



IF₄TM

Institutional framework for development
of the third mission of universities in Serbia



Report on IP Valuation and Commercialization





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IF4TM



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D3.6 Report on IP Valuation and Commercialization

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Abstract	This document summarize the results (non-confidential information) of IP valuation and commercialization strategy for selected research ideas at seven participating Serbian HEIs.
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Abbreviations

IPOS	-	Intellectual Property Office of Republic of Serbia
IP	-	Intellectual Property
IPC	-	International Patent Classification
HEI	-	Higher Education Institution
NDA	-	Non-Disclosure Agreement
PoC	-	Proof of Concept
TRL	-	Technology Readiness Level



1. Introduction

Within the support for commercialization of selected research ideas at seven participating Serbian HEIs, six selected research teams have received the support in IP valuation and development of commercialization strategy). The results of IP valuation and commercialization strategy (non-confidential information) are presented in this Report.



2. Selected ideas

Table 1 presents selected research teams/ideas, from Proof of Concept (PoC) programme, which have received the support for IP valuation and commercialization within the IF4TM project and after its completion, providing sustainability effects of this project.

Table 1. IP valuation and commercialisation support for selected PoC projects

No.	Team	Idea	HEI	IP valuation and commercialisation support
1.	TorqSens	Torque sensor based on magnetomechanical effect in commercial steel	UKG	Business model development IP valuation Feasibility Study Patent application
2.	FOS2D	Robust low-cost fiber-optic 2D deflection sensor	UNS	IP valuation, Utility Patent application, SCI paper
3.	HEISPS	Highly efficient information system for parking support	SUNP	Business model development
4.	MedIn	Device for ultrasound washing and disinfection of medical instruments and vessels	UNI	Business model development



3. Support in IP valuation and development of commercialisation strategy within the IF4TM project

3.1 For FOS2D team

The subject of research within the proposed project is the development of a sensing system based on Fiber Optic Curvature Sensor (FOCS) for continuous static and dynamic monitoring of deformation of civil engineering structures. The aim of the proposed PoC is a functional and operational prototype of the 2D sensing system, based on the innovative method of measuring the deformation using FOCS. Also, the aim of this PoC project is to move from TRL 4 to TRL 5.

Since one of the aims of the PoC FOS2D project is to move from TRL4 to TRL 5, an experiment in order to validate the proposed sensor in the real environment was organized. The essence of the experiment is comparison analysis of two different methods for deformation determination: geodetic and 2D deflection sensor based on FOCS. The experiment is performed by using specially designed construction which makes it possible to apply both methods. For performing geodetic measurements, a geodetic micro-network is established. Measurements by applying 2D deflection sensor and three total stations are carried out by comparison. Based on the performed experiment and achieved measurements results it can be concluded that the proposed system with a 2D deflection sensor can be successfully used in the monitoring of deformations.

For FOS2D team from UNS that is chosen for PoC and TRL, consultations was held in regard to the protection and management of IP. Meeting was held at the premises of Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia with the presence of 3 PoC FOS2D team members: Dr Jovan Bajić, Dr Marko Marković and Dr Miodrag Brkić. Methodology of IPOS service IP pre-diagnosis was implemented with addressing the relevant issues on IP: novelty, prior publications, patent database search, ownership on research results and IP management in the process of possible commercialisation. NDA agreement had been signed before meeting started. Meeting lasted 2.5 hours. After the meeting held on 17/09/2018, IPOS representatives, Daniela Zlatić Šutić and Nataša Milojević, who delivered consultations during the meeting, drafted report IP pre-diagnosis on 33 pages with the customized recommendations + Annexes on basic information for possible IP protection for all IP rights, trademark, industrial design, soft IP, copyright and more in detail focused on patent protection, how to search patent databases with identified IPC symbols and key words, ownership of results in project, etc. The copy of the report was delivered during the second short meeting to PoC FOS2D UNS team, when the report was presented by Nataša Milojević on 12/12/2018. The report is of confidential nature according to the methodology so it is not the part of this report.

As the result of the performed experiment and achieved measurement results, a scientific manuscript entitled: "Comparison analysis of deformation determination by applying fiber optic 2D deflection sensor and geodetic measurements" was published in "Sensors" (IF: 2.475) journal.



3.2 For TorqSens team

For TorqSens team from Faculty of Technical Science, Čačak, University of Kragujevac, who have already participated at PoC activity and visited earlier the University of Maribor for improving solution and raising TRL and prototyping, consultations was held in regard to the protection and management of IP. Meeting was held at the premises of IPOS in Belgrade in presence of 2 PoC TorqSens team members: Branko Kopivica and Marko Rosić. Methodology of IPOS service IP pre-diagnosis for university was implemented with addressing the relevant issues on IP: novelty, prior publications, explanation on overall patent system, patent database search, ownership on research results and IP management in the process of possible commercialisation. Meeting lasted almost 3 hours. Detailed description on phases of patent protection had been given with the relevant deadlines for application in regard to publication date of scientific paper, how to establish the difference from prior publication as well as demonstration of searching in patent database Espacenet. Symbols of International Patent Classification have been determined as well as instructions how to combine IPC symbols with the key words and how to establish and record search strategy. Demonstration of search in New Espacenet has been conducted as well.

At the University of Kragujevac, a meeting was held on 21/03/2019, related to the implementation of PoC project TorqSens as well as on development of the strategy for the commercialization of sensor that was developed and validated within this PoC project. The meeting was attended by Prof. Dr Vesna Mandić, project coordinator, Prof. Dr Nenad Stanišić, expert for the feasibility study, two members of PoC TorqSens PoC project, Prof. Dr Branko Koprivica Project Manager and Dr Marko Rosić, member of the PoC team.

On this occasion, the status of the PoC project, the innovative sensor solution, and the plan of further activities of commercialization were presented, as follows:

- Creating a business plan
- Development of the Feasibility Study
- Preparation of patent application.

As part of the plan for commercialization of proposed technology, the team members participated in the training for developing the Business model using the CANVAS method. The training was organized the Creativity Center of the University of Kragujevac and the Business Innovation Centre in Kragujevac.

The Business model served as a base for development of Feasibility Study for TorqSens technology. The team members developed the part of feasibility study related to the technical issues (Technical feasibility part). In the part of related to the commercial and economic issues of technology development, the team received significant support from Prof Dr Nenad Stanisic from the Faculty of Economics of University of Kragujevac, who developed the document Economic feasibility study based on the information and instructions provided by the TorqSens team.

During the same period, the team started with preparations for the patent application for the proposed technology. It is expected that the application procedure will start in June 2019.

A meeting about all these activities was held on May 27 and all details on current and further activities were discussed. Special intention was devoted to the commercialisation of the



technology, for finding financing models for starting production and a proper way of placing product on the market.

3.3 For MedIn team

For the MedIn team, a business model was created. The business model is based on the development of devices that will ensure the quality of the washing at the European level (procurement of materials only from certified suppliers, strict monitoring and compliance with the procedures of the ISO 9001 standards). It also includes continuous monitoring of the production program of the world's leading companies in the field of medicine and continual updating the production program.

To keep up with the demands of the market, continuous monitoring and listening to the needs of healthcare institutions and constant improvement and adjustments of the new product to their requirements will be ensured. Also, the plan is a close collaboration with Universities in terms of realization of project activities and preparation of technical documentation. The technical and intellectual potential of higher education institutions is a key resource for the development of the model.

The potential buyers of the new product will be all medical institutions, with a special focus on those with less purchasing power. The task is that the low price and wide accessibility of the device ensure the high interest of the institutions and the need for serial production. The estimation is that the cost of building the prototype is around 6000 Euros, and in the case of series production these costs will be reduced by 10-20%. The final price of the product on the market will be significantly lower than the competitors' prices.

3.4 For HEISPS team

HEISPS team has been developed a prototype of the system for parking services. The State University of Novi Pazar sent a letter of intention in order to establish the official cooperation with the Public parking company. The letter was followed by the meeting attended by the management of PC Parking Service Novi Pazar, university's representative Mr. Edis Mekic, PoC team and PC IT department. At the meeting, they discussed the overall organizational aspects of PC, their field of work, parking resources, open and closed parking areas in the city.

Additionally, the various payment methods and parking space availability systems PC use were discussed. To support the development of proposed solution, the PC Parking Service Novi Pazar opened databases for collecting parking data on all three closed parking spaces in Novi Pazar up 07/09/2018. The analysis showed that they do not have compatible systems of tracking parking lots and that they have combination of semi-automatic tracking and counting cars by parking service staff. The conclusion of the analysis was that online database of parking service was unstable and new database needs to be established. Supported by SUNP department of Economics developed, the team developed the Business plan based on CANVAS method.

The implementation of the suggested solution for smart parking was carried out using the surrounding Android Studio. The application is client server based, where client side was done as Android application, while software side was based on PHP script language, and



necessary data were stored in JSON format and MySQL tables. For uploading the maps, the team used Google Maps API for Android.

For the HEISPS team, a series of meetings with local government representatives and companies were organized to support the development of prototype and testing in real time.

3.5 For other teams

The study visits were organized to the partner EU universities in Maribor (June 2018) and Lisbon (July 2018), attended by the members of the following teams: TorqSens, MedIn, 3Phase and FOS2D. In January 2019, another study visit to the laboratories of the University of Maribor was organized with the additional validation of the new prototype developed and tested within the TorqSens team.

In June 2018, at IST (Lisbon), the Intellectual Property Unit of IST made a presentation about the procedures for managing intellectual property at IST and about the aspects to take into account before applying for patent protection (or other types of industrial property rights). A hands-on session was also held in which the groups learned about the basics for performing state of the art search and had the opportunity to do their own state of the art search regarding their technologies. The results were presented and they were able to verify some competitors in their fields and to access the most recently published patent applications. The second hands-on session was held Prof. Luis Caldas de Oliveira, Vice-President of IST for Entrepreneurship and Corporate Partnerships and focused on Value Proposition Design, providing PoC teams with the tools for assessing potential clients and markets for their technologies. Under confidentiality terms, the PoC teams visited some of IST's research groups for discussing their technologies with experts in the respective fields and received feedback from the latter.

For all other teams, a set of documents and procedures related to the protection of intellectual property were prepared, also organized their participation in the training delivered by WIPO and specially adapted NDA contracts for each of the PoC projects.



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