

Building a new admission system from scratch - Is it really worth it?

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1. EXECUTIVE SUMMARY

In 2000 the Swedish government decided to give VHS (The national agency for services to universities and university colleges) the commission to build a new admission system (NyA) for virtually all higher education in Sweden. This paper will take you through the process of building the system and we will also try to evaluate if it really was worthwhile entering this long and winding road of building a new admission system from scratch.

1.1. Background

It all started with a feasibility study back in 1998-1999 where different aspects and business cases were discussed. One reason to build a new system was that the existing two systems were fairly old, built in Cobol technology and had to be modernized anyway. Also, the situation with two coexisting systems meant there was generally hard to get a good overview over all the different possibilities for the applicants.

1.2. Alternatives and the project

There were of course many important issues to address early in the project. Should the system be built in-house or by a contractor, would it be possible to use systems from other countries, which technology should be used and of course which functionality should the system provide. Existing systems in other countries differed quite a lot from the situation in Sweden and it was also considered important to keep knowledge regarding technology in-house and that was the reason to build the system ourselves rather than buying it from someone else.

During the project it became obvious that the task was more complicated than expected, the project ran over budget and the deadline had to be moved forward a couple of times. There was during this time a great need to focus on which processes that the system had to support and to describe them thoroughly.

In 2005, the first version of the system was implemented. This version only handled study programs, the first version that also handled single subject courses was implemented a year later.

The system nowadays supports most processes regarding admission from publication of the different courses and study programs that the student can apply to, to sending information with all admitted students to the local installations of the student record system (Ladok).

1.3. Conclusions

Although the great amount of money spent during the project, we believe the investment has been worthwhile since it has opened up for new ways of cooperation between institutions. Admission officers from different institutions now work together in virtual organizations, handling applications and making it possible for institutions and admission officers to be experts in some field of choice.

2. THE FEASABILITY STUDY

2.1. The reasons for making the study

It all started in 1998 when it was obvious that something had to be done regarding the fact that the two existing admission systems in Sweden were old and had to be modernized in some way.

One system, Lant, was very integrated with Ladok, the student records system. Lant was used mainly for admission to single subject courses at the universities and one of the drawbacks of the system was that each university had their own implementation of the system. This meant that the student had to send in the same information to all universities that he or she wanted to study at.

The other system, H97, was owned and maintained by VHS (The National agency for services to universities and university colleges) and was used for national admission to study programs. This system had been modernized in different smaller steps for about fifteen years and it was very much due to be replaced.

The situation with two coexisting systems also made the information a bit unclear in some circumstances. It was considered a risk that the information to the applicants was not 100 % consistent between the systems. The cost for maintenance was also much higher than it was considered to be if all admission tasks could be handled in one system.

2.2. The study

The purpose of the study was to identify the requirements to be considered when building a new admission system and to make the right prioritizations. This was done by identifying and interviewing persons working in the admission field as well as trying to foresee different changes regarding legislative matters. The study then grouped the requirements into eight groups:

- Flexibility, different modules could be in use by different universities
- Availability, easy for the applicant to follow his/her application
- Interface, easy to use for admission officers
- Time, different deadlines for different kinds of admissions
- Legal security, every application should be handled the same way
- Enrolment, each student enrolled at the "right" university
- Statistics
- Other requirements

A large number of different modules in the system was then proposed in the study and some recommendations were made to the development project.

2.3. Recommendations

One important thing was to make clear what should be handled within the development project. The recommendation from the study was that the project should handle design of the database, the required functionality for the users, documentation, education material and basic education for the users and information to the applicants.

The development should start with the database design and functionality handling data output.

Information should be given through seminars, websites and through regional meeting with representatives from universities and upper secondary level schools.

It was also decided that development of the system should be done in-house, it was considered important that the knowledge about a system as critical as an admission system should stay within the university world.

It was recommended that VHS should be the owner of the system and that VHS also should provide the system management process and other administrative processes.

NyA was considered in the study to cost somewhere between 5-10 million Euros, financed with grants from the government and with fees for the universities.

3. THE EARLY PROJECT YEARS (2000-2003) AND THE RESTART

In June 2000 the Swedish government decided to give the commission to VHS to develop a new admission system for higher education in Sweden. The project started with focus on getting many of the things in place that was needed for the actual development of the system, for example different kinds of definitions, standards, quality issues, methodology and tools. During these years the project members were employees at different universities and there was a problem keeping the project together with so many members at different locations.

In 2001 the project continued with heavy focus on defining the different requirements in detail using user cases and trying to define which 10-15 user cases that would be the most critical ones. During 2001 the process of recruiting programmers from the universities also started. It would later stand clear that having many programmers working at different locations was a too big challenge for the project.

In 2002 it was clear that the implementation of the system had to be delayed with at least six months. At the same time the budget had to be increased to 9,2 million Euros. During 2002 the first development of the system started while much work was put into writing different user cases and defining the process that the system should support. The most critical parts of the system, evaluating merits and qualifications, was considered to take another 12-14 months, thus the reason for the delayed implementation.

In 2003 the decision to make a restart of the project had to be taken, the reason for this were:

- The admission processes that the system should support was not fully defined, thus preventing the detailed user cases to be written
- Since the requirements were not detailed, the architecture could not be decided
- Since the architecture could not be decided, the programmers could not go on with their work
- Many questions and uncertainties and a high number of people involved meant that key resources were involved in details instead of finishing the overall planning work.

A new project management was put in place with the difficult task of restructuring the whole project. As a result of this work, the implementation was divided into three different parts at three different occasions::

- Version one: Delivered 2005-06-30
- Version two: Delivered 2005-12-31
- Version three: Delivered 2006-06-30

The budget had to be revised as well. Another 7,5 million Euros was put into the project, now making the total budget 16,7 million Euros.

4. THE LATE PROJECT YEARS

The project was now replanned from the very beginning, focusing on finishing the detailed documentation of the admission process. From April 2004, the project was “in phase” and all the plans for the different versions were in place.

During this period the planning for the life after the project started. Contract with an IT operating center was signed, a project of handling the transferring phase to normal administration and management of the system started with defining roles and management models for the system.

The later part of these years, as the time for implementation came closer, were quite stressful for the people involved. The project had already been delayed two times and it was considered that the project could not be delayed any further without the confidence in the project and system sinking to an unacceptable low level. At the same time, everyone was working hard to keep the first deadlines putting especially the people involved in test work at a high level of stress. The first versions delivered to the test organizations were full of bugs and errors and there were times when you would deeply doubt that the system could be implemented at all.

5. THE IMPLEMENTATION PHASE

The first version of the system was however implemented as planned in the summer 2005. This version only handled the admission to study programs. It fully replaced the older system at VHS, H97, which afterwards was phased out.

In the autumn of 2005, work continued with the next version that should handle applications to single subject courses. However, in November the same year, the implementation of the second version of the system was postponed until June 2006. The reason for this was that many resources had been occupied with handling the first version of the system in production, the course version of the system also involved all universities since their older system, Lant, now was due to be replaced. It was considered impossible to handle these two tasks simultaneously without causing serious problems and risking that the admission process would not work at all.

At last, in June 2006, the first version of one admission system handling all admission to higher education in Sweden, was implemented.

6. THE FIRST YEARS OF USING THE SYSTEM AND THE FUTURE

Since then, three years has passed and we have continually been improving the system. The improvements included better support for the Bologna process, a better interface for the applicants, numerous improvements of different kinds for the admission officers etc. We are getting nearer and nearer the vision of a complete admission system and when we implement web functionality for teachers and faculty members next year we think that there might be system support for all admission processes.

Fortunately, the world around us changes continuously so we will not be out of work after next year. Legislature regarding admission is very popular to change for Swedish politicians. Important new regulations are put in place every four or five years. The demands from applicants and students change and so does the number of applicants to different courses and programs. The task for the forthcoming years is to continuously develop a system that can handle the varying demands from the student population as well as being a good tool for the admission officers and the faculty members.

6.1. The virtual organizations

The fact that all applications to all universities regardless if the applicant just want to apply for a single course or if he/she wants to enroll in a 5-year study program are handled in the same system has opened up for new and cost-efficient ways to handle applications. Since only one application is handled once rather than once at every university the possibility to handle applications efficiently has improved much.

VHS today administrates two different virtual organizations for admission purposes:

- The virtual organization for handling applications with foreign qualifications
- The virtual organization for handling applications to advanced levels (Masters)

The organizations consists of admission officers from different universities and VHS working together with the evaluation of the applications and as a result of this work, the knowledge spreads among the universities and the applications are handled with consistency.

6.2. The applicants from upper secondary schools

Applicants from upper secondary schools in Sweden are handled without any kind of merits needed to be sent in from the applicants. The schools send in the merits by using a webinterface to the system and because of this, the process of handling these numerous applications is very smooth and cost-efficient with virtually no manual handling at all.

All the applicant has to do, apart from selecting the programs and courses he/she is interested in of course, is to provide the system with his/her civic registration number which then is used as a key to

fetch the merits. Of course, the applicant can follow the application on the website to ensure that all merits have been collected correctly.

7. ECONOMY AND CONCLUSIONS

Due to the fact that the project costs more than doubled from the start of the project until it was finished and the total cost ending at about 20 million Euros you might suspect that the project is considered a failure economically. The fees for the universities have of course been a subject of discussion, especially since the initial thoughts of government grants never came true. During the last years when the system has been fairly stable and new ways of working together has been possible, we think that it has after all been worth the investment. To investigate this, a study was conducted using a method called PENG to evaluate the actual value of the investment. In this method you calculate three different kinds of values:

- Green - Easy to realize, for example money saved by sending e-mails instead of letters
- Yellow - Indirect values, for example faster application processes
- Red - Values that are hard to evaluate, for example improved company image

The investigation was made at one university to keep it simple and was then aggregated to an all-universities-level. Of course, this means that there are some imperfections since there are differences between the universities in many aspects but this investigation gives a “hint” regarding the total picture.

The total cost using PENG was calculated to 6,1 million Euros while the green value was calculated to 8,3 million Euros, implying that the investment paid off by looking only at the values that was easy to realize. The more hard-to-realize yellow and red values summoned up to 3,3 and 2,4 million Euros each.

This first PENG-evaluation has encouraged us to continue on with further investigations measuring whether it is a good idea to invest further into the system or not. It probably is since a normal medium project, developing new functionality of some kind might cost something like 200 000 Euros. This investment is spread over five years meaning that the yearly cost is 40 000 Euros. Since 36 universities or university colleges use the system it means that they each have to save a little bit more than 1 000 Euros each every year. Transferred into work time something like 50-80 hours has to be saved on a yearly basis. Not that much in other words.

The final conclusion is that it is a good idea to start a project like this even if you are in for quite a number of unpleasant surprises along the road. As long as you are able to work efficiently with your new system and as long as many institutions are able to use it, it might just be worthwhile to enter the long and winding road.

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