



From Strasbourg (F) to Almaty (K): a successful transfer of NTI for management of university.

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Preface

Tempus Tacis project: between Robert Schuman university of Strasbourg (France), the Fachhochschule of Darmstadt (Germany) and the national university Al-Farabi of Almaty (Kazakhstan).

The Al Farabi university welcomes 14 000 students in 13 faculties, established on 3 different sites; it exempts multi-field lesson. This university presents of this fact much of similarities, with regard to his size and the finality of its lesson, with its two European partners.

Like the majority of the university establishments in the former USSR , Al Farabi university functions, for historical reasons, according to a very centralized model: this model imposes significant collections of information and permanent data exchanges which are done by heavy, complex procedures and often not very reliable. The absence of global views and management reports as well as slowness of certain procedures complicate considerably, on all the levels, the decision-makings which often are based only on partial data. It is in particular the case in management of the students and in financial management, both procedures, the most significant on which leans a whole of procedures derived like management from the grants, welfare, the management of the building and the university canteens, the salary of the personnel, the management of the inheritance, the inventory control, Even if the administrative model has to advance, it does not remain less true than the management of the data and the organisation of the information exchanges between the Rector of university, the faculties and the services remain the key problems; the setting of a structural coherent frame and an internal communication system constitutes without any doubt a basic mean to decentralize effectively some responsibilities.

The objective of the project come within the revision and the improvement of administration and of the management of the universities. The idea of the project leaves on a triple report:

- the faulty malfunctioning of the procedures current, ascribable at the same time with defects of organisation, sources of heaviness, and with an obsolete, unsuited and not very reliable communication system; this is a quasi general situation in the establishments and the public services in Kazakhstan;
- lack of resources and means of the universities, and State in general,
- lack and the request of know-how in the field of new technologies.



That's why, it appears convenient to us to carry out an experimental operation, within an establishment like Al Farabi university, by creating there a true centre of competences, able to solve problems of management and communication with the help of means of modern data processing, and leaning on a plan quality guaranty plan . This short-term objective reveals prospects which will largely exceed, with middle and long terms, the framework of Al Farabi university and the project suggested.

In the short time, i.e. during the 3 years to come, this centre of competences installed in Al Farabi university will take the of a Centre of Development and Services (CDS) whose mission will be to manage the information processing systems and the lately acquired network and to provide the design and the realization of new automated procedures, in dialogue with the European experts and observing the procedures of quality; in the medium term, i.e. as of the third year and after completion of the project, this centre will have to open its services with other universities or public organizations, in a preoccupation with a diffusion of the products and acquired know-how; this second phase will see the widening of the activities of the CDS by the realization of contracts of services and training with companies or private organizations; it will be as many new resources for Al Farabi university which will find thus the means necessary to maintain, develop and increase its equipment and ensure financial autonomy of the CDS.

The CDS will be created within the present computer centre : it will profit in fact on logistic and human structure existing which will be supplemented. Two application fields will be used as bank of test throughout the project: it is the management of the academic process and the financial management which count among the fundamental and significant fields of the management of the university. The regular follow-up of work of this phase will be ensured by European experts: it will consolidate the personnel of the CDS in their new missions and will be an effective means of grinding of the new device.

1 The objectives of the project.

The project turns around six activities which will be undertaken in partial overlap:

1.1 Organization, methods, coordination and quality control:

In addition to the aspects of the project control, this activity aims at the definition and the setting of a quality plane and together the institution of organisation and work methods, relating to the organisation of the services in general and also the more specific aspects of the data-processing project control.

1.2 Creation a Centre of Development and Services:

The creation of this centre comprises a significant part of training intended for the personnel which will take the responsibility of the various activities; it consists also the purchase of specialized equipment hardware and software intended for these same people.

1.3 Management of the Academic process:

First of the two applications which will be developed throughout the project, this activity consists in a significant analyse and design phase, followed upstream by a phase of realization; it consists also in purchasing of the data-processing equipment (primarily of PC type) for the concerned services, as well as the staff training of these services for using of the office automation software and the specific software of management. The new procedures will have to be operational at the latest at the end of June 1998 to be used for the students registration and the organisation of the start of the academic year 1998/99.

1.4 Financial management :

Second application to being conceived and developed by the CDS during the project, it integrates operations similar to those of the management of the academic process : analyse and design, realization, purchase of equipments for the services concerned and training of their personnel. Will the core of the new application, i.e. especially the budget and the general accounting, have to be operational for December 1998, to be usable for creating the budget of 1999; the realization of the complementary procedures, such as patrimonial accountancy or the inventory control, and the specific developments will take place until July 1999.

1.5 Internal communication system :

The operation of the new automated procedures swill be in a distributed environment which requires data-processing installation of a network, true backbone of the new internal communication system; the network will become the privileged support of the information exchanges between the Direction of the university, faculties and the departments; this installation, which includes buying and the active installation of the equipments and the wiring, was divided into three batches over the total duration of the project. The first two batches relate to primarily the wiring of the services and the installation of the equipment; the third relates to the setting of services such as the electronic mail.

1.6 Diffusion:

The diffusion of the results and the know-how acquired during the project will be done gradually as from the second year; it will be facilitated by application of the quality plan and will be materialised by action of two nature:

- the organisation of demonstrations and full sessions, intended for persons in charge public and private organisms, and the participation in conferences relating to the topics which concern us, in order to promote acquired experience,
- the organisation of a campaign more targeted towards the companies, lasting the third year, intended to make known competences and know-how of the CDS; this action implies the development of a complete and detailed documentation of the CDS itself and of the services he will be likely to provide, and to nominate a person specifically instructed to ensure the promotion.

2 The achievement.

2.1 The net.

The initial objective was to carry out a network for the 5 buildings of the principal campus including the central administrative services and the majority of faculties.

Today all of the 3 campuses however apart 5 kilometers are connected. The installation of the communication system was carried out in 2 phases:

- the creation of the sub-networks of building per internal wiring .The sub-networks of building rest on an internal wiring in twisted pairs. The associated active equipment allows a flow 100Mbit/s. In each building is a cabinet of mixing and the hub corresponding, the whole connected to the central switch Ethernet.250 taken are operational and 160 actually used.
- the installation of the network of campus. The network of campus is the inter-connexion of the sub-networks of building by optical a fiber wiring brought back to the switch.

Five people follows courses about the active equipments and 2 other about wireless and outlets.

2.2 The servers.

The 3 main servers (electronic mail, production and development) are operational:

· the server of production: Bull Express 5800 MC 2400 Pentium III 450, RAM 256 Mo, CD-Rom, 3 hard disks hot plug of 9 Go SCSI in RAID 5, card RAID Mylex AccelRaid 250 with a memory of 4 Mo, DAT 12/24 Go SCSI 4mm DDS3, APC Smart UPS 700, 2 cards networks (a card 3COM for the connection with the server of the developers and a card INTEL Ether Express 10/100 integrated into the mother board). Software installed: Microsoft Windows NT 4 English with service pack 6, Microsoft SQL Server 7.5 English, anti-virus AVP

· the server of the developers: Bull Express 5800 MC 2400 Pentium III 500, RAM 256 Mo, CD-Rom, 3 hard disks hot plug of 9 Go SCSI in RAID 5, card RAID Mylex AccelRaid 150 with a memory of 32 Mo, DAT 8 Go, 1 card INTEL EtherExpress 10/100 integrated into the mother board. Software installed: Microsoft Windows NT 4 English with the service pack 6, Microsoft Exchange 5.5 English with the service pack 3, anti-virus AVP

· the third server is the server of electronic mail : ZDS Express 5800 TM 1100 Pentium II 266, RAM 128 Mo, hard disk 4,3 Go, 2 cards networks including one connected to the server of production. Software installed: Microsoft Windows NT 4 English with the service pack 6, Microsoft SQL Server 7.5 English, Windev 5.5 English, anti-virus AVP.

Three other servers (PIII 500) are used for : Internet mail, proxy server and SMS server (108 clients).About 30 PC Pentium Iii were delivered for the engineers and some users.

Training : Windows NT 4 server 5 persons, SQL server 7.5, 8 persons and 2 administrators, SMS and Exchange 4 persons, Windev case tool 8 persons.

2.3 The academic process application.

The project has to produce only 2 modules to give an example but the vice rector take all the project in his hand and push until we all together finished a complete academic process application.

Last September all the 14 000 students use this application for the registration. For the commercial student all link has be done with the accounting system to control if they pay the good rights. Or the central academic service all document were product with a good quality and in a few time; the end-users were very satisfied.

In the faculties they also used the application for the pedagogic registration and they were very happy because we have put in the central data base all the pedagogic information for all student since 5 years.

A very good team of engineers who know very well the academic process and all the political weight of the vice rector bring this excellent result.

The case tool we used : WINDEV is the perfect software for quickly and professionally developing applications under Windows 2000, 95, 98, NT and 3.1. All the tools you need for design, development, distribution and maintenance

- WinDev creates 16 and 32-bit stand-alone .EXE (with single source code); for Windows 2000, 95, 98, NT and 3.1
- "RAD". A RAD module automatically creates your complete application, from the application design; your application can then be modified and customized.
- Application design graphic descriptor; Simple re-use of external application design (ASCII exchange format); Automatic data-dictionary; Automatic application design/programming program documentation (reverse engineering).
- Client/Server (SQL via ODBC); Optional ORACLE, SQL Server and AS/400 native access;
- Procedure-oriented or object-oriented 4GL language; Code editor with historical review; Supports OLE, VBX, DDE and external DLL; Interface with C, C++, VB, Pascal, Cobol, Fortran; 200 programming wizards. Teamwork is child's play!
- Powerful and intuitive GUI generator (with style sheets); Automatically supports 13 foreign languages per application.
- Report generator (supports bar codes); WinHelp help generator; Installation disks (compressed) generator and automatic application maintenance generator, Testing Automation Tool, Multimedia.

2.4 The financial application.

This application was a little delayed for the development after the decision to produce a complete application for the academic process. Now some parts are running for the 2001 budget. Two other modules should be finished for next march.

Many problem in analysis part due to very often and important change in the financial law; the status of the university also change the third year.

Now people of the financial services ask other modules. . .

2.5 The communication.

All three months an internal newspaper about the project to distributed to all teachers and others people of the university. Now they produce it themselves and print the number 8.

In November 1999, we have had a big meeting with 250 people about the first results of the project. People coming from 20 other universities from Kazakhstan, from the ministry of education, even from **Kirghizstan** follow this 2 days conference. All chef engineers presents one part of the project, for most of them it was the first time.

In February 2000, an international conference about management and new technologies will closed the project with more then 50 presentations and 800 persons taking part.

About 30 people follow, at the university, an English course during two years.

2.6 Following quality.

Many change in the organization of the university : project committees take the decisions, validates all documents and modifications and follows all part of the project, the team of the old computer center is completely change with many young people, a contract of good using of network and applications was distributed to all users.

A very competitive and useful group of 5 people was created between the end-users and the engineers. They help the end-users to understand the application, to use it better, to write some questions or modifications to present to the project committee.

At the end we have the first result of reporting of each group of the computer center with good information for the head of computer center and university.

Conclusion

Although the project had evil to get under way following the many problems met because of the very complex and very slow administrative procedures as well on the side of Tacis as of Kazakhstan, we have to be very satisfied with the result. The objectives are achieved in many fields.

The Al Farabi university lays out today :

One complete institution network connecting all the buildings of the university on the various campuses, a network high flow Ethernet 100mbit/s, 250 outlets installed and modern and powerful active equipment as well as operational personnel technically;

Of 3 operational servers NT for the electronic mail, applications of the academic and financial process and a tool for the developers. A system team of 4 qualified people for NT server, SMS, Exchange and SQL server 7.5. A team of developers of 10 people using the case tool Windev and SQL Server7.5

Two applications operational and especially for the academic field an application supplements energy from the student registration to the delivery of the diploma around one central database accessible by all faculties and interfaced with finances for the academic rights part. Moreover these applications are documented as well for the technical part as for the training of the users.



Users having new PC and powerful formed with Office 98, Internet, the electronic mail, the professional applications and their exploitation.

The concepts which were difficult to make admit are, for the most important, the central and single data base, the installation of a backup system for the data, the generalized using of the electronic mail in a context of oral culture and the installation of reporting and monitoring documents.

The human contributions are them also very significant: technical qualification in the various fields of new technologies of about 20 people moreover formed with English language, the knowledge of France or Germany for all (often a first output of the country or from Almaty).

And the continuation? taking into account the financial restrictions one can fear the worst in 3 to 4 years but most difficult will be to preserve the qualified personnel particularly under paid.

A hope: the installation of a 3 years convention, scientific and technical collaboration between the 2 data-processing centers.

References

- [1] WinDev is a product of PCSoft : www.pcsoft.fr
- [2] Active equipments were delivered by Alcatel.

