



**REVIEW**

by **Ivan P. Popchev**, academician at BAS

of dissertation work for awarding of the educational and scientific degree "Doctor"

in the professional direction 5.3 Communication and computer technologies

Doctoral program " Computer systems and technologies "

Titled " Concepts for the construction of distributed special purpose information systems"

by **Ekaterina Antonova Gospodinova**

By order No. UD-305/28.11.2019, of the Rector prof. Magdalena Mitkova, PhD in accordance with the Act of Development of the Academic Personnel of the Republic of Bulgaria (ADAPRB) and in connection with the decision of the Faculty council of the Faculty of Technical Sciences I have been appointed an external member of the Scientific Jury for defense of the dissertation of Ekaterina Antonova Gospodinova for the educational and scientific degree "doctor" in doctoral program "Computer systems and technologies" in professional direction 5.3. Communication and computer technologies.

In assessing the dissertation work, the terms of the ADAPRB, The Rules for the Implementation of the Act of the Development of the Academic Personnel of the Republic of Bulgaria (RIADAPRB), (Decree No. 56/2018) and the Rules of the University "Prof. Assen Zlatarov" for the implementation of the Act and therefore will be accurate delivered:

1. According to art.27 (1) of the ADAPRB "the dissertation work shall contain scientific or applied research results, which offer original contribution to science. The dissertation work shall show the candidate's profound theoretical knowledge on the respective subject, as well as their ability of independent scientific research."
2. According to art.27 (2) of the RIADAPRB the dissertation work should be presented in type and volume corresponding to the specific requirements of the primary unit. The dissertation work should contain: a title page; contents; introduction; presentation; conclusion - summary of the obtained results, accompanied by an originality declaration; bibliography.

According RIADAPRB the minimum required points by groups of indicators for "Doctor" are:

Group of indicators	Content	Number of points
A	Indicator 1	50
G	Sum of indicators from 5 to 11	30

The scientific supervisors of the dissertation are: Prof. Gany Trendafilov StamoV, DSc and Assoc. Prof. Stanislav Denchev Simeonov, PhD.

**The goal of the dissertation thesis is "to research methods for building distributed information systems".**

To accomplish this goal, the following tasks need to be fulfilled:

1. To study and analyze the main characteristics of the problems for development of distributed information systems and communication standards, and to suggest ways for solutions;
2. To propose a methodology for the design of distributed information systems to allow timely and unimpeded access to information;
3. To design and develop interface for connecting to a network technology platform for automated leveling system LONWORKS® and standard IFSF;
4. To develop a program for the practical implementation of information measurement system as a part of automated levelling measurement system of fuel tanks;
5. To develop new calibration tables based on a complex analysis of errors.

The dissertation is in volume of 158 pages and includes:

- Introduction (5 - 7)
- Literature Review (Chapter 1, 8 - 46);
- Data Transfer Analysis and IFSF Communication Standard Study and LONWORKS® Platform. Design of interface and software for connection to network technological platform for automation of level systems (Chapter 2, 46 - 73);
- Software for an automated levelling system for petrol stations based on IFSF. (Chapter 3, 74 - 101);

- Complex analysis of measurement errors obtained in experimental studies. Methods for removing them. Design of a calibration table (Chapter 4, 102 - 124).
- Contributions (125 - 126);
- Declaration of originality;
- Publications related to the dissertation (127 - 128);
- Participation in scientific conferences (128 - 129);
- References includes 120 sources (130 - 137);
- Appendix (137-158).

**Nine papers have been published in the dissertation:**

- 2 publications are in journals (NNo.7 and 9);
- 7 publications and papers in conference (NNo.1, 2, 3, 4, 5, 6 and 8);
- 3 publications are marked IF and/or SJR (and marked SRJ!) (NNo.7, 8 and 9);
- 3 publications are in Bulgarian (NNo.1, 4 and 6);
- 1 publication (No. 2) has only marked pages in the list on pp.127 - 128;
- 1 publication is in press (No. 3)
- **Five publications are co-authored;**
- 2 publications have the same text (NNo. 3 and 5).

There is a list of participation in 7 scientific conferences and symposia.

No citations were noted.

The requirements of the RIADAPRB and the University "Prof. Assen Zlatarov" rules are fulfilled.

In summary, the **results obtained** are an enrichment of existing knowledge and can be summarized as follows:

- The IFSF standard and the LONWORKS® network platform is analyzed. Interface and software for connection to the network technology platform for an automated gas station leveling system is offered.
- Software has been developed that supports the IFSF standard for an automated gas station levelling system that meets certain state requirements at retail outlets.
- Analytical calculations and experimental studies were carried in cooperation with company SD ELL - Sliven and systematic and instrumental errors in real

conditions were found to be greater than acceptable. After analyzing the uncertainty in the measurements, instrumental errors were systematized and calibration tables were prepared.

#### **Critical notes**

1. The dissertation lacks a "conclusion - summary of the results obtained" according to the rules in Art. 27 (2) ADAPRB, and instead of "bibliography" is "used literature" and the declaration of originality is not on the dissertation page.
2. The bibliography has some incompleteness in a number of sources such as missing: ISSN or ISBN, year of release, publisher and pages.
3. Errors of different nature are not corrected in the text. For example: on page 46, task 4 is unfinished; the title of the dissertation and abstract is written by "learned leaders"; on page 4 contributions instead of page is Error! Bookmark not defined and etc.
4. The dissertation publications are not cited in the text.

#### **Questions on dissertation work:**

1. The thesis is entitled "Concepts ...", where exactly are the concepts are discussed in the text?
2. In the aim of the dissertation it is written "to study methods ...". Where and exactly what methods are being studied? What are the results of these studies and in which dissertation publications they are included?
3. What Author's publications NNo. 8 and 9 have common with the aim, objectives and results of the dissertation?
4. On page 4 it is stated that "precise and accurate calibration tables" have been developed. What are the criteria for "precision" and "accuracy"?
5. Aren't other future studies suggested?

The abstract is in Bulgarian in volume 72 pp., and presents the dissertation thesis.

#### **CONCLUSION**

The dissertation work follows the requirements of the ADAPRB, RIADAPRB and the University "Prof. Assen Zlatarov" rules for implementation of the Act.

I give a **positive conclusion** for the acquisition of the educational and scientific degree "Doctor" to Ekaterina Antonova Gospodinova.

I propose that the Scientific Jury unanimously vote on Ekaterina Antonova Gospodinova the educational and scientific degree "Doctor" professional direction 5.3 Communication and computer technologies, Doctoral Program "Computer Systems and Technologies".

15. 01. 2020

Подпис заличен  
Чл.2 от ЗЗЛД

Signature: \_\_\_\_\_

Acad. Ivan P. Popchev