



**Fund “Nauka” Project № 24003 Resume – Special Competition-based Session
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“Development of a database for analyses and optimization of simulation training at
MU-Varna”

Project leader: Chief assist. prof. Atanas Tsankov Zanev, PhD

Simulation centers play a key role in modern medical education, providing a controlled environment for students to hone their skills. Despite the potential of these structures, numerous management challenges limit their effective use. Recent years have seen the development of management tools, including software products offering software assurance for operational processes in simulation centers. The significant financial costs associated with these platforms are unreasonable for start-up simulation centers such as the Center for Simulation Technology and Medical Equipment at MU-Varna, which is characterized by a limited number of simulators, trainers and staff. In order to overcome this challenge, we propose the development of our own platform for the needs of MU-Varna.

The **goal** of the project is to develop a database for the simulators of MU-Varna, which will allow the extraction of reports based on the searches and choices of the faculty - users of the platform.

The main tasks are:

1. Research the faculty level of simulators awareness;
2. Systematization of the available simulation equipment;
3. Design and development of the database;
4. Database testing and improvement;
5. Data analysis, shaping and dissemination of the results.

The expected results include a new infrastructure with systematized and accessible information about the available simulation equipment. Additionally, the database will deliver reports for competitive analyses and studies of:

1. Faculty preferences regarding the simulation technique;
2. The possibilities of applying the available simulators in different academic disciplines;
3. The need for new simulators/ moulages.

The studies will contribute to the development of more effective methods for managing a simulation center in a medical university, which will have educational and economic significance.

This project was developed in response to the current managerial and financial challenges faced by the heads of simulation centers in medical universities. Since commercial

software platforms for managing these structures require significant financial resources, a team from the Medical University of Varna developed an alternative information platform.

The main objective of the development was to establish an internal database for the available simulation equipment, which not only systematizes it but also allows for data retrieval based on the actual searches of the users. As a result of the successful implementation of the planned project activities, concrete scientific and applied results with direct relevance to simulation-based education and its management were achieved.

1. Scientific Contribution: Classification of Simulation Equipment

Due to the lack of a unified standard in the scientific literature, the project team developed and proposed a proprietary conceptual classification of globally existing simulation equipment. The development includes defining five main groups:

- High-fidelity simulators;
- Complex task trainers;
- Basic task trainers;
- Software simulators;
- Standardized patients.

This classification possesses an original scientific character, as it introduces clear criteria for differentiating between technologies and their educational capabilities. The theoretical framework of the classification has been peer-reviewed and presented in a scientific paper.

2. Scientific and Applied Contribution: Design and Implementation of the Software Platform

Based on a survey conducted among the teaching staff, the actual needs and requirements for the information environment were defined. In accordance with them, the architecture of the proprietary database was constructed, with the primary goal of providing fast, optimized, and convenient access to up-to-date information on the available simulation equipment. To facilitate users in selecting appropriate tools for educational needs, a filter in the form of a drop-down menu for selecting simulators by department has been integrated into the platform's interface. This facilitates the process of discovering educational links between the available simulation resource (apparatus/scenario) and the specific academic discipline.

3. Managerial Contribution: Administrative Statistical Module

The developed database includes a specialized statistical module with restricted administrative access. It registers user activity by tracking keyword searches and selections made by simulator type and academic department. This tool holds high managerial value, as it accumulates objective data on the actual needs of the educational process. The gathered statistics serve as a reliable foundation for data-driven strategic decision-making by the management regarding future planning and investments in new simulators, task trainers, or scenarios.