POSITION

by Prof. Radoslav Dimov Pavlov,
Institute of Mathematics and Informatics -BAS

for the doctoral thesis of Boris Atanasov Staykov
on the topic „Methods, algorithms and software systems for decision support"

for the acquisition of the educational and scientific degree "doctor" in the scientific specialty "Informatics", the professional field 4.6 "Informatics and Computer Sciences" in 4. "Natural Sciences, Mathematics and Informatics"

This position is prepared in accordance with the order of the Director of IICT as a member of the Scientific jury and the decision of the scientific jury.

It is made according to the Act of the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its implementation and the rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at Bulgarian Academy of Sciences and IICT-BAS. As a member of the Scientific jury, I have received all the required administrative and scientific documents from the candidate.

The presented dissertation consists of 174 pages, introduction, 4 chapters, contributions, list of dissertation publications – 8, citations and references – 181 titles.

General description of the thesis

The thesis is dedicated to a current research topic: engineering and developing decision support systems, based on developed methods and algorithms for solving different classes of multicriteria optimization problems.

Comprehensive analysis of the scientific and applied achievements in the thesis

The main tasks and goals of the thesis are formulated in the Introduction.

Chapter 1 presents an analytical survey of scalarizing tasks and algorithms for solving multicriteria optimization problems, developed by team of BAS. Interactive algorithm, based on this research, is developed and implemented.

Chapter 2 is dedicated to development of the system MKO-2.1. and includes syntax for defining multicriteria optimization problems, control and optimization modules.

In chapter 3, web-based decision support system WebOptim is described as a natural successor to the MKO-2.1. This includes overall software architecture of the system, database architecture, interface and control modules, as well as security and user management module, module for management and maintenance of solvers and some other supporting modules. The functionality of WebOptim is also presented.

Chapter 4 describes an experimental study of the efficiency of the features, proposed in Chapter 3. The developed software systems and their multicriteria optimization algorithms are tested and validated using real-world examples.

The conclusion summarizes correctly the scientific and applied contributions of the dissertation, listing the results presented in the dissertation. The abstract

correctly reflects the content of the work. The publications on the topic fully reflect the essential aspects in the dissertation. All publications are written by the candidate in English, 4 of them are in Scopus and Web of Science. The extremely detailed bibliography confirms the detailed knowledge of the dissertation of the researched field.

The candidate has sustainable and long-term research interests in models, algorithms, system and methods in decision support for multicriteria optimization. It is driven by well-thought-out productions and seriously analyzed existing results. In defining and solving the set research tasks, the author shows creative thinking, good insight into the research problems and significant depth in their definition and solution.

Conclusion: On the basis of the above, concerning the presented dissertation, the scientific works, their significance and the scientific and practical contributions contained in them, I consider that the dissertation work of Boris Atanasov Staykov satisfies all the requirements of Act of the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its implementation and the rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions at Bulgarian Academy of Sciences and IICT-BAS for the acquisition of the educational and scientific degree "doctor" in the scientific specialty "Informatics", the professional field 4.6 "Informatics and Computer Sciences" in 4. "Natural Sciences, Mathematics and Informatics" **and I give my positive evaluation** of the PhD thesis. I will vote for Boris Atanasov

Staykov to give the educational and scientific degree "doctor" in the scientific specialty "Informatics".

Sofia, 06.07.2020

Prepared the position:

Prof. Dr. Radoslav Pavlov