

# OntPreHer3D version 1.0, Classes declaration

Status: 07.06.2023

## M1 Digital Model

### Subclass of:

D1 Digital Object

### Scope note:

This class comprise a virtual three-dimensional representations of E71 Mad-Made Thing of conceptual or physical nature that can be displayed in 3D digital space and are documented as single units.

A M1 Digital Model does not depend on a specific physical carrier, and it can exist on one or more carriers simultaneously.

### Examples:

3D model

Laser scan

Point cloud

## M2 Versioning

### Subclass of:

D7 Digital Machine Event

### Scope note:

This class comprises events that result in the creation of digital model documenting one specific state. It also includes digital model update activities in the case of new research findings that reveal information that was not originally included in the digital model.

### Examples:

Changing the roof geometry of the building on a digital reconstruction model based on newly discovered aerial photographs

Applying textures to the model

Adding interior design elements to a 3D model

## M3 Variation

**Subclass of:**

D7 Digital Machine Event

**Scope note:**

This class comprises events that result in the creation of digital model documenting a certain state of knowledge. Depending on the collected source materials, it can result in alternative variations showing possible interpretation of gaps in knowledge. A 3D model of a variation can consist of different versions representing different stages of work.

**Examples:**

Variations in the position of buildings in the settlement reconstruction model

Variations in the geometry of the roof of the temple reconstruction based on available analogies

## M4 Division

**Subclass of:**

D7 Digital Machine Event

**Scope note:**

This class comprises the events of dividing the original digital model into smaller parts for reasons of technical constraint, resulting in creation of new digital models that should not be considered as individual parts. These partial models should not be documented, as independent units, but only as elements that contribute to a collective entity.

**Examples:**

Division of the model into segments corresponding to the working space of the 3D printer

Division of the model into parts meeting the requirements for publication in the web-viewer

## M5 Web Publication

**Subclass of:**

D7 Digital Machine Event

**Scope note:**

This class comprises events of publishing any D1 Digital Object on the web, resulting in creation of M6 Web-based Entry with its own Uniform Resource Identifier (URI).

**Examples:**

Publication of the article in Wikipedia

Uploading the 3D model to Sketchfab repository

Publication of the photo on social media

## M6 Web-based Record

**Subclass of:**

D1 Digital Object

**Scope note:**

This class comprises a digital record on the web regarding D1 Digital Object. M6 Web-based Entry should have its own URI, under which a set of metadata about the published resource and its preview can be found.

**Examples:**

Wikipedia article

Sketchfab repository entry with a view of the 3D model

A record in the museum's digital archive

Blog entry

## M7 Web-based Visualization

**Subclass of:**

E36 Visual Item

D1 Digital Object

**Scope note:**

This class comprises the visual representation of the M1 Digital Model on the 3D viewer canvas, allowing the user to interact with the model via a web browser without the need to install additional software. Due to the limitations of browser viewers, this visualisation is often a simplified version of the original after a process of exporting, converting and compressing the model.

**Examples:**

Canvas with displayed 3D viewer in the Sketchfab repository

Interactive digital 3D museum

## M8 Web Document

**Subclass of:**

D1 Digital Object

E31 Document

E33 Linguistic Object

**Scope note:**

This class comprises the identifiable immaterial records in web-based services that describe single individual component of reality. Although those record use textual expressions as a basic

communication medium, they may also contain information in the form of other media such as images, videos, animations, 3D models, spatial coordinates and others. Elements of this class are publicly available knowledge resources that are identified by their Uniform Resource Identifier (URI).

**Examples:**

Wikipedia entry on “Synagogue in Volpa”, identified by  
[https://en.wikipedia.org/wiki/Wo%C5%82pa\\_Synagogue](https://en.wikipedia.org/wiki/Wo%C5%82pa_Synagogue)

Europeana record on “New Gate Bastion, Derry City Walls (3D Model)”, identified by  
[https://www.europeana.eu/en/item/2048705/object\\_HA\\_175](https://www.europeana.eu/en/item/2048705/object_HA_175)

ORCID record on “Piotr Kuroczyński”, identified by <https://orcid.org/0000-0001-9847-8368>

## M9 Research Publication

**Subclass of:**

E31 Document

E33 Linguistic Object

**Scope note:**

This class comprises the identifiable textual work containing information about conducted scientific research and which is publicly available. There are various types of publications like Scholarly Journals, Professional or Trade Publications, Popular and General Interest Magazines. Research publications have their own identity, place and necessity and in most cases they are preceded by a peer review which checks novelty, applicability and advancement in a given field of knowledge.

**Examples:**

Conference proceedings: Kuroczyński, P., Bajena, I., Große, P., Jara, K., Wnęk, K.: Digital Reconstruction of the New Synagogue in Breslau: New Approaches to Object-Oriented Research. In: Niebling, F., Münster, S., and Messemer, H. (eds.) Research and Education in Urban History in the Age of Digital Libraries. pp. 25–45. Springer International Publishing, Cham (2021), [https://doi.org/10.1007/978-3-030-93186-5\\_2](https://doi.org/10.1007/978-3-030-93186-5_2).

Book: Moore, J., Rountrey, A., Kettler, H., S.: 3D Data Creation to Curation: Community Standards for 3D Data Preservation. ACRL, Chicago, Illinois (2022).

PhD Thesis: Murphy, M.: Historic Building Information Modelling (HBIM) for Recording and Documenting Classical Architecture in Dublin 1700 to 1830, (2012).

Journal article: Champion, E., Rahaman, H.: Survey of 3D digital heritage repositories and platforms. Virtual Archaeology Review. 11, 1–15 (2020). <https://doi.org/10.4995/var.2020.13226>.

## M10 Area

**Subclass of:**

E27 Site

osd53a Place

**Scope note:**

This class comprises places or areas, both inhabited and natural. They have to be distinguished as individuals, identified by their own name and specific boundaries on the map.

**Examples:**

City of Mainz

Jewish Cemetery of Altona Königstraße, in Hamburg

Kew Garden in London

Piazza Maggiore in Bologna

## **M11 Single Built Work**

**Subclass of:**

E22 Human-Made Object

**Scope note:**

This class comprises freestanding buildings and other structures commonly considered individual built works or architectural types. It covers a range from complex buildings to minimal accessory structures, including also constructions providing no enclosure or shelter. Some structures from this class may be relatively small and exist as accessories to other built works.

**Examples:**

The Palace of Culture and Science in Warsaw

Trevi Fountain in Rome

“David” sculpture by Michelangelo

signal tower

cow shed

**Same as:**

Single Built Works (hierarchy name) (<http://vocab.getty.edu/page/aat/300004789>)

## **M12 Furnishing and equipment**

**Subclass of:**

E22 Human-Made Object

**Scope note:**

This class comprises objects that are primarily movable that provide comfort, convenience, or protection in dwellings, places or business, or other public or private spaces. They may be useful or ornamental and may be used in indoor or outdoor spaces.

**Examples:**

Chair of estate used at the coronation of Queen Elizabeth II (1953)

Altar in St Peter's Basilica in Rome

18th century oil lamp

Valve steam engine "Sulzer"

**Same as:**

Furnishings and Equipment (hierarchy name) (<http://vocab.getty.edu/page/aat/300264551>)

## M13 Component

**Subclass of:**

E22 Human-Made Object

**Scope note:**

This class comprises constituent parts or elements of objects, including areas, buildings, structures, or items. Typically, it cannot or does not stand alone.

**Examples:**

Dome of the Cathedral of Santa Maria del Fiore in Florence

Front façade of Casa Batlló by Gaudí in Barcelona

Imperial Hall in the Neue Residenz in Bamberg

Square segment of the city subdivision grid

**Same as:**

Components (hierarchy name) (<http://vocab.getty.edu/page/aat/300241490>)

## M14 Research Project

**Subclass of:**

osd\_7a Research Activity

**Scope note:**

This class comprises activities aimed at finding answers to scientific questions, requiring external funding and often interdisciplinary consultation.

**Examples:**

Project of source-based digital 3D reconstruction of the New Synagogue in Wrocław (<https://www.new-synagogue-breslau-3d.hs-mainz.de/>)

## M15 3D Geometry

**Subclass of:**

E55 Type

**Scope note:**

Used only for classification of instances of M1 Digital Model in terms of geometry representation regards its continuity, completeness, segmentation an volumetric plausibility.

**Examples:**

[NURBS, Mesh, Point cloud]

[Boundary representation (BREP), Closed solid representation]

## M16 3D Material

**Subclass of:**

E55 Type

**Scope note:**

Used only for classification of instances of M1 Digital Model in terms of material representation on the surfaces of the model.

**Examples:**

[realistic, abstract]

[untextured, partially textured, textured]

[seamless tiles, randomized, UV mapped]

[monochromatic, colourful, black-white]

# OntPreHer3D version 1.0, Properties declaration

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## R1 published (was published by)

**Domain:**

M5 Web Publication

**Range:**

D1 Digital Object

**Subproperty of:**

E65 Creation:P92 brought into existence (was brought into existence by):E77 Persistent Item

**Scope note:**

This property describes the process of a publication of a digital object (picture, document, video, 3D model, etc.) on the web resulting in creation of URI.

## R2 has name (is name of)

**Domain:**

E21 Person

**Range:**

E41 Apellation

**Subproperty of:**

E1 CRM Entity:P1 is identified by (identifies):E41 Apellation

**Scope note:**

This property describes the naming of E21 Person by its first name.

## R2 has surname (is surname of)

**Domain:**

E21 Person



**Range:**

E41 Apellation

**Subproperty of:**

E1 CRM Entity:P1 is identified by (identifies):E41 Apellation

**Scope note:**

This property describes the naming of E21 Person by its surname.