Student Management Information System for Polish Universities at its Tenth Anniversary

Mariusz Czerniak
Nicolaus Copernicus University in Toruń
Outline

- Information about USOS
- System components
- Development
- Best practices
- Benefits and challenges
What is the USOS

- Student Management Information System for Polish Higher Education Institutions (HEI)
  - Main task - administrative support of the teaching and learning process
  - Year 2000 - beginning of the development by experienced programmers, IT graduates with good knowledge of specificity of the higher education
    - therefore offers effective solutions and can compete with commercial products available on the educational market
  - University of Warsaw - project leader
- Home page: http://usos.edu.pl/
Business model of USOS

- Owner:
  University Centre for Informatization (MUCI) – the unit created by the Conference of Rectors of Polish Universities in 2002
  - non-profit organization which gathers 38 HEIs
  - partner for consortia of European universities
  - mover and coordinator of other projects deployed in Poland (e.g., eduroam, electronic Student ID card)

- The base license fee and annual fees are very low

- All the collected funds are spent on the application development
USOS and Educational Market in Poland

- The USOS in 2009 was used by 27 public higher education institutions, which constitutes 20 percent of the universities in this category and 40 percent of their students.

<table>
<thead>
<tr>
<th>Categories of HEI Deploying USOS</th>
<th>Quantity</th>
<th>Participation in educational market</th>
<th>Participation in handling students</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>27 from 131</td>
<td>20.61%</td>
<td>40.00%</td>
</tr>
<tr>
<td>non-public</td>
<td>3 from 325</td>
<td>0.92%</td>
<td>0.74%</td>
</tr>
</tbody>
</table>

- In 2010 four more universities joined the project.
Eight of 12 largest Polish universities (over 30 thousand students each) deploy USOS
USOS and types of HEI

- Not only universities are using this system

<table>
<thead>
<tr>
<th>HEI deploying USOS</th>
<th>Other higher education institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police and national defense academies</td>
<td>1</td>
</tr>
<tr>
<td>Agricultural academies</td>
<td>1</td>
</tr>
<tr>
<td>Physical academies</td>
<td>2</td>
</tr>
<tr>
<td>Academies of economics</td>
<td>2</td>
</tr>
<tr>
<td>Teacher education schools</td>
<td>2</td>
</tr>
<tr>
<td>Vocational Schools</td>
<td>3</td>
</tr>
<tr>
<td>Technical universities</td>
<td>5</td>
</tr>
<tr>
<td>Universities</td>
<td>14</td>
</tr>
</tbody>
</table>

(Numbers represent the number of institutions using USOS compared to other higher education institutions.)
## USOS in numbers

### Selected figures describing the project

<table>
<thead>
<tr>
<th>Total number of</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>applications associated with USOS/installations</td>
<td>8 / 65</td>
</tr>
<tr>
<td>servers for main databases and associated applications</td>
<td>79</td>
</tr>
<tr>
<td>defined fields of study/courses</td>
<td>5702 / 528087</td>
</tr>
<tr>
<td>developers/people deploying the system</td>
<td>from 5 to 10 / 89</td>
</tr>
<tr>
<td>people in team deploying the system</td>
<td>from 2 to 7</td>
</tr>
<tr>
<td>users from HEI’s administration / academics / students</td>
<td>3693 / 26798 / 497185</td>
</tr>
</tbody>
</table>
Where can we find USOS
The most innovative elements of the system were presented at EUNIS and other conferences:

- EUNIS Elite Award for excellence in implementing information systems for higher education (2007)

Universities deploying USOS have the highest quality of education:

- For example, three of them took three first places in the Ranking of Higher Education Institutions published in 2010 by magazines Rzeczpospolita and Perspektywy.pl
- Their position in this annual ranking has not changed for several years.
System components

- **USOS-Admin**
  - interface for administrative staff
  - handling most aspects of university education
    - students and teachers personal data
    - study programs, plans and requirements, course of study
    - schedule of courses and classes, manage room resources
    - degree certificates (all processes support ECTS credit system and diploma supplements)
    - student financials (scholarships and fees)
    - survey and reporting

- **Associated web-based applications**
  - dedicated for students and academics
  - full functionality in English language version
  - can use Central Authentication Service (CAS) to authenticate their users
Associated applications: USOSweb

- USOSweb - Virtual Dean’s Office
  - presentation of students’ results and achievements
  - filling in questionnaires on the teaching process
  - participating in the elections
  - communicating with other participants of groups and their teachers
  - changing photo for Student ID card
  - outgoing mobility
  - course registration which supports individual education plans and multiple methods of registration for classes
Associated applications: Admission and KReM

- **Admission:** Internet Registration of Candidates
  - supports the admission process with self-service functionality
  - gives full information about status of the qualification for registered candidates
  - administration, measurement and analyzing recruiting effectiveness becomes very easy

- **KReM:** Central Registry for Results of Maturity Examinations ([https://krem.uw.edu.pl/](https://krem.uw.edu.pl/))
  - provider: University of Warsaw
    - agreement between HEI and University of Warsaw
    - candidates’ data essential for the recruitment process
Associated applications: Course and Diploma Catalog

- Fully compliant with requirements of the Bologna Declaration
- Course Catalog: electronic brochure
  - essential information about the university
  - programs of study offered by the university units
  - recruitment and practical information for students
- Diploma Catalog: graduate thesis
  - information about the topics, authors
  - carrying out the process of review and evaluate thesis by authorized persons
  - storing electronic versions of thesis and written reviews
Associated applications: Mobility (outgoing)

- Outgoing mobility of students and academic teachers
  - part of USOSweb service
  - bilateral agreements and recruiting
  - arrangements with coordinators (Learning Agreement)
  - returning with the Transcripts of Records

- Near future: The Mobility Project
  - main objective: electronically data exchange between partner universities by calling web-services
  - project gathers consortia of European universities (e.g., CINECA, MUCI, SIGMA, HIS, Ladok, etc.)
  - http://usos.edu.pl/Mobility/
Associated applications: Mobility (incoming and domestic)

- Incoming mobility of foreign students
  - registration and process of qualification
  - personal data and accommodation
  - studying details: domains, units and courses offered by the university (integration with Course Catalog)
  - necessary electronic copies of documents

- Domestic exchange (project "MOST")
  - similar to original EU SOCRATES
    - dedicated for Polish universities
    - participate nineteen universities

- central national registry
  - [https://most.uka.uw.edu.pl/](https://most.uka.uw.edu.pl/)
Associated applications: Career Office

- Promotion and guidance for students
  - central national registry - https://biurokarier.edu.pl/
  - validated by the system USOS students’ data from several universities (of course, only those students who agree to share them)
- employers allow to:
  - submit bids for practices and jobs
  - review the data
  - contact with students and alumnus
Associated applications used by HEI

- The most popular applications installed on HEI

- HEI benefiting from the central applications
USOS integration with other IT applications

- Wide variety of IT applications which support HEI activities
  - exchanging data among systems

<table>
<thead>
<tr>
<th>Category of system</th>
<th>Methods used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Resource Management</td>
<td>▪ CSV files</td>
</tr>
<tr>
<td>Financial Accounting and Management Information</td>
<td>▪ own scripts</td>
</tr>
<tr>
<td>Library Management</td>
<td>▪ table views</td>
</tr>
<tr>
<td>Student Mail Accounts</td>
<td>▪ special applications</td>
</tr>
</tbody>
</table>

- Integration – one of the main objectives of the future development of the system
USOS development (1)

- Partnership and exchange of experience
  - expectations of the universities determine the main directions of development
  - discussion leading to consensus
  - people deploying the system get assistance and support of colleagues from other universities in solving technical and organizational problems

- Software development principles and methods
  - similar to those used in open-source society
  - source code is available on request
  - local changes and developed own modules can be incorporated into the official version of the system
USOS development (2)

- Involvement of academics in development of the system
  - research of new algorithms and solutions, for example applying artificial intelligence to the registration of classes
  - support and assistance of graduate students which developed prototype versions of selected modules
    - gain the first experience
    - provides good recommendations
    - accelerates implementation of new expected features at lower cost
Best practices (1)

- The leader of the project
  - review any element of the system
  - describe status of tasks on a daily basis
- Tests of every new modules
  - two-level additional testing:
    - first on sample database
    - second at university which is an author and implements a prototype
- Reference sample database
  - latest structure
  - full but anonymous data
  - good for testing and training
- Sample scripts for data migration from old university databases are available on demand
Best practices (2)

- Access to bugtracker and testing tool (https://bugzilla.usos.edu.pl/)
  - also to the representatives of major users
  - used to suggest new ideas, exchange views and gather support for new projects
- Free training courses and workshops
  - also for other solutions used at universities, for example CAS or LDAP
- Constantly updated documentation
  - contains also all aspects of implementation (for example schedule of all activities, conducting training, legal acts, etc.)
  - helps in successful implementation of the system
Benefits of USOS

- Standardization of processes carried out in higher education
- Changing the university administration
  - more effective and efficient
- Improving management
  - human resources
  - educational buildings and rooms (e.g., planning teaching, filling classrooms)
- Improving communication among teachers and students (e.g., modules U-Mail, Exam)
- Maximizing value of teachers with functions (e.g., Erasmus Coordinator, Catalog Editor, Course Coordinator, etc.)
Challenges

- Develop better tools for data mining and visualization
- Provide better services for students, faculties and staff – more self-service functionality with non-stop system access
- Better integration and data exchange with other university information systems
- Time to rethink earlier technology decisions – parts of the systems will be rewritten using new technology platform
Thanks to
Janina Mincer-Daszkiewicz

- Leader of the USOS and all associated projects from their inception