

OPINION

regarding

the dissertation for attaining the **educational and scientific degree “Doctor of Philosophy”**
in professional field **5.3. Communication and computer technology**,
titled **“Method and models for development of information security systems in organizations”**
with an author **Ivan Kostadinov Gaidarski**
by member of the Scientific panel: Assoc. Prof. Svetozar Ilchev, PhD

1. Legal requirements

The Scientific panel for the present procedure for awarding the educational and scientific degree “Doctor of Philosophy” is appointed by order no. 48 of 24.02.2022 of the Director of IICT-BAS according to Art. 4, para. 2 of the Act on Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and a decision of the Scientific council of IICT (minutes no. 2 of 23.02.2022). In my capacity as a member of the Scientific panel, I received a full set of documents meeting the requirements for awarding the educational and scientific degree “Doctor of Philosophy” according to the ADASRB, the Regulations on the Implementation of the ADASRB (RIADASRB) and the Regulations of Specific Conditions for Attaining Scientific Degrees and for Holding Academic Positions at IICT-BAS.

The PhD candidate **meets the requirements in the Regulations of Specific Conditions** for Attaining Scientific Degrees and for Holding Academic Positions **at IICT-BAS**, according to which candidates for the educational and scientific degree “Doctor of Philosophy” in professional field 5.3 Communication and computer technology must have the following minimum scientometric indicators:

- indicator group A – 50 points;
- indicator group C – 30 points.

The list of scientific publications for participation in the procedure prepared by the PhD candidate includes the following scientific works:

- **1 scientific publication with SCImago Journal Rank (SJR) or publication in journals and proceedings of scientific conferences indexed in Scopus or Web of Science;**
- **4 scientific publications in journals and proceedings of scientific conferences without referencing and indexing in Scopus or Web of Science.**

All publications are on the topic of the dissertation. 4 scientific works are co-authored, 1 scientific work is without co-authors and the PhD candidate is the first or only author of all 5 of the presented scientific works.

The submitted documents substantiate the number of points calculated for the PhD candidate, which are distributed among the indicator groups as follows:

- **indicator group A – 50 points** (the current dissertation);
- **indicator group C – 53.3 points** and I reckon that there is an inaccuracy in the sum calculated by the PhD candidate and the points should be 63.3.

In conclusion, the PhD candidate **has the necessary points in all indicator groups** and, in group C, the calculated points exceed significantly the required minimum number of points.

2. Assessment of the dissertation

According to **Art. 27 (2) of the RIADASRB**, the dissertation must contain: title page; table of contents, introduction; exposition; conclusion – summary of the obtained results with a declaration of originality; bibliography.

The dissertation of the PhD candidate **meets these requirements**. It includes 142 pages (excluding the table of contents and the lists), 48 figures, 13 tables and 2 appendices. The exposition consists of 4 chapters. The bibliography contains 139 sources in Bulgarian and English, including publications of the PhD candidate. The abstract of the dissertation consists of 54 pages. I reckon that it accurately reflects the content of the dissertation.

The topic of the dissertation is very relevant against the background of the ever-increasing use of information systems in the public and private spheres, which leads to new modern regulations at the state and European level regarding the security of processed data.

The goal of the dissertation is the creation of a method and models for the development of information security systems, which provide protection from internal threats (inside-out direction) of sensitive information for organizations that vary in nature and size. To achieve this goal, a total of 6 tasks have been formulated:

1. Definition and classification of approaches to information security management and areas of application;
2. Analysis of the field of “Information Security” as part of the problem area of an information security system;
3. Description of the problem area of information security systems in organizations through conceptual modeling;
4. Analysis and application of object-oriented approach in the creation of a project model of an information security system based on a created conceptual model;
5. Definition of an approach for the transformation of the project model of an SIS into an implementation model;
6. Simulation of SIS and analysis of the generated test data.

The scientific and applied scientific contributions described in the dissertation are:

1. A new classification of IS management approaches;
2. A new method for developing information security systems in organizations, which integrates the model-based development of SIS through the application of a top-down approach with a new method for analyzing the problem area of this type of systems;
3. A multi-layered conceptual model of the problem area of information security systems;
4. An architectural and functional model of information security systems using the object-oriented unified language for describing software systems UML;
5. A comparative analysis of existing DLPS platforms;
6. A model of SIS implementation in an organization.
7. A simulation model of SIS based on an object-oriented description of its architecture using agent-based representation in the environments NetLogo and I-SCIP-SA.

The PhD candidate shows in-depth knowledge of the topic in both scientific and applied aspects. The contributions include different types of models and a new method for developing information security systems. In addition, analyzes and simulations for validation of the proposed models have been made. I reckon that the results achieved by the PhD candidate have a good potential for further development

both in the scientific field and in the creation of new improved information security systems or new modules for existing systems.

The 4 noticed citations of the publications of the PhD candidate and the participation in 3 research projects also make a positive impression.

Accompanying the good impression I have from the work of the PhD candidate, I would still like to make the following critical remarks and recommendations:

1. Guidelines that are more specific should be given for the future improvement and extension of the proposed models and possible plans for their specific application in commercially oriented information security systems.
2. The layout of the dissertation could be improved, e.g. the fonts and the dots in the list of tables should be the same everywhere and the order and the numbering scheme of sources in the bibliography should follow a more systematic approach.

The above critical remarks and recommendations do not diminish the contributions of the PhD candidate and do not change the result of the assessment of the dissertation.

According to **Art. 27 (1) of the RIADASRB**, the dissertation must contain scientific or applied scientific results that represent an original contribution to science. The dissertation must show that the candidate has in-depth theoretical knowledge in the relevant field and abilities for independent research.

I reckon that the dissertation of the PhD candidate **meets these requirements**.

CONCLUSION

With regard to the current procedure for awarding the educational and scientific degree “Doctor of Philosophy”, **Ivan Kostadinov Gaidarski satisfies all requirements of the ADASRB, the RIADASRB and the Regulations of Specific Conditions for Attaining Scientific Degrees and for Holding Academic Positions at IICT-BAS**. The calculated scientometric indicators exceed convincingly the necessary thresholds for awarding the educational and scientific degree “Doctor of Philosophy”.

I give my **positive recommendation** for the PhD candidate and I propose that the members of the Scientific panel **vote for awarding** the educational and scientific degree “**Doctor of Philosophy**” in professional field 5.3. Communication and computer technology **to Ivan Kostadinov Gaidarski**.

Sofia,

Member of the Scientific panel: .

March 16, 2022

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