



The Strategy of IT implementation in the Higher Education Institution on the example of the University of Silesia.

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The University of Silesia

Preface

The University of Silesia is one of the biggest universities in Poland. It has campuses in five cities in the Upper Silesia Region, ten faculties, several inter-faculty units, about 1500 academic staff and 38000 students. Administrative service at the University is provided by over a thousand administrative and technical-engineering staff.




1 IT organisational structure at the University of Silesia.

Tasks in the scope of IT-planning and implementation are performed by the following Universities organisational units:

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1. Centre of Technical Calculations, which provides service in terms of designing, modernisation and development of the network, internet service and manages University WWW service.
 2. Department of Information Systems in Management, which is responsible service of computer systems working for central administration: HR and salary system, materials management and financial-accounting system.
 3. Unit for Library Computer Service at the Main Library of the University of Silesia takes care of smooth operating of computer system, especially for hiring establishment of the library; creating and developing library catalogue in electronic version; ensuring access to scientific date bases.
 4. Rector's Officer for IT coordinates and monitors purchases of computer equipment and programs at the whole University; monitors preparation of the IT projects in the above mentioned units.
 5. Local network administrators are responsible for local networks in organisational units.

Altogether about forty people at the whole University of Silesia take care of computer service for staff and students.

Till the beginning of the 90-ties there was one general organisational unit providing nearly all computer services for the whole University. With the development of computer and network technologies and internet tasks were divided and above mentioned units were created giving present organisation structure in the field of IT service. This units report to different decision makers in the University hierarchy; for example: Department of Information Systems in Management reports Administrative Director, Unit for Library Computer Service



at the Main Library of the University of Silesia - Library Director, Rector's Officer for IT and Centre of Technical Calculations - Vice-Rector for Science, Cooperation and Promotion, local network administrators - deans or heads of organisational units. This situation has advantages and disadvantages. Direct reporting IT units to managers responsible for performing tasks of a given type in the appropriate university activities allows to monitor directly computer staff by these managers. However, sometimes the managers can see only their separate interests and overall University mission and strategy is lost, also in terms of common IT strategy. Some tasks are doublet; some are undertaken too early and some too late.

In the book entitled: "Data stores, data warehousing and the Zachman Framework" [1] authors present four generations of Computer evolution for business organisation:

1. formation - years 1950-1970, the computer was introduced, today techniques and methodology used in this time seem very simple, the first computer units were created in organisations,
2. proliferation - 1960s to 1980s, when the people were able to interact the computer through terminals and computer applications proliferated, usually computer service in an organisation was provided by one created for that purpose computer unit,
3. dispersion - 1980s to 1990s, in some countries by the end of 90 ties, computer components are being dispersed throughout organisation, at the same time one computer unit was divided into a few smaller units serving end users in the organisation,
4. unification - at present, the corporate information resources must be unified from a business perspective and available on the different level of the organisation managing, the redundancy should be managed, and knowledge should be obtained by successfully providing the required information when, where, how it is needed, it requires an integrated computer system with a properly managed data warehouse.

Applying above rules for higher educational institutions it can be concluded, that the University of Silesia is exactly between the last two sages: dispersion and unification.

Universities in Poland, trying to define their management policy, have found themselves at the turning point, which is a result of an outdated legal system, market economy now entering higher education, competition with private schools and world globalisation in terms of education and scientific research. Adjusting higher education institutions to business rules is often difficult and painful. But universities which will begin to treat education and science as a business and scientific research and teaching as "an article" of high quality, and student as a customer are likely to survive and even develop in present reality. These rules should be observed elaborating IT strategy of the University, which should support its basic activities.

2 The project regarding implementation of IT strategy at the University of Silesia.

Authorities of the University of Silesia are aware that modern university without an integrated computer system is not able to face challenges of XXI century and fulfil its strategy and mission. A special team was created, whose task is to prepare a project: " University

IT strategy in the light of newest computer technology". The team consists of 9 people, scientific/didactic, administrative and library staff and is lead by Rector's Officer for IT.

Their work was divided into three stages:

1. Full description of existing computer infrastructure including external environment. For this purpose SWOT analysis was used (Strengths, Weaknesses, Opportunities, Threats), as it allows a full valuation of an organisation in terms of its internal strong and weak points and opportunities and threats resulting from the environment in which university has to function.
2. Analysis of gathered material.
3. A project of the University IT strategy - the most important conclusions, propositions of changes and defining priority tasks to be implemented.

In fact IT touches all internal and external university activities. Priority issues were selected whose description and analysis will allow elaborating the University IT strategy. These are as follows:

1. Library service for staff and students, including computerised collection catalogues and access to scientific electronic data bases, including:
 - (a) unified programs for the Main Library and faculty libraries in hiring establishment, reading rooms and catalogues,
 - (b) full computerisation of catalogues of all libraries and plans to change paper catalogues to electronic data base,
 - (c) broader access and advertising scientific electronic data bases on-line as well as CD-ROM, among scientific staff, doctoral students and students.
2. University computer network and local computer networks - description of present state, analysis of users' needs resulting from teaching process and scientific-research work, development plans and needs.
3. University WWW service - valuation of existing information, project of change of the University WW service and appointing people responsible for gathering, selection and dissemination of information.
4. Central administration:
 - valuation of functionality existing computer programmes and computer equipment,
 - defining the rules of electronic document flows between central administration departments and central administration and other University units,
 - defining the scope and rules of electronic documents usage in the University management,
 - defining conditions necessary to design and implement intranet,
 - integrating HR and salary system, material management and financial-accounting, systems with computer systems of other University organisational units and improvement of different information flows and elimination of redundancy.
5. Faculties and other didactic units:
 - access to information of different kind for scientific staff (e.g. information from central administration departments as well as from other organisational units),



- valuation of e-mail usage by employees in internal and external communication,
- students' access to Internet.
- 6. IT-staff at the University - technical-engineering staff, qualifications and skills.
- 7. Training needs of scientific-didactic and administrative staff of the University in using IT techniques.
- 8. Central computer catalogue of licentiate, masters' and doctoral theses.
- 9. Implementation of computer system for didactic process.
- 10. Rules for working out and approval of equipment and computer programmes standards at the University.
- 11. Valuation of the level of student satisfaction from access to university and world networks.

3 Results of analysis.

SWOT analysis allowed to get an overall picture of factors influencing and shaping the development of the University IT. You cannot separate University activities in science and education from IT. Using new IT techniques is a condition necessary to achieve aims set for the University in its mission, which has been approved by the Senate.

Below there are fragments of a conducted analysis, divided into four groups:



1. External factors - opportunities:
 - strong position of the University as a state higher education institution with traditions, functioning for several years,
 - support from Ministry of Education and Committee for Scientific Research,
 - research and educational international programmes,
 - high demand for "educational services", which is connected with political transformation and demographic explosion,
 - change of the mentality of the society, where education started to be an important element in man's image,
 - changes in the employment market, big unemployment makes it easier to find a job for an educated person,
 - very high demand for post-diploma, part-time and evening studies,
 - lobby connected with computer society,
 - fast development of computer-network technologies, enabling to reach bigger number of students from other regions of the country and world,
 - building computer network for polish science - POL34,
 - approval of the project of polish optician's internet PIONIER,
 - bigger number of programmes for higher education institutions led and co-financed by big world computer corporations, e.g. Microsoft initiative, Cisco Academy, Oracle's academic programme,
 - discounts for computer equipment and programmes by many producers for higher education,



- development of scientific data bases: on-line and CD-ROM versions, in the scope of exact, humanistic and social sciences,
- constant drop in computer equipment prices, which makes it more accessible.

2. Internal factors - strong points:

- highly qualified didactic staff, possessing big experience in education activities, often using computer equipment and programmes in didactic process,
- a big group of scientists conducting their research on the highest level of quality, which at the same time affects high quality of didactic offer,
- big involvement of Rectors in developing IT consciousness of students and staff,
- local networks in all University buildings,
- fiber optics communications of internet connection in 95 %,
- access to several on-line world scientific data bases in different fields,
- scientific-didactic staff willingness to constant development in terms of IT,
- active usage of IT by researchers in conducting scientific research and calculations,
- unified computer system at deans' offices,
- a big number of PCs and printers,
- SUN servers,
- computerised process of lending books at the Main Library and faculty libraries,
- the beginning of introducing books catalogue into a data base (about 40 thousand items have been introduced).

3. External factors - threats.

- legislation which often paralyses the activities of public sector organisations including higher education institutions, e.g. problems with interpreting of personal data protection or the necessity to follow public procurement act,
- a very big competition with state higher education institutions as well as private schools,
- big offer of high quality training courses on the part of commercial companies; e.g. such potentates like Microsoft or Oracle have their own training centres, where courses are led by licensed trainers, and obtaining a certificate is connected with the necessity to participate in the sequence of special courses and passing an exam,
- quickly changing technologies and computer programmes,
- in majority of cases higher education institutions are a bit conservative and fast
- changes often meet with resistance from scientific-didactic and administrative staff.

4. Internal factors - weak points:

- lack of equipment - programmes standards, which would be introduced in the whole University or at least in a given organisational unit,
- average usage of IT among scientific-didactic staff, computer is often perceived as type-machine,

- low usage of scientific electronic data bases, outdated local networks in some buildings,
- poor IT education among technical-engineering staff,
- lack of young IT specialists interested in the work at the university, as the absorptive job market offers much better financial conditions for them,
- lack of proper organisational regulations which would allow to employ at the university highly qualified IT specialists on preferential conditions and salaries comparable with other sectors,
- lack of IT training system for scientific-didactic and administrative staff,
- lack of financial means for constant training of IT specialists employed at the university at the certified external training centres,
- lack of didactic staff with proper qualifications to teach IT subjects at different fields and courses,
- lack of unified computer system for enrolment process.

A full elaboration will be published in the half of the year 2001.

4 Recapitulation.

Elements presented above refer in 90% to the majority of Polish state universities. It is important that university management is aware that without the development of the information technologies it is not possible to lead a modern university. As an effect, Polish universities founded IT Universities Agreement, which is a forum of information and experience exchange.

Young people enter the University, for whom information technique is as common as an abacus for our grandfathers. If an academic teacher, technical-engineering or an administrative employee will not meet certain expectations and a proper level in this area, and information technologies applied at the university will be different from the world standards, then a word "conservative" in IT subject for the university will mean a pejorative feature.

References

- [1] W.H. Inmon, J.A.Zachman, J.G.Geiger; Data Stores, Data Warehousing and the Zachman Framework.; McGraw-Hill; 1997; ISBN 0-07-031429-2.
- [2] G. Gierszewska, M. Romanowska; Analiza strategiczna przedsiębiorstwa.; PWE 2000; ISBN 83-208-1255-0.