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Information technology - Building information model (BIM) software - Part 4: Mesh model

信息技术 建筑信息模型（BIM）软件 第4部分：网格模型

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 4 of GB/T 45393 "Information Technology Building Information Modeling (BIM) Software". GB/T 45393 has been published The following parts.

- Part 2: Parameterized model;

- Part 4: Mesh model;

- Part 5: Data interface.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Introduction

BIM software is characterized by the establishment and application of three-dimensional, structured, and semantic models.

It has the functions of calculation, performance, management, delivery, inspection and coordination, and plays a supporting role in different stages, professions and applications of the whole life cycle of buildings. effect.

GB/T 45393 "Information Technology Building Information Modeling (BIM) Software" aims to guide practitioners to form a consistent understanding of BIM software.

In the development of BIM software, this series of standards is adopted to achieve the interconnection and interoperability of BIM software, the exchange and sharing of BIM models, and improve The availability, applicability and maturity of BIM software promote the formation of BIM software ecosystem and help the assetization of BIM models.

GB/T 45393 is intended to consist of 5 parts.

- Part 1: General requirements. Clarify the basic concepts, functions and data requirements of BIM software, with the aim of assisting BIM software Requirements definition, development and implementation.

- Part 2: Parameterized model. Gives a model format that uses standardized parameter sets to represent geometric objects. The receiver can parse and Modify geometric object parameters to display and modify objects in the BIM model, with the goal of achieving editable models between BIM software exchange.

- Part 3: Model view definition. Provides a language for formally defining the content in the model, with the purpose of defining the model according to specific requirements.

Perform completeness check or model view extraction on the submitted model.

- Part 4: Mesh model. A model format based on triangular meshes that cannot be parametrically edited is given.

Used for visualization, communication and management of BIM models.

- Part 5: Data interface. Gives the data calling methods, sending and returning information between different BIM software and platforms. The purpose is to Enable different BIM software to share BIM data in the form of interfaces.

Information Technology Building Information Modeling (BIM) Software Part 4: Mesh Model

1 Scope

This document defines the data structure of the BIM software grid model and the way to expand and record semantic information, and specifies the multi-level detail model.

The specific requirements of the model in terms of structure, implementation and rendering objects.

This document is applicable to lightweight files or file fragments of BIM software construction models, and is also applicable to supporting the development of related application software.

Read, create and modify mesh model files that conform to this document.

2 Normative references

GB/T 36456.1

GB/T 51447

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Mesh modelmeshmodel

A model represented by mesh geometry defined by vertices, edges, and faces.

Note. A face is usually composed of triangles and quadrilaterals.

3.2 node

The basic data element in the information model is the smallest data unit in the information model.

3.3 semantic information

Meaningful information other than geometric information in the building information model.

Note. Such as object type, attributes, relationships and other information.

3.4 Project

The main goal is to build physical products, including the collection of overall work in the design, construction, operation and maintenance life cycle.

3.5 space

It is used to express the structural information of each decomposition of the project in space, including the spatial decomposition structural information of sites, buildings, floors, rooms, etc.