

## 22. ENGINEERING DATA MANAGEMENT SYSTEM

*Kuzmenka I. V.*

*Belarusian State University of Informatics and Radioelectronics  
Minsk, Republic of Belarus*

*Sinkevich L.E. – Senior Lecturer*

The purpose of this paper is to study the effectiveness and applicability of various engineering data management systems (EDMS) for the optimization of construction processes. This research is aimed at analyzing the impact of EDMS on the working process of enterprises, their ability to improve labour productivity, optimize costs and increase competitiveness in the market.

Engineering data management system is a complex of technologies and systems, the purpose of which is not only to create three-dimensional models of objects, but also to optimize the activity of enterprise at all stages of design and construction. Its main goal is to analyze the advantages and risks associated with the design, assess the performance of the equipment and reduce the cost of replacement, as well as to minimize time delays, which ultimately contribute to an increase of the enterprise's profit. This new development is an improved model of Building Information Model (BIM) technologies. Due to the dynamic development of digital technologies and their impact on the economy and production processes, the relevance of EDMS application in the design of various objects becomes evident. The study of this technology will provide valuable knowledge about its potential for optimizing the work of enterprises and ensuring their competitiveness.

The analysis assessed BIM technology's effectiveness in designing objects with varying importance levels. The main objectives of the research were to compare this development with the traditional design method and automated BIM-approach in order to determine the rationality and its optimum use. The study conducted in Belarusneft-Neftekhimprojekt company revealed the main advantages of BIM [1]. Figure 1 presents the results of time and resource costs, quality of design, level of accuracy and reliability of the obtained data.

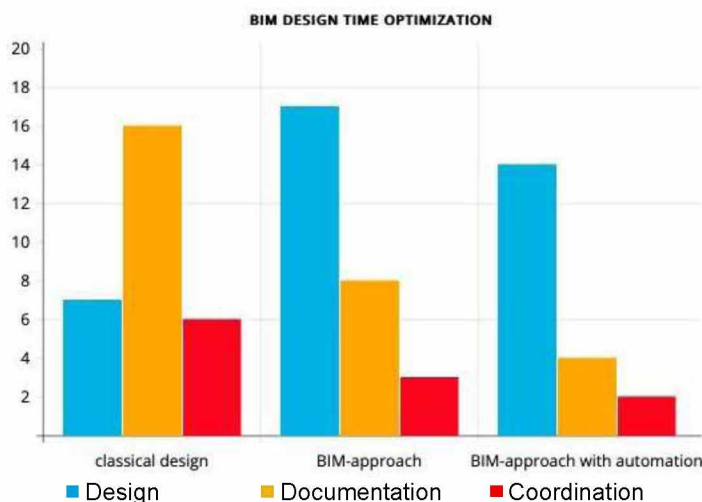


Figure 1 – BIM Design time optimization in 2024

The results clearly demonstrate the superiority of BIM-technology in the field of design, which plays a key role in optimizing the construction process. It relies on a ready-made virtual model, excluding huge construction documentation. One of the main advantages of this technology is the possibility to detect all potential issues at the design stage. It allows to minimize risks and avoid possible errors that may occur during the construction process. This approach not only reduces the cost of correcting errors during the construction process, but also contributes to more efficient resource and time management.

Summing up this research, it can be concluded that its results show a great importance of BIM-technology for various fields, including engineering, economics, logistics and computer communication. The integration of BIM technology into the design process opens up new prospects for the development of more efficient and sensitive digital communication platforms in the future.

The field of technology is constantly evolving, and this study only confirms this fact. Moreover, it provides the basis for the assumption that new, even more advanced techniques and technologies will emerge in the future.

### **References:**

1. Survey results [Electronic resource]. – Mode of access: <https://nhp.by/index.php/bim-kontrol>. – Date of access: 11.03.2024.