

REVIEW

by Prof. Dr. Nikifor Stefanov, for the dissertation of Tsvetomir Emilov Aleksov on the topic: *"Cyberspace as a fifth domain. State-supported and independent hacker groups. Ways and methods of counteraction against cyber attacks of various origins "*, presented for obtaining the educational and scientific degree "Doctor" in the field of higher education 9. Security and Defense, professional field 9.1. National Security, scientific specialty "Organization and management outside the field of material production (Security Strategies and Policies)"

1. Significance of the researched problem in scientific and scientific-applied relation

The relevance of the researched topic is determined by the insufficient level of development and practical need for effective methods for successful resolution of cyber counterattacks of various origins.

The importance of the researched problem in scientific and scientific-applied relation stems from the need to prove the role of security for the existence of cyberspace and the effective counteraction against cyber attacks of various origins.

In this sense, the doctoral candidate offers an analysis of the strategic environment, types and sources of threats, their state, tasks and methods of security, the main directions of public policy and the system of information security. Raises the issue of creating and implementing a regulatory framework in cyberspace to build a certain type of framework of behavior in the information environment.

2. Justification of the goals and tasks in the dissertation

For the working hypothesis of the dissertation, PhD candidate Tsvetomir Aleksov accepted that the penetration of technology and the constant connection of billions of devices on the Internet allows various hackers and hacker groups to perform actions, some of which are crimes and receive various benefits in favor of themselves or third parties, including governments of different countries.

The aim of the research in the work of the doctoral candidate Aleksov, is to find an answer to the question of raising the role of security in cyberspace and effective counteraction against cyber attacks of various origins. It is the desired result of scientific research and concerns the creation of a vision for building cybersecurity.

In order to achieve the goal of the research, the doctoral student has defined the following tasks for solving:

- clarification of basic concepts in cyberspace;
- clarity about the main normative documents regulating the information environment in order to monitor the information space;
- analyzing the main types of cyber attacks and ways to gain unauthorized access;
- getting acquainted with the main hacker groups implementing large-scale cyber projects that affect millions of citizens and their possible connection with government structures;
- building an exemplary configuration of the security system of corporate computer networks and giving recommendations for cybersecurity.

The purpose and tasks of the research are substantiated in the main content of the write up.

3. Correspondence between the chosen methodology and research methodology and the set goal and tasks of the dissertation.

In the dissertation "Cyberspace as a fifth domain. State-supported and independent hacker groups. Ways and methods of counteracting cyber attacks of various origins ", PhD candidate Aleksov applies research methodology that allows him to identify risks to information security, based on basic concepts of cyberspace and clarifying the basic legal norms and standards for information security . The chosen general methods of scientific knowledge and their skillful

application in the development of the dissertation work, have allowed candidate Aleksov to solve the chosen research tasks and achieve the goal of the research.

The chosen methodology and research methodology correspond to the set goal and objectives of the dissertation.

4. Scientific and applied results of the dissertation

I evaluate and characterize the scientific and applied scientific results arising from the dissertation work of Tsvetomir Aleksov in two main aspects.

First aspect - enrichment of existing knowledge about the scientific field - Cyber Defense.

Evidence of this is:

- accurate clarification, analysis, deep methodological justification of the nature and structure of the modern cyberspace and the use of the Internet for malicious purposes;
- detailed analysis of the real state of the main types of cyber attacks and ways to gain unauthorized access and the presentation of the main hacker groups implementing large-scale cyber projects affecting millions of citizens and their possible connection with government agencies.

Second aspect - novelty for science and applications in practice:

- creating a security layout for a corporate computer network and offering system parameters in which it will function optimally in terms of intentional and unintentional actions, allowing manipulation of information resources that could lead to direct or indirect losses for the company.

The main scientific and applied results of the dissertation of the doctoral Candidate Tsvetomir Aleksov represent an original author's research in the scientific field. I believe that the dissertation and the obtained scientific results are the result of in-depth knowledge, creative research, and practical approaches related to the study of cyberspace and its protection.

5. Evaluation of the publications on the dissertation.

The dissertation is supported by 5 publications. All publications are in the direction of the author's research and are directly related to the topic of the dissertation, confirming the results of the research and ensuring its public representation. Two of them have been published and have ISBN 978-619-7383, ISBN 978-619-7478-58-7, and for the other three the doctoral Candidate has not indicated where they were accepted for publication.

I have no joint publications with the author.

6. Citation from other authors, reviews in the scientific press, etc.

I have no reason to claim that I am aware of citations from other authors or reviews in the scientific press on the dissertation's publications.

7. Viewpoints, recommendations and notes.

In order to achieve the goal of the research, the doctoral Candidate Tsvetomir Aleksov has systematized, processed and analyzed 111 scientific publications: books, monographs, articles, reports, websites of official institutions and organizations. It is noteworthy that the Candidate has referred in his research to six publications by Bulgarian authors and 105 foreign authors publications. Candidate Aleksov has in-depth theoretical knowledge in the specialty and abilities for independent research.

Recommendations and notes

I recommend to the doctoral candidate Tsvetomir Aleksov in his future research work to pay more attention to the critical analysis and evaluation of the results of the research and to other authors. Further, to formulate conclusions in a way that will clearly show what needs to be verified in the area of the research, what has not yet been studied and what aspects need to be further developed via pointing out in a correct and logically justified manner, the advantages and disadvantages of his known solutions to the problem and unsolved problems.


8. Conclusion

Given the importance of the researched scientific problem in Tsvetomir Aleksov's dissertation *"Cyberspace as a fifth domain. State-supported and independent hacker groups. Ways and methods of counteraction against cyber attacks of different origins "*, the applied research approach, the authenticity of

the write up as well as the achieved scientific and scientific-applied results, I believe that the dissertation contains scientific and scientific-applied results that represent an original contribution to science which are resulting from independent scientific research, meeting the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria.

I give my **positive assessment** of the dissertation developed by Tsvetomir Emilov Aleksov on the topic "*Cyberspace as a fifth domain. State-supported and independent hacker groups. Ways and methods of counteracting cyberattacks of various origins* "

I propose to the esteemed members of the scientific jury to vote positively for the acquisition by the doctoral candidate Tsvetomir Emilov Aleksov of the educational and scientific degree "Doctor" in the field of higher education 9. Security and defense, professional field 9.1. National Security, scientific specialty "Security Strategies and Policies".

Prof. Dr. 
/ Nikifor Stefanov /

12.02. 2022

Sofia city