OPINION
for a competition for acquiring academic position "Associate Professor"

in the field of higher education:	4. Natural sciences, Mathematics, and Informatics
professional field:	4.6. Informatics and Computer Science
scientific specialty:	Informatics (Context-based Information Systems)
published in:	State Gazette no. 91 / 02.11.2021 and on the IMI website
for the needs of:	Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS) Software Technologies and Information Systems Department
prepared by:	Prof. Veska Mladenova Georgieva, PhD, Technical University of Sofia
member of the scientific jury of the competition, according to:	Order № 341 / 23.12.2021 of the Director of IMI-BAS

Only one candidate has submitted documents for participation in the announced competition:

Assistant Prof. Boris Blagovestov Shishkov, PhD, IMI-BAS

1. Details of the application

For participation in the competition, Assistant Professor Dr. Boris Shishkov has presented 1 monograph and 20 publications that are referenced and indexed in world-famous databases of scientific information (Scopus), outside the habilitation thesis, all in English. A list of citations, a reference for participation in research projects, certificates for teaching at home and abroad are presented.

All submitted materials are in the field of the announced competition. The presented scientific production distinguishes Dr. Boris Shishkov as a scientist with in-depth research and pedagogical activities.

2. A short CV

Dr. B. Shishkov graduated with a master's degree with honors in 1999 in "Management Information Systems" at Sofia University "St. Kliment Ohridski". In 2005 he received a PhD in Informatics from the Technical University of Delft, the Netherlands. From 2005 to 2008 he was a postdoctoral fellow at the University of Twente, the Netherlands, Department of Software Engineering, and from 2008 to 2013 he was an assistant professor at the Technical University of Delft, the Netherlands, Department of Systems Engineering. Since 2015 he has been an assistant professor at IMI-BAS, and since 2018 he has been an associate professor at UniBIT.

Since 2007 he has been the President of the International Institute IICREST - Enterprise Systems and Technology. Dr. Boris Shishkov has led more than 40 publications at international scientific conferences and edited more than 50 scientific books. He speaks English, Russian and Dutch.

3. General characteristics of the scientific works and achievements of the candidate

The characteristic of the scientific works of the candidate is made in connection with the fulfillment of the scientific criteria.

> *Group of indicators A – 50 points (minimum 50)*

Indicator 1. Dissertation thesis for the award of educational and scientific degree "PhD". The candidate has defended his dissertation on the topic: "Software Specification Based on Re-usable Business Components", Technical University - Delft, the Netherlands. Professional field: 4.6. Informatics and Computer Science, Diploma No / date: 000048 / 22.02.2016.

> *Group of indicators B – 100 points (minimum 100)*

Indicator 3. Habilitation work – Monograph. Dr. Shishkov participated in the competition with an independent monograph on "Designing Enterprise Information Systems, Enterprise Modeling and Software Specification", ISBN: 978-3-030-22440-0, Springer, 2020.

> *Group of indicators G – 368 points (minimum 220)*

Indicator 7. Scientific publications in proceedings of papers, refereed and indexed in world-renowned databases of scientific information. According to this indicator, Dr. Shishkov has presented a total of 20 publications indexed in SCOPUS, and in all publications he is the first author. This shows his leading role. The requirement for the presence of at least 5 publications in editions with IF or SJR (Art. 3, par.1, item 2 of PURPNSZAD in IMI) has also been implemented - the candidate has submitted 16 publications in publications with SJR.

> *Group of indicators D – 162 points (minimum 70)*

Indicator 11. Citation in scientific journals, monographs, collective volumes and patents, referenced and indexed in world-famous databases of scientific information. A total of 27 citations in SCOPUS are presented here, which are multiple citations of 6 scientific publications. From the data presented in SCOPUS as of August 2021, Dr. Shishkov has a total of 114 citations without auto-citations and SCOPUS h-index: 9.

The pedagogical activity of Dr. B. Shishkov is related to teaching lectures and exercises in the disciplines Data analytics and System analysis (Technical University of Delft, the Netherlands, respectively in 2018 and 2021), as well as in the disciplines Data mining UniBIT, Bulgaria, 2020-2021 and 2021-2022), Business Modeling and Software Design (UniBIT, Bulgaria, 2020-2021 and 2021-2022). He was a co-lecturer in the discipline Modeling of Processes and Systems (UniBIT, Bulgaria, 2018-2019 and 2019-2020).

Dr. Shishkov was a member of the scientific jury for the defense of doctoral dissertations - in 2011 at the University of Antwerp, Belgium and in 2019 at TU-Delft, the Netherlands and Sofia University "St. Kliment Ohridski".

4. Evaluation of work on projects and other activities

Dr. Boris Shishkov has participated in international research projects: DP - ICC: Delft Pilot - International Criminal Court - innovative solutions for IT Architecture of the International Criminal Court, The Hague, The Netherlands, 2017; Li-La (Library of Labs): Portal-Based Access to Virtual Labs and Remote Experiments, from 2009 to 2011. and AOSD: Aspect-Oriented Software Development - EU-funded in 2007-2008; A-MUSE: Architectural Modeling for Service Enabling, 2006, The Netherlands.

In 2015, Dr. Shishkov was an expert evaluator of the project "FP7 FRACTALS: Future Internet Enabled Agricultural Applications - IT solutions for agricultural development", funded by the EU, as well as a consultant on the project "FP7 COncORDE: Development of Coordination Mechanisms During Different Kinds of Emergencies ", funded by the EU.

The subject of these projects and the activity of the candidate in them are entirely related to the field of this competition and show the international recognition of his competencies.

5. Content analysis of the scientific and applied research of the candidate, contained in the materials for participation in the competition

The achieved scientific and practical results are mainly in the field of Context-Based Information Systems, in which the candidate has been working for more than 15 years. They can be summarized as follows:

Scientific contributions: A new method SDBC (Software Derived from Business Components) is proposed, which combines in an original way social theories and technical paradigms, based on which it presents a methodology for component-based software design based on model transformations starting from process models of the environment (business) environment [monograph, 3s, 7s, 9s, 17s, 20s].

Scientific-applied contributions: Innovative solutions are proposed, referring to existing paradigms and / or technological approaches, as well as research and analysis of the applicability of theories and paradigms in the implementation of inter-organizational coordination, linking software design with the principles of context-based systems, enrichment of model-based engineering, combining different existing methods [2s, 3s, 6s, 7s, 8s, 9s, 14s, 15s, and 16s].

Applied contributions: Applied contributions are related to research results that are relevant to practice in various fields:

a) during emergencies - ICT applications that are based on sensors and smart devices used remotely via the Internet or other platforms in order to implement monitoring and other functions aimed at achieving sustainability, recovery and relief [1s, 4s, 5s].

b) in the field of ENERGY - autonomous and context-based software solutions related to smart energy consumption at the household, neighborhood, city level [12s].

c) in the field of SECURITY - a holistic conceptual model for border control to deter illegal migration, based on synchrony between the actions of border guards and the equipment that serves them: sensors and cameras, mobile devices connected to computer networks and the Internet, drones [11s, 10s].

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6. Critical remarks and recommendations

My recommendation to Dr. Shishkov is to continue to work hard, with great diligence and professionalism in the field of his research, as well as to share his scientific and research experience and ideas as a supervisor of doctoral students, in creating a team of young people and researchers.

7. Personal impressions of the candidate

I know Dr. Shishkov from my participation in ICTRS 2019 - the 8th International Conference on Telecommunications and Remote Sensing, 2019, Rhodes, Greece, of which he was Co-Chair. Even then he made an extremely good impression on me with his organizational and ethical qualities, as well as with the high scientific level of his scientific achievements. This impression of mine is fully confirmed by the scientific production and materials of this competition.

8. Conclusion for this application

The scientific achievements of Dr. Boris Shishkov meet the requirements of the Law for development of the academic personnel of the Republic of Bulgaria and the Regulations on it, the Regulations for the conditions and the procedure for acquiring scientific degrees and for occupying academic positions at the Bulgarian Academy of Sciences and the specific regulations for the IMI-BAS.

The candidate satisfies and in most cases exceeds the minimum national requirements in the professional field in which the competition was announced and no plagiarism has been established in the scientific papers submitted at the competition.

The presented scientific works are of high scientific level and contain significant contributions.

Based on my acquaintance with the candidate's scientific works, the scientific, scientific-applied and applied contributions contained in them, I consider offering Assistant Professor Dr. Boris Blagovestov Shishkov to award an academic position of "**Associate Professor**" in the professional field 4.6. Informatics and Computer Science (Context-based Information Systems).

11.02.2022   Jury Member:…………………..

Sofia   (Prof. Veska Georgieva, PhD)