated to open source solutions and experiences. Manfred Postel has presented Open Source Learning Management Systems and Tools. Campus Source is open source platform for LMS consisting of several open source programs and tools. Thomas Biskup from QuinScape presented OpenSaga web standards compliance out of the box. He commented that web applications are too complex, too technical and short lived. Their approach is the business manifesto – choose platforms that solve business problems – not technical. The second is model driven not technical (UML). The next issue is that design will not be realized by a democratic committee.

The project coordination meeting was organized after the final session and the participants discussed the following: overview and status progress, tender procedure, legal issues, and next steps. Several issues were commented in the conclusions: giving accent on a really nice organized workshop covering a lot of aspects from organizational to technological, then open source issues and topics which include project management. Several other issues discussed were usage of Partnership development, Model based development and possibility to use the idea of Web app store – just upload modules, with graphical tools. Prof. Dilip Patel from LSBU noted that two partners are due to send signed agreements. Payments are distributed. Specification, evaluation criteria, terms and conditions is required. Tender is announced for 4 weeks, one week for finalizing, we do technical evaluation. The contractor confirmed that payments to all participants that have signed the agreement have been transferred and notification about transfers will be send later. The participants were invited for the next event the conference CiiT to be held on March 16-18 in Bitola.

Activity 19: 16-18 Mar 2011 [Workshop #9 - Knowledge management for eServices in University management](#) related to workpackages 1,2 held in Bitola, MK

The conference CiiT was held from 16th to 18th March with 70 participants from universities and companies from Macedonia. The iKnow project organized sessions in two days.

The first day session was organized for dissemination purposes. Prof. Marjan Gusev gave welcome message and explained project objectives for developing innovative solution for

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electronic services for students. The following presentations were held: Dejan Gjorgjevikj – “Enrolment and migration module”, Ivan Chorbev – “Core module”

Ana Madevska Bogdanova – “Security and internal systems”. Fruitful conversations were held after each presentation and a lot of participants outside the consortium have discussed their experience and solutions for establishing electronic services. Especially important were discussions with representatives from Ministry of Education, responsible for organizing the information system for elementary and secondary schools, and also the agency responsible for providing graduation exams for secondary schools, which is prerequisite for our enrolment system. This session continued with workshop discussing details for web services which will be developed to exchange data between the Ministry of Education and our system.

The second day session was working session to discuss details about finalization of deliveries of workpackages 1 and 2 summarized as technical specification, including the non-functional requirements and technical specification.

Activity 20: 7-28 Mar 2011 Tender publishing at LSBU related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 4.1 realized in London, UK

Technical and tender documentation was finished on 28.03.2011. All necessary activities for tender opening were realized by a corresponding office at LSBU. The tender was opened 08.04.2011 by sending invitation to more than 20 companies (most of them in Macedonia as beneficiary country where Macedonian language was asked).

Activity 21: 30 Apr 2011 Winner selection related to workpackage 4.1

The tender was opened 08.04.2011 by sending invitation to more than 20 companies. The deadline was 06.05.2011 and only three companies (Ein-Sof, Asseco and Neocom) submitted bids.

Ein-Sof failed to meet the mandatory requirements based upon financial competence and capability – software development. The Asseco bid satisfied the mandatory criteria and obtained an overall technical score of 80. The Neocom bid achieved a technical score of 90 with a better demonstration of software development capability, solutions with bidding technology and solutions with similar functionality.

The Financial scores were calculated in accordance with the Bidding Requirements document, chapter 1.22 where the lowest price achieved a financial score of 100 and the highest achieving a financial score of 0.

The Asseco bid was the least competitive and therefore achieved a financial score of 0. The Neocom bid was the most competitive therefore achieving a financial score of 100 in line with the scoring methodology.

The total weighted final scores were as follows: Asseco – 24 and Necom – 97.

Activity 22: 1 May – 15 June 2011 Winner awarded, letters delivered and agreement signed related to workpackages 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 4.1 realized in London, UK

The letters were sent to all participants and negotiation process with Neocom in May resulted with winner announcement, acceptance of conditions and contract delivery in early June.

Activity 23: 17-18 May 2011 Presentation about project objectives at World Telecommunication And Information Society Day related to workpackages 3.1 held in Ohrid, MK

The conference entitled “World Telecommunication And Information Society Day” was organized by the Agency for Electronic Communications and MASIT – chamber of commerce for IT companies in Ohrid. Prof. Marjan Gushev as project coordinator, along with the representatives from the University, Prof. Dimitar Trajanov, the dean of Faculty for Information Sciences and Computer Engineering and Prof. Vlado Trajkovik as vice-dean for international

cooperation participated the conference. Prof. Trajanov as dean of the Faculty for Information Sciences and Computer Engineering has signed Memorandum of Understanding for further cooperation among University and MASIT. Prof Trajkovik gave presentation about application results of TEMPUS related projects and disseminated objectives of our project about students' electronic services. This event was excellent for dissemination purposes and initiating spin off effects of TEMPUS projects and representatives from industry in Macedonia.

Activity 24: 1 – 2 June 2011 Management meeting related to workpackages 6.1, 6.3 held in London, UK

This meeting was organized to summarize results and to speedup implementation, due to prolongation of tendering process having in mind the deadline of enrolment process scheduled for August 16th. Prof. Dilip Patel and prf. Shushma Patel were hosts from London South Bank University. The following topics were discussed and all open questions were solved about: 1) Progress of status changes with Technical University of Dortmund and Quinscape, 2) tender realization, 3) winner announcement, 4) negotiation process and contract signing, 5) schedule and allocation of further activities, 6) reporting for first six months of project realization, 7) new instalment and further communication with EU commission. The relevant conclusions were distributed to all partners by electronic means.

Activity 25: 15 June 2011 Status change – new partner Quinscape added to consortium related to workpackages 6.1, 6.3 realized in London, UK

The final acceptance by European Commission was distributed to partners along with request for all partners to sign their approval for status change in project consortium.

Activity 26: 15 June 2011 Project committee appointed for agile development and acceptance of software related to workpackages 6.1, 6.3 realized in Skopje, Bitola, Stip, Tetovo, MK

The project committee that will work on project acceptance (as concluded on our last meetings) will consist of one representative from beneficiary institutions: Prof. Mitrevski from UKLO, Prof. Arsenovski from FON, Prof. Chorbev from UKIM and Prof. Stojanovski from EURM. Prof Gusev as project coordinator will be the leader and responsible of this group. Two more representatives (Prof. Fetaji from SEE and Prof. Zdravev from UGD) will participate in this group at later stages since they require only selected web services.

The working group will be responsible for agile development of the software.


Activity 27: 16 June 2011 Delivery M1 of software phase 1 related to workpackages 1.1, 4.1 realized in Skopje, MK

Company provider Necom has carried out planned tasks in given deadline. Milestone 1 delivery (consisting of the following docs: 1) Web design interface proposal; 2) Hardware and software requirements specification for expected performance; 3) Specification of third party software; 4) Infrastructure roll-out proposal; 5) Detailed project plan for the phase; 6) Test and evaluation plan) of phase 1 was delivered on 16th June.

Activity 28: 28 June 2011 Acceptance of M1 phase 1 decisions by project committee about software related to workpackages 1.1, 4.1 realized in Skopje, Bitola, Stip, Tetovo, MK

Acceptance was given on 28th June after extensive checking of deliveries by all beneficiary partners..

Activity 29: 7 July 2011 Installation of eEnrolment software (delivery M2 phase 1) and customization at UKIM related to workpackages 1.1, 4.1 realized in Skopje, MK

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The initial version software was installed on 07.07.2011 on servers at UKIM.

Activity 30: 11 July 2011 Workshop #10 – eEnrolment software presentation related to workpackages 1.1, 3.2 held in Skopje, MK

The awarded company Neocom has delivered a comprehensive presentation on 11.07.2011 about software solution. This event was mostly used for raising awareness about future software and was realized as necessary event according to announced holidays for University administration.

A lot of questions were raised after this presentation especially having in mind the specifics of different faculties, like arts etc and which require a lot of special cases.

Activity 31: 11 July – 10 August 2011 Testing and agile development of eEnrolment software related to workpackages 1.1, 4.1 realized in Skopje, MK

There has been intensive work on agile development on the software realized mainly by Marjan Gushev and Ivan Chorbev from the UKIM side with software provider Neocom (Meetings were held regularly on Monday, Wednesday and Friday). EURM and FON were also testing some earlier versions, and UKLO was provided with testing accounts from 10.08.2011.

A bug reporting software was used from 20.06.2011. Until 15.08.2011 for phase 1 there were total of 394 reported bugs – 288 are closed, 5 are still in progress, 31 are realized with changes, 12 are rejected, 58 are resolved – waiting to be confirmed by UKIM.

UKIM team has reported 179 bugs and actively worked on their understanding and discussion with Neocom team for their closure.

A team of testers – 10 diploma students were working from 27.06.2011 until 22.07.2011 – they have developed 41 test cases, and realized 95 executions (46 showed malfunctions and failures) and reported 134 bugs.

1 M.Sc. candidate was working on development of Master Thesis – she has developed 34 test cases, and realized 83 executions (57 showed malfunctions and failures) and reported 9 bugs.

Activity 32: 10 August 2011 Training session about eEnrolment software including bug reporting tool related to workpackages 1.1, 4.2 held in Skopje, MK


The awarded company Neocom has successfully delivered trainings to UKIM staff on 10.08.2011 Wednesday. 57 new bugs were reported and most of them included existence of special cases – for example handling 1000 applicants which will submit their applications without filling any form.

Activity 33: 15 July – 15 August 2011 Promotion of electronic enrolment for perspective students related to workpackages 3.1, 3.2 realized in Skopje, MK

A series of activities were organized to promote electronic enrolment, like producing leaflets and posters, their distribution at special events for prospective students, organization of presentation on “open days”, and high schools, media campaigns on radio and billboards etc.

Activity 34: 16-18 August 2011 Live execution of eEnrolment software for 1st enrolment cycle at UKIM related to workpackages 1.1, 4.1 realized in Skopje, MK

All reported bugs were resolved and confirmed by 16.08.2011 to enable 1st enrolment cycle at UKIM. Only two faculties have accepted usage of the new software, while the others just tried its functionality. Corresponding deans at those faculties brought decision not to implemented the software this year due to short time of its introduction, and their will to let Faculty of Information Sciences and Computer Engineering to run extensive test of the software within live execution of the enrolment. The software was successfully used for enrolment of 590

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students at Faculty of Information Science and Computer Engineering and 254 students at Faculty of Science and Mathematics on first enrolment cycle.

Activity 35: 19 August 2011 Acceptance of M2 phase 1 and M1 phase 2 decisions by project committee about software delivery and implementation related to workpackages 1.1, 4.1 realized in Skopje, MK

Acceptance of Milestone 2 (Approval of software installation, documentation, training and performance) was signed by project committee after successful execution of software at 1st enrolment cycle at UKIM.

Milestone 1 delivery (consisting of the following docs: 1) Web design interface proposal; 2) Hardware and software requirements specification for expected performance; 3) Specification of third party software; 4) Infrastructure roll-out proposal; 5) Detailed project plan for the phase; 6) Test and evaluation plan) of phase 1 was delivered on 7th July and acceptance was given on 19th August.

Activity 36: 19 Aug – 15 Sept 2011 Social networking about electronic enrolment related to workpackages 3.1, 3.2 realized in Skopje, Bitola, Stip, Tetovo, MK

An extensive activity was performed on Facebook <http://www.facebook.com/FINKI.ukim.mk> and Twitter <http://twitter.com/#/FINKIedu> promoting the new electronic enrolment to prospective students.

Activity 37: 19 Aug – 15 Sept 2011 Live execution of eEnrolment software for 2nd and 3rd enrolment cycles at UKIM related to workpackages 1.1, 4.1 realized in Skopje, MK

New bugs and addendums were reported during the realization of 2nd and 3rd enrolment cycle, and these were successfully resolved by the company provider to finish the complete enrolment cycle at UKIM.

The most difficult part was persuading the officers to accept the new changed procedures. However the process finished successfully.

Activity 38: 26 Sept 2011 Initial version of phase 2 software installed related to workpackages 1, 2, 4.1 realized in Skopje, MK

The initial version software was installed on 26.09.2011 on servers at UKIM. All other beneficiary universities are about to provide servers in order to make installations on their sites. Presentations and trainings are scheduled for October. Testing and agile development will start after initial presentations.

Activity 39: 27 Sept 2011 Acceptance of M3 phase 1 decisions by project committee about delivery of phase 1 software delivery and implementation related to workpackages 1.1, 4.1 realized in Skopje, Bitola, Stip, Tetovo, MK

Final acceptance – delivery for milestone M3 was signed on 27.09.2011 after successful execution of all three cycles for the enrolment process.

Activity 40: 28 Sept 2011 Poster session – Tempus week related to workpackages 3.2 held in Skopje, MK

This event was organized by National Tempus Office in Macedonia. A lot of projects were presented on this event. Prof. D-r Marjan Gusev has presented the iKnow project to new Minister of Education and Science and delegates from Tempus EACEA. This presentation caused spin off effect since the Minister initiated a new idea to enable electronic enrolment on state level, so collaboration with project results will be extensively used.



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Activity 41: 5 Oct 2011 Workshop #11 – Electronic student services software presentation related to workpackages 3.2 held in Skopje, MK

Neocom has delivered a comprehensive presentation on 05.10.2011 about software solution. This event was mostly used for raising awareness about software and change of workflow procedures as part of University administration.

A lot of questions were raised after this presentation especially having in mind the specifics of different faculties, like arts etc and which require a lot of special cases.

2.3 Dissemination report

The main representatives from University stakeholders including Rectors of domestic Universities and Deans of various faculties were included in dissemination activities for raising awareness and promotion of the concept of electronic services for students (workpackage 3). There were several meetings organized for these purposes and also several dissemination workshops, where relevant EU partners and beneficiary institution partners have disseminated innovation and knowledge management techniques to achieve electronic services for students as part of University Management at Integrated University.

The project web site <http://iknow.ii.edu.mk> was established with main idea to present very clearly the concept of realization of electronic services for students at Integrated University environment.

Info leaflets about project results and deliveries were disseminated to wider audience (for example for enabling electronic enrolment and introducing electronic indexes).

Several workshops organized at beneficiary institutions have also been very successful to reach the overall project objective.

All participants that have realized visit to the EU institutions have disseminated the acquired knowledge about organization and implementation of electronic services for students at Integrated University at EU partners in both formal and informal meetings with relevant colleagues and stakeholders. With these activities the overall level of understanding and public awareness was raised about how these electronic services are organized and implemented.

Realized activities in 1st project year and achieved performance:

Quantity	Delivery	Performance indicator
2000 pcs	Leaflets – Info brochures	2000 students
20 pcs	Posters	Raised awareness
100 pcs	Dissemination strategy booklet	University management
3000 pcs	Booklets – info brochures	3000 prospective students
1 web site	Web publishing	Raised awareness
2 channels	Social networking	3000 students
>7000 mails	e-mail marketing	3000 students
Billboard 1 mon.	Media advertising	Raised awareness
Radio 1 mon.	Media advertising	Raised awareness
Newspaper	Media advertising	Raised awareness
1 workshop	Workshops on ICT related conferences	47 participants
2 presentations	Presentations on ICT related conferences	215 participants
11 workshops	Workshops at Universities	>300 University staff
2 open days	Exhibitions and fairs	Raised awareness
36 schools visited	Exhibitions and fairs	1325 students

2.4 Sustainability report


The management team had a lot of discussion and initiatives to enable existence of electronic version of all procedures and workflows for students with the Ministry of Education and Science. Positive primary effect was adoption of amendments for the New Law for High Education where the concept of electronic index and electronic realization of procedures at January 2011. It will definitely ensure implementation of our project results, since rectors/deans at beneficiary institutions will be interested to obtain infrastructure that will help satisfying the conditions set in the new law for high education.

The new adopted Law for High Education enable legal framework for sustainability of the overall project objective. The Universities will definitely take care about implementation of electronic services and appropriate ICT infrastructure to enable efficient university management of student services.

The steering committee made decision that University Management of beneficiary countries should appoint a responsible person to organize implementation phase at all levels of restructured University Management, including rectors as support. They are supposed to include usage of the electronic system for student services for University Management procedures in new legislation to be adopted at University level as implementation of the new Law for High Education.

Realized activities in 1st project year and achieved performance:

Type	Delivery	Performance indicator
Management	Agile development of the system	2 appointed professors
Management	Main system administration	2 appointed staff
Management	Maintenance	Budget heading adopted
Management	University Senate decision support	Decision voted
Equipment	Tender and provision procedure	LSBU finance department
Installation	Deployment of electronic enrollment	1 installation at UKIM
Implementation	Testing, data population and execution of electronic enrollment	1 installation at UKIM
Exploitation #1	Execution of enrollment software	1 installation at UKIM
Training #1-2	Enrolment software	68 University staff
Legal sustainability	Meetings with government representatives	Amendments to Law adopted
Legal sustainability	Meetings with University Management	12 meetings organized

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2.5 Implementation report

2.5.1 Tender procedure

Technical and tender documentation was finished on 28.03.2011.

The tender was opened 08.04.2011 by sending invitation to more than 20 companies. The deadline was 06.05.2011 and only three companies (Ein-Sof, Asseco and Neocom) submitted bids.

Ein-Sof failed to meet the mandatory requirements based upon financial competence and capability – software development.

The Asseco bid satisfied the mandatory criteria and obtained an overall technical score of 80. The Neocom bid achieved a technical score of 90 with a better demonstration of software development capability, solutions with bidding technology and solutions with similar functionality.

The Financial scores were calculated in accordance with the Bidding Requirements document, chapter 1.22 where the lowest price achieved a financial score of 100 and the highest achieving a financial score of 0.

The Asseco bid was the least competitive and therefore achieved a financial score of 0. The Neocom bid was the most competitive therefore achieving a financial score of 100 in line with the scoring methodology.

The total weighted final scores were as follows: Asseco – 24 and Necom – 97.

The letters were sent to all participants and negotiation process with Neocom in May resulted with winner announcement, acceptance of conditions and contract delivery in early June.

2.5.2 Agile development and acceptance

The project committee that will work on project acceptance (as concluded on our last meetings) will consist of one representative from beneficiary institutions: Prof. Mitrevski from UKLO, Prof. Arsenovski from FON, Prof. Chorbev from UKIM and Prof. Stojanovski from EURM. Prof Gusev as project coordinator will be the leader and responsible of this group. Two more representatives (Prof. Fetaji from SEE and Prof. Zdravev from UGD) will participate in this group at later stages since they require only selected web services.

The working group will be responsible for agile development of the software.

2.5.3 Electronic enrollment

Company provider Necom has carried out planned tasks in given deadline.


Milestone 1 delivery (consisting of the following docs: 1) Web design interface proposal; 2) Hardware and software requirements specification for expected performance; 3) Specification of third party software; 4) Infrastructure roll-out proposal; 5) Detailed project plan for the phase; 6) Test and evaluation plan) of phase 1 was delivered on 16th June and acceptance was given on 28th June.

The initial version software was installed on 07.07.2011 on servers at UKIM.

There has been intensive work on agile development on the software realized mainly by Marjan Gushev and Ivan Chorbev from the UKIM side with software provider Neocom (Meetings were held regularly on Monday, Wednesday and Friday).

EURM and FON were also testing some earlier versions, and UKLO was provided with testing accounts from 10.08.2011

A bug reporting software was used from 20.06.2011. Until 15.08.2011 for phase 1 there were total of 394 reported bugs – 288 are closed, 5 are still in progress, 31 are realized with changes, 12 are rejected, 58 are resolved – waiting to be confirmed by UKIM.

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1 M.Sc. candidate was working on development of Master Thesis – she has developed 34 test cases, and realized 83 executions (57 showed malfunctions and failures) and reported 9 bugs.

Neocom has delivered a comprehensive presentation on 11.07.2011 about software solution. This event was mostly used for raising awareness about future software and was realized as necessary event according to announced holidays for University administration.

A lot of questions were raised after this presentation especially having in mind the specifics of different faculties, like arts etc and which require a lot of special cases.

Neocom has successfully delivered trainings to UKIM staff on 10.08.2011 Wednesday. 57 new bugs were reported and most of them included existence of special cases – for example handling 1000 applicants which will submit their applications without filling any form.

All reported bugs were resolved and confirmed by 16.08.2011 to enable 1st enrolment cycle at UKIM. Only two faculties have accepted usage of the new software, while the others just tried its functionality. The software was successfully used for enrolment of 590 students at Faculty of Information Science and Computer Engineering and 254 students at Faculty of Science and Mathematics on first enrolment cycle.

Acceptance of Milestone 2 (Approval of software installation, documentation, training and performance) was signed by project committee after successful execution of software at 1st enrolment cycle at UKIM.

New bugs and addendums were reported during the realization of 2nd and 3rd enrolment cycle, and these were successfully resolved by the company provider to finish the complete enrolment cycle at UKIM.

The most difficult part was persuading the officers to accept the new changed procedures. However the process finished successfully and final acceptance – delivery for milestone M3 was signed on 27.09.2011.

2.5.4 Electronic Student Services

Awarded company - software provider Neocom has carried out planned tasks in given deadline.

Milestone 1 delivery (consisting of the following docs: 1) Web design interface proposal; 2) Hardware and software requirements specification for expected performance; 3) Specification of third party software; 4) Infrastructure roll-out proposal; 5) Detailed project plan for the phase; 6) Test and evaluation plan) of phase 1 was delivered on 7th July and acceptance was given on 19th August.

The initial version software was installed on 26.09.2011 on servers at UKIM.


There has been intensive work on agile development on the software realized mainly by Marjan Gushev and Ivan Chorbev from the UKIM side with software provider Neocom (Meetings were held regularly on Monday, Wednesday and Friday).

EURM, FON, and UKLO will provide server login details up to 15.10.2011.

A bug reporting software is once again used as a tool for agile development. It is expected that a lot of test cases will be developed and all reported bugs will be resolved.

Neocom has delivered a comprehensive presentation on 05.10.2011 about software solution. This event was mostly used for raising awareness about software and change of workflow procedures as part of University administration.

A lot of questions were raised after this presentation especially having in mind the specifics of different faculties, like arts etc and which require a lot of special cases.

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2.5.5 Conclusions and future activities

It is expected that Neocom will deliver training after initial remarks will be build in software up to the end of October.

To enable sustainability the Rector of UKIM has scheduled a meeting with all deans and vice deans to explain the new workflow procedures and to make decision to start using paperless workflow in provision of electronic student services.

2.5.6 Obstacles and risks

No significant and not foreseen obstacles appeared during the project realization.

We can extract that the main obstacles concern change of attitude of responsible officers to accept new workflow procedures and to implement non-paper handling of documents, along with the resistance of those who might lose their jobs due to lack of activities when full electronic workflow will be implemented. Staff from student services department might be reluctant to support and accept the iKnow software.

Main decisions approved by the steering committee are subject to further improvement, evaluation and implementation.

A possible risk may arise due to frequent changes of the Law for Higher education, and related legal acts might require frequent changes to the iKnow software.