SELF-EVALUATION REPORT MODULE 3

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EVALUATED UNIT: Faculty of Information Technology, Czech Technical University

FORD: 2. Engineering and Technology

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MODUL 3 SOCIAL RELEVANCE

SOCIAL RELEVANCE / SOCIAL BENEFIT OF THE EVALUATED UNIT[1]

3.1 General self-assessment of the social benefit of R&D&I in the fields of research at the evaluated unit, and of the evaluated unit as a whole

The evaluated unit gives a concise, general but informative account of the benefit of R&D&I in the fields in the 2014–2018 reporting period.

Self-evaluation: FIT CTU is a faculty established in 2009 with most of the academic staff focusing on teaching activities and a steady growth in research and development activities. Applied research at FIT is beneficial for wider society. We contributed to the area of programming languages by establishment of a prestigious science laboratory, which was the recipient of an ERC advanced grant. In the area of basic research, we have improved some methods of artificial intelligence, which we were also able to put into practice. Our applied research contributed to the innovations in domestic and foreign companies. We also focused on security research and last but not least on topics highly beneficial for the society, e.g. open data preparation and publishing.

HTML links to additional documentation:

APPLIED RESEARCH PROJECTS

3.2 Applied research projects[2]

The evaluated unit presents a maximum of the five most significant (from the perspective of evaluated unit) applied research projects in the 2014–2018 reporting period from the complete list in the appendix (tables 3.2.1 and 3.2.2), particularly with regard to the results achieved or a project's potential for application.

Self-evaluation: The examples of successful applied research include research of ecosystems of programming languages and development of support tools in order to reduce costs of evolution and generation of new programming languages (ERC Advanced Grant), complex security solution focused on detection and prevention of cyber frauds in the financial services domain (TA CR grant), development and testing of algorithms for the behavioral predictive analysis of persons crossing the external borders of the EU (grant of the Ministry of Interior CR), and a project focusing on

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[1]   In accordance with Section 22(1) of Act No 111/1998 on universities, amending certain acts (the Universities Act), as amended.

[2]   Under Section 2(1)(b) of Act No 130/2002, applied research is theoretical and experimental work aimed at gaining new knowledge and skills for the developing of new or substantially improved products, processes or services; applied research includes <u>industrial research or experimental development, or a combination of both</u>. Under Article 2 of Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, industrial research means planned research or critical investigation aimed at the acquisition of new knowledge and skills for developing new products, processes or services, or for bringing about a significant improvement in existing products, processes or services. It comprises the creation of component parts of complex systems, and may include the construction of prototypes in a laboratory environment or in an environment with simulated interfaces to existing systems as well as of pilot lines, when necessary for the industrial research and notably for generic technology validation; experimental development means acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services. This may also include, for example, activities aiming at the conceptual definition, planning and documentation of new products, processes or services.

development of special software guide for dowry towns of the Queens of Bohemia (grant of the Ministry of Culture CR).

HTML links to additional documentation:

https://prl-prg-erc.github.io/

3.3 Contract research [3]

The evaluated unit briefly comments on revenues from contract research for the 2014–2018 reporting period from the complete list in the appendix (tables 3.3.1 and 3.3.2).

Self-evaluation: Working with partners, we have built several laboratories in priority areas of our research. Business funding has helped us develop our applied research capacities. Some firms also paid us directly for basic research (for example, Showmax - improving neural networks for video processing). Thanks to our licensing policy, most contract research results remain the property of the faculty, and as a result, we can help more firms innovate, and our contract research is more scalable.

HTML links to additional documentation:

3.4 Revenues from non-public sources (besides grants or contract research) from research work

The evaluated unit briefly comments on revenues for the 2014–2018 reporting period for R&D&I from non-public sources, besides grants or contract research (e.g. licences sold, spin-off revenues, gifts, etc.). It presents a complete list in the appendix (table 3.4.1).

Self-evaluation: The largest royalty revenues were generated by the Invoice Processing and Document Analysis software (licensed to KPMG). Furthermore, the faculty received fees from licencing of the software for automating data preparation from the data warehouse and contract research management software licensed to company UNICO.ai CZ, s.r.o.

HTML links to additional documentation:

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[3]	*For a definition of contract research for the purposes of evaluation in the universities sector, see Article 2.2.1 of the Community framework for State aid for research and development and innovation (2014/C 198/01).*

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APPLIED RESEARCH RESULTS

3.5 Applied research results with an existing or prospective economic impact on society
The evaluated unit briefly comments on a maximum of the five most significant (from the perspective of the evaluated unit) applied research results that have already been applied in practice, or that will realistically be applied, in the 2014–2018 reporting period from the overview in the appendix (table 3.5.1).

Self-evaluation: A prototype of the defect detection equipment of transparent materials was realized at FIT. This equipment enables not only to detect the particular defect and the place of its occurrence, but also it is capable to find out defect type, extent, shape or brightness characteristics. The development of the prototype at FIT helped the faculty to obtain contract research and transfer the research results into industry. In the observed period, 1 spin-off company with the license UNICO.ai CZ, s.r.o. was established. This collaboration put successfully into practice an expert system supporting technology transfer. Till now, the results are used by several universities or faculties and research institutes and the number of users constantly grows. Two licenses of Predictor Factory software reducing the time required for expert consultations were sold. The faculty has obtained the European patent called System for Implementation of a Hash Table, which enables efficient implementation of a hash table with fast initialization and which is used in systems implementing compression or based on FPGA architecture.

HTML links to additional documentation:

3.6 Significant applied research results with an impact other than an economic one on society
The evaluated unit gives a concise account of a maximum of the five most significant (from the perspective of the evaluated unit) applied research results with an impact other than an economic one on society in the 2014–2018 reporting period (typically results from disciplines in the humanities and social sciences) from the overview in the appendix (table 3.6.1).

Self-evaluation: The outputs of the project Development and Testing of Algorithms for the Behavioral Predictive Analysis of Persons Crossing the External Borders of the EU have direct expected application on nationwide security. Directly applicable results include journal articles and conference articles that improve age estimation methods and breast cancer detection methods.

HTML links to additional documentation:

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COOPERATION WITH THE NON-ACADEMIC ENVIRONMENT AND TECHNOLOGY TRANSFER

3.7 The evaluated unit's most significant interactions with the non-academic application/corporate sphere

The evaluated unit gives a concise account of the most typical users of its outputs. It explains whether and how it identifies them and how it works with them. It provides examples of a maximum of ten of the most significant interactions with the non-academic environment in the 2014–2018 reporting period.

Self-evaluation: We have worked primarily with businesses that have research potential needing expertise in areas of our research competence. Examples include projects for Showmax, Datamole, Deloitte, Škoda Auto, KB, Passangera. We also work with Cesnet or the Police of the Czech Republic. The end-users of our research results include also foreign firms (Lely, Vendavo).

HTML links to additional documentation:

3.8 System and support of technology transfer and intellectual property protection (can be extended to the whole university, emphasising the specific features of the evaluated unit)

The evaluated unit gives a concise account of its system of technology transfer. It conducts an evaluation of the quality of its applied research and the effectiveness of technology transfer using the data presented in the appendix (table 3.5.1). This commentary will highlight the number of filed and granted patents (Czech and international) and licences sold.

Self-evaluation: TT and IP protection system of the CTU has a centralised base within the Rectorate. On top of that, the Faculty has set up processes for collecting and protecting results promising from the viewpoint of their commercialization. The originator shall support research activities with respect to the applicability of results. The Industry Cooperation Unit has several employees responsible for building capacity and promoting entrepreneurial spirit. The Faculty organises events to promote cooperation and transfer. As the output of faculty research activities is often an algorithm or software, patent protection is impossible in this case in the EU. We try to support research results that can be licensed to multiple companies (such as PredictorFactory). Our spinoff UNICO.ai CZ develops experts.ai platform where we plan to advertise our licences to companies worldwide.

HTML links to additional documentation:

3.9 Strategy for setting up and support of spin-off firms or other forms of commercialization of R&D&I results (can be extended to the whole university, emphasising the specific features of the evaluated unit)

The evaluated unit gives a concise account of the practical use of its intellectual property in the form of setting up spin-off firms or other forms of commercialising R&D&I results (both with or without the participation of the university) established by the evaluated unit (university), another entity controlled by the evaluated unit (university), or an employee of the evaluated unit, presenting the model for their functioning and coordination, and control of intellectual property management of the evaluated unit (university).

Self-evaluation: CTU has a Technology Transfer Office, an incubator InQBay and a strategy for commercialisation of IP. Unfortunately, CTU policy does not yet provide sufficient support for spin-off companies with equity holdings. At the faculty level, we encourage the emergence of innovative companies with scalable products and license the intellectual property generated by employees of the faculty.

HTML links to additional documentation:

RECOGNITION BY THE SCIENTIFIC COMMUNITY

3.10 The most significant individual awards for R&D&I

The evaluated unit presents a maximum of ten examples of the most significant R&D&I awards received (in the Czech Republic and in other countries) in the 2014–2018 reporting period.

Self-evaluation: Examples of FIT employee awards in the monitored period: Fulbright Scholar (Jan Holub, 2016), ECOOP Test of Time Award (Jan Vitek, 2018), ISSTA Distinguished Artifact Award (Jan Vitek, Filip Křikava, 2018), OOPSLA Distinguished Artifact Award (Jak Vitek, Filip Křikava, Jakub Žitný, 2017), Joseph Fourier Prize (Daniel Langr, 2014) , Jaroslav Jirsa Award (Tomáš Valla, 2018).

HTML links to additional documentation:

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3.11 Recognition by the international R&D&I community

The evaluated unit provides the following information / examples demonstrating recognition by the international scientific community in the 2014–2018 reporting period, with a commentary:

It presents a maximum of ten examples of its academic staff's participation on the editorial boards of international scientific journals (e.g. editor, member of the editorial board) in the appendix (table 3.11.1),

It presents a maximum of ten examples of the most significant invited lectures by the evaluated unit's academic staff abroad in the appendix (table 3.11.2),

It presents a maximum of ten examples of the most significant lectures by foreign scientists and other guests relevant to the R&D&I field in the appendix (table 3.11.3),

It presents a maximum of ten examples of the most significant elected memberships of professional societies (table 3.11.4).

Self-evaluation: Examples of editorial boards of international journals, which a FIT employee participated in during the observed period, include the editorial boards of scientific journals "Microprocessors and Microsystems" and "Information Systems Journal". The most important invited lectures were given at international conferences, e.g. EOMAS, ISQED, MECO, ASQED. The invited lectures given at FIT by invited foreign scientist include lectures given by Prof. Eric Wong, Dr. Yervant Zorian, Edmond Jonckheere, Prof. Sartaj Sahni Maciej Ciesielski, Ray Dawson. The most important voted position in the professional society is the position in the Board of Directors and Consultants of EUROMICRO.

HTML links to additional documentation:

POPULARISATION OF R&D&I

3.12 The most significant activities in the popularisation of R&D&I and communication with the public

The evaluated unit gives a concise account of its main activities in the area of popularisation of R&D&I and communication with the public in the 2014–2018 reporting period, and presents a maximum of ten examples that it considers the most significant.

Self-evaluation: The Faculty organizes regular public lectures in cycles called Informatic Evenings and Lecture Series of prof. Svoboda, public Seminar of History of Mathematics, Informatics and Astronomy and other public lectures. It also organizes an informational correspondence seminar for secondary school students. In general, it actively supports academics in science popularization activities, such as publishing in popular magazines.

HTML links to additional documentation:
https://fit.cvut.cz/en/informatics-evening
https://fit.cvut.cz/en/faculty/regular-events/prof-svoboda-lectures

APPENDICES (TABLES)

3.2 Applied research projects

3.2.1 Projects supported by a provider from the Czech Republic

As the beneficiary						
Provider	Project title	Support (EUR thousand)				
		2014	2015	2016	2017	2018
TA ČR	Tools for Automatizing the Quality Assurance in Large Business Intelligence Systems and Data Warehouses	179,20	180,85	182,52	0,00	0,00
MV ČR	Development and Testing of Algorithms for the Behavioral Predictive Analysis of Persons Crossing the External Borders of the EU	0,00	0,00	0,00	0,00	48,67
Total		179,20	180,85	182,52	0,00	48,67
As another participant						
Provider	Project title	Support (EUR thousand)				
		2014	2015	2016	2017	2018
TA ČR	Complex security solution focused on detection and prevention of cyber frauds in the financial services domain	0,00	90,46	91,30	0,00	0,00
TA ČR	Governance support tools for dynamic aspects of Big Data environments	0,00	0,00	0,00	67,26	69,06
MK ČR	Dowry Towns of the Queens of Bohemia (A living part of historical consciousness and its support of the instruments of historical geography, virtual reality and cyberspace)	0,00	0,00	0,00	0,00	21,53
Total		0,00	90,46	91,30	67,26	90,59

3.2.2 Projects supported by a provider from another country

As the beneficiary						
Provider	Project title	Support (EUR thousand)				
		2014	2015	2016	2017	2018
ERC	Evolving Language Ecosystems			1132		739
Total				1132		739
As another participant						
Provider	Project title	Support (EUR thousand)				
		2014	2015	2016	2017	2018
Total						

3.3 Contract research

3.3.1 Research work contracted by a client from the Czech Republic

Client	Research title	Revenues (EUR thousand)				
		2014	2015	2016	2017	2018
CARSLEN s.r.o.	Complex conceptual analysis of a company	6,90	0,00	0,00	0,00	0,00

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CESNET, zájmové sdružení právnických osob	Detection of phishing attacks, implementation, debugging and testing of systems in SAGElab and HWlab	17,18	0,00	0,00	0,00	0,00
CREATIX s.r.o.	Complex conceptual analysis of a company	6,65	0,00	0,00	0,00	0,00
DATA3000 s.r.o.	Complex conceptual analysis of a company	7,05	0,00	0,00	0,00	0,00
Deloitte Advisory s.r.o.	Estimation of the future value of the customers, behavioral mikrosegmentation	0,22	0,00	0,00	0,00	0,00
Komerční banka, a.s.	Intranet, social computing	10,46	0,00	0,00	0,00	0,00
Policie ČR	Expert opinion	3,74	0,00	0,00	0,00	0,00
Škoda-Auto a.s.	Specifically HMI research for onboard computer	13,58	0,00	0,00	0,00	0,00
VŠE	Feasibility study of a system for collaboration between students and industry	1,49	0,00	0,00	0,00	0,00
AŽD Praha, s.r.o.	Reliability analysis KOA1M	0,00	3,67	0,00	0,00	0,00
Datamole, s.r.o.	Dairy Barn Simulaton	0,00	25,62	0,00	0,00	0,00
CESNET, zájmové sdružení právnických osob	Implementation, debugging and testing of systems in SAGElab and HWlab	0,00	27,56	0,00	0,00	0,00
Česko-slovenská iniciativa ECR	Analysis of "EU Supply Chain Initiative: B2B platform for multi-stakeholder dialogue at national level"	0,00	1,47	0,00	0,00	0,00
Daylight, s.r.o.	Web portal creation - intelligent portal pairing offers and request of part times	0,00	10,56	0,00	0,00	0,00
Deloitte Advisory s.r.o.	Extension of predictor factory	0,00	0,62	0,00	0,00	0,00
GfK Czech, s.r.o.	Conceptual analysis, design and implementation of prototype SW tools for anonymous monitoring of movement and customer behavior in the shop	0,00	10,48	0,00	0,00	0,00
Komerční banka, a.s.	Contractual IT research	0,00	69,90	0,00	0,00	0,00
KPC-Group, s.r.o.	Prototype SW tools for managing migration recommendations IT technology within the APM	0,00	10,45	0,00	0,00	0,00
SMART DIALOG, s.r.o.	Development of SW application	0,00	10,48	0,00	0,00	0,00
StyleZone, s.r.o.	Development of integrated multicanal multimedia CRM	0,00	10,81	0,00	0,00	0,00
Ayming Česká republika s.r.o.	Testimonials	0,00	0,00	1,85	0,00	0,00
AŽD Praha, s.r.o.	Reliability analysis ABA - 12	0,00	0,00	2,15	0,00	0,00
CESNET, zájmové	Implementation, debugging and testing of systems in SAGElab and HWlab	0,00	0,00	22,27	0,00	0,00

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sdružení právnických osob						
Datamole, s.r.o.	Behavior analysis of dairy cattle	0,00	0,00	39,84	0,00	0,00
FIEDLER AMS s.r.o.	Innovation voucher - implementation of M2M platform	0,00	0,00	7,40	0,00	0,00
Komerční banka, a.s.	Contractual IT research	0,00	0,00	74,09	0,00	0,00
Organizers Support, s.r.o.	Analysis of mobile unit with UHF reader	0,00	0,00	7,14	0,00	0,00
Ayming Česká republika s.r.o.	Testimonials	0,00	0,00	0,00	1,71	0,00
AŽD Praha, s.r.o.	Reliability analysis	0,00	0,00	0,00	2,62	0,00
CESNET, zájmové sdružení právnických osob	Detection of phishing attacks, implementation, debugging and testing of systems in SAGElab and HWlab	0,00	0,00	0,00	26,24	0,00
Datamole, s.r.o.	Predictive maintenance algorithms	0,00	0,00	0,00	32,24	0,00
Deloitte Advisory s.r.o.	Extension of predictor factory	0,00	0,00	0,00	0,72	0,00
Happy Technik s.r.o.	R&D in a project "developing a secure transport system"	0,00	0,00	0,00	12,65	0,00
HS Project spol. s.r.o.	System for material defect detection	0,00	0,00	0,00	12,65	0,00
Komerční banka, a.s.	Contractual IT research	0,00	0,00	0,00	25,86	0,00
ShowMax s.r.o.	R&D of methods for innovation in VOD and IP TV	0,00	0,00	0,00	18,95	0,00
Ústav organické chemie a biochemie AV ČR v.v.i	ELIXIR CZ- conceptual models in the domain of the donor and blood donor registry	0,00	0,00	0,00	0,72	0,00
Ayming Česká republika s.r.o.	Testimonials	0,00	0,00	0,00	0,00	1,75
CESNET, zájmové sdružení právnických osob	Flexible optical network, console application for netconf-cli, implementation, debugging and testing of systems in SAGElab and HWlab	0,00	0,00	0,00	0,00	32,41
Datamole, s.r.o.	Machine learning algorithms development	0,00	0,00	0,00	0,00	34,24
Komerční banka, a.s.	Contractual IT research	0,00	0,00	0,00	0,00	1,95
Passengera	R&D of machine learning methods and technology of chatbot	0,00	0,00	0,00	0,00	2,92

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ShowMax s.r.o.	R&D of methods for innovation in VOD and IP TV	0,00	0,00	0,00	0,00	46,80
Ústav organické chemie a biochemie AV ČR v.v.i.	ELIXIR CZ -conceptual models in the domain of the donor and blood donor registry	0,00	0,00	0,00	0,00	0,51
Total		67,26	181,61	154,74	134,37	120,58

Note: List and describe contract research work with the revenue for the calendar year in question.

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3.3.2 Research work contracted by a foreign client

Client	Research title	Revenues (Kč thousand)				
		2014	2015	2016	2017	2018
Vendavo	Transaction data processing, anomaly detection			20,20		
Total				20,20		

Note: List and describe contract research work with the revenue for the calendar year in question.

3.4 Revenues from non-public sources (besides grants or contract research)

3.4.1 Overview of revenues from non-public sources raised for the 2014–2018 reporting period

Revenue type	Revenues (EUR thousand)				
	2014	2015	2016	2017	2018
Licence KPMG - annotator of contracts	0,00	0,00	5,55	0,00	0,00
Licence Foibos Books - dtb architectonical culture heritage	0,00	0,00	1,85	0,00	0,00
Licence UNICO - SUP	0,00	0,00	0,00	0,00	1,17
Total	0,00	0,00	7,40	0,00	1,17

Note: List funds for R&D&I from non-public sources, besides grants or contract research (e.g. licences sold, spin-off revenues, gifts, etc.) in each calendar year.

3.5 Applied research results with an economic impact on society

3.5.1 Overview of applied research results in the 2014–2018 reporting period

List and describe the results that have already been applied in practice, or that will realistically be applied, with an existing or prospective economic impact on society. Under "patents" and "licences sold", list all the results; under other results list a *maximum* of five items. Unless otherwise specified below, the definition of a result must correspond to the definitions under the Methodology for Evaluating Research Organisations and Research, Development and Innovation Purpose-Tied Aid Programmes, Appendix No 4: Definitions of Types of Results.

Results	Year	Title
European patent	2018	System for implementation of a hash table
American patent		
Czech licenced patent		
Other foreign patents		
Licences sold	2016	Predictor Factory
Significant analyses / surveys / studies		

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Spin-off with a stake held by the evaluated unit		
Spin-off with no stake held by the evaluated unit	2017	UNICO.ai CZ, s.r.o.
Prototypes	2018	Equipment for material defects detection
Varieties and breeds		
Other		

Note: "Licence" refers to a licence for a result of R&D&I in the broadest sense of the word (licences for patents, utility models, industrial designs; copyright licences for software and other works, and any other licences).

For the purposes of this methodology, a "spin-off" is a juridical person established to commercialise knowledge, usually with the inclusion/transfer of the rights to this knowledge to such juridical person. List all instances of legal persons.

3.6 Significant applied research results with an impact other than an economic one on society

3.6.1 Overview of applied research results for the 2014–2018 reporting period with an impact other than an economic one on society

Result type	Name	Anticipated impact
summary research report	Summary research report of the project Development and Testing of Algorithms for the Behavioral Predictive Analysis of Persons Crossing the External Borders of the EU	nationwide security
peer- reviewed scientific article	Štepanovský, M.; Ibrová, A.; Buk, Z.; Velemínská, J. Novel age estimation model based on development of permanent teeth compared with classical approach and other modern data mining methods Forensic Science International. 2017, 279 72-82. ISSN 0379-073	better age estimation based on orthopantomographs
peer- reviewed scientific article	Koterova, A.; Navega, D.; Štepanovský, M.; Buk, Z.; Brůžek, J.; Cunha, E. Age estimation of adult human remains from hip bones using advanced methods Forensic Science International. 2018, 287 163-175. ISSN 0379-0738.	evaluation of methods of age estimation using hip bones
paper in proceedings	Haindl, M.; Remeš, V. Adaptive Model-Based Mammogram Enhancement In: Proceedings of the Tenth International Conference on Signal-Image Technology & Internet-Based Systems. Los Alamitos, CA: IEEE	ehancement of methods for breast cancer detection

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	Computer Soc., 2014. p. 65-72. ISBN 978-1-4799-7978-3.	
research report	Veselý, D.; Švehla, J.; Bartoň, T. Oestrus detection in dairy cattle 2015. Report no. RRR-FIT-15-09.	oestrus detection of dairy cattle using machine learning techniques

Note: List and describe a maximum of five results (in line with the Definitions of Types of Results) that have already been applied in practice, or that will realistically be applied. These are typically results from disciplines in the humanities and social sciences, for which you should briefly describe their anticipated impact.

3.11 Recognition in the international R&D&I community

3.11.1 Participation of the evaluated unit's academic staff on the editorial boards of international scientific journals in the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Title, publisher, city(-ies) and country(-ies) of origin of the scientific journal
prof. Ing. Róbert Lórencz CSc.	Information Sciences and Technologies, Bulletin of the ACM Slovakia, STU v Bratislave, Bratislava, Slovakia
doc. Ing. Jan Janoušek Ph.D.	COMSIS - Computer Science and Information Systems, ComSIS Consortium, Novi Sad, Serbia
Dr.-Ing. Martin Novotný	Microprocessors and Microsystems, Elsevier, Amsterdam, Netherlands
doc. Ing. Hana Kubátová CSc.	Microprocessors and Microsystems, Elsevier, Amsterdam, Netherlands
doc. Ing. Robert Pergl, Ph.D.	Design and Enterprise Engineering (OD&EE) Journal
Prof. RNDr. Tomáš Skopal, Ph.D.	Information Systems Journal, Elsevier, Amsterdam, Netherlands
doc. RNDr. Pavel Surynek, Ph.D.	International Journal of Artificial Intelligence and Application, Science & Engineering Research Support soCiety, Australia
prof. Ing. Michal Haindl, DrSc.	Kybernetika, International journal ofInstitute of Information Theory and Automation, Prague, Czech Republic
MSc. Jan Vítek, Ph.D.	The JOT Journal, Association Internationale, pour les Technologies Objets, Kaiserslautern, Germany

Note: List a maximum of ten examples of academic staff's participation on the editorial boards of international scientific journals (e.g. editor, member of the editorial board, etc.).

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3.11.2 The most significant invited lectures by the evaluated unit's academic staff at institutions in other countries during the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Invited lecture title	Name of the host institution, conference or other event
MSc. Jan Vítek, Ph.D.	What You Need to Know about Performance Evaluation	ECOOP European Conference on Object-Oriented Programming Summer School
Ing. Josef Pavlíček, Ph.D.	Methods for evaluating the quality of process modelling tools	EOMAS 2018: 14th International Workshop on Enterprise and Organizational Modeling and Simulation
doc. Ing. Jan Schmidt, Ph.D.	On Quality in Experimental Evaluation	Eighteenth International Symposium on Quality Electronic Design ISQED 2017
Dr.-Ing. Martin Novotný	Cryptanalytical Attacks on Cyber-Physical Systems	5th Mediterranean Conference on Embedded Computing (MECO 2016)
Ing. Michal Štepanovský, Ph.D.	An interdisciplinary approach to the design of multiphysics mechatronic systems: The electrostatic actuator design case study	14th International Symposium MEMS 2016
Ing. Jaroslav Kuchař, Ph.D., Ing. Milan Dojčinovski, Ph.D., doc. Ing. Tomáš Vitvar, Ph.D.	Exploiting Temporal Dimension in Tensor-Based Link Prediction	11th International Conference on Web Information Systems and Technologies
doc. RNDr. Alena Šolcová, Ph.D.	First steps in History of Computing in Czechoslovakia	8th IT STAR of History of Computing
doc. RNDr. Pavel Surynek, Ph.D.	Cooperative Path-planning for Multiple Robots,	Ben Gurion University of the Negev, Advanced Topics in Artificial Intelligence, March 2015, Beer Sheva, Israel.
doc. Ing. Štěpán Starosta, Ph.D.	Markov constant and quantum instabilities	Bridges between Automatic Sequences, Algebra and Number Theory, Centre de recherches mathématiques (CRM) Université de Montréal
Dr.-Ing. Martin Novotný	Cryptanalytical Attacks on Objects of Daily Usage	6th Asia Symposium on Quality Electronic Design (ASQED 2015)

Note: List a maximum of ten examples.

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3.11.3 The most significant lectures by foreign scientists and other guests relevant to the R&D&I field at the evaluated unit during the 2014–2018 reporting period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title
Prof. W. Eric Wong	University of Texas at Dallas	Combinatoric Testing and Its Application
Prof. Raimund Ubar	Tallinn University of Technology	Complexity, Accuracy, Dependability – the Challenges in Testing of Digital Systems
Dr. Yervant Zorian	Fellow and Chief Architect at Synopsys, Mountain View, California	Yield & Robustness in Today's Advanced Technology Nodes
Prof. Edmond Jonckheere	University of Southern California	Quantum Adiabatic Computation, where the mathematics is trying to tell us something
Prof. Sartaj Sahni	University of Florida, U.S.A.	Green Computing
Prof. Maciej Ciesielski	University of Massachusetts, Amherst, U.S.A.	Evolution of Electronic Design Automation Tools and Algorithms
Prof. Ray Dawson	Loughborough University, UK	Being Right is Not Good Enough – Why Knowledge Management Initiatives Fail
Prof. Werner Kuich	Technische Universitat Wien	Algebraic Systems
Prof. Marian Vajteršic	Paris Lodron University of Salzburg	Parallel Nonnegative Matrix Factorization (NMF) and its Application

Note: Relevant solely for the R&D&I field. List a maximum of ten examples.

3.11.4 The most significant elected membership in foreign of professional societies relevant to the R&D&I field at the evaluated unit during the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Name of professional society	Type of membership
MSc. Jan Vítek, Ph.D.	ACM SIGPLAN	Chair of the ACM Special Interest Group on Programming Languages (SIGPLAN)
MSc. Jan Vítek, Ph.D.	Association Internationale pour les Technologies Objets	Vice President
Ing. Radek Dobiáš Ph.D., MBA.	CENELEC	SC9XA Communication, signalling and processing systems, WGA 4-2
doc. Ing. Jan Janeček, CSc.	Institute of Electrical and Electronics Engineers (IEEE)	Executive Committe of Czechoslovakia Section IEEE
prof. Ing. Jan Holub Ph.D.	International Federation for Information Processing (IFIP)	Member of Technical Committee 1: Foundations of Computer Science Working Group 1.10 : String Algorithmics & Applications

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doc. Ing. Kateřina Hyniová, CSc.	International Federation of Automatic Control (IFAC),	Member of Technical Committee 4.2 on Mechatronic Systems
doc. Ing. Hana Kubátová CSc.	EUROMICRO	Member of Board of directors and consultants, Member of Steering committee
MSc. Jan Vítek, Ph.D.	Bioconductor	Member of Scientific Advisory Board

Note: List a maximum of ten examples.

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SUMMARY LIST OF ADDITIONAL DOCUMENTATION IN MODULE M3

Document Title	Criterion	Location (HTML link)
Evolving Language Ecosystem project homepage	3.2	https://prl-prg-erc.github.io/
Informatics evenings lecture series homepage	3.12	https://fit.cvut.cz/en/informatics-evening
Prof. Svoboda Series of Distinguished Lectures homepage	3.12	https://fit.cvut.cz/en/faculty/regular-events/prof-svoboda-lectures

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