



# IF4TM

## D5.5.1 Final report on Act. 5.5

Project Acronym:	IF4TM
Project full title:	Institutional framework for development of the third mission of universities in Serbia
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Project start date:	October 15, 2015
Project duration:	36 months

Abstract	This document provides a final report on Act. 5.5.
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## DOCUMENT CONTROL SHEET

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## VERSIONING AND CONTRIBUTION HISTORY

Version	Date	Revision Description	Partner responsible
v.01	23/05/2018	First version	UNI (Marko, Milojković, Staniša Perić)
v.02	25/05/2018	Second version	UKG (Vesna Mandic)
v.03	13/06/2018	Inputs	UBG (Jelena Filipovic and Jelena Cvetanović)
v.04	08/11/2018/	Inputs	UNI (Marko Milojković, Staniša Perić, Miodrag Spasić)
v.05	09/12/2018	Description of five selected services for enterprises realized at UKG	UKG (Vesna Mandic)
v.06	19/12/2018	Inputs from UNS	UNS (Goran Stojanović)
v.07	05/02/2019	Inputs from SUNP	SUNP (Edis Mekic)
v.08	27/02/2019	Inputs from TCAS	TCAS (Olga Deretic)
v.09	28/02/2019	Consolidated report	UNI (Dragan Antić, Marko, Milojković, Staniša Perić, Miodrag Spasić)
v.10	13/03/2019	Inputs from BMU	BMU (Ljubica Cvetković, Bojana Trebinjac)
v.11	13/03/2019	Final report	UNI (Staniša Perić, Miodrag Spasić)



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**IF4TM**



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## 1. Introduction

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This document is part of activities within Act5.5 Unlocking and mobilizing university resources to society and enterprises needs.

Mapping the innovative potential of universities in Serbia consisted of identifying and collecting data on research infrastructure, laboratories, centers, research teams with significant results, developed technologies and knowledge, as well as offered commercial services and training, licenses, patents etc.

All the universities in Serbia, the project participants, have made some kind of collection of existing resources of their universities, either on-line collections as special websites or specifically made online or printed catalogues. The catalogues contain all relevant data on available research resources that can be used for knowledge transfer, application of research and their transformation into market innovation. Partners from Kragujevac (UKG), Belgrade (UBG) and Novi Sad (UNS), which already have the appropriate catalogues, have supplemented them with new data.

Those catalogues are available on the following web addresses:

1. UKG

<http://www.bsokg.kg.ac.rs/>

2. UNS

<http://www.bsons.uns.ac.rs/>

3. UBG

<http://www.ctt.bg.ac.rs/s2b/search.php?language=sr>

Other universities from Nis (UNI), Novi Pazar (SUNP) and Zrenjanin (TCAS) have created new catalogues. Data collection was carried out through appropriate questionnaires, one of which was to map the innovative potentials of universities, and the other to collect data from selected University centers/laboratories/offices/teams.

These catalogues are available on the following web addresses:

1. UNI

<https://www.ni.ac.rs/univerzitet/o-univerzitetu/inovativni-entiteti-univerziteta-u-nisu>

2. TCAS

<https://onedrive.live.com/?authkey=%21AIYE665x15t68a8&cid=BA5EFF7D02ACB1A8&id=BA5EFF7D02ACB1A8%21425&parId=BA5EFF7D02ACB1A8%21126&o=OneUp>

3. SUNP

<http://np.ac.rs/yu/centri/inov-kap>

After mapping of HEIs resources and expertises that can be engaged in cooperation with enterprises, Serbian HEIs provided structured review of realised services and projects in cooperation with domestic enterprises. Document describes the nature of cooperation (service, training, contract or collaborative research, consulting, student practice, etc.).



## 2. Realised services for / projects with enterprises

Institution	Entity engaged in cooperation (web site)	Enterprise (name and web site)	Type of cooperation*	Period of realization	Short description	Realised outputs**
University of Nis (1)	Laboratory for control systems at the Faculty of Electronic Engineering <a href="http://automatika.elfak.ni.ac.rs">http://automatika.elfak.ni.ac.rs</a>	Water company NAISSUS Nis <a href="http://www.jkpnaiissus.co.rs">http://www.jkpnaiissus.co.rs</a>	Project	May 2017-December 2017	Project and practical realisation of the plant for measuring accuracy of water meters	- Realised plant - Technical solution - Two scientific papers
University of Nis (2)	Laboratory for control systems at the Faculty of Electronic Engineering <a href="http://automatika.elfak.ni.ac.rs">http://automatika.elfak.ni.ac.rs</a>	YUMCO A.D. Vranje <a href="http://www.yumco.co.rs/">http://www.yumco.co.rs/</a>	Project	March 2018-November 2018	Project and practical realisation of the control of plant for bleaching and dyeing of yarn in the textile industry	- Realised plant - One professional paper
University of Nis (3)	Laboratory for control systems at the Faculty of Electronic Engineering <a href="http://automatika.elfak.ni.ac.rs">http://automatika.elfak.ni.ac.rs</a>	Water company NAISSUS Nis <a href="http://www.jkpnaiissus.co.rs">http://www.jkpnaiissus.co.rs</a>	Project	March 2018-November 2018	Project and practical realisation of the control and supervision of water purification plant	- Realised plant - One professional paper
University of Nis (4)	Laboratory for control systems at the Faculty of Electronic Engineering <a href="http://automatika.elfak.ni.ac.rs">http://automatika.elfak.ni.ac.rs</a>	MIN DIV Svrlijig <a href="https://www.divgroup.eu/">https://www.divgroup.eu/</a>	Project	May 2016-July 2016	Project and practical realisation of the reconstruction of control of tapping nut machine	- Realised plant - Technical solution - One professional paper
University of Nis (5)	Department for Machine Design, Product Development	COMING Computer Engineering	Project	June 2016-August 2016	Development of HARDWARE	- Realised prototype



	and Engineering at the Faculty of Mechanical Engineering <a href="http://www.masfak.ni.ac.rs/index.php/sr/2015-03-03-09-43-07/shins-ns-ru-ci-r-zv-i-inz-nj-ring-2">http://www.masfak.ni.ac.rs/index.php/sr/2015-03-03-09-43-07/shins-ns-ru-ci-r-zv-i-inz-nj-ring-2</a>	<a href="https://coming.rs/">https://coming.rs/</a>			MODULE OF BTS (Bus Transportation Solution)	
University of Nis (6)	Institute of Mechanical Engineering of Faculty of Mechanical Engineering <a href="http://www.masfak.ni.ac.rs/index.php/sr/2015-03-03-10-25-16">http://www.masfak.ni.ac.rs/index.php/sr/2015-03-03-10-25-16</a>	Johnson Electric <a href="https://www.johnsonelectric.com/en">https://www.johnsonelectric.com/en</a>	Project	September 2017-December 2017	Estimation of Eccentric Press Vibration and Shock Effect on Surrounding Construction	- One professional paper
University of Nis (7)	Institute of Mechanical Engineering of Faculty of Mechanical Engineering <a href="http://www.masfak.ni.ac.rs/index.php/sr/2015-03-03-10-25-16">http://www.masfak.ni.ac.rs/index.php/sr/2015-03-03-10-25-16</a>	Mikrotehnika d.o.o. <a href="http://www.mikrotehnika.co.rs/">http://www.mikrotehnika.co.rs/</a>	Project	June 2018-October 2018	Analysis of Design and improvement of operational characteristics of low and medium pressure centrifugal fans	- Report to customer
University of Belgrade (1)	Foundation for the Advancement of Economics <a href="https://www.fren.org.rs">https://www.fren.org.rs</a>	Project NAPRED	Service	February 2016	The project aimed to stimulate the employability of youth and technology transfer from HEIs to SMEs	- Help with communications to target groups and with promotion
University of Belgrade (2)	International consortium of organizations – programme Interreg	International project ReSTI	Training and service	2018	The project aims to train young managers and administrators to govern scientific,	- Training during ReSTI conference - Help with the creation of video materials – used



					technological and innovative projects	equipment and staff from Creative center
University of Belgrade (3)	Informal group of students Belgrade business school	Volunteering fair	Project and student practice	2016	The group of students organized for the first time in Belgrade the Fair of volunteering which gathered dozens of NGOs	<ul style="list-style-type: none"> <li>- conceptualization of the Fair</li> <li>- management</li> <li>- organization</li> <li>- promotion</li> </ul>
University of Belgrade (4)	StartIT hub	Digital talks	Training and student practice	2017	Students organized trainings for the young entrepreneurs who work in StartIT. The training also included panel.	<ul style="list-style-type: none"> <li>- Training given by the team member</li> <li>- Chairing the panel</li> <li>- Help with organization and conceptualization of the event</li> </ul>
University of Belgrade (5)	Pedagogical society of Serbia	Financial literacy among children and teachers in elementary schools in Serbia	Training (LLL)	2017	Representatives of team members of UBG increased competences and empowered teachers to teach financial literacy to elementary and secondary schools students	- training and workshop
University of Kragujevac (1)	Collaborative Training Centre of the University of Kragujevac <a href="http://www.ctc.kg.ac.rs">www.ctc.kg.ac.rs</a>	Prizma, Kragujevac <a href="http://www.prizma.co.rs">www.prizma.co.rs</a>	Service	2015	Rapid prototyping of components for new design of inhalator using 3D printer Alarais 30 and	Prototype of the new inhalator





					PolyJet RP technology	
University of Kragujevac (2)	Collaborative Training Centre of the University of Kragujevac <a href="http://www.ctc.kg.ac.rs">www.ctc.kg.ac.rs</a>	Belit, Belgrade <a href="http://www.belit.co.rs">www.belit.co.rs</a>	Service and collaborative project	2016	Application of RP technique for rapid tooling for copolymer casting of two/component plastics	Tools for copolymer casting
University of Kragujevac (3)	Center for Virtual Manufacturing, Faculty of Engineering <a href="http://cevip.fink.rs">http://cevip.fink.rs</a>	Nissal, Nis <a href="http://www.nissal.co.rs">www.nissal.co.rs</a>	Service	2016	Numerical modelling and simulation of industrial process – extrusion of Al profile through porthole-die	Optimized technology and tools for extrusion of Al profile
University of Kragujevac (4)	Center for Virtual Manufacturing, Faculty of Engineering <a href="http://cevip.fink.rs">http://cevip.fink.rs</a>	Slododa, Cacak <a href="http://www.sloboda.co.rs">www.sloboda.co.rs</a>	Service, student work	2018	Numerical FE analysis of multistage metal forming process – combined FE stress analysis of tools and workpiece	Analysed and optimized industrial process
University of Kragujevac (5)	Center for Virtual Manufacturing, Faculty of Engineering <a href="http://cevip.fink.rs">http://cevip.fink.rs</a>	Orion, Kragujevac	Service, student work	2018	Re-engineering of bending technology for elimination of springback effects	Product component is accurate and without defects
University of Novi Sad (1)	Faculty of Technical Sciences, Department for traffic	Srbijatransport a.d., Belgrade	Software tool	2017	Calculator of external costs in goods transport	Developed software tool
University of Novi Sad (2)	Faculty of Technical Sciences, Department for mechanical engineering	Dental clinics in Vojvodina (Clinic Potran, Backi Petrovac, Vojvodina)	Software tool	2017	Software for precise production of metal substructure for metal-ceramic crowns in dentistry	Developed software tool



University of Novi Sad (3)	Faculty of Technical Sciences, Department for telecommunications	Alfanum a.d., Novi Sad	Software tool	2016	Axon speech assistant – apps for controlling mobile phones using voice in Serbian language	Software apps
University of Novi Sad (4)	Faculty of Technical Sciences, Department for mechanical engineering	Stojanović Pharm, Novi Sad	Prototype	2017	Device for inspection of water penetration in wood products	Developed device
University of Novi Sad (5)	Faculty of Technical Sciences, Department of Electronics	Iritel a.d., Belgrade	Prototype	2017	Prototype of a wireless heterogeneously integrated motion sensor	Developed prototype and experimental set-up for testing
Technical College of Applied Sciences (1)	CIRTT (Centre for Research, Development and Technology Transfer)	ELASTIC PRODUCTS DOO Zrenjanin	Project	March 2017-September 2017	Resistance testing of caoutchouc vulcanizate	-Technical solution - One professional paper
Technical College of Applied Sciences (2)	CIRTT (Centre for Research, Development and Technology Transfer)	ELASTIC PRODUCTS DOO Zrenjanin	Project	May 2016-September 2016	Effect of soot quantity N- 330 on hardness of vulcanized rubber mixture	Technical solution - One professional paper
Technical College of Applied Sciences (3)	CIRTT (Centre for Research, Development and Technology Transfer)	ALMEX DOO OGRANAK "IPOK" ZRENJANIN (almex.rs)	Project	March 2018-June 2018	Separation and exploitation of corn syrup sugar	-Technical solution - One professional paper
Technical College of Applied	CIRTT (Centre for Research, Development and Technology Transfer)	DOO Dogama Zrenjanin	Project	September 2017-March 2018	Recycling process optimization of unrecycled plastic composites	-Technical solution - Patent



Sciences (4)						
Belgrade Metropolitan University (1)	Faculty of Informational Technologies, Department of Software Engineering and Department of Informational Technologies <a href="https://www.metropolitan.ac.rs/en/faculty-information-technology/">https://www.metropolitan.ac.rs/en/faculty-information-technology/</a>	A+Crowd, Toronto <a href="https://apluscrowd.com/#">https://apluscrowd.com/#</a>	Student practise	2014	Collaboration that provides mentorship, student practices, free scholarships and guaranteed workplace after graduating for students of BMU.	- Presented way of working in IT industry - Employed students - Gained practical knowledge
Belgrade Metropolitan University (2)	Faculty of Informational Technologies, Faculty of Management, Faculty of Digital Arts <a href="https://www.metropolitan.ac.rs/en/bachelor-studies/">https://www.metropolitan.ac.rs/en/bachelor-studies/</a>	Philip Morris International <a href="https://www.pmi.com/">https://www.pmi.com/</a>	Student practise	2018	Collaboration that provides mentorship, student practices and business related workshops.	- Practise done by students - Educational workshops done by PMI
Belgrade Metropolitan University (3)	Faculty of Informational Technologies, Faculty of Management, Faculty of Digital Arts <a href="https://www.metropolitan.ac.rs/en/bachelor-studies/">https://www.metropolitan.ac.rs/en/bachelor-studies/</a>	IKEA <a href="https://www.ikea.com/rs/sr/">https://www.ikea.com/rs/sr/</a>	Student practise	2018	IKEA e-Talent Factory Initiative	- Practise done by students - Gained practical knowledge
Belgrade Metropolitan University (4)	Faculty of Informational Technologies, Faculty of Digital Arts <a href="https://www.metropolitan.ac.rs/en/bachelor-studies/">https://www.metropolitan.ac.rs/en/bachelor-studies/</a>	Deli proctor, Nis <a href="http://deli.rs/">http://deli.rs/</a>	Training, Collaboration	2017-2019	Organization of students' exhibition and workshops on various topics.	-Exhibitions and workshops done by BMU's teachers and students
Belgrade Metropolitan University (5)	Faculty of Digital Arts <a href="https://www.metropolitan.ac.rs/en/faculty-digital-arts/">https://www.metropolitan.ac.rs/en/faculty-digital-arts/</a>	National Library of Serbia <a href="https://www.nb.rs/index.php?change_lang=en">https://www.nb.rs/index.php?change_lang=en</a>	Project	2018	Collecting and visualising stories about migration as a part of European digital content project with the	- Exhibitions of students' work in National Library of Serbia



					theme of migration.	
Belgrade Metropolitan University (6)	Faculty of Informational Technologies, Department of Software Engineering <a href="https://www.metropolitan.ac.rs/en/faculty-information-technology/software-engineering/">https://www.metropolitan.ac.rs/en/faculty-information-technology/software-engineering/</a>	Organization "12p", Belgrade	Training	2018	Training on topic "How to become and stay programmers"	- Presented work of guests from "12p"
Belgrade Metropolitan University (7)	Faculty of Informational Technologies, Department of Software Engineering <a href="https://www.metropolitan.ac.rs/en/faculty-information-technology/software-engineering/">https://www.metropolitan.ac.rs/en/faculty-information-technology/software-engineering/</a>	Miticon, Belgrade <a href="http://miticon.com/">http://miticon.com/</a>	Student practise	2019	Collaboration that provides mentorship, student practices and scholarships.	- Lecture done by Miticon - Practise done by students - Gained practical knowledge
Belgrade Metropolitan University (8)	Faculty of Informational Technologies, Faculty of Management, Faculty of Digital Arts <a href="https://www.metropolitan.ac.rs/en/bachelor-studies/">https://www.metropolitan.ac.rs/en/bachelor-studies/</a>	Europass Center, Serbia <a href="https://europass.rs/">https://europass.rs/</a>	Training	2019	Training held by Europass Center Serbia on the topic "Create your CV"	- Gained practical knowledge about CV writing - Presented online tool for CV making
Belgrade Metropolitan University (9)	Faculty of Informational Technologies, Department of Software Engineering	PowMio <a href="https://www.powmio.com/">https://www.powmio.com/</a>	Student practises	2017	Collaboration that provides mentorship and student practices as well as free scholarships for students of BMU.	- Employed students - Gained practical knowledge

\* service, training, project, contract or collaborative research, consulting, student practice, etc.

\*\* With reference to realized cooperation with the enterprise and listed outputs please provide some photos or other relevant material that confirm reached results and that could be used in consolidated report about this important activity within WP5, i.e Act.5.5

## University of Niš

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1. The realised plant is presented on the following picture:



The description of developed technical solution is available on:

[http://starisajt.elfak.ni.ac.rs/phptest/new/html/nauka/tehnicka\\_resenja/resenja/0289/Tehnicky\\_resenje\\_Bazdarnica.pdf](http://starisajt.elfak.ni.ac.rs/phptest/new/html/nauka/tehnicka_resenja/resenja/0289/Tehnicky_resenje_Bazdarnica.pdf)

The first paper is presented on 10<sup>th</sup> International conference on water and sewage systems, Authors: Stanko Stankov, Dejan Mitić, Zoran Jovanović, Title: Upravljanje baždarnicom za industrijske vodomere pomoću PLC i SCADA sistema, url:

<http://utvsi.com/index.php/dogadaji/vodovodni-i-kanalizacioni-sistemi>.

The second paper is presented on 27<sup>th</sup> International congress of process industry, Authors: Stanko Stankov, Title: Modeliranje sistema za baždarenje industrijskih vodomera, url: <https://izdanja.smeits.rs/index.php/ptk/article/view/2307>

2. This paper is presented on 31<sup>th</sup> International congress of process industry, Authors: Stanko Stankov, Nikola Danković, Milutin Petronijević, Title: Upravljanje linijom za beljenje i bojenje prediva u tekstilnoj industriji, url: <https://izdanja.smeits.rs/index.php/ptk/article/view/3462>



The realised plant is presented on the following pictures:



3. The realised plant is presented on the following pictures:



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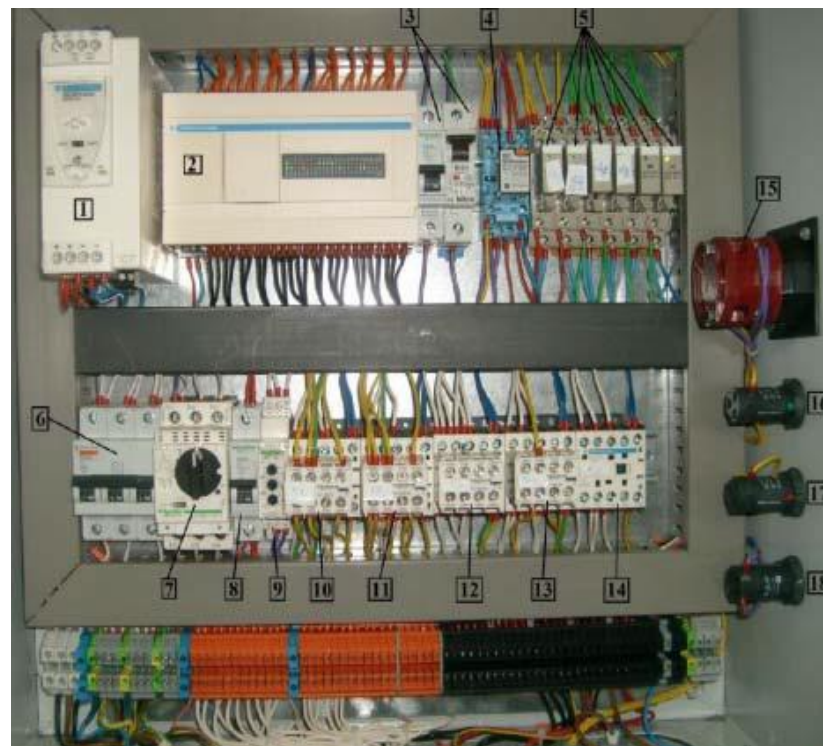


The paper is presented in Process Techniques, Title: Automating of water catchment and mechanical purification of water in water factory "Mediana 2", url: <https://izdanja.smeits.rs/index.php/ptk/article/download/3462/3646>

**4.** Technical solution is available on <http://www.elfak.ni.ac.rs/rs/nauka/projekti/tehnicka-resenja/3101-upravljacki-sistem-urezivanje-navoja>  
The paper is presented on 27<sup>th</sup> International congress of process industry, Authors: Stanko Stankov, Nikola Danković, Title: Rekonstrukcija upravljačkog sistema mašine za urezivanje navoja navrtki, url: <https://smtp.izdanja.smeits.rs/index.php/ptk/article/view/2304>  
The realised plant is presented on the following pictures:



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5. The description of realised prototype is available on [https://www.itresenja.com/resenja/bts-resenje-kompanije-coming-za-kvalitetniji-prevoz-putnika/?fbclid=IwAR128zU\\_BsN\\_X2Eo2KNIYV2OZDupNcU7L\\_cS49ypJNeg82RSIfnhQiVG0AY](https://www.itresenja.com/resenja/bts-resenje-kompanije-coming-za-kvalitetniji-prevoz-putnika/?fbclid=IwAR128zU_BsN_X2Eo2KNIYV2OZDupNcU7L_cS49ypJNeg82RSIfnhQiVG0AY)
6. This paper is presented on the XIV International Systems, Automatic Control and Measurements SAUM 2018, Authors: Dragan Jovanović, Slobodan Jovanović, Milan Banić, Aleksandar Miltenović, Milena Jovanović, Title: Estimation of Eccentric Press Vibration and Shock Effect on Surrounding Construction - a Case Study, url: [http://saum.elfak.rs/documents/conferences/3/SAUM\\_2018\\_CONFERENCE\\_PRELIMINARY\\_PROGRAM.pdf](http://saum.elfak.rs/documents/conferences/3/SAUM_2018_CONFERENCE_PRELIMINARY_PROGRAM.pdf)
7. This project is realised under the framework of innovation vouchers <http://www.inovacionifond.rs/odobreni-inovacioni-vauceri/>





## University of Belgrade

Throughout the project lifetime, University of Belgrade put efforts to empower all entities in the local eco-system, as well as to strengthen all three pillars of the University's Third Mission. With regard to that, the listed services include activities related to: technology transfer, provision of expert services to various stakeholders, engagement in the community and delivering of the life long learning courses. It should be also noted that all target groups of IF4TM, such as: students, NGOs, companies, etc., are considered and provided with custom-made services.

### 1. Project NAPRED (FREN)

AGENDA PRVI DAN	
10.00 - 10.45h	Microsoft - „It's not job, it is a mission“ Zašto je Majkrosofti razvojni centar u Srbiji poželjan poslodavac?
11.00 - 11.45h	Dragan Savić "Efikasna komunikacija i networking - vaša polisa osiguranja kroz život"
12.00 - 12.45h	Milica Đokić "PR i event management"
13.00 - 13.45h	msg global "IT Consulting – finding your way in a „global village“"
14.00 - 14.45h	dr Jelena Krstović "Vaša karijera: između stvarnosti i vizije"
15.00 - 15.45h	Nestle "Kako tražiti posao"
16.00 - 16.45h	Milsped "Logistika pokreće život, mi pokrećemo logistiku"
17.00 - 17.45h	Projekti i prakse za mlade "Da li si za preduzetnika?" Dođi i proveri
18.00 - 18.45h	FlyFly Travel "Impress me if you can - Kako da se najbolje predstavite potencijalnom poslodavcu"





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## 2. Project ReSTI - International consortium of organizations – programme Interreg

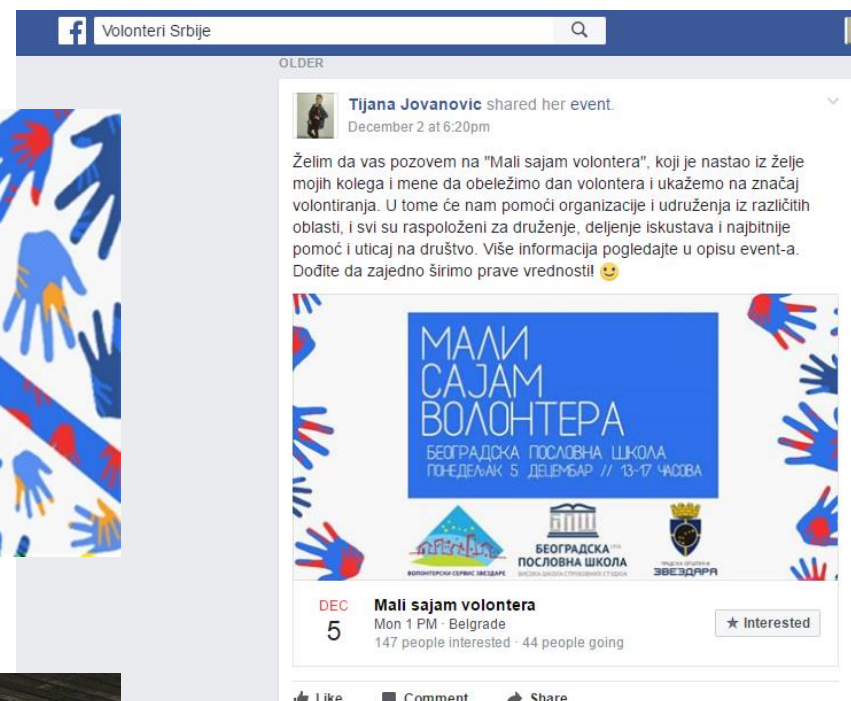
All materials are available at: [https://trello-attachments.s3.amazonaws.com/566aa7a985d3f6bfeddc45c4/5735ce66dfe1350e52e2113a/00c8355835dc0d639ec4ac1f3bfccc74/Panel\\_Excellence\\_in\\_ReSTI\\_Act\\_2-4.pdf](https://trello-attachments.s3.amazonaws.com/566aa7a985d3f6bfeddc45c4/5735ce66dfe1350e52e2113a/00c8355835dc0d639ec4ac1f3bfccc74/Panel_Excellence_in_ReSTI_Act_2-4.pdf)



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### 3. Volunteering fair





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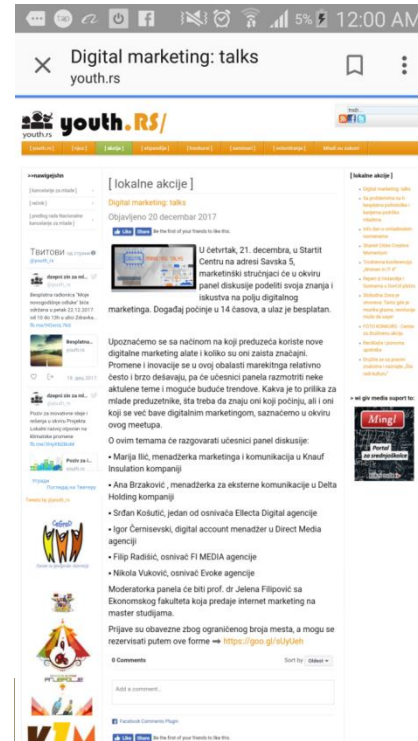


Digital talks





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Digital marketing: talks



## 5. Financial literacy among children and teachers in elementary schools in Serbia

Invitation available at: <https://www.pedagog.rs/2017/12/08/12-12-2017-odrzace-se-republicka-sekcija-strucnih-saradnika/?v=8cee5050eeb7>

### University of Kragujevac

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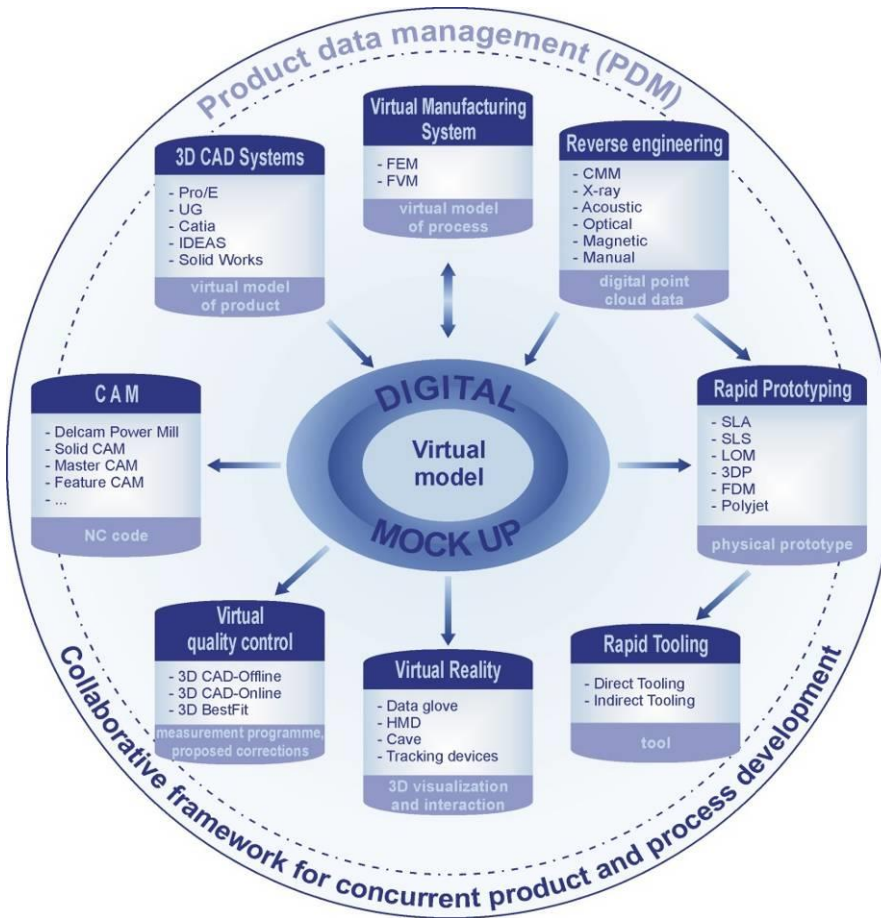
Among other efficient interfaces with the industry, the University of Kragujevac relies on its Collaborative Training Centre (CTC, founded in 2010) and on its Center for Virtual Manufacturing (CeVIP), founded in 2006 by the Mechanical Engineering Faculty. Both university units act as basic and highly specialized service providers to the Serbian industry.

In line with its institutional mission, CeVIP supports 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, 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.

Access to virtual manufacturing technologies (VM) offers quality, timely and inexpensive R&D results helping enterprises to become more competitive through the application of innovative approaches in virtual development of products and processes. VM reduces the number of unsuccessful and long-lasting trial and error attempts inherent to traditional design processes while developing awareness on responsibility for personal development and continuous improvement. Equipped with sophisticated apparatus (RP 3D printer, ALARIS 30, based on PolyJet technology) for rapid prototyping (RP), CTC combines both, technical expertise and manufacturing tools. Competent to meet specific demands of the automotive industry, the university CTC Center is prepared to create smooth surfaces with complex geometries, small moving elements and fine details of plastic prototypes, leading to time and costs savings in product development.



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CTC and CEVIP use modern approach in INTEGRATED PRODUCT AND PROCESS DEVELOPMENT based on virtual engineering applications





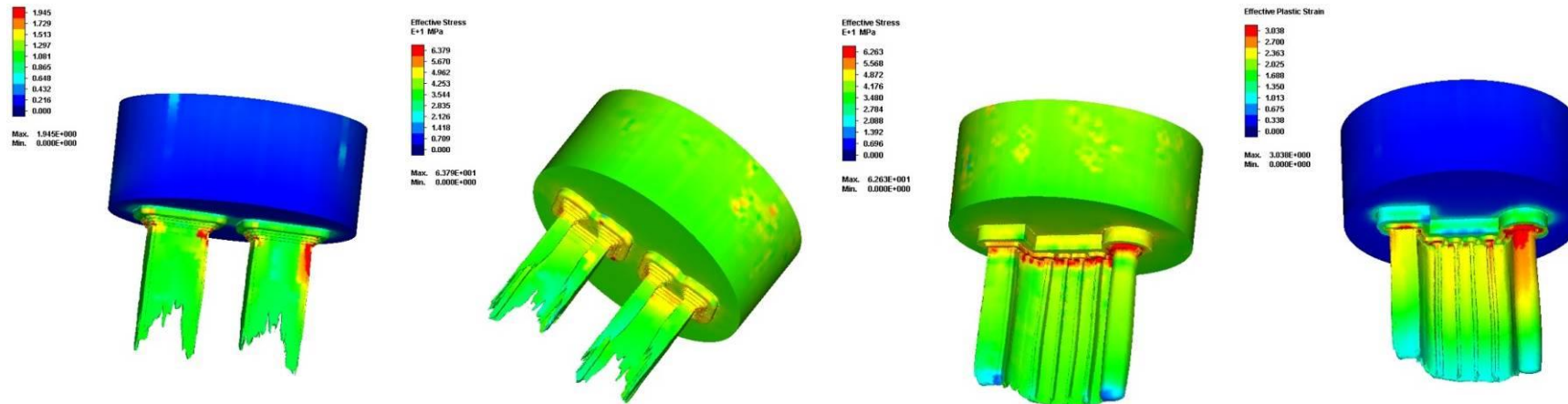
(1) Rapid prototyping of components for new PRIZMA inhalator



(2) Rapid tooling for copolymer casting of two-component plastics for BELIT

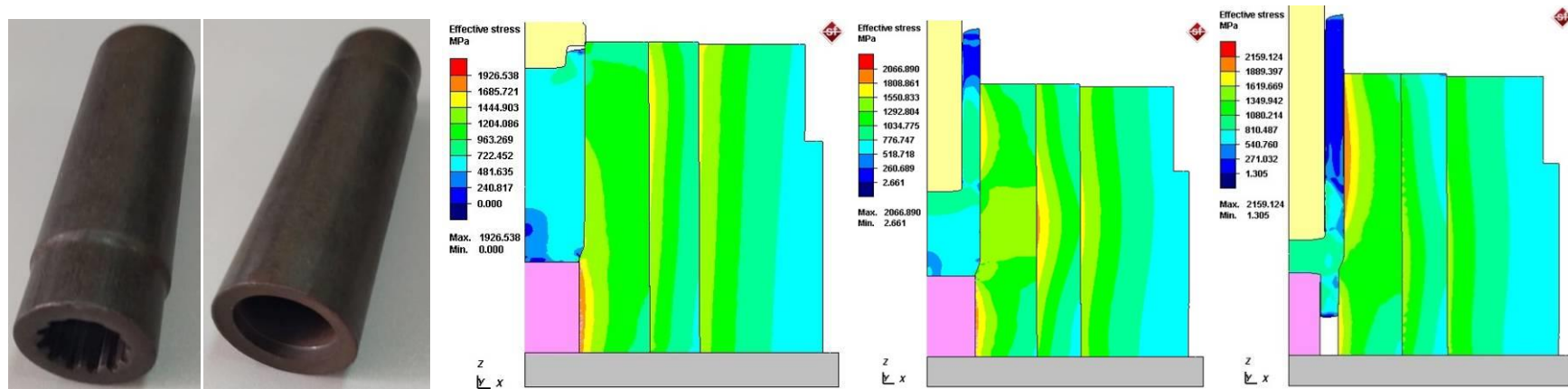


(3) Numerical modelling and simulation of industrial process – extrusion of Al profile through porthole-die for NISSAL

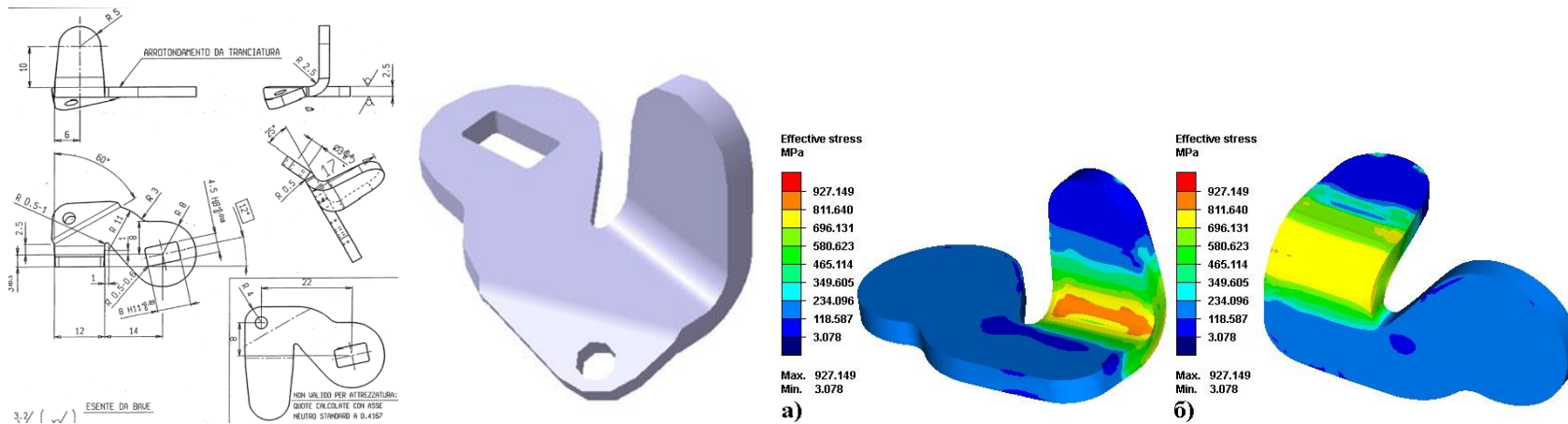




(4) Numerical FE analysis of multistage metal forming process – combined FE stress analysis of tools and workpiece (SLOBODA, Cacak)



(5) Re-engineering of bending technology for elimination of springback effects, Orion, Kragujevac



**(1) Calculator of external costs of goods transport**

The proposed product is a solution that enables fast and easy calculation of the external costs of goods transport in road transport. The external costs calculator (KET1.0) is intended for calculation of external costs for the defined road transport route. The aim of this solution is to raise the awareness of transport service users and managers in transport and logistics companies in the Republic of Serbia about unwanted and by the side effects of transport to society and the environment at the planning stage transport, that is, their type, importance and economic value of their influence.

**(2) Software for precise production of metal substructure for metal-ceramic crowns in dentistry**

This solution (SOFTPREL software) primarily aims at: automating modelling simulation model of metal substructure for metal-ceramic crowns, parameter determination precise casting by simulation, selection of cast subsystems and casting materials of the base from the base data, use and development of databases and knowledge, shortening of the time of production of metal substructure, increase the quality of the treated surface of the cast, determine the "search" code necessary for activation of the control code ("program code") of the CASTCONTROL casting machine application "BEGO Nautilus CC +" and distribution direct / indirect connection with applications and equipment.

**(3) Axon speech assistant – apps for controlling mobile phones using voice in Serbian language**

This solution represents application for controlling mobile phones which use Android operative system, using voice in Serbian language. The aim of this apps is to enable fast, reliable and natural communication between of user of this apps and mobile phone device. The following voice command are supported: calling contact from the list of contacts using name and surname, sending short messages, editing data about contacts, editing settings, etc. Acoustic models are learnt for speech recognition even in the increasing noises conditions.

**(4) Device for inspection of water penetration in wood products**

The aim of the solution is to investigate the impact of the machining process by rolling the ball on resistance to water penetration of products made of different types of wood. It is assumed that high contact pressures from the wood processing process will occur lead to a significant increase in the density of the surface layer of the tree and that it will be compacted wood fibers will be more resistant to atmospheric influences, i.e. that will reduce the flow of moisture from environment in the inner layers of wood. The consequence should be a longer life the duration of the wood products. Starting from this hypothesis, the experimental research was conducted for analyse the impact of the ball rolling method on resistance on water penetration in different types of wood (beech, oak, ash, walnut, acacia and lime). In order to realize experimental research, a special device has been designed through the appropriate software allowing on-line monitoring of water penetration into the wood in the function of the time in which the wood surface layer is in direct contact with water. In doing so, the volume of water is measured at a certain time interval penetrate the inner layers of wood.

#### **(5) Prototype of a wireless heterogeneously integrated motion sensor**

In this solution, a new design of the heterogeneously integrated wireless sensor for motion measurement is developed. The proposed sensor design allows wireless measurements of the shift using an external inductor as antennas. The motion is measured wirelessly by the method of determining the minimum value of the impedance phase and the resonance frequency of the system antenna sensor. Sensor measurement was performed and sensor characteristic was determined.

All above-mentioned solutions can be found on the following link: <http://www.ftn.uns.ac.rs/n1109667516/tehnicka-resenja>

### **State University of Novi Pazar**

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#### **(1) Laboratory for examination of construction materials**

Laboratory for examination of construction materials „Prof.dr Vera Nikolić Stanojević, is accredited for examination of toughness of concrete samples and modules of ground deformations.

Toughness of concrete is done on cube samples, dimensions 20 x 20 x 20 cm or 15 x 15 x15 cm, (standard : SRPS EN 12390-3 : 2010/AC : 2014). Examination is possible on samples of other geometrical standard types (prism, cylinders...) or on samples extracted from constructions. After examination of sample report of toughness f concrete 28 days old is issued.

Laboratory use standardized procedure:

- Receiving and marking of concrete samples for examination
- Visual inspection, dimensions and weight measurement.
- Evaluation of dimension and shape based of standard
- Sample is placed and put under stress in press CONTROLS 50 - C564256 - 3000 kN
- Analysis if results and issuing report on concrete toughness.

Quality of concrete is also examined by noninvasive methods. Most important procedures are examination with Schmidt Hammer and ultra sound.

Laboratory have close cooperation with construction companies from Novog Pazara, Sjenice, Tutina, Raške and other places from region.

Most prominent companies which use resources of laboratory are:

- IKAN COMPANY DOO,
- UKRAS DOO,
- EUROBETON 008
- FAEK COMPANY DOO,



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- HOFMAN DOO,
- MEGALIT-ŠUMNIK.

Up today over 30 examinations of quality and toughness of concrete was completed in laboratory.





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**IF4TM**



## (2) Development of the strategy of Sustainable development of Novi Pazar 2019-2029

State University of Novi Pazar in cooperation with City of Novi Pazar dedicated resources on supporting activities in preparation of strategy of Sustainable development of Novi Pazar 2019-2029. University dedicated 12 contact points for different modules of the strategic document. For cooperation with local economic community and enterprises special attention is given to module for Local economic development. Important members of team for development of this module were representatives of local SMEs active in Novi Pazar region. University staff supported them in analysis of their needs and translation of this need in developed strategic planning decisions, mission and vision statement. Finally in cooperation with SME community they prepared project proposals important for further sustainable economic development.

## Belgrade Metropolitan University

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Belgrade Metropolitan University's mission is "student in the centre of attention" that perfectly aligns with three pillars of University's Third Mission defined in IF4TM project. According to that, BMU has provided many opportunities for its students to get in touch with companies and get the chance to put all their theoretical knowledge into practise, as well as enjoy mentorship and get free scholarships. Below are listed published news (with further details) of all projects, trainings, workshops and collaborations that Belgrade Metropolitan University has made during the project lifetime.

- (1) Collaboration with A+ Crowd, Toronto, <https://www.metropolitan.ac.rs/novosti/potpisan-je-ugovor-izmedu-univerziteta-metropolitan-kanadske-kompanije-acrowd-koji-obezbeduje-50-stipendija-zagarantovano-zaposlenje-nakon-diplomiranja/>
- (2) Collaboration with Philip Morris International <https://www.metropolitan.ac.rs/novosti/saradnja-univerziteta-metropolitan-sa-multinacionalnom-kompanijom-philip-morris-international/>
- (3) Collaboration with IKEA <https://www.metropolitan.ac.rs/aktivnosti/ikea-e-talent-factory-internship-na-univerzitetu-metropolitan/>
- (4) Collaboration with Deli <https://www.metropolitan.ac.rs/fdu/veb-dizajn-predavanje-o-aktuelnoj-temi-u-prostoru-deli-nis/>
- (5) Collaboration with National Library of Serbia <https://www.metropolitan.ac.rs/novosti/fotografije-studenata-fdu-a-u-okviru-programa-dani-prikupljanja-prica-o-migracijama-u-narodnoj-biblioteci-srbije/#>
- (6) Collaboration with Organization "12p", Belgrade <https://www.metropolitan.ac.rs/novosti/postani-programer-c-vs-python/>
- (7) Collaboration with Miticon, <https://www.metropolitan.ac.rs/novosti/kompanija-miticon-dodeljuje-stipendije-za-najbolje-maturante/>
- (8) Collaboration with Europass Center, Serbia <https://www.metropolitan.ac.rs/novosti/europass-centar-srbija-odrzao-radionicu-sastavljanja-biografije-studentima-um-a/>
- (9) Collaboration with PowMio <https://www.metropolitan.ac.rs/novosti/kompanija-powmio-univerzitet-metropolitan-dodeljuje-stipendije-za-najbolje-brucose/>