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**Education and Culture DG**

**National Platform for Knowledge Triangle in Serbia**

**Minutes of Management Meeting  
held on December 2, 2010  
at Vienna University of Technology**

Official Site: <http://knowts.elfak.ni.ac.rs/>

# Minutes of Management Meeting

**Project Title:** National Platform for Knowledge Triangle in Serbia

**Date:** December 2, 2010

**Location:** Vienna University of Technology

**Author:** Stefan Thuis

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## Participants

University of Nis – Prof. Dr. Ivan Milentijevic, Prof. Dr. Teufik Tokic

University of Kragujevac – Prof. Dr. Miroslav Babic

University of Novi Sad – Prof. Dr. Vojin Senk

University of Belgrade – Prof. Dr. Branimir Reljin

Technological Educational Institute of Athens – Prof. Dr. Katerina Georgouli  
(external expert)

University Sts. Cyril and Methodius of Skopje – Prof. Dr. Marjan Gusev  
(external expert)

Vienna University of Technology – Prof. Dr. Peter Kopacek

TU Dortmund University – Dr. Norbert Jesse, Stefan Thuis

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## 1 Welcome Note

Welcome note was addressed by project coordinator Prof. Dr. Ivan Milentijevic from University of Nis.

## 2 Overview of project activities

Prof. Dr. Ivan Milentijevic from University of Nis gave a short overview of the project activities which have taken place since the last meeting in Nis in November and the overall progress of the KNOWTS project.

He gave the following statements:

- A National Board was founded which will hold meetings regularly starting from April 2011.
- A University Board for the foundation of knowledge transfer centers was founded.
- The requested reports of current status at the four participating Serbian universities have arrived.

## 3 Reports

The reports of the four participating Serbian universities were presented. In the following the text of the original reports is included in the minutes.

### 3.1 University of Nis

Prof. Dr. Ivan Milentijevic presented the following report of the University of Nis:

#### ***Transfer of knowledge and technology: Current state at the University of Nis***

Activities of knowledge and technology transfer at the University of Nis are carried out at institutes within the frame of technical faculties, especially at Faculty of Electronic Engineering and Faculty of Mechanical Engineering. Their activities include realization of various projects, as well as consulting related to different fields of electrical and mechanical engineering and information technologies. Main experiences have been acquired through R&D projects financed by Serbian Ministry of Science and Technological development, joint projects with companies, few European projects financed by EC, continuous education of engineers and regular organization of international conferences. The Faculty for occupational safety and the Faculty

of Technology (Leskovac) are also included in technology transfer activities in ecology, food production and pharmaceuticals. Most of activities are accomplished within the frame of Faculties, and there is no organizational structure at the University level. The initiative of technical Faculties on establishment of University Technology Transfer Center in the Campus of Technical Faculties on the location next the Faculty of Electronic Engineering is the crucial one for the future development of the University and economy in South East Serbia. The memorandum on understanding between the Ministry of Science and Technological Development, the City of Nis and the University of Nis has been signed two months ago. The investment of 12 million euro by the Government of the Republic of Serbia should be used for the building of the Technology Transfer Center. Within the frame of the KNOWTS project, activities on establishment of TTC organizational structure have been started recently. Documents for the legal basis of future TTC operation are prepared for the University Council and it is expected to be accepted by the end of 2010. EU Members of the KNOWTS Management Team will be members of the International Advisory Board of the University TTC with aim to provide networking and give support in future applications for EU projects. University management is trying to reinforce Business Incubator Center which was founded in 2005 and was not so successful in its mission. The main reason why University of Nis is trying to help BIC is the wish to encourage and support students in starting up their own businesses and keep them stay in South Serbia. The University of Nis plans to establish Technology Transfer Office by KNOWTS project support. The main task of the future TTO is to facilitate commercialization of research results serving to all researchers across the University of Nis. The role of the Technology Transfer office at University of Nis should be:

- to establish a database of universities research capacities,
- to serve close research-industry contacts,
- to manage interdisciplinary forums and networks,
- to deal with patents and intellectual property rights and
- to promote the commercialization of research results
- to promote the project culture.

The TTO will be located in the building of the Faculty of Electronic Engineering, and staff recruitment will be done in March 2011. TTO officers will be trained in EU partner institutions by financial support of the KNOWTS project.

UNI professors from diverse research fields, who are active in the KNOWTS project, will support and promote TTO:

1. Prof. Miroljub Grozdanovic, Rector of UNI, from Faculty of Occupational Safety
2. Prof. Ivan Milentijevic, KNOWTS coordinator
3. Prof. Dragan Antic, Dean of Faculty of Electronic Engineering
4. Prof. Vlasta Nikolic, Dean of Faculty of Mechanical Engineering
5. Prof. Teufik Tokic, Deputy coordinator
6. Prof. Jovan Stepanovic, Dean of Faculty of Technology
7. Prof. Evica Petrovic, Dean of Faculty of Economics

8. Prof. Dragan Jankovic, Vice-dean of Faculty of Electronic Engineering
9. Prof. Nenad Pavovic, Vice-dean of Faculty of Mechanical Engineering
10. Prof. Dusica Pavlovic, Vice-dean of Faculty of Medicine

### 3.2 University of Kragujevac

Prof. Dr. Miroslav Babic presented the following report of the University of Kragujevac:

#### **1. Current state at University of Kragujevac in the area of transfer of knowledge and technologies**

Among other efficient interfaces with the industry, the University of Kragujevac relies on its [Collaborative Training Centre](#) (CTC) and on its recent [Center for Virtual Manufacturing](#) (CeVIP), the latter founded in 2006 by the Mechanical Engineering Faculty. Both university units act as basic and highly specialized services provider to the Serbian industry. In line with its institutional mission, CTC and CeVIP support Serbian enterprises to become more innovative and competitive at the market by offering broad spectrum of services focused on advanced technologies and techniques of virtual development of products and process optimization. CAD/CAM/CAE; RP/RT/RE technologies; project management; advanced applications of digital/rapid technologies in product and process development; quality control and certification of products; innovative VM technologies; verification of design solutions through FE simulation for concurrent design and manufacture of automotive parts; improvement of existing products and processes; rank among the highly specialized services offered to the Serbian economy, particularly to the manufacturing and automotive industries.

One of the activities of CTC centre within [WBC-VMnet](#) project was the development of methodology and the implementation of a comprehensive [TSNA analysis](#) (Training & Service Needs Analysis), which was carried out in all countries of the WBC region (Serbia, Croatia, Bosnia and Herzegovina, Montenegro). The proposed methodology included 5 steps, in accordance with accepted EU TNA methodology. The research covered a sample of 49 enterprises in Serbia, 30 in Croatia, 30 in Montenegro and 15 in Bosnia and Herzegovina, from different sectors. Besides considering the needs of enterprises and their employees as regards missing trainings and advanced services in innovative development of products and processes, the research included the target group of the unemployed. TSNA results showed that a high percentage of the surveyed follows trends in their area, approximately 95%, mainly through the Internet, participation in trade fairs, professional literature and cooperation with universities (research teams, centers ...). Weak information about the trainings available in the region was detected, because more than 70% of the surveyed answered that they weren't familiar with who carried out the trainings they needed, while only 17% declared that the trainings offered met their needs. 72% of managers plan their own development in the application of new technologies through collaboration with local teams of experts, and 96% of them would send their employees to trainings related to new technologies in the development of products and

processes. About 90% of people surveyed thought it very important to have professional literature and software for the development of new products and services, and were planning to appear on new markets. The final result of TSNA (800 questionnaires in the field) is an insight into the real needs of enterprises, their employees, and labour market for the missing knowledge and skills, as well as specialized services in the development of products and processes. CTC offers [vocational trainings](#) for enterprises and unemployed.

In line with idea of network knowledge and transfer technologies, CeVIP has established [Virtual Manufacturing Network – VMnet](#) as efficient industrial-science link, which has already more than 900 members from the WBC region (large companies, SMEs, R&D organizations, NGO, Agencies for SMEs, entrepreneurs, experts, managers, engineers, researchers, students etc.). Broaden of VMnet is supported by CTC within WBC-VMnet project. Network gathers 16 experts from area of production technologies, materials, information technologies, software development, numerical FE/FV simulation of production processes, rapid prototyping, reverse engineering, design and marketing, who offer support for companies in their R&D activities to implement new technologies, thus improving their competitiveness on the global market. Apart from expertise offered within VMnet, by this network enterprises would get quality, timely and inexpensive development cycle and may optimize the existing products and processes, as precondition for increasing of competitiveness on increasingly requiring market. VMnet network members regularly receive up-to-date information via e-mail on the on-going activities on projects, fairs, events, competitions, 15 electronic journals are also distributed). They also have access to Systematized knowledge base (150 documents on VM technologies, production, design, product development ...).

Working closely with the private sector, **Collaborative Training Centre** offers an [Industrial Fellowship Programme](#) (IFP) already recognized as an efficient measure to enhance university-enterprise cooperation, establishing sustainable partnerships among key players of the so called *knowledge triangle* (universities, enterprises and graduates). An initiative that proved to produce mutual benefits. Enterprises benefit from highly qualified graduates (or employed engineers who spend usually three months to one year at the university research center, for professional development. Acting as industrial fellows, selected graduates are stimulated to participate in specific research projects targeted to industry needs and company business. They work as part of the enterprise team, supported by university experts aiming at introducing a culture for R&D activities and innovation in the enterprise environment, while bridging knowledge and technology transfer.

## **2. Organization structure**

In addition to the administrative departments of the University of Kragujevac, other structures that can contribute to the development of research activities and transfer of knowledge and technologies are:

**The Serbian Academy of Arts and Sciences and the University of Kragujevac** (<http://www.kg.ac.rs/sanu.asp>) established a **joint research center** in 1992. The center comprises ten sections, mostly directed toward research in areas which have not yet been encompassed by the typical teaching and research of the University. The center's work is realized through the activities in research projects, publishing activities and organization of scientific meetings, lectures and round table discussions.

**The University Information Center** (<http://www.unic.kg.ac.rs/>), was founded in 1988 and is located at the Faculty of Mechanical Engineering in Kragujevac. It is the center of the university computer network and regional center of Serbian academic network with over 700 PCs on line. It provides computer support, computer networks of the University and all faculties, as well as provision of high-tech network services, organization of end-users' training, desk-top and electronic publishing, etc.

In July 2007, the University of Kragujevac established the **Center for Career Development and Students Counseling** ([www.razvojkarijere.kg.ac.rs](http://www.razvojkarijere.kg.ac.rs)), in cooperation with the Foundation of Crown Prince Alexander for Culture and Education. The main goal of the Centre is to establish a link between the employers and the recently graduated students, as well as to improve the level of employability of students, providing them with various opportunities for jobs, further education, scholarships, internship, voluntary work and practical placements in the leading innovative companies in order to develop practical skills and better position on the labor market. Besides, Centre organizes presentations of the companies and of their business policies

**Collaborative Training Centre** ([www.ctc.kg.ac.rs](http://www.ctc.kg.ac.rs)) was established in June 2010, as organizational unit of the University of Kragujevac. Its vision is to become a strong cooperative center that will initiate, mediate and maintain mutually beneficial partnerships between universities, that is its members, students and graduates on one hand and enterprises and other partners that support SME sector on the other hand. CTC mission is to develop efficient and effective mechanisms for cooperation between university and enterprises, through the projects' implementation, vocational trainings for enterprises and the unemployed, industrial scholarship programs (Industrial Fellowship Programme - IFP) and student practice (Student Practical Placement Programme - PPP).

### **3. Technology transfer office**

The role of the Technology Transfer office at University of Kragujevac should be:

- to establish a database of universities research results,
- to serve close research-industry contacts,
- to manage interdisciplinary forums and networks,
- to deal with patents and intellectual property rights and
- to promote the commercialization of research results.



### 3.3 University of Novi Sad

Prof. Dr. Vojin Senk presented the following report of the University of Novi Sad:

#### ***Overview of the Knowledge Transfer activities at the University of Novi Sad***

The first activity towards establishing the Knowledge Transfer system at the University of Novi Sad started immediately after democratic changes in Serbia in back 2000. University of Novi Sad was assigned the task of establishing the Strategy of Implementation of Innovation Centers in Serbia for the Ministry of Science, Technology and Development of Serbia, 2001-2002. Coordinator of the task force was prof. Vojin Šenk, and participants included prof. Miroslav Despotović, prof. Ladislav Novak and Prof. Rado Maksimović. The project has, for the first time, defined Science & Technology Parks, Business & Technology Incubators, as well as Innovation Centers as the focal point of the so-called Technology Transfer process in Serbia.

An immediate follow-up of the project was a Tempus JEP project "Science Parks - Organisational Framework", which ran from 2002 till 2004. Coordinated by prof. Vojin Šenk, aided by prof. Ladislav Novak and with participation of Prof. Miroslav Despotović, prof. Fuada Stanković (who was the rector of the University at that time), prof. Radmila Marinković Nedučin (who was vice-rector at the time, and subsequently succeeded prof. Stanković as rector), prof. Ilija Ćosić (vice-dean of the Faculty of Engineering), prof. Janko Hodolič (vice-dean of the Faculty of Engineering), prof. Miroslav Plančak (vice-rector of the University), and numerous others, the project laid the foundation of the Science & Technology Park of the University of Novi Sad, situated at the Faculty of Engineering (Technical Sciences) of the University of Novi Sad. Two well accepted monographs were published on the subject, and the Technology Transfer Centre organized. The Centre did not formally survive due to lack of funds, but the team gathered around remained and conducted all the subsequent activities in the framework of establishing the Innovation System of the University of Novi Sad.

Maybe the most significant project for all subsequent activities was the NOSIC (Novi Sad Incubation/Innovation Centre) project coordinated by prof. Miroslav Despotović aided by prof. Vojin Šenk in 2003-2004. The project performed the training of the team of young enthusiasts from the whole University on how to run a high-tech incubator and how to establish the innovation system in practical terms. Maybe the most important result of the project was that the team ran a pilot Best Technology Innovation competition at the level of University, inspired by the example given by partners from the Chalmers University of Technology from Gothenburg, Sweden, which solicited 81 participants and subsequently yielded 4 new companies (Alfanum, Protech, TIAC and DunavNet). The experience from the project was used from that moment to this very day.

An immediate follow-up from the NOSIC project was the establishment of the Best Technology Innovation competition in Serbia ([www.inovacija.org](http://www.inovacija.org)) organization committee for the Serbian Ministry of Science and Technology.



The following table lists some of the important Knowledge Transfer activities at the University of Novi Sad.

Date from - Date to	Experience
2003-2004.	Coordinated NOSIC (Novi Sad Incubation Centre) project, with Prof. Miroslav Despotović, funded by GTZ
Since 2005.	Coordinates the "Technological Development"
2005-2007	coordinated the Feasibility Study preparation and evaluation for future Science & Technology Parks, Technology Incubators and similar institutions in Serbia
2007-2008	Coordinated PETITHA (Promoting Entrepreneurial Thinking in the High-Tech Area), a project financed by European Agency for Reconstruction. Author of the ICT part of the Technological Development Strategy for AP Vojvodina
2009	Part of the committee for preparation of the new law on Innovation Policy in Serbia.
Since 2009	Coordinates University of Novi Sad team as part of EEN (Enterprise Europe Network)
2010-2011	Coordinates the MORDIC project

### ***Plan of the Knowledge Transfer activities at the University of Novi Sad***

University of Novi Sad plans to establish Knowledge Transfer Office as a part of the activities under the umbrella of the Tempus KNOWTS project. The idea behind establishing the Knowledge Transfer Office is to facilitate commercialization of the applicable academic knowledge, provide platform for integration of individual efforts across the university in the course of knowledge transfer, and provide assistance in sustainable development to the community in the region. Therefore, University of Novi Sad intends to promote the idea of Knowledge Transfer Office as a focus point aiming to integrate comprehensive applicable knowledge generated across the university, including not only Engineering and Technology, but also Natural and Social Sciences, Law, Medicine, Agriculture, etc.

As a response to the challenges arise from the global declining of economy, the University of Novi Sad is determined to make efforts in order to diversify funding, provide efficient platform for transfer and commercialization of the knowledge created within the University and to provide a range of incentives for generation of spin-off companies from the University laboratories.

In order to operationalize this strategy, Core group of the implementation of KNOWTS project at the University of Novi Sad selected a preliminary list of contact persons selected from diverse knowledge fields at the University of

Novi Sad in order to assist in achieving its mission. This preliminary list includes the following academic and university and faculty leadership:

1. Prof. Miroslav Veskovic, Rector,
2. Prof. Ilija Cosic, Dean of Faculty of Technical Sciences,
3. Prof. Pere Tumbas, Faculty of Economics,
4. Prof. Joanea Ranogajec, Faculty of Technology,
5. Prof. Ivana Zivancevic Sekerus, Vice -Dean of Faculty of Philosophy
6. Academic Olga Hadzic, Faculty of Mathematics and Natural Sciences,
7. Prof. Bojan Srdjevic, Faculty of Agriculture,
8. Prof. Vojin Senk, Faculty of Technical Sciences,
9. Prof. Ladislav Novak, UNS deputy contact person,
10. Prof. Veljko Malbasa, UNS contact person.

### **3.4 University of Belgrade**

The following report of the University of Belgrade was presented:

#### ***Transfer of knowledge and technology: Experience of the University of Belgrade, Serbia***

Activities of knowledge and technology transfer at the University of Belgrade are performed through two innovation centers and one incubator. The innovation centers are located at the schools of electrical and mechanical engineering, while the incubator is founded by four technical schools (for civil, electrical, mechanical engineering and the school for technology and metallurgy).

**The Business Technology Incubator of Technical Faculties Belgrade** has been established as a partnership between the four technical faculties of the University of Belgrade (Civil Engineering, Mechanical, Electrical and Technological/Metallurgical), the Municipality of Palilula and the Democratic Transition Initiative, and the establishment has also received support from the Organization for Security and Cooperation in Europe (OSCE).

Establishment of Incubator based on international experiences and best practices has the following goals:

- To encourage and support students in starting up their own businesses and keep them stay in Serbia
- To develop a pool of young and well trained entrepreneurs who will in the future create a new business core of the city

- To create the conditions for practical application of the results obtained through science and research activities of university professors and their associates, by spinning-off private enterprises and transfer of knowledge and technologies.

The aim of the Incubators is to give support in the early stages of business development in the form of subsidized overhead (office and research space and technological and telecommunication infrastructure), administrative assistance (legal, accounting, etc.), as well as business counseling (planning, management, marketing, etc.).

The Incubator has been given its own space in the Campus of Technical Faculties Belgrade, Ruzveltova 1A.

**Innovation center of the School of Mechanical Engineering, Belgrade**, founded in Jun 2006, represents organization that applies scientific results in order to produce new or improved existing products, processes and services.

The main task of Innovation center is to implement scientific technical and technological knowledge, invention and creativity in order to improve the technological resources of Republic of Serbia. The Innovation center is capable of taking a part in diversity of scientific areas of research. In order with requirements of modern research methodology, it provides high professional human resources, adequate premises, equipment, internet, communication connections, labs and other resources necessary for proper projects' management.

Presently, Innovation center consists of Center for quality, Regional center for energetic efficiency, Network for energetic efficiency, Center for factitious, Center for transfer of technology and 11 laboratories.

Their activities include realization of various projects, as well as consulting related to quality control, expertise, certification of products etc. The plan includes faster training of scientists which will be able to participate in scientific and development research. The goal is continuous improvement of the knowledge base, focusing on acquirement and use of the latest scientific results and technologies. Realization of the research will allow direct influence of knowledge in faster industry development and creation of innovative and attractive products, which will lead to improvement of quality and competitiveness of domestic products and services on the international market, as well as development of infrastructural systems in Serbia.

Technology transfer is essential for successful relationship between research organizations and industry. In order to comply with current trends in National development plan and integration into European standards, the program of Innovation center includes the following fields: Informatics linking of designers, manufacturers and users in mechanical industry ; IT in product development - CAD (product design, analyses and function simulation, elastomechanical simulation with FEM, simultaneous engineering, VR/AR technology in product development); IT in planning and management of production systems

(configuration and simulation of production systems, VR/AR technology in production systems planning); IT in production processes (planning of production processes - cutting, deformation, nonconventional processes, handling of materials, parts and products, planning of assembly processes, optimization of production processes and production chains); IT in production of automatic production equipment (CNC machines, industrial robots and other flexible production automation, management of production lines - transfer systems for processing and assembly, adaptive systems of production processes management, RLS systems of process management, intelligent handling systems and soft computing techniques in production processes management); Computer integrated production processes and application of IT in management of business functions of production company as well as the whole business system; IT in production metrology, system quality, measurement and inspection, measuring machines, TQM and related ISO standards; Expert systems for design of construction, transport and mining systems and machines; Expert systems for optimization of equipment disposition; Simulation of warehouse and distributive systems etc.

**Innovation Center of School of Electrical engineering (ICEF d.o.o. )** was established in 2005, as an independent R&D organization where scientific results are applied in a systematic and original way, as well as modern technological processes in order to create innovations, new products, technologies, processes and services or to alter already existing ones to follow the needs of the market.

ICEF d.o.o. provides technical services in the area of measurement, research and testing of machines, installations and facilities (with and without destruction) for both international and domestic customers.

This Center offers adequate facilities and working conditions to postgraduates and to the employees, working on innovation projects at ICEF. Talented postgraduates are allowed to express in full their creativity and provide for their existence, without having to work in various commercial companies or leave the country. This is very important having in mind the development of information technologies (including telecommunications, automatics, electronics and other areas) as well as the strategy of technological development of Serbia. In this way it is possible to directly monitor and implement contemporary achievements in this area.

Activities and area of work performed in Innovation center are the following: Development of prototypes, technology and software, as well as scientific-research projects in the area of electrical engineering (basic and applied research) in the Center or in cooperation with other scientific-research institutions funded by the Ministry of science, Republic of Serbia and/or 3rd parties; Support to innovation programs; Participation in research projects realized in the European Union (through international cooperation and bilateral relations); Providing equipped vacancies, expert and technical support to PhD, postgraduate and master students of the School of Electrical Engineering; Implementation and realization of the internship for students in the framework of required and facultative programs at the School of Electrical Engineering; Technical services in the area of measurement, research and

testing of machines, installations and facilities (with and without destruction) for both international and home users; Production of investment/technical and project documentation for studies and other documentation for NGO users and other users on the market; Participation in the production and compiling of technical standards and regulations, proposition of legislation through cooperation with relevant Ministries of the Republic of Serbia; Research, development and realization of projects in the area of energy efficiency (alternative energy sources, new technology, production management and energy consumption); Production cooperation with international and home companies in the area of innovation, transfer of knowledge, and technologies, management, software, electric machines, tools and instruments (launching of patent and industrial rights, consulting services); Organization of practical training, seminars and knowledge innovation in specific areas of applied electric engineering (high voltage, machines and installations in explosive environments, extreme conditions, etc.); Technical and business cooperation with acknowledged systems in the area of electric engineering and communications in Europe and worldwide (ABB, Siemens, GE, Fluke, Mannesmann, Ericsson and others through various forms of cooperation such as internships for students, participation in R&D projects, equipment of University laboratories, etc.); Cooperation with institutions in the country that are important for the work of the Center (institutes, government agencies, public enterprises, large business systems).

## **4 Management Issues**

The following management issues were discussed:

- The first installment of the grant could not be transferred to University of Alicante
- Another effort will be made to transfer the money by the end of the year

The following was agreed by all participating institutions:

- The request for the second installment of the grant shall be applied in July 2011. Therefore 70% of the first installment (60% of the total grant) has to be spent by this point of time
- A financial overview displaying the level of expenditure should be made by all participating institutions and should be sent to the project coordinator by the end of April 2011