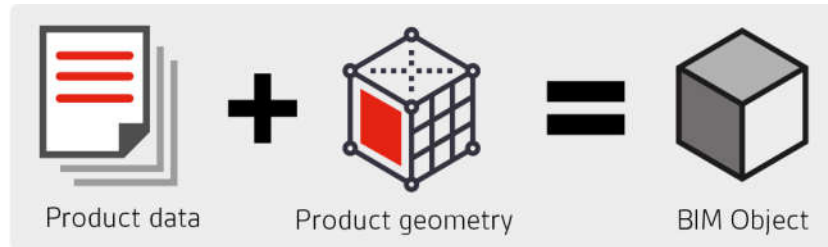


Assignment 01: Understand and Create BIM Objects



A BIM object is a repository of information that holds data regarding 2D and 3D geometry description of the actual product or component. The information container also holds information such as barcodes, U-values, sizes and branding like logo and family names. Links to maintenance documents, assembly manuals etc. are also available in the object.

Today CAD symbols are replaced by BIM objects. BIM objects still carry the representation of the products in 2D and 3D like a CAD symbol would, but they also carry so much more. In a BIM object you can also add links back to the product information, website and montage instructions. The BIM objects are smart by nature and can contain functions like how they should be operated, and of course all visual qualities.

The creation of BIM objects always starts from some original document like 2D drawings in paper or digital form (PDF/DWG). We can also build BIM objects from real physical products if this is the only option, using 3D scanners and digitising techniques, we recreate the physical form in 3D. We add information and data from product sheets and product databases to create a smart BIM object that represent the real physical product. Materials and textures are added to the objects knowledge and functions are programmed into the object if needed.

Objectives

- To study the basic concept of BIM objects.
- To create an example of BIM object using simplified tools and information.
- To document and present the BIM object in a systematic way.

Methodology

The assignment is to prepare a BIM object of your choosing. Each student should consider and select one product or component related to building services engineering for creating the BIM object. An example is a chiller plant, a water pump, a lighting fitting, a sanitary fitting or a fire sprinkler head. Usually, a BIM object is a combination of many information, including:

- Information content that defines the product or component.
- Model geometry representing its physical characteristics.
- Behavioural data such as detection, maintenance and clearance zones, that enable the BIM object to be positioned in, or function in the same manner as, the product itself.
- Visualization data giving the object a recognizable appearance.

The recommended software tool for creating the BIM object is SketchUp and it can be learnt and applied from the following web links. Students may also apply other software (such as Revit and ArchiCAD).

SketchUp <https://www.sketchup.com/>

- SketchUp Free: 3D modeling in a web browser <https://www.sketchup.com/products/sketchup-free>
- SketchUp Pro (free trial version) <https://www.sketchup.com/products/sketchup-pro>
- Video Tutorials <https://www.sketchup.com/learn>

Submission

Each student should submit the relevant information and file(s) of the BIM object together with clear description and representation of the proposed component. The files (such as 3D model) should be of suitable format for review purpose. The description should be neat and properly written and organized to communicate your findings. Proper credit and referencing should be provided to the information sources. Students making direct copy of the information in other publications or sources (plagiarism), if found, will be disqualified.

The file(s) of the BIM object together with the description should be submitted through the Moodle system. The assessment criteria include quality of the content, compliance with relevant standards, complexity of the object, organization and writing skills.

Submission deadline (via Moodle): **on or before 23 March 2018 (Fri)**

Resources

About BIM Objects <https://www.nationalbimlibrary.com/about-bim-objects>

A manufacturer's guide to BIM object creation

<https://www.thenbs.com/knowledge/a-manufacturers-guide-to-bim-object-creation>

BIM object https://www.designingbuildings.co.uk/wiki/BIM_object

Examples of BIM objects:

ARCAT BIM Objects http://www.arcat.com/bim/bim_objects.shtml

BIMcomponents <https://bimcomponents.com/>

BIMobject library <http://bimobject.com>

BIM&CO BIM Objects https://www.bimandco.com/en/bim_objects

DiHub BIM Objects Marketplace <http://www.dihub.com.sg/markets>

MagiCloud <https://www.magicloud.com>

Polantis <https://www.polantis.com/>

References

NBS, 2018. *BIM Object Standard*, Version 2.0 January 2018, National Building Specification (NBS), Newcastle upon Tyne. https://www.nationalbimlibrary.com/resources/bimobjectstandard/NBS-BIM-Object-Standard-v2_0.pdf

CIC, 2015. *CIC Building Information Modelling Standard (Phase One)*, Construction Industry Council (CIC), Hong Kong. https://www.cic.hk/cic_data/pdf/about_cic/news_and_update/BIM/Eng/CIC%20BIM%20Standards_FINAL_ENG_v1.pdf