

CONCEPT FOR THE DEVELOPMENT OF THE DIGITAL PLATFORM FOR EDUCATION AT DUBNA STATE UNIVERSITY

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Modern education is focused not so much on the transfer of knowledge, which is constantly outdated, but on acquisition of basic competencies that allow you to further self-acquirement of knowledge. To prepare competent personnel for the digital economy, it is necessary to modernize the education and training system by introducing digital tools for educational activities and incorporating them into the information educational environment. The paper deal with the methodological aspects on creation and implementation the digital educational platform at Dubna State University. We consider training students in the formulation and solution of applied problems as the main concept of educational process in the Institute of System Analysis and Management (ISAM) of Dubna State University. The technological solutions of the digital educational platform must provide effective, constantly evolving tools that will serve this educational goal. We describe some technological solutions of ISAM that are the components of the ISAM digital educational platform and show the task-oriented implementation of them.

Keywords: E-learning, digital platform, system approach to education

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1. Introduction

The digital economy today refers to business activities in which the key factors of production are digital data, their processing of large volumes and use the analysis results which can improve the efficiency of various types of production, technologies, equipment, storage, sale, delivery of goods and services. The task of training personnel for the digital economy has appeared because of the needs of the new type of economic activity.

The digital economy is, foremost, an instrument of new industrialization and relies on:

- Big Data
- Neurotechnology and Artificial Intelligence;
- GIS Technology;
- Quantum Technologies;
- New Manufacturing Technologies;
- Industrial Internet of Things;
- Robotics and Sensorics;
- Wireless Technology;
- Virtual and Additional Realities Technologies.

The digital economy, as an instrument of new industrialization, is aimed to the strategic goals of the state and can have a significant impact on the national economy. New industrialization is defined as smart industrialization, knowledge-intensive, intellectual. The share of people with higher, professional, specialized, highly qualified education in the labor force of the society becomes predominant.

Modern education is focused not so much on the transfer of knowledge, which is constantly outdated, but on mastering the basic competencies that allow you to further acquire knowledge on your own. Digital educational platform is being created to implement the modern concept of education in the current environment.

2. Methodology aspects

The concept of the educational process at the Institute of System Analysis and Management (ISAM) of Dubna State University places emphasis on formulation and solution the subject-matter tasks by means of modern technology. That skills are the important to meet the requirements of labor market. Study of the system approach to the formulation of subject problems and promising digital technologies such as: machine learning, big data analytics, quantum computing, as well as sequential math and software course units are included in the curriculum of students.

The general scheme of formulation and solution the subject-matter tasks consist on sequential execution of the certain steps (fig. 1).

Figure 2 demonstrates the methodological basis of the digital educational platform in ISAM of Dubna state university.

In our view the key points in development of the digital platform in education are the training students first of all in abilities to revile and formulate the applied problem and then provide the process of solution by adequate technological tools [1].

Implementation of this important principles will allow to meet the changing requirements of employers. As for the students, they will the possibility to format the individual learning paths more consciously.

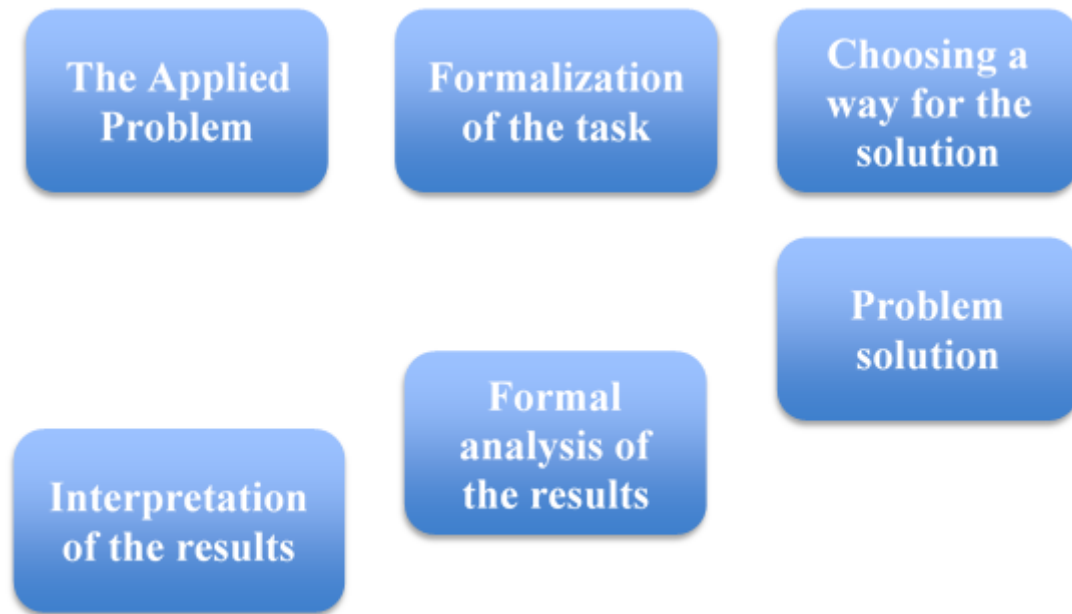


Figure 1. The general scheme for setting and solving applied problems

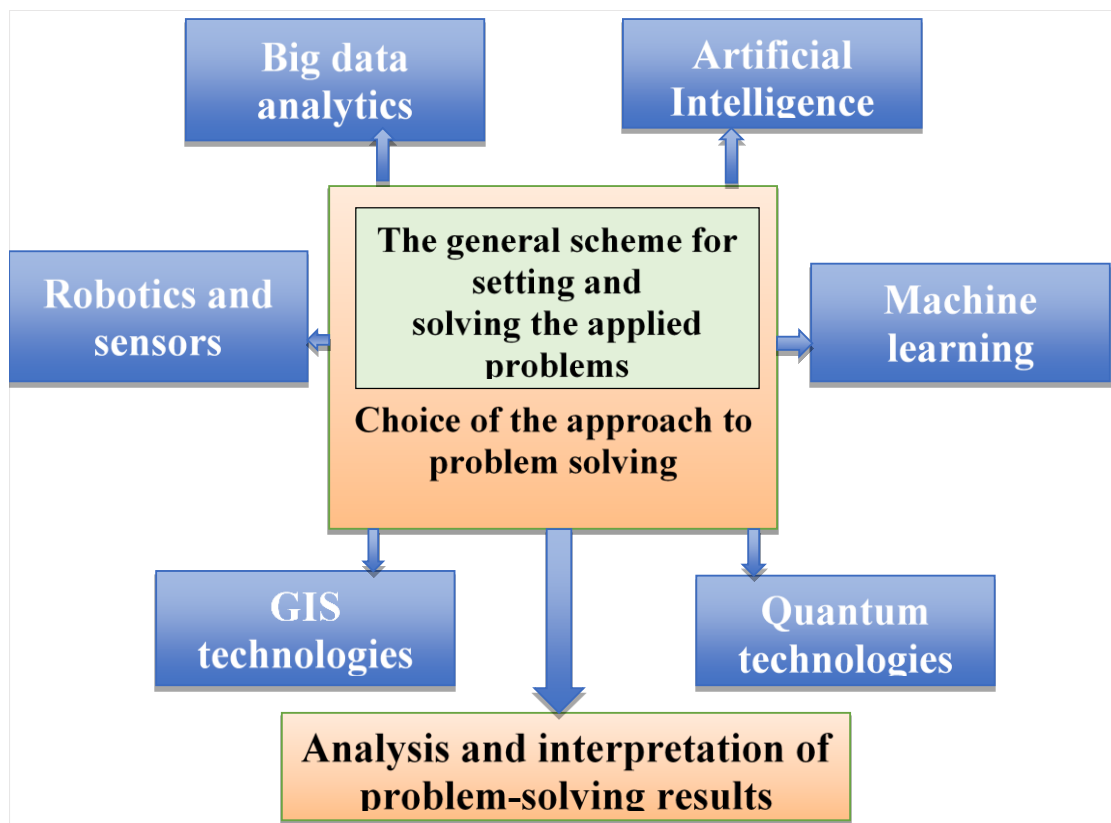


Figure 2. The methodological basis of the digital educational platform

3. Technology aspects

The above-mentioned concept of the educational process at the Institute of System Analysis and Management of Dubna State University is implemented with the help of software and technological solutions that are self-developed or used by agreement with partner enterprises. We list the most significant of them:

3.1 Virtual computer laboratory (VCL)

VCL is a multicomponent software and hardware complex, the hardware basis of which is a high-performance data center. VCL provides the necessary resources for the educational process, in particular for the tasks associated with the deployment of large systems. Educational use of VCL provide the formation of professional competencies of graduates, through which they will be able to successfully solve the main problems arising at all stages of the life cycle of distributed enterprise information systems, horizontally-scalable cluster storage, analysis and data processing, software for business intelligence, and project management for software development [2, 3].

3.2 Intelligent robotic equipment

The equipment simulator allows get a deeper understanding and skills in design and implementation of intelligent control systems for various technical devices, in assembling of models of robotic products — simulators, for further demonstration to potential customers and interested organizations. The equipment concept includes [4, 5]:

- Modern design technologies of robotic systems and intelligent control systems;
- Prototypes and models of robotic systems created by students and employees of the computer lab;
- Software tools for designing intelligent control systems.

3.3 Software and technology complex GIS INTEGRO

The GIS INTEGRO complex provides all the necessary tools for the preparation of GIS projects and cartographic database of production and research works, and also includes specialized modules for solving problems of classification, zoning, data mining, pattern recognition, etc. [6].

3.4 Education and testing polygon HybriLIT

Different IT technologies, namely, grid, cloud technologies, parallel computing, Big Data analysis and a wide range of issues related to mathematical modeling and to the use of applied software packages, will be in demand for megaprojects. For all these tasks, it is necessary to prepare appropriate specialists. The ducation and testing polygon HybriLIT in JINR (LIT) has a heterogeneous structure of computing nodes and allows you to develop parallel applications for calculations on various computing architectures, such as multi-core processors, coprocessors and graphics processor lines, as well as to conduct training courses on parallel programming technologies that make it possible students to master the work on the latest computing architectures. We use the polygon at ISAM for the following purposes [7, 8]:

- Creating specialized groups of students
- Introducing new courses to the bachelor's and master's degree programs
- Holding specialized lectures and master classes

4. Conclusion

The listed methodological and technological solutions provide an effective toolkit of the digital educational platform for solving educational problems at Dubna State University. Using these tools allows ont to create individual learning paths, quickly respond to the changing needs of employers, to organize interaction with partners who are involved in the development and implementation of training programs.

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