

# OPINION

from Assoc. Prof. Metodi Georgiev Traykov, PhD

Department of Informatics, New Bulgarian University,  
professional field 4.6 "Informatics and Computer Science"

for obtaining the educational and scientific degree "Doctor of Philosophy"  
in the field of higher education 4. "Natural Sciences, Mathematics, and Informatics",  
professional field 4.6 "Informatics and Computer Science",  
whit candidate Dobromir Mitkov Dinev

By order № 3-RK-97/30.01.2024 of the Rector of New Bulgarian University (NBU) I was appointed a member of the scientific jury for the defense of Dobromir Mitkov Dinev, a doctoral candidate in the field of higher education 4. "*Natural Sciences, Mathematics, and Informatics*", professional field 4.6 "*Informatics and Computer Science*", for awarding the educational and scientific degree "Doctor of Philosophy". The dissertation topic is "Holistic approach to software quality management".

As a member of the scientific jury, I have received all required documents (in digital form) that concern the procedure for the defense of the dissertation work of Dobromir Mitkov Dinev – a full-time PhD student at the Department of Informatics, New Bulgarian University, according to the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria (DASRBA), the Regulations on the implementation of the DASRBA, and the Development Ordinance of Academic Staff of New Bulgarian University (DOASNBU). Dobromir Mitkov Dinev is deducted with the right to defend by order of the Rector of NBU № 3-RK-8/13.10.2020.

The main research interests of Dobromir are in the field of software engineering, and more precisely software quality management.

The dissertation work with the title "Holistic approach to software quality management" developed by Dobromir Dinev presents in a complete form the results of in-depth research in the areas of his interests. The dissertation consists of 6 chapters, a conclusion, publications, and a bibliography with a total of 164 pages. 27 figures, 17 tables, and 3 appendices are attached. References include 124 sources in English.

The introduction describes the aims and objectives, relevance, and applicability of the technological framework presented in the dissertation.

## **1. Significance of the researched problem in scientific and scientific-applied terms.**

The dissertation work under consideration on the topic " Holistic approach to software quality management ", hereinafter referred to as "thesis" in the Opinion, is dedicated to the creation of a tool for precise and timely assessment of software quality.



The object of the thesis is the software quality models for achieving higher levels of quality in the production process of software. The field of software quality, its assurance, and management is a broad area that is based upon the work of generations of engineers, manufacturers, inventors, and scientists from different fields, for instance, but not limited to mathematics, software engineering, economics, etc.

The main subject of the current work is the utilization of the holistic philosophy/method/approach. The holistic approach is widening the understanding of software quality, its assurance, and management. The newly created holistic model/ framework for software quality can help the work in academia and business.

The academia may use the current development of the holistic software quality model and further formalize and research; thus, even richer models are coined and introduced to the business. The business, on the other hand, can benefit from introducing the new philosophy/ framework for holistic quality and bringing better software to its customers and users.

Therefore, I consider that the given task is extremely relevant - not only for the assessment of software quality in the academic community but also for companies related to the supply and development of software products.

## **2. Justification of the objectives and tasks in the dissertation work.**

The main goal of the thesis is the creation of a tool for precise and timely assessment of software quality that can be applied in other production processes. The goal is very precisely formulated and justified, namely to create a new holistic framework for software quality. Accomplishing this goal will expand the understanding of the term itself and the necessary actions for achieving outstanding quality of the software products. In addition, the thesis also presents a series of studies related to the proposed holistic framework for software quality.

To achieve this goal, Dobromir has set himself several tasks, which I will allow myself to summarize as follows:

- Preparation of a review of the quality models (including software quality) and the paradigms related to them;
- Defining and creating a holistic framework for software quality;
- Presentation of a meta-model of holistic quality as well as related terms;
- Presentation of a mental model of impactors in holistic quality, as well as a general transformation framework by which the holistic approach to quality should be introduced in the organization.

The tasks set by Dobromir go beyond the work usual for standard research but are necessary to achieve the set goal and are serious enough for the topic of the thesis.



### **3. Correspondence between the chosen methodology and research methodology and the aim and tasks of the dissertation work.**

In preparation for the implementation of the tasks set in the thesis, the PhD student has done a very thorough research of the publications related to the topic. The list of publications in the bibliographic reference counts 124 titles, half of which were published after 2000. The check that I did shows that all the titles I checked are properly cited in the text of the thesis. Not only that - the content of each of the cited works has been evaluated from the point of view of the adequacy of the use of the relevant results for the needs of the aim and formulated tasks. This shows that the PhD student knows very well the modern achievements of science in the field of the thesis and has very carefully selected the most suitable approaches for his research. This detailed analysis of the sources will be invaluable to any researcher undertaking further work on the subject.

### **4. Scientific and scientific-applied contributions of the dissertation work**

I accept as admissible the claims for scientific contributions presented by the PhD student and leave them for a detailed assessment by the reviewers.

### **5. Evaluation of the publications of the dissertation work: number, nature of the editions in which they were published.**

The results of the thesis were published in 4 articles. All articles are self-contained and in English. The articles are in collections of reports from an international conference organized by the Union of Scientists in Bulgaria (Scientific Works of Union of Scientists in Bulgaria), as well as the CSECS conference (indexed in Scopus), organized by NBU together with the University of Fulda (Germany) and Boston University (USA).

If we accept the abstract of the dissertation as a type of publication, it can be said that it accurately reflects the obtained results.

### **6. Citation by other authors, reviews in the scientific press, etc.**

I am not aware of citations of the PhD student's works by other authors or reviews in the scientific press. The presented materials give me a reason to accept the obtained results as reliable.

### **7. Opinions, recommendations, and notes.**

I have no critical notes regarding the results and evidence. Overall, the text is well-structured and richly illustrated with relevant images, graphics, and schemes. I noticed that all publications of the PhD student on the topic of the dissertation are independent and presented at international scientific conferences. I recommend the doctoral student to continue his publication activity in indexed scientific journals following the requirements in professional field 4.6 "Informatics and Computer Science".

### **Abstract of dissertation**



The abstract of the dissertation consists of 33 pages. It was prepared following the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria (DASRBA) and the Regulations on the implementation of the DASRBA. Its content reflects sufficiently accurately and completely the results and contributions of the thesis.

**Conclusion:**

The dissertation work presented by Dobromir Mitkov Dinev contains theoretical results that represent an original contribution to the scientific field under consideration and meet all the requirements of the DASRBA and the Regulations for the implementation of the DASRBA. The doctoral student possesses in-depth theoretical knowledge and professional skills in his scientific field and demonstrates qualities and skills for independent scientific research. My evaluation of Dobromir Mitkov Dinev's dissertation work, abstract of the dissertation, scientific publications, and scientific contributions is **POSITIVE**.

The achieved results give me a reason to propose awarding the educational and scientific degree "Doctor of Philosophy" to Dobromir Mitkov Dinev in the field of higher education 4. "Natural Sciences, Mathematics, and Informatics", professional field 4.6 "Informatics and Computer Science".

13.03.2024 г.

Sofia

Signature:  .....

/ Assoc. Prof. Metodi Traykov, PhD /