

OPINION

by Assoc. Dr. Arch. Danail Nedyalkov
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Subject: Dissertation for the award of the educational and scientific degree "Doctor"
by professional direction 5.7. "Architecture, construction and geodesy", scientific specialty
and doctoral program "Architecture of buildings, facilities. constructions and details" on the topic:
Modern information technologies in architecture.
Application of BIM and HBIM in design, management and
maintenance of architectural objects
"Author: arch. Teofana Haralampieva.

Scientific organization: NBU - Sofia, Department of "Architecture".
Academic supervisor: Prof. Dr. Arch. G. Georgiev.

This opinion has been prepared and presented in my capacity as a member of a scientific jury,
appointed by Order Me 3-PK-207 dated 13.05.2024 of the Rector of the NBU, on the basis of Art.
14, para. 3, from Ordinance 3a development of the academic staff Ha NBU, decision of the Faculty
Council Master's Faculty from meeting Me 08/25.05.2024 and report from the Dean of Master's
faculty with entrance No Д-PE-1306 of 09.05.2024

GENERAL CHARACTERISTICS OF THE DISSERTATION

1. Scope and structure of the dissertation mpyo.

The dissertation work is structured in one volume with a volume of 115 pages, including 72
illustrations and tables. The work's bibliography includes 41 titles in Bulgarian and foreign
languages

literature, electronic publications and websites.

The content of the theoretical study is structured in six main parts. The first one
part outlines the context in which scientific analysis is "implemented". In the second part they
introduce themselves

the possibilities of Building information modeling (BM/SIM (Building-Information
Modeling)" technology in the service of architectural design. In the third part,
demonstrate the capabilities of this BIM/CHM technology in a specific aspect, namely in
the field of cultural heritage. In the next part, an overview of different digital is again made
technologies that support the design process. In the fifth part, a possible scenario is given,
for the application of VM/SIM technology when preparing the necessary documentation,
accompanying a given architectural object.

The proposed labor structure demonstrates a well-found ratio between
the introductory and essential part of the study.

2. Subject and scope of the study.

The subject of the research are examples from design practice where they are used
modern information technologies (specialized software products) and through these
BIM technology is applied to specialized software products.

3. Necessity and relevance of the dissertation work.

The work presented is dedicated to the application of information technologies in
architectural design, also suggests the topicality of the topic, namely application of
modern information technologies at the service of the designer. The proposal is different
view, for the optimal use and application of information technologies (IT) c
the design process, is imposed by the need to structure this process and correctly
use even in the earliest phases of design.

3. Goals and tasks of work.

The doctoral student formulates the main goals of the work:

- o To demonstrate the key role in the use of BIM/CUM technologies as well as the need for professional visualization to increase the quality of presentation of the project;
- o Research and analysis of the influence of modern technologies in APXHTEKTYpaTa;
 - « An analysis of the advantages and challenges facing the technological . development B architecture;
 - « The aim of the present development is to support the design process by synthesizing them and analyze the evolving digital technologies to help him. The study of the application of technology in both design and education is a primary goal of the doctoral student.

In accordance with this goal outlines its main tasks, arranged in an adequate methodical order:

- o To explore the application of IT in the preparation and management of building projects, parametric design, 3D printing, visualization, artificial intelligence:
- o To study newly discovered modern technologies in construction and design, site management;
 - « To consider the key role in the use of BIM/CHUM technology as well as the need for professional visualization to increase the quality of presentation of the project:
- o Consider HBIM, or the so-called information modeling of historic buildings such as a digital representation of a historic building that includes both geometric and non-geometric information. It can be a valuable tool for architects and specialists, working on projects for the preservation of historical heritage.

RESEARCH ACHIEVEMENTS AND CONTRIBUTIONS

and Sharing in principle the author's self-assessment of the contributions of the work under review, I would.

wanted to add and highlight some of its features that I think give it quality, namely:

- « Synthesizing comprehensive information about current IT technologies; August 1, 2024 Opinion Taofana Harapampieva NBU.dosh 23)

- o Defining and proving the important role of IT technologies, in identifying and preserving, maintaining and exhibiting architectural historical heritage.

DISSERTATION OPINION, REMARKS AND RECOMMENDATIONS

The doctoral student examines examples from practice with the application of specialized ones software products using BIM technology. The specific consideration of the application of IT is the field of preservation of the architectural heritage and while at "new" design the use of IT is inevitable, with the need to generate documentation of an existing physical architectural object, as is the case with conservation of historical monuments, this work process is specific. In this line of thought, I believe that The doctoral student contributes to the unification of the work process for the preparation of the necessary documentation.

The large volume of research examples, as well as their diversity, is impressive, which allows for future development of the work, but so questions can be asked about the detail and completeness of the examples studied.

I have the following recommendations and a few critical remarks about the main points at the development of a dissertation. First of all, a dissertation has ONE purpose, not one aims. Second, some of the stated goals of the OT doctoral student are more like tasks. Third, in so the formulated tasks of the dissertation work, again there is a lack of understanding and definition of this, what are dissertation tasks. Some of the tasks formulated in this way can easily be done are treated as conclusions or contributions of the work itself. Before the use of abbreviations for example BIM, HBIM , must be written in words and then the abbreviation recommended € in the text

in Bulgarian, to search for translations of the English terms.

Despite the critical remarks made, they do not detract from the efforts made by the doctoral student. I recommend that in the future the author familiarize himself more thoroughly with the structure of presentation of scientific information.

DISSERTATION PUBLICATIONS

In the materials presented by the author on the topic of work, there is no information about published ones articles by the author.

IN CONCLUSION:

Given the mentioned scientific achievements of the candidate, the indisputable relevance and necessity of the presented work and the nature of its scientific contributions for the enrichment of the theoretical foundations for implementing IT in the first phases of design, as well as the practical ones

guidelines for the application of the VTM/SIM technology, I accept the dissertation work of arch. Teofana Haralampieva for being completed and brought in accordance with the requirements of the Law on the Development of the academic staff in the Republic of Bulgaria.

As a member of the Scientific Jury, I give my positive vote for awarding the educational and scientific degree "DOCTOR" of Arch. Teofana Haralampieva.

City of Sofia Prepared the opinion: ... D5

August 2024 Assoc. Dr. Arch. Danail Nedyalkov