

Briefing of BIM-AM Standards & Guidelines v3.0 and the new Guidelines for the Handover of E&M Installation to EMSD

27 Oct 2022

BIM-AM/FM related to the latest Policy

For >30M HKD Capital Works Project

BIM Uses

1. Works Department respective stages of a project when necessary.

	BIM Use	Investigation, Feasibility and Planning	Design	Construction
1	Design Authoring	M ^h	M	M
2	Design Reviews	M ^h	M	M
3	Existing Conditions Modelling	M ⁱ	M	M
4	Site Analysis	M ⁱ	M	
5	3D Coordination		M	M
6	Cost Estimation	O	M ^a	M ^b
7	Engineering Analysis		M ^l	M ^l
8	Facility Energy Analysis		O	O
9	Sustainability Evaluation	O	M ^j	M ^j
10	Space Programming	O	M ^c	
11	Phase Planning (4D Modelling)		M ^d	M
12	Digital Fabrication		M ^k	M ^e
				M ^f
				M ^g
				O
				M ^g
				O
19	Asset Management			M ⁿ
20	Drawing Generation (Drawing Production)		M	M

BIM for AM requirements Effective on 1 Jan 2021 in TC (W) 12/2020

Legend:
M – Mandatory BIM Use for the mentioned stages carried forward from previous stage.
O – Optional BIM Use



	Space Management and Tracking			
19	Asset Management			M ⁿ
	Drawing Generation (Drawing Production)		M	M

maintenance. WDs should critically review their departmental asset information requirement and management strategy in order to leverage the information contained in the BIM models to facilitate asset management over the whole asset lifecycle. Therefore, WDs should proactively collaborate with their maintenance agencies of the built assets to agree on a standard practice for handover of as-built BIM models and documentation which contain the essential asset information requirements (AIR) to facilitate effective asset management.

works projects by monitoring the BIM Key Performance Indicators (KPI) which have been developed by DEVB as described in Annex 3.

Common Data Environment (CDE)

24. With a view to further enhancing the effective use of BIM, the adoption of CDE in the workflow helps ensure that the BIM model so developed can serve as a single source of truth for collaboration throughout the whole project life cycle. Therefore, WDs should critically review their project data requirements, data exchange workflow and project data management strategy so as to facilitate the establishment of departmental CDE and the development of relevant standards for information exchange amongst inter-departmental CDEs.

CDE Requirements Effective on 1 Jan 2022 in TC (W) 12/2021

香港特別行政區政府
The Government of the Hong Kong Special Administrative Region

政府總部
發展局
工務科



Works Branch
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Central Government Offices,
2 Tim Mei Avenue, Tamar,
Hong Kong

Ref : DEVB(W) 430/80/01
Group : 2, 5, 6

20 December 2021

Development Bureau Technical Circular (Works) No. 2/2021

Adoption of Building Information Modelling for Capital Works Projects in Hong Kong

Scope

This Circular sets out the policy and requirements on the adoption of Building Information Modelling (BIM) technology.

2. This Circular applies to works either by government staff, consultants or contractors.

Effective Date

3. This Circular takes effect on 1 January 2022.

Effect on Existing Circulars and Circular Memoranda

4. This Circular supersedes DEVB TC(W) No. 12/2020

Contents

- About the Study and Consultation Timeline
- Introduction of Updated BIM-AM Standards & Guidelines (BIM-AM SG) v3.0
- Introduction of the New Guidelines for the Handover of E&M Installation to EMSD (H/O Guide)
- Q&A

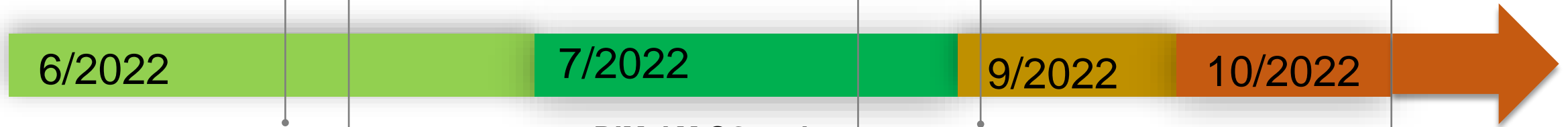
About the Study and Consultation Timeline

The Study and Survey Timeline

- 15 June 2022 BIM-AM SG and H/O Guide (two BIM-AM SG) release with two briefing sessions to Stakeholders (trade & CIC BIM-com members)

Trade Consultation from 24 June to 23 July 2022

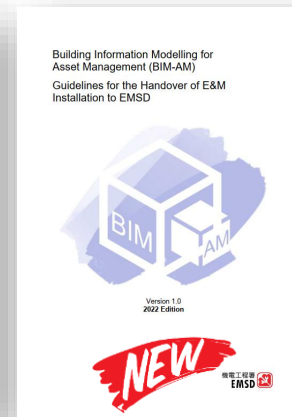
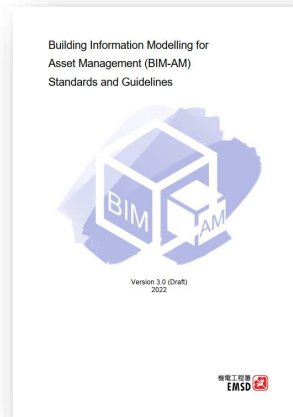
Publication of the BIM-AM SG and H/O Guide



Two webinars for trade consultation on 24 & 27 June (*register links for the webinars*)

BIM-AM SG and H/O Guide to be revised per feedback received from trade

Public Briefing to trade on 27 Oct
* HKIC training content will be updated per v3.0 in late 2022.



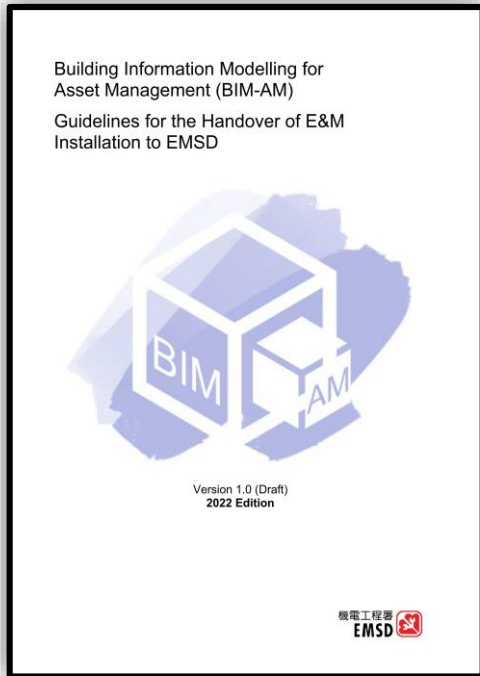
Scan QR Code to Download!



EMSD

AECOM

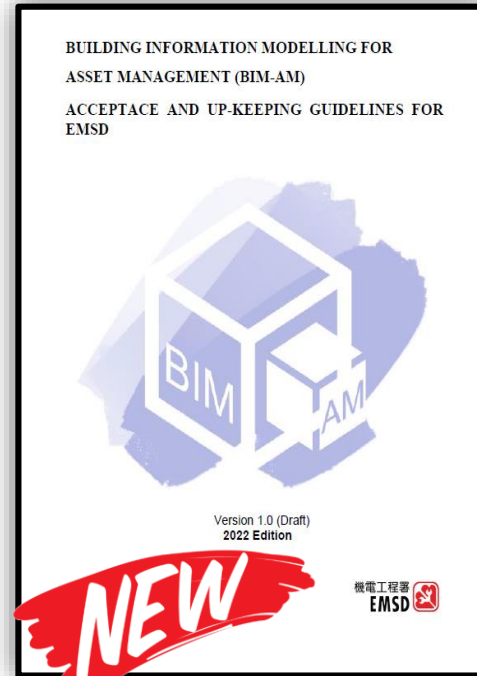
BIM-AM Standards and Guidelines Update



BIM-AM Standards and Guidelines (Version 3.0 2022 Edition)



BIM-AM Guidelines for the Handover of E&M Installation to EMSD For Trade



BIM-AM Acceptance and Up-keeping Guidelines for EMSD For EMSD



Internal Consultation by interview SBUs and staff side representatives



Organized 2 briefing webinars for EMSD Staff



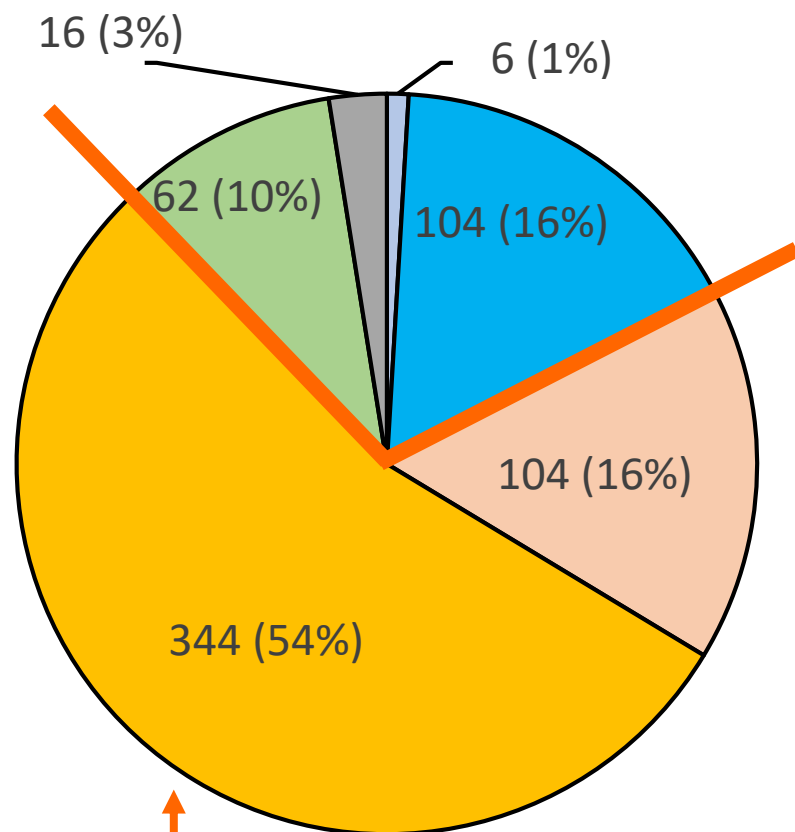
Organized 3 briefing webinars for Trade



1-month Trade Consultation

Stakeholder Engagement

Trade
Consultation



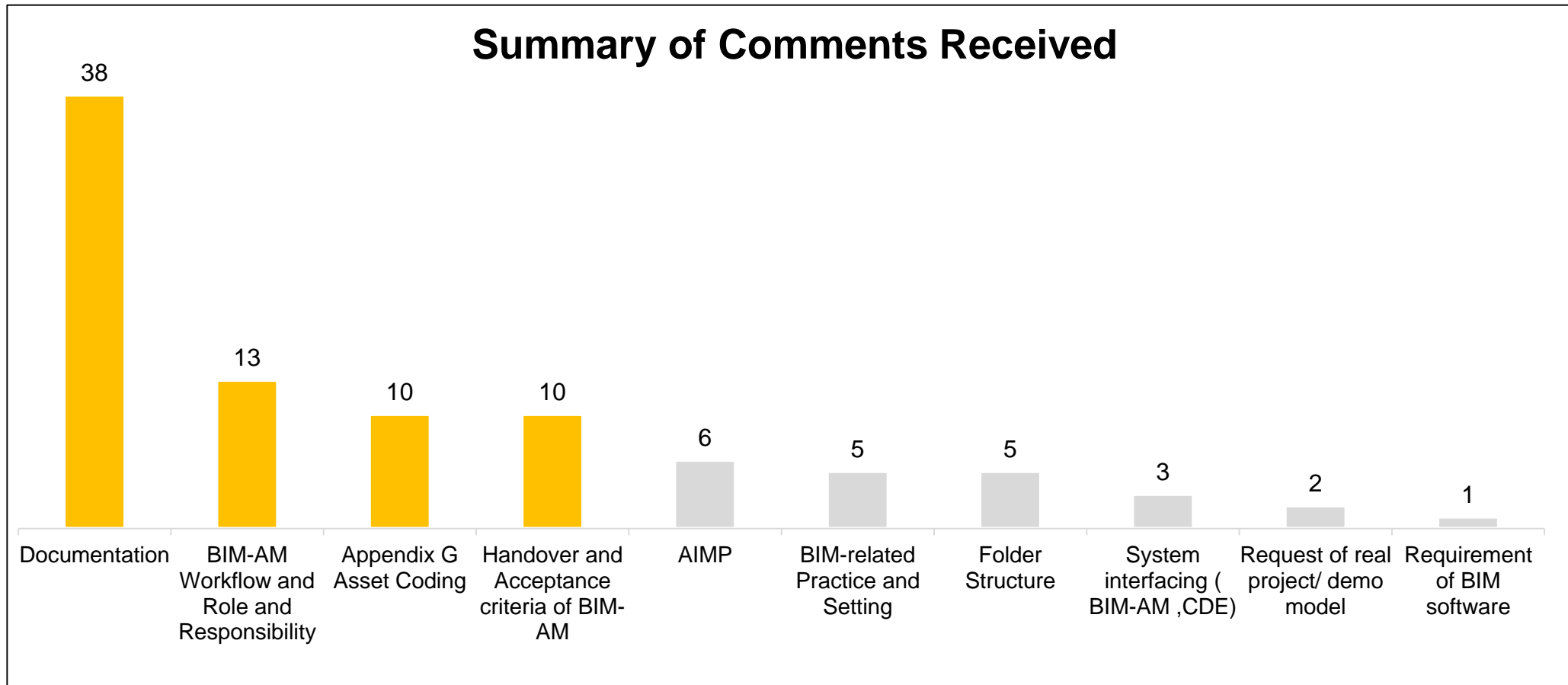
More than **600+**
Practitioners joined the
THREE (3) trade consultation
webinars

- Academic
- Client
- Consultant
- Contractor
- Government
- Institution / Association

~70% (448) are
Consultants & Contractors

Summary of Comments Received

- As at end of July, around **100 comments** were received from EMSD staff and Trade.
- Three EMSD BIM-AM guides were revised and would be issued for **final comments by email circulation** in late Aug.

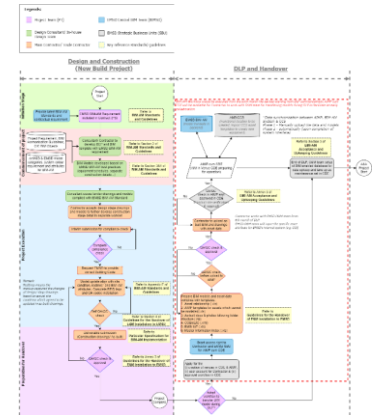
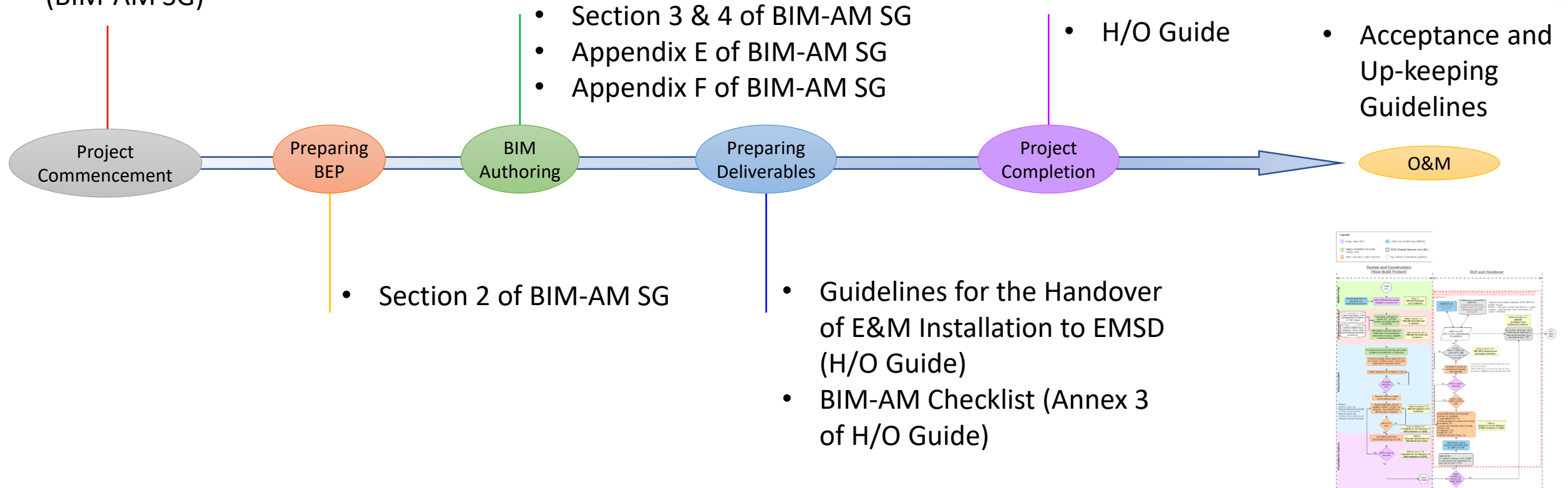


Introduction of Updated BIM-AM SG in v3.0

Highlights of the Updates

BIM-AM Workflow on Using Different Guidelines

- Contract BIM Specification; Appendix Z
- BIM-AM Standards and Guidelines (BIM-AM SG)



Refer to Figure 2-1 in BIM-AM SG

BIM-AM SG v3.0

Section 1	Introduction	Overview, Goals, Objectives and Document Structure
Section 2	BIM Modelling Standard	provide preliminary guide to setting up a BIM project with EMSD BIM-AM required content.
Section 3	BIM Object Authoring	sets the standard for creating objects, in accordance with the BH, the CIC BIM Object Guide's principles, and EMSD BIM-AM's requirement.
Section 4	BIM Model Authoring	sets the standard for creating models, in accordance with the BH, including federation strategy and system modelling methods.
Section 5	Asset Coding and Numbering System	provides the coding principles for districts, disciplines and assets.
Section 6	Asset Information Requirement	explains how BIM models can be setup to provide asset information for future management and maintenance.
Section 7	Interfacing / Integrating BIM-AM System with Other Systems	explains how BIM Asset Management can be integrated with other systems and functions, such as RFID Readers and CCTV system, as well as the Asset Tag coding requirements for facilitating integration.
Section 8	CDE Workflow for BIM Venues	explains how BIM-AM information is integrated into EMSD's Common Data Environment (CDE).
Section 9	Handover and Acceptance	states the tasks and handover materials necessary for ease of information transfer from Contractor to EMSD.

Updated Appendices and New Appendices

Appendix A	Building Code (List of existing buildings in Hong Kong and their corresponding building code).	Updated. For new buildings, the trade should seek advice from EMSD
Appendix B	Asset Information Requirement	Updated.
Appendix C	Asset Information Management Platform (AIMP) User Guide	Updated with enhanced functions in AIMP.
Appendix D	Shared Parameters File for EMSD BIM-AM	Updated with asset parameters.
Appendix E	Best Practices for BIM Modelling	Newly added to elaborate the best practices and modelling methodology used to do for trade.
Appendix F	Codification for EMSD BIM Model Naming Convention	Newly added to align with DEVB BIM Harmonisation.
Appendix G	List of Equipment and Equipment Code and Provisional Requirement of RFID tags and QR codes	Newly added with updated content from Section 2.6 & 2.7 of v2.0. More equipment codes have been covered.
Appendix H	Templates of point definition and point mapping	Newly added for integrating with iBMS (integrated building management system).
Appendix I	Handover Package and Folder Structure	Newly added from Section 1.2 of v2.0 in order to facilitate the BIM-AM deliverable in correct folder structure.

Introduction of Updated BIM-AM SG in v3.0

BIM Modelling Standard

BIM Model Naming Convention & Federation aligned with EMSD's codes and DEVB BIM Harmonisation Guidelines

- Details in BIM-AM SG Appendix F

18. BIM models contain rich information of built assets which can facilitate the integration between BIM and Geographic Information System (GIS) as well as the development of Common Spatial Data Infrastructure (CSDI).

19. Therefore, WDs shall provide their **design and as-built BIM models** to LandsD to facilitate the development of the BIM Data Repository. In addition, for all technical & fee proposals of consultancy agreements or construction works tenders with BIM adoption to be invited on or after 1 January 2022, WDs should ensure that the design and as-built BIM models are prepared in accordance with the DEVB BIM Harmonisation Guidelines¹, which have also been aligned with the Construction Industry Council (CIC) BIM Standards.

V2.0

EMSDN-NA-MEP-LVS .rvt

V3.0

Field 1 Field 2 Field 3 Field 4 Field 5 Field 6 Field 7
EMSDN-EMS-NA_BD-K1_01-BS_LV-M3_A-001 .rvt

↑
 "EMSDN" -
 Project code

↑
 "EMS"-
 Originator is
 EMSD

↑
 "NA" - All Zone
 "BD" - Building "01"

↑
 "K1" - Block 1
 "01" - Building Level 1

↑
 "BS" - Building Services
 "LV" - LV Switchboard

↑
 "M3" - 3D model
 "A" - As-Built

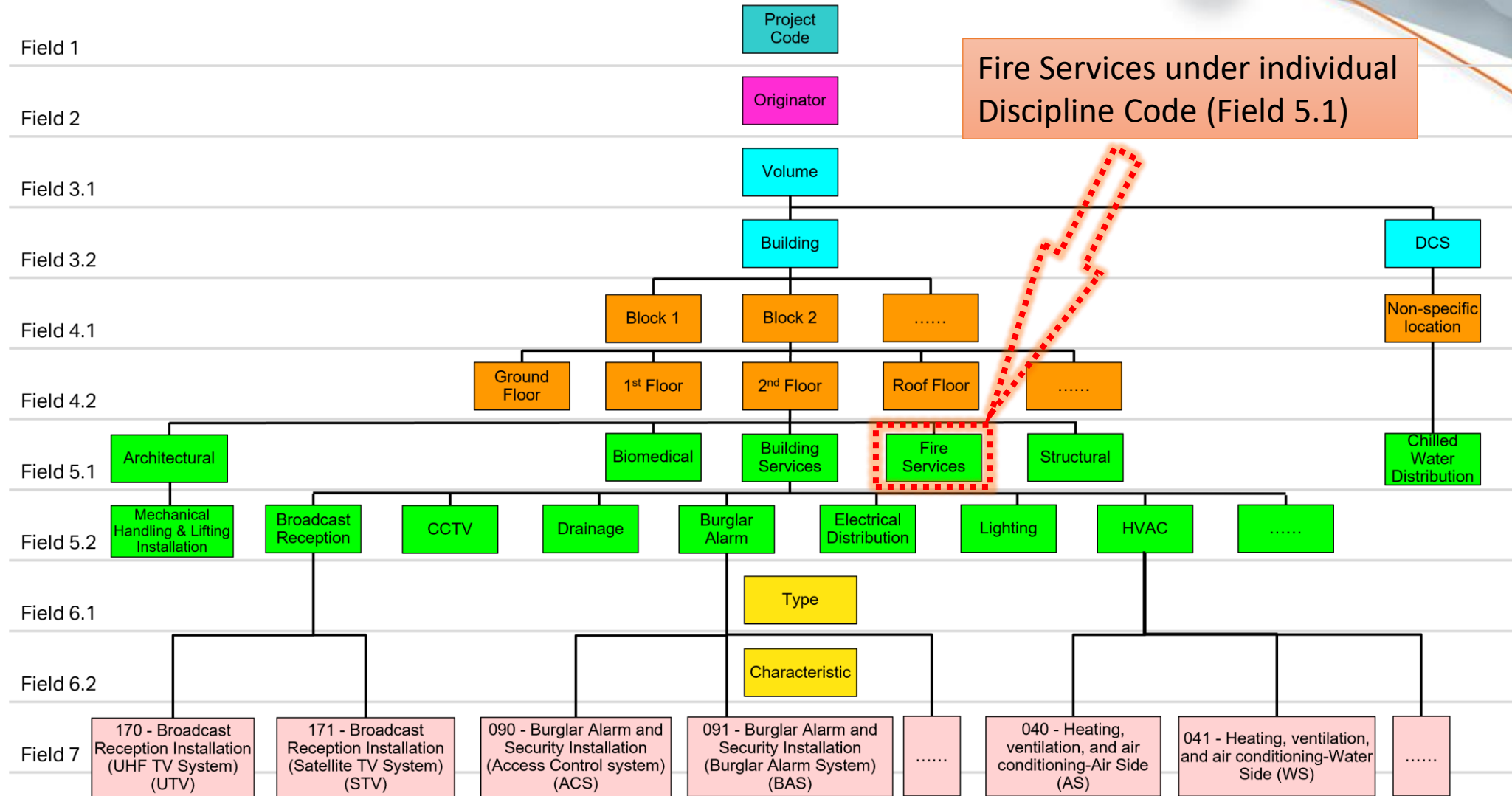
↑
 "001" - Sequential
 (Optional)

More Examples in BIM Model Naming Convention

- Model federation for electrical installation to suit EMSD Asset Management

Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7	
EMSDN	EMS	NA_BD	K1_01	BS_LV	M3_A	001	LV Switchboard
EMSDN	EMS	NA_BD	K1_01	BS_LG	M3_A	001	Lighting Installation
EMSDN	EMS	NA_BD	K1_01	BS_EG	M3_A	001	Emergency Generator Installation
EMSDN	EMS	NA_BD	K1_01	BS_EL	M3_A	001	Electrical Distribution <i>beyond the LV switchboard</i>

Model Federation of BIM Model



BIM Object Authoring

- Follow BIM Harmonisation Guidelines for Naming
- Object should be kept as light as possible
- Classification properties shall refer to CIC BIM Object Guide
- Follow Appendix B for the Asset Data Template (ADT) for attributes data input
- Follow Appendix E for best practices
 - Nested Objects are not allowed
 - Only show construction object details in Fine Level

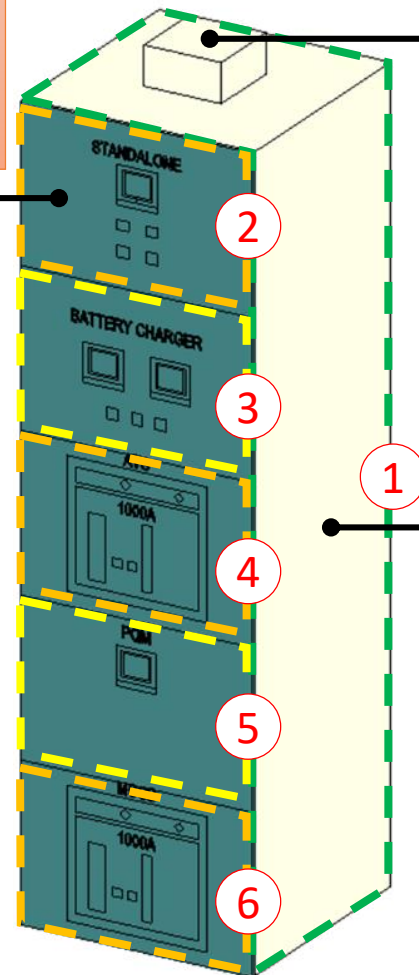
E&M System & Equipment Categorisation

Object Breakdown Example – LV Switchboard

This example has been illustrated under Appendix E-Best Practices for BIM Modelling

BIM object of Level 2 Equipment of System 2 “LV Switchboard”:

- Air Circuit Breaker (ACB)
- Automatic Transfer Switch (ATS)
- Battery (including battery charger)
- Capacitor
- Harmonic Filter
- Moulded Case Circuit Breaker (Open Space)
- Power Quality and Energy Management System (PQEMS)



BIM object of “Busbar Trunking / Main Distribution Cable”

BIM object of LV Switchboard

Equipment Level	Components	Model Format
Level 1	LV Switchboard	.rfa
Level 2	Individual BIM Object: <ul style="list-style-type: none"> • Air Circuit Breaker • Automatic Transfer Switch • Battery • Capacitor • Harmonic Filter • Moulded Case Circuit Breaker (Open Space) • Power Quality and Energy Management System 	.rfa
	Main Distribution Cable (Incoming/ Outgoing)	.rfa

In this example, 6 family objects are broken down based on Equipment Type for Asset Coding (Appendix G)

E&M System & Equipment Categorisation – Asset Coding Example

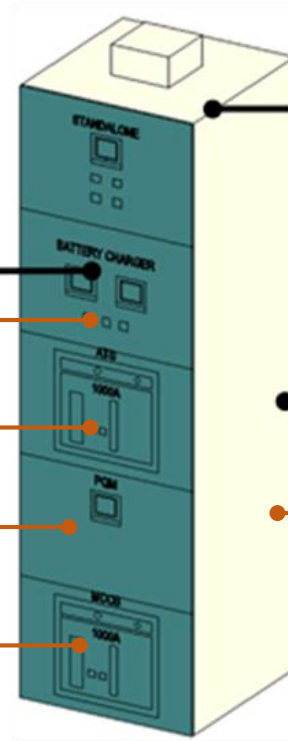
- BIM object of Level 2 Equipment of System 2
“LV Switchboard”:
- Air Circuit Breaker (ACB)
 - Automatic Transfer Switch
 - Battery (including battery charger)
 - Capacitor
 - Harmonic Filter
 - Moulded Case Circuit Breaker (Open Space)
 - Power Quality and Energy Management System (PQEMS)

Asset Code: KT-EMSDN-NA-1F-LVS-**BAT**-01

Asset Code: KT-EMSDN-NA-1F-LVS-**ATS**-01

Asset Code: KT-EMSDN-NA-1F-LVS-**PQM**-01

Asset Code: KT-EMSDN-NA-1F-LVS-**MCCB**-01



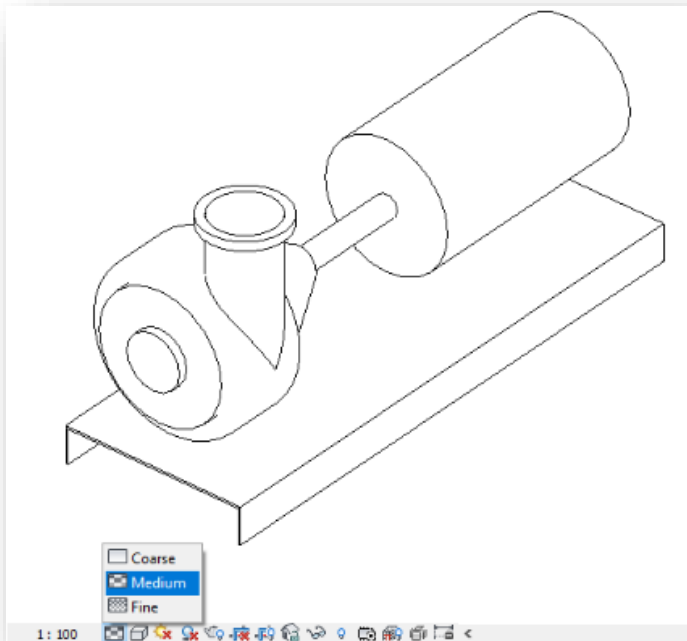
BIM object of “Busbar Trunking / Main Distribution Cable”

BIM object of LV Switchboard

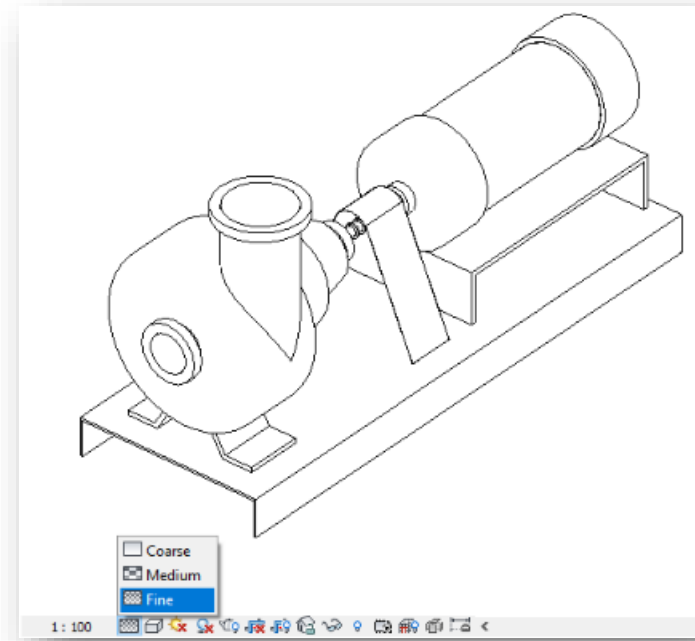
Asset Code: KT-EMSDN-NA-1F-LVS-**LVS**-01

Details Level of Objects

- Object shown as **Medium** in Detail Level



- Object shown as **Fine** in Detail Level



BIM Model Authoring

- **True north** world coordinates and elevation
- **Systems and colours** based on Section 4 of BIM-AM SG
- **Equipment schedules** should be created in BIM
- Equipment designation shall be using **Field 4-7 of Asset Code**

Equipment Category and System Colour

- BIM Category for E&M Equipment

Table 4-8 BIM Category for E&M Equipment

No.	System Name	Equipment Type	BIM Category (Under BIM authoring tools)
01	Lift and Escalator	(All)	Specialty Equipment
02	LV Switchboard	(All)	Electrical Equipment
03	Emergency Generator	(All except type below)	Electrical Equipment
		Fuel Pump	Mechanical Equipment
04	HVAC	(All except types below)	Mechanical Equipment
		Fire Dampers/ Volume Control Dampers/ Silencer	Duct Accessories
		Air Grille/ louver	Air Terminal

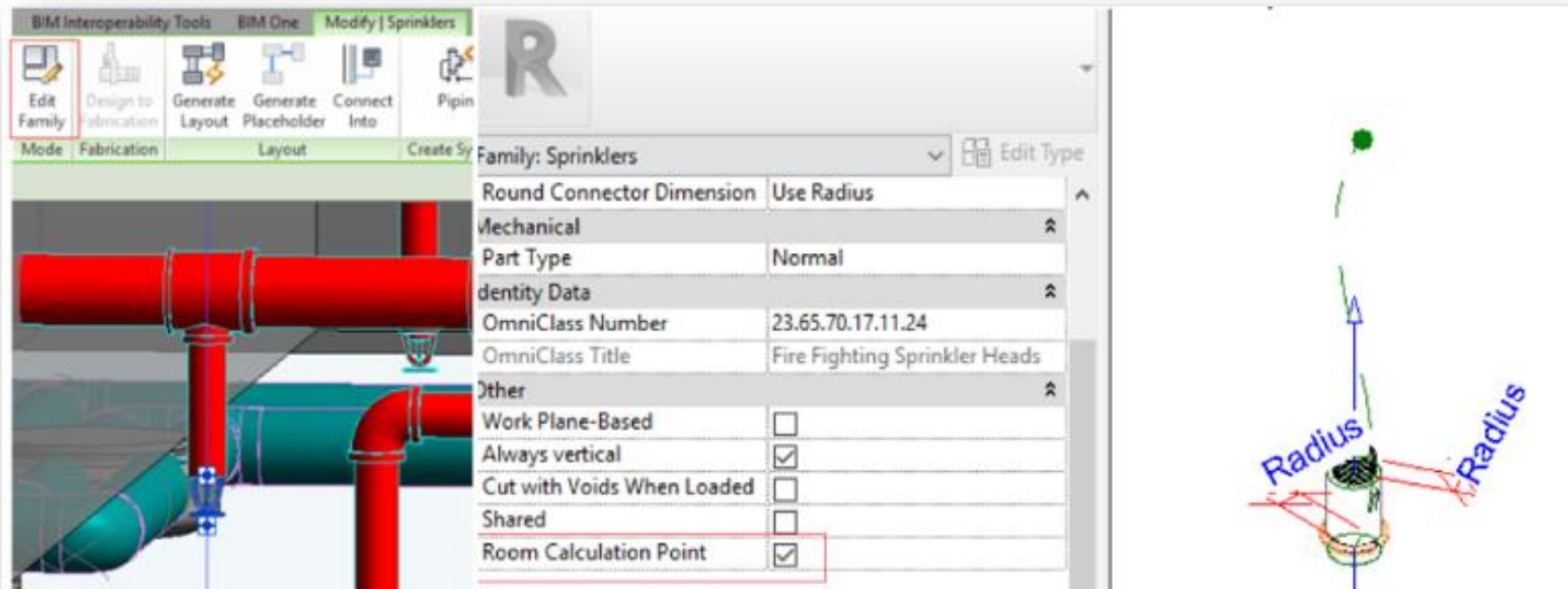
- Colour coding for E&M System

Table 4-10 Line Thickness, Line Type and Colour Coding for E&M Systems

No.	System Name	Routing	Presentation (2D)		Presentation (3D)			Colour Palette
			Line Thickness (mm)	Line Type	Red	Green	Blue	
01	Lift and Escalator	Cable containment for lift and escalator	0.25	Continuous	128	0	128	Purple
02	LV Switchboards	Cable containment for LV Switchboards	0.35	Divide2	128	128	0	Olive Green
03	Emergency Generator	Cable containment for Emergency Generator	0.35	Continuous	255	0	64	Red
		Trunking for Emergency Generator	0.25	Continuous	0	128	255	Blue
		Fuel Oil Return Pipe	0.25	Dashdot2	255	126	0	Orange
		Fuel Oil Supply Pipe	0.25	Dashdot2	255	126	0	Orange
		Fuel Oil Tank Vent Pipe	0.35	Hidden	0	128	255	Blue
		Exhaust Air Duct	0.35	Continuous	0	255	0	Green
04	HVAC	Chimney Pipe	0.35	Continuous	0	255	0	Green
		Primary Air Duct	0.35	Continuous	0	255	255	Cyan
		Exhaust Air Duct	0.35	Continuous	0	255	0	Green

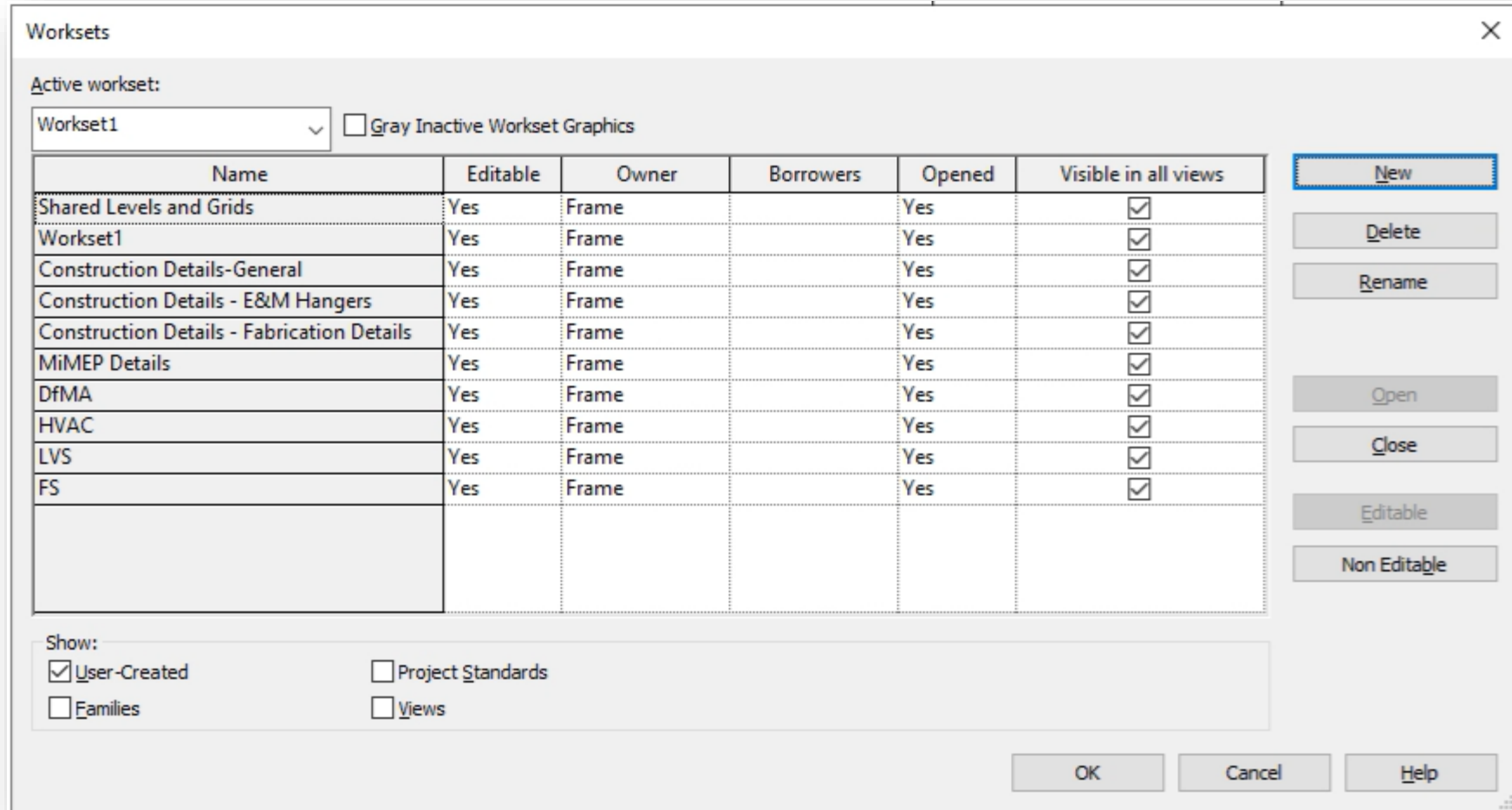
Other Best Practices

Room Calculation Point for BIM Objects



Other Best Practices

Separate Storage set (such as Worksets) for Construction and Fabrication Details

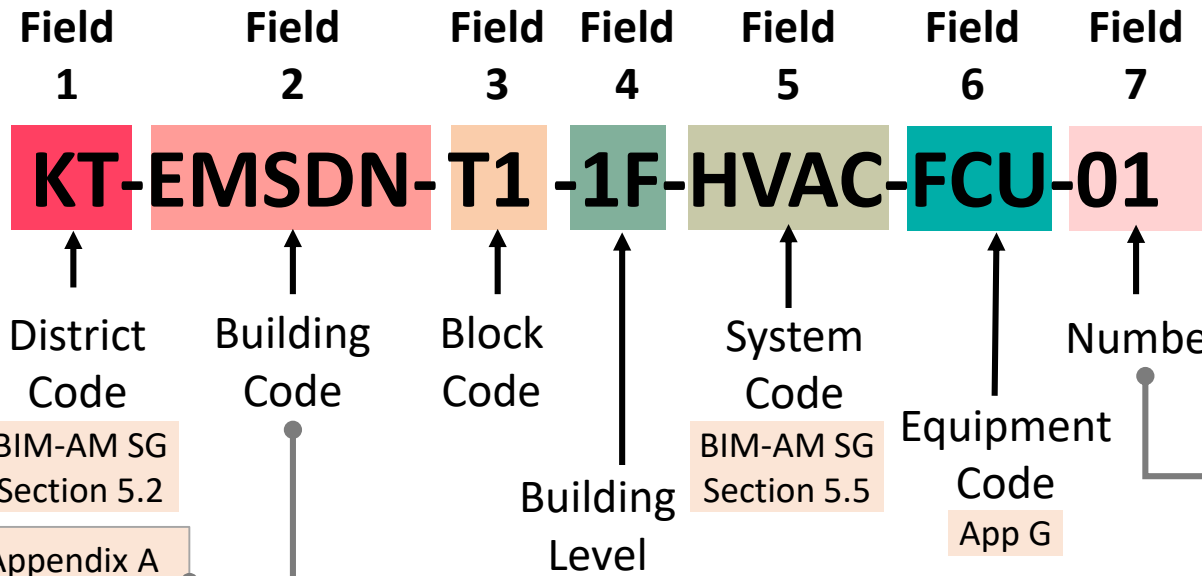


Introduction of Updated BIM-AM SG in v3.0

Asset Code and Asset Information Requirements

Examples for Asset Coding

- Details in BIM-AM SG Section 5



FCU in EMSD HQ Tower 1, 1st Floor

Existing Buildings – Appendix A
New Buildings – Enquire EMSD

Number restart for each type of equipment on different floors.
One leading zero should be provided for single digital equipment number, for example 01 to 09.

KT-EMSDN-T1-2F-FS-FSP-01

Fire Services Pump in EMSD HQ Tower 1, 2nd Floor

KT-EMSDN-T1-1F-HVAC-AHU-701

AHU in EMSD HQ Tower 1, 1st Floor

Equipment Designation

- Utilise the **Field 4-7** of current asset code for equipment designation
- For AHU on Ground floor would have proposed equipment designation such as:
GF-HVAC-AHU-01

Requirement of Asset Coding						
1	2	3	4	5	6	7
District Code (Refer to Section 5.2)	Building Code (Refer to Section 5.3)	Block Code (Refer to Section 5.4)	Building Level	System Code/ Routing Code ⁽³⁾ (Refer to Section 5.5)	Equipment Code (Refer to Appendix G)	Number ^(1,2)
1 to 3 characters	1 to 5 characters	1 to 3 characters	1 to 4 characters	2 to 5 characters	2 to 5 characters	2 to 6 Numbers
KT – Kwun Tong	EMSDN – EMSD HQS (NEW)	NA- No Block	B2F – Basement 2	BLR – Boiler System	AHU – Air Handling Unit	01
		T1- Tower 1	B1F – Basement 1	FP – Filtration Plant		02
		B1- Block 1	GF – Ground Floor	ACS – Access Control System	10	
		N- North Wing	LG1F – Lower Ground Floor 1	STV – Satellite TV System	99	
		S- South Wing	UG1F – Upper Ground Floor 1		101	
			1F – 1 st Floor			
			1MF – 1 st Mezzanine Floor			
	2F – 2 nd Floor					
	RF – Roof Floor					

E&M System & Equipment Categorisation

Object Breakdown

Each Asset Code shall be represented by individual object (based on Appendix G)

Appendix G

BIM-AM No.	BIM-AM EMSD System Name & Codes	BIM-AM EMSD Equipment Type (^): Level 1 equipment type (*): Not existed in the EMSD asset templates.	BIM-AM Version 2.0 EMSD Equipment Code	BIM-AM Version 3.0 EMSD Equipment Code	Equipment Level	Components	Model Format
01	Lift and Escalator (LIFT)	Lift and Escalator (^)	LAE	LIFT	Level 1	LV Switchboard	.rfa
01	Lift and Escalator (LIFT)	Electric Lifts (including the application for passenger lift, good lift, freight lift, vehicle lift, platform lift, stair-lift and dumbwaiter)	ELL	ELL	Level 2	Individual BIM Object: <ul style="list-style-type: none"> Air Circuit Breaker (ACB) Automatic Transfer Switch Battery (including battery charger) Capacitor Harmonic Filter Moulded Case Circuit Breaker (Open Space) Power Quality and Energy Management System (PQEMS) 	.rfa
01	Lift and Escalator (LIFT)	Hydraulic Lifts (including the application for passenger lift, good lift, freight lift, vehicle lift, platform lift, stair-lift and dumbwaiter)	HYL	HYL			
01	Lift and Escalator (LIFT)	Escalators / Passenger Conveyors	EPC	EPC			
02	LV Switchboard (LVS)	LV Switchboard (^) (Note 9)	LVS	LVS			
02	LV Switchboard (LVS)	Air Circuit Breaker (ACB)	ACB	ACB			
02	LV Switchboard (LVS)	Automatic Transfer Switch	N/A	ATS			
02	LV Switchboard (LVS)	Battery (including battery charger)	BAT	BAT			
02	LV Switchboard (LVS)	Capacitor	CAP	CAP			
02	LV Switchboard (LVS)	Harmonic Filter	HAR	HAR			
02	LV Switchboard (LVS)	Moulded Case Circuit Breaker (Open Space)	MCCB	MCCB			
02	LV Switchboard (LVS)	Power Quality and Energy Management System (PQEMS)	PQM	PQM			
						Main Distribution Cable (Incoming/ Outgoing)	.rfa

Asset Data



App G
App B

App G

App G

Asset Types	Description	Data Handling Equipment Section 2.4.2.1																
Type 1	Assets are shown in BIM models <u>with</u> asset code and <u>with</u> Asset Data Templates (ADTs, BIM-AM SG Appendix B)	Use Appendix B (ADT) and G to load relevant shared parameters (Appendix D) into model																
Type 2	Assets are shown in BIM models <u>with</u> asset code , but without ADTs	Create and load the following: <table border="1"> <thead> <tr> <th>Asset Attributes Required</th> <th>Mandatory (M) / Optional (O)</th> </tr> </thead> <tbody> <tr> <td>EMSD.Common.Asset Code</td> <td>M</td> </tr> <tr> <td>EMSD.Common.Zone Tag No.</td> <td>M</td> </tr> <tr> <td>EMSD.Common.Manufacturer</td> <td>O</td> </tr> <tr> <td>EMSD.Common.Model No.</td> <td>O</td> </tr> <tr> <td>EMSD.Common.Equipment Description</td> <td>M</td> </tr> <tr> <td>EMSD.Common.Documentation</td> <td>M</td> </tr> <tr> <td>EMSD.Common.Asset Relationship</td> <td>O</td> </tr> </tbody> </table>	Asset Attributes Required	Mandatory (M) / Optional (O)	EMSD.Common.Asset Code	M	EMSD.Common.Zone Tag No.	M	EMSD.Common.Manufacturer	O	EMSD.Common.Model No.	O	EMSD.Common.Equipment Description	M	EMSD.Common.Documentation	M	EMSD.Common.Asset Relationship	O
Asset Attributes Required	Mandatory (M) / Optional (O)																	
EMSD.Common.Asset Code	M																	
EMSD.Common.Zone Tag No.	M																	
EMSD.Common.Manufacturer	O																	
EMSD.Common.Model No.	O																	
EMSD.Common.Equipment Description	M																	
EMSD.Common.Documentation	M																	
EMSD.Common.Asset Relationship	O																	
Type 3	Neither asset code nor asset templates are specified by BIM-AM SG for the asset, e.g. laundry machine, book conveyor, patient monitor etc. Assets shall be manually created in AMS/CCS through CCS/AMS- Generic template.	Provide asset information to O&M team for manual asset creation. Approval from Asset Management Task Force (AMTF) may be required.																
Type 4	Assets are NOT shown in BIM models with asset code and asset templates, e.g. Level 1 HVAC System & Plumbing and Drainage System etc.	Fill in CCS/AMS templates in found in Appendix B																

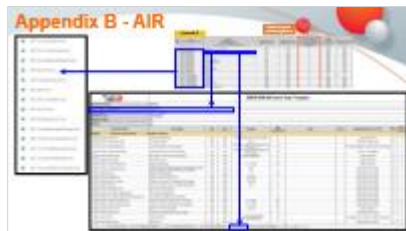
Asset Information Requirement



Appendix G – List of Equipment

1 Find the EMSD System name based on equipment type
E.g. Primary AHU belongs to HVAC (Air Side)

BIM-AM No.	BIM-AM EMSD System Name	BIM-AM EMSD Equipment Type (*): Level 1 equipment type (*): Not existed in the EMSD asset templates.	BIM-AM Equipment Code
4	HVAC (Air Side)	Air Side (*)	-
4	HVAC (Air Side)	VRV-IDU	IDU
4	HVAC (Air Side)	Air Handling Unit	AHU
4	HVAC (Air Side)	Primary Air Handling Unit	PAU



Appendix B – Asset Data Template

2 Find Asset Data Template file based on System name, Find the correct Tab based on Equipment Type

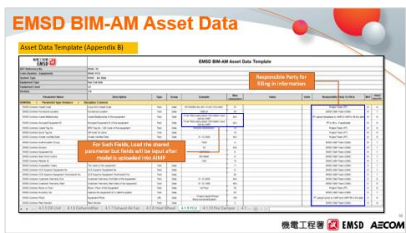
3 Load Common Parameters

4 Check the Equipment Specific Parameters needed for equipment

ADT Reference No.	System Name	System Type	Equipment Type	Equipment Level	Version
EMSD-001	HVAC-3	HVAC-PAU	HVAC - Air Side	Primary Air Handling Unit	L2
EMSD-002	HVAC-3	HVAC-PAU	HVAC - Air Side	Primary Air Handling Unit	L2

Parameter Name	Description	Parameter type	Instance	Discipline
EMSD.Common.Asset Code	Using Asset Code	Text	Instance	Common
EMSD.Common.Functional Location	Functional Location	Text	Instance	Common
EMSD.Common.Asset Relationship	Asset Relationship of the equipment	Text	Instance	Common
EMSD.Common.Groups of Equipment ID	Grouped Equipment ID of the equipment	Text	Instance	Common
EMSD.Common.Asset Tag No.	RFID Tag No. / QR Code of the equipment	Text	Instance	Common
EMSD.Common.Zone Tag No.	QR Code For Zone	Text	Instance	Common
EMSD.Common.Quote Verified Date	Quote Verified Date	Date	Instance	Common
EMSD.Common.Authorization Group	Control if one can change the piece of equipment or create job and notification with reference to the equipment.	Text	Instance	Common
EMSD.Common.Division	Division of the equipment	Text	Instance	Common
EMSD.Common.Equipment No.	EMSD CCS(SAP) Equipment No.	Text	Instance	Common
EMSD.Common.Plant Work Centre	Default work centre for maintaining the Equipment.	Text	Instance	Common
EMSD.Common.Partner ID	Short form (search form) of customer department.	Text	Instance	Common
EMSD.Common.Technical ID No.	Unique ID which is assigned by user	Text	Instance	Common
EMSD.Common.Acquisition Value	The value of the equipment	Text	Instance	Common
EMSD.Common.CCS Equipment ID Superior	Equipment ID Superior	Text	Instance	Common
EMSD.Common.Customer Warranty End	Customer Warranty End Date of the equipment	Date	Instance	Common
EMSD.Common.Customer Warranty Start	Customer Warranty Start Date of the equipment	Date	Instance	Common

EQUIPMENT SPECIFIC	Parameter type	Instance	Discipline
EMSD.HVAC.Equipment Location	Equipment Location	Text	Common
EMSD.HVAC.1st Filter	Filter	Text	Common
EMSD.HVAC.2nd Filter	Second Filter	Text	Common
EMSD.HVAC.Equipment Type	Equipment Type	Text	Common
EMSD.HVAC.Make	Made by which company	Text	Common
EMSD.HVAC.UV Sterilizing Light	Contain UV Sterilizing Light or not	Text	Common
EMSD.HVAC.VSD	Contain VSD or not	Text	Common
EMSD.HVAC.Air Flow	Air Flow	Text	Common
EMSD.HVAC.Cooling Capacity	Cooling Capacity	Text	Common
EMSD.HVAC.Rated Power Input	Rated Power Input	Text	Common



Appendix D – Shared Parameter file

Edit Shared Parameters

Shared parameter file: C:\Users\ChanKY1\AECOM\EMSD-BIM /

Parameter group: Common

Parameters: EMSD.Common.Acquisition Value, EMSD.Common.Asset Code, EMSD.Common.Asset Relationship, EMSD.Common.Asset Tag No., EMSD.Common.Authorization Group, EMSD.Common.Division, EMSD.Common.Equipment No., EMSD.Common.Plant Work Centre, EMSD.Common.Partner ID, EMSD.Common.Technical ID No., EMSD.Common.Acquisition Value, EMSD.Common.CCS Equipment ID Superior, EMSD.Common.Customer Warranty End, EMSD.Common.Customer Warranty Start

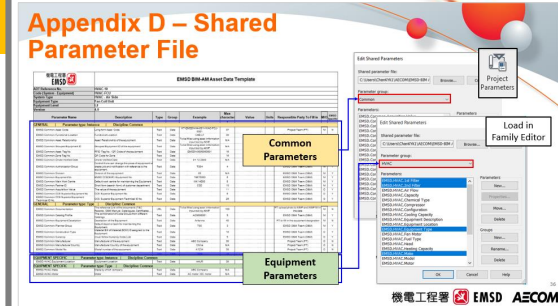
Edit Shared Parameters

Shared parameter file: C:\Users\ChanKY1\AECOM\EMSD-BIM /

Parameter group: HVAC

Parameters: EMSD.HVAC.1st Filter, EMSD.HVAC.2nd Filter, EMSD.HVAC.Air Flow, EMSD.HVAC.Capacity, EMSD.HVAC.Chemical Type, EMSD.HVAC.Compressor, EMSD.HVAC.Configuration, EMSD.HVAC.Cooling Capacity, EMSD.HVAC.Equipment Description, EMSD.HVAC.Equipment Location, EMSD.HVAC.Equipment Type, EMSD.HVAC.Fan Motor, EMSD.HVAC.Fuel Type, EMSD.HVAC.Head, EMSD.HVAC.Heating Capacity, EMSD.HVAC.Make, EMSD.HVAC.Model, EMSD.HVAC.Motor

5 Load common parameter under "Project Parameter" and relevant specific parameters into "Family Object Parameter".





同·創·傳·期
Co-innovate and
Co-create Our Future

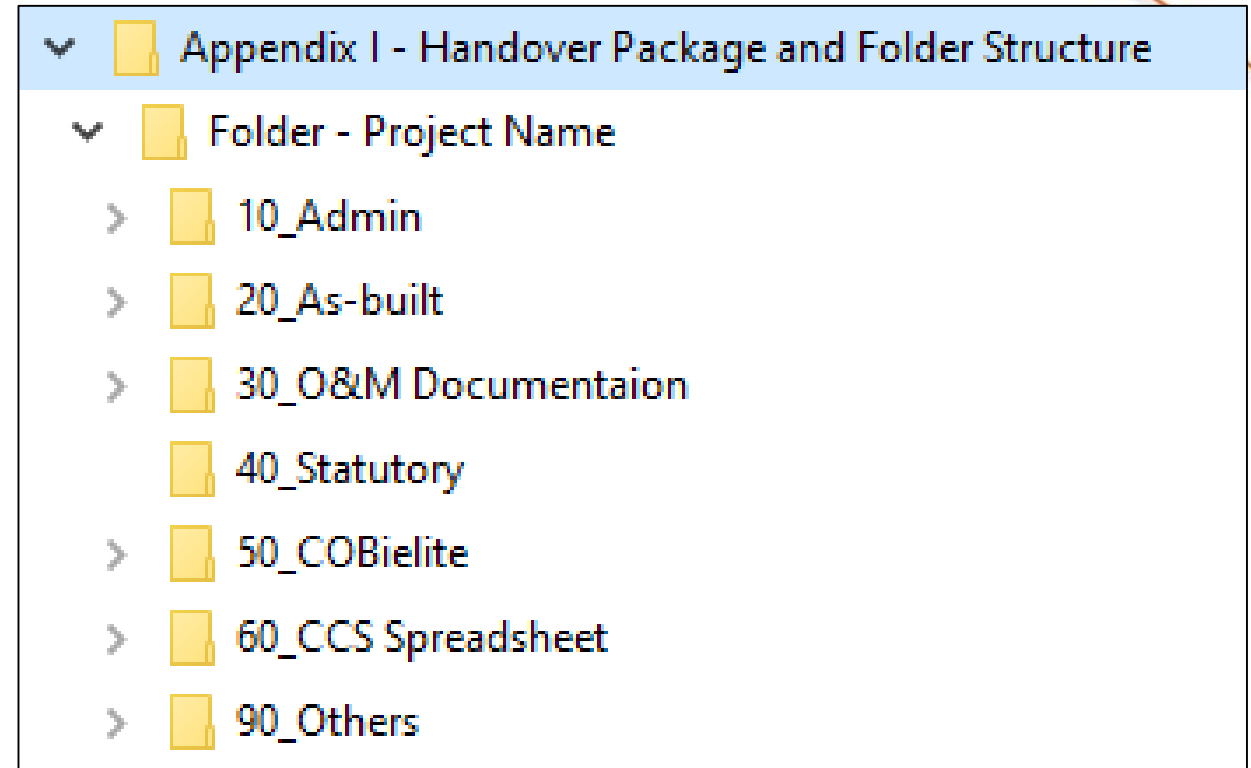
Introduction of Updated BIM-AM SG in v3.0

About Handover Package and Folder Structure Requirements

Appendix I - Handover Package and Folder Structure

Criteria on Handover Documents

- Follow the Folder Template provided by EMSD
- PDF contents shall be searchable
- Upload all the handover documents into AIMP as a .zip file



Folder Structure

Details in BIM-AM SG Appendix I

Main folder	Contents
10_Admin	Stores all document for project management, including Contract, BEPs, Site Survey Reports
20_As_Built	Stores as-builts all disciplines including BIM models, CAD files, Point Cloud and Site photos
30_O&M Documentation	O&M documents, T&C reports, certificates, catalogues, drawings, etc
40_Statutory	Stores all the statutory record, e.g. WR1, ventilation Certificate, FS251, Form 5 of lift, WWO46 etc. under building level.
50_COBielite	COBielite files exported from the model
60_CCS Spreadsheet	All completed CCS/AMS Spreadsheets with asset information filled in.
90_Others	Stores all other documents which are not classified under the above folders. (e.g. Asset Topology, BMS Point Schedule)

Folder Structure in AIMP



BIM Standard and Guideline Section 6.1.3

Files placed within this folder will automatically be mapped to particular Assets in **AIMP** based on the THREE settings:-

- 10_Admin
- 20_As-built
- 30_O&M Documentation
- 40_Statutory
- 50_COBielite
- 60_CCS Spreadsheet
- 90_Others

Based on System and Equipment Type

- 3A1 Plumbing System
- 3A2 Drainage System
- 3A3 Water Leakage Detection System
- 3A4 Mechanical Handling & Lifting Instal...
- 301 Lift & Escalator
- 302 LV Switchboards
- 303 Emergency Generator
- 304 HVAC
- 305 Boiler System
- 306 Filtration Plant
- 307 Fire Services Installation
- 308 UPS
- 309 Burglar Alarm & Security Installation
- 310 Radar & Navigation System
- 311 Microwave Link System
- 312 Timing & Display System
- 313 Audio Video System
- 314 Audio System
- 315 Radio System
- 316 Closed Circuit TV System
- 317 Broadcast Reception Installations
- 318 Lighting System
- 319 Electrical Distribution System
- 320 Medical Gas System

- Catalogues
- O&M
- Others
- T&C

Setting 3:

Asset Specific Folder

Files under this folder will appear for the specific asset code.

- Asset Code XXXX (if applicable)
- LVS-ACB
- LVS-ATS
- LVS-BAT
- LVS-CAP
- LVS-HAR
- LVS-LVS
- LVS-MCCB
- LVS-PQM

Setting 2:

Level 2 folders

- File under this folder will appear for that type of equipment. [refer to Appendix G to identify the code of level 2 equipment type]
- e.g. files under this folder will be assigned to all batteries under LV Switch board.

Setting 1:

Level 1 folders

- File under this folder will appear for ALL type of equipment under that system. [refer to Appendix G to identify the code of Level 1 system/equipment]
- e.g. files under this folder will be assigned to ALL equipment under LV Switch Board

Folder Structure in AIMP

BIM Standard and Guideline Section 6.1.3

Files placed within this folder will automatically be mapped to particular Assets in **AIMP** based on the THREE settings:-

Setting 3: Asset Specific Folder

Files under this folder will appear for the specific asset code.

Setting 2:

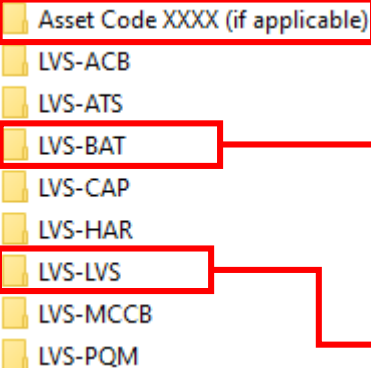
Level 2 folders

- File under this folder will appear for that type of equipment. *[refer to Appendix G to identify the code of level 2 equipment type]*
- e.g. files under this folder will be assigned to all batteries under LV Switch board.

Setting 1:

Level 1 folders

- File under this folder will appear for ALL type of equipment under that system. *[refer to Appendix G to identify the code of Level 1 system/equipment]*
- e.g. files under this folder will be assigned to ALL equipment under LV Switch Board



Asset Data Template (Appendix B)

機電工程署 EMSD		EMSD BIM-AM A			
ADT Reference No.	LIFT-4				
Code (System - Equipment)	LIFT-EPC				
System Type	Lift and Escalator				
Equipment Type	Escalators / Passenger Conveyors				
Equipment Level	L2				
Version	4.0				
Parameter Name	Description	Type	Group	Example	ch
GENERAL Parameter type: Instance Discipline: Common					
GENERAL Parameter type: Type Discipline: Common					
EMSD.Common.Documentation	The reference Link of the documents (T&C Records, O&M Manual, Catalogues, Certificates....)	URL	Data	Document link to be filled by AIMP	
EMSD.Common.Catalog Profile	The combination of Code Groups from different Catalogs	Text	Data	AC0000001	
EMSD.Common.Equipment Description	Description of the Equipment	Text	Data	Antenna	
EMSD.Common.Planner Group	Default depot or team for maintaining the Equipment.	Text	Data	T00	
EMSD.Common.Construction Type	Material Bill of Material (BOM) ID assigned to the Equipment.	Text	Data		
EMSD.Common.Currency	(must follow Currency Code List)	Text	Data		
EMSD.Common.Manufacturer	Manufacturer of the equipment	Text	Data	ABC Company	
EMSD.Common.Manufacturer Country	Manufacturer Country of the equipment	Text	Data	China	
EMSD.Common.Model No.	Model number of the equipment	Text	Data	A1234	
EMSD.Common.Weight	Weight of the equipment	Text	Data	50kg	
EQUIPMENT SPECIFIC Parameter type: Instant Discipline: Common					

New E&M Systems & Equipment



New Level 1 Systems & asset

Per Trade's comments



Internet-of-thing Installation (IoT)



High Voltage Power Supply (HV)



Private Automatic Branch Exchange System (PX)



Automatic Refuse Collection System (ARCS)

New Level 2 equipment in existing Level 1 System

Per PAT's comment

- Air Treatment System (including air purifier)- AP
- Constant Air Volume Box- CAV
- Computer Room Air Conditioner & Handler - CRAC
- Dehumidifier- DHUM
- Humidifier-HUM
- Jet Fan- JF
- Kitchen Mortuary Fan- KMF
- Transfer Air Fan- TAF
- **Venturi Valve- VTV**
- Water Scrubber- WSCR
- **Main motorized/ modulating control valve- MCV**
- Tube Cleaning System- TCS
- Energy Meter- EM
- Solar Photovoltaic System- PV
- **Water Filter for Drinking Fountain - DF**

Sub-classification of equipment type

Align with iBMS!

PMP under AMTF Templates to

- Chilled Water Pump-CHWP
- Circulation Pump- CP
- Condensing Water Pump- CWP
- Cooling Tower Bleed Off Pump- CTP
- Heating Water Pump- HWP
- Sea Water Pump- SWP

CHR under AMTF Templates to

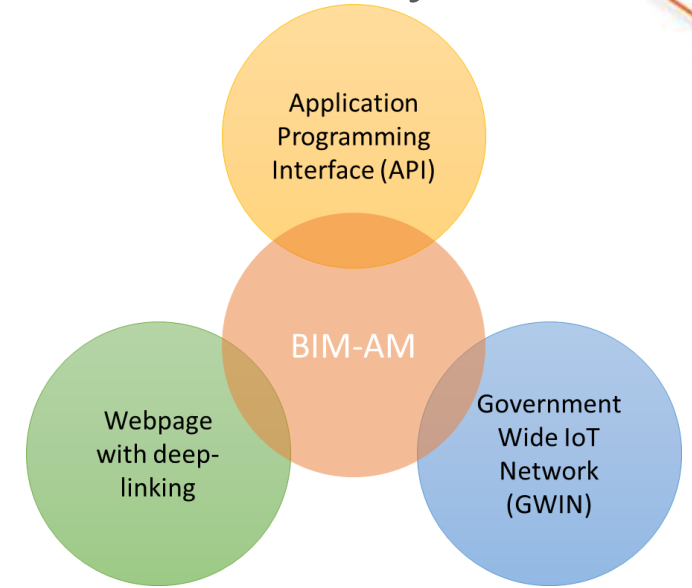
- Air Cooled Chiller- ACC
- Water Cooled Chiller- WCC

Introduction of Updated BIM-AM SG in v3.0

Interfacing with EMSD's Corporate System

Interfacing with EMSD's Corporate System

- EMSD's BIM-AM system is capable to interface with other systems
 - Central Control and Monitoring System (CCMS),
 - integrated Building Management System (iBMS),
 - Regional Digital Control Center (RDCC),
 - Radio Frequency Identification (RFID),
 - Internet-of-Things (IoT) devices, and
 - Long Range Radio (LoRA) network.



Three methods to interface with other systems

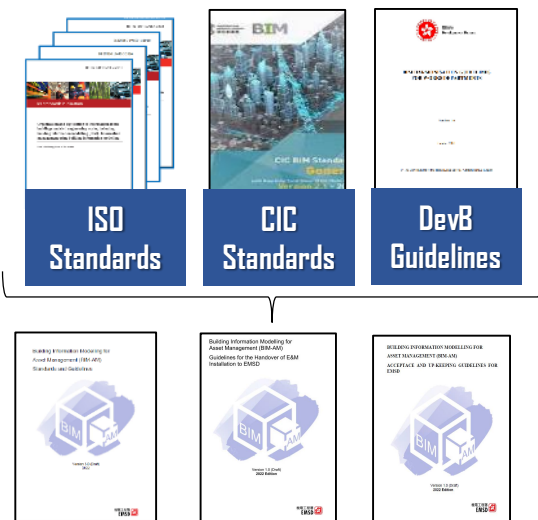
- (1) Application programming interface (API) for data retrieval;
- (2) Webpage with organized user interface by deep-linking; or
- (3) Information exchange via Government Wide IoT Network (GWIN).

Introduction of Updated BIM-AM SG in v3.0

CDE Workflow and AIMP

CDE – Common Data Environment
AIMP – Asset Information Management Platform

BIM-AM Acceptance & Up-keeping Workflow



3 EMSD BIM-AM Standards

Specified the workflow & requirement

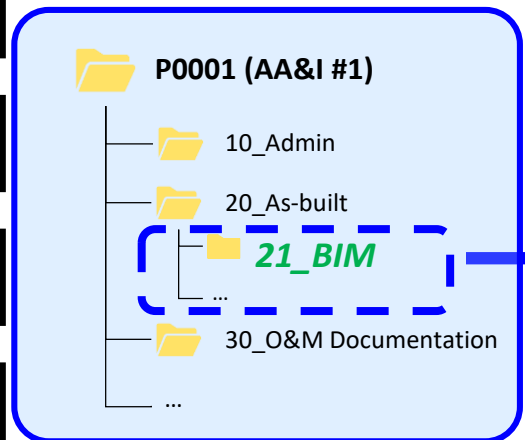
New Building During DLP



For online submission by Project team (e.g. ArchSD) / Contractor

CDE - Master Record of O&M Documents

Project CDE (e.g. AA&I of EMSD 6/F)

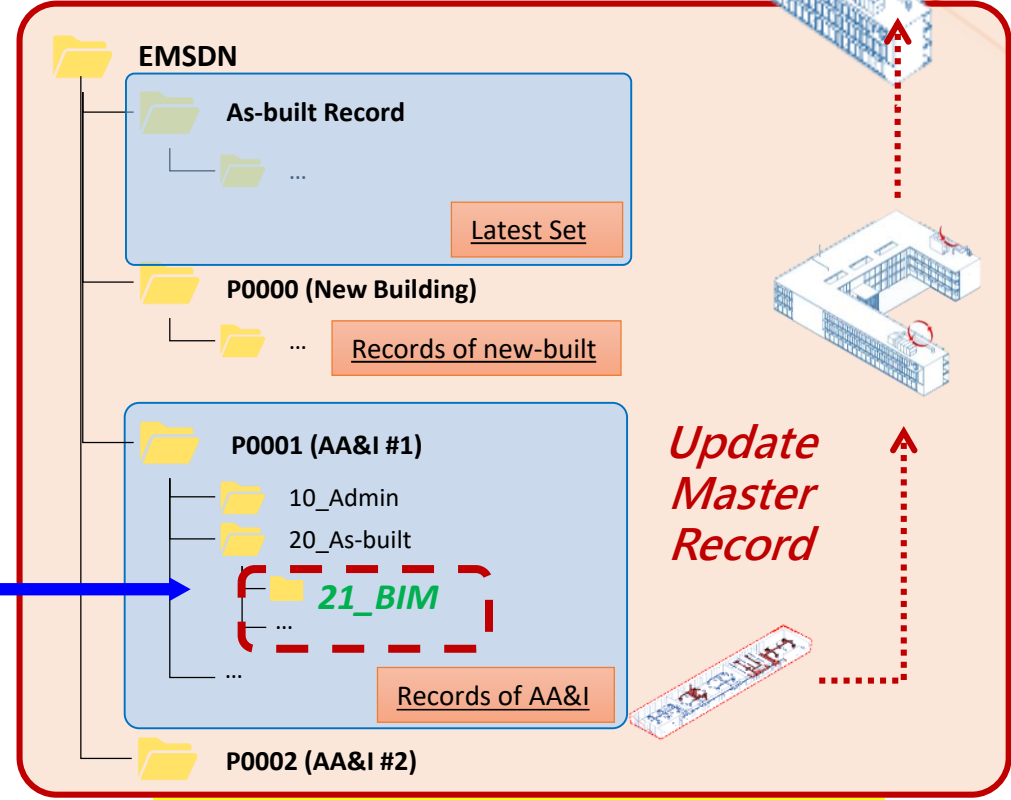


For Review & Approval
改功課

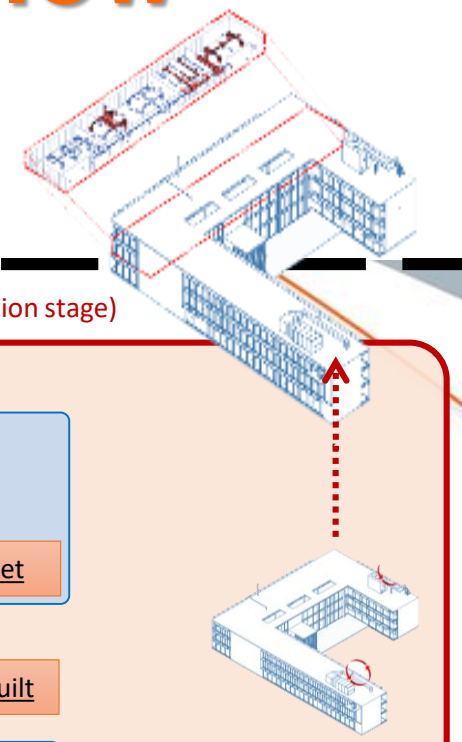
Handover Completed



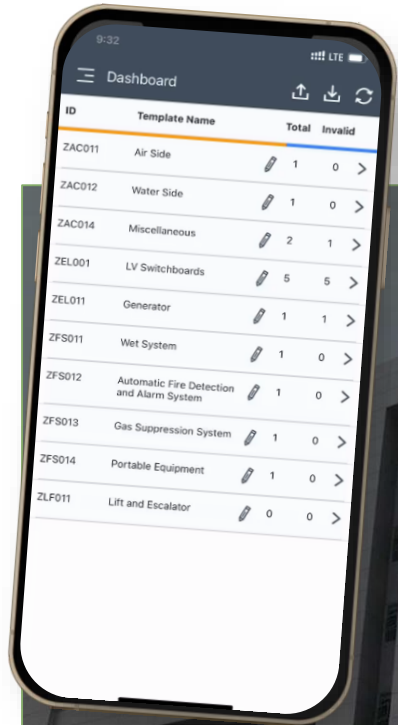
Venue CDE (e.g. EMSD HQs, for operation stage)



For on-going upkeep and reference
夾齊功課



Asset Information Management Platform (AIMP) Frontend of CDE for Contractor Submission



9:32 LTE

Dashboard

ID	Template Name	Total	Invalid
ZAC011	Air Side	1	0
ZAC012	Water Side	1	0
ZAC014	Miscellaneous	2	1
ZEL001	LV Switchboards	5	5
ZEL011	Generator	1	1
ZFS011	Wet System	1	0
ZFS012	Automatic Fire Detection and Alarm System	1	0
ZFS013	Gas Suppression System	1	0
ZFS014	Portable Equipment	1	0
ZLF011	Lift and Escalator	0	0

App Version

Asset Information Management Platform



機電工程署
EMSD

Log In

v1.0

Minimum system requirements
Web browser: Google Chrome
Resolution: 1920 x 1080

Desktop Version

Contractor's interface for submitting the BIM-AM deliverables to EMSD

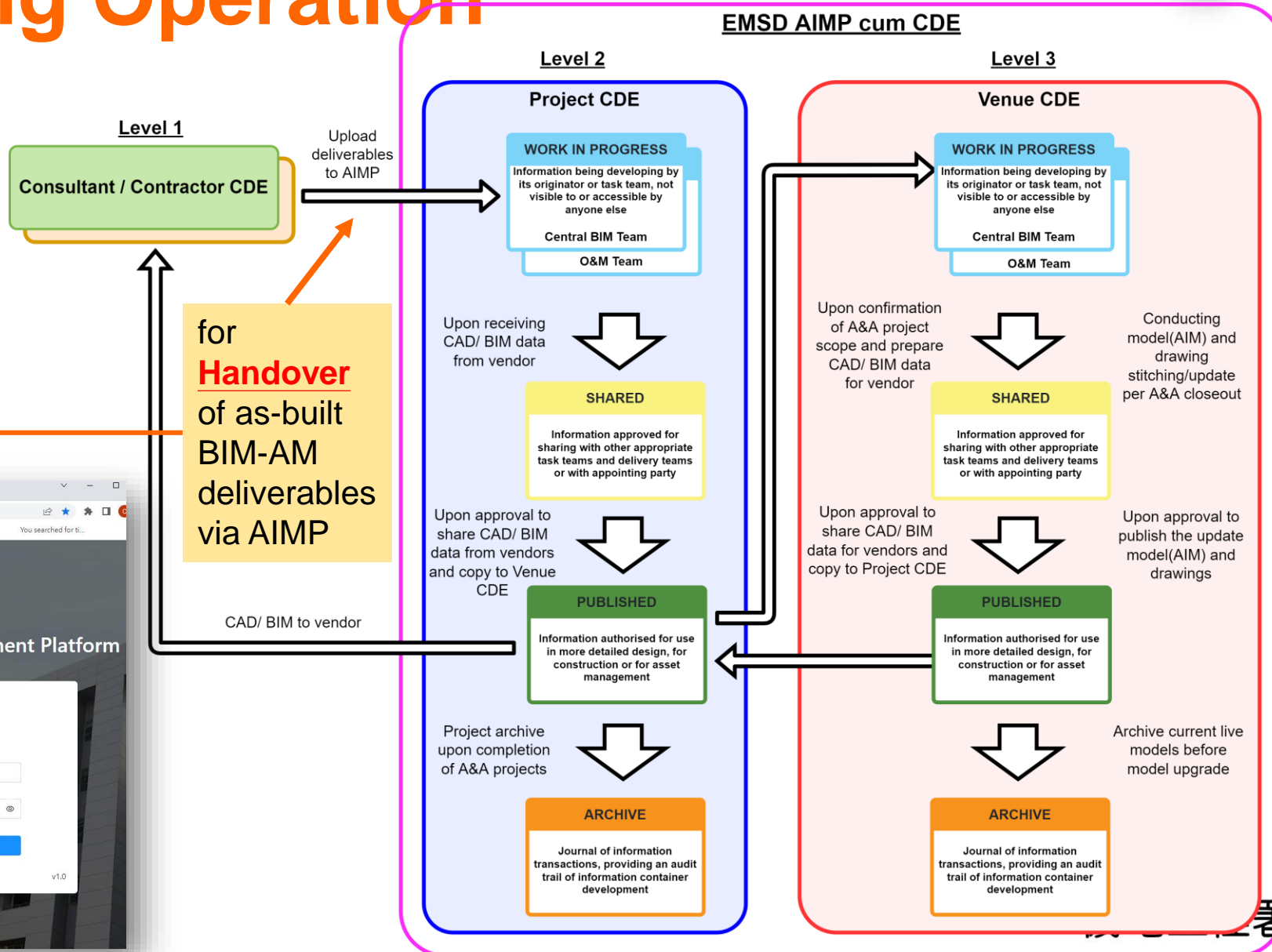
AIMP role:-

1. Handover of BIM and BIM-AM deliverables
2. Tools to upload O&M document in various format so that mapping between document and asset can be created
3. Handy Apps development to facilitate AM

NOTE: The clients or their authorised contractors / consultant could approach the corresponding EMSD's O&M team for the AIMP User Accounts.

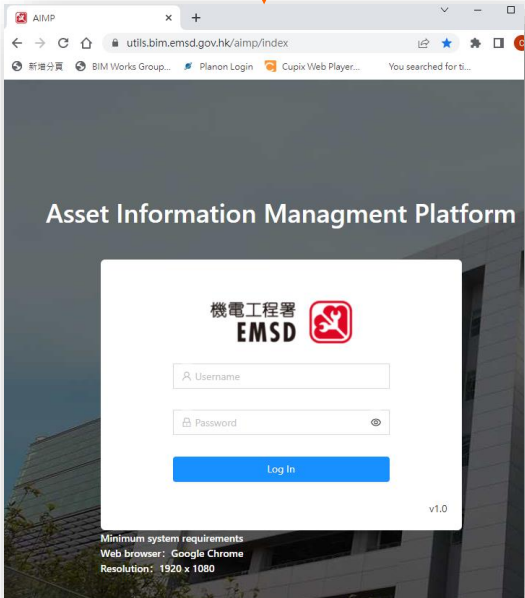
CDE Workflow for Handover and Building Operation

Single source of truth for workflow management

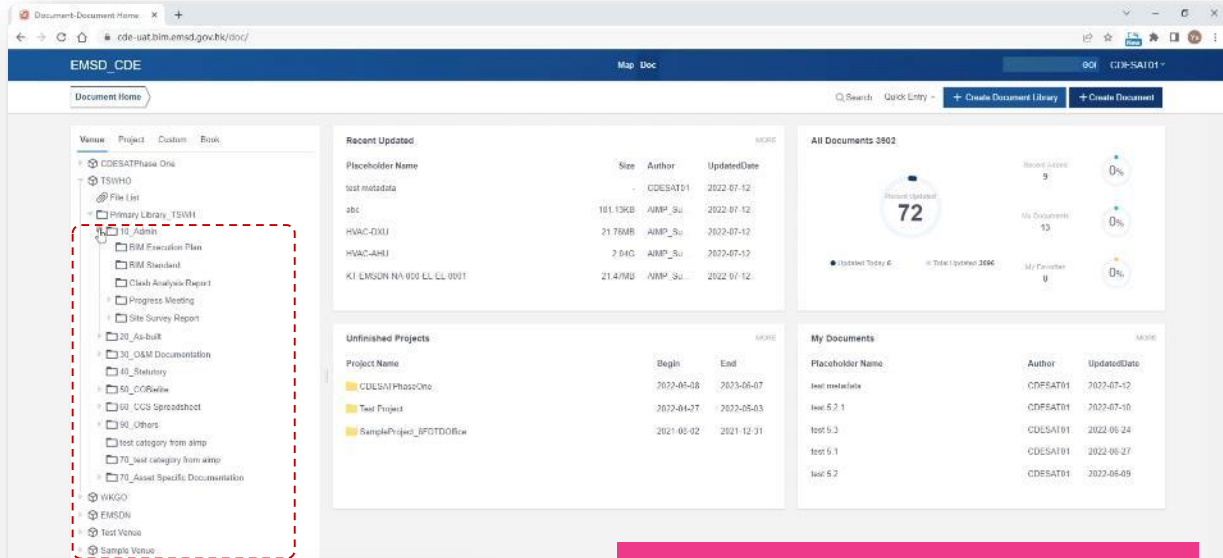


for **Handover** of as-built BIM-AM deliverables via AIMP

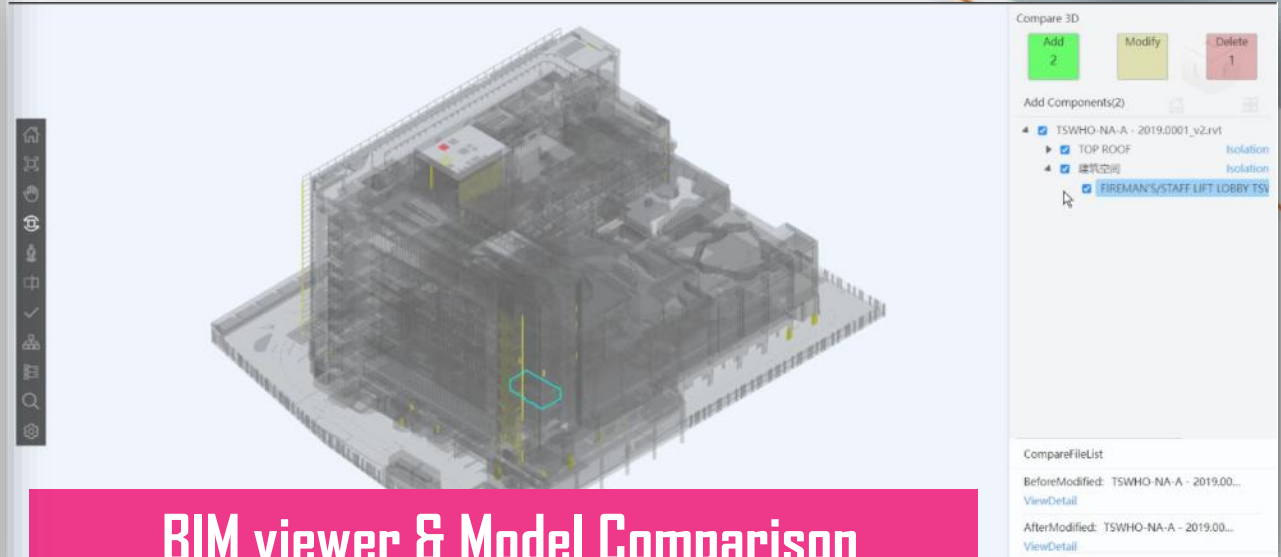
Only accessible by EMSD for Building Operation



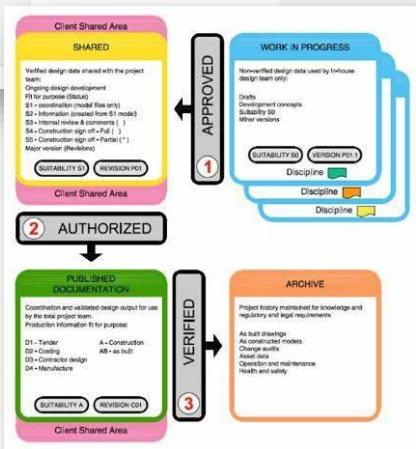
Features of EMSD CDE



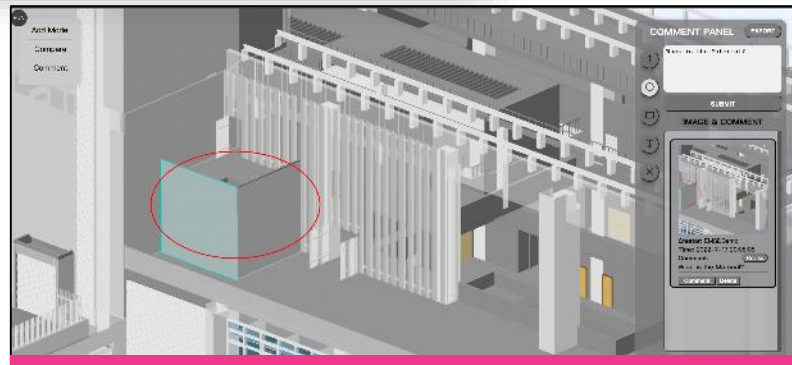
Data Repository



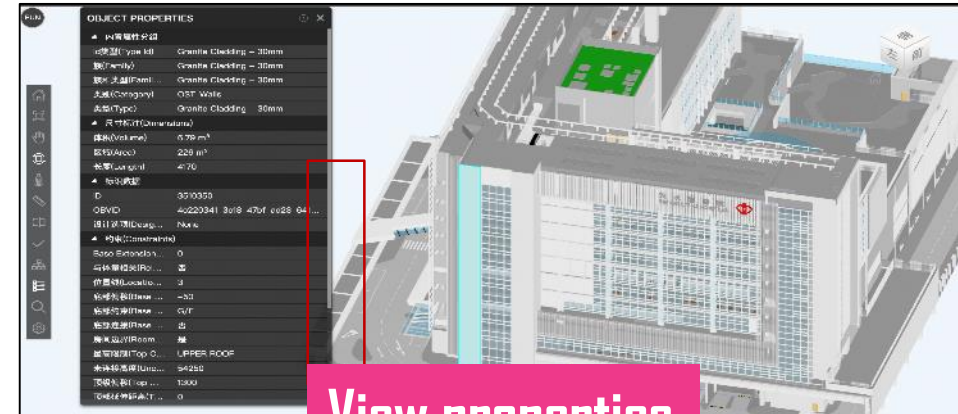
BIM viewer & Model Comparison



ISO19650 Compliant Approval Workflow



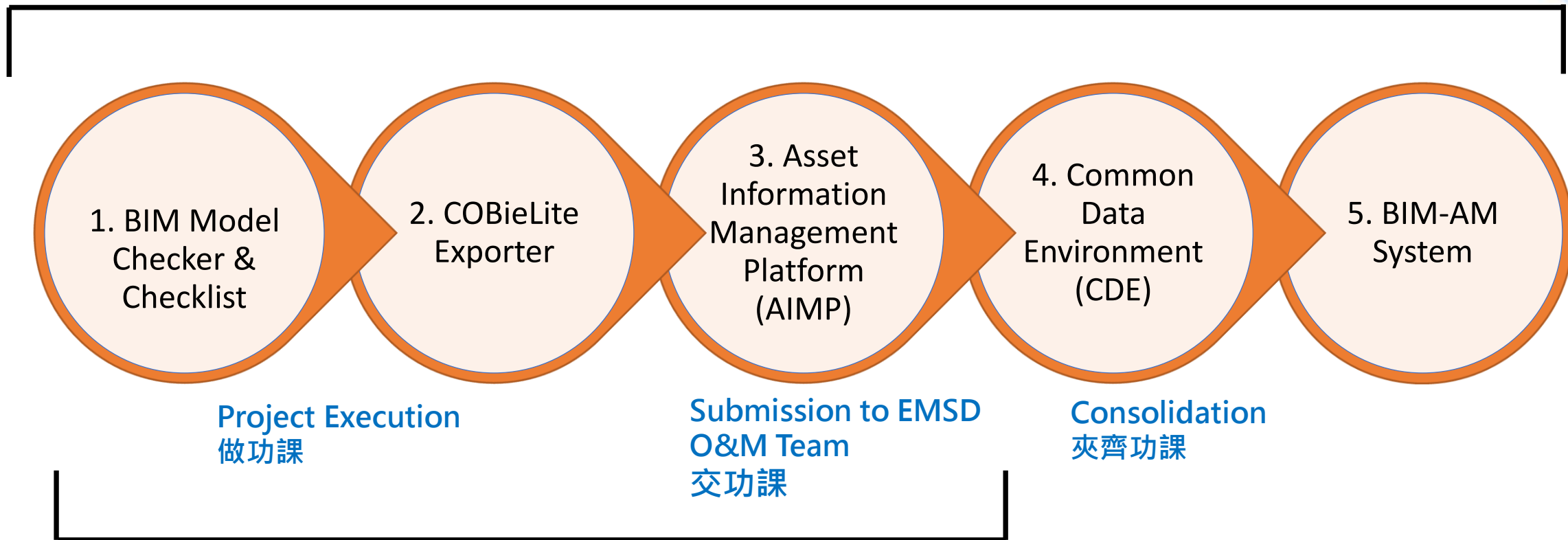
Mark-up and export comment



View properties

Other BIM-AM Related Tools & Systems to facilitate the BIM-AM implementation

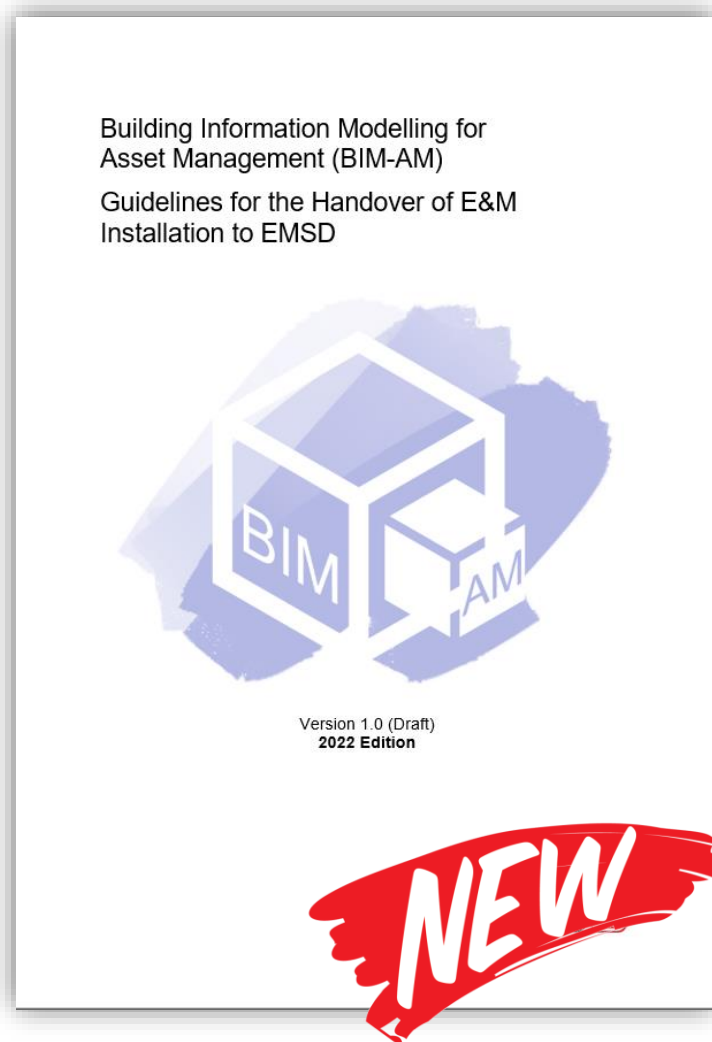
Covered in BIM-AM Standards and Guidelines



Implemented in 89+ venues in Asset Digitalisation

Introduction of the New Guidelines for the Handover of E&M Installation to EMSD (H/O Guide)

About the new H/O Guide



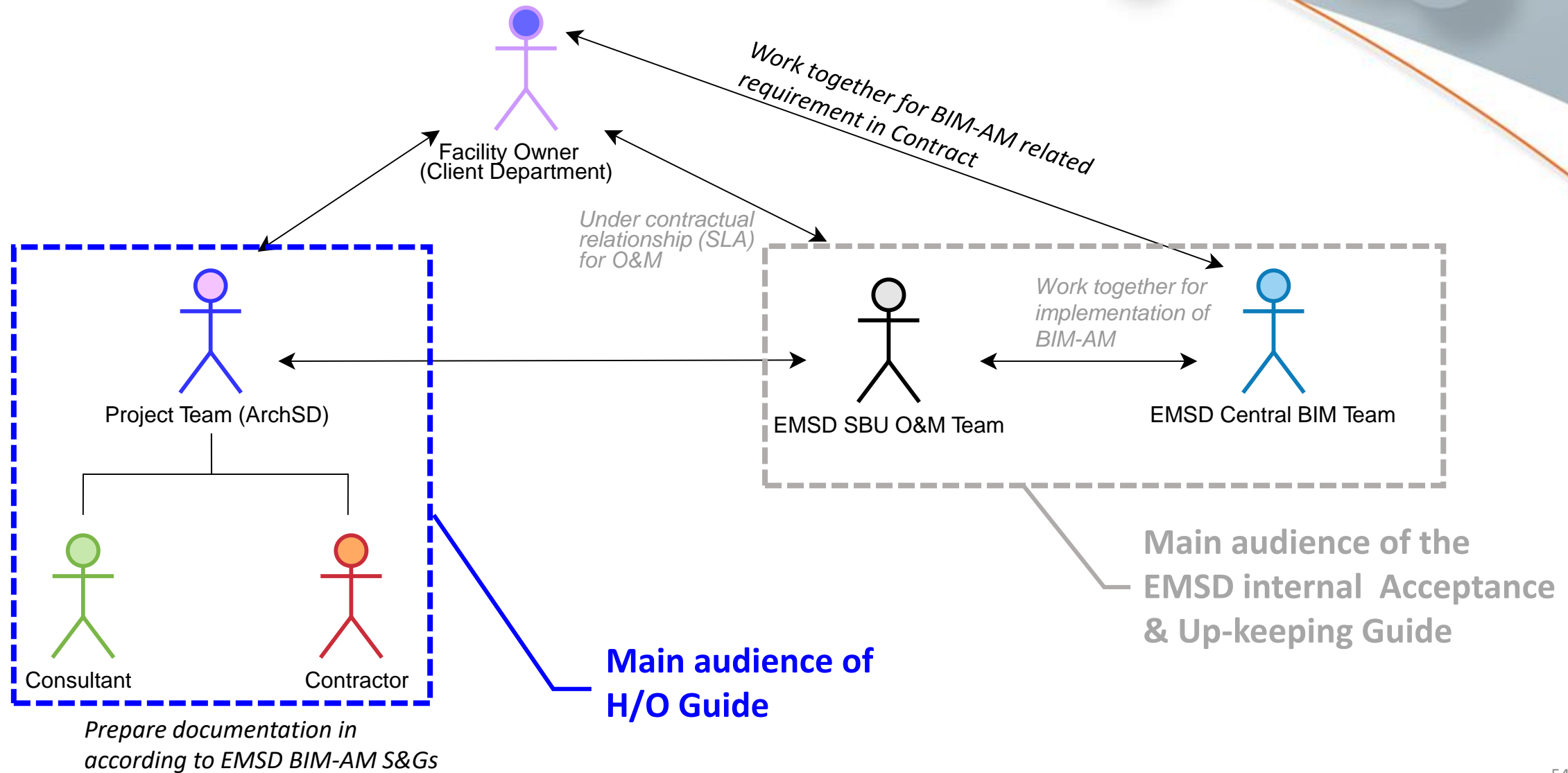
New guideline to prepare BIM & BIM-AM Handover deliverables covering:-

- New BIM-AM workflow with role & responsibility for the handover of new build and A&A projects
- Detailed handover procedures, i.e. deliverable preparation stage → asset data upload stage → Set up database for upkeep
- Treatment of different equipment type for the formulation of asset templates
- Handover checklist on BIM-AM deliverables with QA/QC procedures, e.g. models, asset data, O&M document, relationship etc.

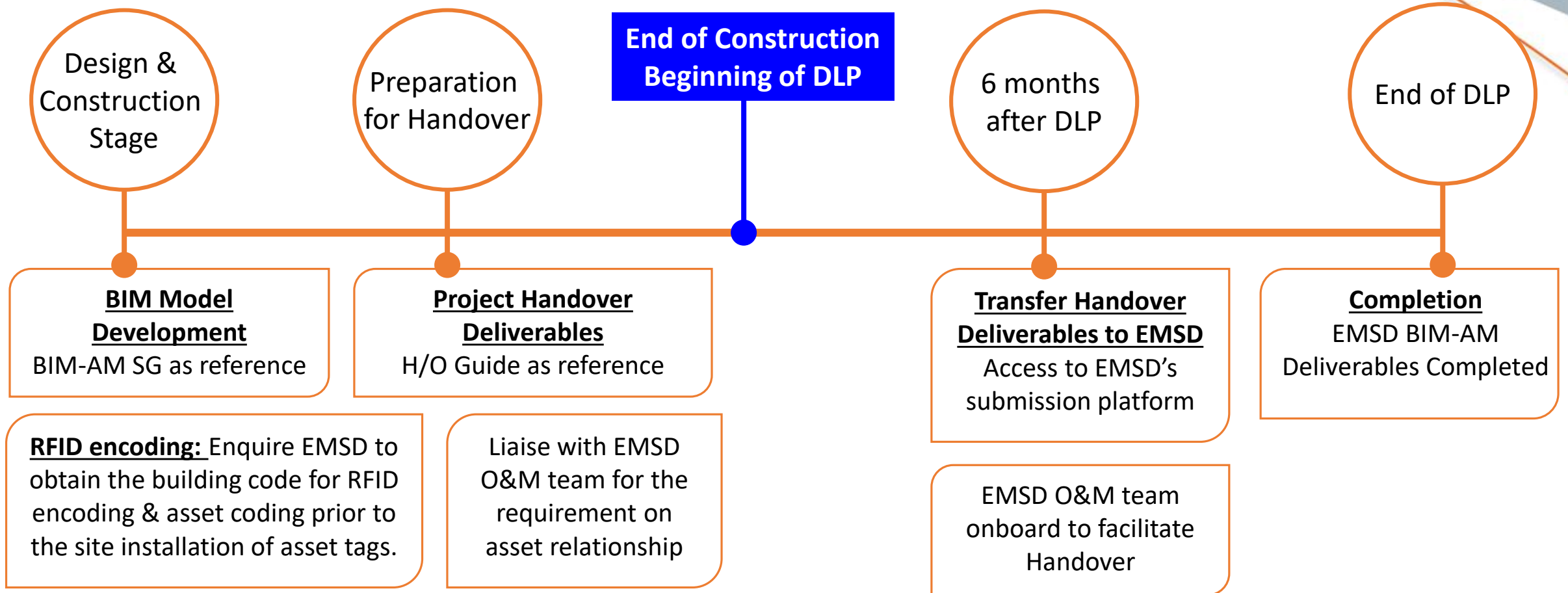
Introduction of the New Guidelines for the Handover of E&M Installation to EMSD

About Roles & Responsibilities and Key Milestones during BIM-AM Implementation

Roles and Responsibilities



Key Milestones for BIM-AM Implementation

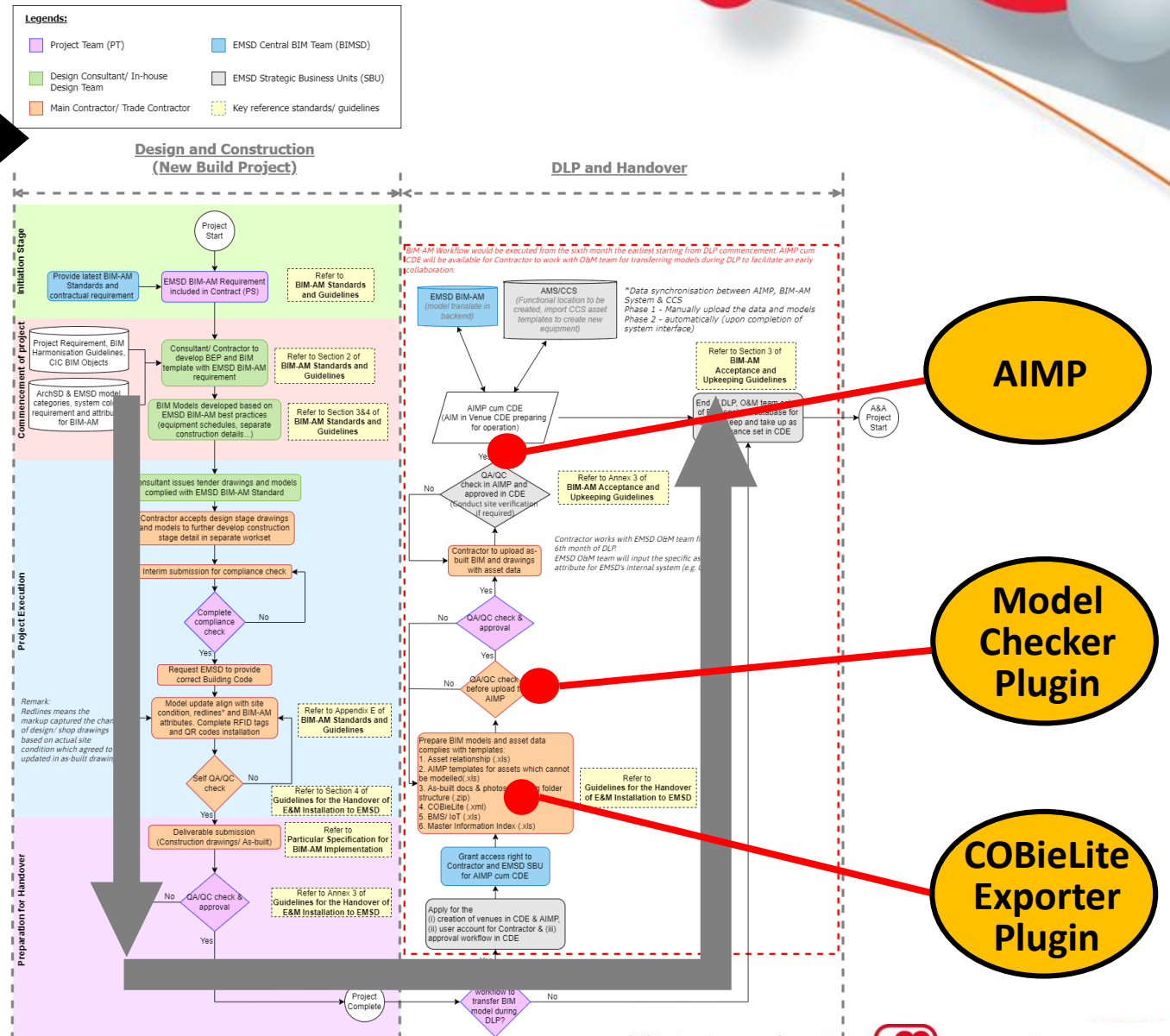


Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Handover Procedures and Tools

Handover Procedures

- Enquiry System login details from EMSD via project team
- Overall workflow
- Tools available for preparing BIM-AM deliverables
 - Asset Information Management Platform (AIMP)
 - COBieLite Exporter Plugin
 - Model Checker Plugin



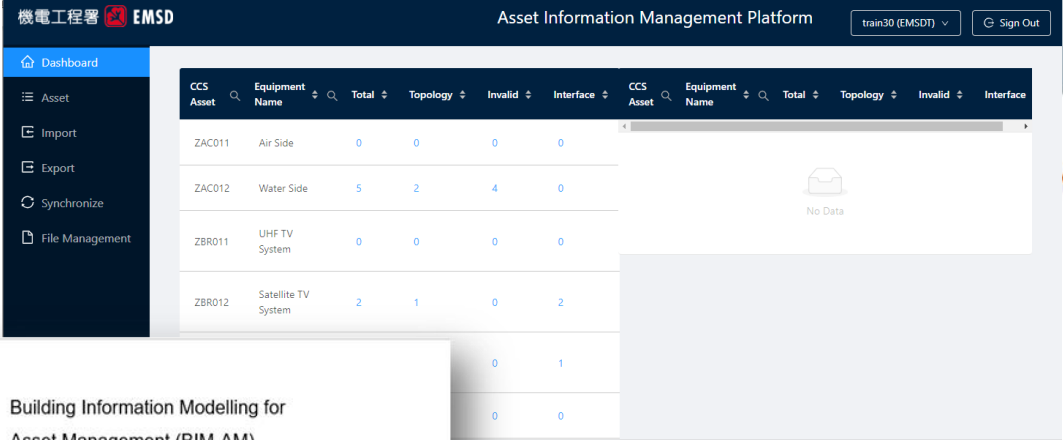
Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

AIMP Asset Information Management Platform (AIMP)

About AIMP

It is used for:

- A platform for Contractor to download plugins and templates needed for the Handover:
 - Model Checker Plugin
 - COBieLite Exporter Plugin
 - Asset Relationship Excel templates
 - CCS/AMS Asset Templates (latest version)
- Upload BIM-AM and Model deliverables
- Upload O&M documents and mapping to assets
[Section 6.1.3 of BIM-AM SG]
- Create Level 1 system which cannot be modelled
- Export of AIMP COBieLite & CCS/AMS files



機電工程署 EMSD Asset Information Management Platform

CCS Asset	Equipment Name	Total	Topology	Invalid	Interface
ZAC011	Air Side	0	0	0	0
ZAC012	Water Side	5	2	4	0
ZBR011	UHF TV System	0	0	0	0
ZBR012	Satellite TV System	2	1	0	2

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

Building Information Modelling for Asset Management (BIM-AM) Standards and Guidelines Version 3.0

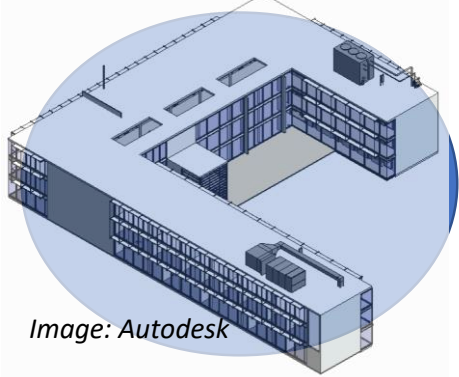
機電工程署 EMSD

Appendix C – User Manual for Asset Information Management Platform (AIMP)

- Enquiry System login details from EMSD via project team
- User Manual is in Appendix C of the BIM-AM SG v3.0

v3.0
2022

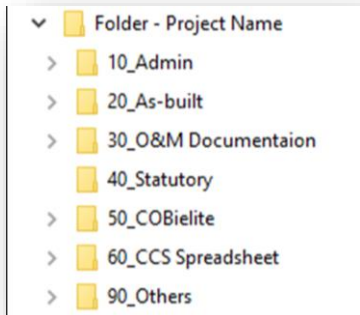
Tools for preparing the BIM-AM deliverables – AIMP



Asset information from models in COBielite format



Asset information from Various Excel Templates



Other files provided for handover in zip file

User Interface of AIMP

機電工程署 EMSD Asset Information Management Platform

Dashboard

- Asset
- Import
- Export
- Synchronize
- File Management

CCS Asset	Equipment Name	Total	Topology	Invalid	Interface
ZAC011	Air Side	0	0	0	0
ZAC012	Water Side	5	2	4	0
ZBR011	UHF TV System	0	0	0	0
ZBR012	Satellite TV System	2	1	0	2
ZEL001	LV Switchboards	1	1	0	1
ZEL011	Generator	0	0	0	0
ZFP011	Filtration Plant	0	0	0	0
ZFS011	Wet System	0	0	0	0
ZFS014	Portable Equipment	1	1	0	1
ZGE121	Audio System	0	0	0	0

Total Count : 15

CCS Asset	Equipment Name	Total	Topology
AC1101	DX Unit	15	8
AC1102	Air Handling Unit	56	0
AC1103	Primary Air Handling Unit	3	0
AC1104	Heat Wheel	0	0
AC1105	Fan Coil unit	22	1
AC1106	Fire Damper	5	0
AC1107	Fresh Air Fan	0	0
AC1108	Exhaust Air Fan	0	0
AC1109	VAV Box	4	3
AC1105	Local Control Panel	0	0

Total Count : 11

AIMP consolidates and organises information uploaded by trade

Tools for preparing the BIM-AM deliverables – AIMP

User Interface of AIMP

機電工程署 EMSD Asset Information Management Platform

Dashboard Asset Import Export Synchronize File Management

CCS Asset	Equipment Name	Total	Topology	Invalid	Interface
ZAC011	Air Side	0	0	0	0
ZAC012	Water Side	5	2	4	0
ZBR011	UHF TV System	0	0	0	0
ZBR012	Satellite TV System	2	1	0	2
ZEL001	LV Switchboards	1	1	0	1
ZEL011	Generator	0	0	0	0
ZFP011	Filtration Plant	0	0	0	0
ZFS011	Wet System	0	0	0	0
ZFS014	Portable Equipment	1	1	0	1
ZGE121	Audio System	0	0	0	0

Total Count : 15

機電工程署 EMSD Asset Information Management Platform

Dashboard Asset Import Export Synchronize File Management

Search asset template (>= 5 characters)

- (ZFS014) Portable Equipment
- (ZBR012) Satellite TV System
- (ZAC012) Water Side
- (AC1202) Heat Pump Type Chiller
- (AC1203) Cooling Tower
- (AC1205) Pump
- (ZEL001) LV Switchboards
- (EL0059) Battery
- (EL0066) Harmonic filter
- (EL0074) Switchgear
- (EL0075) Relay
- (EL0076) Capacitor
- (AC1109) VAV Box
- (GE12802) Static Transfer Switch
- (SS1102) Steam boiler
- (AC1101) DX Unit

Functional Location: EMSDT Equipment Description: Portable Equipment 02 Asset Code: KT-EMSDT-NA-1F-FS-PE-0001 Acquisition Value

Total Count : 1

Assets organised by System

機電工程署 EMSD Asset Information Management Platform

Dashboard Asset Import Export Synchronize File Management

Search asset template (>= 5 characters)

Common Attributes Specific Attributes

Attributes Name	Attributes Value	Upd
Acquisition Value	Please input Acquisition Value	
Asset Code	KT-EMSDT- NA - 1F - -LAS-LVS- 0001	2021
Asset Relationship	Asso:KT-ZCBT-NA-040-HVAC-VAV-0005,Asso:KT-ZCBT-NA-040-HVAC-VAV-0001,AS:	2021
Asset Tag No.	EMSDT-0400000001	2021
Authorization Group	KS00	2021
Catalog Profile	AC0000001	2021
Construction Type	Please input Construction Type	
Currency	1 0 0	2021
Customer Warranty End	24.03.2021	2021
Customer Warranty Start	24.03.2018	2021
Division	02	2021
Documentation		
Equipment Description	ASD	2021
Equipment No.	Please input Equipment No.	
Functional Location	EMSDT	2021
Grouped Equipment ID	Please input Grouped Equipment ID	
Inventory No.	Please input Inventory No.	

- Assets Attributes from Model & Excel are extracted and organized
- Data validation

Tools for preparing the BIM-AM deliverables – AIMP

The screenshot shows the AIMP interface with a search bar at the top and a table of asset attributes. The table has columns for 'Attributes Name' and 'Attributes Value'. The 'Attributes Name' column lists various attributes like 'Acquisition Value', 'Asset Code', 'Asset Relationship', 'Asset Tag No.', 'Authorization Group', 'Catalog Profile', 'Construction Type', 'Currency', 'Customer Warranty End', 'Equipment Description', 'Equipment No.', 'Functional Location', 'Grouped Equipment ID', 'Inventory No.', and 'Main Work Centre'. The 'Attributes Value' column shows corresponding values, some with input fields or dropdown menus.

Assets Attributes from Model & Excel are extracted and organised

Information can be extracted from AIMP to EMSD's BIM-AM and CCS/AMS system

The screenshot shows the AIMP interface with a dropdown menu for 'Attributes Definition' and a table of asset status. The dropdown menu lists various options: 'Attributes Definition', 'CCS', 'COBieLite (asset code)', 'COBieLite (GUID)', 'COBieLite (asset code and GUID only)', 'COBieLite (Revit)', 'Revit Checkset File', and 'Unuse Asset Code'. The table has columns for 'Status', 'Start Time', and 'End Time'. The table contains three rows of data.

Status	Start Time	End Time
Complete	2022-04-06 11:59	2022-04-06 11:59
Failed	2022-03-10 14:47	2022-03-10 14:47
Complete	2022-02-09 15:11	2022-02-09 15:15

Tools for preparing the BIM-AM deliverables – AIMP

Contractor's Uploads

機電工程署 EMSD Asset Information Management Platform

CCS Asset	Equipment Name	Total	Topology	Invalid	Interface
ZAC011	Air Side	0	0	0	0
ZAC012	Water Side	5	2	4	0
ZBR011	UHF TV System	0	0	0	0
ZBR012	Satellite TV System	2	1	0	2
ZEL001	LV Switchboards	1	1	0	1
ZEL011	Generator	0	0	0	0
ZFP011	Filtration Plant	0	0	0	0
ZFS011	Wet System	0	0	0	0
ZFS014	Portable Equipment	1	1	0	1
ZGE121	Audio System	0	0	0	0

Total Count : 15

CCS Asset	Equipment Name	Total	Topology
AC1101	DX Unit	15	8
AC1102	Air Handling Unit	56	0
AC1103	Primary Air Handling Unit	3	
AC1104	Heat Wheel	0	
AC1105	Fan Coil unit	22	
AC1106	Fire Damper	5	
AC1107	Fresh Air Fan	0	
AC1108	Exhaust Air Fan	0	
AC1109	VAV Box	4	3
AC1105	Local Control Panel	0	0

Total Count : 11

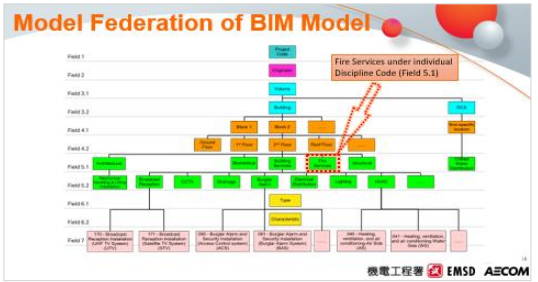
BIM-AM/
CCS/AMS
System

AIMP Consolidates and Organizes information

Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

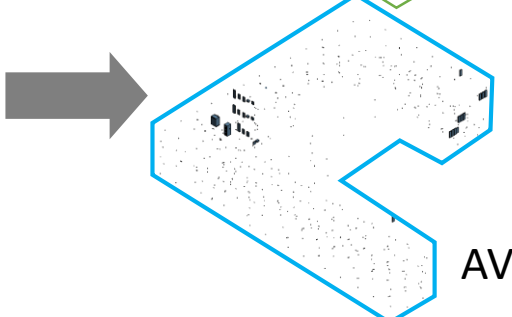
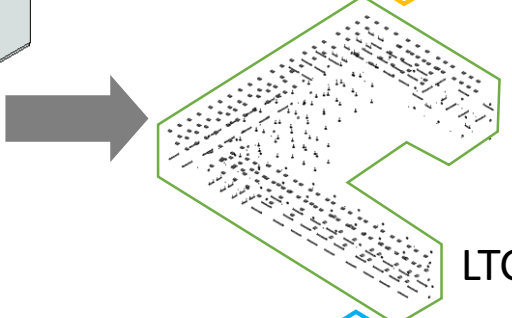
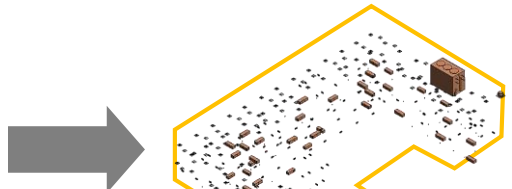
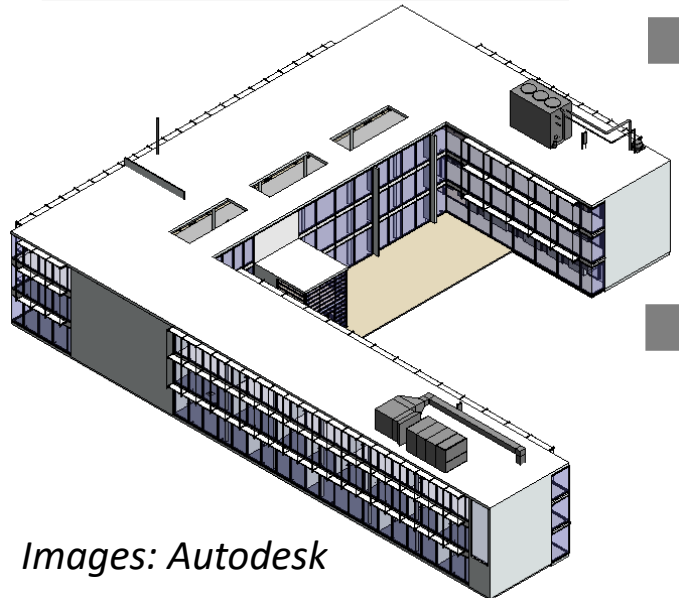
COBieLite Exporter

Tools for preparing the BIM-AM deliverables – COBieLite Exporter



MEP models extracted from federated model

Model Object Data extracted into XML format readable by AIMP



COBieLite Exporter Plugin

COBieLite Exporter Plugin

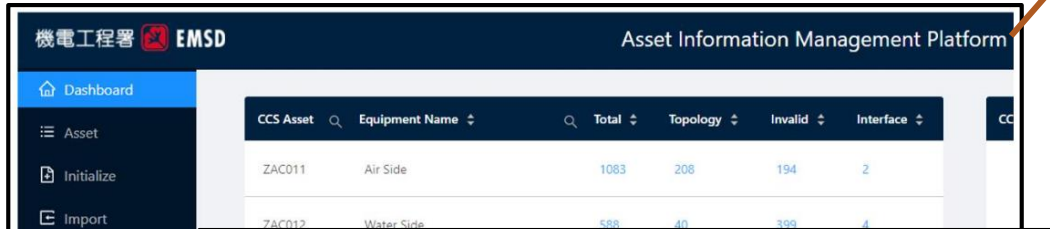
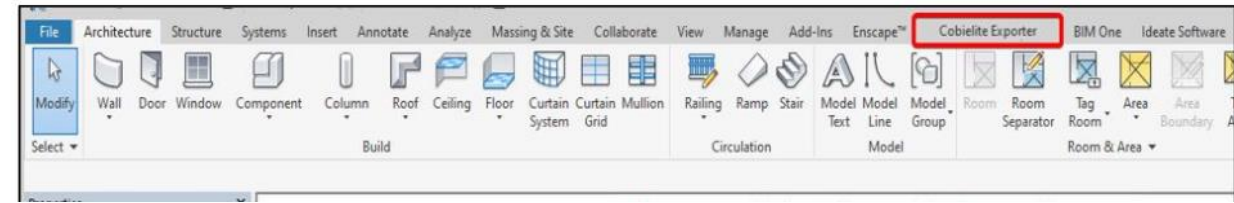
COBieLite Exporter Plugin



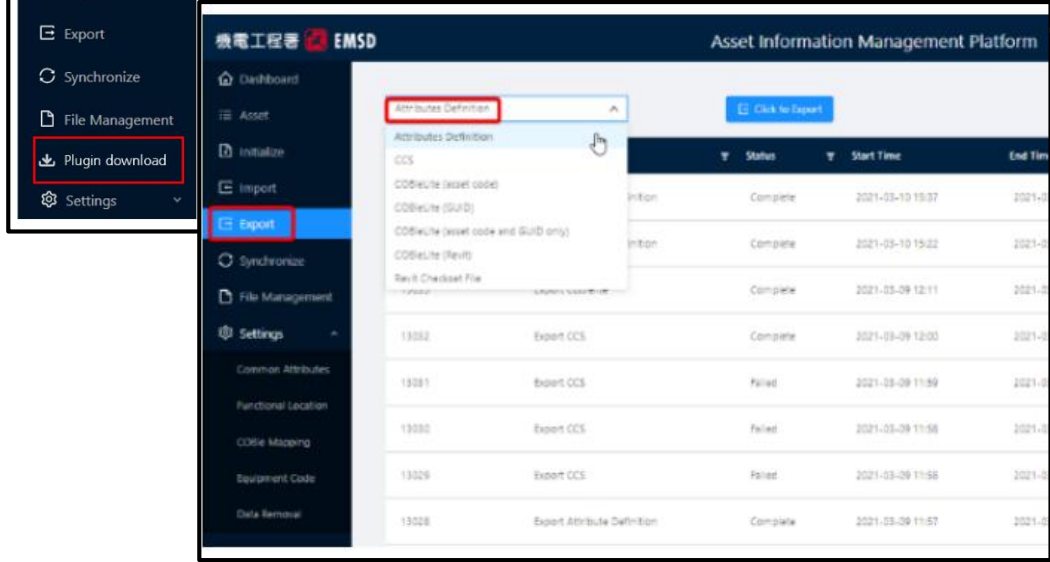
AIMP

Tools for preparing the BIM-AM deliverables – COBieLite Exporter

Plugin can be downloaded from AIMP



Download customized Attribute Definition file from AIMP



Detailed export steps in H/O Guide Section 2.5.3



Output: .XML files containing data exported from model



Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

BIM Model Checker

Tools for preparing the BIM-AM deliverables – BIM model checker

Checks for Major Asset for:

- Asset Code Coding
- Common Project Parameters loaded
- Asset Attributes:
 - Specific Asset Attributes loaded for each asset
 - Asset Attributes belongs to correct Attribute group
- Equipment Schedule
- Unit and Symbol Setting

Requirement of Asset Coding

1	2	3	4	5	6	7
District Code (Refer to Section 5.2)	Building Code (Refer to Section 5.3)	Block Code (Refer to Section 5.4)	Building Level	System Code/Routing Code ⁽¹⁾ (Refer to Section 5.5)	Equipment Code (Refer to Appendix C)	Number ⁽²⁾ (1 to 3)
1 to 3 characters	1 to 5 characters	1 to 3 characters	1 to 4 characters	2 to 5 characters	2 to 6 characters	2 to 6 Numbers
KT - Kwun Tong	EMSDN - EMSD HQS (NEW)	NA - No Block T1 - Tower 1 B1 - Block 1 N - North Wing S - South Wing	B1F - Basement 2 B1F - Basement 1 GF - Ground Floor LG1F - Lower Ground Floor 1 UG1F - Upper Ground Floor 1 1F - 1 st Floor 1MF - 1 st Mezzanine Floor 2F - 2 nd Floor RF - Roof Floor	BLR - Boiler System FP - Filtration Plant ACS - Access Control System STV - Satellite TV System	AHU - Air Handling Unit FCU - Fan Coil Unit	01 02 10 09 101

To enquiry EMSD for Building Code for New Projects. Building Code for Existing buildings can be found in Appendix A

- Notes:
- (1) The sequence should be restarted for each type of equipment on different floor.
 - (2) One leading zero should be provided for single digit equipment number, for example 01 to 09.
 - (3) System code should be used for asset coding, except for equipment of ACS, GAS, CCTV, SCSS, CAS, VPS, KLS, DAB and ELS of No. 09 "Burglar Alarm System" and LTV and STV of No. 17 "Broadcast Reception" in which routing code should be adopted.

Examples:

- Fan Coil Unit on first floor in EMSD Headquarter: Asset Code: KT-EMSDN-NA-1F-HVAC-FCU-01
- FS Pump on second floor in EMSD Headquarter: Asset Code: KT-EMSDN-NA-2F-FS-PMP-01
- AHU (Air Handling Unit) on first floor in EMSD Headquarter: Asset Code: KT-EMSDN-NA-1F-HVAC-AHU-01

Appendix D – Shared Parameter File

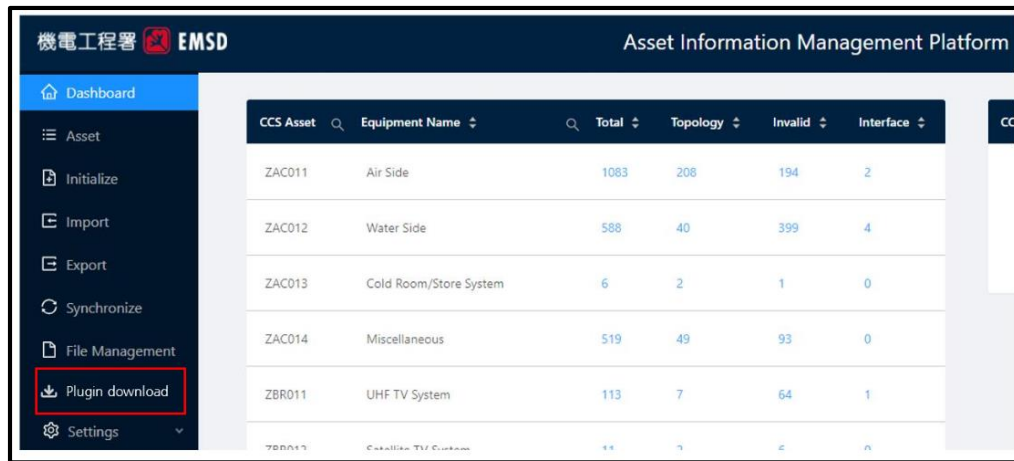
Parameter Name	Description	Type	Group	Example	Max. Characters	Value	Units	Responsible Party ID	EMSD
EMSDN-01-ParameterType	Parameter Type	Text	Common	EMSDN-01-ParameterType	30				
EMSDN-01-ParameterGroup	Parameter Group	Text	Common	EMSDN-01-ParameterGroup	30				
EMSDN-01-ParameterValue	Parameter Value	Text	Common	EMSDN-01-ParameterValue	30				
EMSDN-01-ParameterUnit	Parameter Unit	Text	Common	EMSDN-01-ParameterUnit	30				
EMSDN-01-ParameterSymbol	Parameter Symbol	Text	Common	EMSDN-01-ParameterSymbol	30				

Common Parameters

Equipment Parameters

Tools for preparing the BIM-AM deliverables – BIM model checker

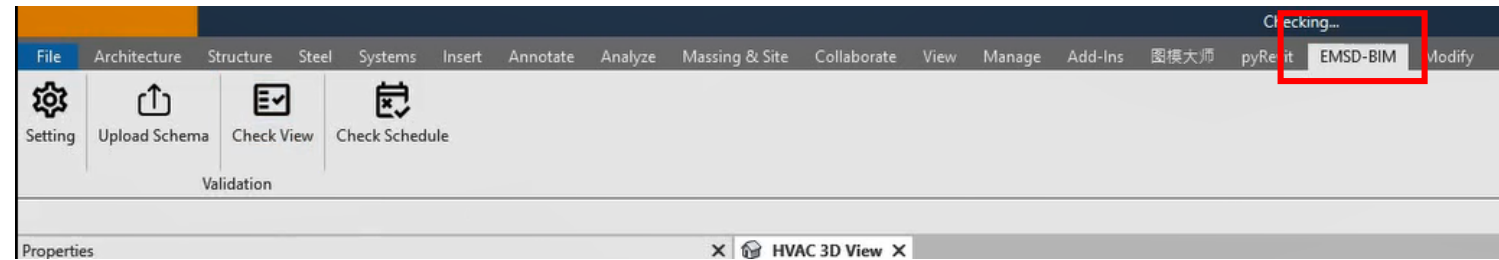
Plugin can be downloaded from AIMP



機電工程署 EMSD Asset Information Management Platform

CCS Asset	Equipment Name	Total	Topology	Invalid	Interface
ZAC011	Air Side	1083	208	194	2
ZAC012	Water Side	588	40	399	4
ZAC013	Cold Room/Store System	6	2	1	0
ZAC014	Miscellaneous	519	49	93	0
ZBR011	UHF TV System	113	7	64	1
ZBR012	Cable TV System	44	3	6	0

Dashboard
Asset
Initialize
Import
Export
Synchronize
File Management
Plugin download
Settings



File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins 圖模大師 pyRe it EMSD-BIM Modify

Setting Upload Schema Check View Check Schedule

Validation

Properties HVAC 3D View

Detailed steps in
BIM-AM SG Appendix E Section 9

Output: .CSV files containing non-compliance
report detected in model



Tools for preparing the BIM-AM deliverables – BIM model checker

Non-compliance found in project parameters that need to be resolved.

1	Project Parameter EMSD.Common.Manufacturer Serial No. does not exist				
2	Project Parameter EMSD.Common.CCS Superior Equipment No. does not exist				
3	Project Parameter EMSD.Common.CCS Superior Equipment Technical ID No. does not exist				
4					
5	Element ID	Comments	Asset Code	Remark	Family Name Family Type
6	1782127	HVAC-FD		assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb
7	1782127	HVAC-FD		assetType=EMSD.HVAC.Model is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb
8	1782127	HVAC-FD		assetType=EMSD.HVAC.Quantity is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb
9	1783563	HVAC-FD		assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FD-4SBIM-Fire_D HVAC_FD_4SBIM_ADB_FireDamper
10	1783563	HVAC-FD		assetType=EMSD.HVAC.Model is not defined	HVAC-FD-4SBIM-Fire_D HVAC_FD_4SBIM_ADB_FireDamper
11	1783563	HVAC-FD		assetType=EMSD.HVAC.Quantity is not defined	HVAC-FD-4SBIM-Fire_D HVAC_FD_4SBIM_ADB_FireDamper
12	1790142	HVAC-FD		assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FD-4SBIM-Fire_D HVAC_FD_4SBIM_ADB_FireDamper
13	1790142	HVAC-FD		assetType=EMSD.HVAC.Model is not defined	HVAC-FD-4SBIM-Fire_D HVAC_FD_4SBIM_ADB_FireDamper
14	1790142	HVAC-FD		assetType=EMSD.HVAC.Quantity is not defined	HVAC-FD-4SBIM-Fire_D HVAC_FD_4SBIM_ADB_FireDamper
15	1790518	HVAC-FD		assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb
16	1790518	HVAC-FD		assetType=EMSD.HVAC.Model is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb
17	1790518	HVAC-FD		assetType=EMSD.HVAC.Quantity is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb
18	2296572	HVAC-FCU	SSP-PHLC-NA-013-HVAC-FCU-0010	assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FCU-4SBIM FCU_11_10 (6)
19	2296572	HVAC-FCU	SSP-PHLC-NA-013-HVAC-FCU-0010	assetType=EMSD.HVAC.Quantity is not defined	HVAC-FCU-4SBIM FCU_11_10 (6)
20	2296251	HVAC-FCU	SSP-PHLC-NA-013-HVAC-FCU-0011	assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FCU-4SBIM FCU_11_11 (6)
21	2296251	HVAC-FCU	SSP-PHLC-NA-013-HVAC-FCU-0011	assetType=EMSD.HVAC.Quantity is not defined	HVAC-FCU-4SBIM FCU_11_11 (6)
22	2301770	HVAC-FD		assetType=EMSD.HVAC.Equipment Description is not defined	HVAC-FD-4SBIM-VCD_ HVAC_FD_4SBIM_VCD_Adb

Non-compliance found in object parameters that need to be resolved.

Non-Compliance report regarding the **parameter setting and naming** generated as CSV file

Non-Compliance Element's Element ID will be identified

Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Master Information Index

Master Information Index (MII)

To list out BIM-AM related files information including documents, drawings or models in compliance with EMSD BIM-AM folder structure.

File information including but not limited to CDE path, author and discipline, etc. Could be generated from CDE after being uploaded to the AIMP cum CDE by the trade

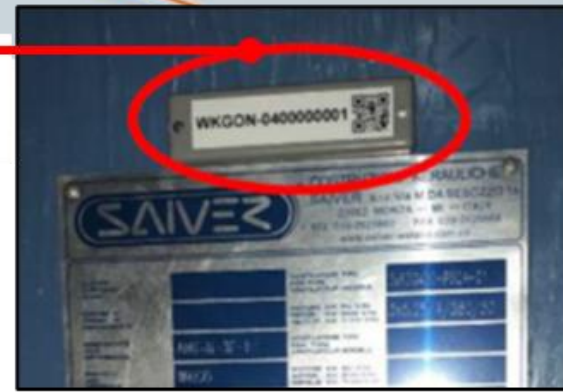
To be input by the Contractor (PDF drawing should be input with individual row as separate file)								to be filled by CDE (Do not manually edit)						to be filled by CDE based on user's selection of metadata during uploading to CDE, to be verified by uploader				
File Name	Document Type	File format	Sheet Number	Description / Sheet name	Rev.	Sheet Size	Scale	Native file	CDE Path - Native	Folder Path	File ID (Unique) Auto-generate once uploaded to AIMP	File version in CDE	Author / User Account (Account in AIMP)	Last update	System (auto-fill based on folder path of file)	Equipment (Optional)	Level	Block
HKCH-EMS-NA_BD-BLK1_01-B5_HA-M3_E.rvt	3D model	Revit	N/A	Building Block 1 (Level 01) Building Services (Heating, ventilation, and air conditioning) 3D Model File of NA (Existing, to remain)	A	N/A	N/A		https://cde.bim.emsd.gov.hk/my/	\20 As-built\21 BIM\2104 HVAC\Revit			EMSD	2022/5/5 10:2	HVAC			
HKCH-EMS-NA_BD-XX-ZZ-CM-N.rwd	3D model	Navisworks	N/A	Master model	A	N/A	N/A		https://cde.bim.emsd.gov.hk/my/	\20 As-built\21 BIM\Navisworks			EMSD	2022/5/5 10:2	Architectural			
HKCH-EMS-AR-GBP-L01.pdf	Statutory submission	PDF	A101	General Building Plan - First Floor	A	A1	1:100		https://cde.bim.emsd.gov.hk/my/	\20 As-built\28 PDF			EMSD	2022/5/5 10:2	Architectural			
HKCH-EMS-NA_BD-BLK1_01-B5_HA-M3_E_H201.pdf	Layout Plan	PDF	H201	First Floor Layout Plan of HVAC Installation	A	N/A	1:100	HKCH-EMS-NA_BD-BLK1_01-B5_HA-M3_E.rvt	https://cde.bim.emsd.gov.hk/my/	\20 As-built\28 PDF			EMSD	2022/5/5 10:2	HVAC			
HKCH-EMS-BLK1_01-B5_HA-M2_SCH.dwg	Schematics	AutoCAD	H301	Air-side Schematic Diagram of HVAC Installation	A	N/A	NTS		https://cde.bim.emsd.gov.hk/my/	\20 As-built\22 CAD\2204 HVAC			EMSD	2022/5/5 10:2	HVAC			
HKCH-EMS-B5_HA-M2_DETAILS.dwg	Installation Details	AutoCAD	N/A	Installation Details for HVAC Installation	A	A1	1:25		https://cde.bim.emsd.gov.hk/my/	\20 As-built\22 CAD\2204 HVAC			EMSD	2022/5/5 10:2	HVAC			
HKCH-EMS-B5_HA-M2_DETAILS (Sheet 1 of 2).pdf	Installation Details	PDF	H401	Installation Details of Water Cooled Chiller (1 of 2)	A	A1	1:25	HKCH-EMS-B5_HA-M2_DETAILS.dwg	https://cde.bim.emsd.gov.hk/my/	\20 As-built\28 PDF			EMSD	2022/5/5 10:2	HVAC			
HKCH-EMS-B5_HA-M2_DETAILS (Sheet 1 of 2).pdf	Installation Details	PDF	H401	Installation Details of Water Cooled Chiller (2 of 2)	A	A1	1:25	HKCH-EMS-B5_HA-M2_DETAILS.dwg	https://cde.bim.emsd.gov.hk/my/	\20 As-built\28 PDF			EMSD	2022/5/5 10:2	HVAC			

Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Handover Procedures

BIM-AM Function Example

1 Scan RFID code on Asset



3 BIM-AM System zooms to Asset in 3D model

2 Asset Attributes

Screenshot from BIM-AM system (Planon)

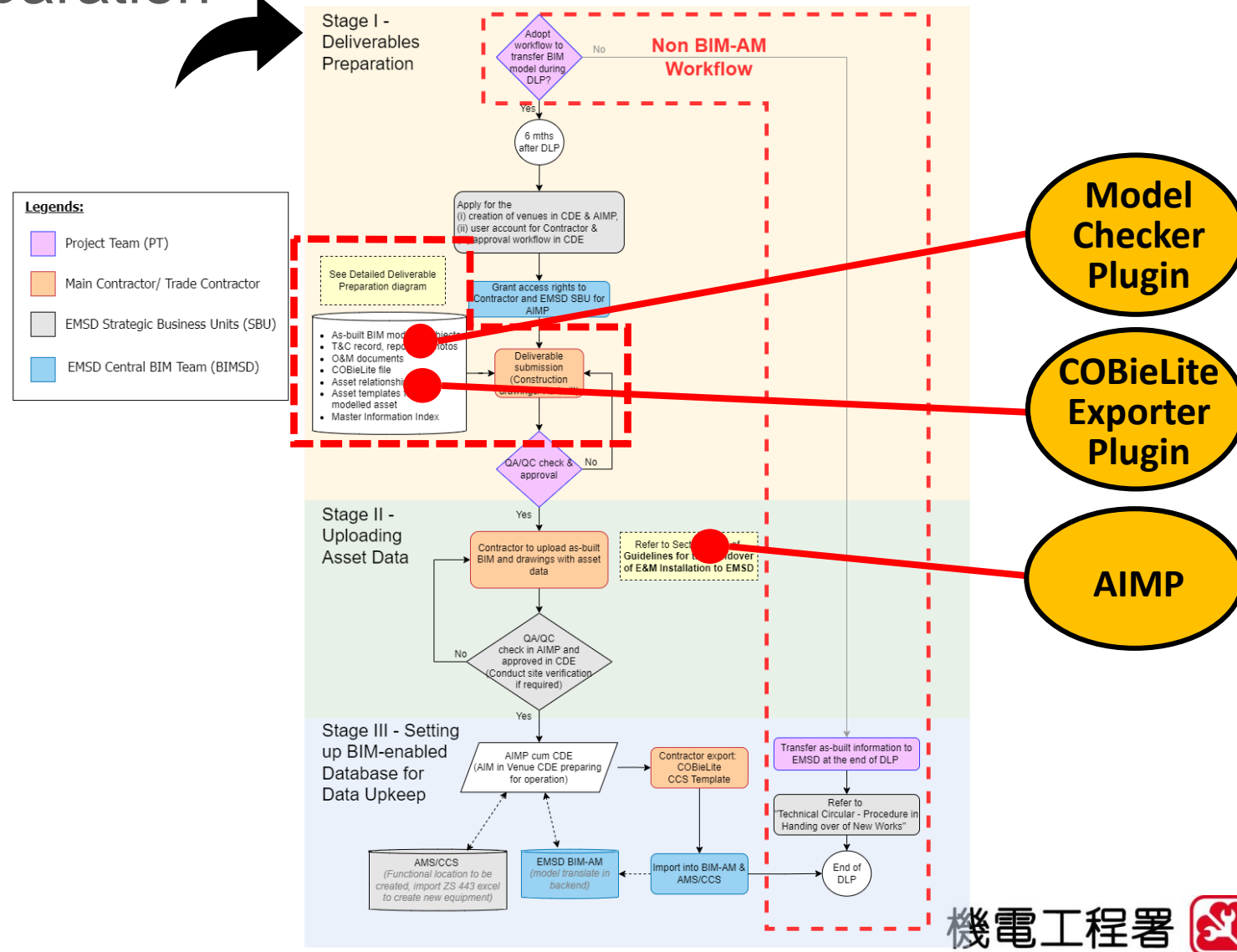
Steam Boiler
BIM Model

Common Attributes	
Asset Tag No.	TSWHO-0500000003
CCS Equipment ID Supe...	10811552
Equipment Number	SB-1
Floor	9th Floor
Inventory No.	10811552
Manufacturer	Vessmann
Manufacturer Country	China
Model No.	VITOMAX 200-HS
Serial No.	7457720508043.103
Weight	2.66

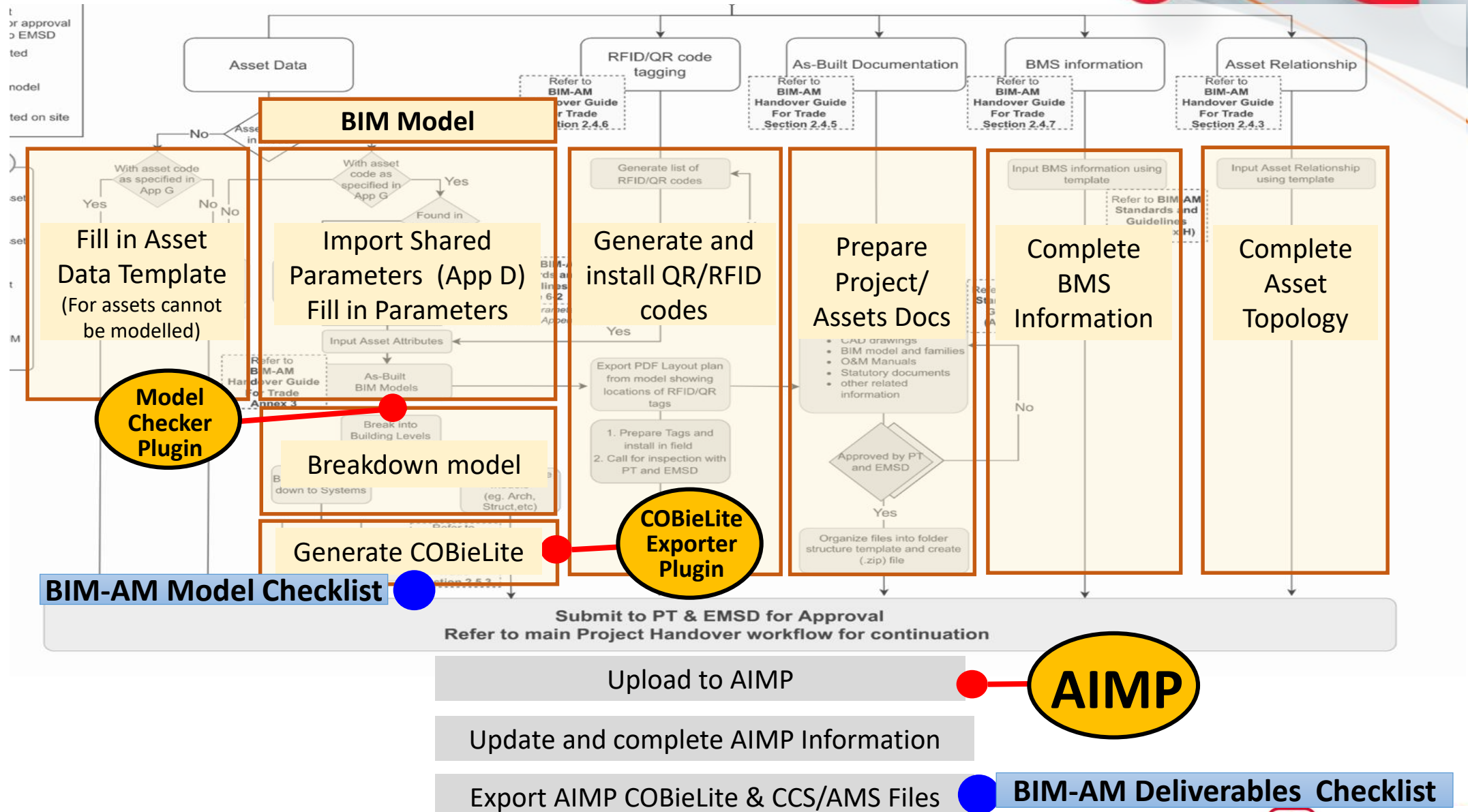
A screenshot of a BIM-AM system interface. The main view shows a 3D model of a steam boiler in a grey environment. A semi-transparent blue window titled 'Attributes' is overlaid on the left side of the model, displaying a list of common attributes for the selected asset. The interface includes a navigation bar at the top and a toolbar at the bottom with various icons for navigation and manipulation.

Handover Procedures

• Deliverables Preparation



Handover Summary

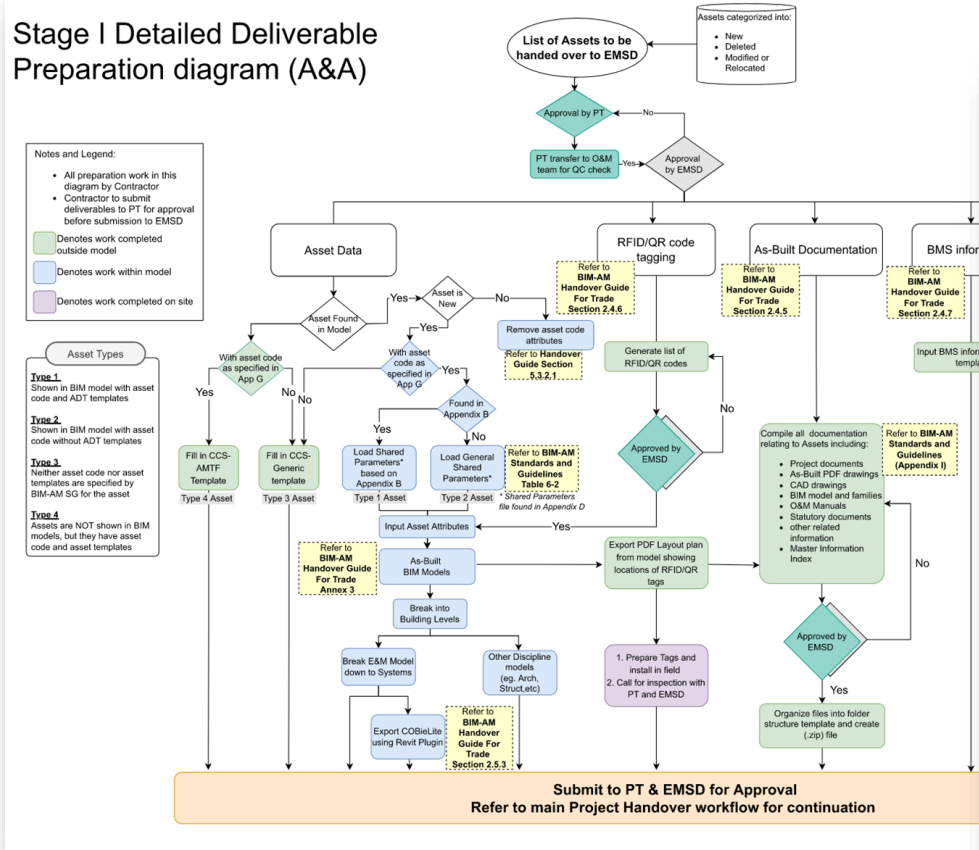


Handover Procedures

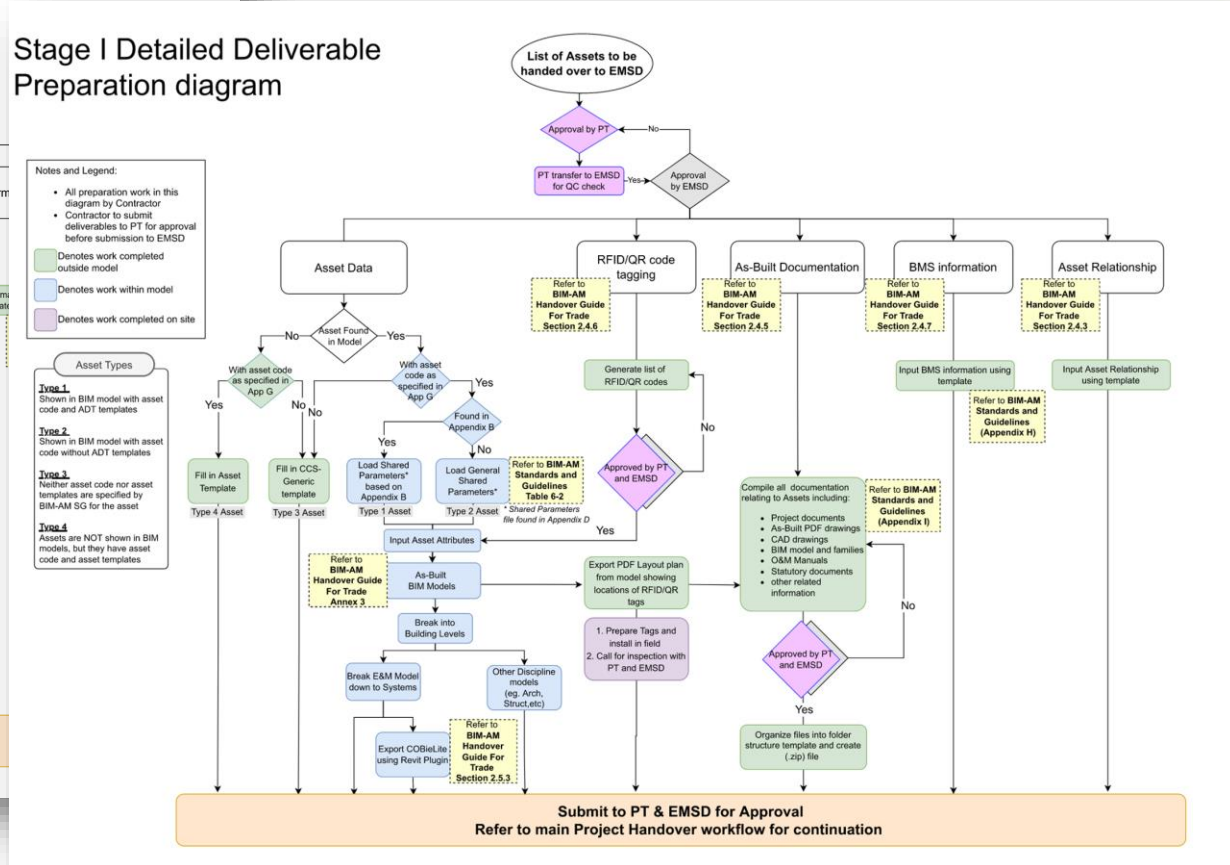
- Deliverables Preparation-Detailed



Stage I Detailed Deliverable Preparation diagram (A&A)



Stage I Detailed Deliverable Preparation diagram



Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Asset Relationship

Asset Relationship

Within AIMP

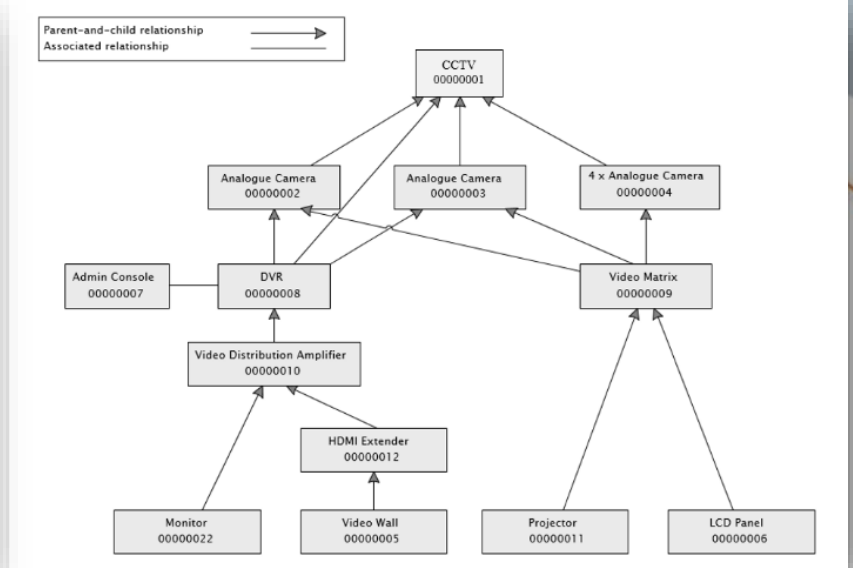
機電工程署 EMSD Asset Information Management Platform train30 (EMSDT)

Dashboard Asset Import Export Synchronize File Management

Please enter Group name Add Group Rename Group Remove Group Add Node Remove Node/Link Node Details Switch Link Zoom

GoJS 1.8 evaluation (c) 1998-2018 Northwoods Software Not for distribution or production use northwoods.com

Illustration of Systems Diagram



Asset Relationship Template

Level 1 asset/ system code	parent asset	child asset	grandchild asset
KT-CCC-008-RXXX-HVAC-AS-003	KT-ZCB-NA-B00-HVAC-HW-001	KT-CCC-008-TLT2-HVAC-FD-001	ST-DSD01-000-LOB-BS-BFD-013

Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Handover Checklists

Handover Checklist

- H/O Guide Annex 3

Spilt into 2 portions:

BIM-AM Model Checklist

To check that all the requirements are met before uploading to AIMP

- To be submitted before uploading models to AIMP
- List of models checked to be submitted together

BIM-AM Deliverables Checklist

To check that all the steps and requirements are completed for the entire handover process

- To be submitted at the end of the Handover Process

Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Model Checklist

BIM-AM Model Checklist

- H/O Guide Annex 3

Contractor to fill in the fields with personnel in charge of checking the deliverables

Project title: _____

Submitted by: _____

Name: _____

Company: _____

Designation: _____

Date: _____

Model Checked (List file names, provide list as attachment if required):

Notes:

- Checklist shall be completed by Contractor
- Refer to **BIM-AM SG sections** for details on each checklist item
- Item under “General” section are not EMSD specific requirements but is General industry standard (eg. CIC)
- Contractor shall indicate in the comments/remark section any exceptions/ deviations to standard (eg. A&A work where asset relationship is not applicable)
- All fields shall be filled up, “Not Applicable” to be indicated wherever applicable

References to guides is added for Contractor to refer to for details

Deliverables	BIM-AM SG Section	Items	Comments / Remarks
BIM Model			
BIM Project Model	Model Management		
	2.1	(a) Models are authored using the agreed software	<input type="checkbox"/>
	2.5	(b) Models are separated by disciplines and systems as specified in Appendix G	<input type="checkbox"/>
	2.7	(c) Each model file size is below 500Mb	<input type="checkbox"/>

BIM-AM Model Checklist

- H/O guide Annex 3

Checks include:

- Model Management
- Model Naming Convention
- Model Setup, e.g. system colour
- E&M / Architectural Models requirements
- Presentation
- Object Parameters/ Asset Information Requirements

BIM-AM Model Deliverable Checklist

Project title: _____

Submitted by: _____

Name: _____

Company: _____

Designation: _____

Date: _____

Notes:

- Checklist shall be completed by Contractor
- Refer to **BIM-AM SG sections** for details on each checklist item
- Item under "General" section are not EMSD specific requirements but is General industry standard (eg. CIC)
- Contractor shall indicate in the comments/remark section any exceptions/ deviations to standard (eg. A&A work where asset relationship is not applicable)
- All fields shall be filled up, "Not Applicable" to be indicated wherever applicable

Model Checked (List file names, provide list as attachment if required): _____

Deliverables	BIM-AM SG Section	Items	Comments / Remarks
BIM Model			
BIM Project Model	Model Management		
	2.1	(a) Models are authored using the agreed software	<input type="checkbox"/>
	2.5	(b) Models are separated by disciplines and systems as specified in Appendix G	<input type="checkbox"/>
	2.7	(c) Each model file size is below 500Mb	<input type="checkbox"/>
Deliverables	BIM-AM SG Section	Items	Comments / Remarks
	2.5	(d) "Master" federated model is linked to all system models	<input type="checkbox"/>
	10.1.2	(e) The file structure of handover is as specified in Section 10.1.2	<input type="checkbox"/>
	General	(f) Central models (instead of local models) are submitted.	<input type="checkbox"/>
	Naming Convention		
	2.4	(a) Model naming convention is in accordance with Section 2.4	<input type="checkbox"/>
	3.1	(b) Object naming convention is in accordance with Section 3.1	<input type="checkbox"/>
	Model Setup		
	N.A.	(a) BIM project files in native formats are editable	<input type="checkbox"/>
	4.1.1	(b) Units and symbols adhere to principles as specified in Section 4.1.1	<input type="checkbox"/>
	4.1.2	(c) Location and Geo-Coordination adhere to principles as specified in Section 4.1.2	<input type="checkbox"/>
General	(d) Detach Central model and maintain worksets for switching off construction details	<input type="checkbox"/>	

Introduction of the New Handover of E&M Installation to EMSD (H/O Guide)

Deliverables Checklist

BIM-AM Deliverables Checklist

- H/O Guide Annex 3

BIM-AM Deliverable Checklist

Project title: _____

Submitted by: _____

Name: _____
 Company: _____
 Designation: _____
 Date: _____

Notes:

- Checklist shall be completed by Contractor
- Refer to **H/O Guide sections** for details on deliverable
- Contractor shall indicate in the comments/remark section the following:
 - Date deliverable was completed
 - Any exceptions/ deviations to standard (eg. A&A work where asset relationship is not applicable)
- All fields shall be filled up, "Not Applicable" to be indicated wherever applicable

Trade to fill in the fields with personnel in charge of checking the deliverables

References to guides is added for trade to refer to for details

Deliverables	H/O Guide Section	Items		Comments/Remarks
Stage I Deliverables Preparation				
Deliverables To prepare the following deliverables for import into AIMP in Stage II	2.4.1	As-built BIM models (eg. rvt) passed model quality checks	<input type="checkbox"/>	
	2.4.1	Asset relationship (.xls)	<input type="checkbox"/>	
	2.4.3	Completed asset templates for those assets not shown in BIM models (.xls)	<input type="checkbox"/>	
	2.4.5	As-built documents (.zip) - Folder Structure per Appendix I of BIM-AM SG	<input type="checkbox"/>	

BIM-AM Deliverables Checklist

- H/O Guide Annex 3

Checks include:

Stage I - Deliverables Preparation

- Deliverables list
- Model Checklists
- RFID/QR tagging
- Site Vetting

Stage II Uploading Asset Data

- AIMP Uploads
- AIMP Data Vetting

Stage III Preparation for Handover

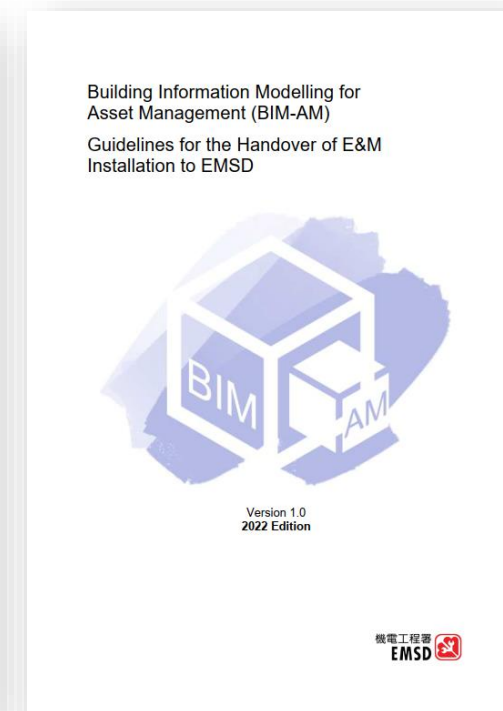
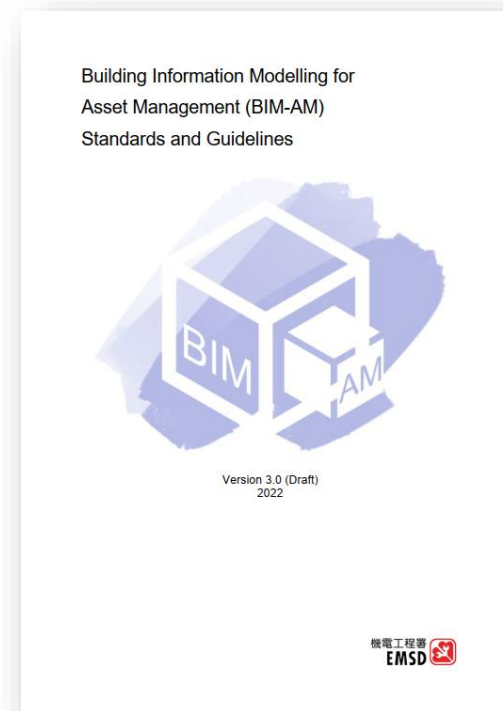
- AIMP outputs
 - CCS/AMS files
 - CoBieLite files

BIM-AM Deliverable Checklist			
Project title: _____		Notes:	
Submitted by: _____		<ul style="list-style-type: none"> • Checklist shall be completed by Contractor • Refer to H/O Guide sections for details on deliverable • Contractor shall indicate in the comments/remark section the following: <ul style="list-style-type: none"> - Date deliverable was completed - Any exceptions/ deviations to standard (eg. A&A work where asset relationship is not applicable) • All fields shall be filled up, "Not Applicable" to be indicated wherever applicable 	
Name: _____			
Company: _____			
Designation: _____			
Date: _____			
Deliverables	H/O Guide Section	Items	Comments/Remarks
Stage I Deliverables Preparation			
Deliverables To prepare the following deliverables for import into AIMP in Stage II	2.4.1	As-built BIM models (eg. rvt) passed model quality checks	<input type="checkbox"/>
	2.4.1	Asset relationship (.xls)	<input type="checkbox"/>
	2.4.3	Completed asset templates for those assets not shown in BIM models (.xls)	<input type="checkbox"/>
	2.4.5	As-built documents (.zip) - Folder Structure per Appendix I of BIM-AM SG	<input type="checkbox"/>
Deliverables	H/O Guide Section	Items	Comments/Remarks
		- Master Information Index (MII) (.xlsx) included in .zip file	
	2.4.6	Site installation of RFID tags and QR codes, including RFID/QR list (.xls) and location plan (.pdf)	<input type="checkbox"/>
	2.4.7	BMS point definition files and BMS point mapping files for BMS/iBMS/DCS/IoT sensor interface per Appendix J of the BIM-AM SG (.xls)	<input type="checkbox"/>
Model Checklists To ensure model is ready for import to avoid rework	4.1.1	Revit schedules per equipment type as specified in Appendix G in BIM-AM SG	<input type="checkbox"/>
	4.1.2	Completed BIM-AM model deliverable Checklist model quality check.	<input type="checkbox"/>
RFID/QR tagging	2.4.6	RFID/QR list matching Asset /Zone Code to RFID/QR tag. (.xls)	<input type="checkbox"/>
	2.4.6	RFID asset codes and zone codes are inputted to models	<input type="checkbox"/>
	2.4.6	Floor plans showing location of tags for the joint site inspection with O&M Team (.pdf)	<input type="checkbox"/>

Takeaway

Takeaway

- BIM-AM SG v3.0 and H/O Guide have been launched onto the [EMSD website](#).



Scan QR Code to
Download!

Takeaway

- If agreed by the project team to adopt workflow to transfer BIM models during DLP, the contractor shall provide BIM models and associated as-built BIM-AM deliverables (e.g. COBieLite files, etc.) to EMSD at **the earliest time of the sixth month after DLP commencement.**
- The following tools shall be applied by the contractor to facilitate the handover process:
 - AIMP platform
 - Model Checker
 - COBieLite Export

Thank You!

Q&A

For enquiries regarding EMSD BIM-AM related matters, please send an email to bimam-support@emsd.gov.hk.

The hotline is being set up and will be announced in due course.