

# BIM Standard for Hong Kong

David Fung *HKIA Registered Architect  
AIAB Chairman  
HKIBIM Vice-Chairman*

# BIM STANDARD - US

United States

## **NATIONAL BUILDING INFORMATION MODELING STANDARD**

Version 1 - Part 1:  
Overview, Principles, and Methodologies

Transforming the Building Supply Chain  
Through Open and Interoperable Information Exchanges



National Institute of  
**BUILDING SCIENCES**  
Facilities Information Council  
National BIM Standard



# BIM STANDARD - GSA



# BIM STANDARD - UK

## AEC (UK) BIM Standard

*A practical & pragmatic BIM standard for the Architectural, Engineering and Construction industry in the UK.*

Version 1.0

November 2009

First release



## AEC (UK) BIM Standard for Autodesk Revit

*A workable implementation of the AEC (UK) BIM Standard for the Architectural, Engineering and Construction industry in the UK.*

Version 1.0

April 2010

First Issue

# BIM STANDARD - HK

Hong Kong Institute of  
Building Information Modelling

BIM Project Specification



MTR CORPORATION

OPERATIONS DIVISION

BUILDING INFORMATION MODELING MANUAL

**Building Information Modelling (BIM)  
Standards Manual  
for  
Development and Construction Division  
of  
Hong Kong Housing Authority**



(Version 1.0)  
November 2009

Prepared by Business Information Technology Unit  
Development & Construction Division  
Housing Department



What is standard for ?

## Standard = Collaboration

- If just oneself, No Collaboration = NO NEED STANDARD
  - Internal Team
  - External Disciplines
  - External Party (statutory)
  - Across Projects
  - Data Recycling

# BIM - INFORMATION FLOW

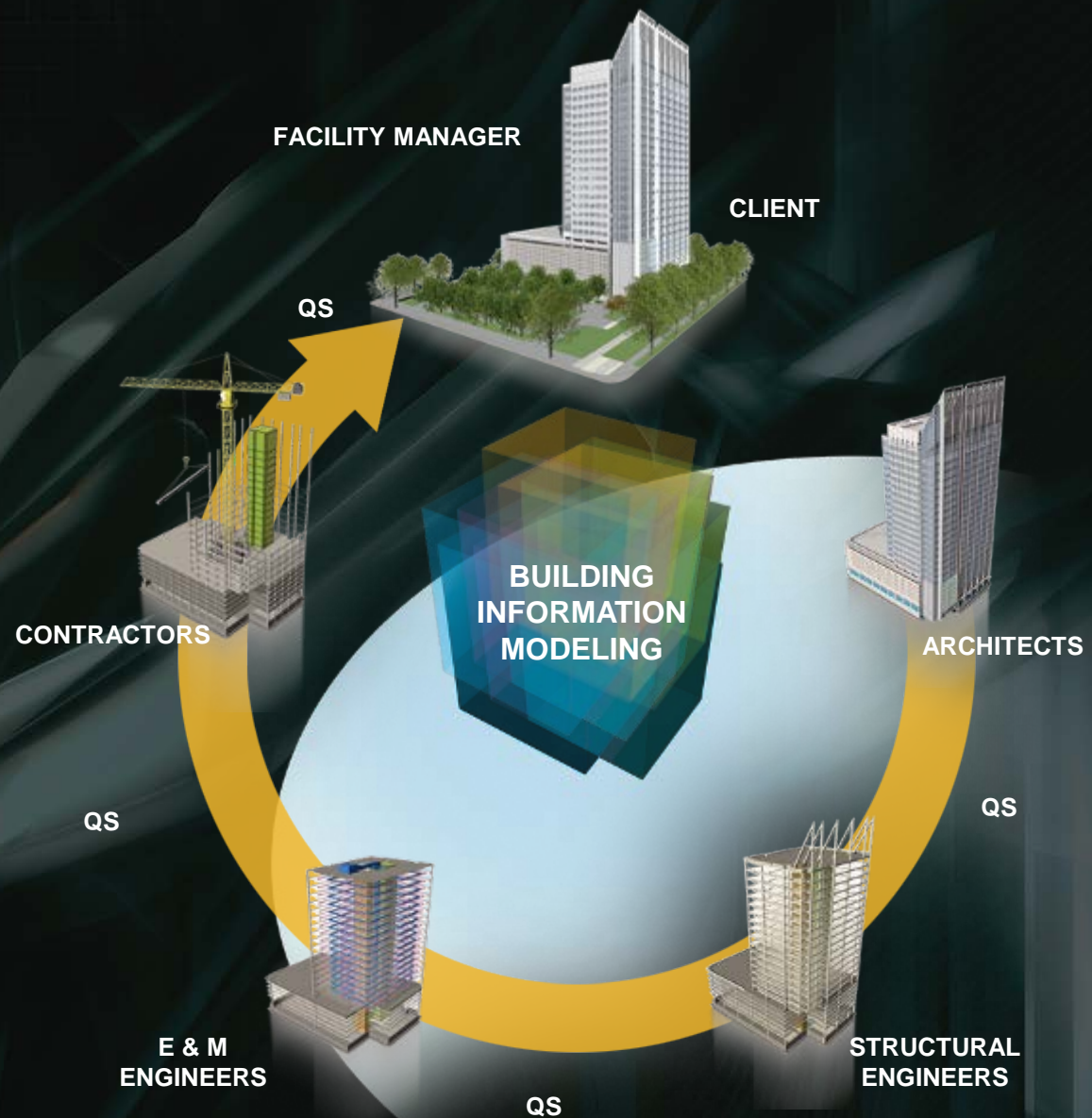
Graphical  
Data

+

Non-  
Graphical  
Data

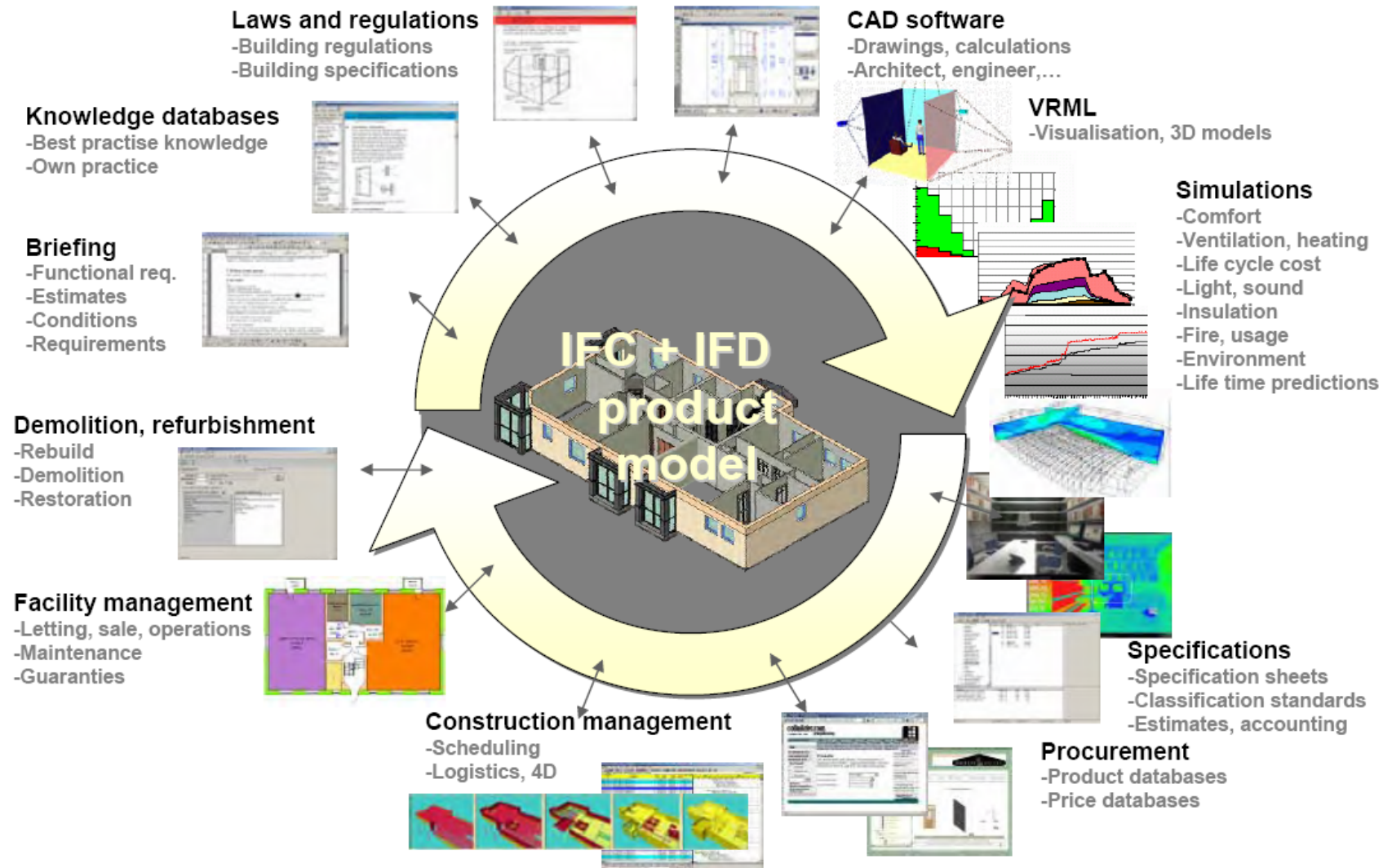
+

New  
workflow





## Tier 3 – Derived Lifecycle View





# BIM OBJECTIVES (HKIBIM)

## 2.0 BIM Project Objective

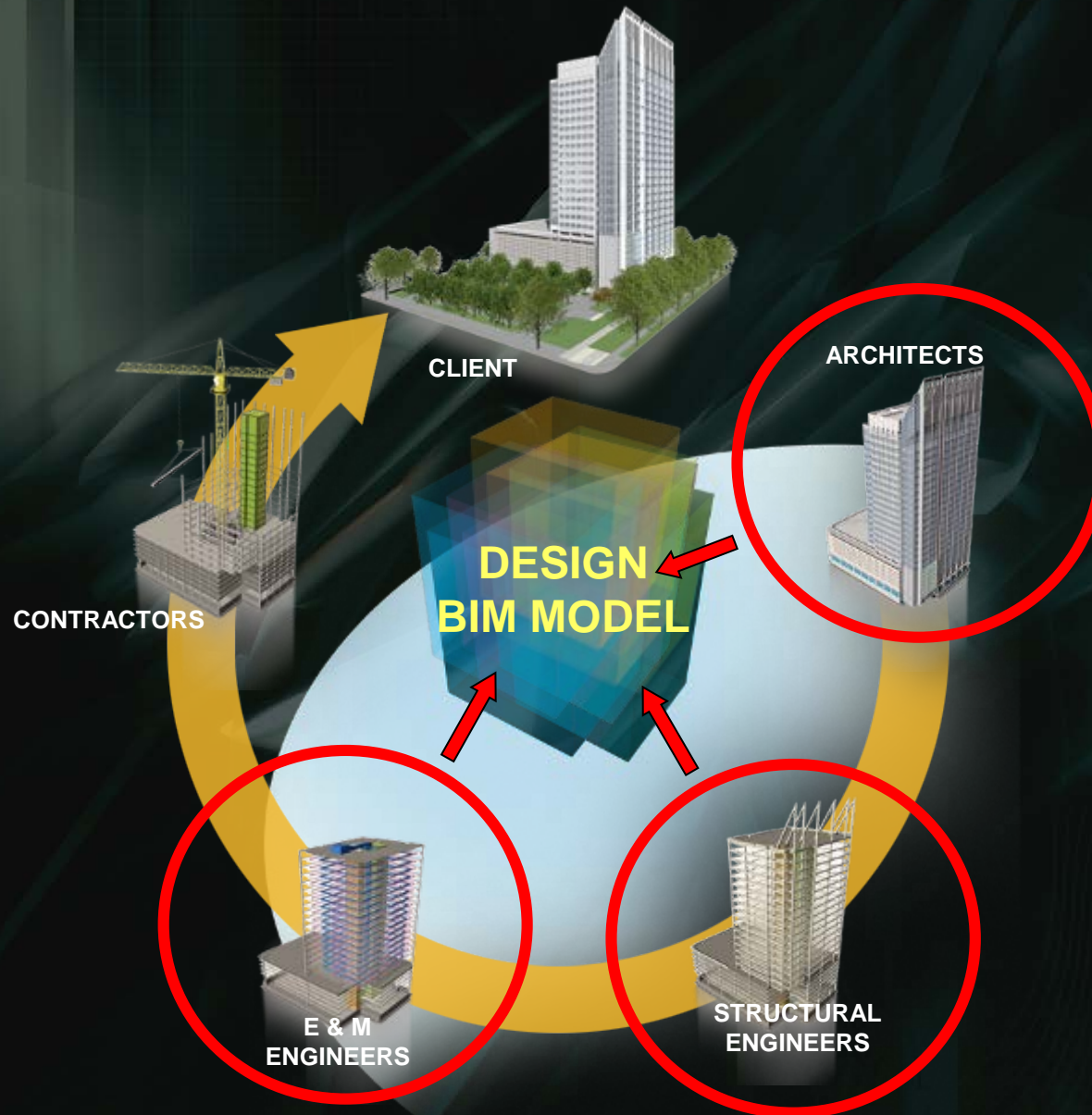
The client, architect and BIM Project Manager should define and agree the purpose of the BIM process at the beginning of a project. It will be difficult to implement additional functionality in the BIM models at a later date.

The purpose for the BIM on a project can be selected from the requirements and objectives listed in Table 1. For each objective, an individual organisation should be appointed to manage the task. This role may change at different stages of the project life-cycle and should be reviewed at key milestones.

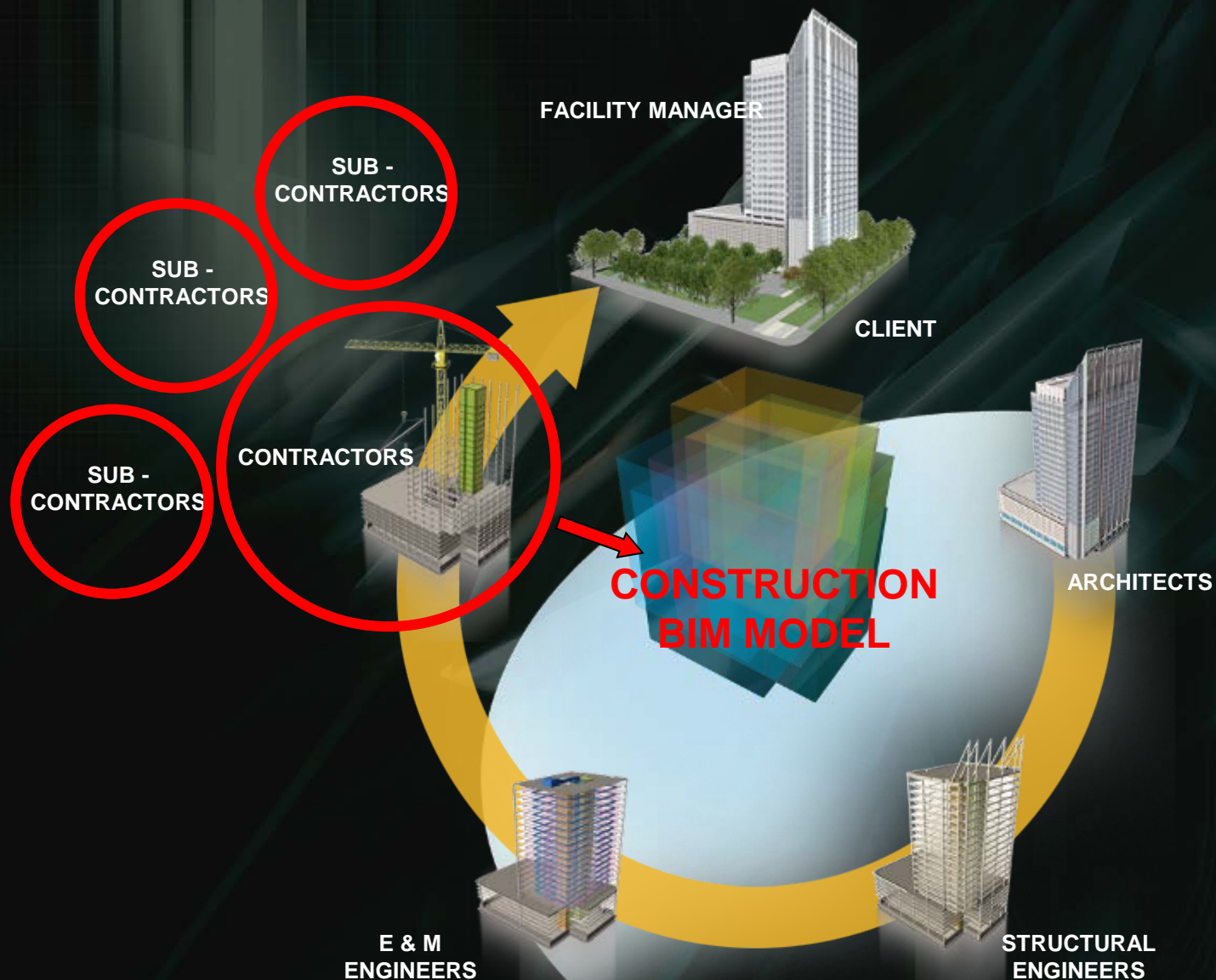
BIM Project Objective		REQ	Arc	Str	MEP	Con	FM	BIM
1	Use BIM Models for Master plan site study at Feasibility analysis stage							
2	Create architectural BIM.							
3	Maintain and update architectural BIM.							
4	Create structural BIM.							
5	Maintain and update structural BIM.							
6	Create MEP building services BIM.							
7	Maintain and up date MEP building services BIM.							
8	Create and maintain parametric models							
9	Produce design drawings and documentation including plans, elevations and sections directly from the BIM applications.							
10	Produce drawings for statutory submissions							

11	Produce a Bill of Quantities in accordance with the standard method of measurement							
12	Digitally link the BIM to the project specifications							
13	Include spatial validation checks for headroom and working spaces for building operations and maintenance activities.							
14	Produce visualisation walk-through, animations and rendered images.							
15	Implement clash analysis systems to detect and identify conflicts and interferences between different model elements.							
16	Link the BIM models to environmental analysis software for solar, heating and cooling and life-cycle analysis to support building design accreditation and building performance assessment.							
17	Produce schedules of materials, areas and quantities from the BIM databases.							
18	Link the BIM models to the construction programme to produce 4D Virtual Construction simulations							
19	Produce shop drawings, fabrication drawings, combined services drawings (CSD's), individual services drawings (ISD's) from the BIM applications							
20	Produce Purchase Orders as part of contractor procurement systems							
21	Incorporate as-built equipment information in the BIM model elements for provision to the building facility							

# STANDARD – DESIGN BIM MODEL

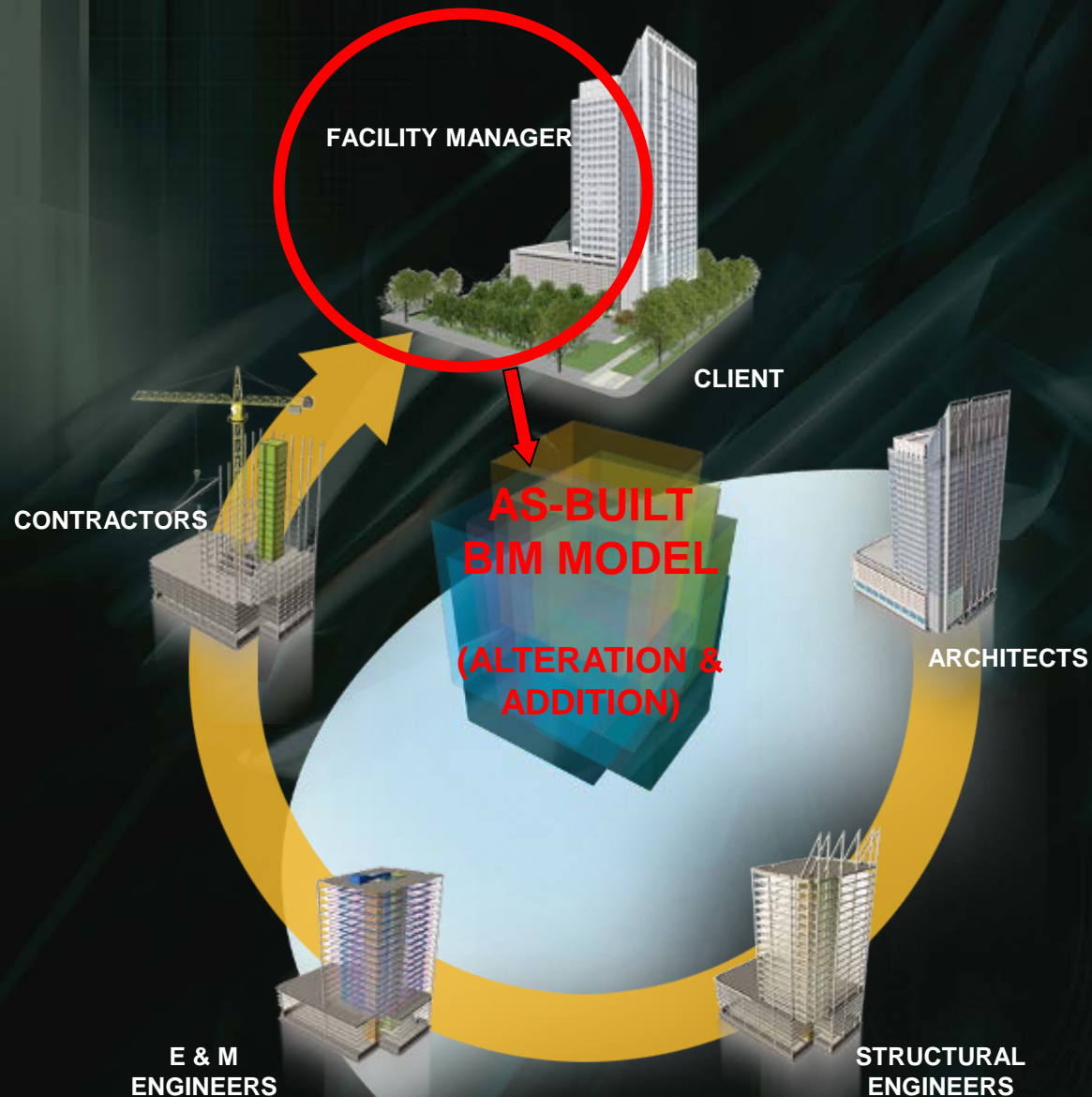


# STANDARD – CONSTRUCTION BIM MODEL














# STANDARD – AS BUILT BIM MODEL













# 1. COLLABORATION - INTERNAL TEAM

-  BIM Standards
-  Common Families
-  Fonts
-  Keynotes
-  Maps
-  References
-  Shortcut
-  Template
-  Titleblock

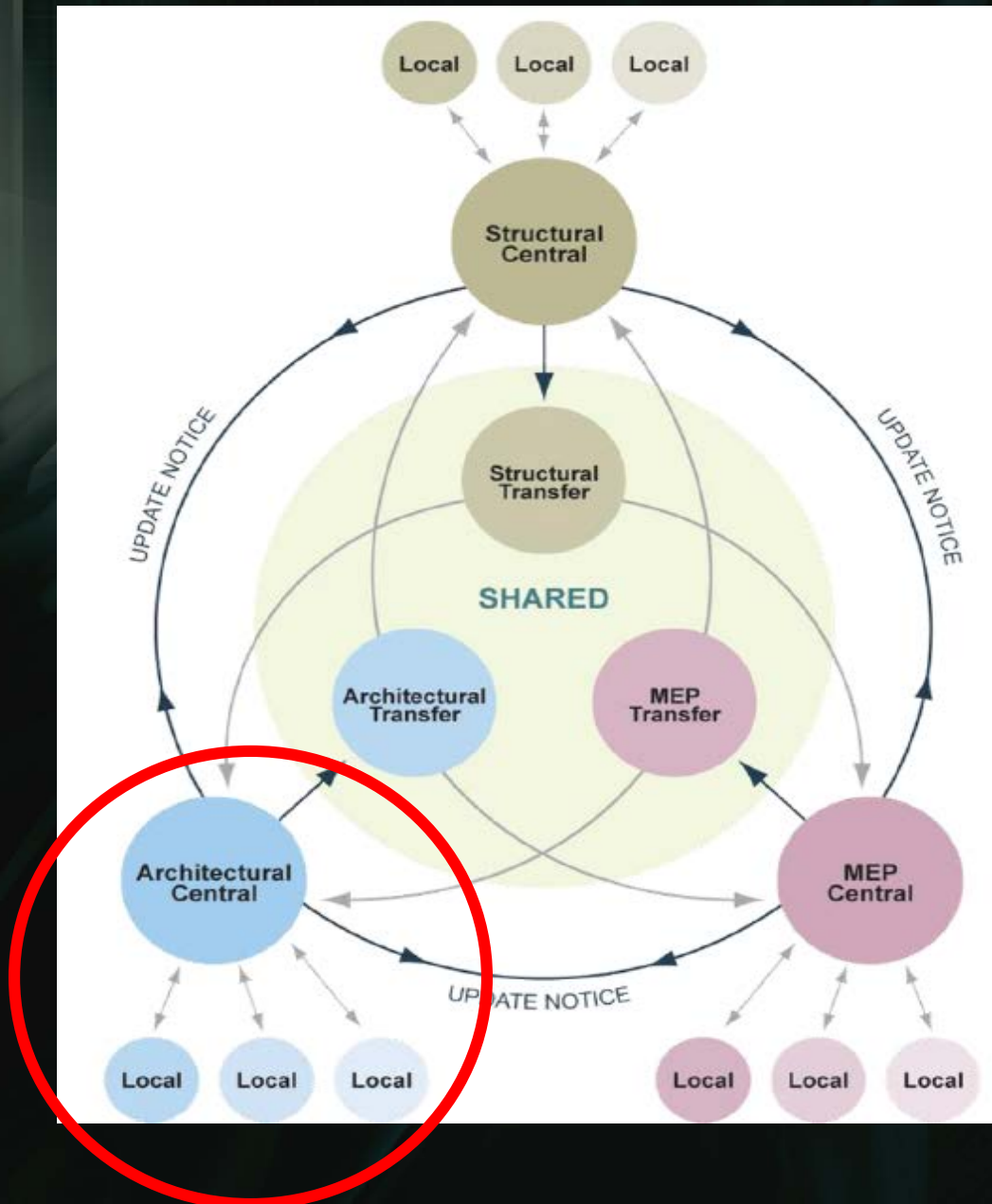
**BIM ADMIN FOLDER STRUCTURE**

## Name

-  Archive
-  Background
-  Central File
-  Incoming
-  Photo
-  Presentation
-  Project Specific BIM Admin
-  Project Specific Families

**BIM PROJECTS FOLDER STRUCTURE**

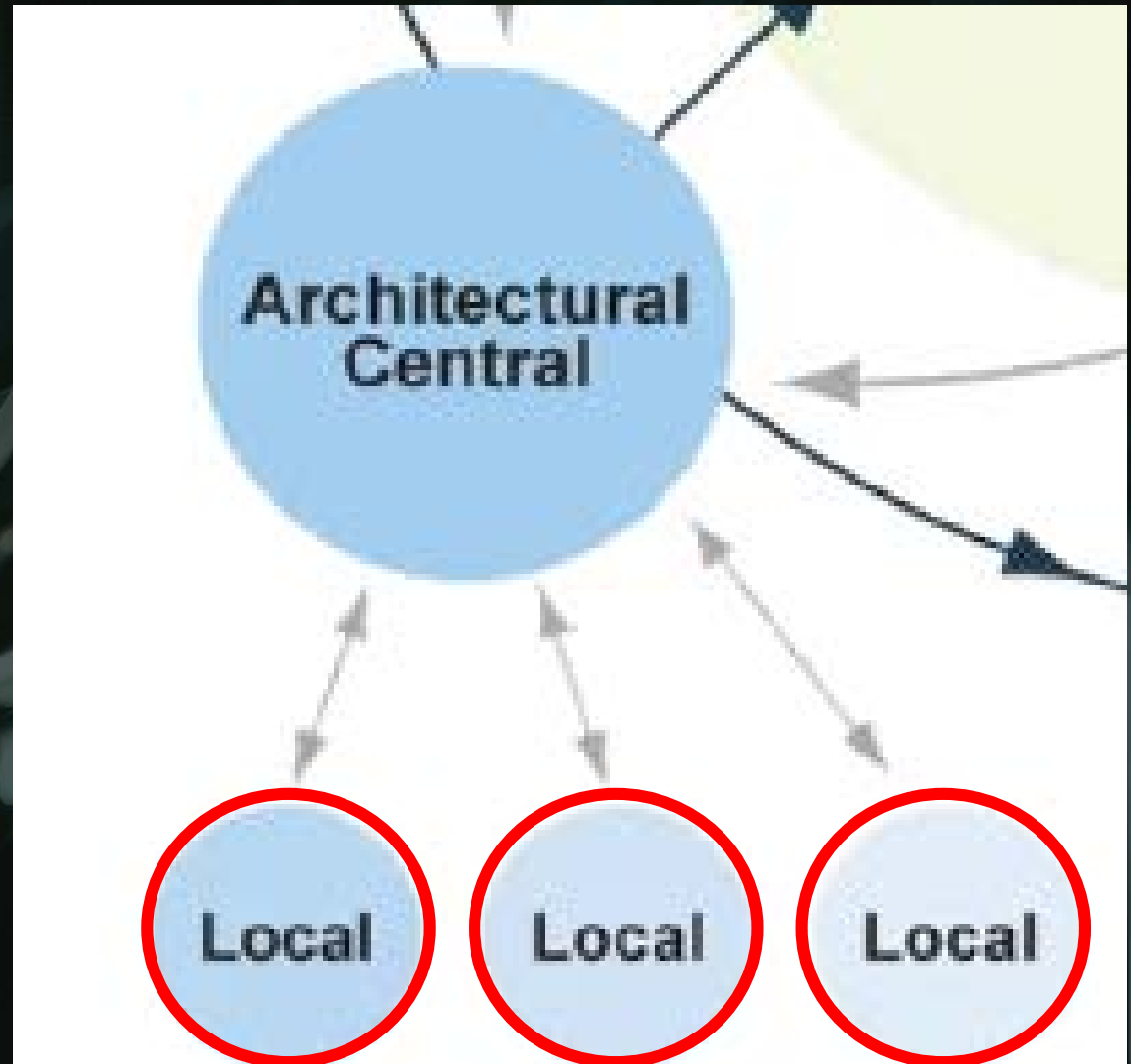
# 1. COLLABORATION - INTERNAL TEAM



# 1. COLLABORATION - INTERNAL TEAM (WORKSET CONTROL)

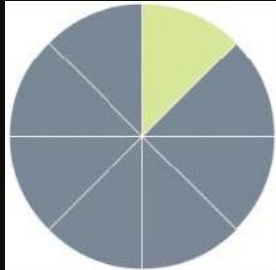
Mother

Son (s)

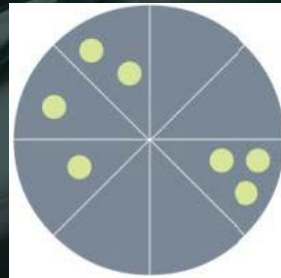


# 1. COLLABORATION - INTERNAL TEAM (WORKSET CONTROL)

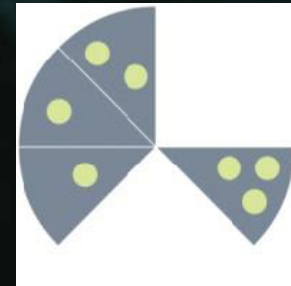
Take **OWNERSHIP** of an entire  
workset



**BORROW** elements from workset as required



**NB/** Users only need to open required  
worksets





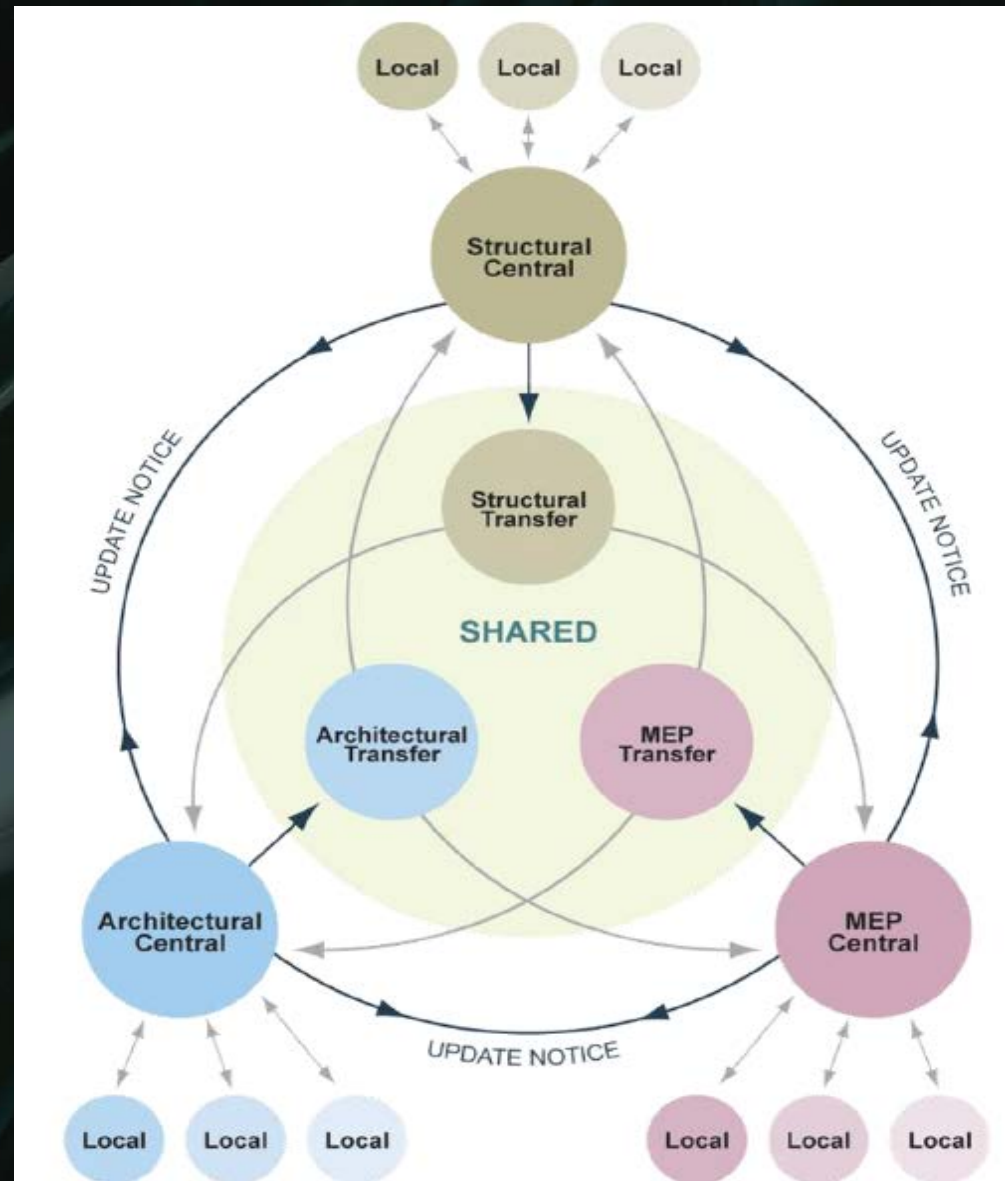
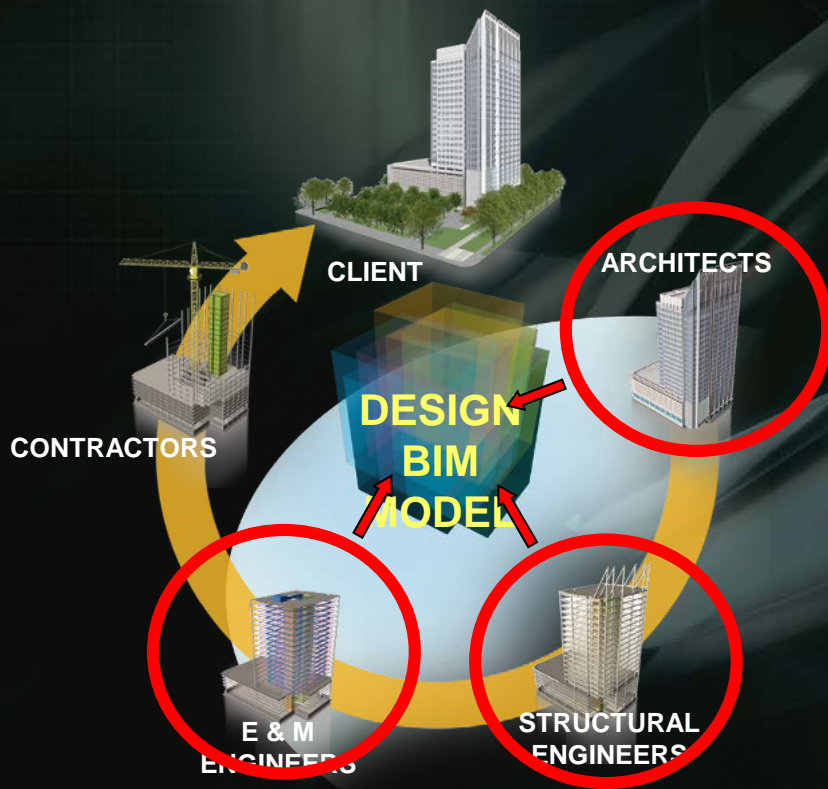
# WORKSETS

	Workset	Note
Architectural	Shared Levels and Grids	Default Levels and Gridlines
	Area & Room	Room, Area object, Colour pathes
	CAD Reference	Base Map, Existing drawings, in AutoCAD or Microstation Format.

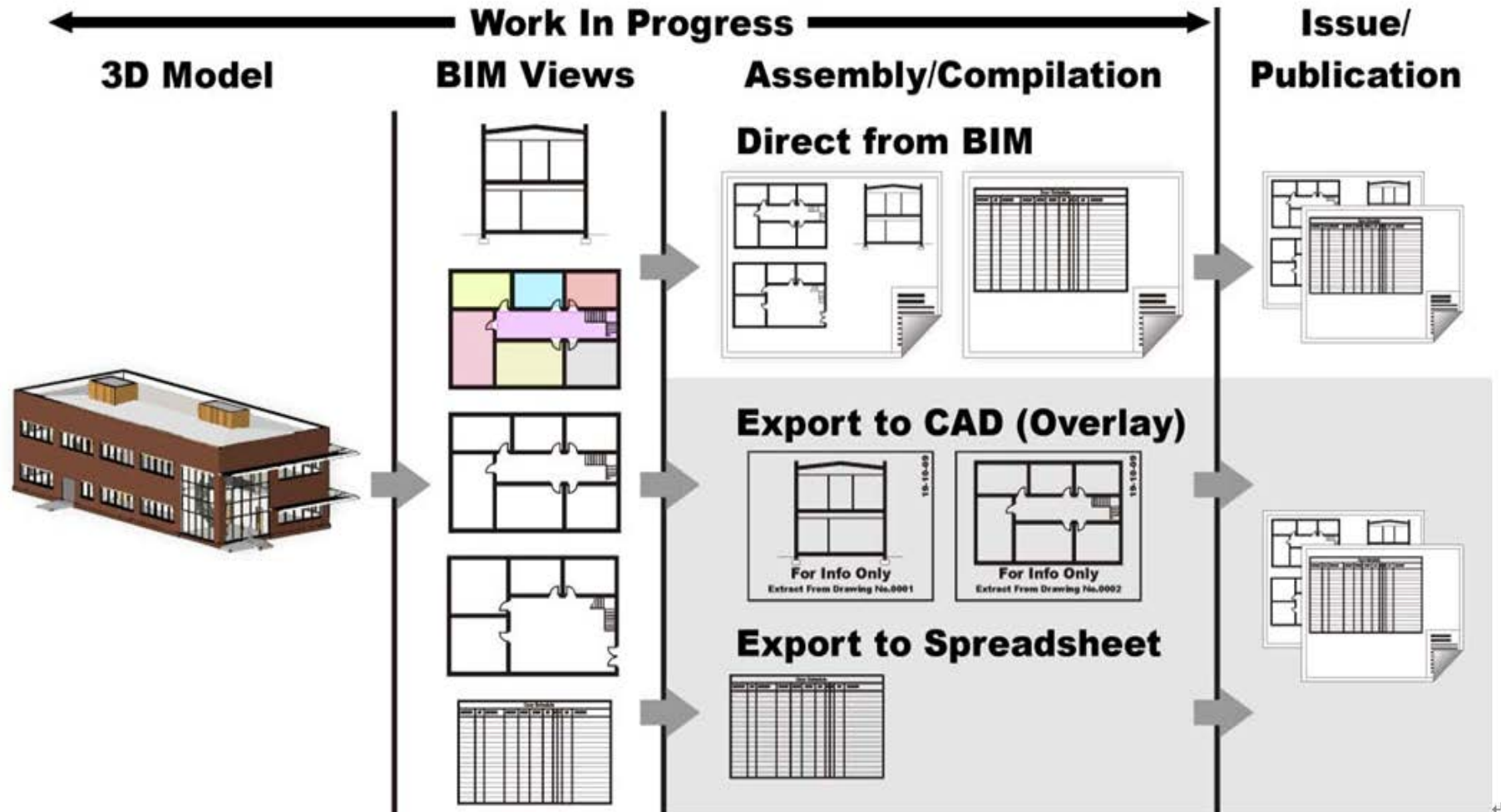
Structure		
	Shared Levels and Grid	
	Site	Site reference files, typography, Building blocks, above ground structures, roads etc
Mechanical Elements	EAD - Exhaust air ducts	
	FAD - Fresh air ducts	
	SAD - Supply air ducts	
Electrical Elements	CAB - Cable tray, trunking, cable containment, Electrical risers, conduit, Busduct, power feeds	
	BRD - HV & LV switch boards, switchgear, MCCB breakers, MCCB breakers	
Plumbing & Drainage Elements	FWP - Fresh water piping	
	RWP - Rainwater & stormwater pipework	
	SWP - Sewerage water piping	
Fire Protection Elements	TRP - Grease traps	
	PMP - Pumps	
	PIT - Sumps	
Fire Protection Elements	TNK - Storage vessels	
	UGR - External drainage	
	WSD - Wastewater supply	

Fire Protection Elements	SPR - System piping, droppers, fittings
	PMP - fire sprinkler pumps
	TNK - Sprinkler tanks
Fire Protection Elements	HYD - Hydrants and hose reels
	GAS - Gas piping for suppression systems
	PAN - Heat or smoke detectors
Fire Protection Elements	EXT - Fire extinguishers
	SHT - Fire shutters & hoods above
	BG - Fire alarm gongs & break glass
Fire Protection Elements	AFA - AFA control & monitoring

## 2. COLLABORATION - EXTERNAL TEAMS

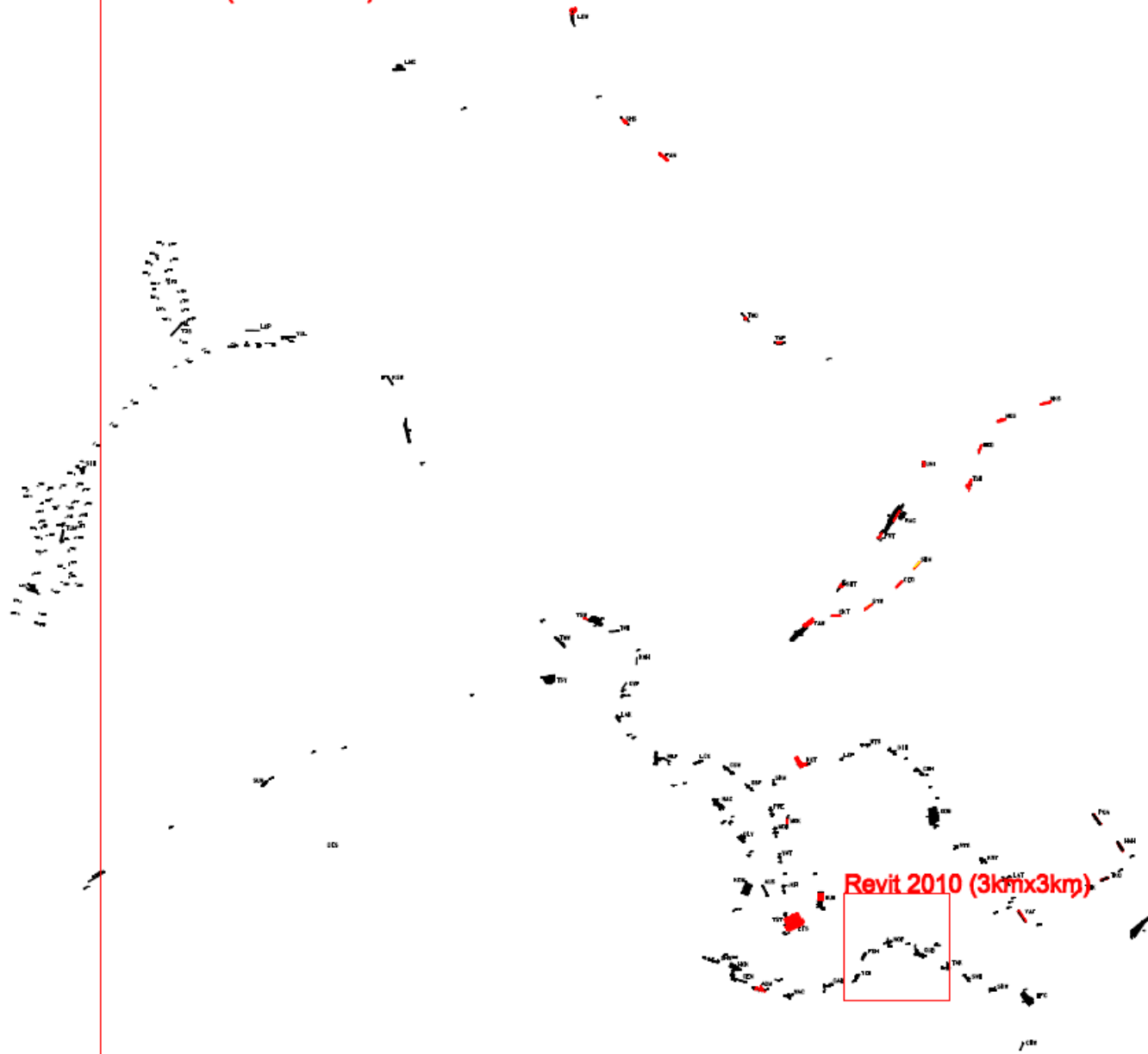


# DRAWING ISSUE



# TRUE WORLD CO-ORDINATES

Revit 2011 (30kmx30km)



Revit 2010 (3kmx3km)

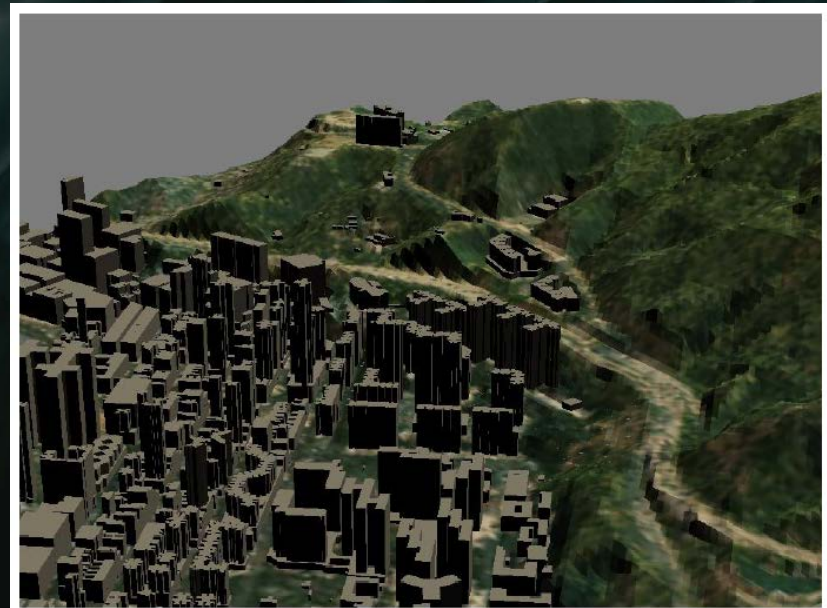
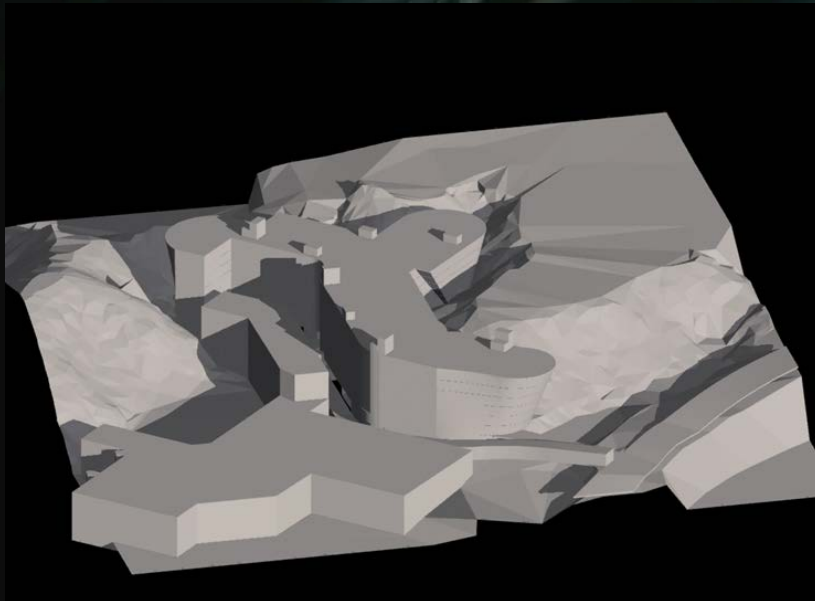
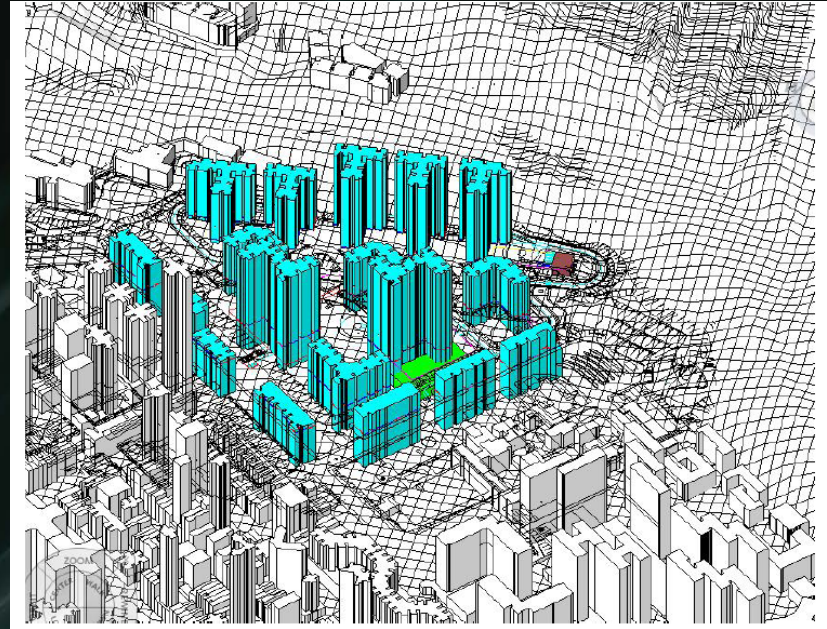


# TRUE WORLD CO-ORDINATES

SAME WORLD CO-ORDINATES (X, Y)

SAME LEVEL (mPD) (Z)

- *SOLAR STUDY*
- *GIS INTEGRATION*
- *INTERFACING WITH OTHER DISCIPLINES*

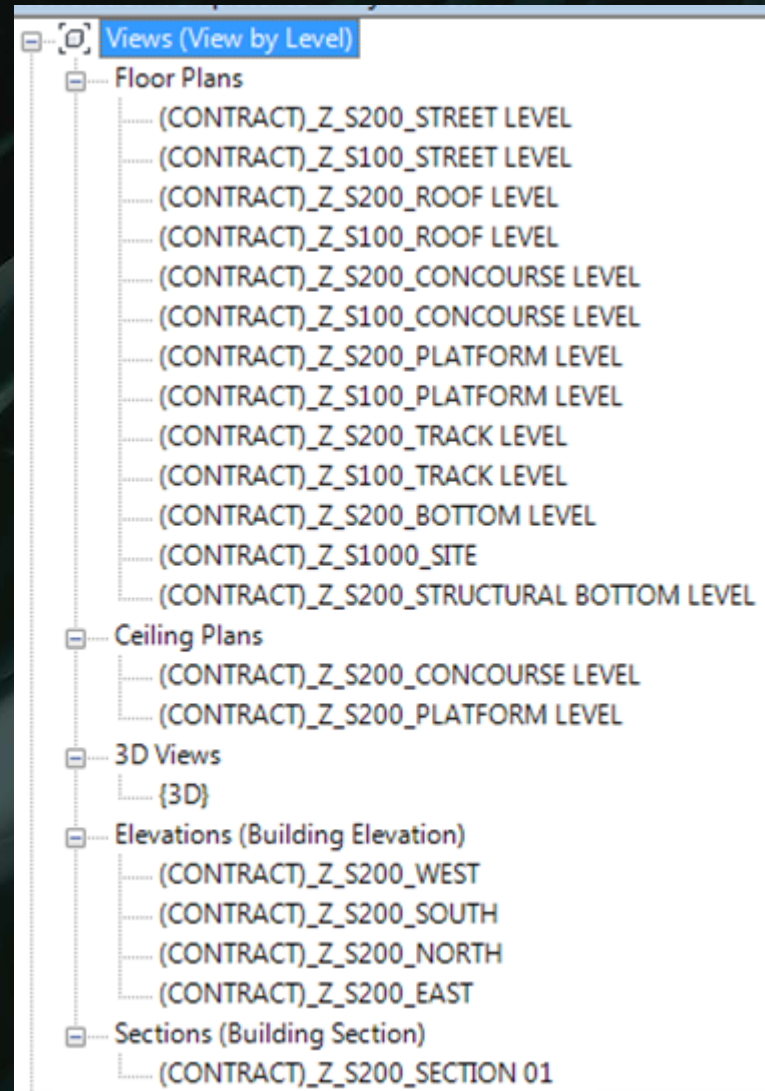


Authority Submission	Drainage Services Department	YES	NO	NO	NO	YES	NO	NO	DSD Colour Code	
	Water Authority	YES	NO	NO	NO	YES	NO	NO	B&W	
	STIC	YES	NO	NO	NO	NO	NO	NO	STIC Colour Code	Location, Area
	SSCC1	YES	NO	NO	NO	NO	NO	NO	SSCC Colour Code	Fire Safety, Area
	SSCC2	YES	NO	YES	YES	NO	NO	NO	SSCC Colour Code	Fire Services Provision
	SSCC3	YES	NO	YES	YES	NO	NO	NO	SSCC Colour Code	Smoke Extraction
	CLP/ HKE/ Gas/ Telcommunication	NO	NO	NO	NO	NO	YES	YES	B&W	
Tender		YES	YES	YES	YES	YES	YES	YES	B&W	Quantity, Specifications, Cost
Construction		YES	YES	YES	YES	YES	YES	YES	B&W	Dimension and Material
CSD		YES	YES	YES	YES	YES	YES	YES	CSD Colour	Clashes
Shop Drawing		YES	NO	YES	YES	YES	YES	YES	B&W	Construction Details
As-Built Drawings		YES	YES	YES	YES	YES	YES	YES	B&W	
Demolition		YES	YES	YES	YES	YES	NO	NO	Dotted lines	Area of demolition

## VIEW TEMPLATES

[illegible]

# VIEW NAMING





# BIM STANDARDS

- Units and Measurement
- Folder Structure
- Model Naming Convention
- Sheet Naming Convention
- Parameter Naming Convention
- View Naming
- Project Browser Organization

## **Presentation Styles**

- Templates
- Annotation
- Text Assignment
- Line Weight
- Line Pattern
- Line Style
- Hatching & Fill Regions
- View Templates and Filters
- Dimensioning
- Title block
- Symbology

### 3. COLLABORATION - EXTERNAL PARTIES (STATUTORY REQUIREMENTS)

#### SSCC Submission Stage 1

	Pantone No.	R	G	B	Colour
Extent of SSCC Submission	179 U	226	61	40	
Gazettal Boundary for Railway Development	293 U	0	81	186	
Station Boundary	130 U	234	175	15	
Design Year Incoming Passenger (PPH)AM (PM) Peak	286 U	0	56	168	
Design Year Outcoming Passenger (PPH)AM (PM) Peak	390 U	186	196	5	
Fireman's Access Route	286 U	0	56	168	
Emergency Vehicular Access	485 U2X	216	30	5	
Station Emergency Evacuation Route	368 U2X	91	191	33	
Disabled Access Route	239 U2X	224	33	158	
Station Public Area	607 U	242	234	188	
Station Public area, Open 24 Hours	623 U	165	191	170	
Non-Public Area, Operation	155 U	244	219	170	
Non-Public Area, E&M	453 U	214	204	175	

#### SSCC SUBMISSION STAGE 1

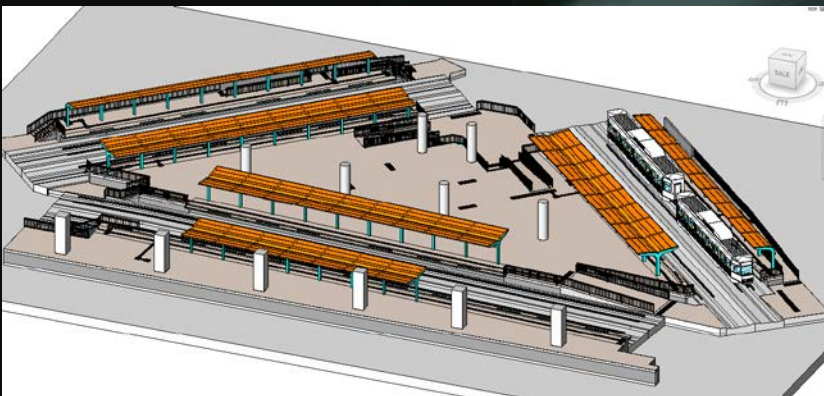
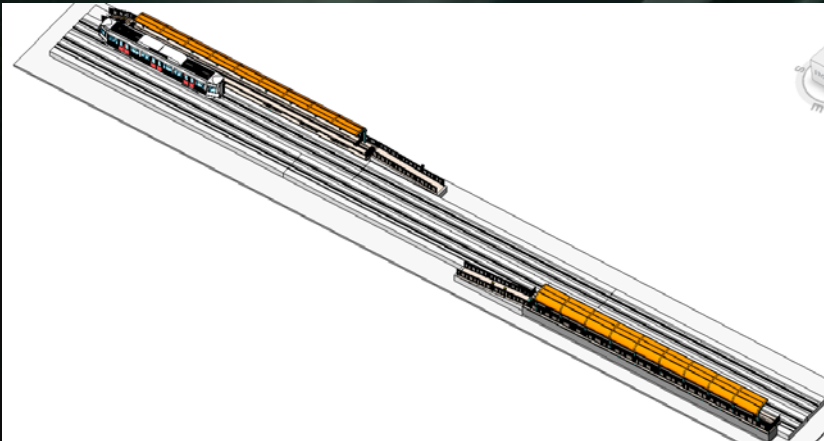
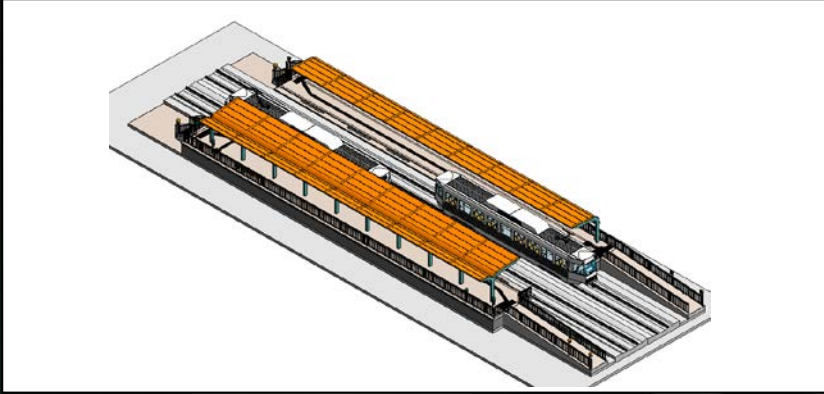
PANTONE NO.			
179 U		EXTENT OF SSCC SUBMISSION	
293 U		GAZETAL BOUNDARY FOR RAILWAY DEVELOPMENT	
130 U		STATION BOUNDARY	
286 U		DESIGN YEAR INCOMING PASSENGER (PPH) AM(PM) PEAK	
390 U		DESIGN YEAR OUTGOING PASSENGER (PPH) AM(PM) PEAK	
286 U		FIREMAN'S ACCESS ROUTE	
485 U2X		EMERGENCY VEHICULAR ACCESS	
368 U2X		STATION EMERGENCY EVACUATION ROUTE	
239 U2X		DISABLED ACCESS ROUTE	
607 U		STATION PUBLIC AREA	
623 U		STATION PUBLIC AREA, OPEN 24 HOURS	
155 U		NON-PUBLIC AREA - OPERATION	

### 3. COLLABORATION - EXTERNAL PARTIES (STATUTORY REQUIREMENTS)

**12.23 Drawing Colour Coding<sup>u</sup>**

Material	Design	SSCC Submission	BD Submission (Practice Notes AGM)					
			Preferred Colour	BS5252 Identification Code	Colour	R	G	B
Earth (unexcavated)			Fawn	06 C 33		245	217	144
Hardcord or dry fill			Brown	06 C 39		65	44	13
Brick			Red	04 E 55		230	36	11
Concrete (plain or reinforced)			Green	14 E 53		0	134	67
Solid Concrete Blocks			Blue	20 E 56		1	52	135
Hollow Concrete Blocks			Mauve	24 E 53		110	67	113
Lightweight Partition (e.g. Plasterboard)			Orange	06 E 55		255	66	10
Plaster or Cement Rendering			Magnolia	08 E 49		255	251	201
Mosaic or other non-absorbent floor tiles			Pink	02 C 33		255	217	218
Mosaic or other non-absorbent wall tiles			Lemon	10 E 50		254	253	67

## 4. COLLABORATION - ACROSS PROJECTS



**SAME FAMILIES**

**SAME TEMPLATES**



**GENERATE SCHEDULES**

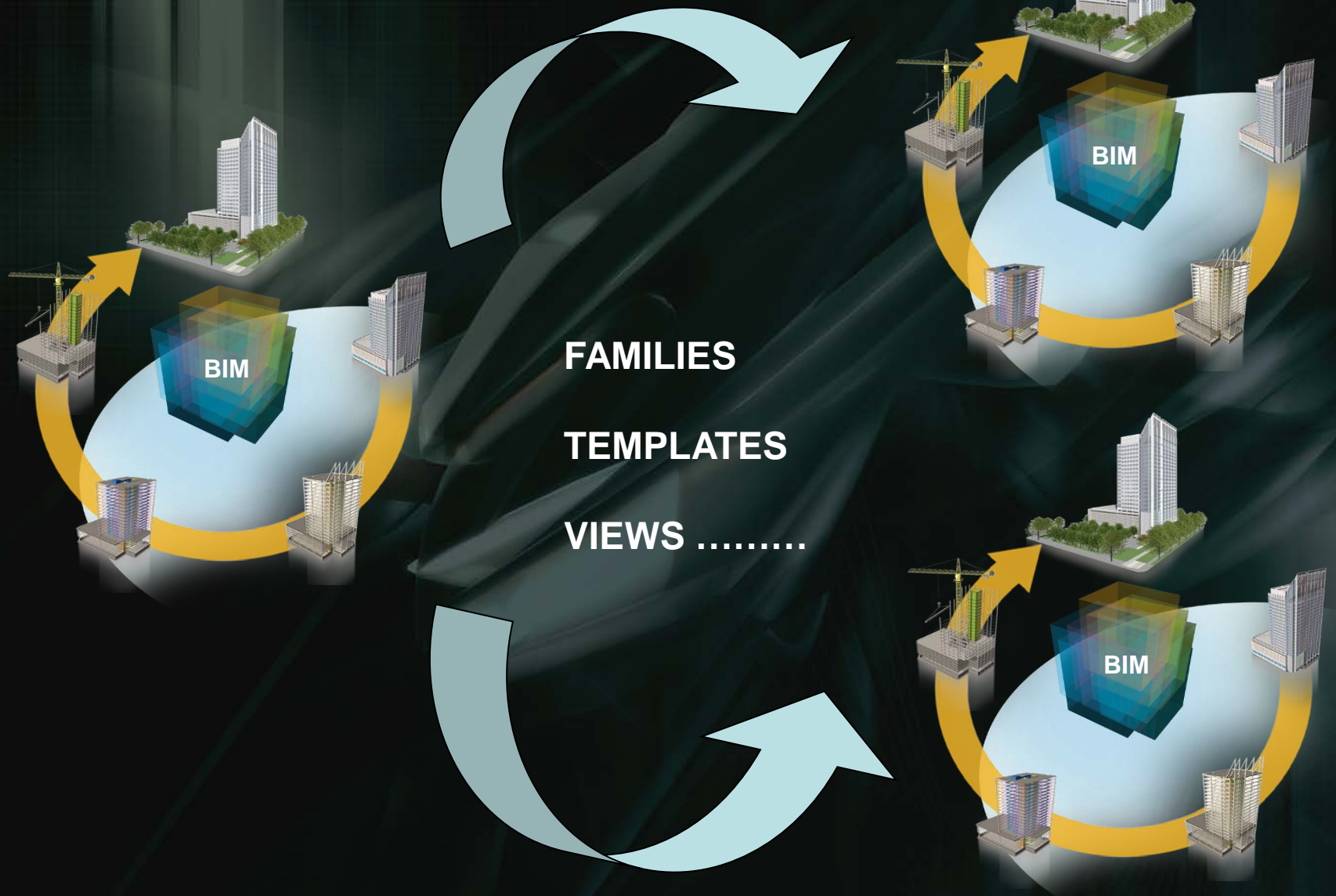
**COMPARABLE ANALYSIS**

**FACILITY MANAGERMENTS**





## 5. COLLABORATION - DATA RECYCLING





# 5. COLLABORATION - DATA RECYCLING

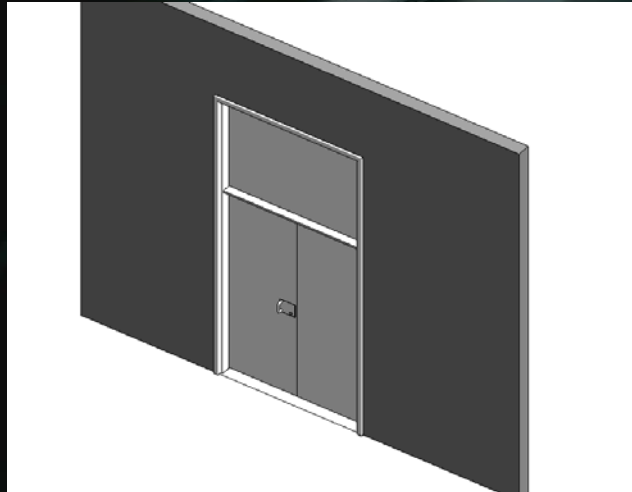
Category – Subcategory – Originator – Description 1 – Description 2




















Category .	Code .
Air Terminals .	AIR .
Annotations .	ANN .
Ceilings .	CLG .
Columns .	COL .
Communication Devices .	COM .
Casework .	CSW .
CUC .	CUC .
Curtain Wall Mullions .	CTM .
Curtain Panels .	CTP .
Curtain Systems .	CTS .
Data Devices .	DAT .
Duct Accessories .	DCA .
Duct Fittings .	DCF .
Duct Insulations .	DCI .
Duct Linings .	DCL .
Ducts .	DCT .
Detail Items .	DET .
Doors .	DOR .
- Door .	DOR .


Category .	Code .
Mass .	MAS .
Mechanical Equipment .	MEC .
Nurse Call Devices .	NRS .
People .	PEP .
Pipe Fittings .	PIF .
Plumbing Fixtures .	PLM .
Planting .	PLN .
Profile .	PRF .
Pipe Accessories .	PPA .
Pipe Fittings .	PPF .
Pipes .	PPS .
Parking .	PRK .
PSB .	PSB .
PSD .	PSD .
Roads .	RDS .
Roof and Ceiling .	RFC .
Railings .	RLG .
Ramps .	RMP .
Roofs .	ROF .

- ADP\_(Advertising Panel)
- ANN\_(Annotations)
- CLG\_(Ceilings)
- COL\_(Column)
- CSW\_(Casework)
- CTP\_(Curtain\_Panels)
- CUC\_(CUC)
- DOR\_(Door)
- ECS\_(Environmental\_Control\_System)
- ELF\_(Electrical\_Fixture)
- ESC\_(Escalator)
- FIF\_(Fire\_Fixture)
- FLR\_(Floor)
- FRN\_(Furniture)
- FRS\_(Furniture\_Systems)
- KOK\_(Kiosks)
- LFT\_(Lift)
- LGF\_(Lighting\_Fixtures)
- LOU\_(Louvre)
- PEP\_(People)
- PIF\_(Pipe\_Fittings)
- PLM\_(Plumbing\_Fixtures)
- PLN\_(Planting)

## 5. COLLABORATION - DATA RECYCLING



-  DOR-DBL-HK-Curtain Wall.rfa
-  DOR-DBL-HK-Metal.rfa
-  DOR-DBL-HK-Metal-full swing.rfa
-  DOR-DBL-HK-Metal-self closing.rfa
-  DOR-DBL-HK-Metal-Transformer Room.0001.rfa
-  DOR-DBL-HK-Metal-Transformer Room.rfa
-  DOR-DBL-HK-Metal-vision panel self closing.rfa
-  DOR-DBL-HK-Timber-self closing.rfa
-  DOR-DBL-HK-Timber-vision panel self closing(unsy...
-  DOR-DBL-HK-Timber-vision panel self closing.rfa
-  DOR-DBL-HK-Timber-vision panel.rfa
-  DOR-DBL-HK-Timber-vision panel-self closing.rfa
-  DOR-DBL-HR-Metal-Tx Leaf & Lock.rfa
-  DOR-DBL-MTR- Hinge & Handle.rfa
-  DOR-DBL-MTR-C101 & P029.rfa
-  DOR-DBL-MTR-Cabinet-MTR-for Water Meters.rfa
-  DOR-DBL-MTR-Curtain Wall Type T.rfa
-  DOR-DBL-MTR-Fixed Panel & Handle.rfa
-  DOR-DBL-MTR-Frame and Panel-MTR-With Handle....



• Thank You !