

E Campus Central ASIA:

An example of international collaboration for e-learning.

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Abstract

The articles reviews the process of implementing the ICT into an education process in the Central Asian region. The review of technological penetration into the academic and administrative process is done in the case study of the National University of Uzbekistan (NUUz). The efforts of the University staff in development of the digital education environment is described in detail. The International Projects and International Collaboration of NUUz Web-based Education accomplished with the EU partners are discussed. The special attention is given to the e-Campus portal creation, with the Numeric Work Space for universities of three Central Asian countries : Kazakhstan, Tajikistan, Uzbekistan. The technology of the portal with SSO (Single Sign On) technology and educational effects are considered.

Keywords: **Portal, SSO, RSS, LDAP, e-learning.**

1. Introduction

In Central Asia we see a development where governmental policies nowadays demonstrate their awareness of information and communication technologies as a strong tool to bridge a growing gap in knowledge with countries, who have access to the capacity building tools of the 21st century. In the different sectors of society and economy facilities are created to enable the implementation of the so-called E-society.

Capacity building and ICT in education are indeed very important for the youth to benefit from the regular stream of education. At all levels, basic, secondary and higher education programs and projects arise to implement the designed policies. The call for more access and quality of education form the core elements of these projects.

Analyses from organizations as UNESCO, World Bank and EU TACIS-Tempus show us similar trends since years in the rapid evolution of knowledge, technologies and globalization. The search for conversion of global systems into local ones is a real challenge in this area.

Open and distance or distant education is already discovered and translated into projects. Kazakhstan and Uzbekistan and maybe in a more modest way Tajikistan have shown their efforts in the improvement of the information infrastructure as one of the important facilitating factors. Leading universities have participated in projects where information management, networking and sharing of resources became objectives next to the first pilots in development and application of new contents, teaching methods, learning materials and assessment.

In Kazakhstan the number of Tempus projects were focused on the development of technical IT infrastructure designated for education. For instance, in 1997-2001, the Al-Farabi Kazakh National University has jointly implemented a NOVA project with the University of Robert Schuman from Strasbourg, France. The project aimed the creation of a new computing centre with the modern technical infrastructure and applications.

The situation in Tajikistan show us a different kind of development in terms of external support but with their own human, financial, human and technical resources they are heading for the same direction of implementing E-education. Nowadays, the educational institutions of Tajikistan are actively engaged with the Quality assurance systems for education based on ICT. Their recent involvement into the international cooperation within the frameworks of TACIS-Tempus will allow them to intensify their efforts.

The National Program of Personnel Training of the Republic of Uzbekistan and the Governmental regulations on development of information technologies and Internet address the most urgent tasks of development of science and education in Uzbekistan. The key role in this activity is to be played by the universities and other higher education institutions as catalyst in this development process.

In Uzbekistan a series of Tempus projects focused also on the different aspects of ICT applications at all levels of university organization. The cooperation between partners from EU states and Uzbekistan has resulted in a chain of

projects. Management, teaching, technical and administrative staff got familiar with information management, needed new technologies (hard- and software), pedagogical and technical capacity building as integrated ingredients for the enhancement of E-education. On a modest scale the learning content, quality control and assessment were subject of development. Also here the need was felt to continue with the initial achieved results and look for expansion of the internal and external network of the National University of Uzbekistan.

The first experiences with networking between 8 universities are promising and resulted in the search for strategic expansion of shared information management and new initiatives on collecting and sharing content on the market of Open Source.

The results of NOVA project at Al-Farabi University of Kazakhstan has created an initiative of UNESCO to develop and implement a new project in all Central Asian states. The project was named as e-Campus Central Asia and had an objective of creating one education portal in the University in each country of Central Asia. The EU partner for this project was the Universities of Strasbourg, France. In Uzbekistan the National University of Uzbekistan was selected as the project partner.

2. The case study of technological penetration into the education process, the perspective of the National University of Uzbekistan.

From the very beginning, the development of University in the ICT fields was planned according to the Concept of Corporate Network. The Concept was presented at the 2nd UNESCO Conference on Education development in Uzbekistan held in Tashkent. The special attention was paid to the further expansion of technical and software capacity to allow the on-line lecturing. The gradual construction of infrastructure involved the following major milestones.

The first Fiber-Optic network of University in Uzbekistan was created within the frameworks of the TACIS-Tempus project UZBEKINFO. The pilot network experience was further disseminated to other Universities of Uzbekistan during the other Tempus project UZANANETU implementation. As a result of these projects, the pilot education network of Universities was created in Uzbekistan. <http://www.nuuz.uzsci.net/uznanetu>

By the years 1999-2001 the first scientific and educational network of Uzbekistan – UZSCINET, <http://www.uzsci.net> – was already operational and this fact allowed using its facilities for communication with external world. Connection to UZSCINET gave advantages to not only to Uzbekistan higher educational institutions to contact with the Western ones but vice versa, the Western audience obtained the opportunity to familiarize with the Oriental mentality. NUUZ received access to Internet, and the educational and research network of Uzbekistan was enlarge by the campus network of NUUZ, the largest of its kind. This was an important development and NUUZ became the major participant of the growing educational network.

In order to provide students and faculty/staff with free Internet access, creation of an Internet Public Access Site (Open Learning and Information Center, OLIC) was proposed. This activity was supported by Open Society Institute Assistance Foundation – Uzbekistan (OSI AF) through its Internet Program.

The education quality issues were addressed in the UNIQUIM project within the frameworks of TACIS-Tempus program. The Quality Assurance System and the Centre responsible of the issues of quality management were established. The special software for the knowledge support and control as well as the student registration and administration has been developed; <http://www.nuuz.uzsci.net/uniqum>. As the logical continuation of the Quality management was issue the e-resources management at the University. For this purpose, the project named UNIQERM was submitted and approved. E-resources management system is being developed and implemented.

The e-Campus project that was jointly implemented by the Universities of Strasbourg, France and three Universities of Central Asia, including the National University of Uzbekistan has a special role in international cooperation for e-learning.

The role of e-Campus project in this respect becomes more urgent and important. The projects that were implemented before foresee development in the certain, selected area of ICT implementation. E-Campus project integrates all the aspects into a unified system utilized with the education portal. The technology implemented in creation of portal allows to use the technical infrastructure and information system of University for the personalized presentation of academic, administrative and educational information for the users of the system. By other words we can say that at this moment the e-Campus portal generalizes and unifies the resources and expertise generated by other projects of the NUUZ for the creation of e-learning environment or numeric work place. The technology and education impact of e-Campus is further discussed.

The detailed description of international projects of the NUUZ is given in the Appendix 1.

3. The technical architecture of e-Campus.

This project used all the studies we made to realize EPPUN. The French EPPUN project (Environment Pédagogique Pour l'Université Numérique – Pedagogical Environment for Numeric University) has the ambition to offer a coherent range of services to the students, teachers and administrative staff of higher education establishments. It is financed by the Ministry of Education of France and is realized by the Universities of Strasbourg, France.

Answering the essential missions of the university, the numerical work environment EPPUN is composed of a base relying on the existing information systems in universities without substituting itself to it, and of a modular range of educational and administrative bricks that can be used according to the choices of each establishment. The aim of the EPPUN project is to gather all functionalities in an inter-operable, modular and multi-technological architecture.

The base allows after authentication to achieve an individual portal giving Internet services.

E- Campus Central Asia

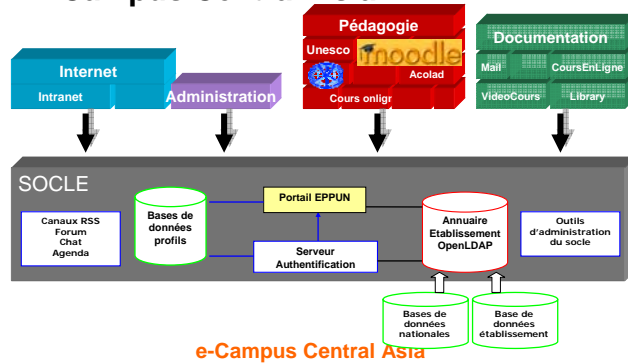
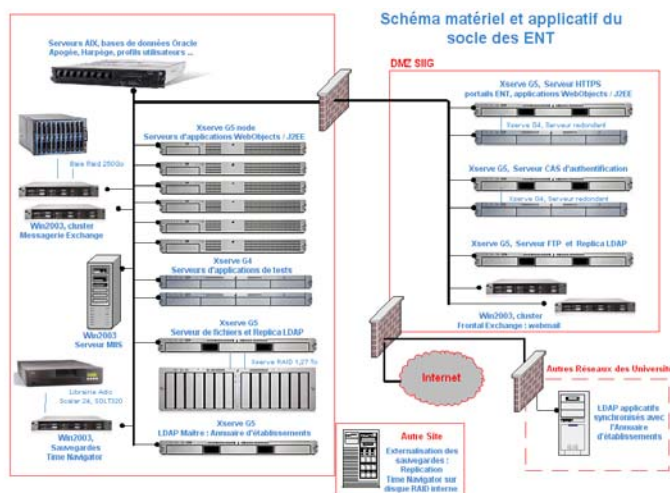


Figure 1. Scheme of the portal for the NUUz

The portal was developed with the use of web applications allowing implementing the first connection in Numerical Working Environment, procedure of changing the single password, the personalization of the portal, the management of menus containing offered Internet services and management of profiles.

The whole was conceived in Java with the based on the norms W3C-HTML and W3C-CSS for better inter-operability and compatibility. These applications were developed in Java with WebObjects 5.2 connected to Oracle 9 database.

As regards the authentication part, a CAS server was used in correlation with a directory OpenLDAP 2.3.4. It is in this directory that should be all the users concerned by Numerical Working Environment. The material architecture is the following:



4. Transfer of new technologies

The e-Campus has the following technical components with the technologies used:

4.1 Socle tools

LDAP Lightweight Directory Access Protocol: training for building the institution directory with **OpenLDAP**.

Server CAS: Central Authentication Server. For more explanation read the excellent article published by Mrs V. MATHIEU, P. AUBRY and J. MARCHAL, "**Individual Sign one open-source with CAS (Central Authentication Service)**": http://www.esup-gate.org/consortium/espace/SSO_1B/cas/jres/cas-jres2003-article-Web.htm

WebObjects is both, our development tool and application server.

WebObjects is most often referred as an application server; however, it's much more. WebObjects consists of a set of frameworks that allow you to write cross-platform, server-distributed applications, and a set of tools to help you write them. The tools include WebObjects Builder, EOModeler, Rule Editor, and Web Services Assistant. You'll also use Project Builder and sometimes even Interface Builder.

The applications must be written in Java, but can be distributed in a variety of ways, including HTML, Java Client, or even via Web Services. Since WebObjects is Java-based, you can actually use other tools to create WO Applications, such as [Eclipse](#), an open source Java IDE led by IBM.

Why Use WebObjects?

WebObjects allows you to create a wide variety of applications. It's a mature suite of frameworks and tools that were obtained by Apple in its acquisition of NeXT. WebObjects was a crown jewel at NeXT. Companies like Disney, German Bank, and AAA all use(d) WebObjects to create cutting edge web applications (heck, even Dell used it). Even today, WebObjects is being used to create new and compelling applications, like the Apple Music Store. **WebObjects Documentation** : <http://developer.apple.com/webobjects/>

W3C: XHTML, WCSS, WAI

These three norms are included in all development. That's give to the portal a very high level of technology and ergonomic.

4.2 Services

Univ-RX offers students and teachers a unique, delocalized and secured access to a personal environment, to a configurable range of software as well as to a storage space. The power of the provider platform is made available to users via the network, by granting them access to the desktop automation tools and to scientific software (chemistry, biology, mathematics).

ACOLAD is a remote teaching platform where each user has access, according to their profile, to contents of data bases interfaced in visualization to represent the usual places of formation. The classes are thus placed at the disposal of students and allow them to form training groups within this virtual educational environment.

VIDEOCOURS is a research project intended to set up an automatic implement of video course. By this technique, it is possible to produce support of course automatically, without intervention of specialized video operator, mixing video of the teacher and support of lessons used during lesson (Web pages, transparent, PowerPoint). These video lessons can be viewed direct, or be available for consultation in postponed, by achieving an advanced interactive navigation then.

The **documentary portal** is a simple, fast and effective tool to access printed and electronic documents. The end-user will access, via a single interface of simultaneous questioning, to heterogeneous documentary sources (catalogues, data bases, reviews, theses and electronic books, multimedia documents).

In Numerical Working Environment, you can find the possibility of inserting channel of information into RSS norm. As regards the tools of mail, a web - mail was also inserted.

However, this ENT does not limit itself to particular applications. His strength comes from his ability to integrate applications using other technology such as Moodle for instance. That's why local web applications are not forgotten and can wholly be inserted into the Numerical Working Space.

Management tools: for registration, exam results, time table, accounting, human resources etc...

All this services are included in the portal depending on the profile of the person (student, teacher or worker) and used thru single sign on.

5. Portal in the National University Uzbekistan

After consolidation, personalization, localization we have now one portal running in NUUZ, including some services. The services at the moment include the communication tools (Internet, Intranet, mail, chat, document exchange, etc); administrative tools (SAMMER QAS, OAS, etc.); and pedagogical tools (Moodle, ACOLADE, VIDEOCOURS, etc.). As it can be seen the services can be as the open-source resource as well as the commercial software. The

software for the quality assurance (SAMMER) developed at the University is also integrated into the portal. Next step is to add some more courses and disseminate to students and teachers.

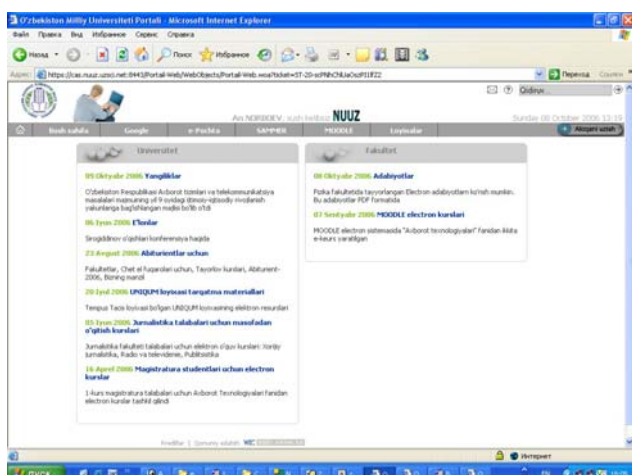


Figure 2. The screenshot of the interface of the NUUZ portal

At the beginning it was mentioned that e-Campus became the basis of e-Learning environment at NUUZ. However, it is necessary to mention that e-Learning is not quite a systematic application of the ICT into education process. Instead there are a number of elements in the learning process that can be implemented with the use of the ICT. Such elements like Discussion Forum or Media Presentation are just some of the elements. There would also be elements that are best to be implemented via traditional media, "Face to face" realization. By other words it is a not replacement of a teacher by PC but enhancement of the learning process into other areas of everyday life and involvement of ICT into this process.

The implementation of e-Learning takes several levels: technical, pedagogical, managerial, etc. The status assigned to learning in its new aspects will determine the scope and type of efforts to be made in its creation, e.g. distant learning with diplomas awarded or self-study as a preparation to lectures. For all these purposes the e-Campus portal serves as the gateway and media.

6. Conclusion.

Because of the high cost of telecommunication services, especially broadband network connections, as well as the high cost of the corresponding equipment, the most advanced and sophisticated ways of distance learning, such as real-time video conferences, are not affordable for most universities of Uzbekistan yet, and therefore can not be the core part of the e-learning services in the framework of today's E-Learning projects. The more appropriate paradigm is so-called "hybrid" form of distance education which combines more cost-efficient tools of e-learning and traditional forms of education. The very good example of such a system is the e-Campus portal for education.

Summarizing the above mentioned the major direction of development is the introduction of more courses and dissemination into other regional Universities.

Appendix I.

International Collaboration of National University of Uzbekistan in field of Web-based Education and implementation of new ICT in education

UNESCO Chair	1998	Chair of Physics and Astronomy, 5 PCs computer Center
TACIS-Tempus “UZBEKINFO”	1999/01	Creation of LAN in NUUZ, strenghtening of university management, training of system-managers
NATO Science Committee Network Infrastructure Grant - “UZUNINET” Project	2001/04	Creation of inter-university network and connection to the UZSCINET network, functionality of proxy, web, mail and file servers
OSI AF sponsored “Internet Public Access Site” and “Open Learning and Information Center”	2001/03	Free Internet access for students and faculty/staff, basic IT trainings, Computer Center with 52 PCs
TACIS-Tempus “UZNETU”	2002/04	Advanced IT and IM trainings for staff of 8 universities of Uzbekistan, creation UZNETU network, preparation of curricula, knowledge dissemination, content creation. Activity of remote administration, on-line and of line support, web-design support and web-hosting.
"Informix" educational grant	2001	Trainings on database technologies, educational software granted
Creation of Uzbekistan UNESCO Chairs Network	2004	Installed web and file servers for 9 UNESCO Chairs of Uzbekistan
TACIS-Tempus “UNIQUM”	2005	Creation of University Quality Assurance System (QAS) based on Web-technologies and open-sources
e-Campus CAntral Asia project UNESCO	2005/6	Creation of an education portal for one University in three countries of Central Asia
TACIS-Tempus “UNIQERM”	2006/7	Development of e-resources management system