

Administrative Systems for Universities Should Be More Than Just a Spreadsheet

Michal Brandejs, Iva Hollanová, Mirka Misáková, and Jan Pazdziora

Faculty of Informatics MU Brno

1 Information System at Masaryk University, Brno (IS MU)

This paper is not a case study of a particular administrative system. Our aim is to share the experience and knowledge gained during deployment and running of IS MU. We also stress the consequences it has had on the university as an organization. Its two main principles are as follows:

- Every student and staff member authorized as an IS MU user can participate in enhancing the system and contribute to analysis of new applications. The system is to provide something interesting or useful for everyone. The access to the system must be transparent, i.e. all applications have web interface. Apart from around 15 thousand students (who use the system at least occasionally), IS MU has to serve several thousands of staff members (access the system on a regular basis) as well as people from the registrar departments and management (50-100 people, massive usage). IS MU operates from March 1999. In December 2000, the number of accesses reached 20 millions. During the last semester (Autumn 2000), university could fully exploit the features of IS MU. The number of accesses was over 180 thousand per day.
- Everybody is responsible for keeping their data up-to-date. Everyone has access to all available public information (IS MU obviously respects the Data Protection Act). The system is there for everyone, not merely for a few admin people or managers.

We consider both principles to be very important. We believe that they were one of the forces behind recent changes and setting of new trends for the university. IS MU must be a living system, an everyday tool, to have the potential to change traditional university.

The system is being implemented step by step. From the first set of applications (Catalogue of Course Offerings), it increased its scope to approximately 160 applications. The applications comprise tools for "Lecturer" (20 applications), "Student" (10), "Catalogue of Course Offerings" (40), "Credit Control" (40), "Publications" (10), various tools for presenting information and communication applications (20). For details see "<http://is.muni.cz>". The university consists of eight independent faculties, hundred of degree programmes and combined-studies degrees.

2 Student-driven education

Universities offer various degree programmes: the longer the tradition of a particular programme (it is even 20 or 50 years!), the better. Indeed, this is very true for some subjects,

like law or mathematics. The programmes are set and students are lucky if they are allowed to choose a couple of optional courses per year.

There are, however, subjects that must take into account the latest development in the fast-changing world, so that the graduates have a chance to get a good job. Computer science studies are the prime example. Universities may not be able to identify students' needs. Student-driven education is the answer to the problem.

Student-driven education allows students to select individual courses to form their profile. This way, students can fine-tune their degree programmes according to their current needs and also with respect to their ambitions for future. Especially those who intend to study more than one subject could benefit from this new approach. Traditional programmes hardly support interdisciplinary studies and give little flexibility, as the large majority of the courses are compulsory.

In the traditional approach, universities are in full control of available programmes and therefore directly guarantee their standards. Apart from the philosophical reasons, critics often see technical problems, which make implementation of the student-driven education rather difficult. Students' demand for courses can (and will) vary tremendously in every academic year: How could a university cope with such changeable desires? Uncontrolled individual programmes are nightmare for administrative and secretarial staff: Is this student eligible to carry on his studies in the next academic year? Is that student entitled to receive her master degree? All in all, the student-driven education is not easily accepted.

The real life proves that the above mentioned problems can only be overcome with a proper UIS. Once the current degree programmes are algorithmised and entered into UIS with assessment methods, the system then works perfectly and, rather paradoxically, enables student-driven education as well! Managing individual programmes by hand is impossible while it is not an issue any more with UIS.

Let us first concentrate on collecting students' requests, or demand if you like, for courses for the next semester: Before the next semester starts, heads of departments and deans of faculties agree on time schedules for pre-registration and registration (it also gives a time period when students can make changes). The pre-registration is a period when students choose courses and fill their requests. This is all computerized, requests are time stamped for obvious reasons (the high demand for popular courses must be sorted on "first come first served" basis).

Lecture timetables are created, reflecting the pre-registration and minimizing time collisions. The individual plans are checked and approved by registrar departments. Formal registration takes place after that. Students are allowed to make changes, usually during the first two weeks of the term, either because of their timetable (they cannot attend 2 different lectures at the same time) or other reasons (esp. if they were not impressed by the lecturer or the first lecture implies the course is far too easy or difficult). Students cannot register all courses just according to their desires. Sometimes, one must meet certain criteria, to be able to attend lectures and sit exam:

- Minimum knowledge requirements, usually a list of courses one had to pass beforehand (or a list of courses one has to register for in the same semester)

- Students registered with a particular faculty or department will be given priority (esp. when certain courses are designed for them)
- There is often a limited number of places – so the pre-registration time stamp is taken into account if no other criterion can reduce the number of students within limits

Students are encouraged to go for any course so that the true interests are expressed. A student can electronically ask the lecturer for an exemption from the minimum knowledge requirements, for example. This is possible although it cannot be a general rule at all. Conditions once set, were set on purpose and denied students then have to register different courses.

IS MU is very busy during the pre-registration period. The system has to record all requests, check if applicants are eligible for courses, eliminate excess demands and keep an eye on changes. IS MU keeps list of formally registered courses for each student. In the near future, we would like to incorporate another, fully computerized feature so that IS MU is able to tell whether a particular student is entitled to receive a degree in, say, Informatics or in English Literature. Unfortunately, the algorithm allowing this is extremely difficult to work out. Extensive co-operation with people involved in developing "traditional" degree programmes at the faculties will produce the result eventually. IS MU would then fully support student-driven education.

Standardized and computerized pre-registration and registration procedures open up great opportunities for bright students. They can choose almost any of the 10 thousand courses offered by the MU. In theory, students could register for various courses before the time of IS MU but there were enormous administrative barriers. Fortunately, during the time of UIS startup, the students departments had to go through the degree programmes and offerings of other faculties and had the final say on which courses can be suitable for which kind of students. Clearing up the rules raised interest among the students in extending their education.

As stated above, the concept of student-driven education, allowing individual multi-disciplinary degree programmes, is not terribly popular, esp. among administrative and secretarial staff. There were doubts at Masaryk University whether students want to work harder and whether they would accept the responsibility for their programmes. The pre-registration proved that the number of such students is slowly increasing. IS MU is also capable of comparing how open-minded various registrar departments are to multi-disciplinary studies. The system also helps to psychologically increase "the rate of their openness".

The system can encourage students if the Catalogue of Course Offerings provides a complete list with details. This is a big "if" as there will always be lecturers or tutors ignoring IT! It might take some time before they realize IT helps people communicate and this way they can save both their own time and attract students interested in their lectures.

The real student-driven education will take a while to be fully accepted and implemented. Multi-disciplinary degree programmes might need another 5 or 10 years to develop. Still, there are signs that some faculties are on the right way: they consider possibilities of a few basic packages of courses for students from different faculties (including certificates conferring success in exams).

3 Universities need to re-unify their faculties

Traditional Czech universities often consist of a number of independent faculties that rarely cooperate. Up until 1998, faculties were legal bodies and universities still find it hard to unite and/or co-ordinate their faculties. Immediate outcome is the reduction of admin work, which is frequently duplicated. On the other hand, the process of "re-unification" is difficult because faculties have very different degree programmes, registration procedures, teaching & learning methods, credit accumulation or degree assessment systems. There is a way to overcome this problem: a good UIS.

MU is located in a number of buildings shattered all over the city of Brno. Communication, therefore, is a big problem. It should not come as a surprise that even representatives of faculties do not know one another sometimes. IS MU recognized the needs for communication and implemented them. The most essential characteristics are:

- Integrated mail-server with WWW interface is a part of IS MU. Although some faculties provided their students and staff with email accounts, this was not the case everywhere. Free-mail web server is not a particularly good solution for important admin or even confidential messages. IS MU sorts out this inconvenience. Every authorized user is given an email account that is registered. Anyone can search for email addresses of people he/she would like to contact.
- Personal web-pages automatically generated: some already had their own web-pages, but, again, vast majority of IS MU users do not have time or knowledge to do so. IS MU creates personal web-pages automatically – everyone then keeps information about themselves accurate and they can always add something if they feel like it. IS MU also provides web-pages useful links (e.g. information about the lecturers a particular member of the teaching staff gives, his/her email address, papers, articles and books published, etc.)
- Digital photographs: MU issues ISIC (International Student Identity Card) (switch)cards that are student membership cards at the same time. We believe the university will soon be able to provide the teaching staff with ITIC cards. All digital photographs once taken are saved and available for IS MU applications.
- Notice board facility: Everyone has the chance to inform the whole university (or just a particular department) about coming event, interesting project and many other things. Information can reach the target groups very quickly as the "notice board" comes up as the front page of IS MU.

Apart from useful information, IS MU users can find other people interested in the same field or establish new contacts.

Other IS MU application that brings faculties together is able to transform various documents in MS Office format and present them on the web so they are readable for everyone. A dedicated server stores important documents, like meeting notes, various regulations, agreements and other documents. One can thus immediately compare the work being done at different faculties. Both, conscious and unconscious comparisons of students' departments, teaching staff or teaching & learning methods that every IS MU user can make is the driving force behind progressive improvements of each department. The force is

apparent even in faculties that are less IT-oriented: if others can do it why are we behind? IS MU contributes to various aspects of university life, even in areas that are not its top priority.

4 Improving the Educational Process

Universities are educational institutions of advanced learning and research. (The definition is borrowed from the Oxford Dictionary of Current English, Oxford University Press, 1992)

Therefore, one of the main objectives of every university must be to provide students with proper education of the best possible kind. Some say: "How does UIS fit in? Aren't you just moving bits & bytes and promoting bureaucracy? Aren't you asking too much of staff members who should rather concentrate on lectures and tutorials?" We believe that these questions arise from prejudice against computer networks.

Admin departments and management are dependent on UIS, students benefit from available information provided thanks to the contribution of the teaching staff (e.g. students can access the detailed Catalogue of Course Offerings, they can enroll for courses, register for exams or receive group E-mail messages of their lecturers). From the above questions one could get the wrong impression that UIS is not terribly useful for lecturers or tutors themselves. And yet, lecturers and tutors are the "key" users who make UIS a better product. IS MU provides useful applications for them as well. Probably the most popular one is the group E-mail facility (university staff can easily target various groups of students) as well as the students' database with recent photographs. Let us now mention 3 examples of features for students, hardly possible without IS MU:

- Lecture timetables based on pre-registration. The number of students increases every academic year, new faculties and departments are established and additional premises are used for lectures & tutorials. All this prevents MU to use fixed timetables over and over again. Being able to identify students' demand well before the new academic year starts and eliminate serious timetable collisions are both valuable assets of IS MU.
- Detailed Catalogue of Course Offerings that reveals explanatory notes, syllabi and suggested readings. Thanks to the IS MU, it is much easier to produce student handbooks or degree programmers booklets. The support texts are not only listed but the pages can contain direct links to other web-sites so that students can instantly access those texts and print them out or search the documents straight away. Something unheard of without IS MU.
- Examination timetables. Exams can be written or oral and students can re-sit a particular exam several times within the same examination period. The fact builds up the pressure on examiners to offer students suitable dates. IS MU gives them a chance to look at the current examination timetable (and also where the exams take place) and can then offer the best dates for their students

IS MU is also able to compute various statistics and compare exam results (features welcome by some, hated by others). From the point of view of MU's management department, IS MU brought two new services:



- The demand for accommodation is always greater than supply. IS MU incorporates criteria to eliminate excessive demand. IS MU takes full control and makes sure all available rooms are allocated (fairly) to students without any delays, during the whole year.
- IS MU calculates exact fees students are to pay by law for their education. This is quite complicated as the amount also depends on the number of days he or she spent at other Czech universities, or on type of current study, or whether they already have a degree.

5 Improving Computer Literacy

It could appear, that computer literacy is not a problem any more. And yet, there is a number of people, some of which can be excellent lectures or researchers (esp. those specializing in subject concerned with human culture, like languages, literature, and history) that are lost with computers. Prejudice, fears, lack of trust towards computers are the most common problems people have to overcome. An intranet system might sort them out. Everyone has already come across the word "Internet". If the scared people are encouraged and motivated, they will put some effort into understanding the basics of UIS. The knowledge gained will serve them very well. They will be able to work with usual applications and experience pleasure from surfing all the World Wide Web system, not just one particular UIS. On the other hand, people who are comfortable with computers will find IS MU user friendly and easy to master.

Our experience shows us that students have no problems with computer literacy. They are usually well prepared from secondary schools and the level of their knowledge is getting better every year. Two years passed from the implementation of IS MU and the majority of the first-year students are familiar with email and the Web. The experience with IS MU shows that IT is becoming more popular even among the teaching staff specializing in humanities. User-friendly applications of IS MU helped them build up confidence and a number of them started to exploit IT for education purposes. Communication thanks to email, presentation on their web-sites or sharing interesting URL are the most popular ones. There will soon be a need for another feature of UIS: distant lifelong education/degree programmes.

6 Conclusion

Our experience with IS MU helped us to realize that UIS can only be useful and encourage organization's changes if: a) the development and implementation of the system is fully supposed by the management of the university and b) UIS's features bring valuable application to everyone.

The traditional universities of Eastern European type are very complicated institutions. Elected management cannot "bully" lectures and scientists to use UIS. This would be very foolish and contra-productive. The management staff should promote UIS patiently in every possible way, pointing out the benefits and opportunities for all its users. This should be a part of every university's long term policy. To be able to take the full advantage of



UIS, the system must be "sensible", everything must be in good proportion. What is the point of incorporating clever algorithms, professional graphics, or having superb computer network and most recent web applets if data supplied into the system are incomplete or wrong? The most recent information must be fed into UIS, which is the main goal. It is possible but only when every UIS user manages data that fall to his responsibility. Positive motivation is essential. Students, lectures, tutors, everyone must be persuaded about the benefits of UIS for them. They must understand that UIS is not only for the management. Then they will be willing to contribute and co-operate, even when it comes to collecting data or statistics for management themselves.

Designing and implementing UIS is a tough challenge. Not everyone appreciates your work. It would be wrong to pretend that IS MU runs smoothly and has had no problems with the described methodology. And our task is still not finished. Nevertheless, we have reached a phase when the benefits of the system are visible. Our time and effort put into IS MU pay dividends.

References

- [1] Pazdziora, J., Brandejs, M.: University Information System Fully Based on WWW. ICEIS 2000 Proceedings. Setúbal, Portugal: Escola Superior de Tecnologia do Instituto Politécnico de Setúbal, 2000. pp. 467-471. ISBN972-98050-1-6.
- [2] Vrana, I.: Process of Implementation of University Information System. EUNIS 2000 Proceedings. Poznan, Poland: Politechnika Poznanska, 2000. pp. 199-206. ISBN83-913639-1-0.