Assessment and efficiency monitoring of KTT (Knowledge and Technology Transfer) activities through KPIs (Key Performance Indicators)

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Western Balkans Regional University Innovation Platform aims to support the development and growth of a range of **KTT activities (Knowledge and Technology Transfer activities)** including commercialisation of research, collaboration between universities and enterprises, and establishing start-ups and spin-offs.

The following **KTT modes** were selected for further elaboration:

- R&D collaboration, contract research projects, scientific or technological services;
- Commercialization of R&D results by patenting, licensing
- Entrepreneurship (spin-outs from university, start-ups)
- Student mobility, career services
- Student projects with businesses
- Mobility of academics between science and businesses
- Involvement of businesses in curricula development
- Lifelong learning, training courses.

Assessment and efficiency monitoring of KTT modes

Within the mapping and benchmarking analysis on WBCInno project, it was identified that at WBC universities there are KTT activities, but the main issue is the lack of monitoring system which is why there are some overlapping efforts at faculties and universities. Additionally, due to this lack of integrated monitoring system supported by information technologies, KTT services are not visible for potential users from academic and business world. If university management could monitor the effects of research, innovation and KTT activities, then institutional incentives and funding of those activities would also be promoted. This is why it is important, as one of the first steps in modernization of universities in this area, to establish the system for assessment and monitoring of KTT modes efficiency and activities of KTT units and university staff.

Within the WBCInno project, a set of metrics for assessment and efficiency monitoring were developed as **Key Performance Indicators (KPIs)** and they are presented in the tables below. Also, the processes of data collection, assessment and presentation have to be supported by integrated information system at university level.

Table 1: KPIs for investment in knowledge transfer, innovation and research

Metric	Description
Total research expenditures	The total research expenditures spend by the university.

Staffing level	The number of employees working in the different university departments involved in KTT modes, divided into teaching, research, administrative and technical staff
Method of KTT data collection	Does university have research information system for data collection and statistics?
Investment in infrastructure	Annual investment in KTT infrastructure
Funds committed to IP management	Initial and maintenance costs for IP management
Number and value of joint ventures	Number of public-private partnerships in funding of research as joint ventures and investment value
Annual KTT units budget	Annual budget covering the costs of KTT units
Public funding for KTT staff	Annual budget from public funds provided to KTT staff
Self-financing of KTT units	Income from commercial services of KTT units to third parties

Table 2: KPIs for knowledge transfer through cooperation

Metric	Description
Number of R&D contracts	Number contracts where at least 1 firm funds the university to perform research (including contracts with public funding AND at least 1 firm).
Number of consultancy contracts	Number contracts where a firm funds the university to perform consultancy with the firm.
Income from R&D contracts	The income that has been generated by the R&D contracts with the firms (including contracts with public funding AND at least 1 firm).
Income from consultancy	The income that is generated by the consultancy contracts with the firms.
Duration of R&D contracts	The average duration of the contracts in R&D.
Duration of consultancy	The average duration of the contracts in consultancy.
Number of publications with firms	Number of scientific publications where at least one author has listed an affiliation with the university and a least one other author has listed an affiliation with at least one firm.
Number of bachelor and master theses with firms	Number of bachelor and master theses with the involvement of 1 or more firms.
Cooperation with	Number of companies that have some kind of cooperation with universities

companies	(regardless of the type of KTT activity)
Cooperation with business consultants	Number of business consultants in KTT activities
Cooperation between researchers and KTT units	Number of researchers who cooperate with KTT units

Table 3: KPIs for knowledge transfer through exploitation or commercialization of research results

Metric	Description
Number of trainings for researchers	Number of trainings for research commercialisation
Number of invention disclosures	Number of inventions or discoveries submitted to knowledge transfer offices staff or equivalent for assessment of commercial application.
Number of patent applications	Number of patent applications submitted, divided into national and international level
Number of patents granted	Number of technically unique patents granted, divided into national and international level
Number of licensing agreements	Number of licenses, options and assignments agreed for all types of intellectual property.
Total license income	Total revenue from all licenses, options and assignments that are generating income for the university.
Number of researchers involved in commercialization	Number of researchers who received a support in invention commercialization from KTT unit

Table 4: KPIs for knowledge transfer through people

Metric	Description
Spin-off companies	Number of companies launched associated with the university.
Income generated by spin-offs	Value of univesity revenue generated by the spin-off
Survival rate/viability of spin-offs	Ration of established spin-offs versus existing (operational) spin-offs
Growth rate of spin-offs	Business indicators of growth of spin-offs
Student mobility	Number of international student exchanges
Student projects with business	Number of student works in business environments
Academics mobility	Number of students and researchers spend time in industry with the

	purpose of PhD or Master thesis
Curricula development	Number of external (industrial) lecturers
Lifelong Learning	Number of training courses offered and delivered to company employees

These KPIs can be used for internal monitoring of efficiency of KTT modes and activities of KTT units. However, during the design of monitoring system for efficiency of KTT activities universities are advised to conduct the normalisation of indicators, i.e. recommended KPIs, so that they can be comparable with other HEI and PRO institutions at national, regional and international level. In that sense, there are several recommendations given below:

- Quantitative indicators should be presented in percentage or normalised, taking into account the size of university, number of researchers, time when certain services was developed, etc.
- Systems for efficiency monitoring should be adjusted to the monitoring requirements of the system that collects the data for relevant Ministries.
- The annual presentation of results should be enabled and all data that are not confidential should be published, in order to encourage and motivate the university staff to engage more in KTT activities as well as to improve the university's reputation among its business partners.
- Lower limit for response rate should be defined so that statistical results of the monitoring could be valid.
- In case that university is not integrated (such is the case with universities in Serbia), faculties and institutes as its parts should be obliged to collect data regularly and to follow the efficiency indicators for KTT activities at their institutions.
- In order to overcome the abovementioned KTT decentralisation problems at institutions that are part of university, it is necessary to develop an integrated system for assessment and monitoring of research, innovation and KTT activities at university.