Central Application Procedure for the Universities in Slovenia: Systems Development under Crisis

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Abstract

Candidates, who intend to study at the Universities in Slovenia, have to pass the unique centralized application procedure. For most of about 300 programs at both Universities, admission is limited. Different admission qualifications for each program, and the fact that the vast majority of candidates apply before they actually finish secondary school, makes the application procedure and supporting information system very complex. This paper describes the procedure, the evolution of its information system, and proposes further improvement of the application procedure and use of new technology.

Application Procedure

Slovenia is a small country with population of two million and two universities: University of Ljubljana with 35,000 students and University of Maribor with 12,000 students. Candidates can choose among 300 programs from both Universities.

Since 1995, there has been a new application procedure for admission at universities in Slovenia. An important characteristic of the procedure is that the majority of candidates apply before they finish secondary school and do not know how successful they will be. The reason for this is that, according to the law, the Slovenian government decides upon limited admission for particular programs, after the number of applicants is known. The basic schedule of the procedure is as follows: candidates apply in the beginning of March; the government decision is accepted in the middle of April; school year in secondary schools finishes at the end of June; school year at universities starts in October. Another important characteristic is preference among wishes. Candidates must name desired programs in the preferred order on the application form. They are allowed to name up to three programs, called wishes. According to their qualification one of them (or no one) shall be fulfilled. The application procedure can be decomposed into the following activities:

• Preparation
• Capturing the data from application forms
• Analysis of the applications
• Capability tests determination
• Capturing of secondary schools certificates and tests
• Calculation procedure
• Selection procedure

For some programs special capability tests are required (talents, physical disposition, special skills etc.). After finishing secondary school, candidates (or their schools) send certificates of graduation and capabilities tests results. According to the program’s qualification criteria, and calculations of the candidate’s results, in selection procedure, all of the successful candidates are ranked and listed for the one of the desired programs.

Information System for Application Procedure

The information system for the application procedure supports all of the activities, from preparation of all the required catalogues (code tables) up to the selection procedure. One of the most important objectives of the information system is to assure the consideration of all the qualifications and terms for a particular program which are recorded in a database, and updated in the preparation phase. The most critical procedures that the information system supports are calculation and selection procedures.

Development of Information System

The first version of the information system has been developed under extreme time pressure under the conditions of crisis management. The project literally started one month before the beginning of applications data entry and two month before the first required analysis report (which is the bases for government decision upon limited admission). The reason for this late start was delay in legal procedure for the new system. The first task was to choose hardware and software for the production system and for development. The main criteria were software maturity, reliability, and quality of support. In both admission offices (each university has its own), servers and LAN’s (8 workstations in Ljubljana and 3 in Maribor) were installed. The main components of the chosen platform were: operating system Novell NetWare; database Oracle 7.0 on both servers; DOS operating system for clients; Oracle development tools; CASE tool SilverRun. The servers were not connected. The reasons for this were unreliable communications lines, unfinished inter-university network, and time shortage. Two unconnected servers caused many problems during the whole procedure.

The main consequence of time pressure has been the unsystematic development of the information system. There has not been enough time for analysis to get the complete model of the system. Development followed a step-by-step approach according to the current requirement (milestone) of the application procedure. The approach of gradually building the process
Renovation of Information System

The first step of the renovation was changing the hardware and software configuration. In the meantime, the inter-university network has been built. So, it was possible to install the powerful UNIX Workstation for the central database server and to connect both LANs to it. Two unconnected servers and combination Oracle-NetWare proved to be inefficient and unreliable.

It has been difficult also to maintain consistency of the database. The other reasons for renovation were:

- changes in the application procedure as a consequence of the analysis after the first year;
- too complicated use of the information system;
- announcement from ORACLE of the end of further development of the tools under DOS.

For the renovation, new Oracle tools have been used. The old data model was imported from SilverRun to Oracle Designer 2000 and changed according to changes in the application procedure and experiences from the first year of operation. Thanks to the new client environment (which was changed from DOS to Windows), new forms and reports using Oracle Windows tools have been developed on the bases of the old ones. Main advantages of the new approach to system development are:

- improved consistency of data because of central data server,
- higher productivity of development by using of new tools,
- improved control and transparency of development process using repository,
- user friendly screen forms and reports
- qualitative documentation

Besides increased reliability, the main advantage of the renovated system has been better user satisfaction. System operation became easier and more transparent. The new information system also significantly improved communication with candidates. Candidates receive mail at least twice during the procedure. After capturing the application forms, candidates receive mail with their data in the database to verify and correct them, and mail them back to the admissions office. Candidates receive second mail when the selection procedure is finished. They are informed about the program into which they are accepted with all the explanations.

Conclusions

According to the experiences with present information system, and new technology opportunities, some further changes and upgrading of the system have been considered. They include changes in application procedure and some changes to the information system itself. Changes in the application’s procedure itself, unfortunately would not be possible without changing the law.

Capturing the data from application forms is a process, which lasts at least four weeks. A small group of clerks does the coding of application forms (average is 20,000 candidates). Based on code tables, data entry is much easier and faster. In spite of this, there need to be at least ten clerks to do the work. Expenses and duration of the process call for better solutions. There are two possible alternative solutions under consideration: IOCR technology to capture the data; and Internet based solutions

Intelligent OCR is improved technology, which provides new features that increases the accuracy and throughput for converting printed or scanned documents into computer-editable text. The technology behind this innovative approach to OCR is predictive optical word recognition. Using IOCR technology to capture data from application forms would reduce costs. According to technical characteristics of IOCR technology, the whole process would not last more than a few days.

The idea of using the Internet to capture data from application forms is even more attractive. Every secondary school in Slovenia has access to the Internet! Under teachers’ supervision, candidates could apply using a Web-program. The Internet could be used also as the general communication channel between candidates and the Admissions Office. The same approach, which is already accepted and under development, is capturing the results of capability tests performed at University departments. The advantages of this approach will be numerous. Among these advantages are:

- reduced costs,
- more accurate data capture (interactive control of data entry),
- no need for data coding,
- direct input into database and efficient communication among candidates and the Admissions Office.

The Internet is also considered to be used more extensively than it already is, for information about programs, terms, admission rules, etc., and as mentioned, to improve communication among universities and candidates. Recently, also work was started on an Information Strategy Plan for renovation of the University Information System of the University of Ljubljana, where experiences in this project are taken into account.

References
