Research Article

PRIORITIES FOR THE DEVELOPMENT OF BIM TECHNOLOGY IN URBAN PLANNING

B.I. Urmonov
Assistant, Department of Architecture, Fergana Polytechnic Institute, Fergana, Uzbekistan

S.R. Qosimov
Assistant, Department of Architecture, Fergana Polytechnic Institute, Fergana, Uzbekistan

D.O. Nurmatov
Assistant, Department of Architecture, Fergana Polytechnic Institute, Fergana, Uzbekistan

ABSTRACT

BIM is located at the crossroads of different disciplines. Using this modelling method in a single project, you can combine architectural, design, engineering, economic solutions, and many other details, which together allows you to avoid mistakes, justify the project itself, and increase efficiency. Data is entered following established standards, and is accurate and regularly updated.

KEYWORDS

Modelling, Main advantages of the model, Information modelling, Architect, designer, Navigation.

INTRODUCTION

One of the main advantages of the model is the ability to reduce time and costs by the customer, as well as the ability to fix and improve the project in the early stages of its formation. Information modelling technology makes the customer a full participant in construction. He can imagine what the object will look like and make corrections as it moves [1-4]. No 2D drawing can provide a true picture of a future building using BIM modelling. The idea of an architect, designer, or client is not always realized in practice, and this can only be seen in the early stages of design in the BIM model. With this type of design, a building that has not yet been built will "come to life" on the screen, making any imperfections and potential problems visible [3-7].

THE MAIN PART

The idea of modelling BIM dates back to the 1970s. The term "building model" was first coined in 1985 by Simon Ruffle, and later by Robert Ash, a software developer used in the reconstruction of Heathrow Airport. The concept of "building information model" was first mentioned in its current meaning in GA van Nederven and FP Tolman's article "Modeling multiple views of buildings". The term only came into widespread use in 2002 and began to be used to refer to a digital image of the construction process. The ancestors of modern BIM software were RUCAPS, Sonata, and Reflex, ArchiCAD applications. Today, the main players in the global construction data modelling market - are Autodesk, Bentley Systems, Dassault Systemes, AECOM, Asite Solutions, Beck Technology, Nemetschek, Pentagon Solutions, Trimble Navigation, and Synchro Software. It is estimated that the size of the BIM market in Russia is currently estimated at $ 110 million [8-11]. This figure is incorrect because it includes the cost of software sold and the cost of training, as well as the implementation and maintenance of projects using BIM. According to a survey of 541 project organizations, 22 per cent of companies have switched to full BIM technology. There is no doubt that BIM design will continue to evolve and grow rapidly in the coming years. Currently, the main players in the Russian market are design companies such as GENPRO, ArchiPlus, 3C Development Group, and Etalon Group. There are several companies that started developing BIM models 5-10 years ago. Now, this approach is used by most developers in Moscow, and some in major central cities [12-17]. The number of BIM projects is growing, which is associated with reducing the cost of developing BIM, as well as improving the regulatory framework. In Russia, on July 19, 2018, the order of the President of the Russian Federation was announced, according to which BIM was declared a priority in the development of construction. It is believed that the transition to the information modelling system will reduce construction time, as well as improve the quality of construction projects, and optimize the use of material and labour resources. Now, this approach is used by most developers in

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The advent of information modelling has radically changed the interactions of architects, engineers, and other construction professionals. Full information about the project - materials, technologies, their cost, as well as design, logistics, and maintenance of the facility during construction, after commissioning - is available to each participant due to BIM and cloud technologies. BIM is just beginning its rapid development and demand, with only the richest countries actively using information modelling in the last decade.

The UK is still not only the first but also the absolute leader in the use of BIM. This was possible due to state-level support: from 2016, all budget construction projects will be required to apply BIM Level 2, not lower. Thus, as a test, this technology will be used in a project of the Ministry of Justice - the expansion of Kuxem Wood Prison in Kent. And this has allowed for a significant reduction in capital costs and implementation time. In the United States, the General Services Administration has established a BIM program since 2003 for all public building renovation projects. Today, about 72 per cent of

construction firms in the U.S. use BIM to save significant costs on projects. Several U.S. states, universities, and private organizations also use BIM standards. Wisconsin, for example, has made it mandatory to use BIM for government projects if their total budget starts at $ 5 million. In France, there are already half a million houses designed using BIM. Since 2017, the country's government has placed BIM in the housing sector for 500,000 homes. Le Plan Transition Numérique dans le Bâtiment The working group is responsible for a French BIM strategy aimed at sustainability and cost reduction. Since 2017, the country's government has placed BIM in the housing sector for 500,000 homes. Le Plan Transition Numérique dans le Bâtiment The working group is responsible for a French BIM strategy aimed at sustainability and cost reduction. Since 2017, the country's government has placed BIM in the housing sector for 500,000 homes. Le Plan Transition Numérique dans le Bâtiment The working group is responsible for a French BIM strategy aimed at sustainability and cost reduction.

In Germany, the government also influences the promotion of BIM technology. By 2020, all infrastructure projects are focusing more on commercial and residential buildings to introduce BIM. In Spain, BIM has been used for public sector projects since 2018, and from 2019, the use of technology in infrastructure projects is mandatory. A special commission has been set up to encourage the introduction of BIM in the Spanish construction sector. The Scandinavian countries were the first to use BIM. For example, Finland began using building data modelling as early as 2002. BIM has been used to create complex infrastructure such as the Helsinki metro line.

CONCLUSION

In summary, BIM has become a key element and they are used in most projects. The Chinese government has not yet required the use of BIM in construction, but its use is encouraged. In general, BIM works experimentally even in economically strong countries - the process of introducing digital technologies into construction is not fast for several reasons. However, there is still an acceleration in the digitalization of the industry, and developers have a great interest in modern long-term solutions, such as building information modelling.

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