Steering Committee meeting

21st October, Belgrade

Overall WBC-VMnet project achievements and UKG results

Prof. Dr Vesna Mandic

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Outline

- Overall achievements
- Project implementation timeframe
- Key project results, per Outcomes
- Budget analysis, overall and per partners
- Recommendations for closure of the budget

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Overall achievements

- Four CTCs are functional in Kragujevac, Rijeka, Banja Luka and Podgorica
- VMnet network has 1138 members in total (during the project 720 new members)
- Comprehensive TSNA analysis in the WBC region (800 questionnaires)
- Implementation of the WBC Regional model for University-enterprise cooperation is ongoing
- Project WEB site is regularly updated with all important results and news
- 6 new systematization of knowledge
- Practical Placement programme is in implementation phase (7 PC-PC, 3 PC-EU)
- Industrial Fellowship programme is in implementation phase
- Syllabuses and instructional materials for 16 vocational trainings developed;
- 11 trainings realized (UKG 4, UR 4, UBL 1, UP 2- 221 trainees)
- 12 info days have been organized – 393 participants in the WBC region
- 3 motivational seminars (111 participants), 3 two-day workshops (232particip.)

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Project implementation timeframe

Ref.N°	Activities: Title	M10 Y2	M11 Y2	M12 Y2	M1 Y3	M2 Y3	M3 Y3	
1.	**Four Collaborative Training Centres (CTC) are established …**							
1.1	Found and equip four CTC and define Action plan	F						
1.2	Re-training for staff							
1.3	Market and marketing activities							
2.	**VMnet network is enlarged throughout the WBC region …**							
2.1	Develop collaborative web tools and communication strategy	F						
2.2	Bring new VMnet members and experts for multidisciplinary approach							
2.3	Update existing systematization knowledge e-base with new topics							
3.	**Model for university-enterprise cooperation developed …**							
3.1	Analyze the EU models for cooperation in the knowledge triangle	F						
3.2	Develop, assess and adopt the new regional model of cooperation	F						
3.3	Set up joint structures of SMEs							
3.4	Case studies – benchmarking best practice							
4.	**Training/service needs identified and trainers/service providers…**							
4.1	Training/service needs analysis (TSNA)	F						
4.2	Selection and re-training of trainers and service providers							
4.3	Quality monitoring of training/services							
5.	**Programme of vocational training, industrial fellowship and student practical placement developed and carry out …**							
5.1	Develop and delivery vocational trainings for SME, unemp.graduates …							
5.2	Develop and redesign instructional material for e-learning							4m
5.3	Develop and conduct Industrial Fellowship Progr. (IFP) for graduates…				F			8m
5.4	Develop and conduct Practical Placement Programme for students			F				
6.	**Dissemination**							
6.1	Prepare Programme for public information, dissemin. and raising awareness							
6.2	Printing and publishing of brochures, leaflets and other material							
6.3	Information days and public appearances				F			
6.4	Organize three motivational seminars	F						
6.5	Organize three workshops							
6.6	Organize three brokerage events							1m
7.	**Sustainability**							
7.1	Institutional sustainability							
7.2	Financial sustainability							
8.	**Quality control and monitoring**							
8.1	Develop quality control and monitoring strategy							
8.2	Internal monitoring and interwievs of target groups							
8.3	External monitoring and inter-Tempus coaching							
9.	**Management of the project**							
9.1	Overall project management and administration							
9.2	Local management on the level of WBC partners							
9.3	Local management on the level of EU partners							

	Period of implementation
	In time
	Delay
	Delay, but not critical
F	Finished

eLearning
IFP implementation
PPP implementation (EU)

Brockerage event

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Tempus Project University of Kragujevac
WBCVMnet
WBC Virtual Manufacturing Network
Fostering an Integration of the Knowledge Triangle

Case study – Serbia
University of Kragujevac

Key project results – Outcome 1

CTC
Collaborative•Training•Centre

Network of Collaborative Training Centres in the WBCs

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Key project results – Outcome 1

List of Equipment provided within WBC-VMnet project:

CTC Kragujevac:

- PC equipment (1 server, 3 PCs, 2 laptops and 6 monitors)
- 1 Projector
- Intranet network system in CTC
- 1 Multisensor CMM laboratory machine for quality control - WERTH Video-check IP250
- 1 3D printer for Rapid Prototyping - OBJET Alaris 30
- 2 VM softwares - Stampack and Vizard

CTC Rijeka:

- 10 PCs
- 1 Projector
- 2 VM software - Simufact and 3DQuickPress

CTC Banja Luka:

- 10 PCs
- 1 Projector
- 1 VM software - Simufact

CTC Podgorica:

- 10 PCs
- 1 Projector
- 1 VM software - ProEngineer

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Case study – Serbia
University of Kragujevac

Key project results – Outcome 1

❖ Four web sites of CTCs are developed, in involved WBC countries, in local languages

- √ www.wbc-vmnet.rs
- √ www.ctc.kg.ac.rs
- √ www.ctc.riteh.uniri.hr
- √ www.ctc.unibl.ba
- √ www.ctc.ac.me

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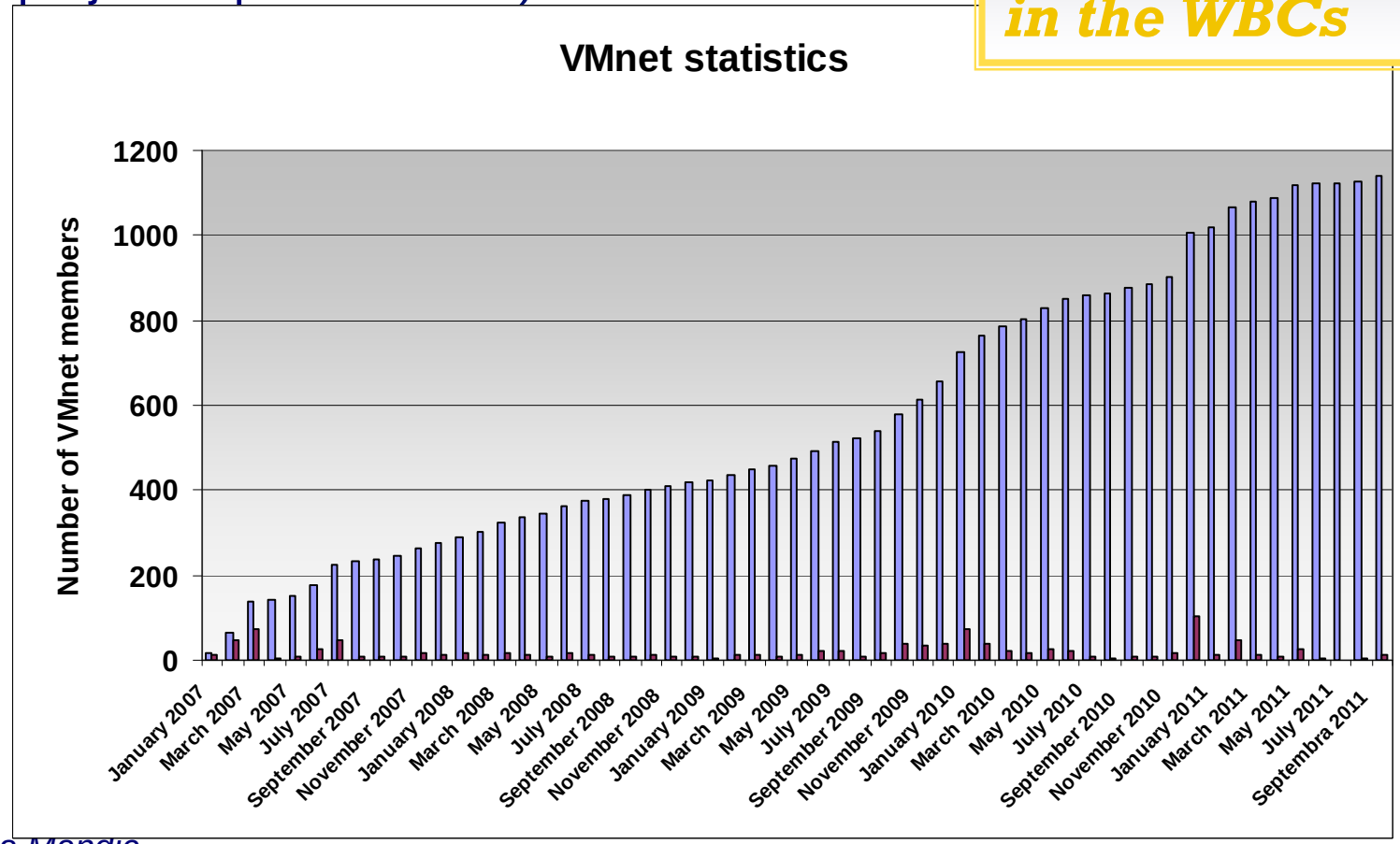
Key project results – Outcome 2

Virtual Manufacturing Network - VMnet in the WBCs

- **1138** members in total, from WBC region, 720 durin the project implementation)



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Key project results – Outcome 2

❖ VMnet is enlarged with 730 new members from WBC region, in 2009, 2010 and 2011, (1151 members in total)

Number of new VMnet members in 2009-2011		Planned number, WBC-Vmnet project	Balance
Provided by partner	**Number of VMnet members**		
UKG, Serbia	377	450	73
UP, Montenegro	99	150	51
UR, Croatia	153	150	-3
UBL, Bosnia & Herzegovina	101	150	49
TOTAL in 2009/2011	**730**	**900**	**170**
TOTAL number of VMnet members	**1151**		

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Key project results – Outcome 2

❖ 6 new systematization of knowledge, available for VMnet members, after login)

5. CAD/CAM/CAE tehnologije
Izrada strojnog dijela, od projektiranja do izrade proizvoda (UR)
Projektiranje procesa izrade vratila – primjer (UR)
Mašine, alati I metode mašiniranja (UBL)

9. Strateški management
Proizvodna strategija (UR)

10. Kvalitet
Unapređivanje kvaliteta (UR)
Merenje buke i vibracija (UBL)

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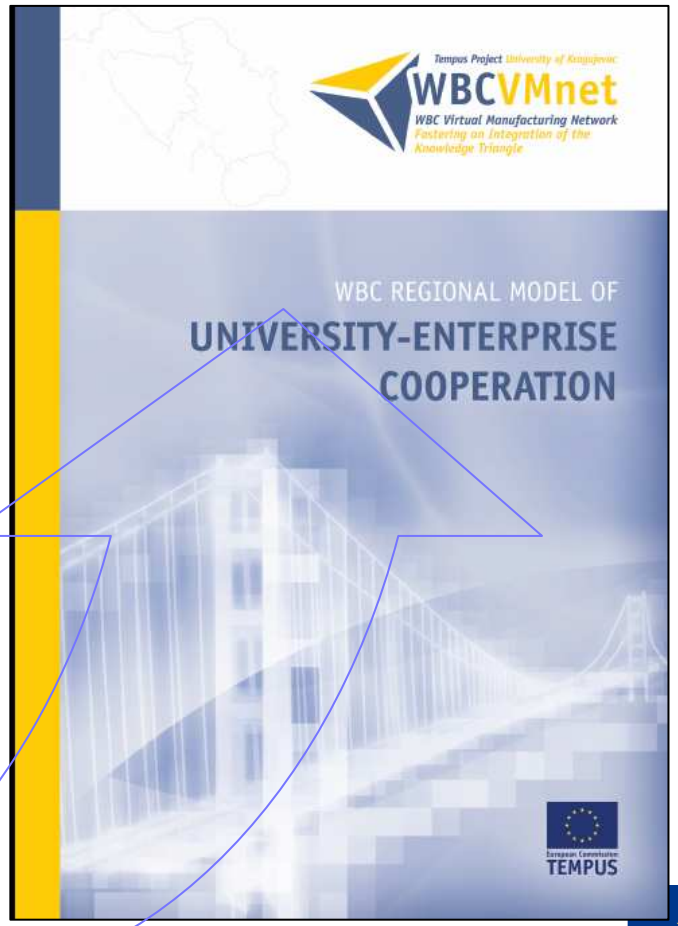
Key project results – Outcome 3

Innovation

Research

Education

1. Science and Technology parks
2. WBC regional industrial clusters
3. University-enterprise consortia for joint projects
4. Collaborative training centres
5. Open Innovation Networks with SMEs
6. Practical placements for students
7. Industrial fellowship programme



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Key project results – Outcome 3

❖ CTC Kragujevac established VRPM group (Virtua/Rapid Prototyping and Manufacturing in July 2011, with support of ICIP project

❖ Three meetings were held
- 4th July 2011,
- 9th August 2011 and
- 13th September 2011

❖ CTC assists SMEs in preparing proposals for EU projects, and manages VRPM profiles and growth of the group on CORDIS web platform

❖ Establishing new partnerships among academia and business



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Key project results – Outcome 3

CORDIS

VRPM members from Serbia

No	Member	Organization	Type	CORDIS Profile	Join group	Conne-ctions	Project ideas	Partnership requests/ interests
1.	Vesna Mandic	University of Kragujevac, MFK	UNI	78%	9	17	3	10 / 1+5
2	Sasa Vujic	Vlatacom, Belgrade	SME	64%	6	1	1	
3.	Ivana Boskovic	Comtrade, Kragujevac	SME/Large	78%	1			
4.	Aleksandar Stojimirovic	WBC d.o.o, Belgrade	SME/RTD	100%	6	2	1	
5.	Sanida Omerovic	WBC d.o.o, Belgrade	SME/RTD	35%	1			
6.	Danijela Milosevic	University of Kragujevac, TFC	UNI	50%	1	1		
7.	Vladimir Urošević	Belit, Belgrade	SME/RTD	78%	5	2	2	3
8.	Goran Stojanovic	University of Novi Sad, FTN	UNI	78%	1	2	1	
9.	Natasa Kecman	Chamber of Commerce RS	OTH	35%	5	1		
10.	Vitomir Rašić	Intranea solutions, Krgaujevac	SME	64%	2	6		
11.	Dejan Ciric	Quadel, Nis	SME	50%	1	3		
12.	Boško Nektarijevic	Balkan Security Network	NGO	85%	7			

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Key project results – Outcome 3

CORDIS

Partners Service

VRPM members from abroad

No	Member	Organization	Country	Thematic area
1.	Thies Wittig	ITconsult,	Germany	ICIP consultant
2	Sujata Tilak	Ascent Informatics	India	Innovative IT solutions
3.	Eva Sanchís	AIITP – Spanish Technological Centre for Plastics and Moulds Industry	Spain	INNOVATION AND TECHNOLOGY CENTRE
4.	D.Yıldırım BAYAR	Trade product& consultancy	Turkey	Geographical information systems
5.	Adèle Peenaert	CIM centre	Spain	R&D, Innovation
6.	Oleksandr Kuzmenko	BioMedTalk	Ukraine	Science forum
7.	Hansjoerg Tutsch	Flexis – automotive excellence	Germany	Solutions for automotive industry
8.	Gala perez	AIMEN technology centre	Spain	Technological services for companies
9.	Aleksandar Ivanov	Univ. of Ruse	Bulgaria	R&D centre
10.	Mihai IOVEA	ACCENT PRO 2000 Ltd	Romania	R&D company – industrial tomography
11.	Zohar Ben-Asher	ABC Consultants	Israel	Consultant
12.	Sachin Laddha	Battelle Science & Technology India	India	Automotive & Green building applications, Materials Processing
13.	Arnau Rabadan	Fondacio CIM	Spain	Technological Center of the Universitat Politecnica de Catalunya
14.	Nikolaos Mekras	ANTER Ltd.	Greece	Software development, consulting and research Company

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Key project results – Outcome 3

CORDIS

Partners Service

Project ideas of VRPM members from Serbia

1.	WBC d.o.o	Planning, optimization, monitoring, and simulation of thermal and fluid circulation in the industrial furnaces environment
2.	Vlatacom	Advanced Imaging/Video System for Road Traffic Control
3.	Belit	Developing and Improving the Copolymer Cold Casting Production Process Using Rapid Prototyped Elements
4.	NIC PP	Development of equipment, technologies and processes for the treatment of the hard industrial waste
5.	UNI-NS FTN	Intelligent (smart) packaging for food quality monitoring and embedded communication tools
6.	UNI-KG-MFK	Strengthening the potential and regional impact of Mechanical Engineering Faculty in the area of converging sciences and technologies
7.	UNI-KG-MFK	Improvement of the competitiveness of enterprises in Serbia through knowledge and technology transfer, networking and providing high-tech business support services
8.	UNI-KG-MFK	Virtual/Rapid Prototyping/Manufacturing in collaborative engineering environment as high-tech total solution for SMEs

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Key project results – Outcome 3

Individual meetings and consultancy

- CTC – Chamber of Commerce of Republic of Serbia
- CTC – NIC Prva Petoletka – Development-production centre
- CTC – Inmold, project manager
- CTC – UNI-KG Technical Faculty Cacak
- CTC – Regional Economic Development Agency of Sumadia&Pomoravlje
- CTC – Automotive cluster, Director
- CTC – Comtrade, teleconference (due to mobility of staff)

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Key project results – Outcome 3

- CTC Kragujevac supports joint structure of SME, through offering trainings and services to existing clusters
  - www.embeded.rs,
  - www.ssc.rs,
  - http://acserbia.org.rs/sr) and the planned inclusion as a member.
- The initiative of establishing ICT cluster in Serbia was supported by CTC KG
- SCGM, partner on the project, joined the auto components cluster
- CTC Krgaujevac has recognized as service provider for Serbian clusters, full description in Report "*Testing and certification in Serbia: demands from the software/ embedded and automotive industry sectors", produced within SECEP project "Support to Enterprise Competitiveness and export Promotion* "
- New initiative within SEE programe related to cluster development (CTC KG is partner)

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Key project results – Outcome 4

Selection and re-training
of CTC staff and service providers

- **CEVIP**, Serbia, May 2010
  (1p UR, 1p UBL, 1p UP)
- **UL+C3M**, Slovenia, June 2010
  (4p UKG, 4p UR, 1p UBL, 1p UP)
- **IPU**, Denmark, August 2010
  (5p UKG, 1p UR, 1p UBL, 1p UP)
- **DIMEG**, Italy, September 2010
  (5p UKG, 1p UR, 1p UBL, 1p UP)

27 flows

Training provider	List of offered trainings	Duration (days)
DIMEG	Metal forming (integrated design)	1.0
5 days max.	Geometrical metrology	1.0
	Concurrent engineering lab.	1.0
	New advances in micro-manufacturing	1.0
	Rapidprototyping and Reverse engineering	0.5
	Surface engineering	0.5
Total days DIMEG		**5 days**
IPU	Tribology (Bulk metal forming)	0.5
5 days max.	Measurement of heat transfer coefficient	0.5
	Metrology (dimensional)	1.0
	Metrology (surface characterisation)	1.0
	Laser technology	1.0
	Micro technology	1.0
Total days IPU		**5 days**
UL	Thermomechanical testing of materials	0.5
3 days max.	Microstructural changes	0.5
	Superplastic Al alloys	0.5
	Microscopy (SEM, optical)	0.5
	Industrial tours	1.0
Total at UL		**3 days**
C3M	Introduction to FEM (half day)	0.5
2 days max.	Symbolic approach to FEM (half day)	0.5
	M5 modelling (half day)	1.0
Total at C3M		**2 days**
CEVIP	VM software (2 days)	2.0
5 days max.	VE technolofies - integration	0.5
	Rapid prototyping (OBJET, ALARIS 30)	1.0
	CMM Werth VideoCheck IP250	1.0
	Industrial tour	0.5
Total at CEVIP		**5 days**

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Key project results – Outcome 4

Prof. Dr Vesna Mandic

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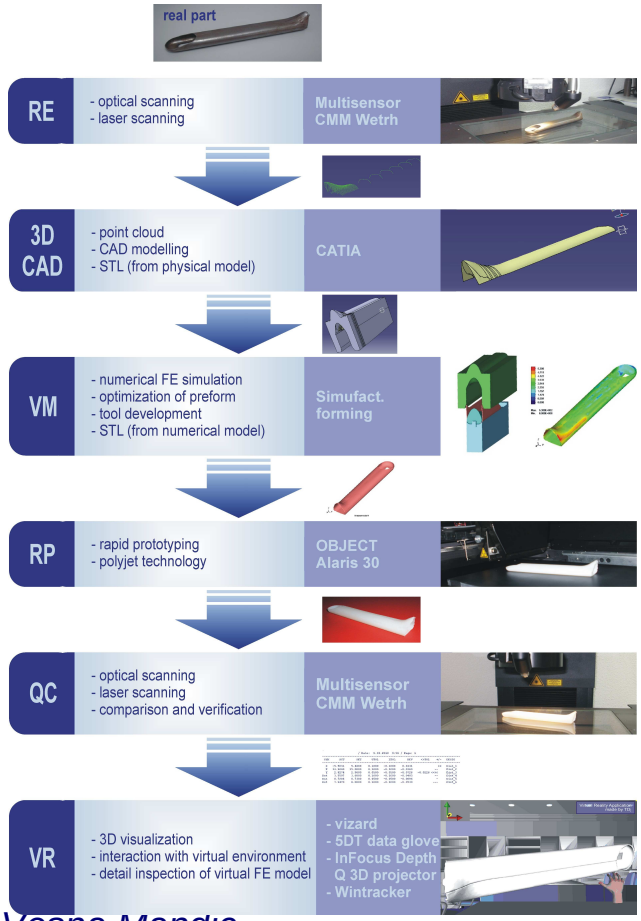
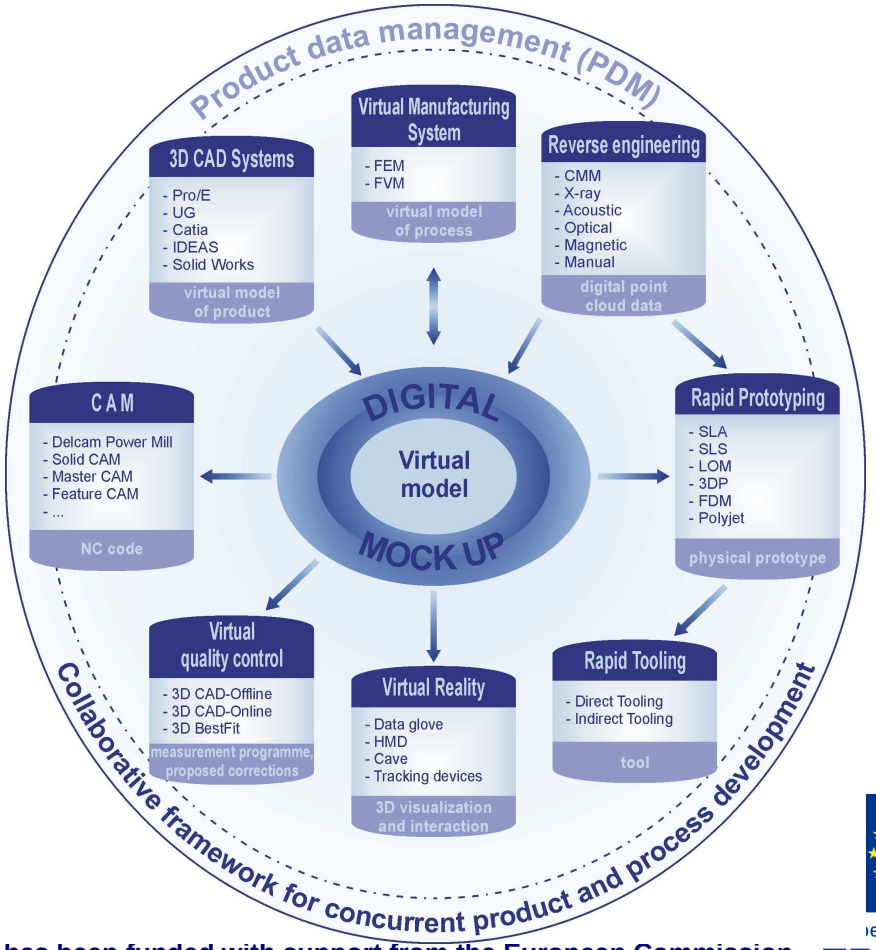
Key project results – Outcome 4

Case study UKG

Virtual product development and re-engineering within integrated VE system





Prof. Dr Vesna Mandic

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Key project results – Outcome 5

Specialized vocational trainings (40 hours, 4ECTS):

CTC Kragujevac (7 trainings) – 77 sertificates issued

CAD/CAM modelling (31 sertificates)
Tool design (20 sertificates)
Modelling and optimization of production processes using the FE / FV simulation (8 sertificates)
Project management
CAM modeling and generating NC code for 3 axis CNC milling machines (12 sertificates)
Industrial metrology (6 sertificates)

CTC Rijeka (7 trainings) - 78 trainees:

Simulation of machining processes and RP techniques (SolidWorks, SolidCam 25 trainees)
Product design and development with CATIA
Process Quality Improvement Methods (8 trainees)
Fundamentals of project management (17 trainees)
Application of MS Project for planning and monitoring projects (16 trainees)
Qualification program for new product/production system development

CTC Banja Luka (2 trainings) – 10 trainees:

Advanced CAD modeling using Solid Works (10 trainees)
NC programming and the basics of CAM modeling

CTC Podgorica (5 trainings) – 56 trainees:

CAD - ProEngineer (10 trainees)
Office informatics (46 tranees)

10 train. planned - 16 offered
200 planned - 221 trainees

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Fostering an Integration of the Knowledge Triangle

Case study – Serbia
University of Kragujevac

Key project results – Outcome 5

Brochures for vocational trainings

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Key project results – Outcome 5

- Syllabuses are avilable at the project web site, with CVs of lecturers

Name	Modeling and optimization of production processes using the FE/FV simulation
Code	CTC-KG-03
ECTS	4
Location	CTC Kragujevac, University of Kragujevac, Faculty of Mechanical Engineering, Sestre Janic 6, 34000 Kragujevac, Serbia
Trainer/s	Prof. Dr Vesna Mandic (CV is in addendum)
Purpose	New market demands in terms of price and quality of products call for the implementation of more efficient ways to design products and tools, which involves application of new CAD - technologies, modeling and FE simulation. The research and analysis of processes, its visualisation through virtual models obtained from FE simulation is proven way to increase the efficiency of design and to increase the quality of the final product. Participant of this training will have the opportunity to learn and train themself for the application of innovative VE technologies in product development, tools development and optimization of material processing.
Recommended entry level	7th level of professional qualification, mechanical engineering
Special requirements	Basic knowledge of CAD modeling and design of tools
Duration	40 hours
General objectives	Trainees should be able to: • explain the principles of concurent engineering • explain the importance of modeling and simulation in the design of products and processes • use a modern software tools for FE/FV simulation process • identify the relevant parameters for the optimization process • provide quality input for the FE simulation of the process (flow curves, contact friction, thermal conditions ...) • interpret the results and transform them to the real processes • explain ways to optimize products and processes through a set of relevant parameters
Topics	1. Engineering design 2. Virtual engineering technologies and their integration 3. Importance and role of modeling and numerical simulation in engineering design 4. Role of virtual/rapid prototyping of product, tools and processes in the concurent engineering, practical demonstration 5. Finite element/volume method 6. Input parameters for modeling and simulation process (preprocessing), exercise 7. Modeling of deformation processing, principles, examples, exercises 8. Interpretation of the results of modeling and simulation (post processing), exercise 9. Optimization process, the target function 10. Optimization of processes and tools, exercises
Specific learning outcomes in topics	Topic 1: Engineering design — Number of hours: 2 Trainees should be able to: • Describe the stages in the development cycle of products and processes, especially in the engineering design • Apply the recommendations for successful engineering design • Apply the principles of guided iteration in engineering design Topic 2: Virtual engineering technologie sand their integration — Number of hours: 2 Trainees should be able to: • Description of contemporary trends in the application of innovative VE technologies • Demonstrate the application and integration of different VE technologies in product development and related technological processes Topic 3: Importance and role of modeling and numerical simulation in engineering design — Number of hours: 2 Trainees should be able to: • Select the method of modeling processes and „tools" for numerical simulation • Designating the relevant process parameters • Highlight the advantages of modeling and simulation in engineering design Topic 4: Role of virtual/rapid prototyping of products, tools and processes in the concurent engineering, practical demonstration — Number of hours: 4 Trainees should be able to: • Select the method for making prototypes • Select the method for reverse engineering • Describe the principles of concurent engineering Topic 5: Finite element/volume method — Number of hours: 2 Trainees should be able to: • Understand the principles of finite element and finite volume methods • Choose the type of FE analysis and finite element • Interpret the results of FE/FV analysis Topic 6: Input parameters for modeling and simulation process (preprocessing), exercise — Number of hours: 8 Trainees should be able to: • Use CAD importer, standard formats for the transfer of geometry • Define relevant input for the FE process simulation • Understand the concept of flow curves, strain hardening, experimental determination • Understand the conditions in the contact of tool and workpiece, mathematical description of the contact friction and determine the friction parameters • Describe the thermal conditions of the process • Successful use of FE/FV software post processor for entry of input data 11. Topic 7: Modeling of deformation processing, principles, examples, exercises — Number of hours: 6 Trainees should be able to: • Model different processes of deformation using FE/FV software • Define relevant process parameters, which should be modified in the course of numerical analysis • Successfully use VM software for numerical simulation Topic 8: Interpretation of the results of modeling and simulation (post processing), exercise — Number of hours: 4 Trainees should be able to: • Interpret the results of FE/FV analysis process and transform them to the real processes • Do a detailed analysis of the results of simulation and suggest corrective measures • Successfully use post processor in FE/FV software for overview of results Topic 9: Optimization process, the target function — Number of hours: 2 Trainees should be able to: • Optimize design solution through numerical FE/FV simulation • Identify influential parameters of the process, define a plan of „numerical experiment" • Understand the concept of target function optimization, making the right choice Topic 10: Optimization of processes and tools, exercises — Number of hours: 8 Trainees should be able to: • Independently optimize processes of deformation using FE/FV simulations • Correct geometrical parameters of tools and process parameters to meet the target function optimization • Find ways to use VM technologies in domestic environment
Portfolio assessment	Trainer evaluates level of success in overcoming the training of each student, through assessment exercises and testing. Rating exercise: Exercise trainer defined on the basis of which can be implemented to assess the degree of learning outcomes. The exercises can be performed individually or in team, in groups of 2-5 trainees. Examination: Test is defined by trainer on basis of examination which can assess the cognitive skills and their application. For this purpose it is necessary to respond to a range of questions. Answers to questions are provided in writing and orally, in a conversation with

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Key project results – Outcome 5




Three meetings with NEA, CTC staff, trainers and potential candidates (unemployed and engineers from enterprises)

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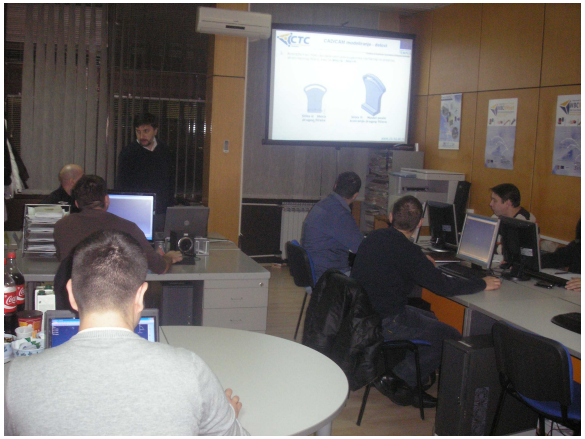
Key project results – Outcome 5



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Key project results – Outcome 5

Универзитет у Крагујевцу

CTC
Kooperativni•Trening•Centar

European Commission
TEMPUS

Кооперативни тренинг центар
Универзитета у Крагујевцу

СЕРТИФИКАТ

Александра Раковић

је са успехом завршила обуку

CAD/CAM моделирање

у трајању од 40 часова (4 ECTS)

М.П.

Проф. др Весна Мандић
Координатор КТЦ

Проф. др Слободан Арсенијевић
Ректор Универзитета у Крагујевцу

У Крагујевцу, 17.01.2011. године

Certificate

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Key project results – Outcome 5

CTC Practical Placement Programme

In order to improve and acquire new knowledge of students, CTC centers have developed and coordinate a new Practical Placement Programme (PPP) which provides students the opportunity to gain practical experience in industry, in an area that relates to their academic studies, and to further develop their professional, technical and interpersonal skills.

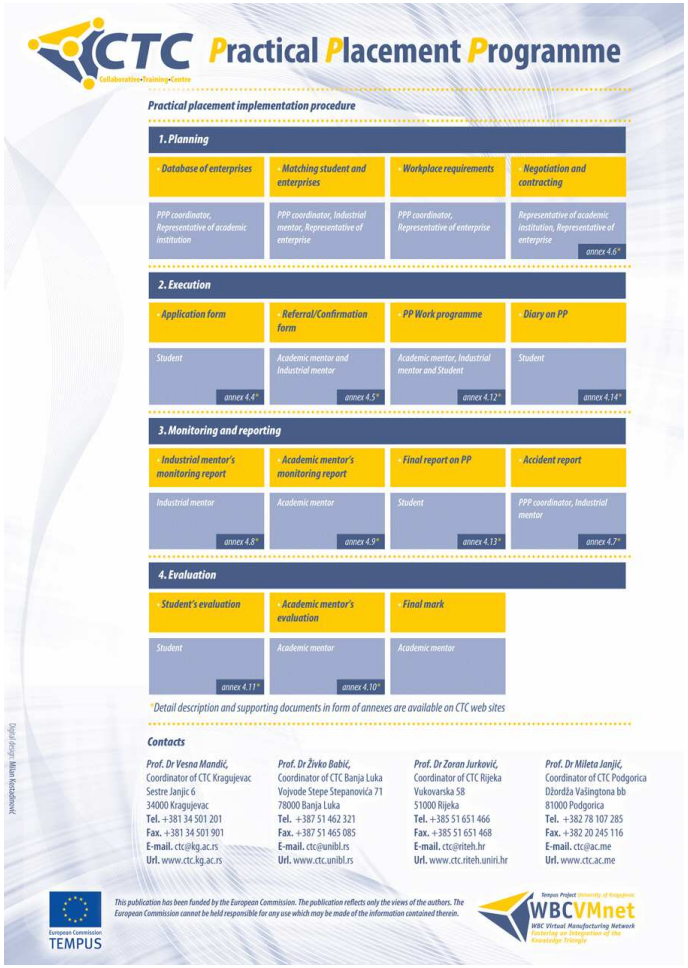
Placement programs have the important role of creating a bridge between education and employment. They help students to optimize their education and subsequently work choice and to better position themselves in the work world. Then the objective of PPP is to facilitate the incorporation of students into the workforce while supplying them with professional experience and skills in addition to theoretical knowledge.

Benefits for students

- Acquisition of practical knowledge and skills in the field of studies, often connected with solving real problems at workplace;
- The student can see how the teaching material covered within subjects of studies is applied and how relevant it is to the real situations in the business, which increases learning motivation;
- Making business contacts and increasing chances for future employment through gathering additional references in CV, by working at real jobs;
- Developing business communication skills and team work;
- Access to career development opportunities and proper decision making as regards the choice of future occupation;
- Broader understanding of domestic and international business environments and communications required for career development and business development;
- Sometimes practical placement can be a source of additional revenue, if the company that provides practical placement wishes and is able to finance part of the student's realized activities; it is defined by the contract.

Benefits for enterprises

- Students bring new ideas and different interpretations of the current problems of enterprise, which are up to date with modern trends and new technologies they learn during studies;
- Making closer connections with universities, and strengthening of development capacities;
- Longer practices may serve well to the evaluation and selection of new employees;
- The practical placement is an opportunity to influence the improvement of student education and their better preparation for inclusion in the work processes when employed;
- Student involvement in the ongoing projects and reinforcing the team with fresh personnel;
- Employees involved in realization of practical placement strengthen their monitoring skills;
- Costs of training employees are reduced when employing graduates who have gone through the practical placement of that enterprise;
- Raising the reputation and publicity of enterprises through support and sponsorship of practical placement.



CTC Practical Placement Programme

Practical placement implementation procedure

1. Planning			
Database of enterprises	Matching student and enterprises	Workplace requirements	Negotiation and contracting
PPP coordinator, Representative of academic institution	PPP coordinator, Industrial mentor, Representative of enterprise	PPP coordinator, Representative of enterprise	Representative of academic institution, Representative of enterprise annex 4.6*
2. Execution			
Application form	Referral/Confirmation form	PP Work programme	Diary on PP
Student annex 4.4*	Academic mentor and Industrial mentor annex 4.5*	Academic mentor, Industrial mentor and Student annex 4.12*	Student annex 4.14*
3. Monitoring and reporting			
Industrial mentor's monitoring report	Academic mentor's monitoring report	Final report on PP	Accident report
Industrial mentor annex 4.8*	Academic mentor annex 4.9*	Student annex 4.13*	PPP coordinator, Industrial mentor annex 4.7*
4. Evaluation			
Student's evaluation	Academic mentor's evaluation	Final mark	
Student annex 4.11*	Academic mentor annex 4.10*	Academic mentor	

*Detail description and supporting documents in form of annexes are available on CTC web sites

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Key project results – Outcome 5

- Practical placement programme is implementing at UKG, UR, UP, UBL
- 185 PPP mobility-flows from university to industry within PC were realized, of which 140 at UR, Croatia
- 7 PPP mobilities from PC to PC
  - 1 student from Montenegro to Croatia (1 month at ELCON)
  - 2 students from Serbia to Croatia (1 month at UR and ELCON),
  - 1 student from Croatia to Serbia (1 month at SCGM)
  - 1 student from Croatia to Bosnia&Herzegovina (1 month at UBL)
  - 1 student from Montenegro to Serbia (1 month at UKG)
  - 1 student from Serbia to Bosnia&Herzegovina (1 month at UBL and TRI BEST)
- 3 PPP mobilities from PC to EU
  - 1 student from Montenegro to Slovenia (1 month stay at Slovenian SME)
  - 1 student from Bosnia&Herzegovina to Slovenia (1 month stay at Slovenia SME)
  - 1 student from Bosnia&Herzegovina to Slovenia (1 month stay at UL)
- Selected Reports, Dairies and Presentations are available at www.wbc-vmnet.rs

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Key project results – Outcome 5

CTC Industrial Fellowship Programme

Collaborative•Training•Centre

Purpose and aims of IFP

IFP program is intended for the establishment of sustainable partnership between universities and industry through hosting industrial fellows (graduates and engineers from industry) in research and academic centers, with the aim to realize advanced targeted trainings of industrial fellows and joint research according to the needs of industrial sponsor.

Flexible IFP duration, organized several times during the year, enables the hiring of industrial fellow on development and innovation projects of mutual interest for academic and industrial partner. The IFP program is an excellent opportunity for technology transfer and involvement of young people in innovative projects that contribute to the exchange of experience, ideas, knowledge, and increase of innovative potential and competitiveness of enterprises.

The Industrial Fellowship Programme should focus on those sectors that have strategic importance for the WBC region, such as:
- manufacturing and production;
- micromanufacturing;
- nanotechnologies;
- energy and energy saving;
- advanced biotechnologies;
- ICT and embedded systems;
- other new and emerging sectors.

The main goals for the Industrial Fellowship programme will be:
- to establish and support research projects in strategic industrial sectors;
- to develop innovative solutions to industrial and societal challenges;
- to provide academics with the opportunity to learn about interesting and relevant problems and applications for future research directions;
- to transfer academic knowledge to industry;
- to facilitate long-term career success of highly qualified knowledge workers in academic organizations and industry;
- to encourage creation of R&D jobs in industry.

Motivation

Several main reasons can motivate the industry to increase university-industry cooperation (including IFP). They are:
- access to manpower, including well-trained graduates and knowledgeable faculty;
- access to basic and applied research results from which new products and processes will evolve;
- solutions to specific problems or professional expertise, not usually found in an individual enterprise;
- access to university facilities, not available in the enterprise, for example some specific software tool or modern equipment;
- assistance in continuing education and training;
- obtaining prestige or enhancing the enterprise's image; and
- being good local citizens or fostering good community relations.

On the other hand, the reasons for universities to be interested in IFP are:
- industry provides a new source of money for university;
- industrially sponsored research provides student with exposure to real world research problems;
- industrially sponsored research provides university researchers a chance to work on an intellectually challenging research programs;
- some government funds are available for applied research, based upon a joint effort and cooperation between university and industry.

CTC Industrial Fellowship Programme

Collaborative•Training•Centre

Benefits for industrial fellows

An industrial fellowship is particularly valuable for graduates. The main benefits the fellows will experience can be summarized as follows:
- to be provided by an interesting working experience, developing an important contact with the university research environment;
- to enhance his/her own creative thinking, problem-solving, project management and team-building skills;
- to enhance his/her own ability to communicate with academy in order to identify solutions for problems and issues of interest;
- to be provided by a customized learning experience based on skills, talents, and developmental needs;
- to work in a collaborative environment with both academics and industrial people, forming long-term contacts and networks for future collaborations;
- to access to academic services (on-line databases, software, laboratory equipment, academic network) and the possibility of attending ongoing courses and seminars;
- to have the possibility of publishing papers and patent applications with the research team at the University.

Benefits for the R&D institution

Thanks to the activation of an industrial fellowship program, the hosting R&D institutions can:
- have fellows that will act for the knowledge and technology transfer from university to sponsor enterprises and provide excellent communication channels between them;
- provide a pipeline of up-to-date, experienced practitioners for innovation of internal audit products, tools, and services;
- reduce investment in overall staffing since the labor costs (salary and consumables) for fellows accepted into the program will be assumed by the sponsoring enterprise for the duration of the fellowship assignment;
- alignment the strategic directions of research to the real needs of industry;
- application and verification of fundamental research results through joint development and innovation projects with the sponsoring company within the IFP;
- development of a consortium for new projects (national and international).

Benefits for the sponsor enterprise

Sponsoring enterprises can gain great benefits from participation in Industrial Fellowship Programs. In particular the IFP:
- brings out technical expertise, research, and innovation from university experts (professors and researchers) to the industry;
- helps technological transfer from university to industry;
- fosters sustained competitive advantages through applying innovation;
- encourages to apply the scientific approach to industrial activities;
- promotes the development of new skills useful for the industry;
- gets opportunity to reduce rates at selected research facilities used in IFP;
- allows professional growth and reward opportunities for high-potential staff, integrating career goals with fellowship opportunities;
- creates an important communication channel with the university and R&D centres, helping knowledge transfer even in technological fields external to the specific research activity;
- generates customized assignments that are mutually beneficial to the employee, the organization, and the university;
- strengthens external relations;
- provides opportunities to impact the future research direction.

Digital design: Milan Kostadinović

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Tempus Project University of Kragujevac WBCVMnet WBC Virtual Manufacturing Network Fostering an Integration of the Knowledge Triangle

Key project results – Outcome 6

Realized dissemination events:

1. Motivational seminar, Kragujevac, Serbia, 25.12.2009, **30** participants,
2. Motivational seminar, Rijeka, Croatia, 16.02.2010, **42** participants
3. Motivational seminar, Banja Luka, BIH, 24.04.2010, **39** participants

1. Info day, Kragujevac, Serbia, 15.04.2010, **50** participants,
2. Info day, Belgrade, Serbia, 13.05.2010, **20** participants,
3. Info day, Banja Luka, BIH, 17.05.2010, **34** participants,
4. Info day, Rijeka, Croatia, 18.06.2010, **42** participants,
5. Info day, Ulcinj, Montenegro, 24.06.2010, **27** participants,
6. Info day, Novi Sad, Serbia, 24.06.2010, **29** participants,
7. Info day, Zagreb, Croatia, 30.06.2010, **40** participants,
8. Info day, Gornji Milanovac, Serbia, 28.10.2010, **32** participants,
9. Info day, Niš, Serbia, 2-4.11.2010, **20** participants,
10. Info day, Kragujevac, Serbia, 24.11.2010, **17** participants,
11. Info day, Pljevlja, Crna Gora, 23.12.2010, **49** participants
12 Info day, Kragujevac, Serbia, 26.01.2011, **33** participants

736 participants

1. Workshop, Kragujevac, Srbija, 29-30.11.2010, **89** učesnika.
2. Workshop, Rijeka, Hrvatska, 27-28. januar 2011, **90** participants
3. Workshop, Podgorica, Montenegro, 13. May 2011, 53 participans

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Key project results – Outcome 6










646 participants

Prof. Dr Vesna Mandic

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Case study – Serbia
University of Kragujevac

Key project results – Outcome 6

❖ Main dissemination tools are project web site and 4 local CTC web sites, in all WBC countries, in local languages

- √ www.wbc-vmnet.rs
- √ www.ctc.kg.ac.rs
- √ www.ctc.riteh.uniri.hr
- √ www.ctc.unibl.ba
- √ www.ctc.ac.me

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Tempus Project University of Kragujevac
WBCVMnet
WBC Virtual Manufacturing Network
Fostering an Integration of the Knowledge Triangle

Case study – Serbia
University of Kragujevac

Key project results – Outcome 6

Tempus Project Representatives Meeting, 6 and 7 December 2010, Antwerp

For 2010 Projects selected under the Third Call for Proposals of Tempus IV

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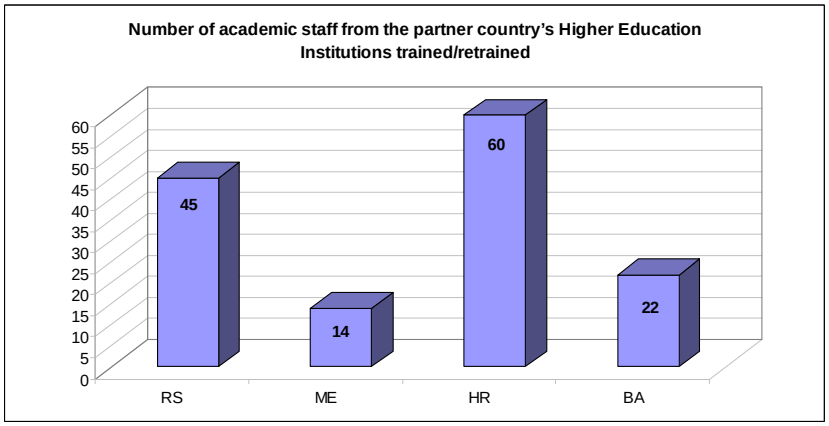
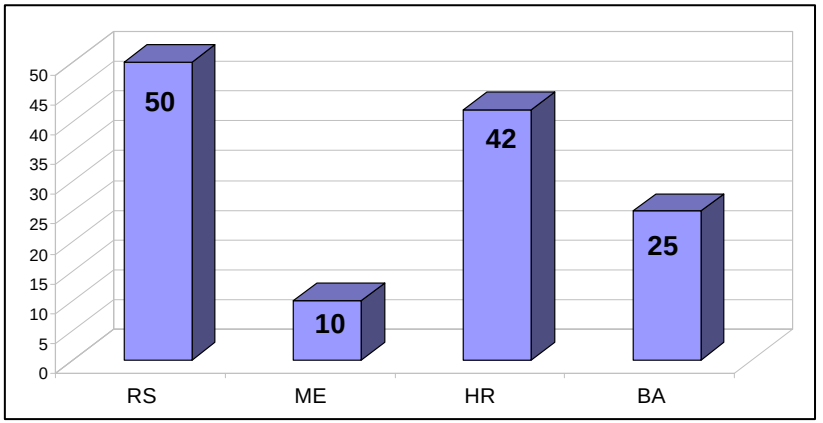
Statistical data - trainings

Country Code	RS	ME	HR	BA
Number Male	27	13	37	17
Number Female	18	1	23	5

Country Code:	RS	ME	HR	BA
Number Male	**34**	**10**	**22**	**23**
Number Female	**16**	**0**	**20**	**2**





Number of traineed academic staff from PC

Number of traineed non-academic staff from PC

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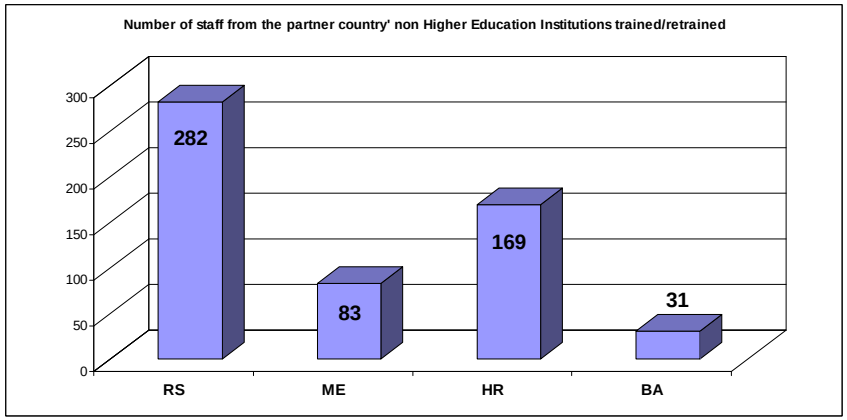
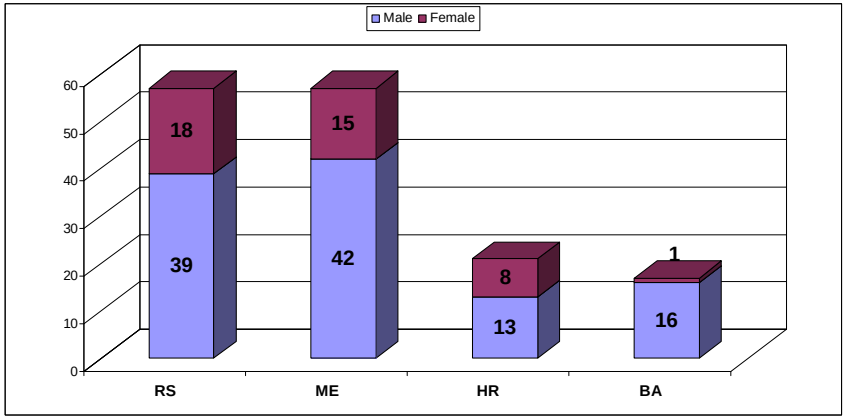
Statistical data - trainings

Country Code:	RS	ME	HR	BA
Number Male	214	31	129	25
Number Female	68	10	40	6

Country Code:	RS	ME	HR	BA
Number Male	39	33	13	16
Number Female	18	13	8	1





Number of traineed non-university staff from PC

Number of trained students from PC

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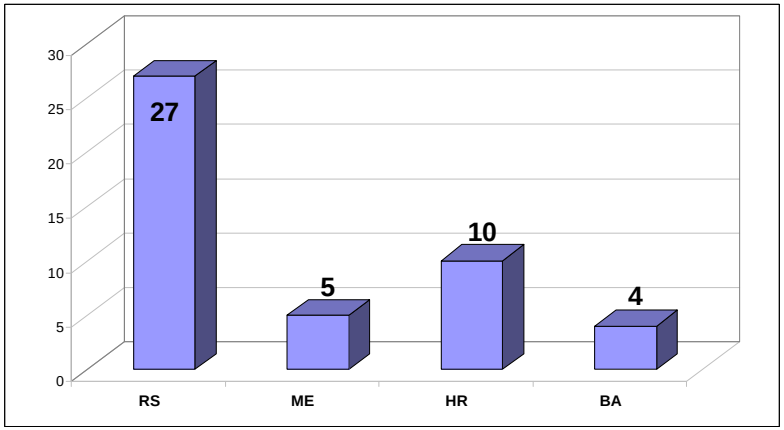
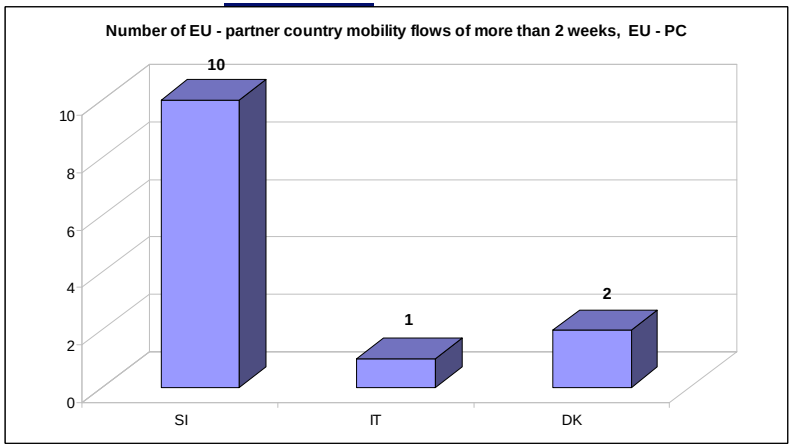
Statistical data - mobility

PC-EU



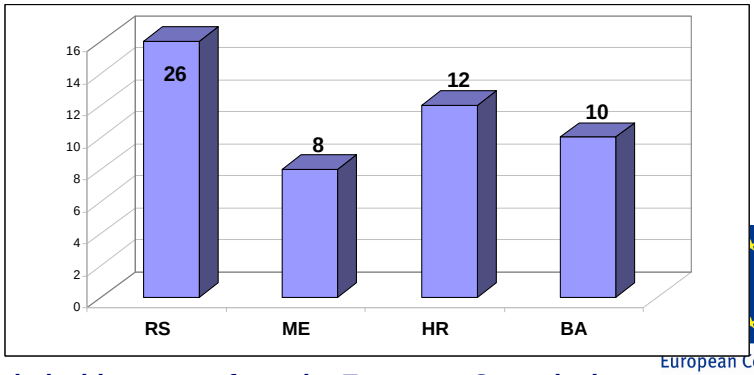
Country Code:	RS	ME	HR	BA
Number Male	17	5	10	4
Number Female	6	0	0	0

EU-PC



Country Code:	SI	IT	DK
Number Male	10	1	2
Number Female	0	0	0

PC-PC



Country Code:	RS	ME	HR	BA
Number Male	17	8	12	11
Number Female	9	0	0	0

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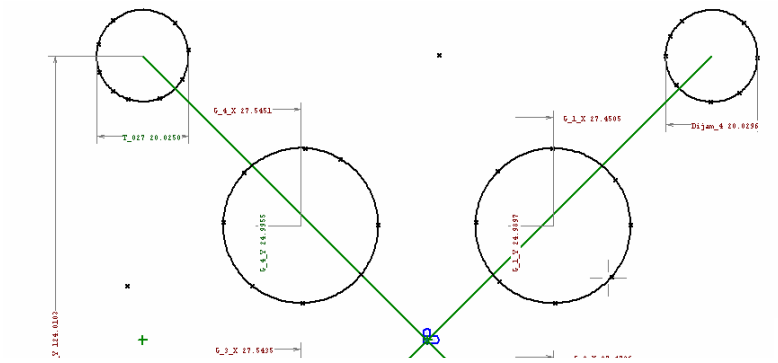
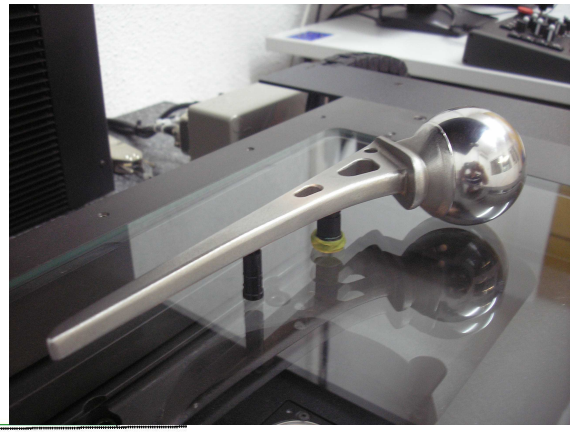
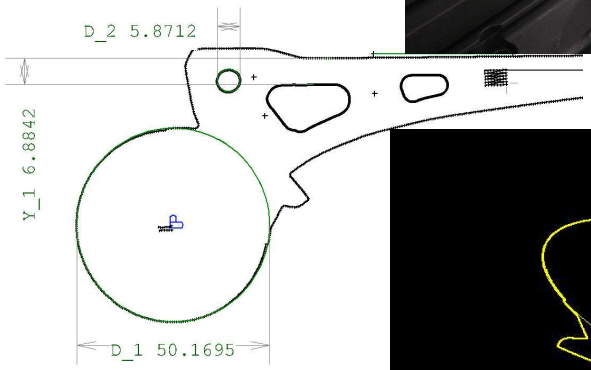
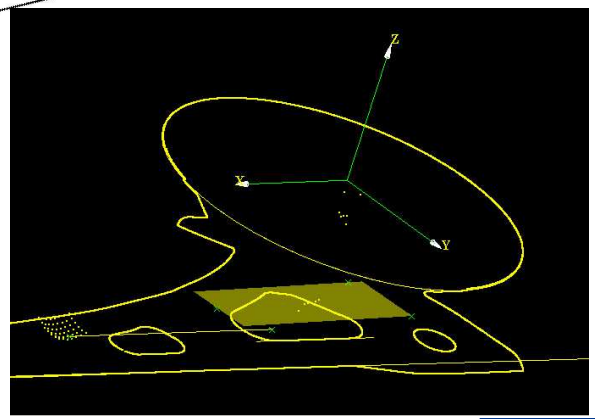
Key project results – Outcome 7









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I Z V E S T A J O M E R E N J U

Korisnik	: SCGM Kragujevac	Datum	:16.06.2010
Deo	: F50 (Cavity plate)	Vreme	:09:58:30
Broj dela	: MT0107		
Ime programa	: -		
Operater	: Vladan Lukovic		
Komentar	: -		

/ Date: 16.06.2010 9:58 / Page: 1

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D	20.0394	20.0000	0.0200	0.0000	0.0394	0.0194	>>>>	Dijam_2
D	20.0250	20.0000	0.0200	0.0000	0.0250	0.0500	>>>>	Dijam_3
D	20.0296	20.0000	0.0200	0.0000	0.0296	0.0096	>>>>	Dijam_4
Dst	124.0153	124.0000	0.0100	-0.0100	0.0153	0.0053	>>>>	Osno_X
Dst	124.0103	124.0000	0.0100	-0.0100	0.0103	0.0003	>>>>	Osno_Y
X	27.4736	27.5000	0.0100	-0.0100	-0.0264	-0.0164 <<<<		G_2_X
Y	-25.0128	25.0000	0.0100	-0.0100	0.0128	0.0028	>>>>	G_2_Y
X	-27.5435	27.5000	0.0100	-0.0100	0.0435	0.0335	>>>>	G_3_X

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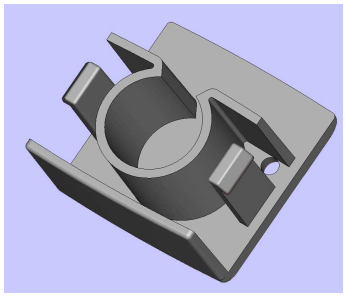
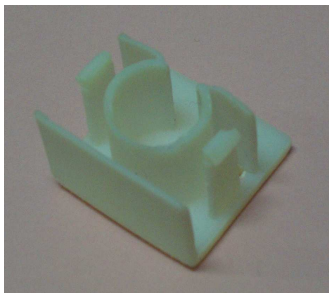
Key project results – Outcome 7

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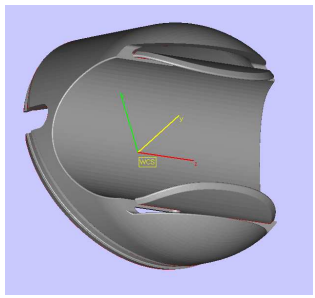
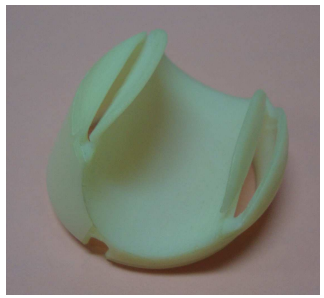
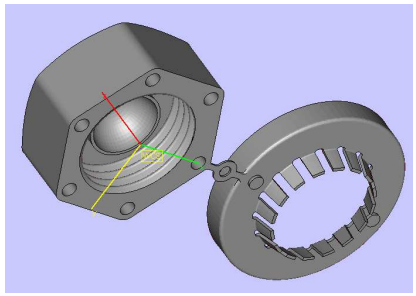




SCGM d.o.o.

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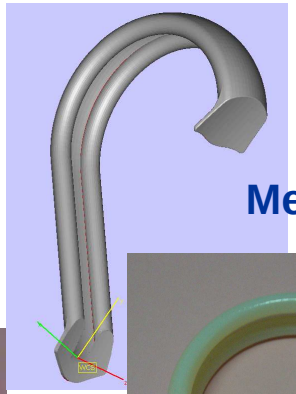

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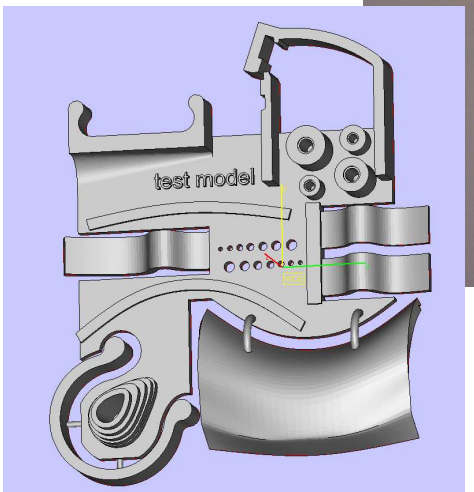

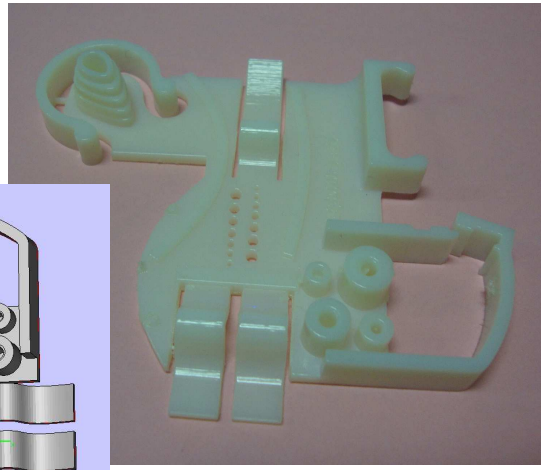

Vlatakom

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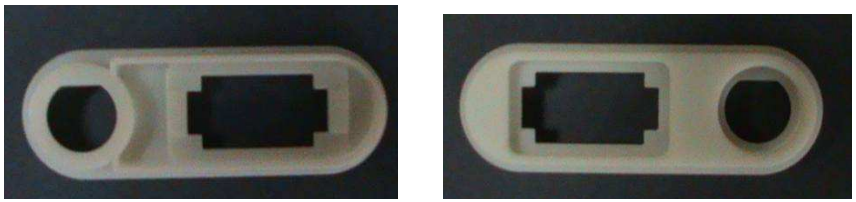
Key project results – Outcome 7



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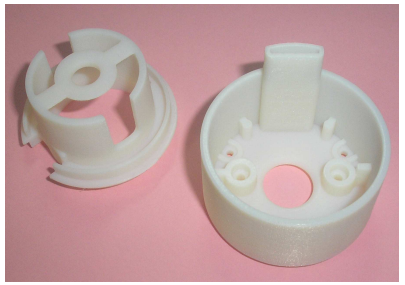

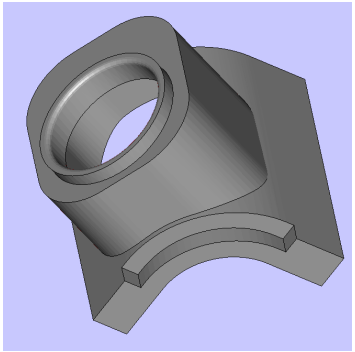

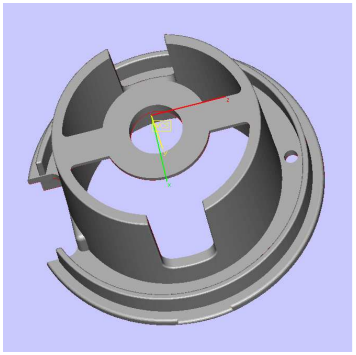

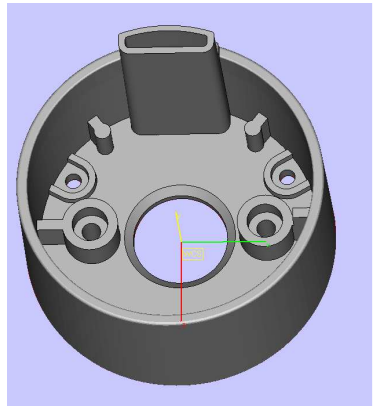

Prizma d.o.o.

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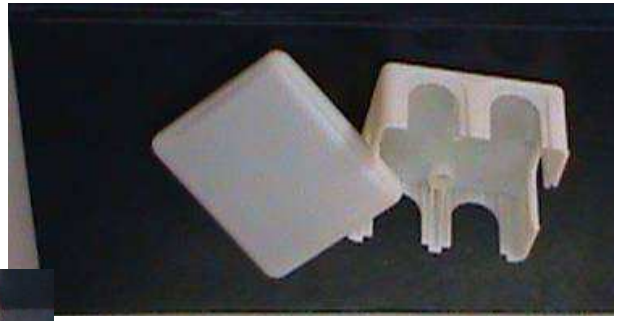
Key project results – Outcome 7

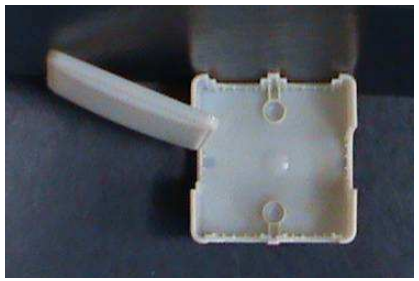
Promotor – irva Kragujevac

Vlatakom Beograd



Sveučilište u Rijeci

Metalka Majur



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Key project results – Outcome 8

- Three internal monitoring visits to UR, Elcon Geratebau and UBL, by Project Coordinator, have been realized in February and April 2010,
- Six external monitoring visits were performed by national TEMPUS offices:
  - UR - Rijeka, February 2010
  - UKG – Kragujevac, January 2010
  - UBL – Banja Luka, May 2010
  - UP – Podgorica, October 2010
  - UKG – Kragujevac, January 2011
  - UP – Podgorica, May 2011
- Three external monitoring visits (UR, UKG, UP) by Prof. Jasmina Caloska
- Each partner had their own internal quality control activities (financail control, quality control of trainings and services...)
- Pozitive feedback about monitoring vistis obtained by EACEA

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Key project results – Outcome 9

- 1st, 2nd and 3rd instalments transferred to all partners who sent PP reports and spent more than 70% of previous instalment
- Project Coordinator was in charge of overall project management on the level of Consortium
- Communication channels have been established
- UKG has updated (on monthly base) financial tables, cash flow,
- All supporting documents are properly stored (their own and obtained from partners)
- Intermediate report was approved by **EACEA**
- The second pre-payment from EACEA received in November 2010 (30% of planned project budget – efined by Grant Agreement)
- The last payment will be after acceptance of Final Report

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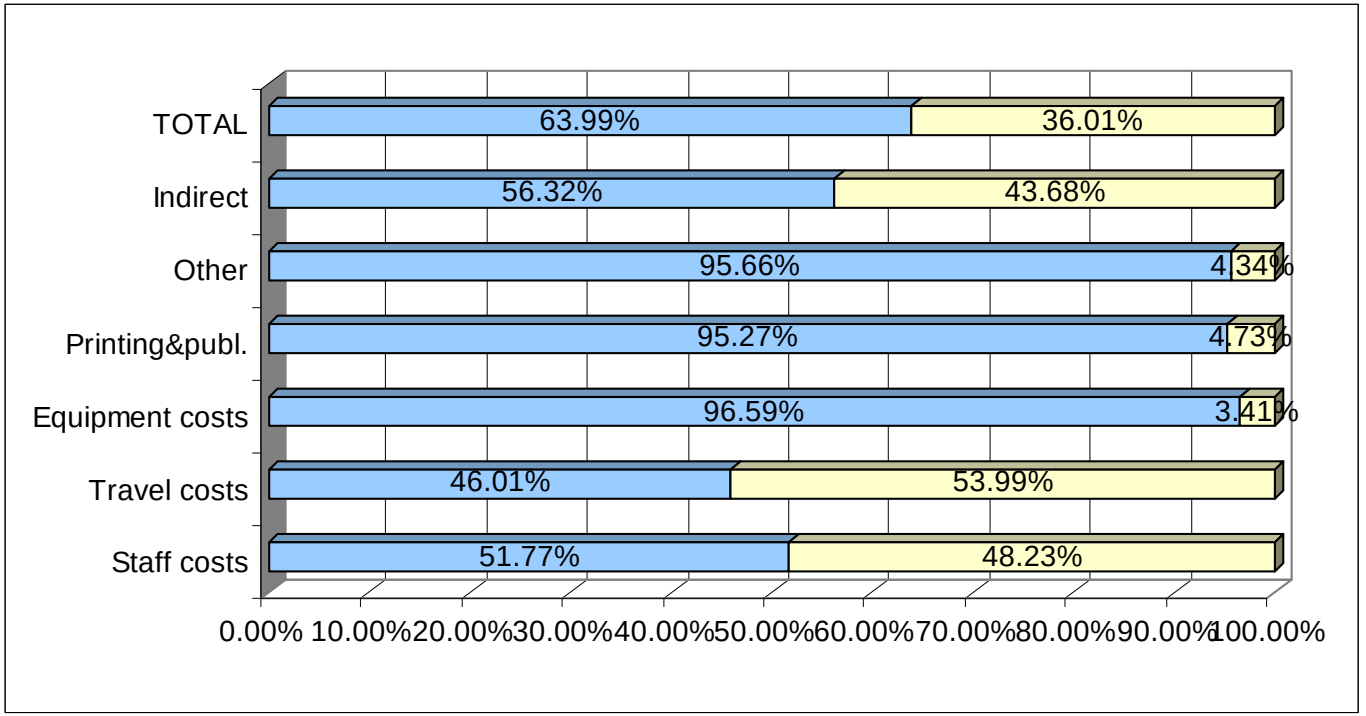
Key project results – Outcome 9



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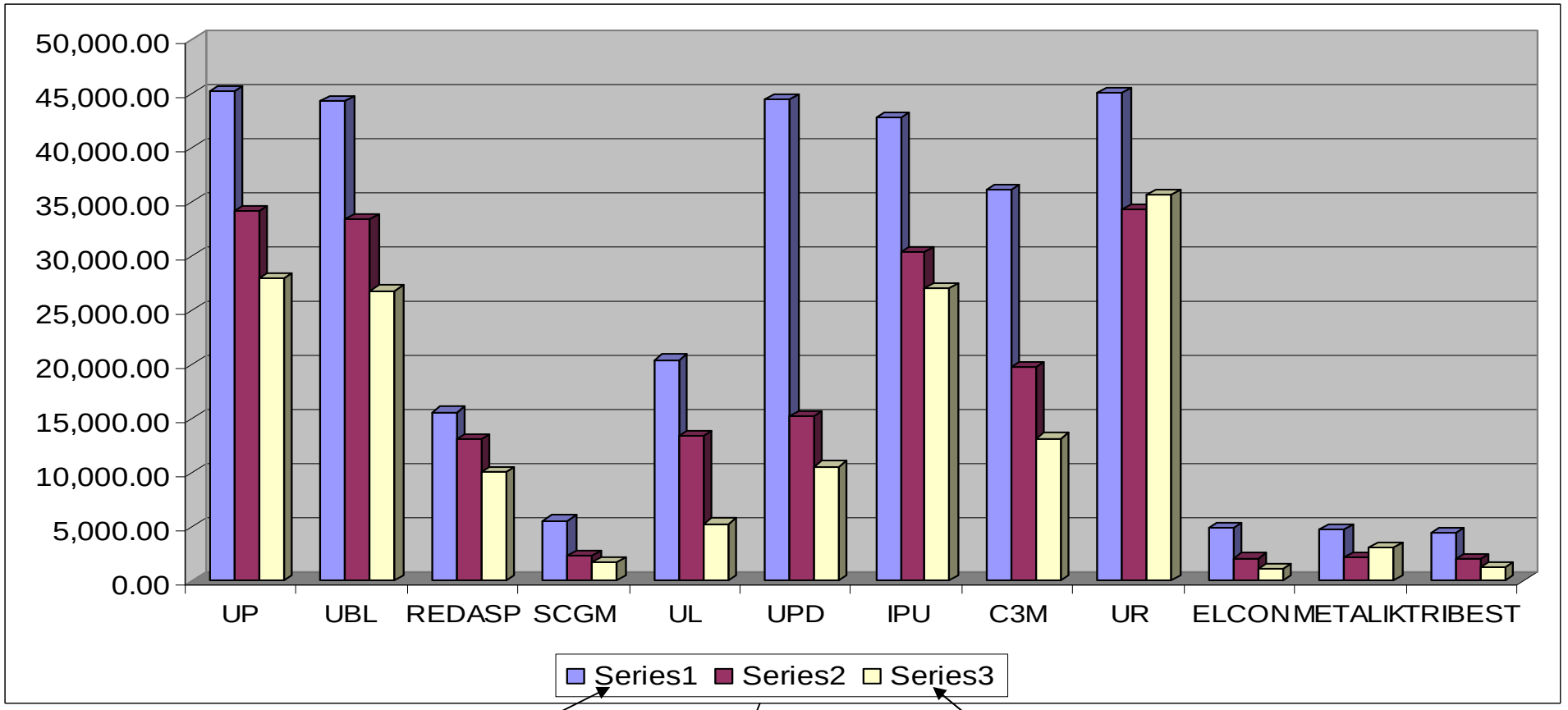
Key project results – Outcome 9



Planned budget

Transfer of TEMPUS grant to partners

Costs

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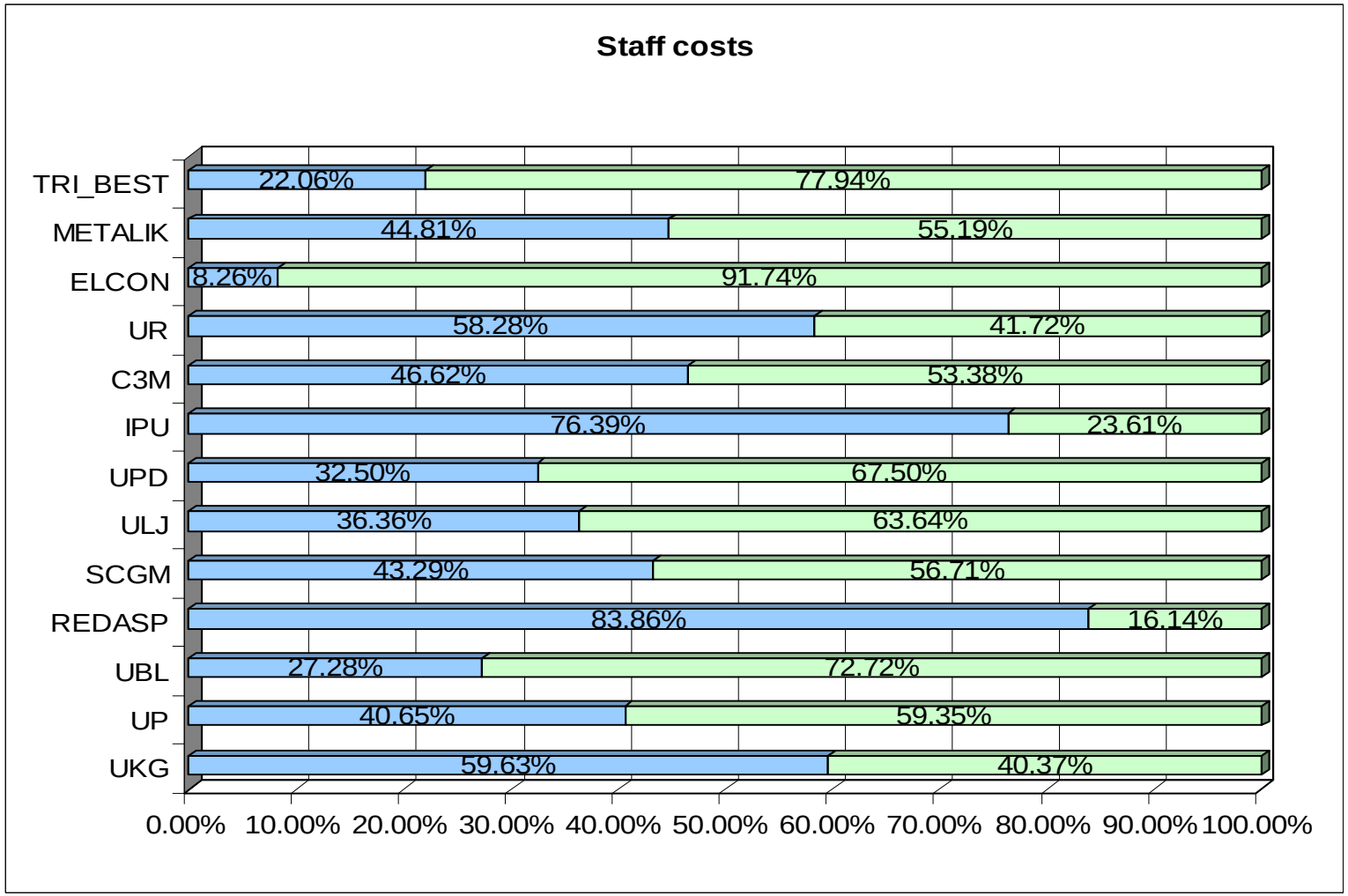
Key project results – Outcome 9



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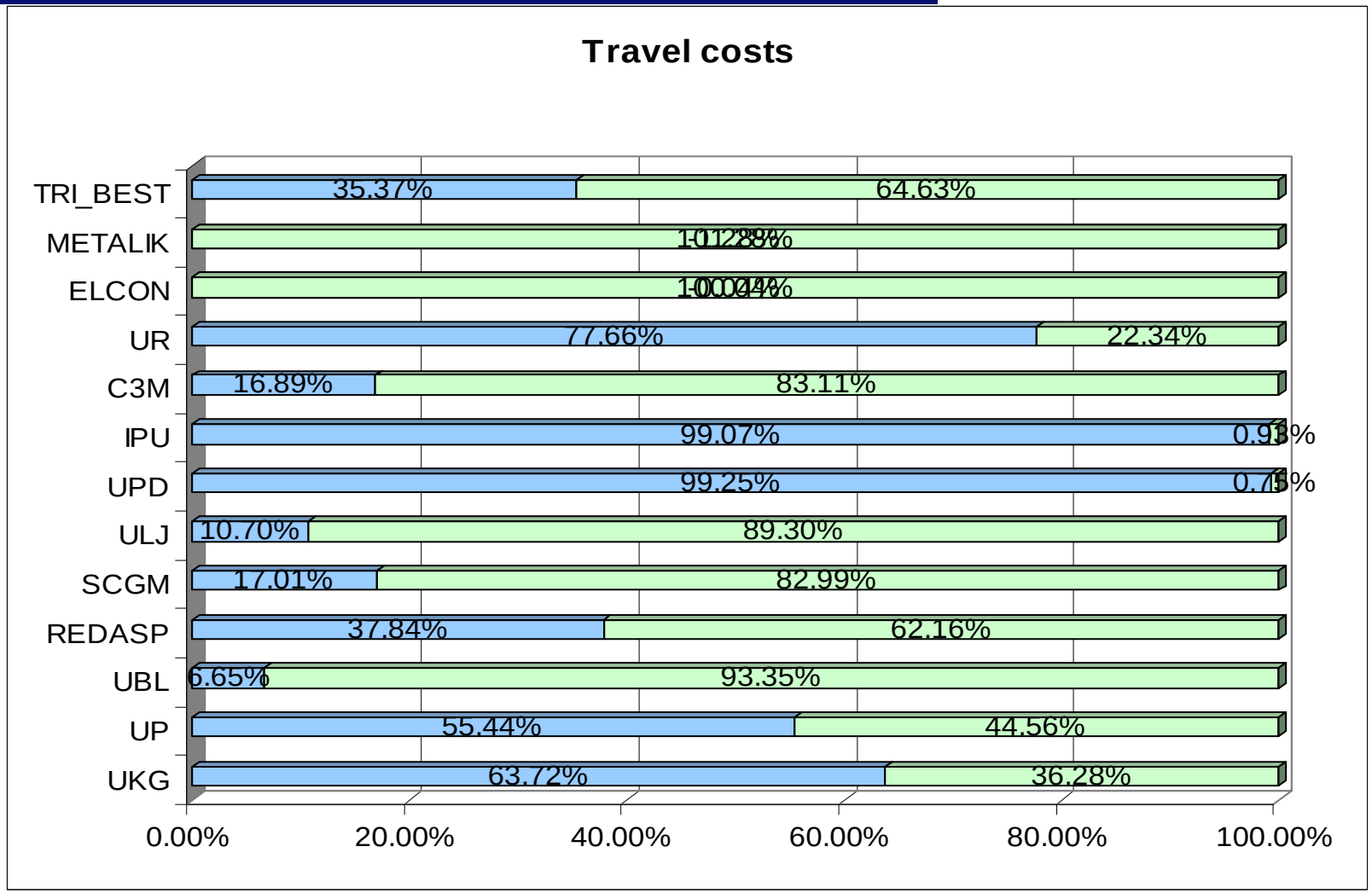
Key project results – Outcome 9



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Key project results – Outcome 9

- Consolidated budget statistics (PP + UKG) has following distribution: 63.9% declared costs with completed supporting documents, 29.2% unspent TEMPUS grant, 69.9% of co-financing and pre-payment by PP and UKG
- Coordinator and Site managers should envisage co-financing and 10% of prefinancing in this final year of the project implementation

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Thank you for your attention

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