Land Information Systems and Administration. TEMPUS Project in Russia.

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SUMMARY

Development of educational process in the Russian Federation is based on transfer to the Bologna system and integration into European Educational society.
Land management and land administration education are also involved in the transfer process. The focus of the new model education is integration of administrative and technical qualifications for the graduates of a new generation.
Design of new Master Programme in the field of land management and land administration was the main objective of the TEMPUS Joint European Project Master programme in Land Information System and Administration. Application of advanced teaching methodologies and development of modern curriculum should enable sustainable student s recruitment in a long run. Information technologies (IT) in the Russian Federation have become one of the most progressive fields of activity during recent years. None of the spheres of the economy can be efficiently managed without IT. The land sector is not an exception. In particular, the land policy of Russian Federation includes, among others, collection, processing and distribution of land information.
The labour market has serious demand for the professionals skilled in
development, supporting and assessing land IT. The modern land information system includes, along with geographical information, information on the rights and encumbrances, planning, property valuation and taxation, etc. It also facilitates cooperation between all administrative units and, as consequence, improves purchasing and mortgaging abilities. In particular, to be able to meet the needs of the modern land information system, the professionals shall possess a wide range of integral knowledge in the fields of IT, surveying, land law economy, land planning and land development.
Consortium members have strategic goal to make new Master programme competitive in world arena and attractive for students both inside the Russian Federation and abroad.

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1. DEVELOPMENT OF THE PROJECT

Information technologies (IT) in the Russian Federation have become one of the most progressive fields of activity during recent years. Information processing is the main objective of IT. None of the spheres of the economy can be efficiently managed without IT. The land sector is not an exception. In particular, the land policy of Russian Federation includes, among others, collection, processing and distribution of land information.
Another prioritised area in Russia is integration of the whole educational system into the Bologna process. The labour market survey carried out by the Russian consortium members has shown a high demand for the professionals skilled in development, supporting and assessing land IT. The Russian universities are initiators of the project since they face a keen demand for highly qualified specialists from the practice.
The centuries-old history testifies that one of the main sources of life and prosperity of any state is land. Thus, to understand land not only as the territory (space) of the state, but also as all rights attached to that. Land resources of any country are a major economic and political factor of development. Russia has a large territory that must be at present governed by the different land information systems on the local and central administrative levels. Thus, the federal structure of Russia and its large territory make an automatic processing of land information an issue of vital importance. The modern land information system includes, along with geographical information, information on the rights and encumbrances, planning, property valuation and taxation, etc. It also facilitates cooperation between all administrative units of the Russian Federation and, as consequence, improves purchasing and mortgaging abilities. Land IT is extremely important due to an innovative system of the unified real estate cadastre introduced in Russia on 1st of March 2008. The executive authorities and their local representatives, responsible for maintenance of the new cadastre, are created all over Russia. In particular, to be able to meet the needs of the modern land information system, the professionals shall possess a wide range of integral knowledge in the fields of IT, surveying, land law economy, land planning and land development. They in turn require highly qualified staff for further development and daily maintenance.
The consortium has made a survey of existing educational programmes in Land information systems in Russian. This survey has revealed that there is no any integrated study programme in this field.
The consortium members from Russia have initiated a process of integration to the Bologna process. Their development strategies focus on development and introduction of new Master programmes and modernization of existing ones together introduction of new teaching methods. The Russian universities - consortium members - represent three different regions of Russia: Central, Siberian, Southern. This goes in line with the national policy of regional governance as each university is situated in one federal region with own governance structure. At the same time such spread of the university over the Russian territory increases ability of

the consortium to wider disseminate the project outcomes. Federal Educational Agency will provide the consortium with methodological and administrative information for more transparent and effective implementation of the programme. Accreditation of the Master programme by state authorities will ensure future development after the project period.
Cooperation with European partners of the consortium will enable the project to increase the level of education at Russian universities, implement ECTS and integrate it with European education technologies and methodologies.
An investigation of the present situation in Russian universities discovered lack of qualified staff skilled in modern teaching methodologies, language and IT. The level of corresponding teaching and learning equipment does neither fit modern technologies and thus reduce quality of education. The project implementation will enable to increase a number of qualified staff, which will disseminate their experience for colleagues. Thus the project will be very useful in long-run perspective.
Moscow State University of Geodesy and Cartography was an initiator of the project application. During the project implementation, it serves as a contact university and will assist other Russian consortium members in achieving the project outcomes. Two other Russian universities have similar educational profiles with Departments of IT, Surveying, Law, and Economy. All three Russian universities are members of the Methodological Association in Surveying.

2. CONSORTIUM MEMBERS

2.1 Royal institute of technology (KTH)

Royal Institute of Technology (KTH) is the oldest technical university in Sweden with approximately 19000 of students and more than 3000 employees. Since 1996 the Division of Real Estate Planning and Land Law is also responsible to the International Master programme in Land Management where up to now approx. 400 students from the former Soviet Union, the former Yugoslavia and several African countries have been trained. The Division's teaching staff participates in a wide range of research on comparative study of IT, land tenure systems, on expropriation, urban/rural land consolidation as well as on property transactions throughout Europe. Since teaching staff of the Division is highly competent it will assist in developing of courses within this project. Moreover, the Division assist other partner universities all over the world in revision of their existing land management curricula, namely this revision has already been done in Russia (40-50 universities), Estonia, Belarus, Ukraine, Moldova, Georgia, Ethiopia and Slovenia. Besides, the Division takes part in the on-going Tempus projects such as JEP-24210-2003 on development of new study program in Real property law at Polotsk State University (Belarus) as well as JEP-26100-2005 on curriculum development in land resource management at two Uzbek universities. Helsinki University of Technology is also involved in implementation of these projects.

2.2 Helsinki University of Technology (TKK)

Helsinki University of Technology (TKK) was founded in 1849 and received university status in 1908. There are twelve faculties, including Surveying and nine separate institutes. TKK is the leading technical university in Finland with 19 degree programs, 250 professors and 15000 under- and postgraduate students. In 2005 the University revised all degree programs in accordance with the Bologna process. The Institute of Real Estate Studies of TKK is a part of the Department of Surveying. Together with the Institute of Law (particularly law on real estate and environment), the Institute is in charge of the degree program "Real Estate Economics". This degree program has two educational options: -Land Management and Law and -Real Estate Management. The Institute is specialized, in land related IT, education and research on real estate planning, property development, real estate economics, property valuation, real estate management, etc. Within the degree program there are about 250 students on the Master's degree level (annual intake about 50) and about 60 postgraduate students. Education on Real Estate Valuation is given almost only at the Department of Surveying at TKK. Since Autumn 2006 an English Master's program in Real Estate Investment and Finance is taught together with the Hanken Business School.

2.3 Delft University of Technology (TU Delft)

Founded in 1842, Delft University of Technology (TU Delft) is the oldest, largest, and most comprehensive technical universities in the Netherlands. With over 13000 students and 2100 scientists (including 200 professors), it is an establishment of both national importance and significant international standing. Research Institute for Housing, Urban and Mobility Studies (OTB) is an interfaculty research institute of TU Delft. In its fundamental and applied research OTB draws on the IT, policy analysis, management science and informatics. The most important policy fields in which it is involved are housing, urban renewal, building and real estate management, urban policy and environmental planning, land use, environmental protection, infrastructure, traffic and transport, construction policy, and land information. The Section of Geo-information and Land development participates in a range of international projects. The staff of the section takes part not only in comparative research of real property transactions, land registration as well as the cadastral databases between several European countries (including Sweden) but also in education by providing high standard lectures all over Europe.

2.4 National Land Survey of Finland (NLS)

National Land Survey of Finland (NLS) produces and provides information on and services in real estate, topography and the environment for the needs of citizens, other customers and the community at large. The National Land Survey (NLS) is responsible for Finland's cadastral system and general mapping assignments. It also promotes the shared use of geographic information. The NLS consists of 13 District Survey Offices, five national operational units and the small central administration. The NLS has staff of over 2000, of whom over 80 % are employed in the District Survey Offices. The NLS is a governmental agency subordinate to the Ministry of Agriculture and Forestry. The first land surveyor initiated land surveying in

Finland as early as 1633. The time span from the 17th century to present day is so inconceivably long that history is bound to be present in today's activities of the NLS. Internationalization continues to increase The National Land Survey of Finland's (NLS) area of expertise. NLS is an active participant in international projects and in the operation of several international organizations. NLS participates actively in international cooperation with Finland's neighboring countries, between European countries and worldwide. Development within the European Union increases the need for international cooperation in Europe.

2.5 Moscow State University of Geodesy and Cartography (MIIGAiK)

Moscow State University of Geodesy and Cartography (MIIGAiK) established in 1779 is a leading surveying university in Russia and one of the largest surveying institutions of Europe. It consists of ten Faculties and trains almost 5000 students. MIIGAiK educates students in surveying, geoinformation, mapping, technical aspects of land management, land information systems as well as legal support of real property. MIIGAiK is the only surveying university in Central federal district of the Russian Federation. Therefore, it has responsibility for training of specialists for a large part of the country. At the moment MIIGAiK is on the way to introduce two-level educational system (i.e. Bachelor/Master). Therefore, the proposed project goes in line with the Development Plan of the University.
Teaching staff of MIIGAiK is eager to introduce changes in educational process. Most of lecturers possess PhD and Doctor Habitat degrees that proves its high competence. MIIGAiK has a wide range of scientific elaborations in the field of land related IT.

2.6 Siberian State Geodetic Academy (SSGA)

Siberian State Geodetic Academy (SSGA) was founded in 1933 as Siberian Geodetic Institute. At present the Academy consists of five Institutes with eight Faculties and 28 Departments. Now SSGA trains specialists in geodesy, land management, cadastre and geoinformation systems. The Institute of Geodesy and Management educates students in eleven specialities including surveying, management and economics of surveying enterprises. It consists of two Faculties and nine Departments. About 400 students are annually admitted and the majority of graduates is normally employed. The Academy is fairly equipped with surveing instruments and there is still a lack of modern equipment. In particular, the Academy still experiences need in further development of its IT facilities and library. The Academy has long-term coopration with MIIGAiK both in education and research. It has also been responsible for a wide range of Regional and International Conferences.

2.7 Southern Federal University (SFU)

Southern Federal University (SFU) is the largest centre of education, cience and culture in the south of Russia. The University has 2 campuses in Rostov-on-Don and Taganrog. At present SFU, the legal successor of Rostov State University, comprises 36 faculties, 23 branches and 70 Research units of SFU (in the part of former Rostov State University), Taganrog Technological, Rostov Pedagogical, and Architecture Institutes. SFU GIS-Technologies Center has an old experience in land related IT, land information and administration.

2.8 Federal Cadastral Centre "Zemlia" (FCC)

Federal Cadastral Centre "Zemlia" (FCC) was founded by Federal Real Estate Cadastre Agency (Rosnedvizhimost) in 1991. In accordance with beginning creation in the Russian Federation IT system for maintenance of the State Land Cadastre in 1996 Research and Development Centre of the Russian Federation "Zemlia" had been transformed in the federal cadastral centre "land". In 2001 to Federal Cadastral Centre "Zemlia" are fixed Russian institute monitoring of lands and ecological system.

3. CURRICULUM DEVELOPMENT

The aim of the the project is to introduce a new integrated Master programme in Land information system and administration at Moscow State University of Geodesy and Carpography (MIIGAiK), Siberian State Gedodetic Academy (SSGA) and Southern State University (SSU). The main target groups of the project are teaching staff and students of universities participating the project.
The project is planned for the period January 2009 – June 2011. This implies introduction of a new Master programme in Land Information System by June 2011 through creation of new curriculum and courses, which will be taught during a two year period after four years of Bachelor study. The intention is to develop a complete set of new courses together with newly prepared teaching materials, while new teaching methodologies are also going to be developed and applied. This study program will end up with thesis work and obtaining Masters degree by students.
The consortium consist of members from Russia MIIGAiK, SSGA and SFU who are the unique representatives of the geodetic and cartographical technical high schools in Russia, located in three different regions of Russia, acoordingly Central, Southern and Siberian. Besides Governmental support is providen by the Federal Cadastral Centre "Zemlja" and Federal Educational Agency. At the same time Methodical associations for Geodesy l provides with methodological support.
In order to ensure relevance of the results of this project for both educational system and future employers, a Steering Committee (12 persons) was be created. It consists of representatives of the MIIGAiK administration and coordinator and representatives of the SSGA, TU Delft, TKK, KTH and SFU. Also representatives of the National Land Survey of Finland, The Federal Cadastral Centre "Zemlja" and Federal Educational Agency of Russia act as a members of Steering Committee. In order to inprove student involvement in the project one representative of student community became a member of Steering Commeetee. This Committee as assumed to be a consulting body for the project and at the same time evaluates quality of the project outcomes.
New curriculum design has started with review of actual courses of relevant profiles and evaluation of the academic and technical potentials of the MIIGAiK, SSGA and SFU. The summary of this investigation were presented during a kick-off meeting at the MIIGAiK in February 2009. All the consortium members were invited to ensure the common understanding of the project goals, outcomes and activities as well as roles of each partner.

The project approach is to develop multi-faculty Master programme formed in three subject modules: IT module, administrative module, integrative module. Therefore, the new Master programme will focus on land related IT, technical support of land transactions and administraton, relationship between land, economic development, socio-political organization, and environmental sustainability. This kind of subdivision on three modules will enable to attract students with differen Bachelor background, thus raising relevance of the Master programme.
The following courses with preliminary number of credits are to be developed during the project:
IT module (30 ECTS)
1. Introduction to Geodesy and Cartography. (OPTIONAL) This course will enable students to get into the mechanism of surveying. During this course they will be accuainted with the main surveying technologies as well as approaches to the geoditeic measurements. (10 ECTS)
2. LIS. The course will be based on present LIS system in Russia. The course will also provide the basics of land valuation and land use planning by using remote sensing and GIS. The course allows students to get familiar with the architecture of GIS. Emphasis is given to the application of remote sensing and GIS tools for sustainable use of land resources with adequate capability and technical know-how. (10 ECTS)
3. Cadastral technology. This course will provide students with technical data concerning process of cadastre system in Russia, including responsible authorities and their obligations. (5 ECTS)
4. Geodesy and geomatics. (5 ECTS)
Administrative module (40 credits) - Legal track
5. Civil law (OPTIONAL) (general provisions, specific provisions). Civil law part gives an overview of the existing types of property rights/encumbrances, mortgages and types of their enforcements as well as considers contract law with focus on land, etc. The course only treats the general policy issues relating to land. The third part is Public law that studies legal relations between individuals and the government. Students obtain knowledge of the constitutional and administrative principles, gain understanding the concept of compulsory purchase, and different limitations affecting rights to property appeal enivronment and court system. (10 credits)
6. Environmental, land and palnning law (general provisions, legal regulation on different land categories). In the first part, the course provides detailed knowledge about the existing system of law, which are related to land.luding expropriation. In other words, the course provides basic principles as well as practical rules in the legislation governing land issues. The course also provides a fundamental understanding of the Russian legal system from perspective of the environment. Since the legal framework is important for understanding how to administer property rights, special attention is given to a relevant legislation. The aim is to understand the relations between existing property rights and demand for their changes to enhance dynamism in the society. How to change ownership of land, commons, infrastructure and utility easements, leasing, water use, mining, hunting, forestry and fishing therefore. The course deals with the legal framework for the protection and use of natural resources..(6 credits)

7. Comparative law. This course will contain information about different legal systems and legal families. It will allow to compare different countries from legal position, find out the ways of international cooperation. (4 credits)

Economical track

8. Economics. (OPTIONAL) Economical block will be based on theoretical studying of micro and macro economics. This will be sufficient in order to enable students for their future studies in Real estate investment and valuation. (10 credits)

9. Real estate investment. This course introduces students to the basic tools of evaluating the profitability of real estate investments under a variety of circumstances. These tools are essential in helping students to understand the way real estate assets should be evaluated. The course should enable students to evaluate the profitability of real estate investments, using basic financial tools. This allows to effectively use one of the most commonly used valuation methods for real estate assets – the discounted cash-flow model. (6 credits)

10. Real estate valuation. The course provides knowledge of methods for land valuation and valuation theories. The students obtain knowledge and understanding of different concepts of value and other related terms such as price, income, capital and costs. It deals with various approaches to land valuation. The course also studies factors affecting valuation, purpose and application of valuation, problems related to valuation. The students get insight in analysis of land taxation. Taxation law with application to different types of land use is also considered. The students attention will be stressed on Tax Code of the Russian Federation. (4 credits)

Integrative module (30 credits)

11. Urban land planning and development. The aim of the course is to understand the need for legal framework for urban development in Russia. The students get inside into the problems of ownership, development of enterprises, rural development, ecology of the landscape, culture environment, green forest management plans, methodology, partners to be included in the process and issues of opinion (moulding of public opinion, enformation efforts and influence of owners). (10 credits)

12. Mass valuation with GIS-methods. The aimof the course is to provide students with integrated approach to the valuation process. Apply for GIS technologies in the context of mass valuation will enable students to operate with advanced valuation methods. (10 credits)

13. Negotiations and communication. This course is designed to highlight on the basics of alternative dispute resolution mechanisms and techniques of negotiation that help interested parties arrive at a certain agreement. Such important techniques like negotiation, conciliation and adjudication have wider treatment in this course. At the end of this course the students are able: to resolve disputes in amicable means and mechanisms, to understand the various techniques of negotiations, to give well reasoned advises to disputing parties on how to negotiate for their common good. (5 credits)

14. Infrastructure. This course provides with specific objectives of infrustructure development. (5 credits)

The Master thesis work will consist of in-depth studies in a subject area within the scope of the program and has 30 credits. The thesis may be carried out at any institution/authority acting in the field of land information systems, real property development and technical support of real property transactions.

In order to establish educational process new teaching materials are to be prepared. Lecture notes of new courses as well as textbooks will be developed by the MIIGAiK teaching staff in

co-operation with academic staff from KTH, TKK, TU Delft, SSGA and SFU through study of existing European textbooks in information technology, land information systems, real estate law and surveying, discussions and analysis of teaching materials used by the EU consortium members.
In parallel with development of new courses and new teaching materials, the Land Information Centres were established at the MIIGAiK as well as in SSGA and SFU. That Centres consist of a library supplied with modern literature and IT laboratory. The laboratorys are equipped with PCs and, consequently, each student will have his/her own workplace during the seminars. The total number of graduate students to be educated in these laboratories is estimated as 100-150 annually.
Retraining of the Russian teachers includes study visits to the EU consortium universities for experience exchange, learning new teaching methodology and acquiring new ideas. The study visits last two weeks at each EU consortium member. Selection of teachers for two weeks study visits is transparent. It means that a teacher assigned for a specific course (e.g., Real property law) will participate in the visits especially developed for studying that specific subject at the EU university.
To improve communicative skills of the teaching staff of the Faculty, the intensive English courses are held (Advanced English). They are taught by English teachers of respective universities. Moreover, one week methodological seminar at KTH and one week workshop at TKK were organised for the Russian teachers. They included presentation of existing IT teaching methodologies applied at KTH and TKK. The participating Russian teachers were able to test on-line technologies and to discuss them with KTH and TKK teaching staff. NLS of Finland also arranges one week study visit for the russian teachers. Trained teachers will disseminate their experience as trainers for future sustainability of the project.
Project web-portal was developed to disseminate the results of the project and to increase the public awareness about efficient measurements in land IT and administration. In particular, the web-portal will become a place where different opinions not only of academic staff but also of professionals from practice about land IT in Russia will meet and be openly discussed.
As soon as project activities will be on respective level (assumed September 2010) consortium will apply for accreditation of the Master programme in educational authorities and start test-run of elaborated courses. As Federal Educational Agency is consortium member it will provide with necessary consultations and directives during this procedure.
In order to make elaborated Master programme more transparent and clear for the future target groups, consortium will create “Student guidelines” which will contain all practical and useful information about programme, as: how to apply, content of courses, duration, modular system of the project etc.. These “Student guidelines” will be disseminated through consortium members administration and stuff.
To promote the new Master programme, an advertising campaign will be undertaken in Russia in January 2010 - June 2011. To make this campaign visible, informational handouts about a new program will be published and distibuted. The graduate students and teachers involved will advertise a new Master programme at the local and national level in Russian mass media.
The training courses for enterprisers, local authorities, NGOs and other target groups are not formulated as an outcome of the project, but during development of the new Master.

The following distribution of responsibilities was agreed by the consortium.

	TKK	TU Delft	KTH	MIIGAiK	SFU	SSGA
IT Module						
Introduction to Geodesy and Cartography (OPTIONAL) (10 ECTS)		X			X	X
LIS (10 ECTS)		X			X	X
Cadastral Technology (5 ECTS)		X			X	X
Geodesy and Geomatics (5 ECTS)		X			X	X
Administrative module						
Legal track						
Civil Law (OPTIONAL) (10 ECTS)	X		X	X		
Environmental, Land and Planning Law (6 ECTS)	X		X	X		
Comparative law (4 ECTS)			X	X		
Economical track						
Economics (OPTIONAL) (10 ECTS)	X			X		
Real estate investment (6 ECTS)	X			X		
Real estate valuation (4 ECTS)	X			X		
Integrative module						
Urban land planning and development (10 ECTS)			X		X	X
Mass valuation with GIS-methods (10 ECTS)	X		X		X	X
Negotiations and communication (5 ECTS)			X	X		
Infrastructure (5 ECTS)			X			X

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BIOGRAPHICAL NOTES

Professor, doctor of science Vasiliy Malinnikov has started professional career in 1972. Since 1973 in MIIGAiK as assistant, associate professor, professor, dean of the Applied Cosmonautics and finally rector of the Moscow State University of Geodesy and Cartography. Laureate of several governmental awards, member of the Russian cosmonautics academy, head of dissertation council in land management, cadastre and land monitoring. Author and co-author of more than 170 scientific works, among them 5 monographs, 1 text-book, more than 10 teaching guidelines.

After graduation from the Moscow State University of Geodesy and Cartography Nadezda Kamynina worked as an expert for the legal regulation of environment protection in the Ministry of natural resourced of the Russian Federation (Centre for international projects). In 2008 Master thesis in Land Management was presented in the Royal Institute of Technology. Since 2008 PhD student of the Moscow State University (Law faculty). Involved in development of international educational projects.

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