УДК 519.95

MODERNIZATION OF THE UNIVERSITY MANAGEMENT SYSTEM BY MEANS OF INFORMATION TECHNOLOGIES. PART 1. GENERAL INFORMATION ABOUT THE TAMBOV REGION, THE WORKING GROUP, THE STRUCTURE OF TSU AND TSU MANAGEMENT, OUR PREPOSITIONS FOR THE PROJEKT REALIZATION[1]

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Арзамасцев А.А., Зенкова Н.А., Зусман Ю.А., Слетков Д.В. Модернизация системы управления университетом с использованием информационных технологий. Часть 1. Общая информация о Тамбовской области, рабочей группе, структуре и управлении ТГУ имени Г.Р. Державина и наши предложения по реализации проекта. Приведен доклад по данной проблеме, сделанный А.А. Арзамасцевым на первом рабочем совещании по проекту TEMPUS TACIS "System Modernisation of University Management" (SMOOTH, UM_JEP-24217-2003), 21–22 марта 2005 года.

Monday, March 21, 2005

Dear colleagues, ladies and gentlemen,

First of all I would like to thank you as the main organizers of this project for the possibility (for our university) to participate in such a large European project together with other European Community countries and the Ukraine. It is the first time for our University to participate in such a prestigious European project.

The aims of my short lecture today are to inform you about:

– Tambov region;

– Tambov State University named after Gavrila Romanovith Derzavin;

– the members of our work group within the framework of this project.

Tambov City and Tambov Region. The city of Tambov is a regional centre of the Russian Federation located approximately 450 km to the south-east from Moscow. The population of the city is about 300 thousand people, while the population of the Tambov region is about 1.5 million people. The city was founded in 1636 on the bank of the river Tsna. It is older than, for example, St.-Petersburg.

In Tambov there are two universities: Tambov State University named after Gavrila Romanovith Derzhavin and Tambov State Technical University, two institutes: Musical Institute and Military Institute, a large number of colleges, therefore it is possible to say that Tambov is a student city.

The nature of Tambov region is extremely interesting and various. You can find here large woods, small rivers, water meadows. We consider the beauty of nature to be our main property. In spite of the fact that the basic sphere of activity of the people in the region is agriculture, we have some large industrial enterprises, such as the Share-holding company "Pigment", several large machine-building enterprises.

Tambov is a large cultural centre of the region. Outstanding scientists and people of arts lived here in different

periods: the composer Segrey Rakhmaninov, the natural scientist academician Vernadsky, the poet and statesman Gavrila Derzhavin. In Tambov there is a regional picture gallery containing a collection of masterpieces of Russian and West-European art of the 18-20th centuries, as well as the works of modern artists. The territory of the Tambov region is an old bulwark of the Russian orthodox church. There are some working monasteries and a large number of orthodox cathedrals.

Tambov State University. Tambov State University was formed in 1918. Further it had different names until 1994. In 1994 the university was revived as an educational institution of a classical type.

Now Tambov State University is one of the largest higher education institutions in the Black-Soil (Tsentralno-Chernozemny) region. The structure of the university includes 12 academies, institutes and faculties, among which there are the institute of mathematics, physics and computer science, the institute of natural sciences, the academy of economics and management, etc.

More than 700 teachers work at the university, there are more than 100 professors among them. About 15000 students study at the university, both full-time and part-time ones.

Today I am not going to speak about structure of our university and about management. It is the theme of tomorrow's lecture. Now I would like to inform you about all members of our working group.

Members of our working group.

Dr. Natalia Zenkova. Age: 27. Senior Teacher of Computer and Mathematical Simulation Department of TSU. Scientific Interests: Computer Simulation in Psychological and Social Systems (over 30 publications). Projects experience in University Management Sphere: Project of Institute "Open Society", "The information technology development on psychological-pedagogical testing of the initial educational level on the basis of artificial neural network modeling", 2002–2003. In the present project N. Zenkova will carry out functions of a scientific secretary.

Denis Sletkov, post-graduate student. Age: 24. Programmer of the Computer and Mathematical Simulation Department of TSU. Scientific Interests: Computer Simulation in Biological Systems, Fractal Geometry. In this project D. Sletkov will carry out functions of a programmer.

Dr. Yury Zusman. Age: 47. Head of the Department of International Relations of TSU. Scientific Interests: Foreign Languages Study, University Management (over 30 publications). In this project Yu. Zusman will carry out functions of an interface manager.

Prof. Dr. Alexander Arzamastsev. Age: 49. Head of the Computer and Mathematical Simulation Department of TSU. Vice-Director of Institute of Mathematics, Physics & Computer Science for Research. Corresponding Member of Russian Academy of Natural Sciences. Scientific Interests: Computer and Mathematical Simulation in Natural Sciences and Social Systems (over 250 publications). Grants and Projects: Institute "Open Society" – 2002–2003, International Soros Science Education Program (ISSEP) – 2000–2002, International Science Foundation (ISF) – 1995, etc. In this project A. Arzamastsev will carry out functions of a promoter of the Russian part of the project.

Thank you very much for your attention.

Tuesday March 22, 2005

Dear colleagues, ladies and gentlemen,

The aims of my lecture now are to inform you about:
– Structure of Tambov State University;
– Structure of Tambov State University Management;
– The functions of all parts of Administrative Staff;
– The disposition of TSU buildings on the Tambov City Map;
– The Present State of TSU Network and Software;
– The ways of real Management in TSU;
– Steps of the system realization.

The Structure of Tambov State University. Now Tambov State University is one of the largest higher education institutions in the Black-Soil (Tsentralno-Chernozemny) region. Approximately 15000 students of all forms of study are at the university. The number of full-time students is shown on table 1.

The structure of the university includes 12 academies, institutes and faculties, among which there are the Institute of Mathematics, Physics and Computer Science, the Institute of Natural sciences, the Institute of Pedagogy and Social Work, the Institute of Sociology and Culture, the Institute of Psychology, Academy of Arts, Service and Advertising, the Institute of History, the Institute of Law, the Institute of Philology, the Institute of Physical Education and Sports, the Faculty of Journalism and the Academy of Economics and Management. It is possible to summarize, that 82.5 percent of all students are of humanitarian specialties and only 17.5 percent are of natural sciences and technical specialties. The distribution of students of other forms of education is identical.

We have the following resume on TSU structure: TSU is very big university which presents a difficult and complex object of management.

Structure of Tambov State University Management. The structure of Tambov State University management is also very complex (fig. 1). It includes: the rector who carries out general management of the university and is responsible for all questions. Now the Rector of TSU is professor Vladislav Yuriev. We have two first vice-rectors: first vice-rector for education and research and first vice-rector for economics. We have also five vice-rectors: vice-rector for education, vice-rector for research and international relations, vice-rector for innovations, vice-rector for social work, vice-rector for administrative and economic activity.

The functional duties of the vice-rectors are very different. However it is important to note, that practically all important questions connected with the educational system are under the control of the vice-rector for education.

We have the following resume on TSU management: 1) the structure of TSU management is complex; 2) we have here the multilevel system of management.

The functions of all parts of Administrative Staff. The functions of different parts of the administrative staff are rather various. The problems are as follows: education (rector, first vice-rector for education and research, vice-rector for education, vice-rector for innovations, directors and vice-directors of institutes and academies and corresponding services), economics (rector, first vice-rector for economics, vice-rector for administrative and economic activity, chief accountant and corresponding services), research (rector, scientific council of the university, first vice-rector for education and research, vice-rector for research and international relations, the scientific secretary, directors and vice-directors of institutes and academies and corresponding services).

To sum it up, we can conclude, that the administrative communications are very complex and various. But the real management of educational process is carried out by dean's offices (directors and vice-directors of institutes) and vice-rector for education.

Table 1*

No	Institutes, Academies or Faculties	Number of Students
1	Institute of Mathematics, Physics and Computer Science	821
2	Institute of Natural Sciences	829
3	Institute of Pedagogy and Social Work	691
4	Institute of Sociology and Culture	284
5	Institute of Psychology	498
6	Academy of Arts, Service and Advertising	555
7	Institute of History	475
8	Institute of Law	1236
9	Institute of Philology	1003
10	Institute of Physical Education and Sports	558
11	Faculty of Journalism	137
12	Academy of Economics and Management	2321

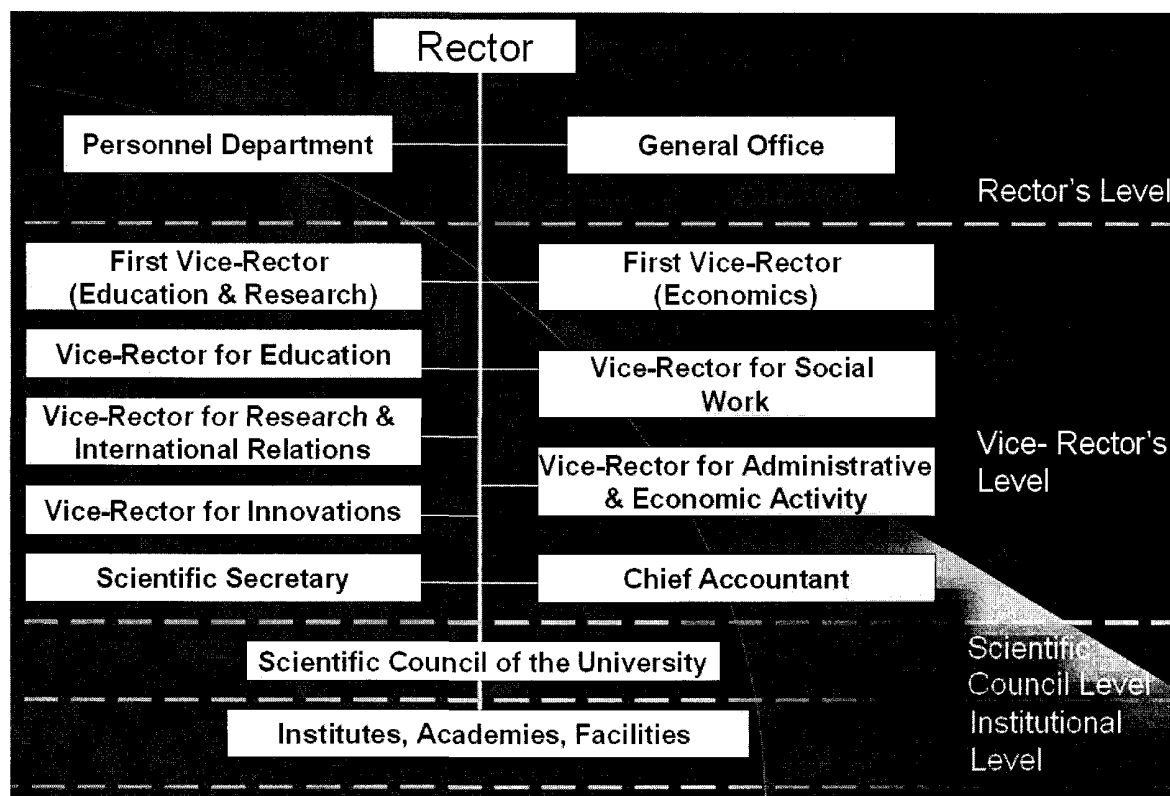* The presented official data are of the end of 2004.

Fig. 1. Structure of Tambov State University Management

The disposition of TSU buildings on the Tambov City Map. The administrative and educational buildings of Tambov State University are space-distributed. (See fig. 2). They form three clusters (see clusters #1, #2 and #3). There is also the main building, where the rector and administration (cluster #0) are located and two separate buildings. Cluster #1 is formed by the following institutes: Institute of Mathematics, Physics and Computer Science, Institute of History, Institute of Law, Institute of Psychology, Institute of Physical Education and Sports, Institute of Sociology and Culture (total 5 buildings and 6 institutes, the distances between them do not exceed 800 meters). Cluster #2 is formed by the following institutes: Institute of Natural Sciences, Institute of Philology, Faculty of Journalism (1 building and 3 institutes). And Cluster #3 is formed the following institutes: Academy of Arts, Service and Advertising and Academy of Economics and Management (1 building and 2 institutes). We have also Institute of Pedagogy and Social Work; its buildings are located very much far apart and from the centre. The main building (cluster #0) is located approximately a kilometer from cluster #2.

Resume on TSU disposition is: the object is space-distributed; the various parts of TSU structure are very much detached from each other; there are three clusters here; the distances between the clusters are significant (3–7 km).

The Present State of TSU Network and Software. The modern condition of a computer network of the university is not ideal. We have two Internet-providers in Tambov: the Centre – Telecom and Tambov Regional

Centre of New Information Technologies (TambovCNIT). And only by now one more provider, OOO Lanta, has appeared.

Now the network of TSU is at the stage of reconstruction. We have separate ISDN connections in cluster#0, cluster #2 and cluster #3 (see the map). The speed of data transfer of these channels is 128 kbit/sec. Unfortunately, cluster #1 is connected to the main building (cluster #0) with the help of a general modem (the speed of data transfer of this channel is very low. However, inside cluster #1 two buildings (Institute of Mathematics, Physics and Computer Science and Institute of Law) are connected by optical fiber communication. The university does not have financial opportunity so far to improve the communication system. We have a few programs for the dean's and educational offices service. But this software should be updated. This software may be used to calculate educational loading of the teachers, students, etc. The most part of communication system is based on paper carriers, networks being hardly used.

The ways of real Management in TSU by means of information technologies. It is quite clear that the use of paper carriers makes information processing slower. It becomes more evident because some buildings of the university are far detached from each other. It is known that information delays may cause bad object control. To exclude this, we offer the following ways of real TSU management:

1) creation of the information base containing all information about students, teachers, etc., and their properties;
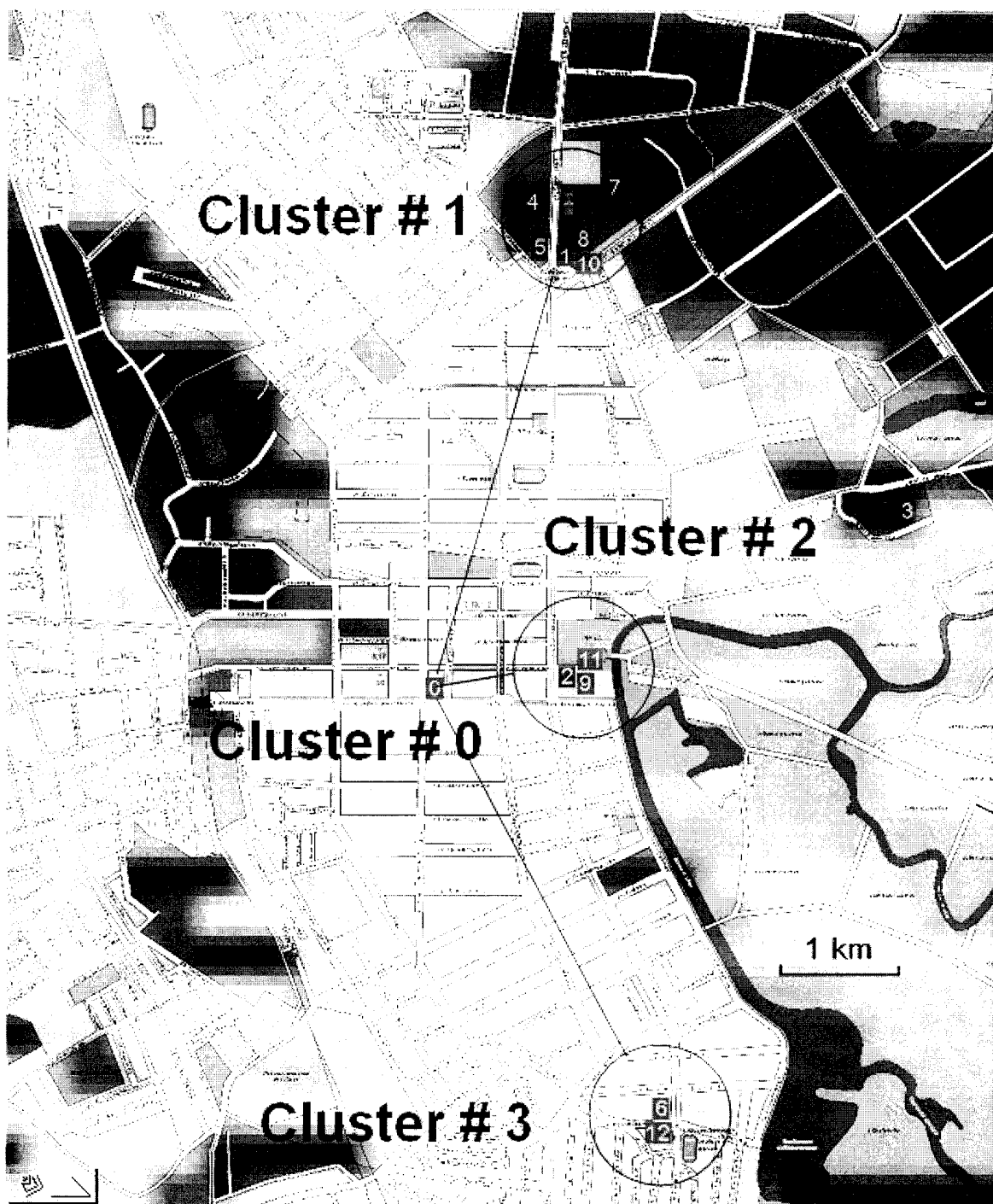
Fig. 2. The disposition of TSU buildings on the Tambov City Map: 0 – Rector's Office; 1 – Institute of Mathematics, Physics and Computer Science; 2 – Institute of Natural Sciences; 3 – Institute of Pedagogy and Social Work; 4 – Institute of Sociology and Culture; 5 – Institute of Psychology; 6 – Academy of Arts, Service and Advertising; 7 – Institute of History; 8 – Institute of Law; 9 – Institute of Philology; 10 – Institute of Physical Education and Sports; 11 – Faculty of Journalism; 12 – Academy of Economics and Management

2) access to this information base from different university buildings with the help of the network; priority system should be followed here, and each user should have access only to the necessary allowed information;

3) development of corresponding software and training managers of different levels.

We hope our work will be developing in this direction.

We are very thankful to Professor Sergey Chernyshenko for his informing us about a similar system developed at Dnepropetrovsk National University. We hope that with the help of the TEMPUS program we'll be able to introduce the same system in Tambov State University.

However, we suppose that it is necessary to try this system in real work first on a small cluster. Neither we nor the rector have seen how this software operates so far, so we have a vague idea about its work and possibilities or advantages of its realization. It is not quite clear to what extent the developed in DNU software can be used at TSU. This software needs to be adapted to the TSU conditions and requirements. We propose cluster #1 to be used for such purpose. The fact is that the institutes situated in cluster #1 are most advanced in computer science. We think that introducing the system on a local level we'll be able to try it in real work and demonstrate its properties and possibilities to the rector, vice-rectors and heads of institutes and faculties. After such presentation it will be much easier for the rector to make a decision to introduce the system in Tambov State University.

In conclusion, we can say that Institute of Mathematics, Physics and Computer Science is an ideal object for information technology trial.

Steps of the system realization.

Step 1. Realization of information technology in the Institute of Mathematics, Physics and Computer Science (the staff of this institute is more advanced in computer science) for the system "dean's office – departments"; debug of the system in local conditions; training of the personnel for dean's offices.

Step 2. Realization of information technology in all departments of the first cluster (6 dean's offices and approximately 28 departments). At this stage we hope also to take into account the remarks of the vice-rector for education and we will debug the whole system. We will demonstrate the system in work to the rector and vice-rectors.

Step 3. Realization of information technology in Tambov State University. Although the project was delayed and was launched later than expected, we do hope that there will be enough time to introduce the control system on the TSU level.

Step 4. We also hope that in future this system can be introduced on the level of the Ministry of Education and Science and Universities of the Russian Federation. But, of course, it will be our new project.

Thank you very much for your attention.