CIC Production of Building Information Modelling Object Guide

General Requirements

August 2019

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Document Revision

Issue Date	Notes
June 2018	Title of the document is CIC Production of BIM Object Guide - General Requirements (June 2018)
August 2019	A few points were elaborated with enhanced images and correct a few typos.

Contents

1 Introduction

1.1 Background

Building Information Modelling (BIM) is not just a three-dimensional drawing tool but a new tool to holistically manage information relating to construction projects from the planning stage, to the design, construction and operational stages. It is a new way of using new technology to facilitate project management and execution, better construction process control, cross-disciplinary collaboration, internal coordination, external communication, problem solving, decision making support, productivity management, and risk management.

BIM is a new way of working – it facilitates construction professionals to work together and communicate in one PLATFORM and all team members should be working to the same standards. BIM creates value from the combined efforts of people, processes and technology.

The Development Bureau of the Government of the Hong Kong Special Administrative Region issued Technical Circular (Works) No. 7/2017 **Adoption of Building Information Modelling for Capital Works Projects in Hong Kong,** which took effect from January 2018. This circular sets out the policy and requirements on the adoption of Building Information Modelling (BIM) technology and applies to works by in-house government staff, consultants and contractors.

The Circular has mandatory requirements to use BIM for production of drawings at the design and construction phases. **Drawing production** is one of the most important deliverables of the industry, both statutorily and contractually, as the drawings usually form part of the statutory and contractual documents. A value-driven BIM process should be able to generate drawings suitable for presentation, statutory and tender purposes.

A BIM project is made up of numerous BIM objects such as walls, floors, columns, windows, door, furniture or even pictures on a wall. To achieve the drawing production objective, a digital component that contains both geometrical and non-geometrical information about a product or element in the building needs to be standardised.

This Guide is intended to standardise the **minimum** requirements for production for BIM object creators such as manufacturers, the construction industry and other BIM developers. Standardizing production of BIM objects is a pre-requisite to the compilation of a comprehensive and usable BIM object library to help improve the efficiency of the whole construction industry in Hong Kong.

1.2 BIM Platforms

This Guide aims to provide guidelines for good practice in the production of BIM objects for the Hong Kong construction industry.

While BIM technology involves different software platforms, this Guide specifies general requirements in terms of geometry, non-geometry and function for all BIM objects common to all BIM platforms. This Guide considers the common aspects of all BIM objects, i.e. coordination, drawing production, and purposes, with the intention to facilitate exchange of/ smooth geometrical and other information among various BIM platforms and phases of a project.

A specific Technical BIM Object Guide including the workflow of widely-used BIM platforms such as Autodesk Revit, Graphisoft ArchiCAD and Bentley AECOsim is planned to be published in future under separate cover. This is illustrated diagrammatically below.

Autodesk Revit

Graphisoft ArchiCAD

General Requirement

Bentley AECOsim

Other BIM Authorizing Platform
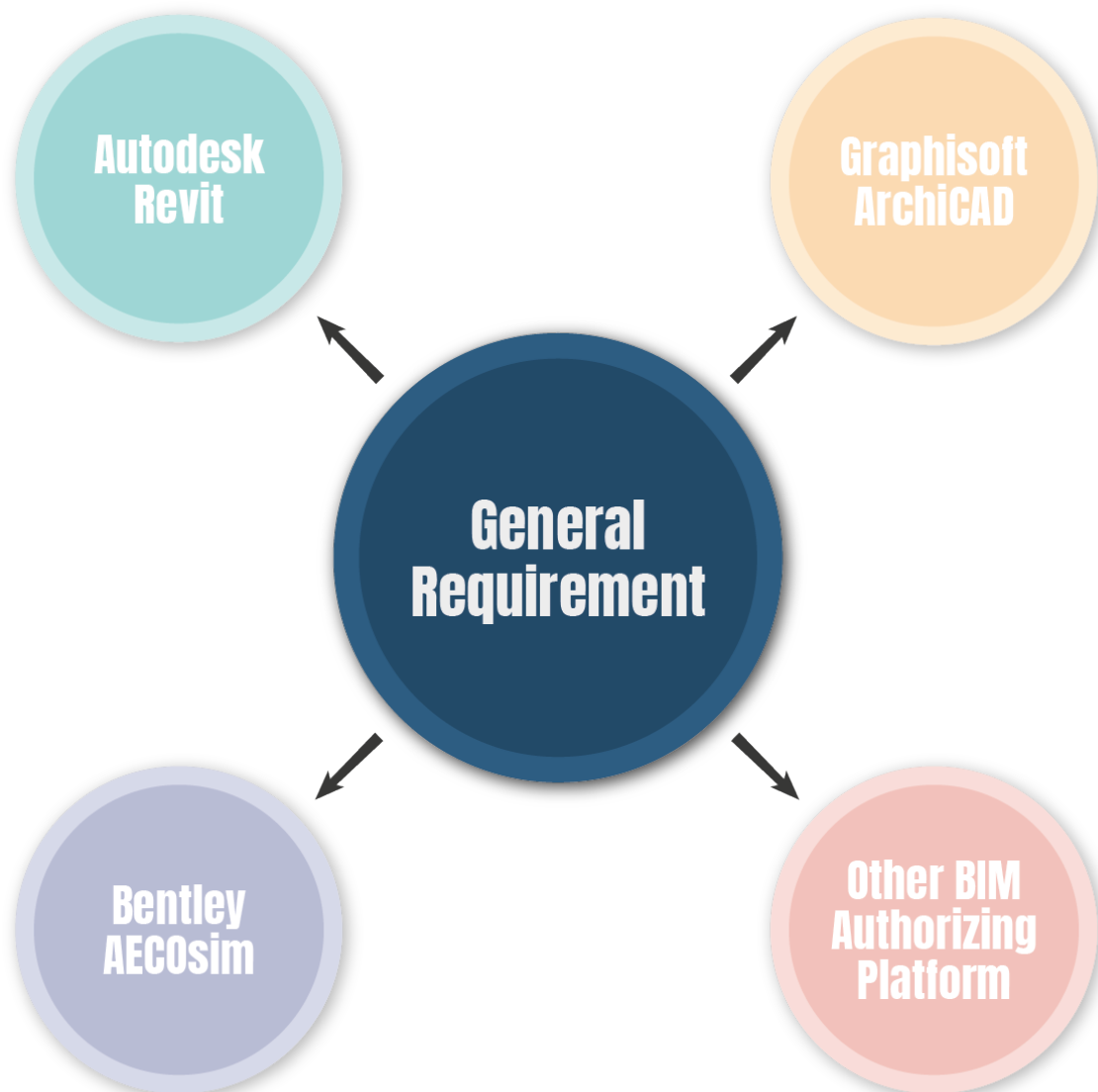
2 General Requirements

This section describes the general requirements for the production of BIM objects, including object categorization and Level of Development (LOD).

2.1 General

1. The word 'shall' is used to indicate requirements in this Guide. The word 'should' is used to indicate recommendations. The word 'may' is used to indicate preference, e.g. among alternative recommendations.
2. Terms in bold and red font indicate similar concepts or terms used in different BIM platforms, e.g. **category / classification / catalog** (Revit / ArchiCAD / AECOsim).
3. The BIM object shall be delivered as either a design phase object, construction phase object or facility management phase object.
4. The BIM object shall be created with the intention of using it for drawing production with easy control.
5. The BIM object shall not be modelled with excessive detail. It is not suitable nor necessary to model BIM objects with 100% of reality, given the limitations of hardware and software, and the purpose of using BIM. Refer to the Level of Development (LOD) to decide minimum components of the BIM object.
6. The BIM object shall be reusable across different projects with the same or similar BIM requirements.
7. It is acknowledged that software platforms will be upgraded at regular intervals, and that most platforms are NOT backward compatible, i.e. cannot be saved as a previous version. Therefore the whole project team needs to come to an agreement on the upgrading strategy. In general it is not recommended to upgrade the platform as soon as an upgraded version is released, as bugs and inconsistencies may need to be fixed with a few patches before the new version is reasonably stable.

2.2 Level of Development (LOD)

1. The BIM object shall be produced to a specified LOD as a minimum requirement for both geometrical and non-geometrical components. The LOD specification should be consistent with the CIC Building Information Modelling Standards.
2. A suitable LOD for the BIM object shall be decided based on client requirements, project demand, BIM platform limitations and realistic modelling practice.

2.3 Object Category / Classification / Catalog

1. The **category / classification / catalog** system may vary among different BIM platforms. Nevertheless, any BIM object shall be assigned with the most appropriate and representative **category / classification / catalog** based on its platform system, e.g. a door BIM object shall be assigned to the "Door" **category / classification / catalog**.
2. The BIM object may also be assigned with a **category / classification / catalog** based on another classification system, such as The *OmniClass Construction Classification System*, if that is available on the BIM platform used for a project, or can be stated as an additional property.
3. To facilitate the exchange of BIM objects and related information, the BIM object shall be assigned with appropriate Industrial Foundation Classes (IFC) parameters.

3 Geometrical Requirements

This section defines the minimum geometrical requirements for the production of BIM objects, including aspects of shape, symbolic items, space and material.

3.1 General

1. The BIM object shall have a modelled geometry at a scale of 1:1.
2. The BIM object shall include a suitable insertion point for its intended use, as follows:
   - Normally, the insertion point shall be located at the geometrical centre
   - in plan view (as known as the XY plane in a three-dimensional coordinate system) and at the geometrical base in elevation view (XZ plane or YZ plane). The following figure indicates insertion points of a simple cubical geometry by redcrosses.
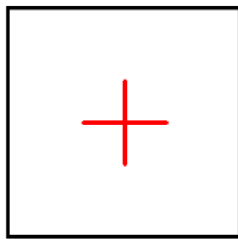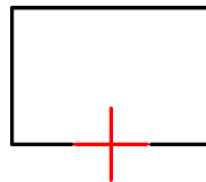

PLAN VIEW   ELEVATION VIEW

   - The insertion point can be located at other positions if reasonable, e.g. a lighting switch is always aligned on a wall surface, in which case the insertion point in plan (XY plane) should be located at the back of the switch surface.
   - BIM objects shall include an insertion point like in the above images, but the indication marks shall not be visible in the BIM project environment.
3. The BIM object shall not contain temporary modelling information such as construction lines and reference material. The BIM object shall be purged before submission.
4. The BIM object shall be assigned with suitable host / placement behaviour based on the BIM platform system. If a BIM object has not been assigned host / placement behaviour, it is called a standalone / free-standing object.
5. Certain kinds of BIM object might be required to connect to the MEP system. These BIM objects shall have a build-up connection with the MEP system in the BIM project environment based on the BIM platform system.
6. The BIM object shall be created using metric geometry with units of millimetres and degrees if necessary.
7. The BIM object shall be assigned suitable dimensions.
8. The BIM object shall have controlled visible geometry and symbolic components to facilitate drawing production.
9. BIM objects at the design phase shall be provided with appropriate geometrical parameters to facilitate the demand for various sizes.
10. BIM objects at the construction phase shall be provided with appropriate geometrical parameters to satisfy the design requirements.
11. BIM objects at the facility management phase shall be produced with the actual geometry based on product catalogues, and are not intended to be modifiable but independently replaceable.
12. If the BIM object contains angular parameters, including 3D geometry and 2D symbolic items, it shall be produced by a bearing system used by the BIM platform. If the BIM platform does not include a bearing system, the angular parameters shall be defined by Cartesian bearing, unless otherwise required, as illustrated in the following diagram:

True Bearing	Cartesian Bearing
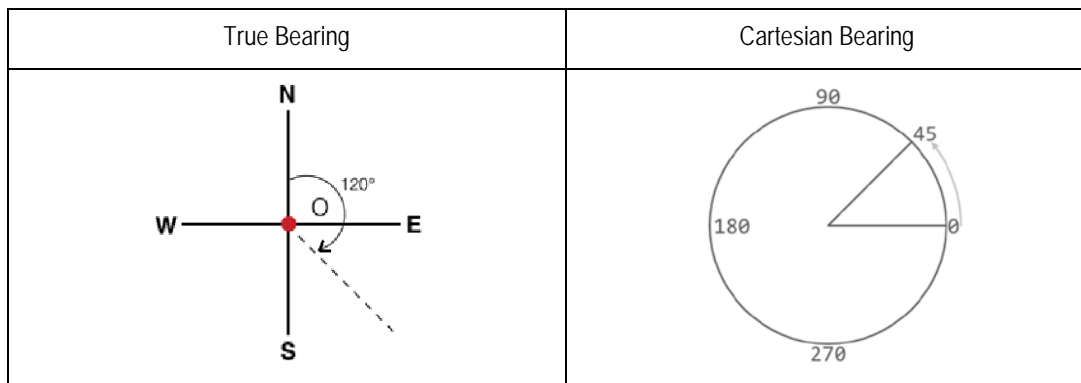
3.2 3D-Geometry

1. The BIM object shall have modelled geometrical parameters which are supported by the BIM platform if appropriate.
2. The BIM object shall be modelled with a fixed geometry where the facility management phase object has a fixed shape and is not intended to be modifiable but independently replaceable.
3. The BIM object shall be modelled with a suitable geometry which shows a reasonable size for major components of the product for a design-phase object, and actual size for a construction-phase object and facility-management phase object.

3.3 2D-Symbolic Items

1. The 2D-symbolic items of a BIM object include a symbol and a **tag / label / annotation**.
2. The BIM object shall include, where appropriate, a set of symbolic items at scales of 1:20 and 1:100 for general use. Users requiring a different scale shall create / modify the BIM object in accordance to their own need.
3. The **tag / label / annotation** shall be created as a separate BIM object if available on the BIM platform system. The information relating to the **tag / label / annotation** shall be extracted from the **property / parameter / attributes** of the BIM object.
4. The BIM object symbol shall follow change in its location or geometry, i.e. if a BIM object is moved in a project, its symbol will follow that change automatically.
5. The BIM object symbol shall be modelled, where appropriate, as size-dependent with its own 3D geometry.
6. The BIM object symbol shall be used for drawing production, and shall include:
   - Symbol shown orthogonal to the BIM object geometry;
   - Controllable offset(s) for overlapping objects in the BIM model.
   - The following figure is an example showing the lighting switch symbol orthogonal and offset in plan view and elevation view:

PLAN VIEW

ELEVATION VIEW
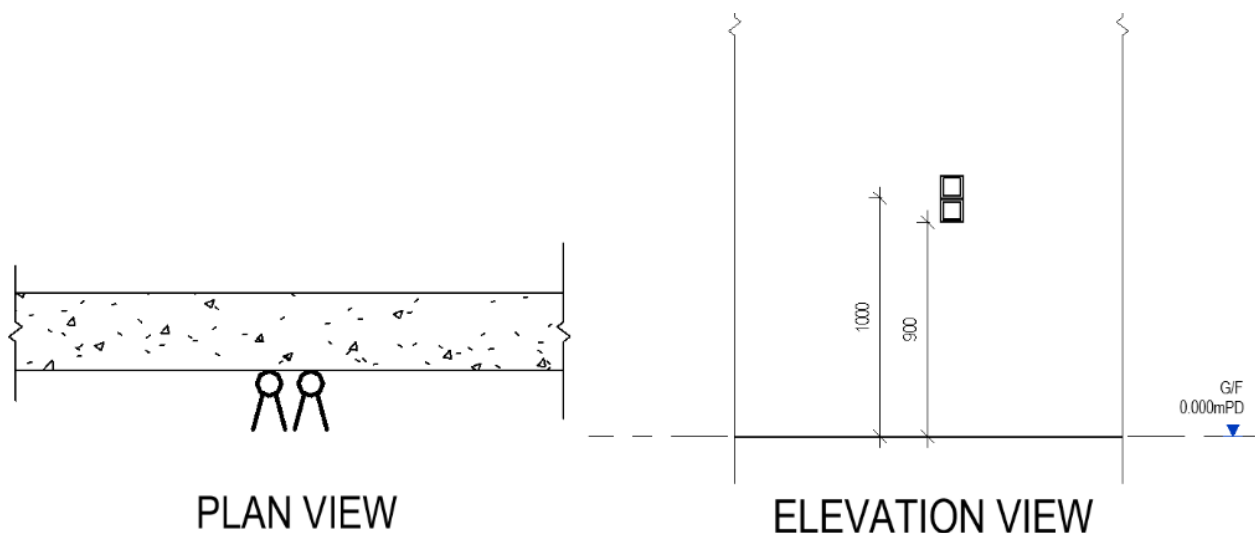
7. The BIM object symbolic items shall be consistent with local practice.
8. The BIM object symbolic items shall be readable on the produced drawings.

3.4 Space

1. The BIM object shall include indications of 2D and 3D space requirements for construction-phase and facility management-phase objects. The design-phase BIM object should also include indications of suitable space. The following list is sample of the common space requirements:

- Access space
- Clearance space
- Installation space
- Maintenance space

3.5 Material

1. The BIM object shall include suitable colours, surface patterns or texture images.
2. The BIM object at the design and construction phases should have representative colours and surface patterns for display in the relevant graphical view.
3. The BIM object at the facility management phase shall reflect the product material, colour and surface.
4. The BIM object may be shown with default materials provided by the BIM software if no specific requirements are stated otherwise.

4 Non-Geometrical Requirements

This section defines the non-geometrical requirements (information) contained within a BIM object, including aspects such as property, value, units and property naming convention.

4.1 General

1. The BIM object shall contain properties that are suitably assigned as **type** or **instance / component**. All instance of the BIM object in the project will be affected by the **type** property. The **instance / component** property can be customized for each instance of the BIM object in the project.
2. The BIM object shall contain minimum information for the purpose of phasing, e.g. placeholder (space occupation) at the design phase, coordination at the construction phase and reality reflection at the facility management phase.
3. Unless otherwise required, the BIM object shall not include undefined values. Every additional property shall be completed and shall not include unset or undefined values.
4. The BIM object may contain additional information which helps to describe the product.
5. The BIM object shall use appropriate units of measurements. Basically, millimetre (mm) is the most commonly used unit in local practice. The units of measurements shall be consistent with the EMSD Building Information Modelling for Asset Management (BIM-AM) Standards and Guidelines. Any units of measurements which are not stated in the document shall be based on the International System of Units (SI).

4.2 Property / Parameter

1. The BIM object property shall provide accurate information.
2. The BIM object property shall be an unambiguous definition to facilitate consistent BIM object selection and submission between different stages. Besides any default property provided by the BIM platform, additional BIM object properties shall have a consistent order of definition, property name and unit. These method of referencing is suggested to all BIM developers to increase information exchange at different stages in a project, although it is recognised that certain BIM developers will have variations in accordance to their needs based on project and client requirements.
3. The BIM object property assists in describing its geometrical and non-geometrical characteristics. The property value may be presented as a single value, list value or range value. However, the BIM platform system may have restrictions in assigning a property value, e.g. only a single value is allowed for each numerical data item, or only numerical data is allowed to be added in an arithmetic formula. The following table gives guidance for choosing a suitable data type and format for assigning BIM object property values;

Present Format	Usage	Data Type	Example	Remark
Single Value	Description Only	Text / Numerical	Creator Name (Mr. Chan) Net Weight (40 kg)	
Single Value	Calculation	Numerical	Dimension (200 mm)	
List Value	Description Only	Text	Colour Option (Black, White) Optional Wattage / Lumen (13/1055, 33/4000)	
List Value	Calculation	Numerical	Optional Size (3000mm 3500mm 4000mm)	If restricted by the system, consider breaking to a separate property or BIM object type.
Range Value	Description Only	Text	Allowable Setting Value (-4ºC ~ 0ºC)	
Range Value	Calculation	Numerical	Input Voltage (100V~230V)	Range value shall be separated into two properties to represent its lower bound and upper bound values.

4.3 Property Naming

1. The BIM object property shall use Camel Case and title casing for parameter naming, e.g. Coefficient of Performance; Point of Shipment.
2. The BIM object property shall use descriptive naming. The name shall describe the property's meaning or definition rather than describing the product component.
3. The BIM object property shall not be ended with a space or footstep.
4. The BIM object property should be named as short as possible.
5. The BIM object property should avoid abbreviation and truncation in cases where there is no unambiguous definition or industrial consensus.
6. The BIM object property should use the most common descriptor for a group as the first part of the name so that the property can be sorted logically (e.g., Filter Face Area; Filter Efficiency).
7. The BIM object property shall avoid using symbols in property naming.
8. The BIM object property naming with boolean (YES/NO) data types shall be named such that they clearly imply a YES/NO value is returned, e.g. Is Energy Efficient, Show Hoods.

5 Functional Requirements

This section defines functional requirements of BIM objects, including BIM object naming conventions and expected behaviour.

5.1 Naming Conventions

1. The BIM object shall be named systematically and logically for the understanding of users and for easy BIM object management.
2. Certain kinds of BIM object may be modelled for a specific purpose, such as model submission to Works Departments. In such cases the naming conventions of these kinds of BIM objects may be varied to suit the Works Departments requirements.
3. Unless otherwise required, all BIM developers shall apply the methodology of naming conventions specified in this Guide, including Format, Field Definition and Limitation, in their own BIM object library.
4. The naming conventions shall include abbreviations of category, functional type, originator and descriptor fields.
5. The category field shall indicate the BIM object **category / classification / catalog** based on the BIM platform system.
6. The originator field shall indicate who owns or creates the BIM object.
7. The descriptor fields shall indicate the critical characteristic of the BIM object.
8. Each abbreviation shall be unique. Examples of suitable abbreviations are given in the F.L.I.P Master Type List (http://www.aiab.org/index.php/flip-guideline).

Format

<Category> - <Functional Type> - <Originator> - <Descriptor 1> - <Descriptor 2>.<File Format Extension>

Limitations on Number of Characters in the Name

- maximum 30 characters for the entire name, including hyphen marks (file names exceeding 30 characters may result in invalid file paths due to computer operating system limitations).
- keep file names as short as possible

Example

Field	Example	Description
Category	**DOR**-SGL-AEC-Wood-w_Louvre.xxx	A Door, DOR, is the abbreviation of the **category / classification / catalog** "door".
Functional Type	DOR-**SGL**-AEC-Wood-w_Louvre.xxx	A Single Door, SGL, is the abbreviation of the sub-type "**single**".
Originator	DOR-SGL-**AEC**-Wood-w_Louvre.xxx	AEC is the abbreviation of **Architecture, Engineering and Construction**. It represents a common standard of the industry. Alternatively this can be replaced by the abbreviated name of the owner / creator
Descriptor 1	DOR-SGL-AEC-**Wood**-w_Louvre.xxx	A door is made of **Wood** (Material). An optional descriptive text.
Descriptor 2	DOR-SGL-AEC-Wood-**w_Louvre**.xxx	A door is built **with a Louvre**. This text further describes the BIM object.
File Format Extension	DOR-SGL-AEC-Wood-w_Louvre.**xxx**	File Format Extension

5.2 BIM Object Behaviour

1. The BIM object shall not be compromised by the performance of the project model in which it is placed, and shall not model to a higher LOD than is required for its intended purpose. Exact replication of all life details is NOT recommended and is not necessary.
2. The BIM object shall be modelled such that its behaviour can be easily controlled by different users.
3. The BIM object shall be modelled such that it can be associated and connected with other objects where the association is appropriate to the project model and its analysis.
4. The BIM object shall be available to be scheduled in the project.
5. The BIM object shall be used for drawing production, and thus shall contain appropriate symbolic items with visibility that can be controlled to suit both 2D & 3D purposes.

6 Purpose-Driven BIM Objects

BIM object need to have purpose and value. A high-quality BIM object should satisfy all the requirements in this Guide, including suitable geometrical and non-geometrical information, functional requirements of the project and capable of generating production of drawings.

Drawing production is the most important purpose of all BIM objects, due to drawings being the only widely-accepted tool of submission and communication in local practice nowadays. BIM objects shall be designed and modelled to enable generation of drawings without extra handling or modification. The value of a BIM object is created through having correct information in all aspects, including geometrical and non-geometrical components. Hence, the BIM object can then be used for direct coordination in BIM models and enable production of drawings and schedules.

6.1 BIM Object Sheet

The BIM object shall contain 3D components of geometry and 2D components of symbols and **tag / label / annotations**. All of these contents are intended for production of presentation drawings, statutory / authorities submission drawings, and tender / construction drawings. In addition, the BIM object shall be capable of being scheduled in the project environment with correct information. The production of drawings and schedules shall follow industry practice and requirements of the project and client.

The BIM object shall be provided together with a comprehensive cover sheet to convince clients, receivers and users that the BIM object is complete and satisfies all requirements and functions for drawing production.

The BIM object cover sheet shall contain the items shown in the following table. An example of a BIM object sheet is shown below the table.

Item	Description
1. 3D Geometry	- Views to be shown on the sheet (plan view, front and side elevation view, 3D view) 6. (2D symbolic items are not shown in this part)
2. Property / Parameter	- Property / Parameter / Attribute sets and values
3. 2D – Symbol	- 2D symbolic items for drawing production
4. 2D – Tag / Label / Annotation	- 2D symbolic items for drawing production
5. Drawing Production	- Plan view and elevation view for presentation purposes - Plan view and elevation view for statutory / authority submission purposes - Plan view and elevation view for tender / construction purposes
6. Schedule Production	- Schedules with appropriate property / parameter, starting with the name of the BIM object

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BIM OBJECT SHEET

QR Code For FM	Revit 2016	REFERENCE NUMBER
	11-2017	670 A - 002
	-	

Parameters were setup for size, materials; All parameters are shared parameter; 2-D symbolic lines shown in plans.

PURPOSE/ VALUE DRIVEN BIM OBJECT DELIVERABLES

INPUT

SPQ-FSI-AEC-ES-Text	Specialty Equipment	300

1 3D Geometry

2 Property / Parameter

3 2D Symbol
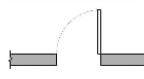
4 2D Tag / Label / Annotation

OUTPUT

5 Drawing Production (Industry Practice / Requirement)

6 Schedule Production (Industry Practice / Requirement)

The BIM Object Sheet shall follow the following layout:

14
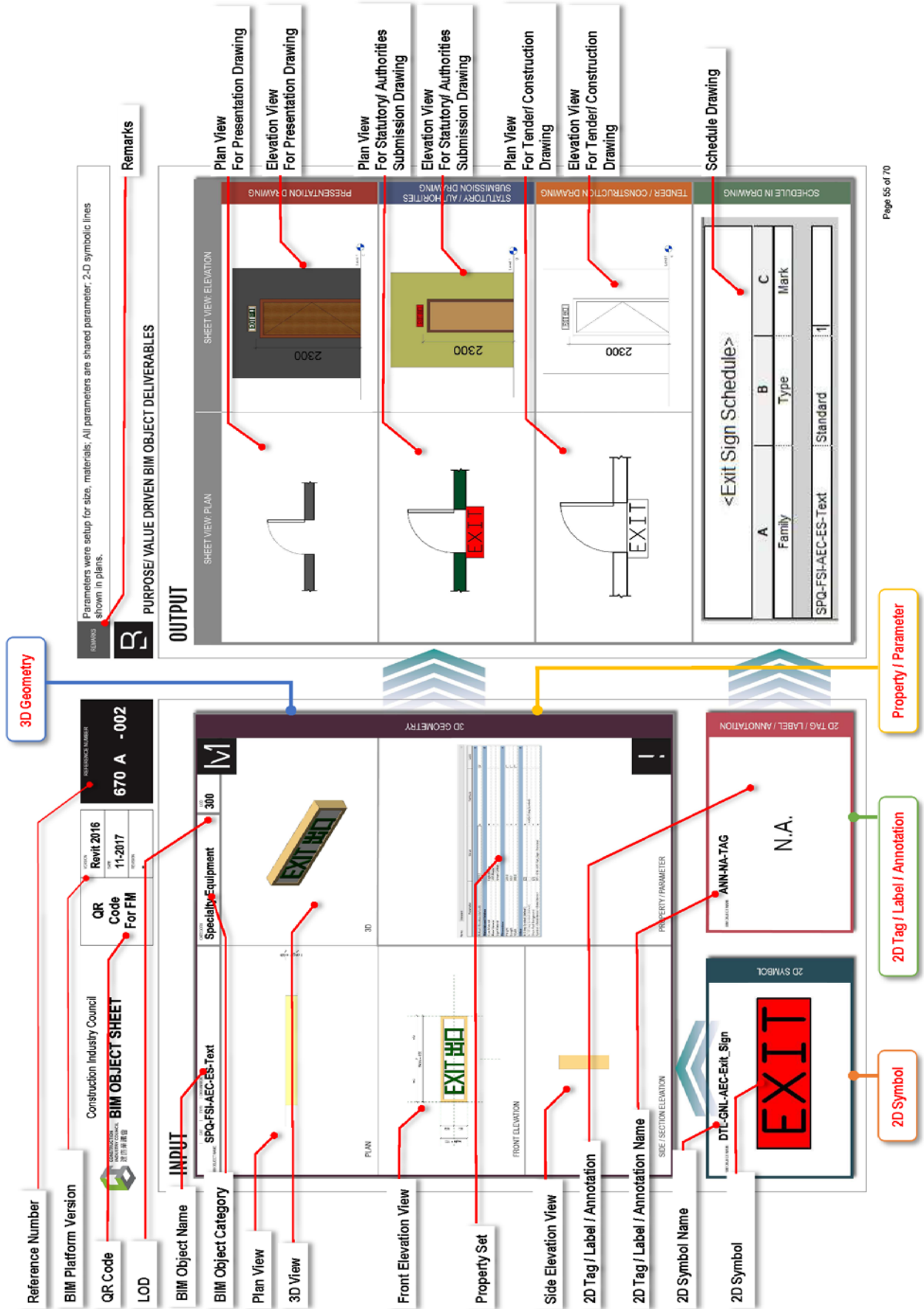
6.2 Quality Assurance

The BIM object shall be checked by using a comprehensive check form and shall be endorsed by the inspector to verify the BIM object functions and behaviour. This quality assurance check form should also be provided BIM object creators for self-checking, and to the client or receiver for inspection.

The check form shall include the following items:

Major Item	Content	Nature of Check	Recommended Acceptable Result
3D Geometry	File Size	Is it too large?	Refer to BIM platform document. Generally recommended to be <1 MB.
	Visibility Control	Suitable setting? Is unnecessary geometry hidden on plan and elevation?	Only main components of geometry are visible on plan and elevation.
	Category	Is the BIM object of the correct category?	Correct category Shall be chosen
	Insertion Point	Is the insertion point appropriate?	Refer to Chapter 3.1.
	Unit	Are units of measurement correct?	Normally use the International System of Units (SI), i.e. millimetres and degrees.
	Space	Does it require Access / Clearance / Installation / Maintenance space? Does the space conform to local practice?	Large equipment may have a particular space requirement. If space is required, it needs to conform to local practice.
	Parametric Properties	Is the parametric property necessary? Is parametric behaviour as expected?	Design phase and construction phase objects shall have parametric properties for modelling. The parametric behaviour must be testing in BIM project environment.
	Host / Placement	Is the object assigned with suitable host / placement behaviour?	Based on the BIM platform system, this behaviour will obviously affect the BIM object usage method and difficulty of modification in the BIM project environment. The host / placement behaviour shall be tested in the BIM project environment.
	MEP Connection	Is connection to the MEP system required?	Based on the BIM platform system, the BIM object may need additional modelling for connection to the MEP system in the BIM project environment.
Property / Parameter	Management	Are properties classified in suitable grouping and naming?	Refer to Section 4.3.
	Information	Is all non-geometrical information necessary and exhaustive for the user?	Refer to Section 4.1.

Major Item	Content	Nature of Check	Recommended Acceptable Result
2D-Symbolic Item (Symbol)	Symbol	Does the symbol conform to local practice or client requirements?	The symbol shall conform to the local practice or client requirement.
	Geometry Dependency	Can the symbol follow change of location of the 3D geometry in the BIM project environment?	The symbol shall automatically follow any change of location.
	Symbol Offset	If necessary, can the symbol offset be adjusted for overlapping in the BIM model?	Strict requirements are needed for BIM objects which commonly overlapping plan view, such as lighting switches.
	Symbol Orientation	Is the symbol orthogonal to the BIM object geometry? If necessary, can the symbol orientation be controlled?	The symbol orientation shall be suitable for drawing production, with symbols normally placed orthogonally.
	Drawing Production	Is the drawing readable and accurate when printed?	Drawings shall be readable and accurate.
2D-Symbolic Item (Tag / Label / Annotation)	**Tag / Label / Annotation**	Does the **tag / label / annotation** conform to local practice or the client requirement?	The **tag / label / annotation** shall conform to local practice or the client requirement.
	Drawing Production	Are drawings readable and accurate when printed at the appropriate scale?	Drawings shall be readable and accurate.

The check form shall follow the following layout:

BIM Object Check Form

A Acceptable
R Reject
O Outstanding
N Inapplicable

3D Geometry
Property / Parameter
2D Symbol
2D Tag / Label / Annotation

Space
Does it require Access / Clearance / Installation / Maintenance space?
Is space conformed to local practice?

Host / Placement
Is it assigned suitable host / placement behavior?

Category
Is the BIM object of correct category?

Insertion Point
Is the insertion point appropriate?

Parametric
Is it necessary to be parametric?
Is parametric behavior as expected?

Property Management
Are properties classified in suitable grouping and naming?

Property Information
Is all information necessary or exhaustive for the user?

Symbol
Is the symbol conformed to local practice or client requirement?

Tag / Label / Annotation
Is the tag / label / annotation conformed to local practice or client requirement?

Visibility Control
Suitable setting?
Hide unnecessary geometry on plan and elevation?

Symbol Drawing Production
Is symbol readable when printing out in appropriate scale?

Symbol Orientation
Is the symbol orthogonal to the BIM object geometry?
If necessary, can the symbol orientation be controlled?

Geometry Dependency
Can the symbol follow the location change of the 3D geometry in BIM project environment?

Symbol Offset
If necessary, can the symbol offset adjustable?

Symbol Drawing Production
Is it readable and accurate when printing out in appropriate scale?

Tag / Label / Annotation Drawing Production
Is it readable and accurate when printing out in appropriate scale?

File Size
Is it too large?

Unit
Is unit of measurements correct?

MEP Connection
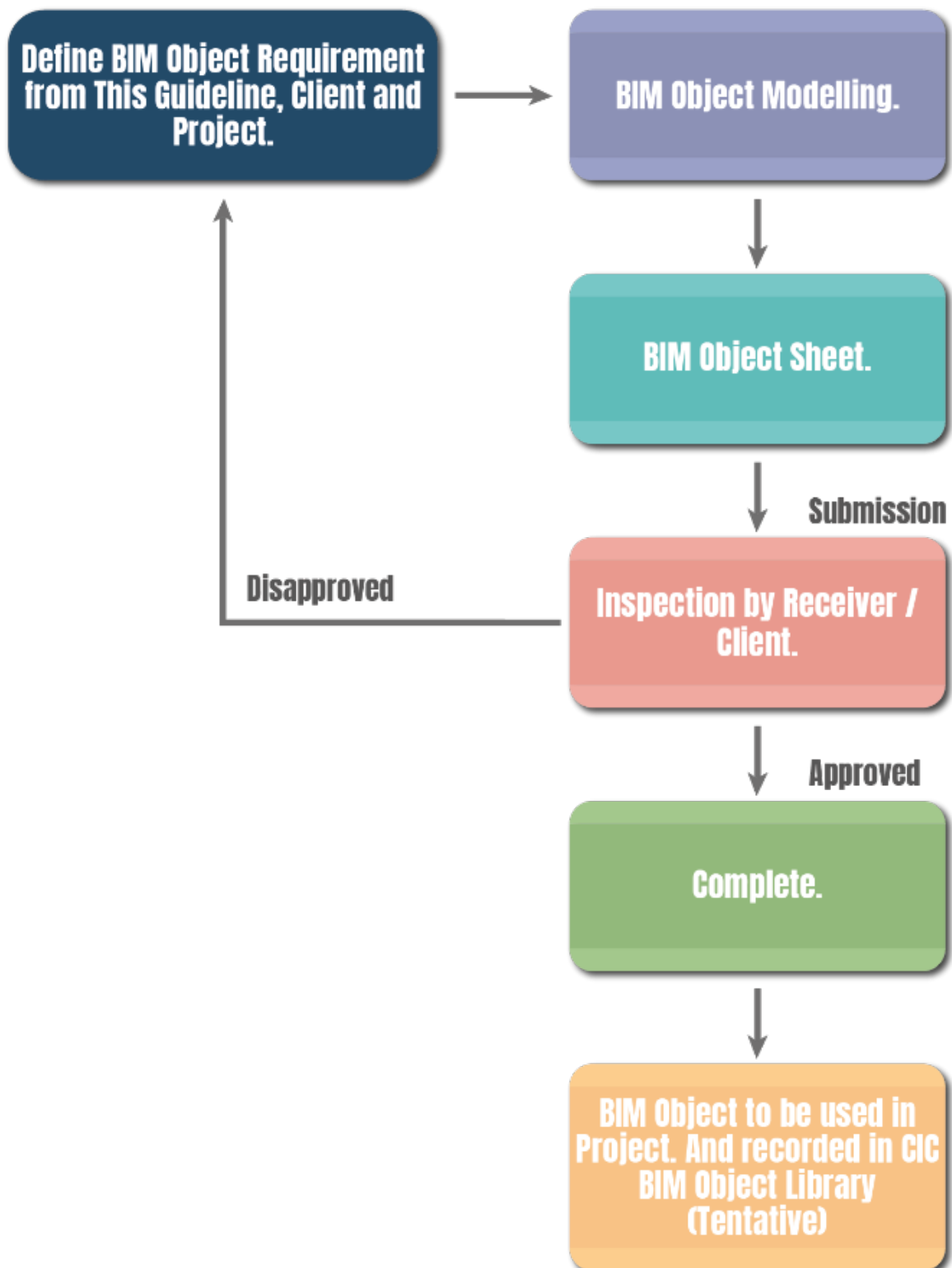Is it required connection to MEP system?

Comment:

BIM Object Name	Ref. No.	
Date	Assessment	APPROVED/ DISAPPROVED/ RESUBMIT
Inspector	Signature	

6.3 Workflow

The BIM object shall follow the workflow illustrated in the diagram below regarding its creation, inspection and approval.

```
┌─────────────────────────┐          ┌─────────────────────────┐
│ Define BIM Object       │  ──────▶ │                         │
│ Requirement from This   │          │ BIM Object Modelling.   │
│ Guideline, Client and   │          │                         │
│ Project.                │          │                         │
└─────────────────────────┘          └─────────────────────────┘
          ▲                                      │
          │                                      ▼
          │                          ┌─────────────────────────┐
          │                          │                         │
          │                          │ BIM Object Sheet.       │
          │                          │                         │
          │                          └─────────────────────────┘
          │                                      │  Submission
          │                                      ▼
          │   Disapproved            ┌─────────────────────────┐
          └──────────────────────────│ Inspection by Receiver /│
                                      │ Client.                 │
                                      └─────────────────────────┘
                                                 │  Approved
                                                 ▼
                                      ┌─────────────────────────┐
                                      │                         │
                                      │ Complete.               │
                                      │                         │
                                      └─────────────────────────┘
                                                 │
                                                 ▼
                                      ┌─────────────────────────┐
                                      │ BIM Object to be used in│
                                      │ Project. And recorded   │
                                      │ in CIC BIM Object       │
                                      │ Library (Tentative)     │
                                      └─────────────────────────┘
```

7 BIM Object Library (Tentative)

This section is prepared in order to contribute a comprehensive and open source CIC BIM object library for all construction industry users and BIM developers. The BIM object library provides a platform for the whole BIM industry to submit their BIM objects and benefit from sharing with each other.

The scope of this section includes the platform operation structure and submission structure.

All contents of this section are primary draft and will be further modified.

7.1 Platform Operation Structure

As illustrated below, the platform consists of the BIM object library, end-users and contributions from the industry BIM practitioners such as BIM developers. The library is open source and allows end-users to review, download and use any BIM objects from the library. The library allows BIM practitioners to submit their own BIM objects and hence contribute to increasing the entire value of the library to the industry.
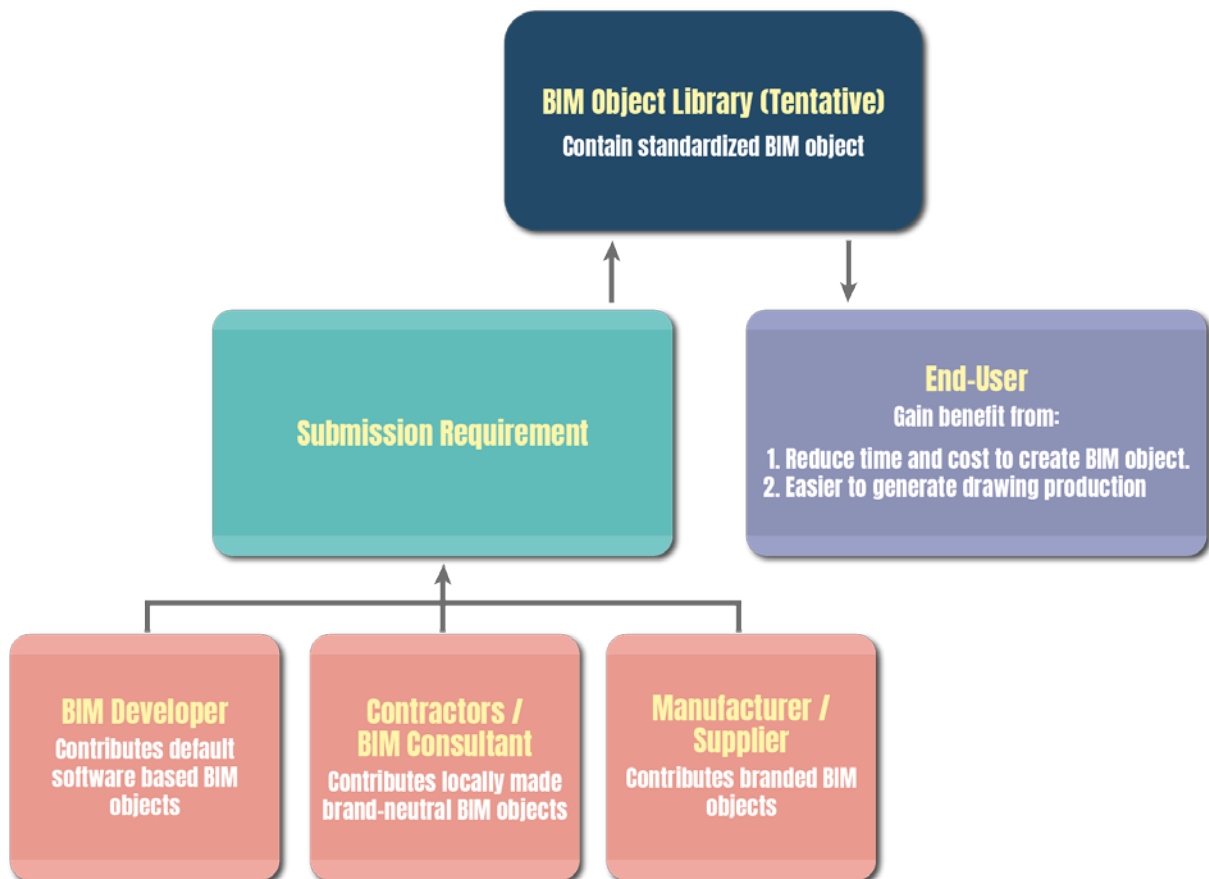
7.2 Submission Requirements

The BIM object shall be provided with a completed BIM object sheet and check form to prove that the object is complete and satisfies the requirements of this Guide.

The BIM object and relevant documents shall be submitted as a package and follow a standardised folder structure, as follows:.

Folder Name (The BIM object name without file format extension)

├ The BIM object file

├ Image Folder (Storage of the BIM object geometry and property images)

├ Symbol Folder (Storage of the symbol object file(s) and its image(s))   If Applicable

├ Tag Folder (Storage of the tag object file(s) and its image(s))   If Applicable

└ Document Folder (Storage of the completed BIM Object sheet and BIM Object check form)

8 References

The following documents or information are generally applicable to this Guide, and are listed for general reference.

General:

- NBS BIM Object Standard (https://www.nationalbimlibrary.com/nbs-bim-object-standard)
- BIM-MEP^AUS (http://www.bimmepaus.com.au/initiative/)

Autodesk Revit:

- Family Library Interchange Program (F.L.I.P.) (http://aiab.org/index.php/background)
- International Revit User Group (www.revitcity.com)

GRAPHISOFT ArchiCAD:

- GDL Object Description (http://gdl.graphisoft.com/)
- BIM Classification Systems (https://www.graphisoft.com/downloads/archicad/BIM_Data.html)
- Overview of Creating Custom Objects (https://helpcenter.graphisoft.com/guides/archicad-21/archicad-21-reference-guide/elements-of-the-virtual-building/parametric-objects/create-custom-library-parts-and-components/)
- Expression Defined Property Values – Overview (https://youtu.be/SnDYdbUAwv0?list=PLnXY6vLUwlWUv8rM2RYu5RQnXVlZ-xdd7)

Bentley AECOsim:

- AECOsim speedikon (https://communities.bentley.com/products/building/building_analysis___design/w/)

Reference Guidelines:

- DSD BIM Modelling Manual

- EMSD Building Information Modelling for Asset Management (BIM-AM) Standards and Guidelines

The BIM Object Guide are based on the libraries and documents from following major local organizations with BIM capability:

- ASD (Architectural Services Department)
- CEDD (Civil Engineering and Development Department)
- DSD (Drainage Services Department)
- EMSD (Electrical and Mechanical Services Department)
- WSD (Water Supplies Department)
- HyD (Highways Department)
- HKHA (Hong Kong Housing Authority)
- Other Works Departments

9 Acknowledgements

In order to achieve a standardised technical BIM approach for the industry, it is inevitable that certain portions of this Guide share similar approaches to those of other organizations. The CIC acknowledges that some methodologies recommended in this Guide originate from the Housing Authority Building Information Modelling Standards and Guidelines (HABIMSG) study to be published by Hong Kong Housing Authority and Housing Department.

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- ASD (Architectural Services Department)
- CEDD (Civil Engineering and Development Department)
- DSD (Drainage Services Department)
- EMSD (Electrical and Mechanical Services Department)
- WSD (Water Supplies Department)
- HyD (Highways Department)
- HKHA (Hong Kong Housing Authority)
- Autodesk Far East Ltd.
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- Bentley Systems Hong Kong Ltd.