



MINISTRY OF DEFENCE
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OPINION

by Associate Professor Dr. Ivan Stefanov Hristozov,
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of the dissertation of **Kristina Lyudmilova Ignatova**

on **"Models of cloud architectures for building a communication and
information environment for joint activities and management"**

for obtaining the educational and scientific degree "Doctor"

in the scientific specialty "Automated systems for information processing and
management"

1. Relevance and significance of the developed scientific problem

Modern society is characterized by the development and improvement of new information technologies and services that require remote access to data and suggest opportunities for collaboration - cloud computing, virtualization, data centers, social networks and more. From this point of view, the topic of the dissertation deals with a topical issue related to the creation and use of communication and information environment for collaboration, based on modern cloud architectures and software products for collaboration. The main content of the dissertation is related to the presentation of generalized network models for building a communication and information environment for joint activities and their study with the package for simulation of generalized networks Generalized Nets Integrated Development Environment (GN-IDE), which fully corresponds to the dissertation. According to the problem presented by the author, I am not aware of such developments.

A novelty in the development is the application of generalized networks and intuitionistic fuzzy sets in the creation and study of cloud models for collaboration and management.

2. Evaluation of the scientific results and the contributions of the dissertation

I accept the contributions and results proposed by the author.

I believe that the created generalized network models of the process of building a communication and information environment for collaboration, the process of organizing video communication and creating a cloud infrastructure of such a work environment are an enrichment of existing knowledge. As such, I define the presented approaches for building an environment for joint activities and for determining the evaluation parameters of the cores in the generalized network models.

Application of the scientific achievements in practice are the study of the

possibilities for functioning of the proposed models using the software environment for simulation of generalized GN-IDE networks and the proposed prototype of communication and information environment for joint work of defense officials. This prototype is based on a comprehensive analysis of cloud technologies and software products to build a collaborative environment.

An essential achievement of the doctoral student is the study of the software product Generalized Nets Integrated Development Environment to the level of applying it to solve the specific tasks it sets.

The way of consistent and thorough presentation of all the main results in the dissertation, together with the technological way of obtaining them, is a clear indicator of the author's participation. According to its content, the presented 7 scientific publications on the topic reflect the idea, the methods used, the realized research and the obtained results and conclusions from the dissertation. Two citations of the same are mentioned. I believe that in this way the main results of the dissertation have gained the necessary publicity

I am not aware of works by other authors, which in their content to present the results declared by the author of the dissertation. The initial statements, the basic concepts and the theory of the treated scientific field are presented by citing appropriate, current sources.

3. Critical remarks

I have no special critical remarks on the presented dissertation. It clearly states the statements, the goals, the tasks are formulated and the framework of the research is defined. The dissertation and the abstract are developed on a professional level, the language and style are consistent with the subject area. The chapters of labor are balanced in content. Graphical representations of models and block diagrams are precisely developed. Mathematical formulas are written clearly and legibly. All tables, figures and formulas are numbered correctly according to the text they illustrate.

I recommend the doctoral student to continue his research in accordance with the guidelines presented by him for future work.

4. Conclusion

In my opinion, Kristina Lyudmilova Ignatova has acquired the necessary knowledge and experience, and is able to independently formulate and develop scientific and scientific-applied problems. I believe that the presented dissertation meets the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for its implementation for obtaining the scientific and educational degree "DOCTOR".

The achieved results contain the necessary in quantitative and qualitative terms contributions of scientific and applied nature. They can find practical application in the development of communication and information environments for joint activities and management.

5. Evaluation of the dissertation

I **positively** evaluate the presented dissertation and propose to award the doctoral student Kristina Lyudmilova Ignatova educational and scientific degree "Doctor" in the scientific specialty "Automated systems for information processing and control".

Date
May 5, 2022

Member of jury
(Assoc. Prof. Dr. Eng. Ivan Hristozov)