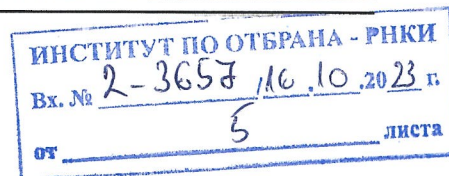

DEFENCE INSTITUTE „PROFESSOR TSVETAN LAZAROV“

STANDPOINT



by Associate Professor Dr. Eng. Ivan Stefanov Hristozov,

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of the scientific papers submitted in the competition for the academic position of "Associate Professor" for a civil servant, in scientific field 5. Technical sciences, professional field 5.3. Communication and computer technology (Communication networks and systems),

for the needs of the Research Department "Information Systems and Information Protection" of the Directorate "Development of C4I Systems" at the Defence Institute "Professor Tsvetan Lazarov", published in the State Gazette, issue 61/18.07.2023 in compliance with Order № 288 of 04.07.2023 of the Director of the Institute.

of the candidate Doctor Engineer Grigor Raykov Velev, a long-time employee of the Institute of Defense "Professor Tsvetan Lazarov" and former director of the Directorate "Development of C4I Systems".

1. General characteristics of the research, scientific-applied and pedagogical activity of the candidate.

In the current competition for the occupation of the academic position of "Associate professor" for a civil servant, the only candidate participating is Dr. Eng. Grigor Raykov Velev.

According to the author reference provided by Dr. Velev, the list of his scientific production contains 21 titles, of which he participated in the current competition with 19 scientific works (1 monograph, 1 book based on a dissertation and 17 articles and reports) published in the period 2011 - 2023. Five of the publications submitted for review are in English, the rest are in Bulgarian.

The works submitted for review are in the field of communication and information technologies for defense needs, mobile self-organizing networks and routing in them, sensor networks and automated information systems for defense and disaster relief.

The materials provided correspond to the minimum scientometric indicators defined in the Regulations for the implementation of the LDASRB for professional direction 5.3. Communication and computer technology.

Doctor Engineer Grigor Velev has participated in working teams on 7 international and 5 national scientific projects (of three as a leader) and developments, the most important of which are: "Homemade Explosives and Recipes characterizations", "European network of Cybersecurity centers and competence Hub for innovation and Operations", the CyberTwin project, the "Malicious Network Activities Monitoring and Data Analysis" project, as well as those related to the construction of fragments of and expansion and development of the stationary digital integrated communication system of BA, acquisition of sensor information from ground, water and unmanned aerial vehicles and its visualization.

All this allows the candidate to be characterized as a researcher and implementer in the professional field of the competition.

2. Evaluation of the special preparation and activity of the candidate.

Dr. Eng. Grigor Velev has worked in the military scientific and military scientific field since 1986, which includes various military formations and specialized units for the development of communication and information systems and technologies for the needs of defense. He held positions in the Department of "Communication Networks and Development of Communication Systems" - Directorate "KIS", was the head of the Department "Development of C4I Systems and Information Protection" at the Institute of Defense and a long-time Director of the Directorate "Development of C4I Systems" in the same institute. He led program teams related to system analysis and design of systems and subsystems in the field of construction and development of communication and information systems and a team on construction, development and expansion of the Stationary

Communication System of BA, etc.

In 2018, Grigor Velev obtained the educational and scientific degree "Doctor" in professional direction 5.3 "Communication and computer technology", doctoral program "Radio transmission and radio reception technology" after defending a dissertation on the topic: "Routing models in mobile self organizing networks for security and defense".

I have known Dr. Grigor Velev since 2000 as an excellent professional. The impressions I have of his work as a researcher and expert give me reason to assert that the candidate has the necessary special training in the field of the competition.

3. Main scientific results and contributions.

I define the essence of the obtained results and contributions of Dr. Velev, as:

- Enrichment of existing knowledge: monograph (II.1.1), book (II 1.2); publications (II.2.1, II.2.2, II.2.3, II.2.5, II.2.6, II.2.7, II.2.8, II.2.10, II.2.12, II.2.14, II.2.15, II.2.16) ;
- Application of scientific achievements in practice: works (II.2.9, II.2.11, II.2.17, II.3.1, II.3.2, II.3.3, II.3.4, II.3.5, III.1, III.2, III.3, III.4, III.5, III.6, III.7).

The main contributions in the direction "**Research related to mobile self-organizing networks and their routing models**" are:

- The classification of routing protocols of mobile self-organizing networks (MANET) has been expanded and supplemented [II.2.2, II.2.5, II.2.7];
- MANET models and a modified Ad Hoc On-Demand Distance Vector (AODV) routing protocol with consideration of state parameters of intermediate devices constructing the route. [II.1.2, II.2.12] are proposed, as well as an approach and model for dividing MANET into clusters [II.2.12], taking into account the reception level of the signal from the master node and limiting the number of cluster members.
- A generalized network model has been developed modeling the processes of the proposed hierarchical cluster routing in MANET-networks. The performance of the modified AODV protocol compared to AODV is analyzed based on simulation studies [II.2.10].
- Analyzed are: problems with the security and vulnerability of a MANET network and the main types of attacks to it [II.2.6]; machine learning methods and their role in improving the performance, efficiency and management of 5G networks [II.2.16].

In the direction "**Research related to communication systems and technologies**" the main contributions are:

- An analysis of modern technologies for building telecommunication networks [II.1.1, II.2.1, II.2.3] was carried out. The process of designing a departmental telecommunications system and specific technical solutions for its construction in accordance with operational, functional, technical, technological, informational, organizational, etc. and requirements for it and its construction

[II.1.1] are presented;

Considered are: the role of defense strategy and the impact of technological innovation on development [II.2.14], as well as cloud technologies in the field of communications and provided services [II.2.17] with a proposal for the use of software solutions for organizing communication exchange between work teams.

- Developed are specific system and technical requirements [III.1, III.5, III.7, III.8, III.9, III.10] and work projects [II.3.1, II.3.2, III.2, III.3, III.4] for building a departmental communication and information system, as well as programs and methods for their acceptance into operation [III.6].

In the direction "**Research related to the acquisition of sensory data to support decision-making**".

- The problems were studied and basic tactical requirements and spatio-temporal parameters were defined in which the technical means of acquiring information and data should work when creating a system to improve situational awareness of the interior of buildings and their real-time representation on a map [II.2.8, II.2.9, II.2.11, II.3.11];

- Cyber risks are analyzed in relation to cruise ships at sea [II.2.15];

- For the needs of the CYRADARS project, an open source "honey pot" study was carried out [II.2.13];

- The possibilities have been explored: for obtaining, sending and visualizing information from the locality in real time from an area of operational (crisis) situation in an operational decision-making center by using mobile ground, water and unmanned aerial vehicles and subsequent computer processing of the received the sensory information [II.3.3]; to achieve sustainability and energy autonomy of infrastructure objects, as well as autonomous maintenance of optimal climatic conditions [II.3.4]; to study potential threats related to the Internet departmental information networks [II.3.5].

Of the 19 publications submitted for review, one of which is a monograph, the candidate is the sole author of ten of them, and in two he is the first author, which confirms his personal contribution.

In the process of my work as a member of the scientific jury, no non-anonymous and motivated written signal was received to establish plagiarism in the monograph and other publications of the candidate for the competition.

4. Assessment of the significance of contributions to science and practice.

The analysis of the results and contributions of Dr. Eng. Velev shows the professional knowledge of the problems and the appropriate combination of research and implementation activities, which leads to concrete and practical solutions. The candidate demonstrates his high scientific training, knowledge and skills in 7 international and 5 national scientific projects, as well as in a number of other developments.

Doctor Velev has proven a total of 17 (seventeen) citations, in which the

results of the materials proposed for review found a place. Of these, 2 are in scientific publications, referenced and indexed in world-renowned scientific information databases and 15 are in peer-reviewed collective volumes.

5. Critical remarks on peer-reviewed papers.

I have no particular critical remarks about the scientific works submitted for review. They clearly state the statements, the goals, formulate the tasks and define the framework of the research. Through the results summarized in conclusions, new facts are obtained and proven or existing ones are confirmed.

6. Conclusion.

Bearing in mind the candidate's overall scientific research and implementation activity and the positive evaluation of his contributions and results, I consider that the only participant in the competition, Dr. Eng. Grigor Raykov Velev, fully meets the requirements of LDAS in the Republic of Bulgaria, the Regulations for its implementation and the Regulations for the conditions and the procedure for occupying academic positions at the Defense Institute "Professor Tsvetan Lazarov".

I propose to the esteemed members of the scientific jury to vote positively for giving the academic position of "Associate professor" to Dr. Eng. Grigor Raykov Velev in the field of higher education 5. Technical sciences, professional direction 5.3. Communication and computer technology (Communication networks and systems)

7. Evaluation of the candidates.

In view of the above, I give a **positive assessment** to the only candidate in the competition, Dr. Eng. Grigor Raykov Velev.

Date
16.10.2023 г.

Member of the jury /S/

(Assoc. Prof. Dr. Eng Ivan Hristozov)