

# CIC Building Information Modelling Standards

## BIM Dictionary & Glossary



September 2020

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**Document Revision Tracking**

Issue Date	Notes
July 2020	1 <sup>st</sup> Draft
September 2020	2 <sup>nd</sup> Draft / Final Issue

## Foreword [To be updated]

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August 2020

## Introduction

It aims to apply the Abbreviations & Terminology / Glossary to all CIC BIM Standards-related publications.

## BIM Dictionary and Glossary

3D	Three dimensional	The use of software tools to generate three-dimensional geometries, either as surfaces (e.g. Trimble SketchUp) or non-parametric solids
3D Printing	3D Printing	A Model Use representing how 3D models are used as a base to generate 3D Prints either directly from within the main BIM Software Tool or through specialised 3D printing software
4D	Time	The fourth modelling dimension (4D) refers to 3D + time. That is, a model or a modelling workflow is considered to be 4D when the time is added to model objects to allow Construction Scheduling
5D	Cost	The fifth modelling dimension (5D) refers to 4D + cost. That is, a model (or modelling workflow) is considered to be 5D when cost is linked/embedded within BIModels and Model Components. 5D is used for the purposes of generating Cost Estimates and practicing Target Value Design
6D	Lifecycle and Facilities Management	The sixth modelling dimension (6D) refers to apply BIModels to identify and assess the environmental impacts (e.g. waste) of building products and materials over their whole life and the interdisciplinary activities performed during the Operation Phase of building, space or infrastructure. FM activities typically include operation, leasing occupancy, maintenance, cleaning, etc.
AEC	Architecture, Engineering and Construction	A phrase that may be used as an alternative to describe the building construction industry. Prevalent in US and related practice.
AECO	Architectural, Engineering, Construction and Operations	An extension of the AEC acronym which includes professionals and enterprises related to the operations and maintenance of buildings and infrastructures
AIM	Asset Information Model	Maintained information model used to manage, maintain and operate the asset; required to support an organization's asset management system
AIR	Asset Information Requirements	Data and information requirements of the organization in relation to the asset(s) it is responsible for
AM	Asset Management	BIM-enabled Asset Management is characterized by linking virtual objects and spaces within a model to an external database for the purpose of operating and maintaining a Facility or a portfolio of facilities
API	Application Programming Interface	
AR	Augmented Reality	A Model Use where 3D models - combined with other technologies - allow users to experience virtual objects superimposed on top of physical objects or places. As opposed to Virtual Reality Simulation, Augmented Reality (AR) is only partial 'immersive' thus allowing images from the physical and virtual worlds to appear as one. AR is typically experienced through hand-held screens, wearables, holograms and projections
BCF	BIM Collaboration Format	A schema used for exchanging information and model viewpoints between individuals irrespective of the software tools used. Implemented as both an XML file (bcfXML) format and a RESTful API webservice (bcfAPI), the Open BIM Collaboration Format (BCF) is typically used to highlight issues discovered during model reviews. The schema allows for the exchange of comments and images linked to specific Model Components through their unique Global Unique IDentifiers (GUID)
BEP (PXP)	Building / Project Execution Plan	Plan prepared by the suppliers to explain how the information modelling aspects of a project will be carried out
BIM	Building Information Modelling	Building Information Modelling (BIM) is a set of technologies, processes and policies enabling multiple stakeholders to collaboratively design, construct and operate a Facility in virtual space. As a term, BIM has grown tremendously over the years and is now the 'current expression of digital innovation' across the construction industry

BPEL	Business Process Modeling Notation	An XML-based language designed to enable task-sharing for a distributed computing or grid computing environment.
buildingSMART	buildingSMART	An international organisation aiming to promote the exchange of interoperable, open and non-proprietary data between software applications used within the construction industry. buildingSMART is involved in the development of Industry Foundation Classes, buildingSMART Data Dictionary (bSDD) and the Information Delivery Manual (IDM)
CCBC	CIC-Certified BIM Coordinator	
CCBM	CIC-Certified BIM Manager	
CDE	Common Data Environment	It represents the Cloud-based centralized digital/electronic document management system which is used for BIM collaboration, storing and exchange digital data under a common data environment
CIC	Construction Industry Council	The Construction Industry Council (CIC) is a statutory body established on 1 February 2007 after the enactment of the Construction Industry Council Ordinance on 24 May 2006. The main functions of the CIC are to convey the industry's needs and aspirations to Government of Hong Kong, as well as provide a communication channel for Government to solicit advice on all construction-related matters.
CICBIMS	Construction Industry Council Building Information Model Standards	<p>The CIC BIM Standards (CICBIMS) are designed to enable an Appointing Party / Client to specify, manage and assess BIM deliverables by architects, engineers, surveyors and contractors in Hong Kong. The use of the CIC BIM Standards should ensure that project deliverables produced using the BIM processes achieve an agreed level of quality.</p> <p>The principle for the development of the CIC BIM Standards is that the planning, implementation, management and checking of the use of BIM on a project requires Appointing Party / Client direction, involvement, and leadership along with design consultant and contractor collaboration.</p>
Clash Analysis	Clash Analysis	Spatial, specification and other design non-compliance
COBie	Construction Operation Building information exchange	Subset of BS ISO 16739 IFC documented as a buildingSMART model view definition (MVD) which includes operational information used to supply data to the organization to populate decision-making tools and asset management systems
DfMA	Design for Manufacture and Assembly	A design approach aims to ease of manufacture and efficiency of assembly of a product. With the increasing use of off-site prefabrication, the construction sectors have begun to adopt DfMA. By manufacturing construction components with the most-cost-effective materials and processes at off-site facilities and assembling them at reduced cost and minimized operations on-site, a construction project can be delivered with higher quality, lower cost and lesser time.



Digital Twin	Digital Twin	A set of digital assets – models, documents and data sets - that mirror a physical Asset for part/whole of the Asset Life Cycle. In the Construction Industry, a Digital Twin typically refers to a data-rich 3D model – of a building for example - that represents, reacts to, and can cause changes in the Physical Twin, the actual building. Through Asset Coupling, the connection between the two twins can be either (i) one-way or (ii) two-way, (a) synchronous or (b) asynchronous, depending on their Coupling Level. Higher coupling – through two-way connectedness of BIModels with live sensors, cameras, scanners and Building Management Systems - allows a twin to adjust itself according to the information received from the other. As a simple example, opening a door in one, will open the door in the other. More useful examples include (1) the ability to utilise the Digital Twin to monitor and control the mechanical and environmental performance of its Physical Twin; and (2) the real-time synchronisation of digital assets to match any changes in corresponding physical assets
DOC	Level of Documentation	<p>The level of information need for the kind of documentation is associated with the uses to meet the professional deliverables. Each Task team/discipline will understand their deliverable requirements against a specific use – e.g., Presentation styles such as colour, font, 2D symbols associated with certain particular drawing production, information on standard title block, etc.</p> <p>The level of information needed use table should identify the discipline/role expected to respond and the detail will then reside within the Task Information Delivery Plan (TIDP). Professional domain knowledge must be applied to DOC as deliverables when Statutory and Contractual liabilities are involved.</p> <p>The kind of documentation to be associated with the uses to meet the identified requirements. Each Task team will understand their deliverable requirements against a specific use. The level of information need Use table should identify the discipline/role expected to respond and the detail will then reside within that TIDP.</p>
EIR	Employer's Information Requirements	A document setting out the information requirements to be delivered, and the standards and processes to be adopted by the supplier as part of the project delivery process
FM	Facility Management	The term Facility Management (FM) refers to the interdisciplinary activities performed during the Operation Phase of building, space or infrastructure. FM activities typically include operation, leasing occupancy, maintenance, cleaning, etc.
gbXML	The Green Building XML schema	Green Building XML database file, Refers to a file containing data specifically for use I, and linking to, sustainability and environmental BIM software similar to an IFC Green Building
GIS	Geographic Information System	A geographic information system (GIS) is a conceptualized framework that provides the ability to capture and analyze spatial and geographic data. GIS applications (or GIS apps) are computer-based tools that allow the user to create interactive queries (user-created searches), store and edit spatial and non-spatial data, analyze spatial information output, and visually share the results of these operations by presenting them as maps.
Hologram	Hologram	An image that appears to be three dimensional and can be seen with the naked eye. Holography is the science and practice of making holograms, a photographic recording of a light field, rather than an image formed by a lens
IFC	Industry Foundation Classes	An international specification for product data exchange and sharing for AEC/FM. IFC enables interoperability between the computer applications for AEC/FM. A subset of IFC is approved as ISO/PAS 16739.



ISO 19650-1	ISO 19650-1	Organization of Information about Construction Works -Information Management using Building Information Modelling - Part 1: Concepts and Principles (ISO 19650-1:2018)
ISO 19650-2	ISO 19650-2	Organization of Information about Construction Works - Information Management using Building Information Modelling - Part 2: Delivery Phase of the Assets (19650-2:2018)
Laser Scanning	Laser Scanning	A Model Use representing the process of rapid generation of Point Cloud data of as-built structures, terrain and vegetation using a fixed, mobile or airborne 3D Laser Scanner
LOD-G	Level of Development - Graphics	LOD for graphical representation
LOD-I	Level of Development - Information	LOD-I is the description of non-graphical information in a model element and will evolve as the project progresses
MEP	Mechanical, Electrical and Plumbing	Mechanical, electrical and plumbing (MEP) refers to these aspects of building design and construction. In commercial buildings, these elements are often designed by a specialized engineering firm. MEP design is important for planning, decision making, accurate documentation, performance- and cost-estimation, construction, and operating/maintaining the resulting facilities.
MiC	Modular Integrated Construction	<p>Modular Integrated Construction (MiC) is an innovative construction method. By adopting the concept of “factory assembly followed by on-site installation”, MiC helps to ease some of the current challenges faced by the local construction industry.</p> <p>MiC is one of the identified supporting technologies under the CITF scheme. The CITF helps fund the industry on a matching basis for those industry stakeholders who wish to employ consultants for a MiC project, or to purchase machines and components in relation to MiC. The aim is to encourage wider adoption of this innovative construction method in the construction industry, with a view to improving the productivity, quality, safety and environmental performance of construction projects.</p>
MR	Mixed Reality	A term combining both Virtual Reality (VR) and Augmented Reality (AR). While VR experience allows the users to immerse themselves in a digital environment completely detached from the physical world, AR enables the digital content on top of the physical world and MR facilitates the digital content to be interactive with the physical world
OCCS	OmniClass	OmniClass (OCCS) is a Classification System for organizing library materials, product literature and project information. OmniClass has 15 'classification tables'; some of which are incorporated from other classification systems including: MasterFormat (a classification for 'work results') and UniFormat (a classification of 'construction elements'). OmniClass is an Open Standard developed by the Construction Specifications Institute (CSI)
OIR	Organization Information Requirements	Data and information required to achieve the organization's objectives
Open BIM	Open BIM	The term generically refers to the process of exchanging non-proprietary BIModels and other data. As a trademark, Open BIM is a "universal approach to the collaborative design, realization and operation of buildings based on open standards and workflows. Open BIM is an initiative of buildingSMART and several leading software vendors using the open buildingSMART Data Model"

Photo grammetry	Photogrammetry	A Model Use representing the automatic or semi-automatic process of generating 3D models through photography and image analyses
PIM	Project Information Model	Information model developed during the design and production and construction phase of a project, consisting of graphical information, non-graphical information and documentation defining the delivered project
Point Cloud	Point Cloud	A set of data points in 3D which are typically created by 3D Laser Scanners to capture an object, space or a whole building. Point Clouds can be transformed into meshes, surfaces and even 3D objects using specialised tools. Point Cloud files can be typically imported into most BIM Software Tools to generate As-Built Models or model parts
QTO	Quantity take-offs	A Model Use representing how 3D models are used to calculate the quantity of Furniture, Fixtures and Equipment or building materials for the purpose of generating Cost Estimates
RDS	Room Data Sheet	Room Data Sheet (RDS)s are 2D Drawings detailing the facility operator's requirements (room layout, furniture, fittings, equipment, and surface finishes) of each room type within a large facility. RDSs are typically developed for projects that include numerous identical rooms (e.g. hospitals and large hotels)
RFID	Radio Frequency Identification	A technology that uses "radio waves to transfer data from an electronic tag, called RFID tag or label, attached to an object, through a reader for the purpose of identifying and tracking the object"
RM	Responsibility Matrix	A table setting out the responsibilities of each discipline for model or information production according to pre-defined project stages. The Responsibility Matrix (RM) is typically first included - in low detail - within the Employer's Information Requirements (EIR) document and then - in higher detail - within the Master Information Delivery Plan (MIDP)
SCADA	Supervisory Control And Data Acquisition	Supervisory control and data acquisition (SCADA) is a control system architecture comprising computers, networked data communications and graphical user interfaces (GUI) for high-level process supervisory management, while also comprising other peripheral devices like programmable logic controllers (PLC) and discrete proportional-integral-derivative (PID) controllers to interface with process plant or machinery. The use of SCADA has been considered also for management and operations of project-driven-process in construction.
UU	Underground Utilities	Underground Utilities means any below ground line, structure, facility or installation used by a utility or service provider including, but not limited to, telephone company lines, cable and conduit; cable television lines, cable and conduit; internet lines, cable and conduit; sewer lines and water lines, including individual sewer and water service lines; stormwater lines; gas lines; electrical lines, cables and conduit; and traffic signal lines, cable and conduit.
VDC	Virtual Design and Construction	Refer to "BIM"
VR	Virtual Reality	A Model Use where 3D models are part of an Immersive Environment where users experience simulated places, objects and processes. As opposed to Augmented Reality Simulation, VR may require full 'immersion' within multi-projection rooms (CAVE) and/or through stereoscopic goggles and other specialized gear
XML	eXtensible Markup Language	A language for defining and exchanging structured, computer interpretable information. It provides a method for both the definition of information, and the encoding of data based on the definition into an exchange format

## Acknowledgement

- The Hong Kong Institute of Surveyors
- MTR Corporation Limited
- BIM Dictionary (<https://bimdictionary.com/>)
- Wiki – Wikipedia (<https://en.wikipedia.org/wiki/Wiki>)

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