Summary

BIM - Building Information Modeling. In Polish translations, this term means "modelling information about construction objects". The use of BIM in the investment and construction process is not only limited to changes in the technology of generating data and operating it, but also affects the course of this process. The change of technology entails a number of cualitative changes of an organizational, procedural or legal nature. A significant change under the influence of BIM is the model of communication between participants of the investment process, implemented in an electronic environment. As a result, BIM affects all phases of the investment life cycle, from the design phase to its demolition. This dissertation in the theoretical part has been prepared on the basis of foreign and domestic literature and documents produced so far as part of the process of implementing BIM technology to the Polish system of public procurement for construction works. In the empirical part of the work, the source materials obtained as a result of the use of the case study method and the survey research were of significant importance. It should be emphasized that the process of implementing BIM technology into the Polish public procurement system for construction works is still an unfinished process. The year 2012 was adopted as the initial turning point of this process, when BIM technology appeared in commercial projects, which was institutionally expressed by the creation of the BIMKlaster organization. The end date of this process is assumed to be 2025, when – according to the provisions of the "road map" processed by the competent ministry – the use of BIM technology in public procurement in Poland is to become a legal requirement.

The proposed approach refers not only to the course of the implementation process itself, but also takes into account various conditions important from the point of view of its effectiveness. Due to the pioneering nature of the approach and the fact that – as mentioned – the process of implementing BIM technology into the Polish public procurement system is still ongoing, the issue raised in the dissertation requires further research that will allow to verify the findings made.

In the situation indicated above, the main objective of the dissertation is to present, based on the current legal status, literature and empirical material collected as a result of own research, the conditions and course of the process of implementing Building Information Modeling – BIM technology into the Polish public procurement system. For the purposes of this work, the following research hypotheses have been formulated:

H1: The implementation of BIM technology in Poland is hindered by a number of conditions of various nature.

H2: The use of BIM technology in individual phases of the investment and construction process has a positive impact on the efficiency of data exchange between participants integrally associated with a given project.

H3: The use of BIM technology in all phases of the construction investment process has a positive impact on the cost, deadline and quality of the investment.

The dissertation consists of an introduction, five chapters, a summary, a list of literature and lists of figures, tables, charts and appendices.

Chapter I is devoted to the definition and analysis of the structure of the investment and construction process. For the purposes of the present dissertation, this process is included as a set of activities (preparatory, executive, as-built) regulated by the provisions of various areas of law, which are necessary to accomplish a specific investment. Chapter II also discusses barriers and problems in the functioning of BIM technology, which have been observed in countries where this technology has been implemented, and which may also occur in Poland. Chapter III refers to the current conditions of the BIM technology implementation process in Poland. First of all, the issue of organizational and competence conditions was raised. In this context, the focus was especially on the years 2019-2020, because it was the period in which the Ministry of Development and Technology implemented the Operational Program Knowledge-Education-Development. The other two chapters of this dissertation – IV and V – are research chapters. They contain, carried out by the author of the dissertation, a presentation and analysis of empirical material collected in the course of his own research. Chapter IV discusses – using case study and comparative analysis – the practical effects of using BIM technology in the design of buildings. Chapter V presents conclusions from sociological research relating to conditions and barriers in the process of implementing BIM technology to the Polish system of public procurement for construction facilities. These studies were carried out on the basis of a research questionnaire (attached to the dissertation) prepared specifically for the purposes of the research.

On the basis of the results of the research and observations made in this dissertation, the following conclusions can be drawn: The public procurement system may turn out to be a kind of flywheel for the spread of BIM technology throughout the Polish construction sector. The process of implementing BIM technology in the public sector in Poland, despite many obstacles and shortcomings, is planned and organized. However, it is still in the initial phase in terms of the state of legal and standardization solutions. A factor stimulating knowledge about BIM technology is participation in the completion of construction projects in which this technology was used. The role of this factor in gaining knowledge about it has so far been very limited in our country. In order to

successfully implement BIM technology, it is necessary to increase the awareness of stakeholders of the investment and construction process in the use of this technology in all its phases.

Keywords: BIM, public procurement for construction works, investment and construction process, life cycle of buildings.

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