Modernization of WBC universities through strengthening of structures and services for knowledge transfer, research and innovation

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Steering Platform on Research for Western Balkan Countries

12th December 2013, Zagreb, Croatia

Knowledge and technology transfer:

Modernization of WBC universities through strengthening of structures and services for knowledge transfer, research and innovation

Prof. Dr Vesna Mandić

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Project CV – basic information

Contract number	530213-TEMPUS-1-2012-1-RS-TEMPUS-JPHES
Project acronym	WBCInno
Project name	**Modernization of WBC universities through strengthening of structures and services for knowledge transfer, research and innovation**
Project duration	15th October 2012 – 14th October 2015
Programme	TEMPUS IV, DG for Education and Culture
Thematic priority	Higher education and society
Total cost of the project	766 094 €
Commission funding	689 484 €
Coordinator	Prof. Dr. Vesna Mandic University of Kragujevac Jovana Cvijica bb 34000 Kragujevac, Serbia e-mail: mandic@kg.ac.rs tel. +381 34 501 201, fax. +381 34 501 901 www.wbc-inno.kg.ac.rs wbc-inno@kg.ac.rs

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Consortium

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- University of Kragujevac, Serbia
- University of Novi Sad, Serbia
- University of Zenica, Bosnia and Herzegovina
- University of Banja Luka, Bosnia and Herzegovina
- University of Montenegro, Montenegro
- University of Brighton, United Kingdom
- Graz University of Technology, Austria
- Centre for Social Innovation, Austria
- University of Alicante, Spain
- Hamburg University of Technology, Germany
- Business Technology Incubator of Technical Faculties Belgrade, Serbia
- Business Innovation Centre Kragujevac, Serbia
- Business Incubator Novi Sad, Serbia
- Business Service Center of Government of Zenica-Doboj Canton, Bosnia and Herzegovina
- Intranea Solutions, Serbia
- Innovation centre Banja Luka, Bosnia and Herzegovina
- Business Incubator "Inventivnost", Podgorica, Montenegro

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Priority and overall objective

- The project is in compliance with TEMPUS IV objective "Higher education and society" and addresses regional prioritiy for Western Balkans, „Knowledge triangle of education, research and innovation“
- The WBCInno project has an overarching aim to contribute to the modernization of WBC universities through the strengthening of their management structures and services for cooperation with the world of work in the areas of knowledge transfer, research and innovation.
- It has as its ultimate goal the creation of strong entrepreneurial universities and innovative regions.

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Specific objectives

- To establish a University Innovation Platform (UIP) at five WBC universities for integration and focusing of innovation potential and for fostering technology transfer and commercialization, by M12
- To reinforce existing and to establish new university structures and services in the areas of knowledge transfer, research and innovation, in line with UIP requirements, by M18
- To support the development of Business Incubators and Science Technology Parks in the WBCs, through mobilizing university resources
- To develop a methodology for innovation management and networking of different stakeholders from universities and businesses, utilising collaborative software platform/tools, by M18
- To facilitate the creativity of young people and involvement of public and private stakeholders in all modernization processes based on the Triple Helix model of cooperation

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Main focus

- To develop the University Innovation Platform …
- …supported by collaborative software tool for innovation management…
- …with the intention of gathering new ideas from university staff and students…
- …and boosting knowledge transfer and commercialization of R&D results.
- University structures and services will be developed and modernized for efficient support in the development of Business Incubators and Science Technological Parks in WBCs.

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From CHALLENGES…

- Traditional organization of WBC universities has created a fragmentation of resources, with the absence of agreed priorities and focus
- There is no strategic innovation platform to provide the capitalizing of knowledge and research potential, or its coordination and mobilization to facilitate the development of an innovative region
- Linkages with enterprises are sporadic and individual, since there is no university office or other mechanism which provides single-point of access to university services
- There is no efficient web-based collaboration tool to facilitate the promotion of existing university resources and new ideas of students, or for matching them with financial facilitators

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… To ACHIEVEMENTS

- Regional University Innovation Platform
- Five Business Support offices at WB universities
- Five Catalogues of university innovation potential
- Ten WB university units/centres reinforced
- Regional development strategy for BIs and STPs
- Sustainability strategy of WBC universities
- Methodology for innovation management
- Innovation management software platform (stage-gate)
- Innovative Ideas Competition for students
- 25 dissemination and training events in WBCs
- Increased number of start-ups, spin-offs, and new projects/services/businesses
- Enhanced innovation culture within scientific community
- Increased number of students/researchers demonstrating entrepreneurial spirit

2013

2014

2015

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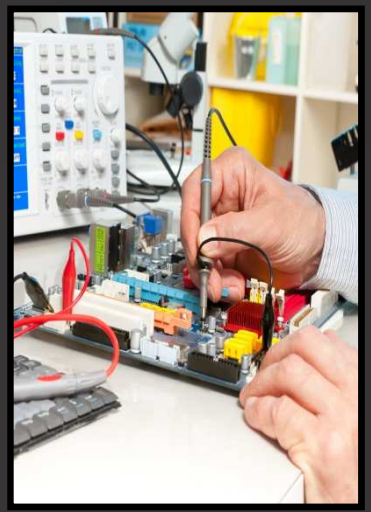
Impact

WBCInno is designed to have an ongoing and sustained impact on the region and multiplier effects for the universities and BIs/STPs, as follows:

- Forming an innovation culture within the scientific community and boosting entrepreneurial spirit
- Students can promote their ideas, resulting in new business streams and an increased number of start up companies
- Researchers will have the opportunity to focus on research areas demanded by the market.



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Impact (continued)

- Investors will find new opportunities in a pool of fresh ideas, precisely evaluating prospects, and abandon poor projects early
- BI/STP management can find innovative new businesses, thus creating new jobs
- An ever improving culture of university/company collaboration
- Increasing levels of employment within the region

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Some results and achievements until now

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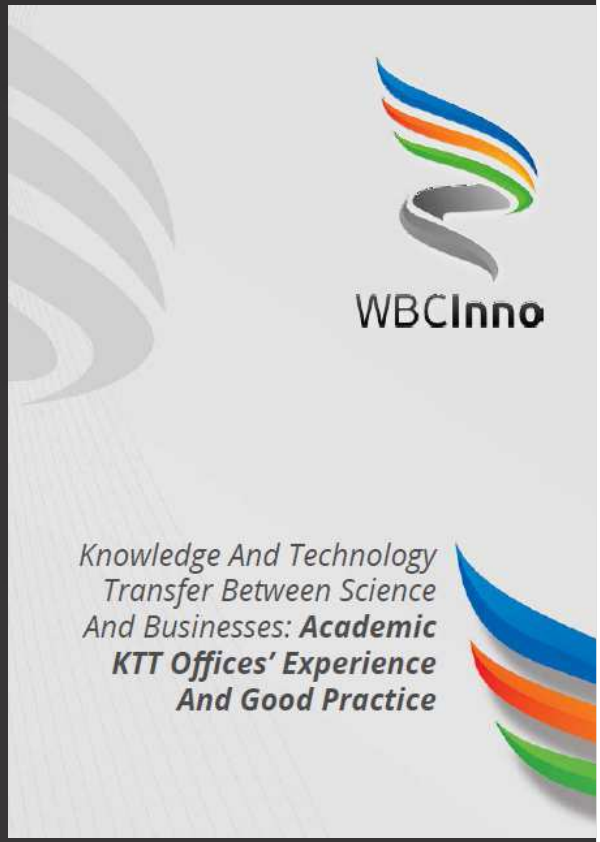
Knowledge And Technology Transfer Between Science And Businesses - Report on Academic KTT Offices' Experience And EU Good Practice

TUG	• **TUG (R&T House)** • **TU Delft (Valorization Centre)**
TUHH	• Fundación Zaragoza Logistics Center • Politecnico di Milano (Servizio Valorizzazione Ricerca) • Hamburg University of Technology (TuTech Innovation GmbH)
UA	• University of Alicante (Oficina de Transferencia de Resultados de Investigación)
UB	• University of Brighton (Centre for Collaboration and Partnership) • University of the West of England, Bristol (Faculty of Environment & Technology) • University of Wales (Global Academy)
ZSI	• TU Vienna (Research and Transfer Support) • University of Vienna (DLE Research Services and Career Development)



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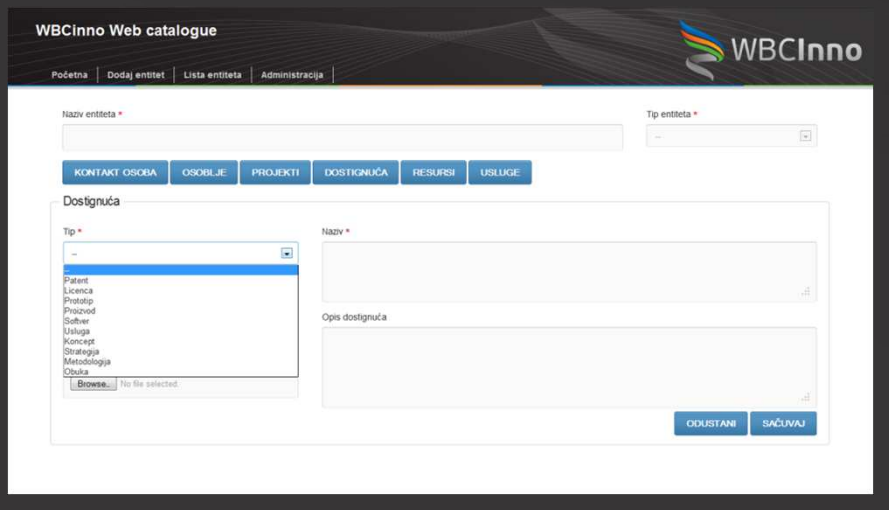
Mapping of universities' innovation potential

- Methodology for mapping of universities' innovation potential with Questionnaire
- 5 Catalogues of WBC universities with presentation of 108 RTDI units&teams
- HTML catalogue – web publishing of collected data, browsing and easy preparing different reports
- Presentation of:
  - valuable research results,
  - developed technologies,
  - software,
  - patents and licences,
  - specific methodologies,
  - trainings,
  - commercial services,
  - laboratory tests



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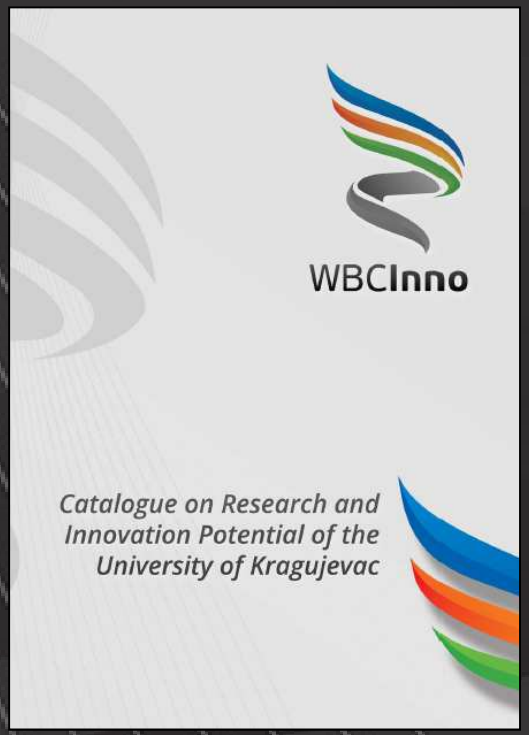
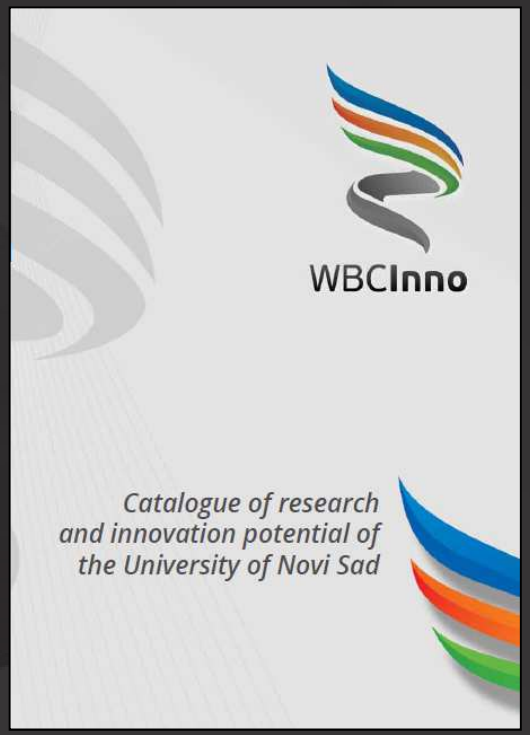
Mapping of universities' innovation potential

Catalogues on Research and Innovation potential





- University of Kragujevac, Serbia
- University of Novi Sad, Serbia
- University of Montenegro, Montenegro
- University of Banja Luka, Bosnia & Herzegovina
- University of Zenica, Bosnia & Herzegovina

108
RTDI units presented

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Mapping of universities' innovation potential

Catalogues on Research and Innovation potential

CeVIP CENTAR ZA VIRTUELNU PROIZVODNJU

Centre for Virtual Manufacturing

Contact

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Centre for Virtual Manufacturing (CeVIP) was founded in 2006, at Faculty of Engineering in Kragujevac, within the project titled "Virtual Manufacturing Support for Enterprises in Serbia". CeVIP has necessary resources for application of innovative technologies of virtual engineering (virtual manufacturing, CAD/CAM/CAE, virtual reality, quality and performance control of CNC machines, etc.). It realizes joint research projects with Serbian enterprises and offers innovative approach and services in product, processes and tools development and their optimization, contributing in this way to the increase of their innovative potential and competitiveness on the market. Strategic networking with enterprises, leading research institutions and relevant ministries within the VMnet network makes CEVIP renowned and reliable service provider in research and innovative environment in Serbia.

Activities

- Realization of scientific – research projects in the areas such as: virtual manufacturing. modelling and FEM/FVM numerical simulations and optimizations of technological processes, application of CAD/CAM/CAE technologies, 3D visualization of products and processes through application of virtual reality
- Development of VMnet network for effective knowledge and technology transfer and provision of high-tech services
- Provision of services and consulting – elaboration of feasibility studies, consulting in introduction of VM technologies, simulation of tool production. generating NC code. testing of CNC machines performances, etc.
- Realization of international projects (TEMPUS, FP6, SEE, WUS, EUREKA, GIZ, EAR, etc.)
- Organization and realization of courses for knowledge innovation, seminars, workshops and trainings

Results

- Strategic equipping of CEVIP centre with capital equipment and software that are unique in Serbia
- Establishment of VMnet network and HTML platform for knowledge systematization; the network gathers over 1400 registered users from entire Western Balkans Region as well as 18 leading experts from various areas
- Establishment of VRPM (Virtual/Rapid Prototyping/Manufacturing) group on CORDIS portal
- Organization of seminars, workshops, info-days, trainings, etc.
- Coordination of 12 international projects from FP6, TEMPUS, WUS, EAR, IPA/SEE programmes
- Coordination of collecting 120 examples of good practice in transformation of research into innovation
- Trainings abroad for CEVIP team members (Slovenia, Italy, Denmark, Germany, WBC, etc.)
- Realization of research projects and services for Serbian enterprises

Resources

1. Software packages for virtual manufacturing (Simufact.forming, Delcam PowerMill, Stampack, Vulcan)
2. Renishaw device QC10 BallBar for control of CNC machines performances
3. Equipment for virtual reality (Infocus 3D projector with 5 pairs of stereoscopic glasses NuVision, 5DT data glove, magnetic movement tracking device VR Space Wintracker with three sensors)

International projects

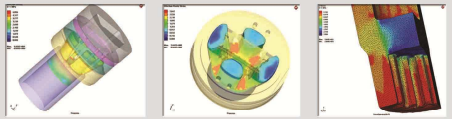
1. Modelling and Simulation in Metal Forming, WUS CDP, 2005-2006
2. EUREKA/ASMATA, E!3240: Renewal of steel car parts with aluminium, 2005-2007
3. Optimization of material forming processes through physical modelling, FE simulation and inverse analysis, Bilateral project between Serbia and Slovenia, 2006-2008
4. Development of Metal Forming Electronic Instructional Resources, eLearning-WUS, 2006
5. Virtual Engineering, WUS projekat, 2006, No. 103/2006
6. Virtual Manufacturing Support for Enterprises in Serbia, 2006-2007, http://cevip.fink.rs
7. Reinforcement of Research Capacity in Software Development and Innovative Collaborative Design and Engineering in Serbia and Montenegro, RRCSD INNCODE, FP6 INCO 043820, 2007-2009
8. Promoting Innovation in the Industrial Informatics and Embedded Systems Sectors through Networking, I3E, SEE/A/219/1.1/X, 2009-2012, www.i3e.eu
9. Modelling and optimization of tool by application of information technologies of virtual manufacturing with experimental verification, Bilateral project Croatia-Serbia, 2011-2013
10. Improvement of the competitiveness of enterprises in Serbia through new technologies transfer and support of innovations, GIZ 83124094, 2012-2013, http://cevip.fink.rs

Projects with industry

1. Preventing defects in hot forging process through application FE simulation, Zastava Kovačnica 2003
2. Optimization of multi-stage forging process aimed at tool verification and filling, Zastava Kovačnica, 2003
3. Tool stress prediction through simulation of aluminium profile extrusion, Nissal, 2006
4. Simulation of Al profile extrusion process for predicting quality of welding zone, Nissal, 2006
5. Application of numerical simulations for determination of tube forming quality, Jucit invest, 2007
6. FE simulation of deep drawing process of box-shaped part, Metalac INKO, 2007
7. FE analysis of hydraulic rubber pipe 2SN, Fadip holding Bečej, 2007
8. Tool design for lateral profiling roof tile panels, Metalprodukt, 2007
9. Scanning and modelling segments of the worm shaft, Toza Marković Kikinda, 2007
10. Simulation of profile rolling process for machine design, Milanović inženjering, 2007
11. Modelling of hot porthole-die extrusion of AL profile, SCGM, 2008
12. Reverse engineering of heat exchanger plate and simulation of sheet metal forming, Budućnost, 2008
13. Optimization of deep drawing process of monoblock sink of ferritic steel, Metalac INKO, 2008-2009
14. Optimization of process of making the cover of stainless steel sheet in four operations, Metalac bojleri, 2009
15. Simulation of multi-stage cold extrusion of parts with internal gear, Sloboda, 2009
16. Analysis of hot forging of joint body and optimization of technology, Fabrika automobilskih delova, 2010
17. Modelling and optimization of hot aluminium forging, Petar Drapšin, 2010
18. Design of progressive tools for production of parts of high-strength steel, Unimet, 2011
19. Simulation and analysis of bending and forming of spring contact part, Metalka Majur, 2012
20. Reverse engineering and modelling of light for LEDs, Metalka Majur, 2012
21. Reverse engineering and rapid prototyping of bakelite handle, Metalac posuđe, 2013
22. Rapid tooling for composite sink production, Polyagram, 2013

The most important prototypes, products, services, strategies and methodologies

- I3E Strategic Research Agenda, I3E Consortium, 2012
- Strategic Research Agenda – Annex I National Profiles, 2012
- Methodology Guide for Innovation, I3E Consortium, 2012
- Methodology Guide for Innovation – Annex I National Profiles. 2012
- WIKI data base with 120 examples of good practice in transformation of research into innovation, 2011 http://www.i3e.eu/i3e_wiki

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Benchmarking assessment of existing university structures and services in the areas of knowledge transfer, research and innovation

- ✓ Benchmarking metrics defined
  - - Metrics for Investment in Knowledge Transfer, Innovation and Research
  - - Metrics for Knowledge Transfer through Co-operation
  - - Metrics for Knowledge Transfer through Exploitation or Commercialization of Research Results
  - - Metrics for Knowledge Transfer through People
- ✓ Questionnaire for benchmarking assessment and interview questions developed
- ✓ Five reports (UKG, UNS, UBL, UM, UZ) with set of recommendations prepared by UB, TUG, UA, ZSI and TUHH

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Five Bussines Support Offices (Kragujevac, Novi Sad, Banja Luka, Zenica, Podgorica)

- collating the data ont research and innovation potential of university
- promoting the university research and services using and updating the Catalogue on research and innovation potential of university
- establishing and maintenance a resource database as HTML catalogue, with on-line browsing and preparing specific reports
- providing a single-point of access to university resources, equipment, trainings, research findings, patents and licensing
- developing partnerships with enterprises connecting researchers and students with business partners
- supporting liaisons with business incubators and science and technolocal parks
- encouraging students to creative thinking and articulating ideas;
- maintenance of innovation management web-platform
- joint market participation with other KTT university units
- improvement of the university regulatory documents

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TSNA and market analysis

- ✓ TSNA questionnaires modified, adjusted
  - Questionnaire for employees
  - Questionnaire for employers
- ✓ 680 questionnaires collected in the field
- ✓ TSNA statistical tool developed by UKG, excel files with predefined graphical presentations
- ✓ TSNA statistical processing is ongoing by 10 WBC partners
- ✓ TSNA reports completed

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Regional University Innovation Platform (UIP) - at five WBC universities

- Introduction
- Review of Findings to Date
- Strategic measures and recommendations for establishment of Regional UIP

1. Defining of priority research areas by university, focusing on mapping results and identified needs of the region
2. Capitalizing of university knowledge and research potential
3. Assessment and efficiency monitoring of KTT modes through defined metrics
4. Commercialization of research results and their transformation in innovation
5. Efficient innovation management supported by collaborative software platform
6. Development of cooperation between universities and enterprises
7. Encouraging students/researchers to establish start-ups and spin-offs
8. Strengthening the university capacity to support the development of BIs and STPs

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Regional Development Strategy for Business Incubators and Science Technology parks

1. Executive summary
2. Introduction
3. Trends in development of BIs/STPs in EU and in the world
4. Current state of BI/STP in WBC
   - 4.1 Introduction
   - 4.2 Benchmarking surveys of BIs/STPs metrics in WBC region within WBCInno project
   - 4.3 Perceived problems and challenges
5. Strategic goals and suggested measures
6. Next steps and implementation of strategy through institutional support

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Regional Development Strategy for Business Incubators and Science Technology parks

5. Strategic goals and suggested measures

1. Improvement of organisational and financial framework of BIs/STPs
2. Infrastructure development that suited to meeting start-up and spin-off needs
3. Application of ICT tools and e-cloud platforms for improved communication and innovation management
4. Improvement of services for tenants of BIs/STPs
5. Application of new incubation models – virtual business incubators
6. Establishment of creative and entrepreneurial framework with schools and universities
7. Creation of mechanisms and structures for high-tech innovations in cooperation with universities and research centres
8. Organisation of competitions and awards for best business plans, best student's/researcher's ideas
9. Improving visibility, promotion and internationalization of BIs/STPs for their sustainable development
10. Networking among BIs and with STPs and universities on local, regional and EU level

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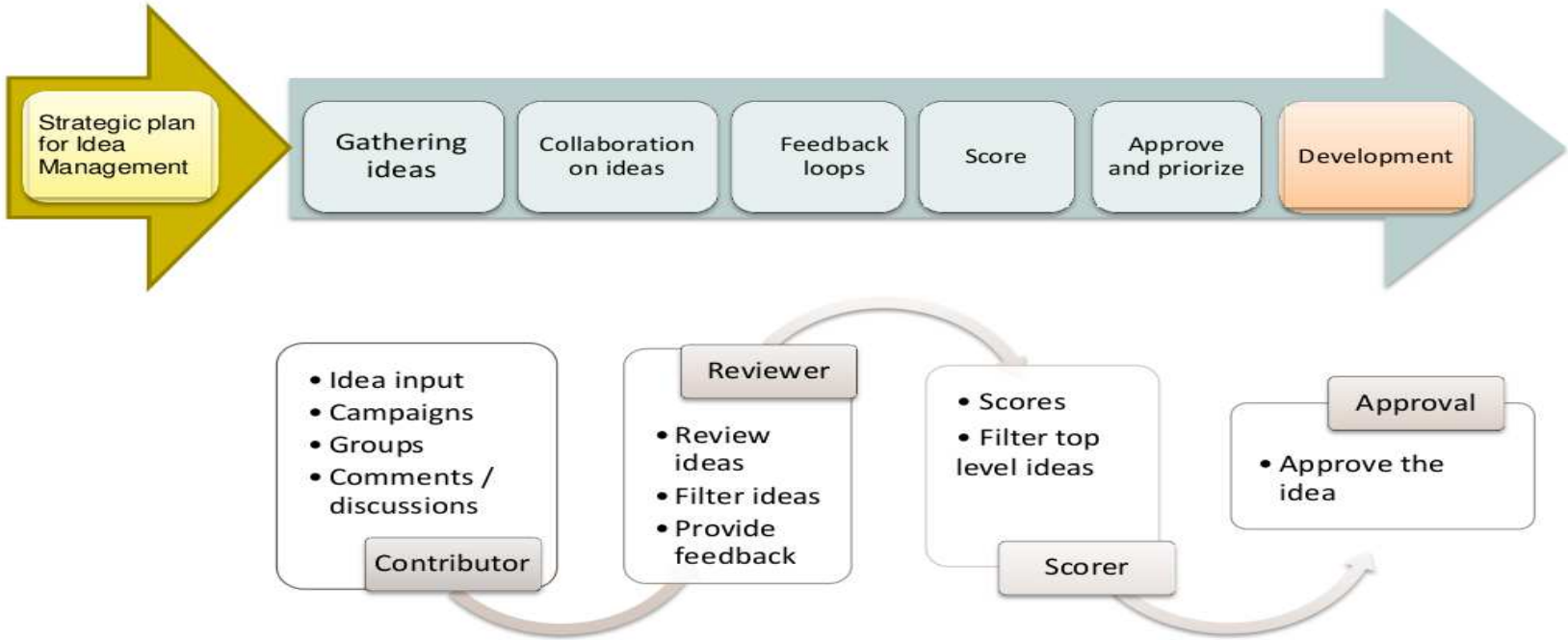
Methodology for Innovation Management at WBC universities

3. Innovation management techniques
4. Intelectual Property rights, types, EU and national legislation
5. Innovation cycle with financial tools
6. On-line collaborative Platform for Innovation management, based on gate-stage methodology



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Thank you for your attention

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