REVIEW

For the academic procedure for holding the position of Professor in Professional Field 4.6. "Informatics and Computer Science" (Electronic Government and Electronic Business) in Bulgarian and English

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Legal Grounds: Order RD 38-622 / 20.11.2023 of the Rector of Sofia University "St. Kliment Ohridski" and Scientific Jury Decision №3, Protocol № 01/19.12.2023

1. General Overview of the Procedure and Candidates

The review was prepared within the framework of a procedure for holding the academic position of "Professor" in Professional Field 4.6. "Informatics and Computer Science" (Electronic Government and Electronic Business) in Bulgarian and English, published in the State Gazette, no. 86, page 70 of 13.10.2023 for the needs of the Faculty of Economics and Business Administration of Sofia University "St. Kliment Ohridski". The only candidate in the competition is Assoc. Prof. Dr. Kamen Boyanov Spasov.

Associate Professor Spasov has extensive practical and academic experience. He completed his higher education in 1984 at the Higher Chemical-Technological Institute (now the University of Chemical Technology and Metallurgy), where he also developed his dissertation on "Mathematical Modeling and Control of Processes in Out-of-Furnace Steel Processing". In 1998-1999, he completed a dual master's program in International Business Administration (MBA) at the University of Economics in Vienna and the Darla Moore School of Business at the University of South Carolina. In the following years, Associate Professor Spasov has a series of additional qualifications that coincide with the field of the current competition.

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Assoc. Prof. Kamen Spasov has extensive practical experience in the public and private sector, and in the period 1989-2011 he held a series of management positions in private IT companies. In the same period, he was also a coordinator in the Coordination Center for Information, Communication and Management Technologies at the Council of Ministers. In 2014, he was acting Deputy Minister for electronic government in the Ministry of Transport, Information Technologies and Communications, and in the period 2013-2019, he was the head of the Electronic Management Laboratory at the Bulgarian Academy of Sciences. He has been teaching at Sofia University since 2009, holding the academic position of associate professor. This circumstance is also shown in the report on his work experience. The candidate's profile is suitable for the current competition and meets all the legal requirements for holding an academic position.

2. Evaluation of Compliance with National Minimum Requirements

The candidate in the current competition has duly submitted a report on the fulfillment of the minimum national requirements for occupying the academic position of "Professor" as per the Act on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB). With a minimum required number of points of 550 for PF 4.6 Informatics and computer sciences, Assoc. Prof. Spasov presents a report for a total of 1021 points, or almost twice the national minimum. The breakdown by category is as follows:

- Group A: achieved 50 points out of 50 points required
- Group C: achieved 216 points out of the required 100 points
- Group D: achieved 327 points out of the required 200 points
- Group D: achieved 192 points out of the required 100 points
- Group E: achieved 236 points out of the required 100 points

It is noteworthy that the excess is proportionally greater in the categories pertaining to publications and citations, which is a testimony to the volume and quality of the scientific work of Assoc. Prof. Spasov.

3. Evaluation of Scientific Work

Assoc. Prof. Spasov has carried out a significant amount of research work within his scientific career. The Authors system reference shows 6 book chapters, 3 books (2 co-

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authored and 1 sole author), 3 monographs (all co-authored), 20 journal articles, 1 series article, 32 collection articles, 3 textbook and 99 conferences reports. Of these, a total of 21 works have been submitted for participation in the current competition. Those are as follows:

- In lie of habilitation monograph – 7 publications indexed in Scopus and/or Web of Science;
- 9 other publications indexed in Scopus and/or Web of Science;
- 3 books;
- 2 textbooks.

It is worth focusing on the seven main publications that the candidate presents instead of a monograph. Here Assoc. Prof. Spasov took advantage of the opportunity provided for in Art. 29, para. 1, item 3 of the ZRASRB to present not a monograph, but equivalent work in specialized scientific publications. I consider that the volume, content and originality of the contributions of the presented publications are equivalent to a monographic work.

The first paper in this group (Annex 17, Section 1, Item 1) examines the challenges to cyber security in the context of smart cities and builds a conceptual framework for the research space in which they can be addressed. In the second article (item 2), an algorithm for dynamically calculating the optimal trajectories of e-buses, which receives requests in real time, is presented. The algorithm is tested with real data and some main results are presented. The third article (item 3) examines some of the basic concepts and the algorithmic task of building computer-optimized urban transport. In essence, it presents some results of the INNOAIR project and is written by the team of authors involved in it. The fourth article (item 4) focuses on a topic that Assoc. Prof. Spasov has been developing throughout his career – semantic interoperability and its applications for the needs of e-government. Here, the focus is on the application of the concept and its underlying principles to the Internet of Things. Assoc. Prof. Spasov argues that the transfer of intelligence from an Internet of Things environment to e-government will transform administrations from executors of service requests into intelligent assistants of citizens and businesses (p. 401). I take this statement more as an invitation for discussion in the academic community than as a final result.

The fifth article (item 5) is again with an emphasis on the field of electronic government. In essence, an audit of the presence of municipal administrations in social networks is carried out here and a methodology and tool is developed for conducting such observations in real time. As a scientific-applied result of this research, a specific web tool for the purpose is shown. In this sense, the article approaches the principles of design science, producing useful artifacts alongside new scientific or applied science knowledge. The sixth article (item 6) reviews the implementation of Bulgaria's strategic goals in the field of e-government (set in 2006 in a document of the Ministry of State Administration and Administrative Reform) and examines specific cases, identifying the main challenges and directions. The last article in this group (item 7) examines the attitudes of citizens in sub-Saharan African countries to the privacy and protection of their personal data. The article outlines key recommendations for overcoming challenges and implementing successful e-governance.

Apart from these articles, the candidate also presents a set of scientific publications, the focus of which again lies on different aspects of e-government. Among them, it is worth noting the development of a model of a health information system (Appendix 17, section 2, item 1), the study of information security issues (items 2, 3, 8), applied aspects of electronic management (item . 4, 5), issues of semantic interoperability (items 6, 7, 9). The published monograph "E-Governance in Bulgaria: A Legally Regulated Technological Framework" (co-authored with L. Blagoev) is in itself a significant contribution. It presents a proposal for a general framework and structure of e-government in Bulgaria and, apart from being an academic contribution, it also has a significant effect on the real construction of e-government in our country. The book is recognizable to researchers and experts in the field of e-governance as it registers significant contributions. In a sense, it is surprising that Assoc. Prof. Spasov does not present this book or a potential extension of it as the required monographic work, but chooses to replace it with equivalent publications.

I do not accept the document "Institutional identity of the Internet pages and pages in the social networks of the state administration in Bulgaria" as completely scientific. Although it contains interesting empirical information about the online presence and

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attitudes of the administration, there is also a large practically oriented part that does not contain scientific contributions. It would be more appropriate if the document were divided and Assoc. Prof. Spasov presented for review only a part of it – for example, pages 29-44 can easily be omitted. The last three works submitted for review (Collection of master's theses, textbook and handbook) are primarily pedagogical in nature and emphasize Assoc. Prof. Spasov's commitment to teaching topics in which he is also an active researcher.

4. Evaluation of Scientific Contributions

In the submitted documents, the candidate for the current competition, Assoc. Prof. Kamen Spasov, declares contributions in the following areas:

- Theory of electronic government
- Applied aspects of e-government
- Electronic governance on the Internet and social networks
- Information security
- Optimization of transport
- Training in e-governance and e-business

Within the framework of the theory and applied aspects of e-government, Assoc. Prof. Spasov works on the concept of semantic interoperability and its importance in the successful implementation of projects and programs in the field of e-government (Appendix 17, section 1, items 4, 5 and 6; section 2, items 6, 7, 9). The monographic work "E-Governance in Bulgaria: A Legally Regulated Technological Framework" (co-authored with L. Blagoev) presents a general architecture of electronic government and justifies the role of semantic interoperability for its successful construction.

In his more recent works Dr. Spasov also focuses on the dimensions of semantic interoperability in the context of the Internet of Things. There are publications that analyze the achievements in the field of e-government in our country and apply the balanced scoreboard with indicators of Kaplan and Norton for their measurement (Appendix 17, section 2, item 8).

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The contributions in the field of implementation of solutions in the field of e-government are mainly applied in nature. Among them should be mentioned the development of an integrated system for electronic healthcare, development and implementation of an electronic management system in the municipality of Borino and Dospat, a system developed and implemented in the Varna regional administration and a pilot system for electronic biometric identification developed.

Assoc. Prof. Spasov's contributions are also found in the field of information security. Together with a team of colleagues, Dr. Spasov develops a new model demonstrating the superiority of attackers over defenders in a cyber environment (Appendix 17, section 2, item 2). Another publication develops a model for a shared cybersecurity operations center (Annex 17, Section 2, Item 3). Data privacy is also embedded in one of the studies submitted for review (Appendix 17, Section 1, Item 7), where the author brings out the attitudes of citizens of southern African countries regarding the protection of their personal data.

Although smaller in volume and scope, the candidate also has contributions in the field of transport optimization, which can be considered as a sub-task of e-governance. They are mostly concentrated in recent papers (Appendix 17, section 1, items 2 and 3) and focus on developing an algorithm for real-time traffic optimization of electric buses in a smart city. The last group of contributions are of an applied and pedagogical nature. They are expressed in the development of a significant volume of training materials (a collection of master's theses, a textbook, and a handbook in Bulgarian and in English), which can be used to train students in the field of e-business and e-governance.

The contributions of Assoc. Prof. Kamen Spasov are sufficient in volume and scope to meet the requirements for holding the academic position of "Professor". The attitude of the national and international scientific community towards the work and scientific contributions of Assoc. Prof. Spasov is clearly positive – his research is the subject of a wide response and a significant number of citations. The candidate's total citations are 293, 38 of which are in journals indexed in Web of Science, and 72 are in journals indexed in Scopus.

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5. Evaluation of Teaching Experience

In addition to his active professional and research career, Assoc. Prof. Spasov also has extensive teaching experience. Since 2003, he has been a lecturer at the Institute of Public Administration, and since 2009 - an associate professor at Sofia University, initially being a member of the academic staff of the Faculty of Mathematics and Informatics, and since 2019 - of the Faculty of Economics and Business Administration. Within the Faculty of Economics, Assoc. Prof. Spasov teaches the following courses:

- Information Systems and Technologies (in English)
- Foundations of Electronic Business (in English)
- Introduction to Business Management Information Systems (in English)
- Customer Relationship Management – CRM (in English)

The candidate's workload in recent years has been significant - 405 equivalent hours (academic year 2019-2020), 540 equivalent hours (academic year 2020-2021), 540 equivalent hours (academic year 2021-2022) and 607.5 equivalent hours (academic year 2022 -2023). The disciplines fall entirely within the scope of the current competition, and the realized employment meets the legal requirements and the University's internal rules for occupying the academic position of "Professor".

6. Critical Comments and Recommendations

The publications in world-renowned journals and the large number of citations speak unequivocally about the quality of Assoc. Prof. Spasov's scientific work. However, I would venture to flag some more basic comments:

- The documentation is mostly neat, but there are still some gaps, e.g. missing summaries in Bulgarian and/or English in Appendix 17, which should not have been overlooked;
- Separation protocols were not submitted, and a large part of the work submitted for review is co-authored. For the purposes of the review, I assume relatively equal contribution of all authors to the given article;
- I would recommend Assoc. Prof. Spasov to collect his scientific results and significant practical experience in a new monographic edition, which will replace or renew the collective monograph "E-Governance in Bulgaria: A Legally

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Regulated Technological Framework" in accordance with the new technological and regulatory realities.

The remarks made in no way diminish Dr. Spasov's scientific contributions, and especially the last comment should be considered more as an idea for future work.

7. Personal Impressions

I know Assoc. Prof. Kamen Spasov personally and I have excellent impressions of him. I had the opportunity to work with him in his role as an expert in the field of e-governance, and since 2019 we have been colleagues at the Faculty of Economics and Business Administration. Assoc. Prof. Spasov has always impressed me with his consistency, positive attitude and high competence. He is open to helping both fellow academics and the students he teaches. Kamen Spasov is an established lecturer, recognizable scientist and an accomplished professional.

8. Conclusion

The quantity and quality of the scientific work and the evidence of research and teaching activities presented in the current competition fully meet and exceed the minimum requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB) and the Regulations for the Implementation of the Act. The only candidate in the current competition, Associate Professor Kamen Spasov, convincingly demonstrates his suitability for the academic position of "Professor" at the Faculty of Economics and Business Administration of the University. Therefore, I **express a positive opinion** and propose that the respected Scientific Jury award Assoc. Prof. Dr. Kamen Boyanov Spasov the position of "Professor" in Professional Field 4.6. "Informatics and Computer Science" (Electronic Government and Electronic Business) in Bulgarian and English.

Chair of the Scientific Jury:

Prof. Anton Gerunov, Ph.D., D.Sc.

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