

From CAD Monkey to BIMpanzee: The Evolution of Design Technology at BDP

Elliott Crossley

Associate, BDP.

@bdp_com, @elliott_kalenko



Class summary

- Learn how BDP has developed in recent years while addressing UK Government BIM requirements; a case study of a £330m project to explore progress to date.

Key learning objectives

At the end of this class, you will be able to:

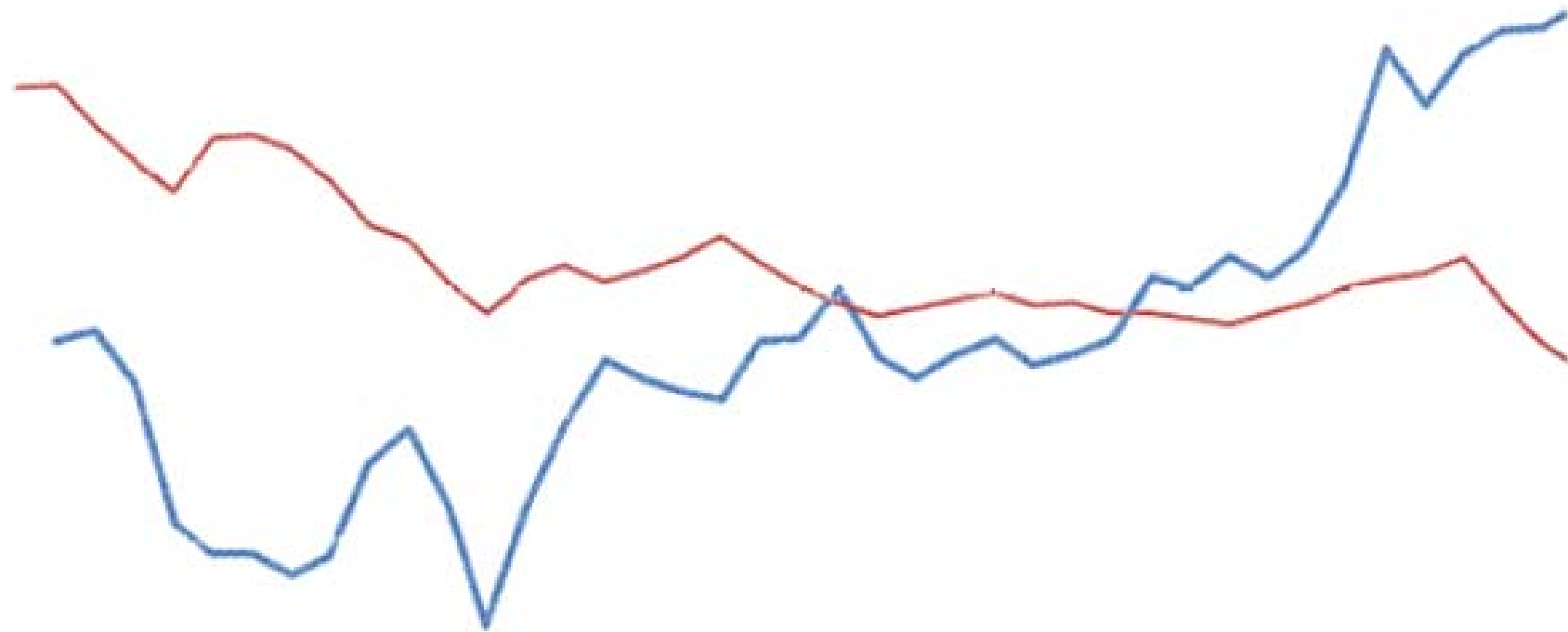
- Understand the approach of a multi-disciplinary practice to meet UK BIM 'Level 2' and the efficiencies achieved.
- Organise and manage large project teams through company standards and best practice
- Use Autodesk products as a tool for commenting and improved communication to enhance design
- Link modelled objects to external databases and see the opportunities that brings for Design, Construction and Operation



Compounding Efficiencies







Population Change
Residential Construction





Lower Costs

33%

Reduction in the initial cost of construction and the whole life cost of built assets

Faster Delivery

50%

Reduction in overall time, from inception to overall completion, of newbuild and refurbished assets

Lower Emissions

50%

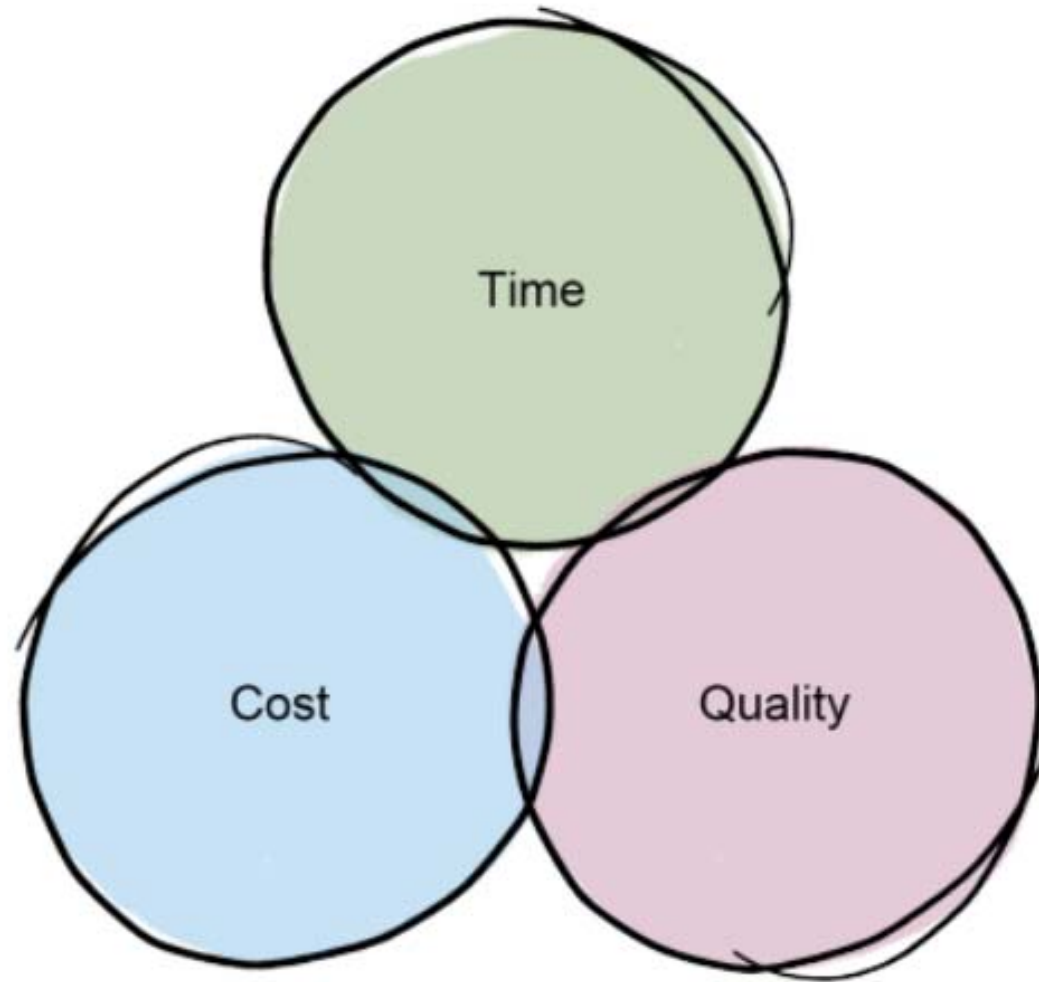
Reduction in greenhouse gas emissions in the built environment

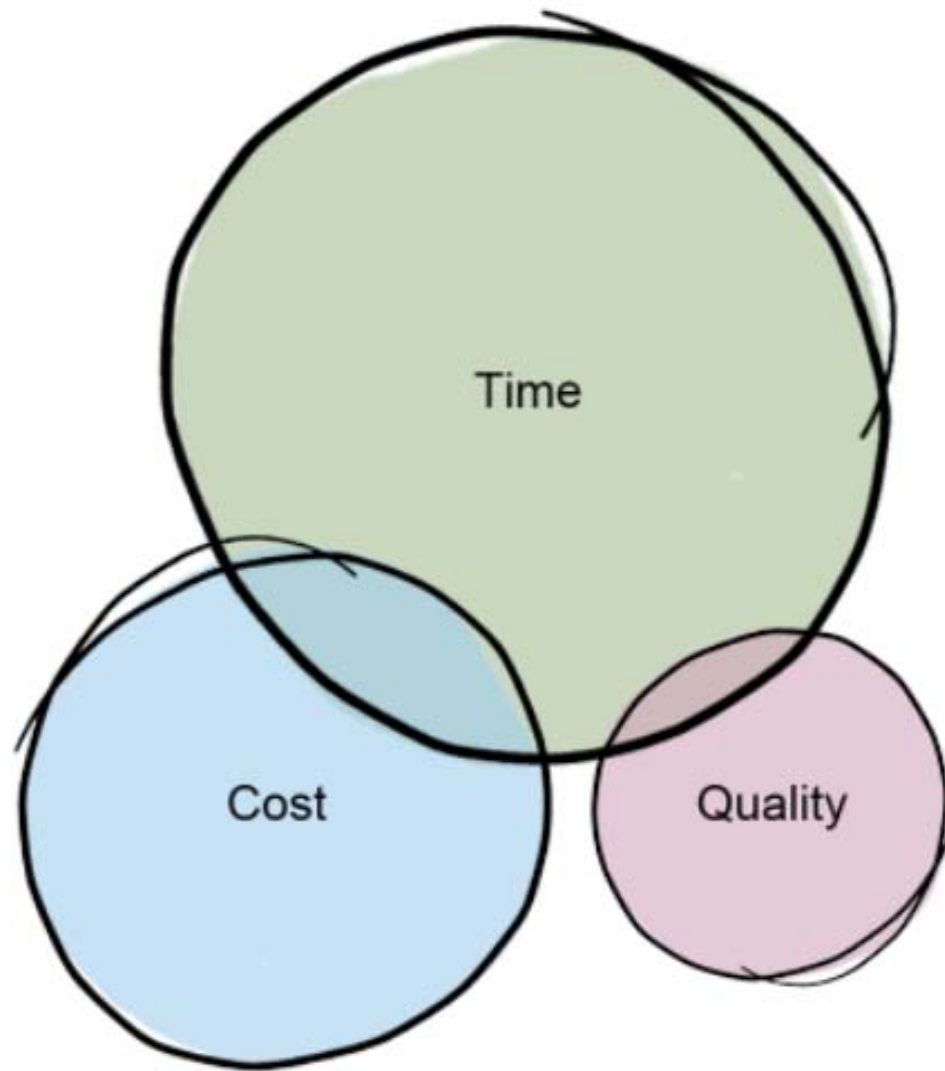
Improved Exports

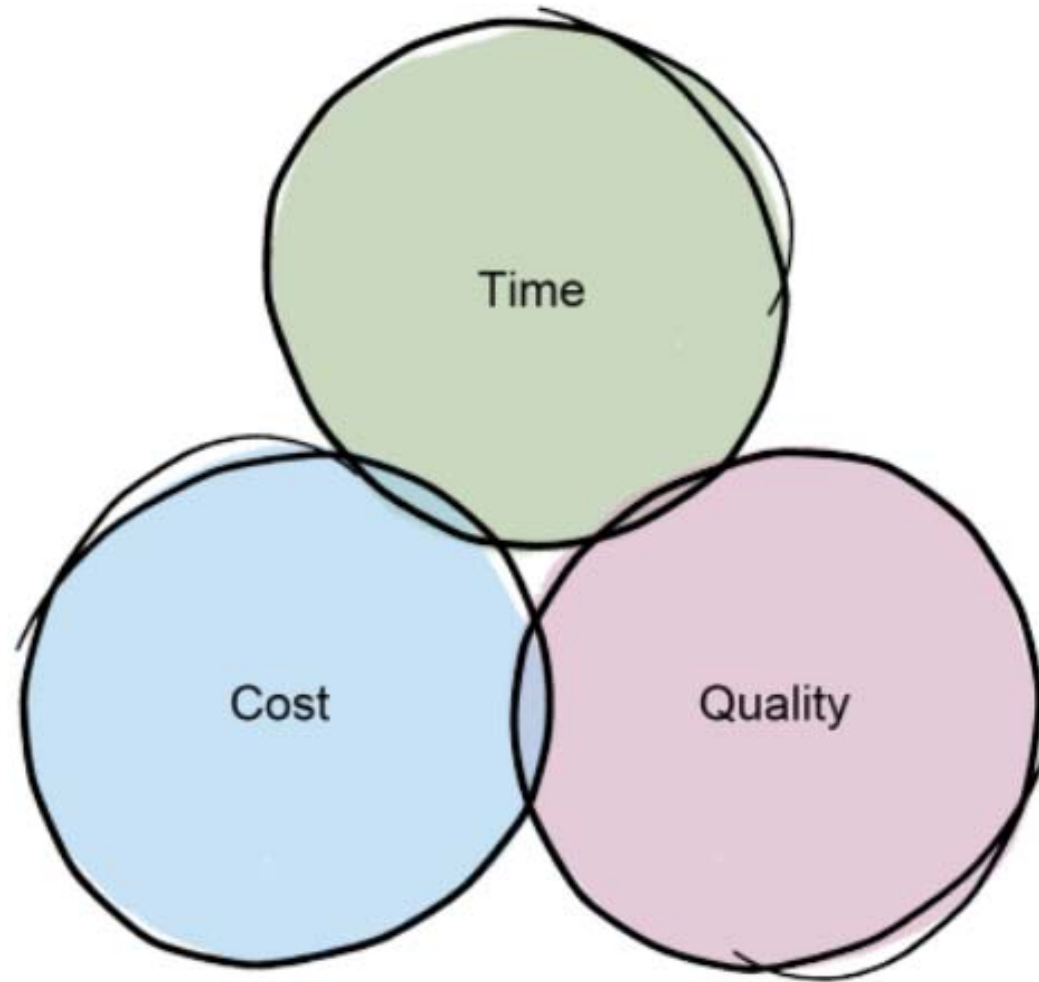
50%

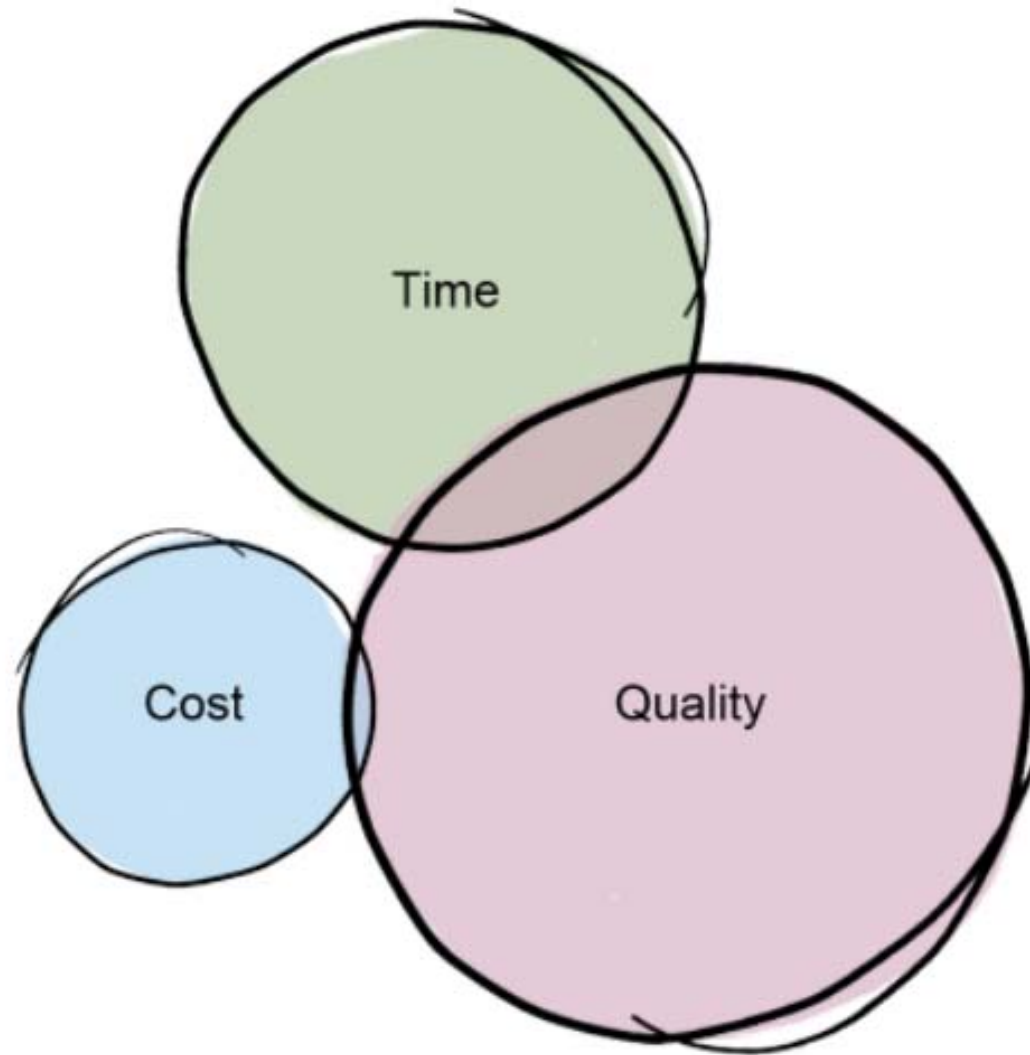
Reduction in the trade gap between total exports and total imports for construction products and materials

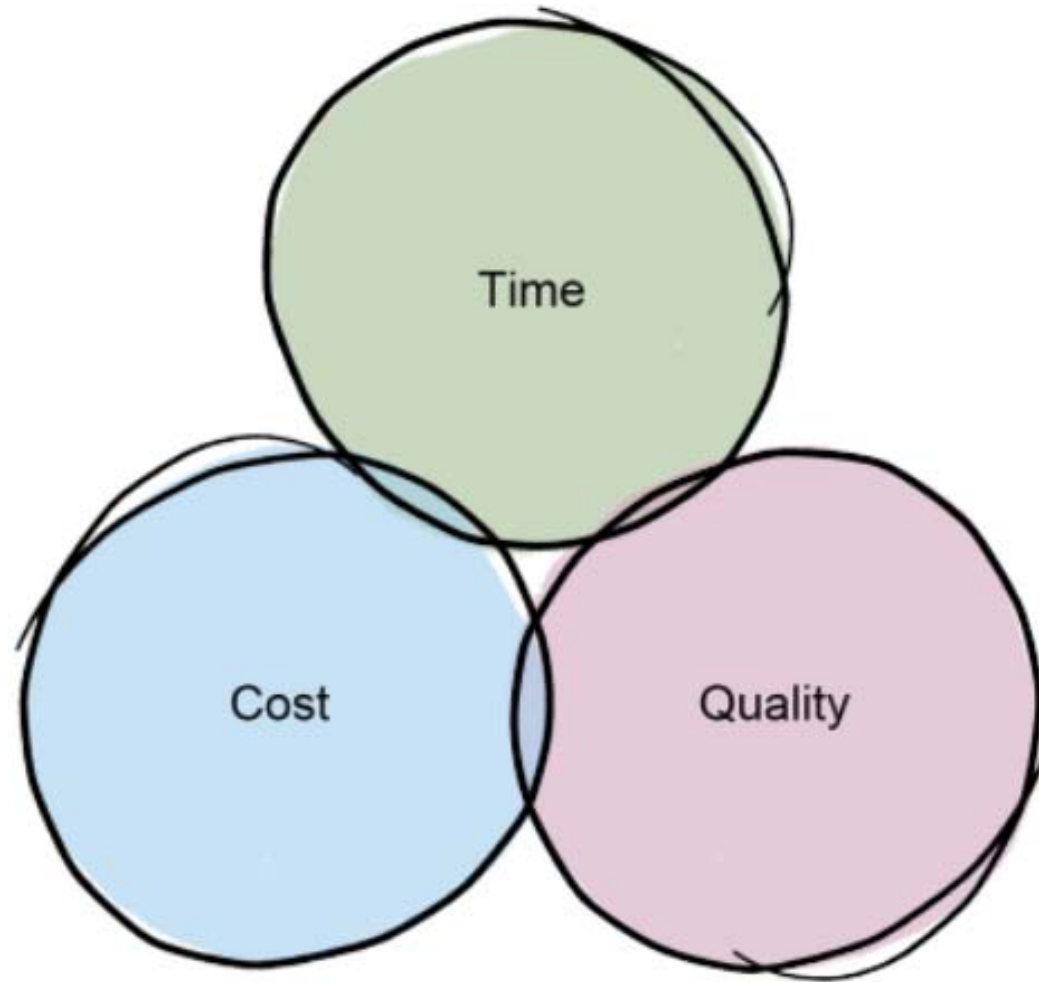


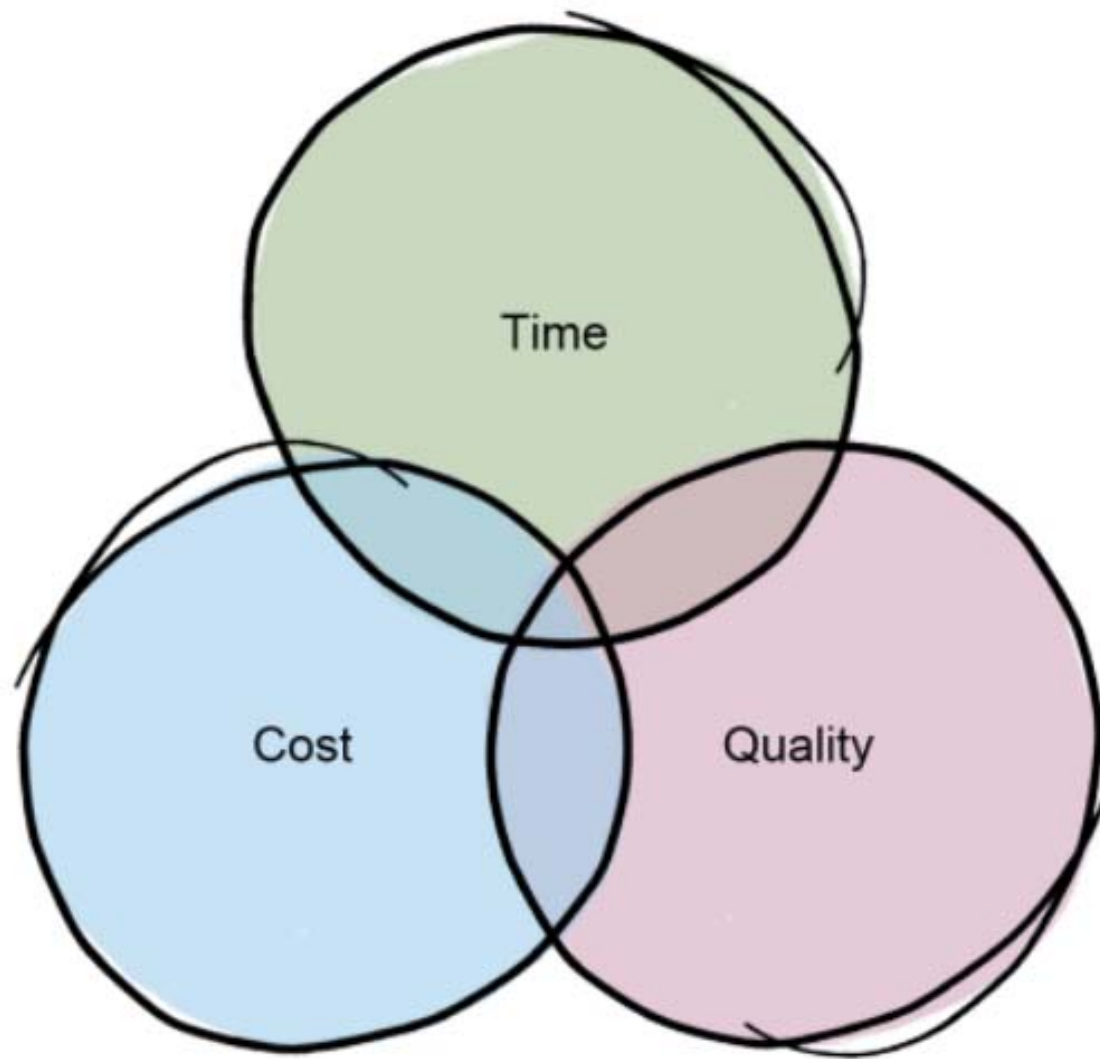












How?

1. Communication



2. Communication

From: Engineer
To: Architect
Subject: RE: MEP coordination in cores

We need a mark-up by the end of the week for review.

Please consider the environment before printing this e-mail

From: Engineer
To: Architect
Subject: RE: MEP coordination in cores

We need a mark-up by the end of the week for review.

Please consider the environment before printing this e-mail

From: Architect
To: Engineer
Subject: RE: MEP coordination in cores

Whatever your constraints are, they are putting the focus on the original scheme which is problematic and falls victim to the fallacy of retroactively projecting such origins onto the subjective and objective criteria of this time period in question. Regards

Please consider the environment before printing this e-mail

3. Communication



RIBA

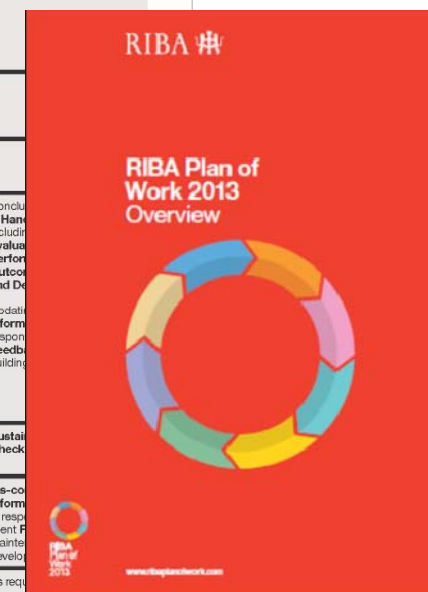
The RIBA Plan of Work 2013 organises the process of briefing, designing, constructing, maintaining, operating and using building projects into a number of key stages. The content of stages may vary or overlap to suit specific project requirements. The RIBA Plan of Work 2013 should be used solely as guidance for the preparation of detailed professional services contracts and building contracts.

www.ribaplanofwork.com

	0	1	2	3	4	5	6	7
Stages	Strategic Definition	Preparation and Brief	Concept Design	Developed Design	Technical Design	Construction	Handover and Close Out	In Use
Core Objectives	Identify client's Business Case and Strategic Brief and other core project requirements.	Develop Project Objectives , including Quality Objectives and Project Outcomes , Sustainability Aspirations , Project Budget , other parameters or constraints and develop Initial Project Brief . Undertake Feasibility Studies and review of Site Information .	Prepare Concept Design , including outline proposals for structural design, building services systems, outline specifications and preliminary Cost Information along with relevant Project Strategies in accordance with Design Programme . Agree alterations to brief and issue Final Project Brief .	Prepare Developed Design , including coordinated and updated proposals for structural design, building services systems, outline specifications, Cost Information and Project Strategies in accordance with Design Programme .	Prepare Technical Design in accordance with Design Responsibility Matrix and Project Strategies to include all architectural, structural and building services information, specialist subcontractor design and specifications, in accordance with Design Programme .	Offsite manufacturing and on-site Construction in accordance with Construction Programme and resolution of Design Queries from site as they arise.	Handover of building and conclusion of Building Contract .	Undertake In Use services in accordance with Schedule of Services .
Procurement *Variable task bar	Initial considerations for assembling the project team.	Prepare Project Roles Table and Contractual Tree and continue assembling the project team.	The procurement strategy does not fundamentally alter the progression of the design or the level of detail prepared at a given stage. However, Information Exchanges will vary depending on the selected procurement route and Building Contract . A bespoke RIBA Plan of Work 2013 will set out the specific tendering and procurement activities that will occur at each stage in relation to the chosen procurement route.			Administration of Building Contract , including regular site inspections and review of progress.	Conclude administration of Building Contract .	
Programme *Variable task bar	Establish Project Programme .	Review Project Programme .	Review Project Programme .	The procurement route may dictate the Project Programme and may result in certain stages overlapping or being undertaken concurrently. A bespoke RIBA Plan of Work 2013 will clarify the stage overlaps. The Project Programme will set out the specific stage dates and detailed programme durations.				
(Town) Planning *Variable task bar	Pre-application discussions.	Pre-application discussions.	Planning applications are typically made using the Stage 3 output. A bespoke RIBA Plan of Work 2013 will identify when the planning application is to be made.					
Suggested Key Support Tasks	Review Feedback from previous projects.	Prepare Handover Strategy and Risk Assessments . Agree Schedule of Services , Design Responsibility Matrix and Information Exchanges and prepare Project Execution Plan including Technology and Communication Strategies and consideration of Common Standards to be used.	Prepare Sustainability Strategy , Maintenance and Operational Strategy and review Handover Strategy and Risk Assessments . Undertake third party consultations as required and any Research and Development aspects. Review and update Project Execution Plan . Consider Construction Strategy , including offsite fabrication, and develop Health and Safety Strategy .	Review and update Sustainability, Maintenance and Operational and Handover Strategies and Risk Assessments . Undertake third party consultations as required and conclude Research and Development aspects. Review and update Project Execution Plan , including Change Control Procedures . Review and update Construction and Health and Safety Strategies .	Review and update Sustainability, Maintenance and Operational and Handover Strategies and Risk Assessments . Prepare and submit Building Regulations submission and any other third party submissions requiring consent. Review and update Project Execution Plan . Review Construction Strategy , including sequencing, and update Health and Safety Strategy .	Review and update Sustainability Strategy and implement Handover Strategy , including agreement of information required for commissioning, training, handover, asset management, future monitoring and maintenance and ongoing completion of 'As-constructed' information. Update Construction and Health and Safety Strategies .	Carry out activities listed in Handover Strategy including Feedback for use during the future life of the building or on future projects. Updating of Project Information as required.	Conclude in Handover including Evaluate Performance and Outlook and Develop . Update Information response Feedback building.
Sustainability Checkpoints	Sustainability Checkpoint – 0	Sustainability Checkpoint – 1	Sustainability Checkpoint – 2	Sustainability Checkpoint – 3	Sustainability Checkpoint – 4	Sustainability Checkpoint – 5	Sustainability Checkpoint – 6	Sustainability Checkpoint – 7
Information Exchanges (at stage completion)	Strategic Brief .	Initial Project Brief .	Concept Design including outline structural and building services design, associated Project Strategies , preliminary Cost Information and Final Project Brief .	Developed Design , including the coordinated architectural, structural and building services design and updated Cost Information .	Completed Technical Design of the project.	'As-constructed' Information .	Updated 'As-constructed' Information .	'As-constructed' Information in respect of client Feedback and Development .
UK Government Information Exchanges	Not required.	Required.	Required.	Required.	Not required.	Not required.	Required.	As required.

*Variable task bar – In creating a bespoke project or practice specific RIBA Plan of Work 2013 via www.ribaplanofwork.com a specific bar is selected from a number of options.

© RIBA



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BDP. AUTODESK.

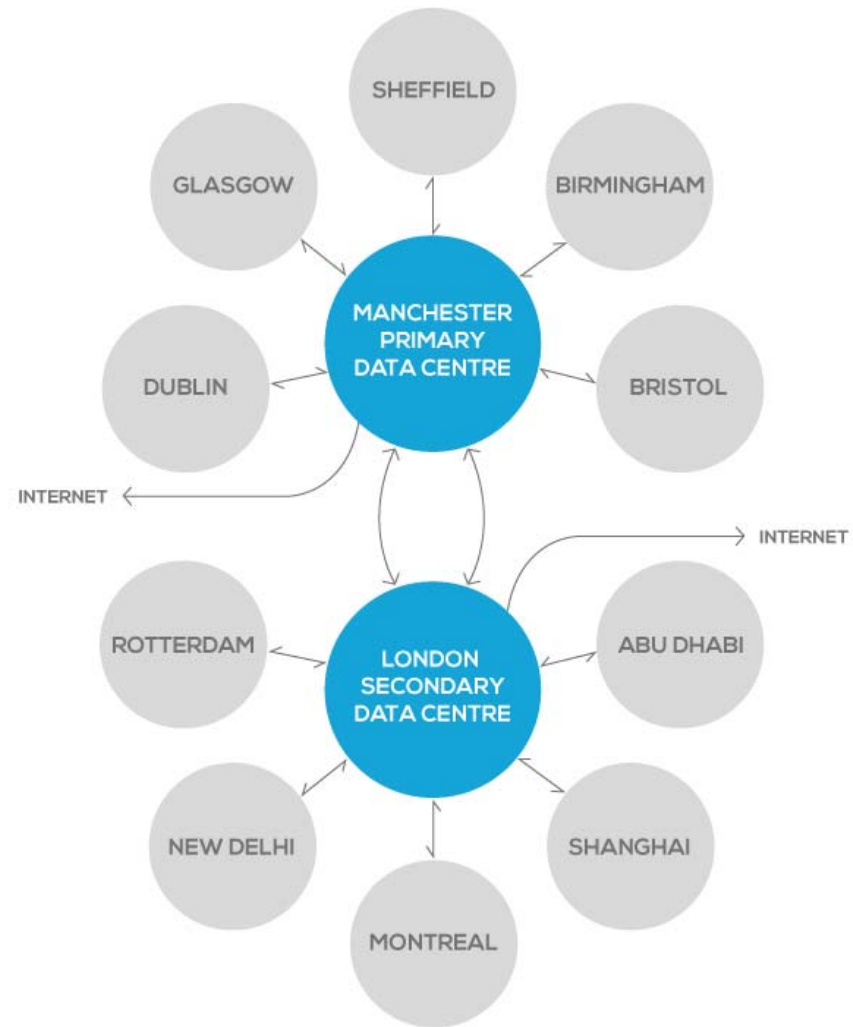
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Collaborative Working Environments

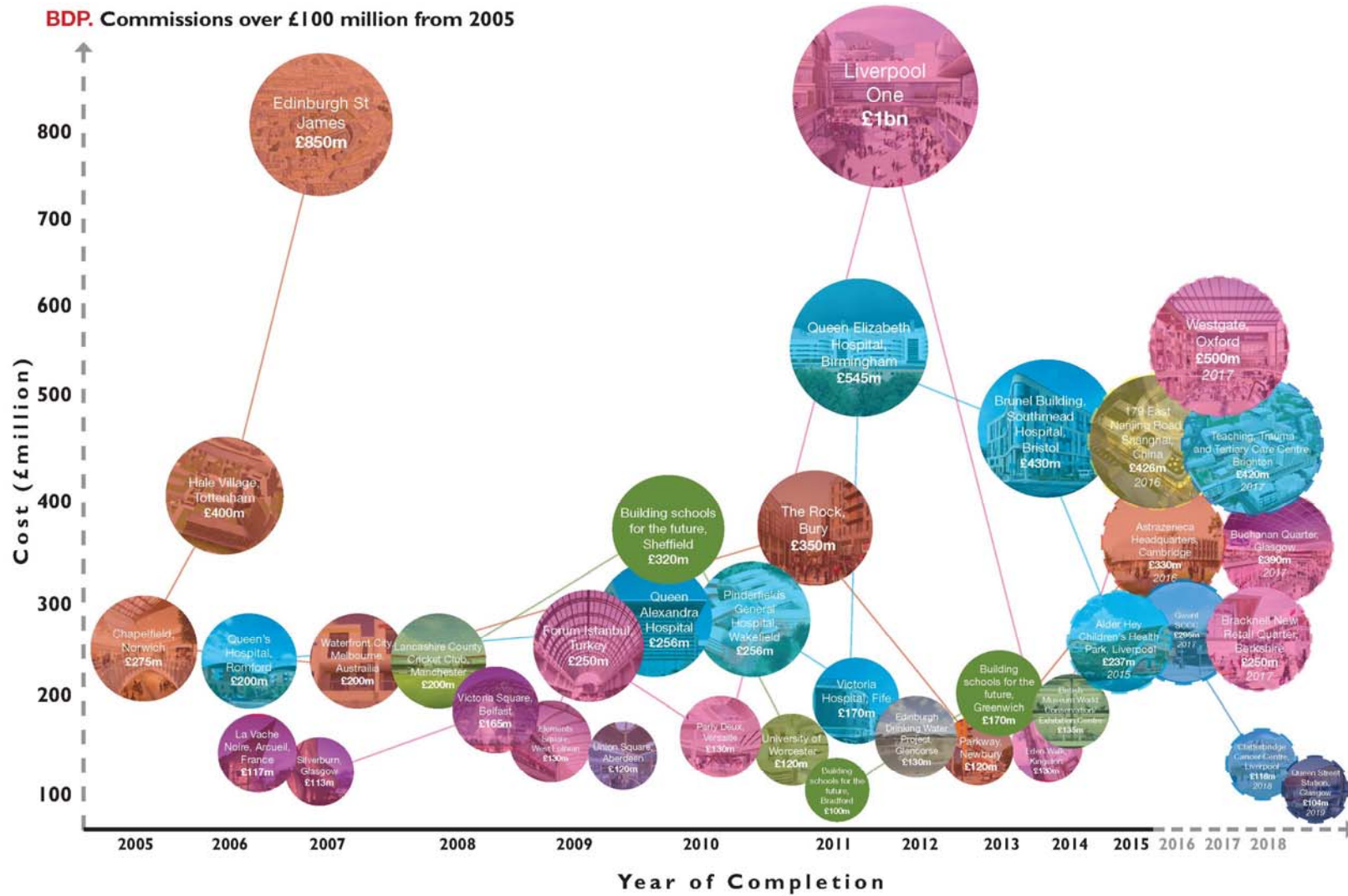








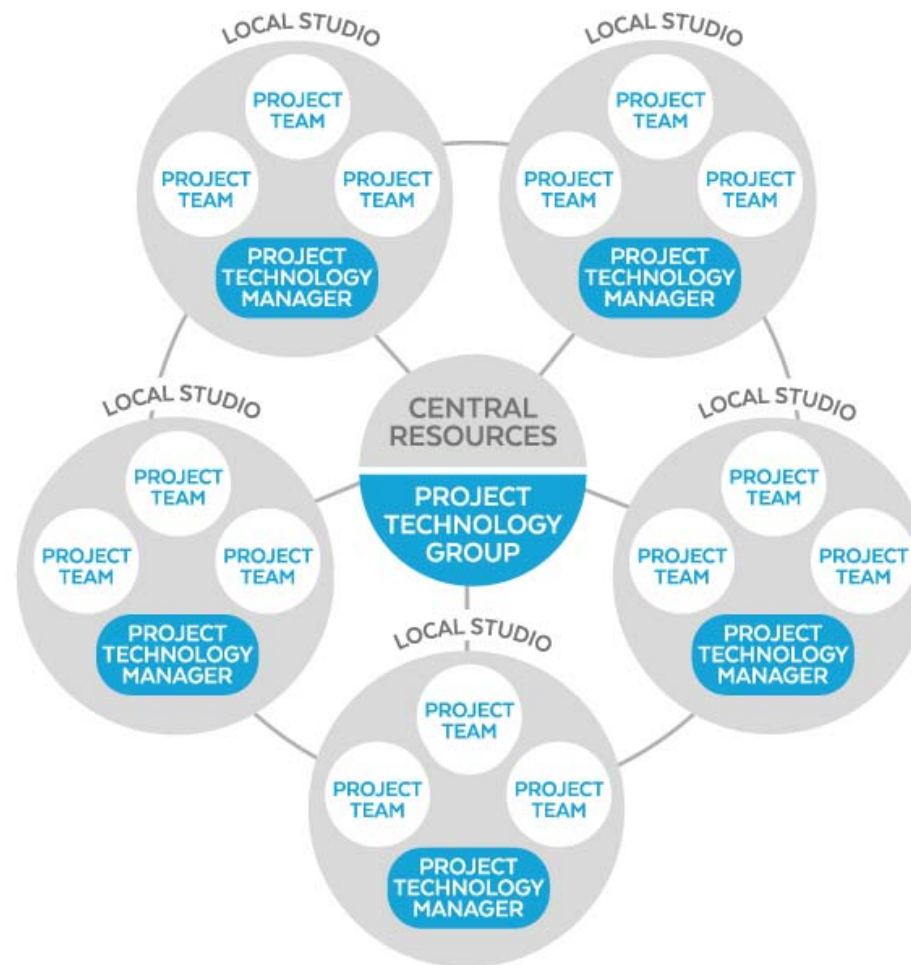
BDP. Commissions over £100 million from 2005





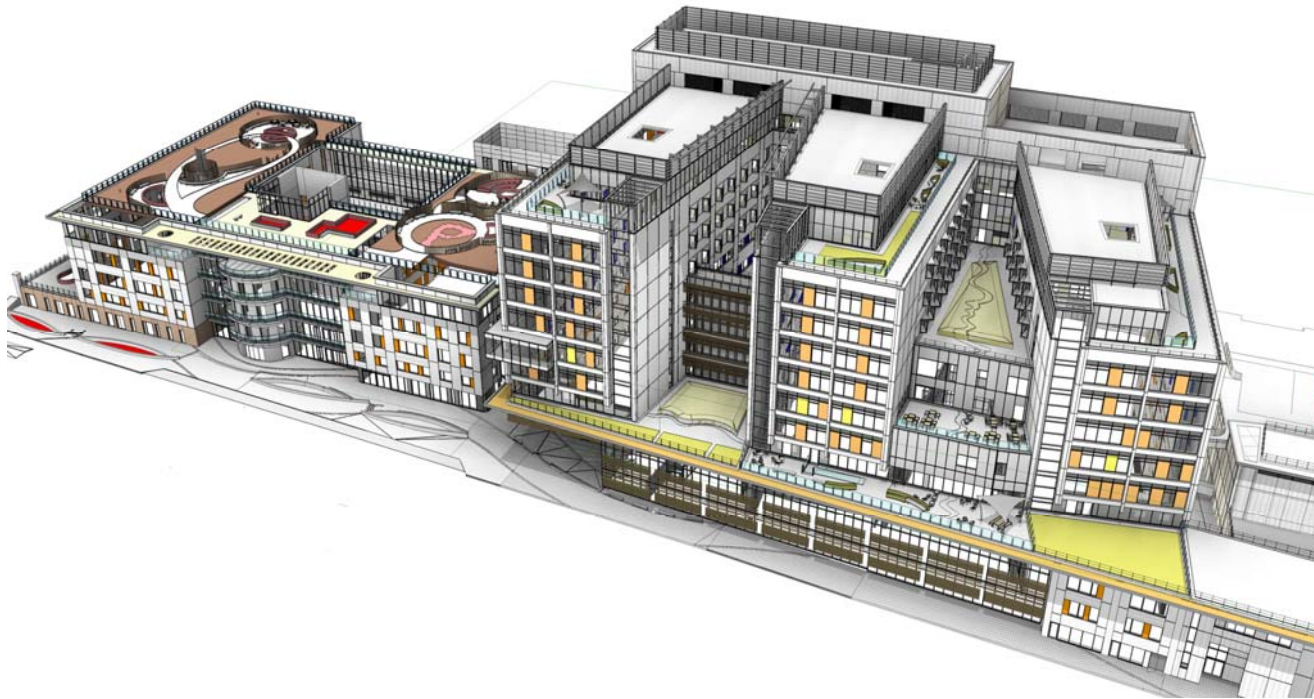
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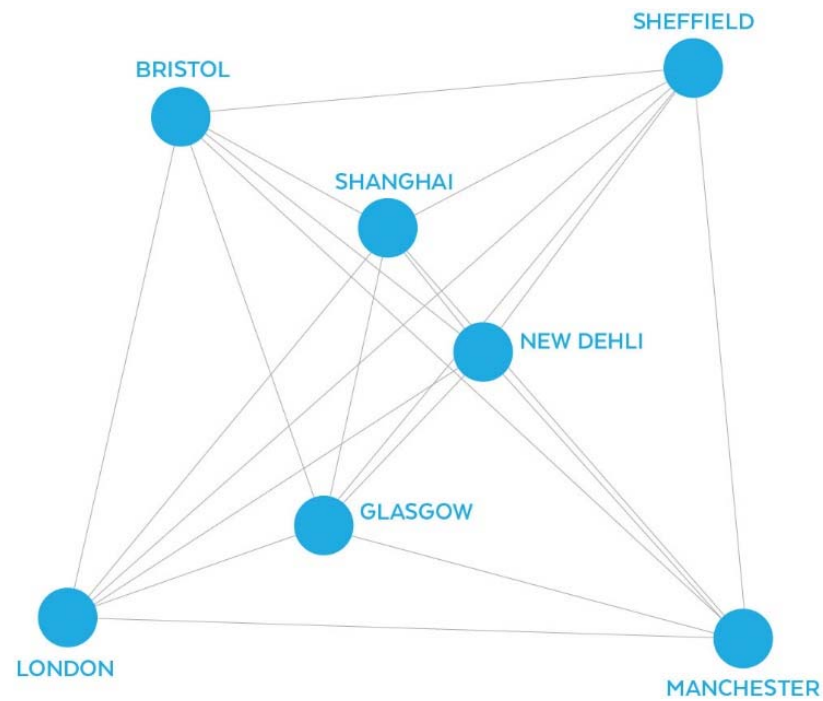
Starting Small...

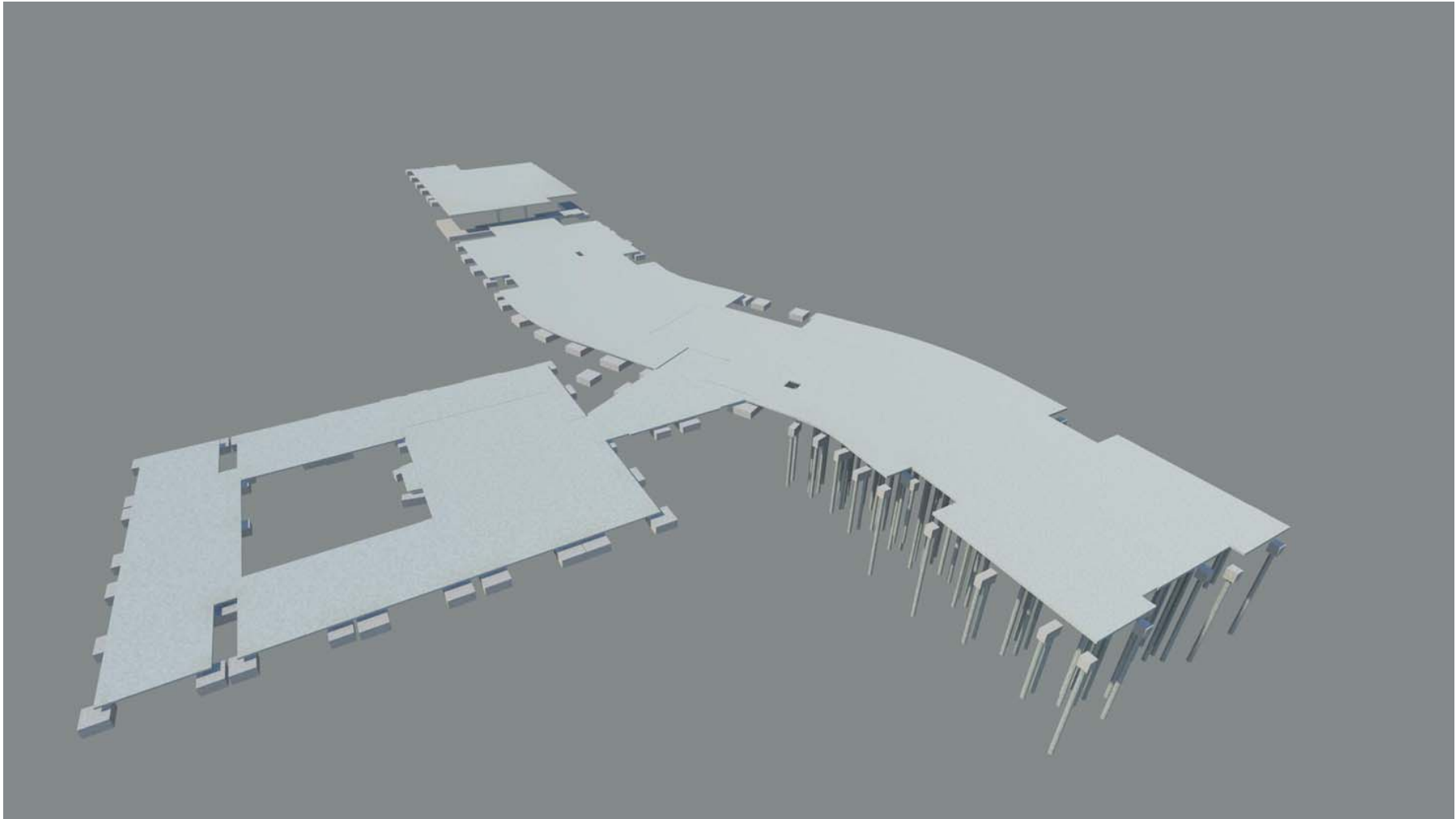


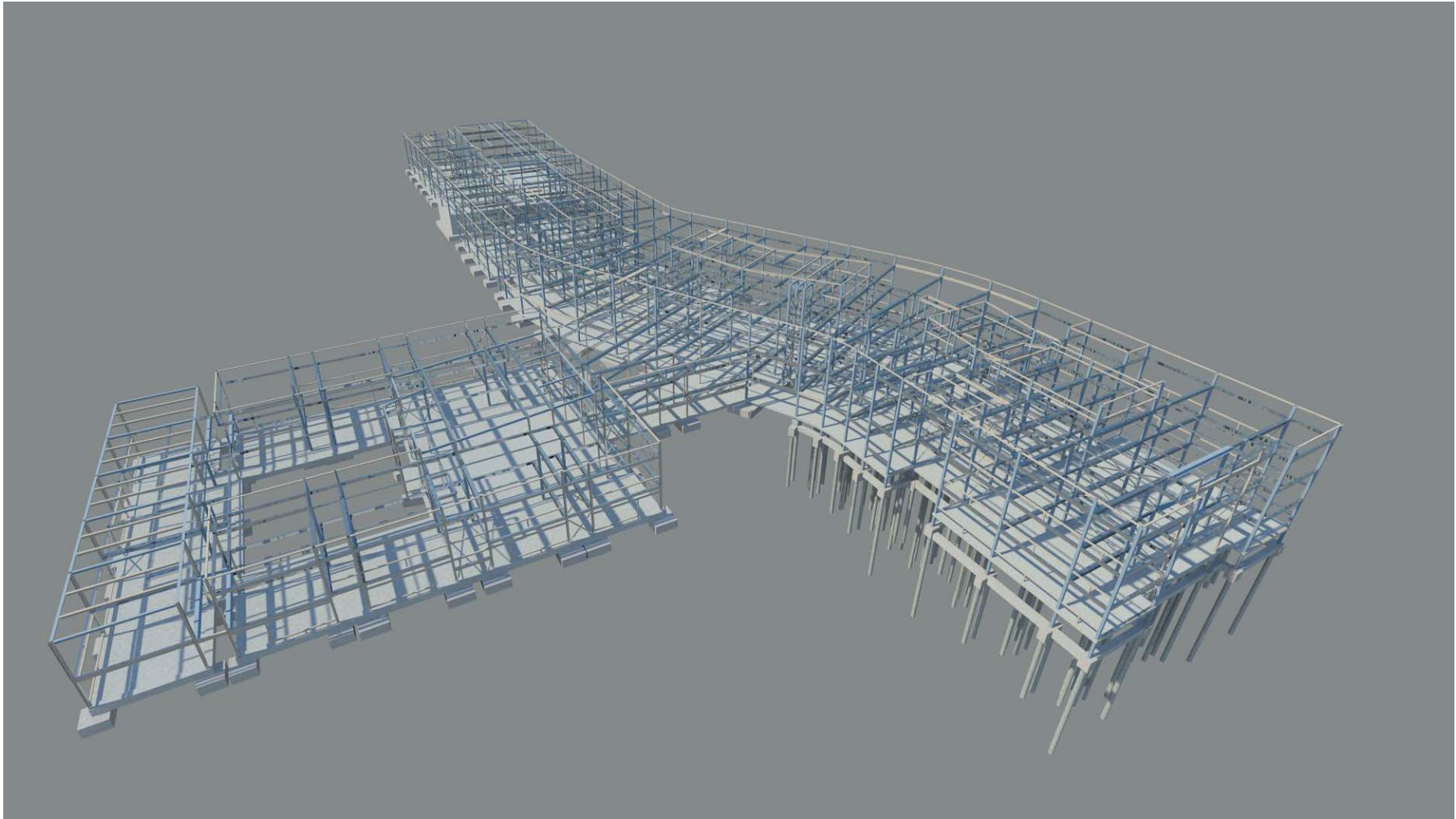
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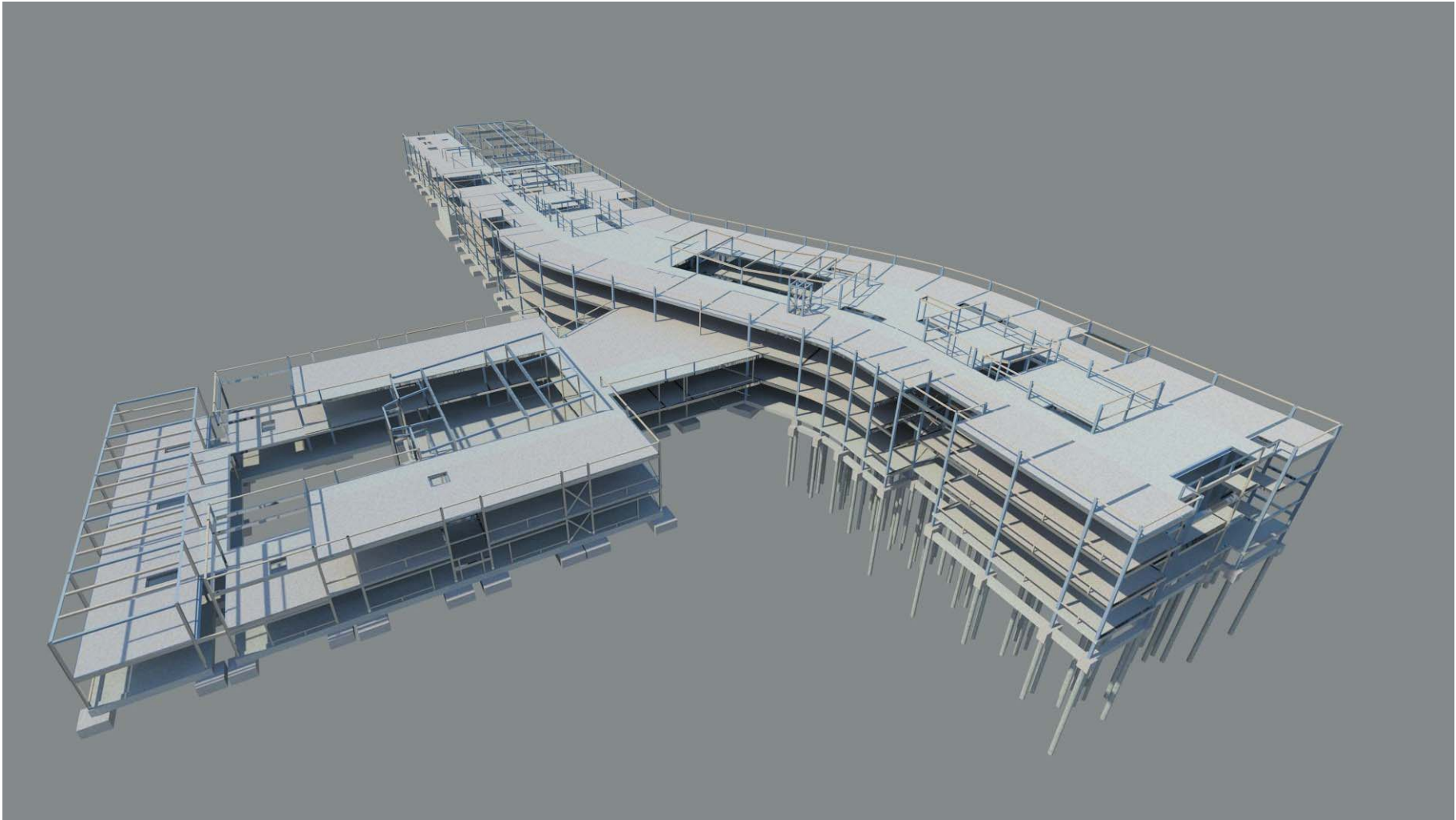
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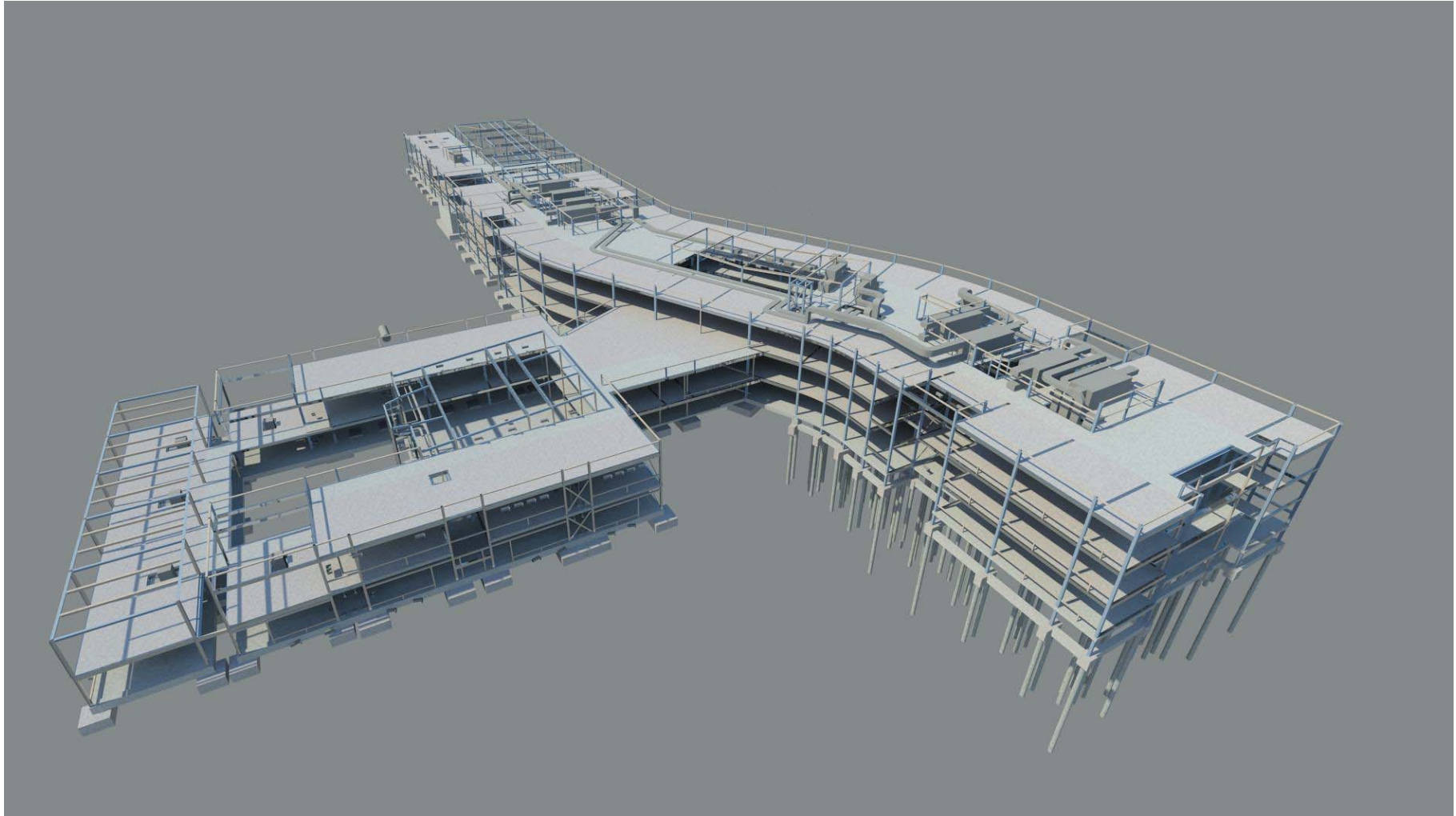
NEWFORMA

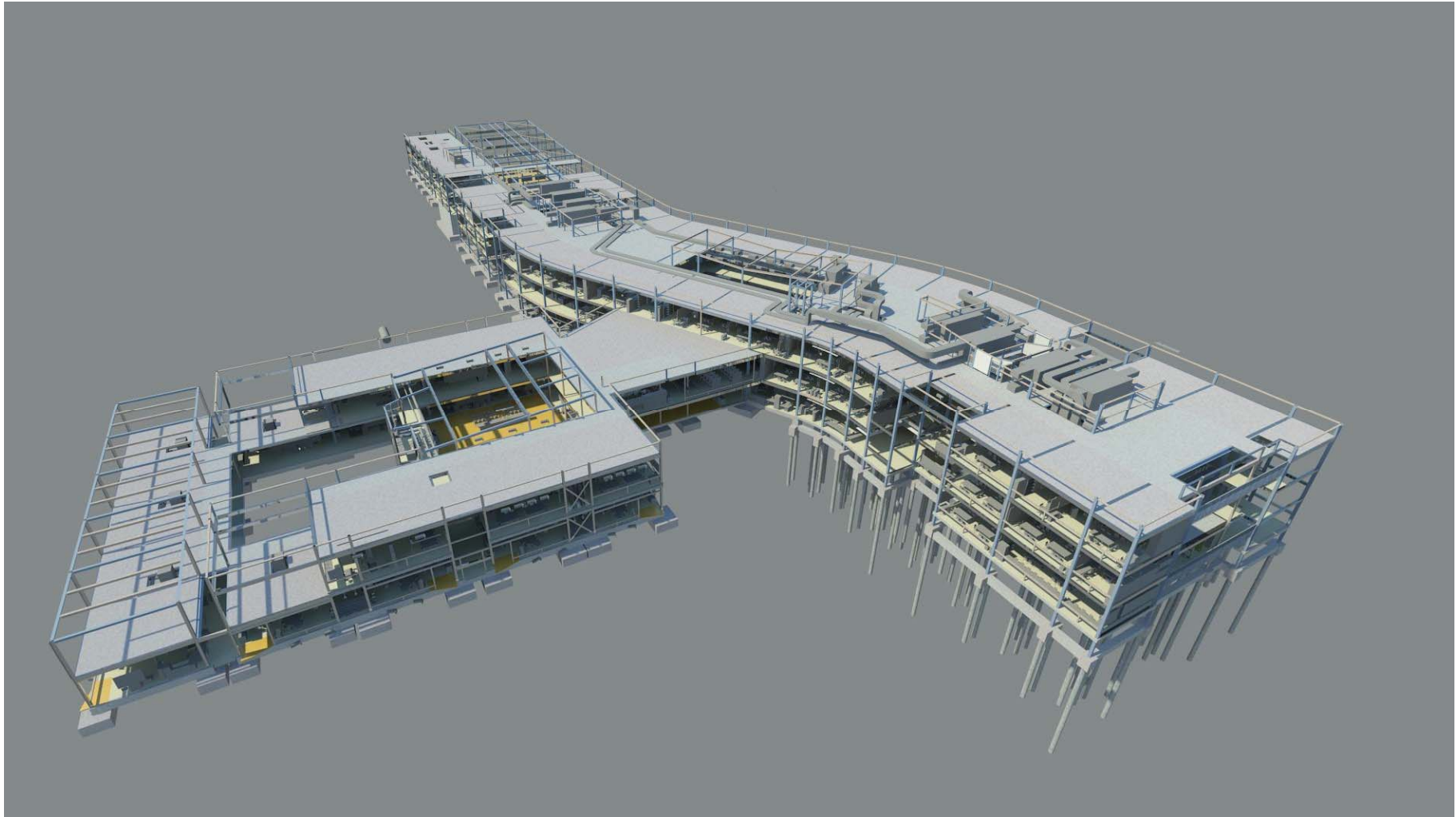


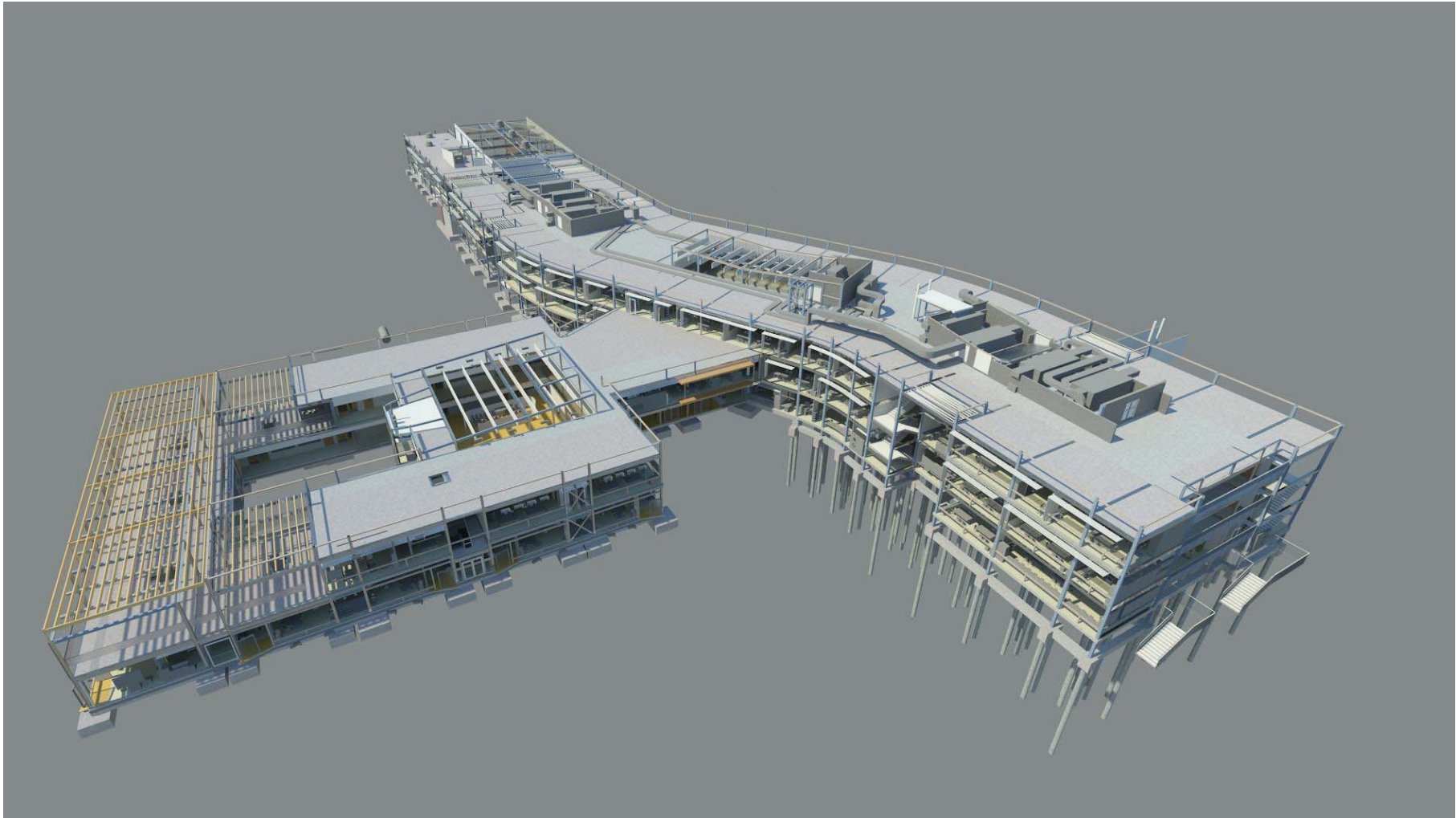


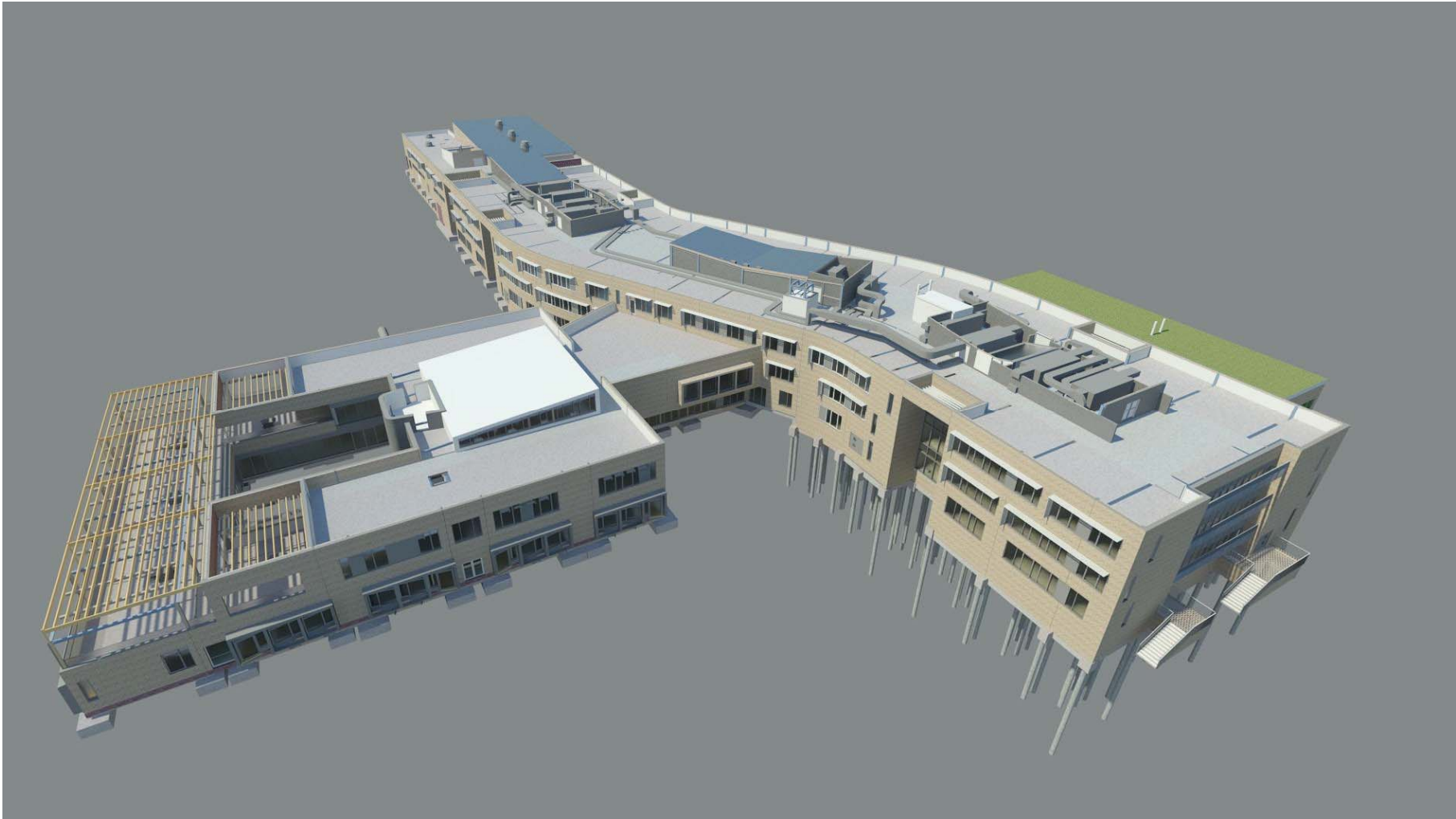








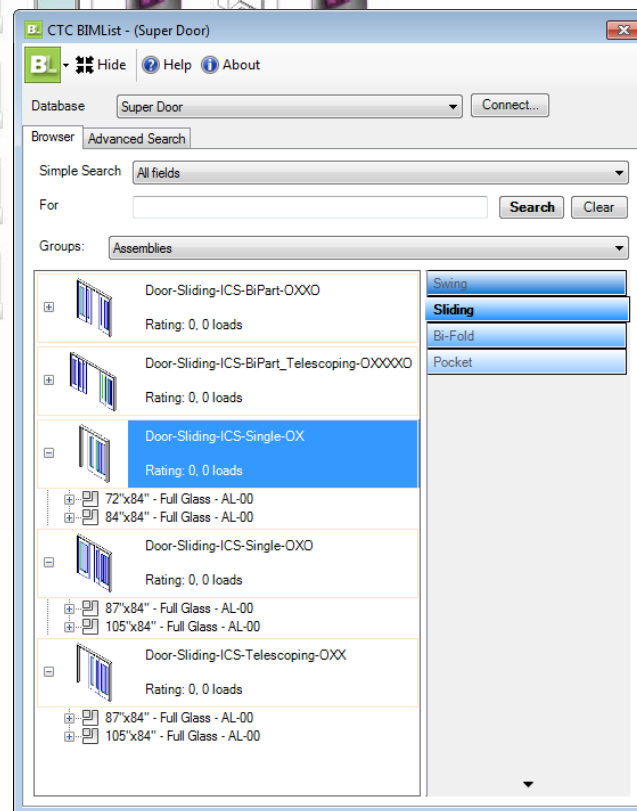
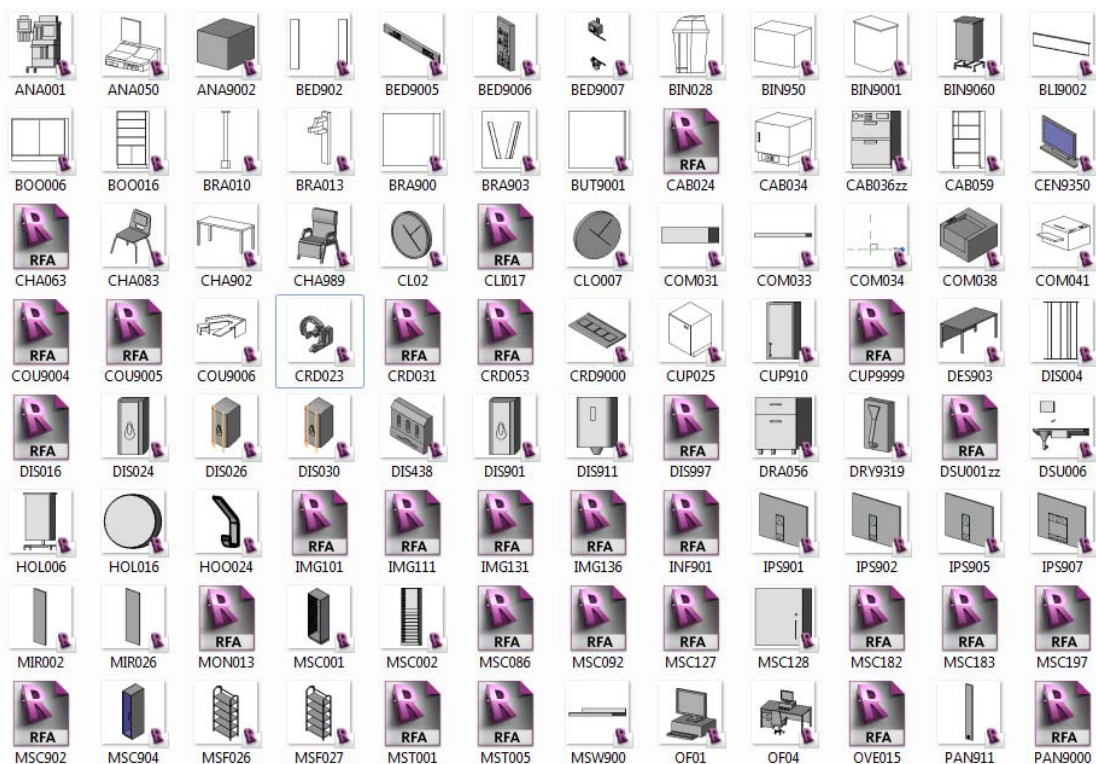






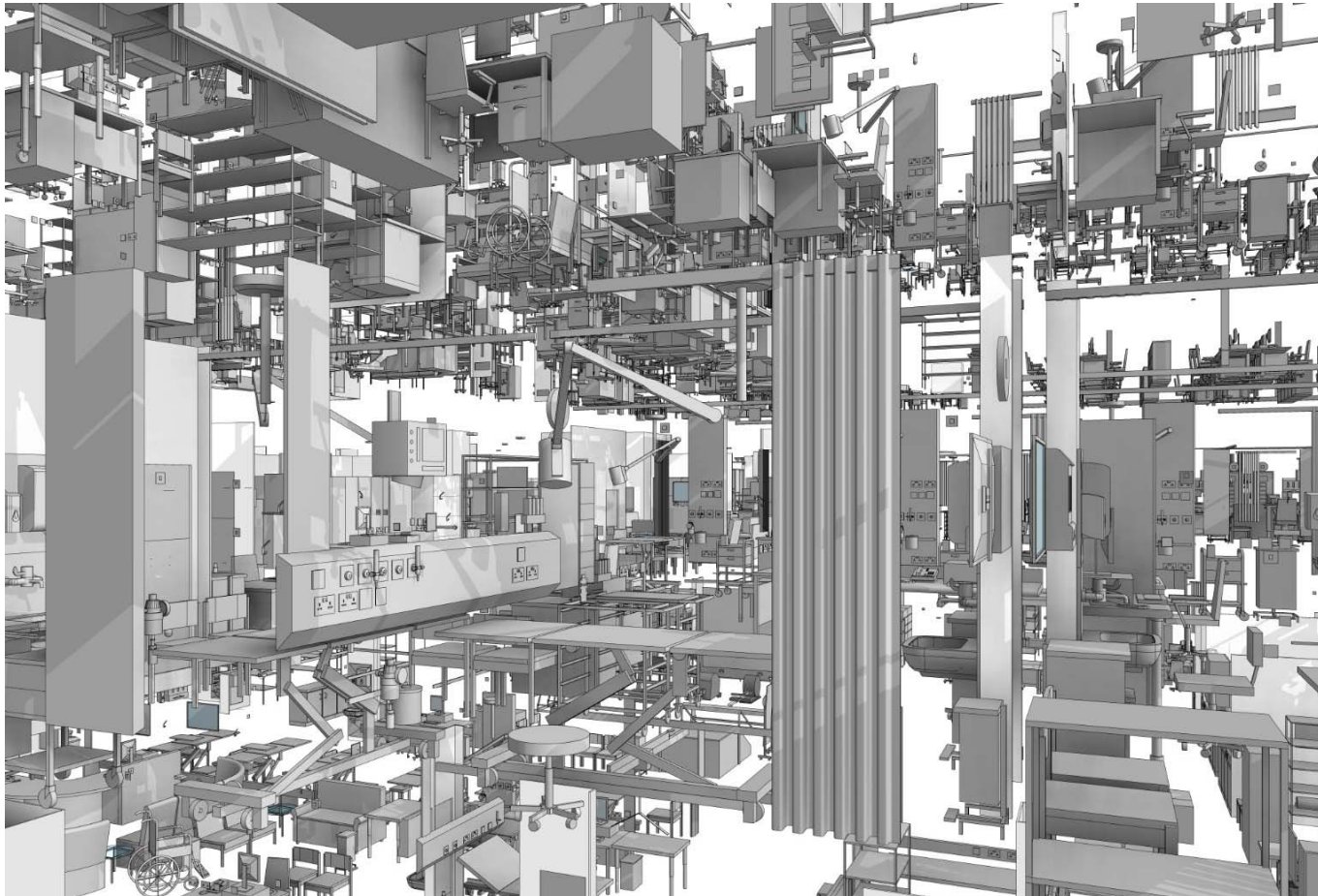


- Annotations
- Balusters
- Casework
- Columns
- Curtain Panels
- Detail Components
- Doors
- Electrical Fixtures
- Entourage
- Furniture
- Generic Models
- Lighting Fixtures
- Mass
- Mechanical Equipment
- Planting
- Plumbing Fixtures
- Profiles
- Site
- Speciality Equipment
- Stair
- Windows









BDP.





About New Process



Where Next for BIM?



BIM Level 2 Certification



Information about RIBA

Welcome to Process⁺

revised, re-designed & re-imagined



0



1



2



3



4



5



6



7

Glossary of Terms

IT at Project Initiation

Matters to be addressed at start of project set-up.

CDM

Legal obligations on designers to address the health and safety aspects of their designs during both construction and ongoing operation.

Job Costing System

BDP's method of project financial management.

Business Case

The rationale behind the initiation of a new building project. It may consist solely of a reasoned argument.

Change Control Procedures

Procedures for controlling changes to the design and construction following the sign-off of the Stage 2 Concept Design and the Final Project Brief.

Common Standards

Publicly available standards frequently used to define project and design management processes.

Communication Strategy

The strategy that sets out when the project team will meet, communicate & discuss protocols.

Contractual Tree

A diagram that clarifies the contractual relationship between the client and the

results are powered by
BDP Glossary Of Terms



Practical Application of BIM



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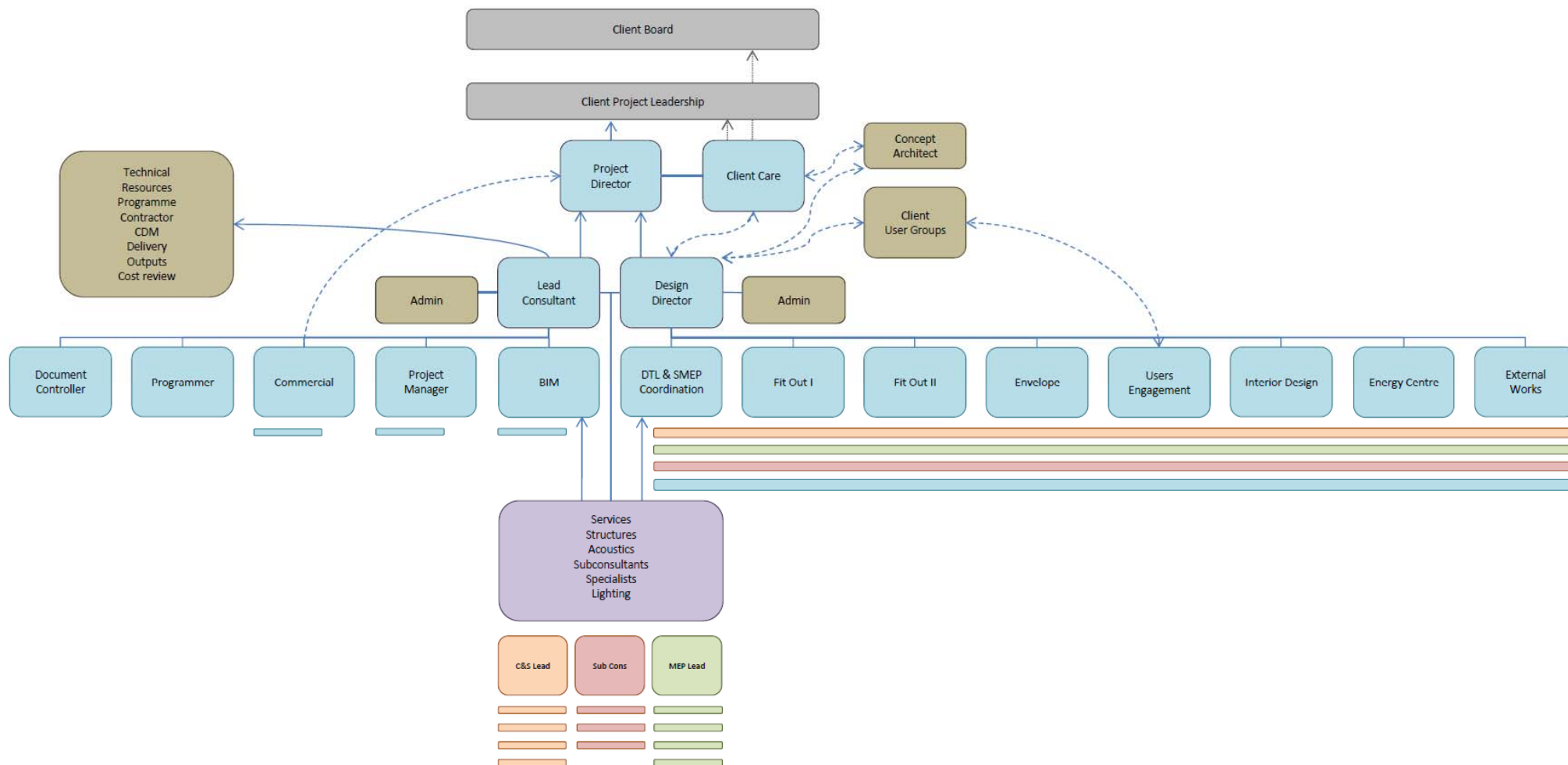


















“Our aim is to create an open, welcoming and vibrant centre that will inspire our teams and partners to push the boundaries of scientific innovation.”



Stage 1: Preparation



Employer's Information Requirements

Project Title New Cambridge Site
 Document Owner Global Engineering
 Document Reference CB000- XX-XXX-RP-K-009077
 Status / Suitability S4 – Issued for construction approval
 Revision / Version P04

Employer's Information Requirements
 Rev P04 - 21/11/2014
 Page 1 of 23

Specimen Model Production and Delivery Table

Showing models required at different project stages

LOD definitions (from PAS 1192)

- 1 Brief
- 2 Concept
- 3 Developed Design
- 4 Production
- 5 Installation
- 6 As constructed
- 7 In use

Stage definitions (from APM)

- 0 Strategy
- 1 Brief
- 2 Concept
- 3 Definition
- 4 Design (production information)
- 5 Build & Commission
- 6 Handover & Closeout
- 7 Operation and end of life

Model Originators identified by name

Overall form and content

- Space planning
- Site and context
- Surveys
- External form and appearance
- Building and site sections
- Internal layouts

Design strategies

- Fire
- Physical security
- Disabled access
- Maintenance access
- BREEAM

Performance

- Building
- Structural
- MEP systems
- Regulation compliance analysis
- Thermal Simulation
- Sustainability Analysis
- Acoustic analysis
- 4D Programming Analysis
- 5D Cost Analysis
- Services Commissioning

Elements, materials components

- Building
- Specifications
- MEP systems

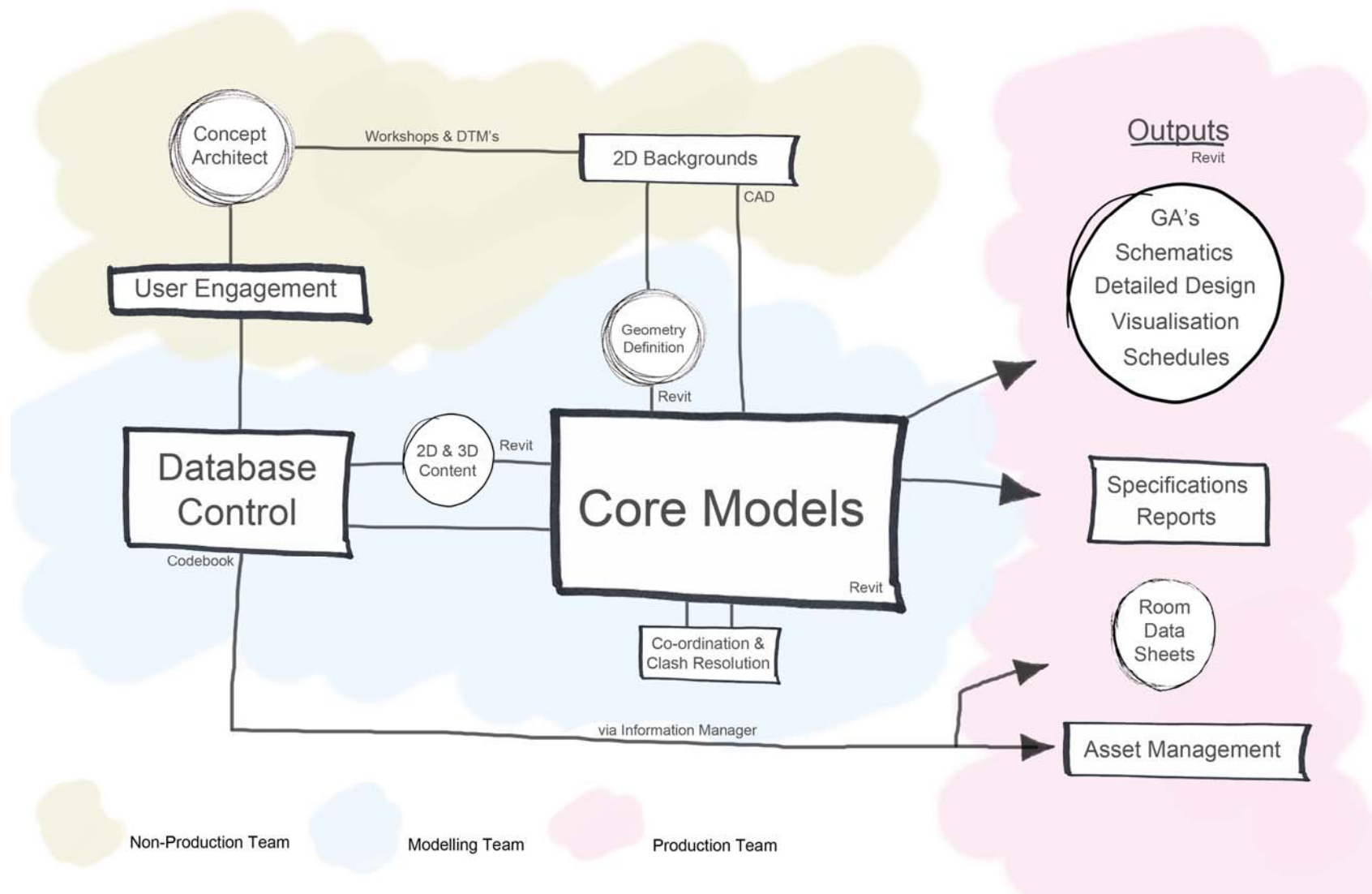
Construction proposals

- Phasing
- Site access
- Site set-up

Health and safety

- Design
- Construction
- Operation

Drop 1 Stage 1		Drop 2a Stage 2		Drop 2b Stage 2		Drop 3 Stage 3		Drop 4 Stage 6	
Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail
Architect	1	Architect	2	Contractor	2	Contractor	3	Contractor	6
Architect	1	Architect	2	Contractor	2	Contractor	3	Contractor	6
		Architect	2	Contractor	2	Contractor	3	Contractor	6
				Contractor	2	Contractor	3	Contractor	6
				Contractor	2	Contractor	3	Contractor	6
				Contractor	2	Contractor	3	Contractor	6
		Architect	2	Contractor	2	Contractor	3	Contractor	6
		Architect	2	Contractor	2	Contractor	3	Contractor	6
		Architect	2	Contractor	2	Contractor	3	Contractor	6
				Contractor	2	Contractor	3	Contractor	6
Architect	1	Architect	2	Contractor	2	Contractor	3		
Architect	1	Str Eng	2	Contractor	2	Contractor	3		
Architect	1	MEP Eng	2	Contractor	2	Contractor	3	Contractor	6
						Contractor	3	Contractor	6
						Contractor	3	Contractor	6
						Contractor	3	Contractor	6
						Contractor	3	Contractor	6
						Contractor	3	Contractor	6
		Architect	2	Contractor	2	Contractor	3	Contractor	6
		MEP Eng	2	Contractor	2	Contractor	3	Contractor	6
						Contractor	3		
						Contractor	3		
						Contractor	3		
						Contractor	3		
						Contractor	3		
						Contractor	3	Contractor	6





BIM Execution Plan

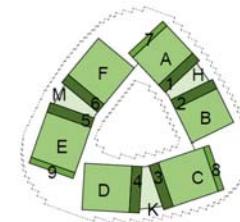
Volume 1 - Project Implementation Plan (PIP)

Project Title New Cambridge Site

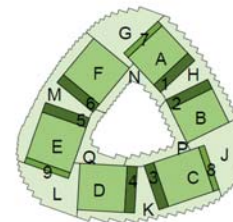
Document Owner

Status S3 - Issued for internal review and comment

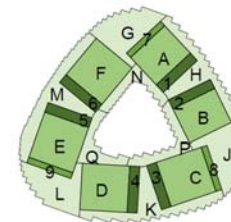
BEP - Vol 1 (PIP) - Project Implementation Plan
Rev 001 - 2016/01/01
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Zoning Strategy - L00
1:1250



Zoning Strategy - L10
1:1250



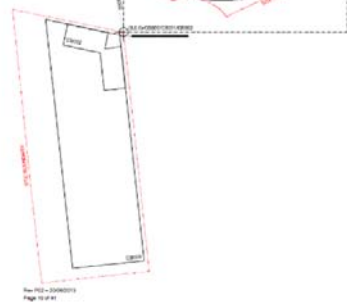
Zoning Strategy - L20
1:1250

Project Information Model (PIM) origin and orientation

The origin and orientation of the project are based on the project location and its reference to other plans or local grids, for example Ordnance Survey. Some projects have their own grid system instead, for instance, when the London Grid is specified for that project, to suit the Olympic programme.

See the CPM Production Information 2003 publications for specific requirements.

See Origin:



Rev 001 - 2016/01/01
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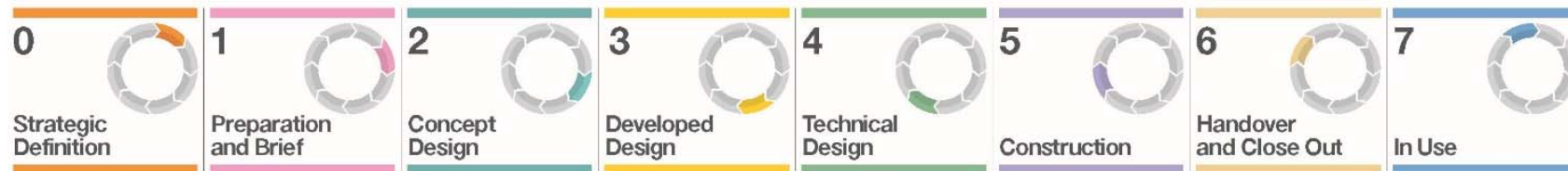
BDP.

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NBS BIM Toolkit BETA

**THE EASY WAY TO DEFINE
WHO IS DOING WHAT AND WHEN
ON YOUR LEVEL 2 BIM PROJECTS**

[Create a project >](#)

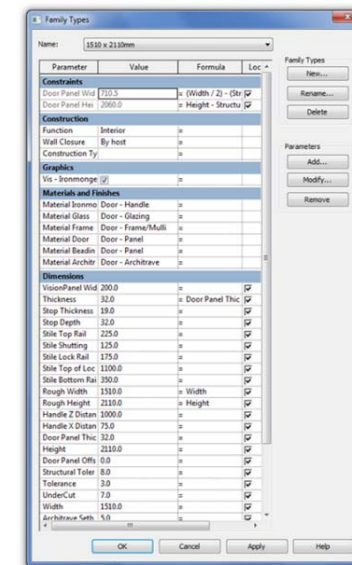
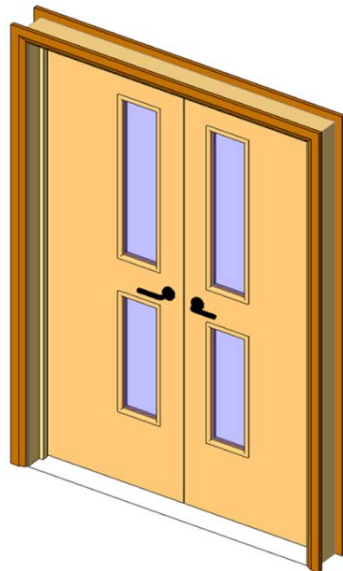


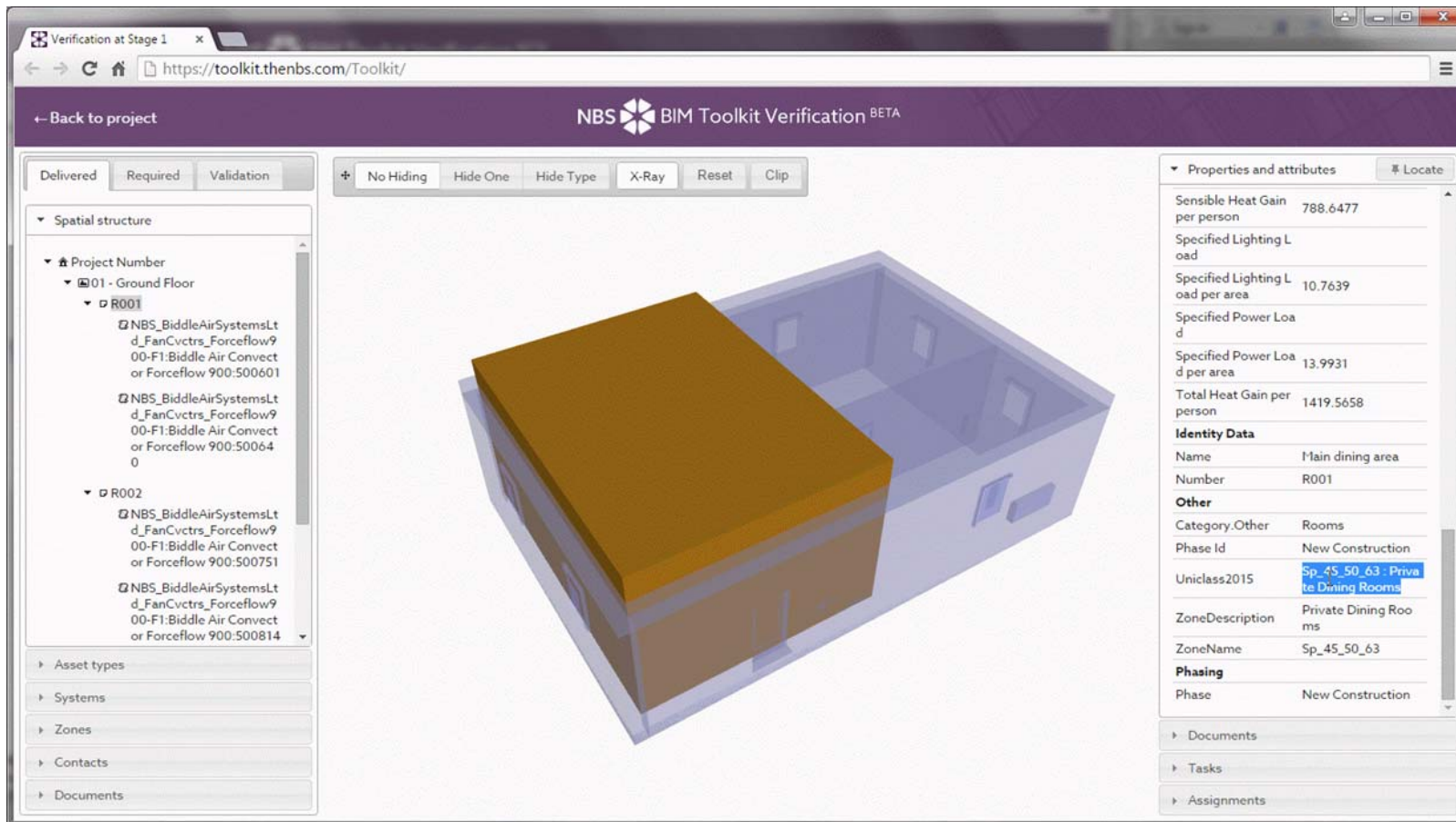
LOD

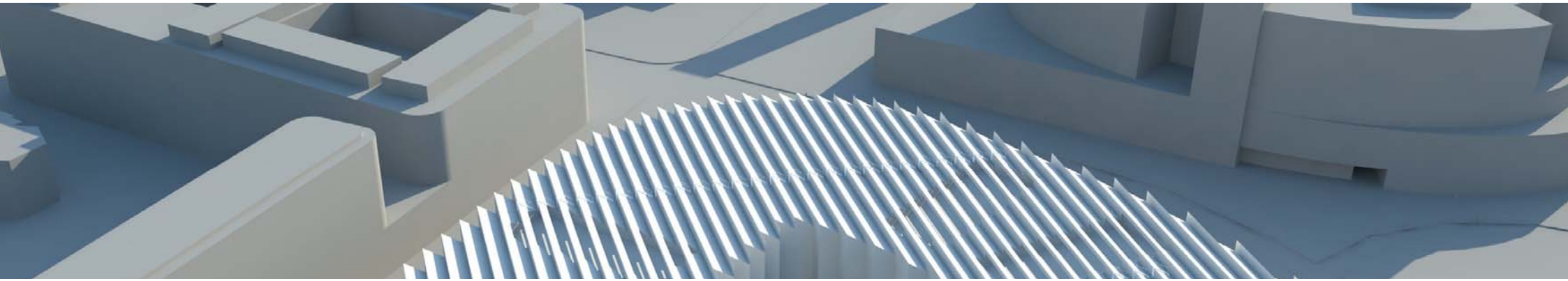
Graphical / Geometric Definition

LOI

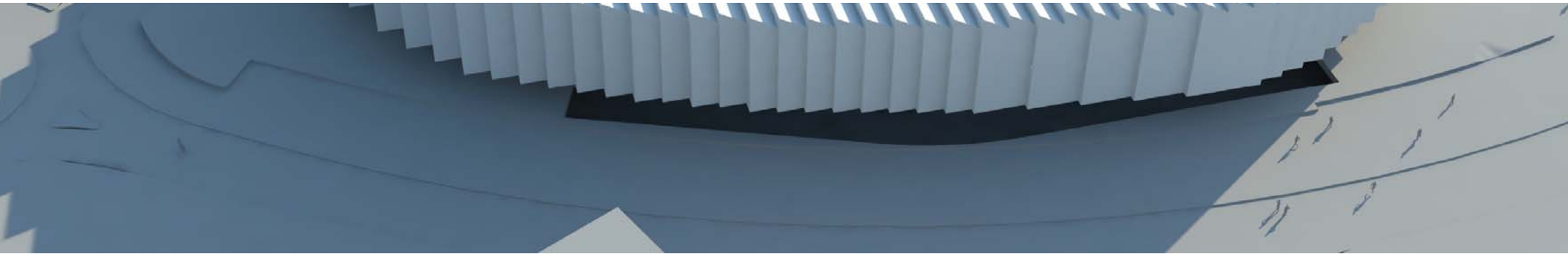
Information associated with objects

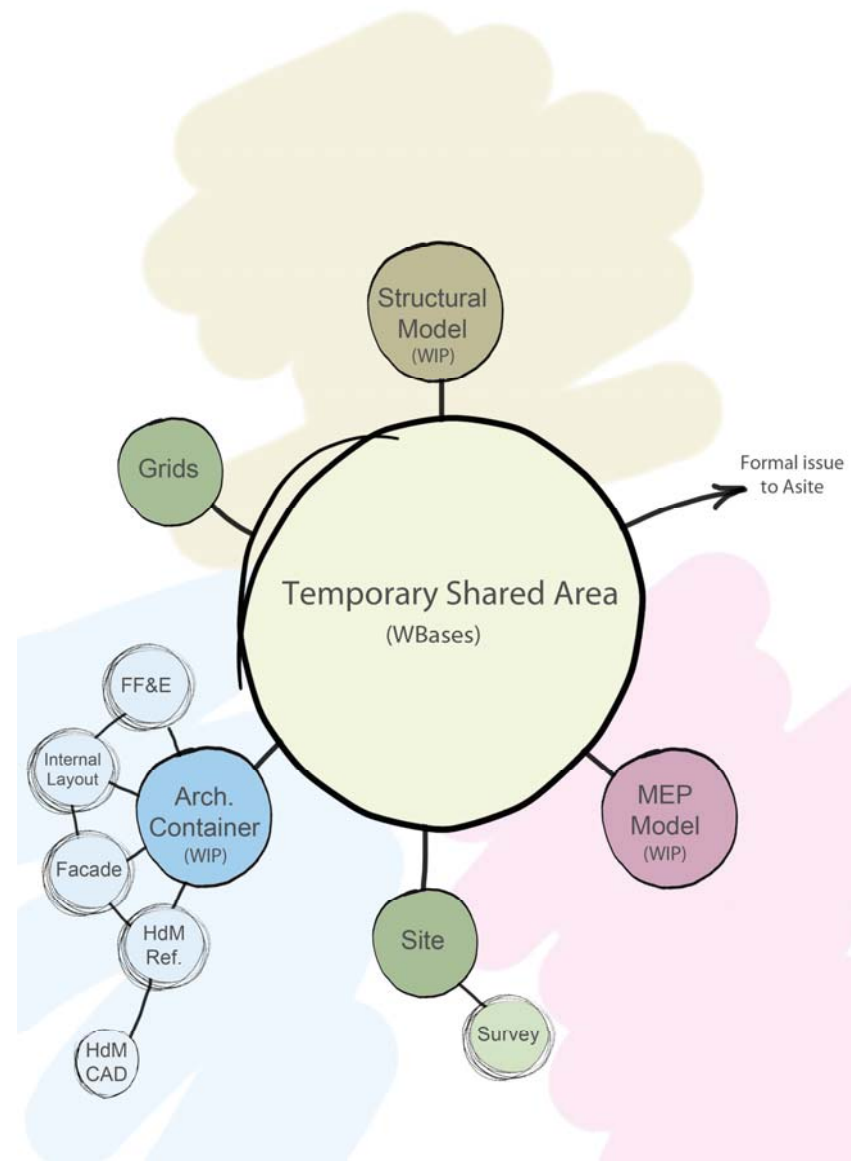


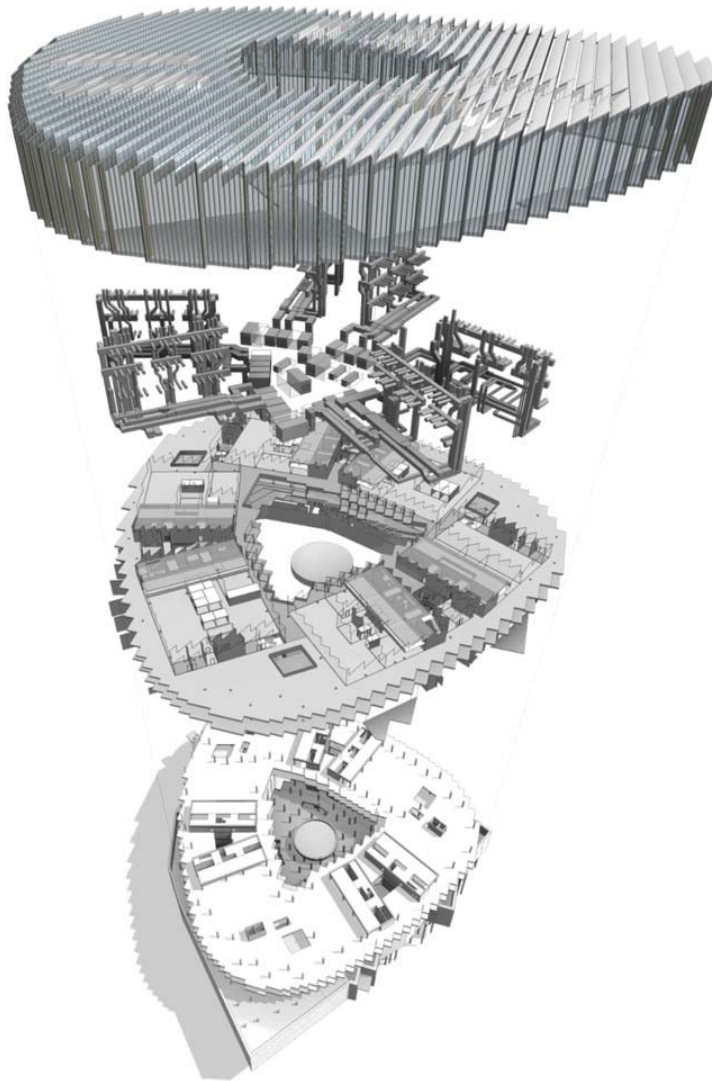




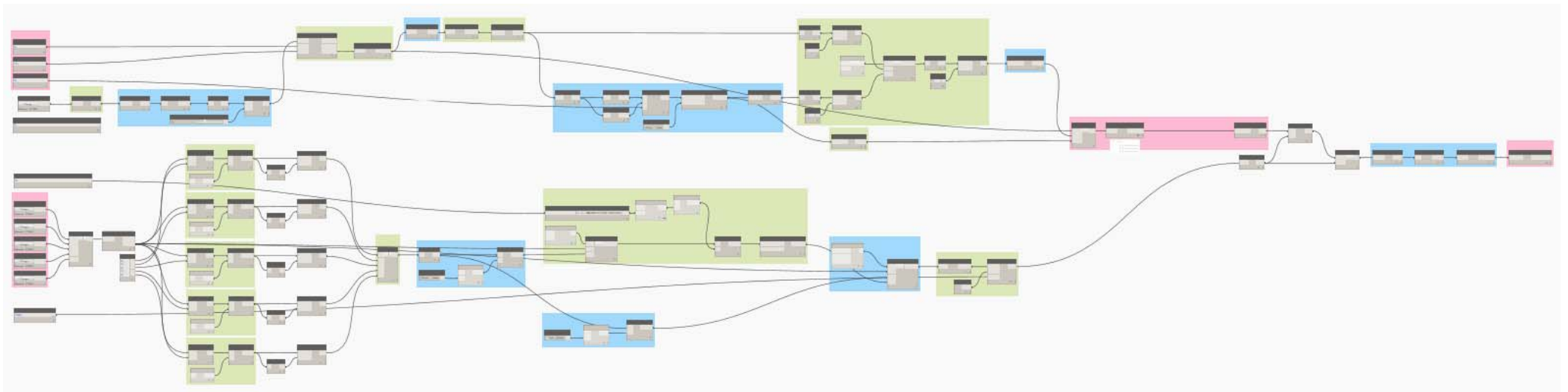
Stage 2: Concept Design





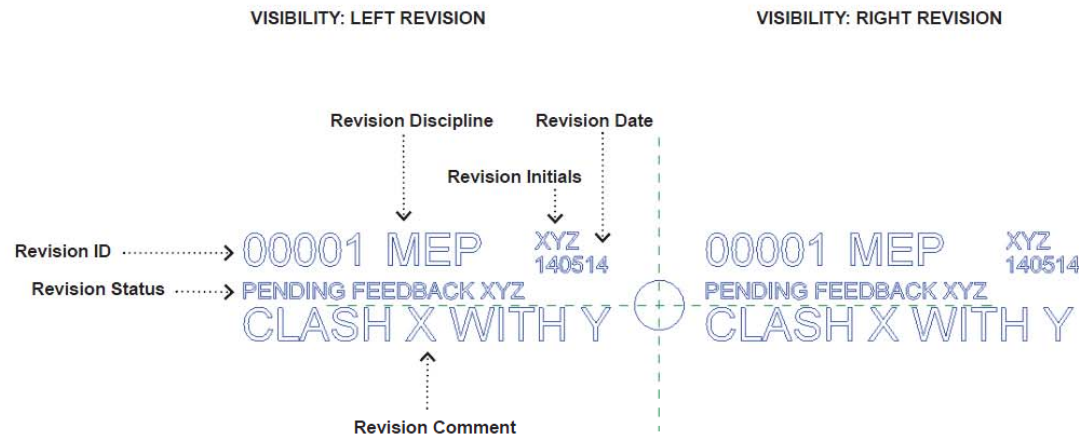








- Data Driven Design
- Automate Repetition*
- Verification



Parameter Values input in Family Properties:

Constraints	
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Host	Level : BASEMENT 1
Offset	1500.00
Moves With Nearby Elements	<input type="checkbox"/>
Graphics	
3D-ANNO-TEXT-POS-RIGHT	<input checked="" type="checkbox"/>
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Text	
3D-ANNO-SOLVED_BY	JBR
3D-ANNO-RECEIVER	HuM
3D-ANNO-PRIORITY	HIGH
3D-ANNO-NOTE	140610 solved
3D-ANNO-INITIALS	JBR
3D-ANNO-ID	00159
3D-ANNO-DISCIPLINE	STR
3D-ANNO-CREATION-DATE	140603
3D-ANNO-COMMENT	ADD COLUMN acc. to BH
3D-ANNO-STATUS	SOLVED
Dimensions	
NOTE-SPHERE-SIZE	150.00
Volume	0.014 m³
Identity Data	
Comments	
Mark	
Workset	8_ANNOTATION
Edited by	
Phasing	
Phase Created	New Construction

Some Samples:



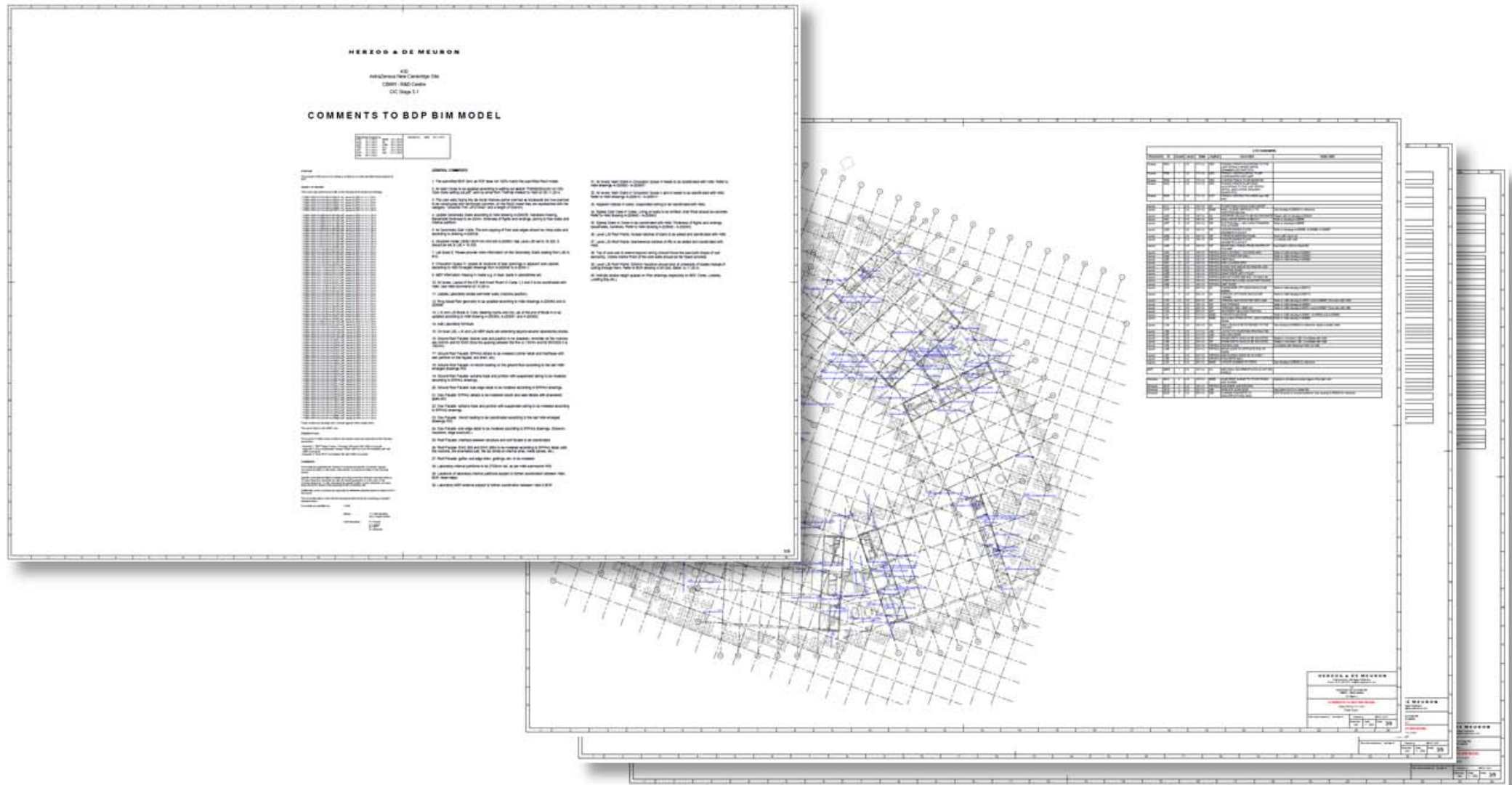
Autodesk Revit interface showing the 'Modify Schedule/Quantities' ribbon and a 3D view of a building model.

The ribbon includes the following tabs: Annotate, Analyze, Massing & Site, Collaborate, View, Manage, Add-Ins, Modify, and Modify Schedule/Quantities. The 'Modify Schedule/Quantities' ribbon is active, showing options for Columns, Rows, Titles & Headers, and Appearance. The 'Highlight in Model' button is highlighted in the Appearance group.

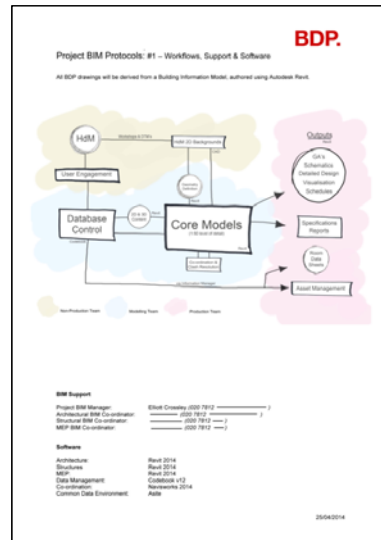
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BASEMENT 1	00031	STR	NOT ALIGN WITH ARC	140520	JBR
BASEMENT 1	00032	STR	NOT ALIGN WITH ARC	140520	JBR
BASEMENT 1	00033	STR	NOT ALIGN WITH ARC	140520	JBR
BASEMENT 1	00105	MEP	REVIEW ICT	140523	JBR
BASEMENT 1	00106	MEP	REVIEW ICT	140523	JBR
BASEMENT 1	00107	MEP	REVIEW ICT	140523	JBR
BASEMENT 1	00228	STR	NOT ALIGN WITH ARC	140610	JBR
BASEMENT 1	00024	STR	NOT ALIGN WITH ARC	140520	JBR
BASEMENT 1	00025	STR	NOT ALIGN WITH ARC	140520	JBR
BASEMENT 1	00027	STR	NOT ALIGN WITH ARC	140520	JBR
BASEMENT 1	00026	STR	ADD STR WALL acc. to BH	140520	JBR
BASEMENT 1	00028	STR	REMOVE STR WALL	140520	JBR
BASEMENT 1	00063	STR	REMOVE STR COLUMN	140521	JBR
BASEMENT 1	00064	STR	NOT ALIGN WITH ARC	140521	JBR
BASEMENT 1	00065	STR	MOVE COLUMN acc. to BH	140521	JBR
BASEMENT 1	00066	STR	ADD STR. WALL WIDTH acc. to BH	140521	JBR
BASEMENT 1	00068	STR	NEW STR WALL acc. to BH	140521	JBR
BASEMENT 1	00069	STR	NEW STR WALL acc. to BH	140521	JBR
BASEMENT 1	00070	STR	NOT ALIGN WITH ARC	140521	JBR
BASEMENT 1	00071	STR	MOVE COLUMN acc. to BH	140521	JBR
BASEMENT 1	00072	STR	MOVE COLUMN acc. to BH	140521	JBR
BASEMENT 1	00076	STR	DELETE COLUMN acc. to BH	140522	JBR
BASEMENT 1	00074	STR	DELETE COLUMN acc. to BH	140522	JBR
BASEMENT 1	00075	STR	DELETE COLUMN acc. to BH	140522	JBR
BASEMENT 1	00077	STR	MOVE COLUMN acc. to BH	140522	JBR
BASEMENT 1	00078	STR	DELETE COLUMN acc. to BH	140522	JBR
BASEMENT 1	00079	STR	DELETE COLUMN acc. to BH	140522	JBR
BASEMENT 1	00083	STR	ADJUST STR. WALL WIDTH acc. to	140522	JBR
BASEMENT 1	00131	STR	ADD COLUMN acc. to BH	140527	JBR
BASEMENT 1	00138	STR	ADD COLUMN acc. to BH	140527	JBR

The 3D view shows a building model with various annotations. A red arrow points from the 'Highlight in Model' button in the ribbon to the 'Highlight in Model' button in the 3D view. Another red arrow points from the 'Highlight in Model' button in the ribbon to the 'Highlight in Model' button in the 3D view.



Plain Language isn't just for Clients

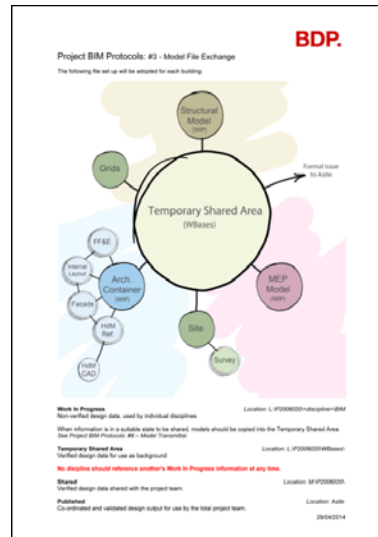
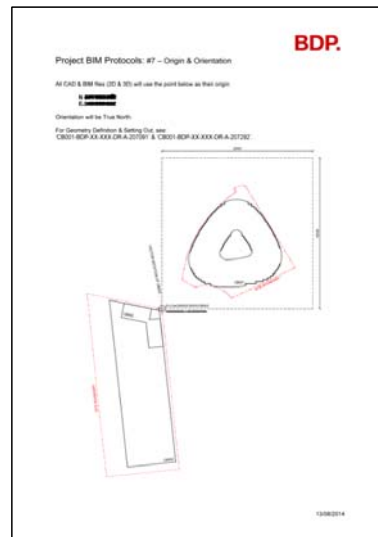
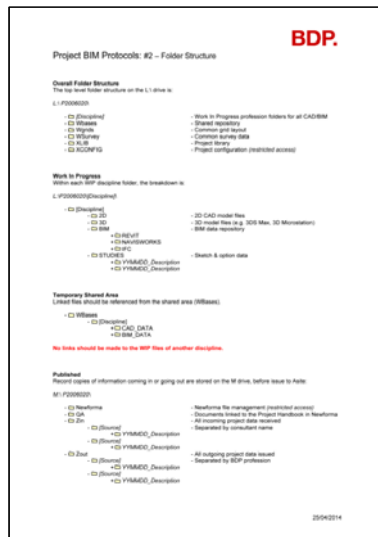
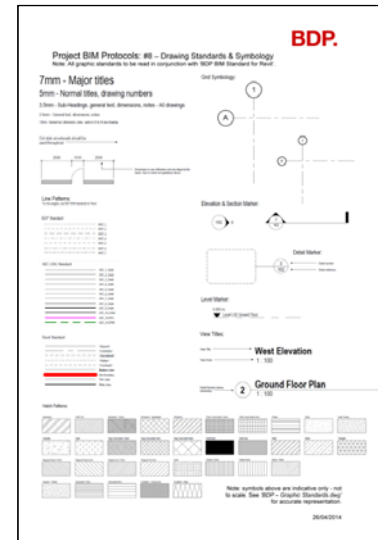


Project BIM Protocols: #4 – Document Numbering System

All files on the project will be named according to the following system:

Project	Originator	Volume	Level of Location	File Type	Discipline	Number
000001	BDP	100	100	001	001	001
000002	BDP	100	100	001	001	002
000003	BDP	100	100	001	001	003
000004	BDP	100	100	001	001	004
000005	BDP	100	100	001	001	005
000006	BDP	100	100	001	001	006
000007	BDP	100	100	001	001	007
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000009	BDP	100	100	001	001	009
000010	BDP	100	100	001	001	010

11/05/2014

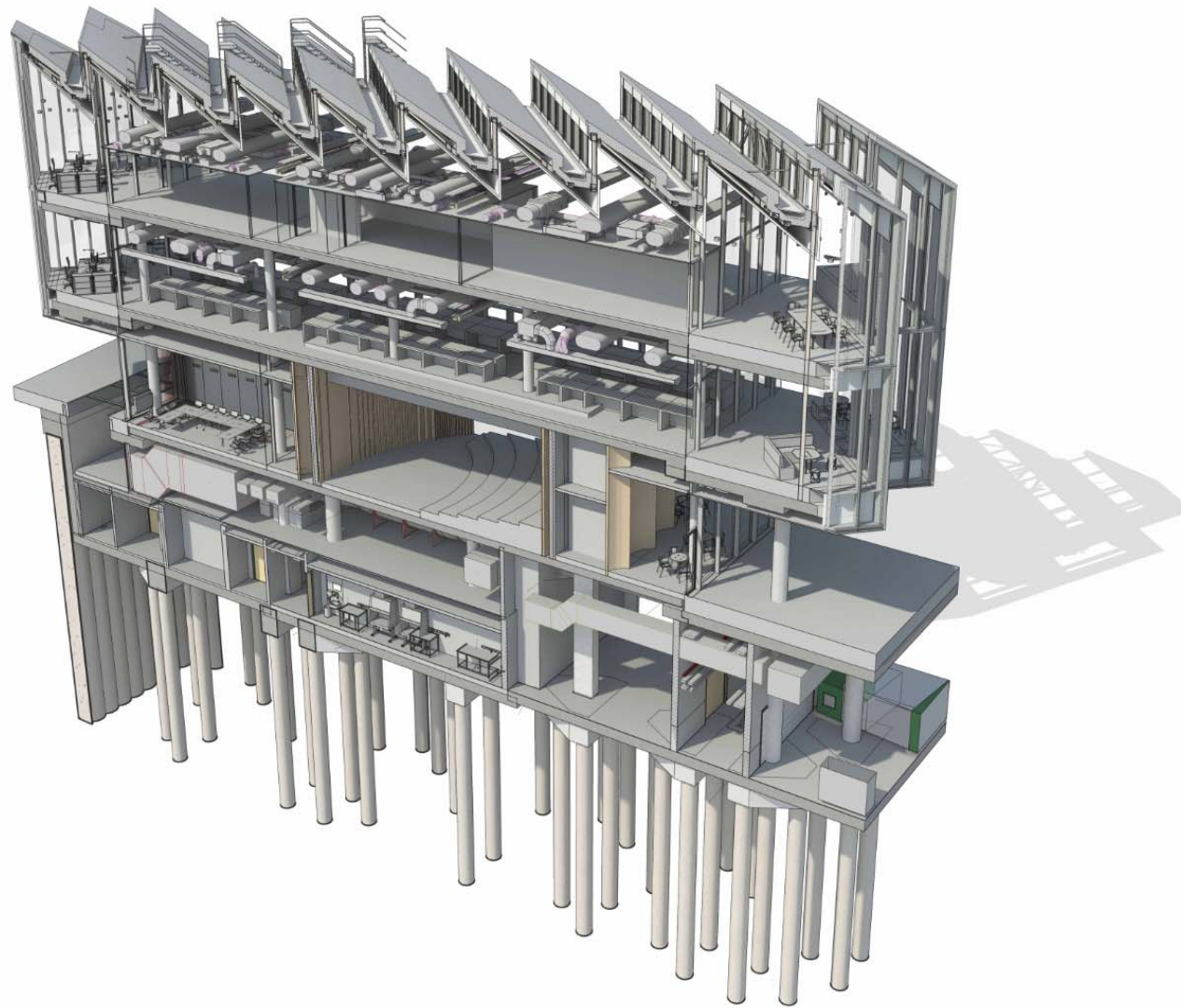




Stage 3: Developed Design



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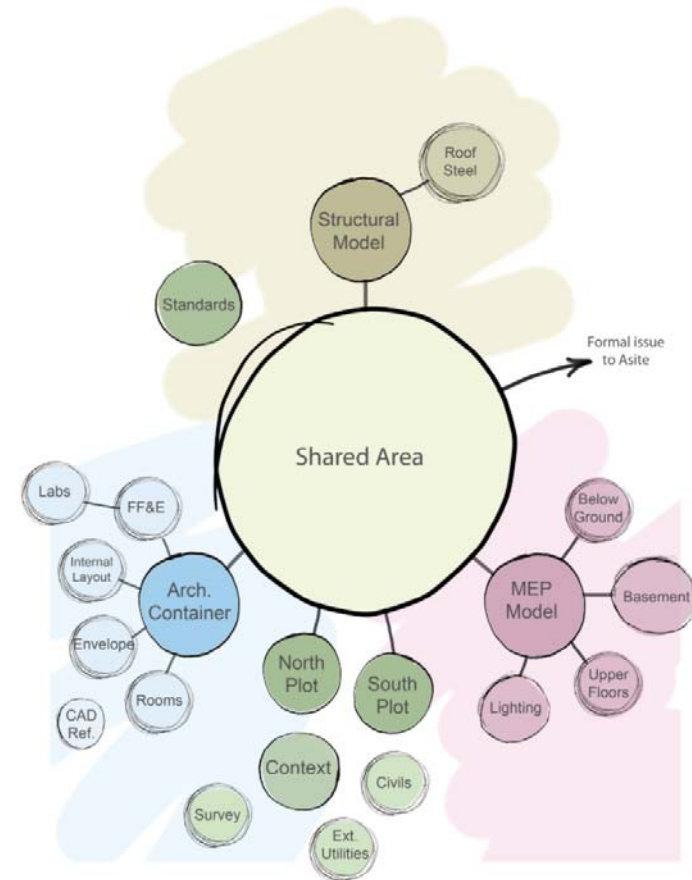




DOCUMENT REGISTER - BIM

03.08.2015

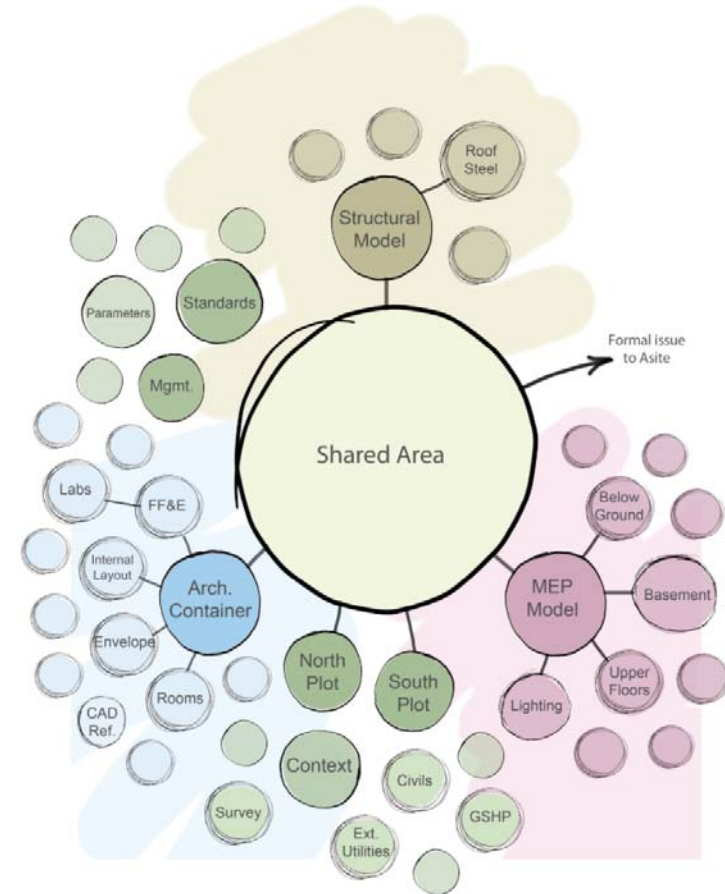
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3D MODELS - Sitewide													
CB000-GRH-XX-XXX-M3-B-208001	Existing Survey	n/a	.nwc, .rvt	n/a	n/a	n/a	n/a	n/a	n/a	n/a		wSurvey	50 Mb
CB000-BDP-XX-XXX-M3-Z-208001	Masterplan Federated Model	n/a	.ifc, .nwd	BDP	BDP	BDP	BDP	BDP	BDP	BDP		Z/BIM	30 Mb
CB000-BDP-XX-XXX-M3-A-208001	CAD Reference	n/a	.nwc, .rvt	n/a	n/a	n/a	n/a	n/a	n/a	n/a		wBases	60 Mb
CB000-BDP-XX-XXX-M3-L-208002	North Plot Proposed Landscape	n/a	.nwc, .rvt	n/a	BDP - L	n/a	BDP - L	BDP - L	BDP - L	BDP - L		L/BIM	100 Mb
CB000-BDP-XX-XXX-M3-L-208003	South Plot Proposed Landscape	n/a	.nwc, .rvt	n/a	BDP - L	n/a	BDP - L	BDP - L	BDP - L	BDP - L		L/BIM	100 Mb
CB000-BDP-XX-XXX-M3-M-208701	External Utilities	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - M	BDP - M	BDP - M	BDP - M		M/BIM	100 Mb
3D MODELS - R&D Building													
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CB001-BDP-XX-XXX-M3-A-208101	Envelope	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	120 Mb
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CB001-BDP-XX-XXX-M3-A-208301	Non-Laboratory FF&E	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A		D/BIM	200 Mb
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3D MODELS - R&D Enabling Building													
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CB001-BDP-XX-XXX-M3-M-208701	MEP - Basement	n/a	.nwc, .rvt	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M		M/BIM	200 Mb
3D MODELS - Energy Centre													
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3D MODELS - Service Corridor & Misc													
CB002-BDP-XX-XXX-M3-A-208001	Container File	n/a	.nwc, .rvt	BDP - A	n/a	n/a	n/a	n/a	n/a	n/a		A/BIM	40 Mb
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CB002-BDP-XX-XXX-M3-Z-208501	Grids	n/a	.nwc, .rvt	BDP - A	n/a	n/a	n/a	n/a	n/a	n/a		wGrids	10 Mb
CB002-BDP-XX-XXX-M3-S-208601	Structure	n/a	.nwc, .rvt	BDP - S	n/a	n/a	n/a	n/a	n/a	n/a		S/BIM	60 Mb
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CB005-BDP-XX-XXX-M3-S-208601	Structure	n/a	.nwc, .rvt	n/a	BDP - S	BDP - S	BDP - S	BDP - S	BDP - S	BDP - S		S/BIM	60 Mb
CB005-BDP-XX-XXX-M3-M-208701	MEP	n/a	.nwc, .rvt	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M		M/BIM	100 Mb
3D MODELS - Energy Centre													
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3D MODELS - Service Corridor & Misc													
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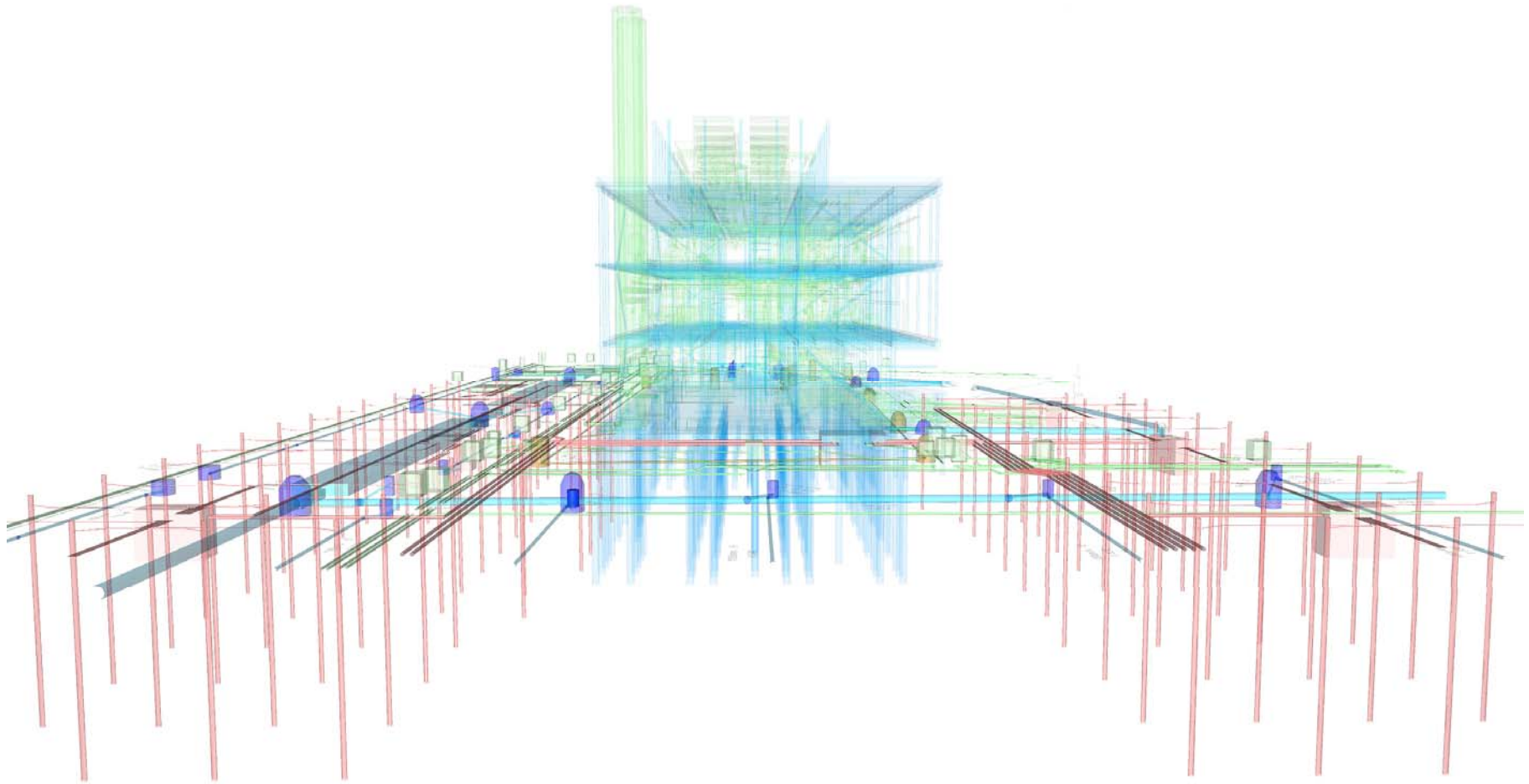


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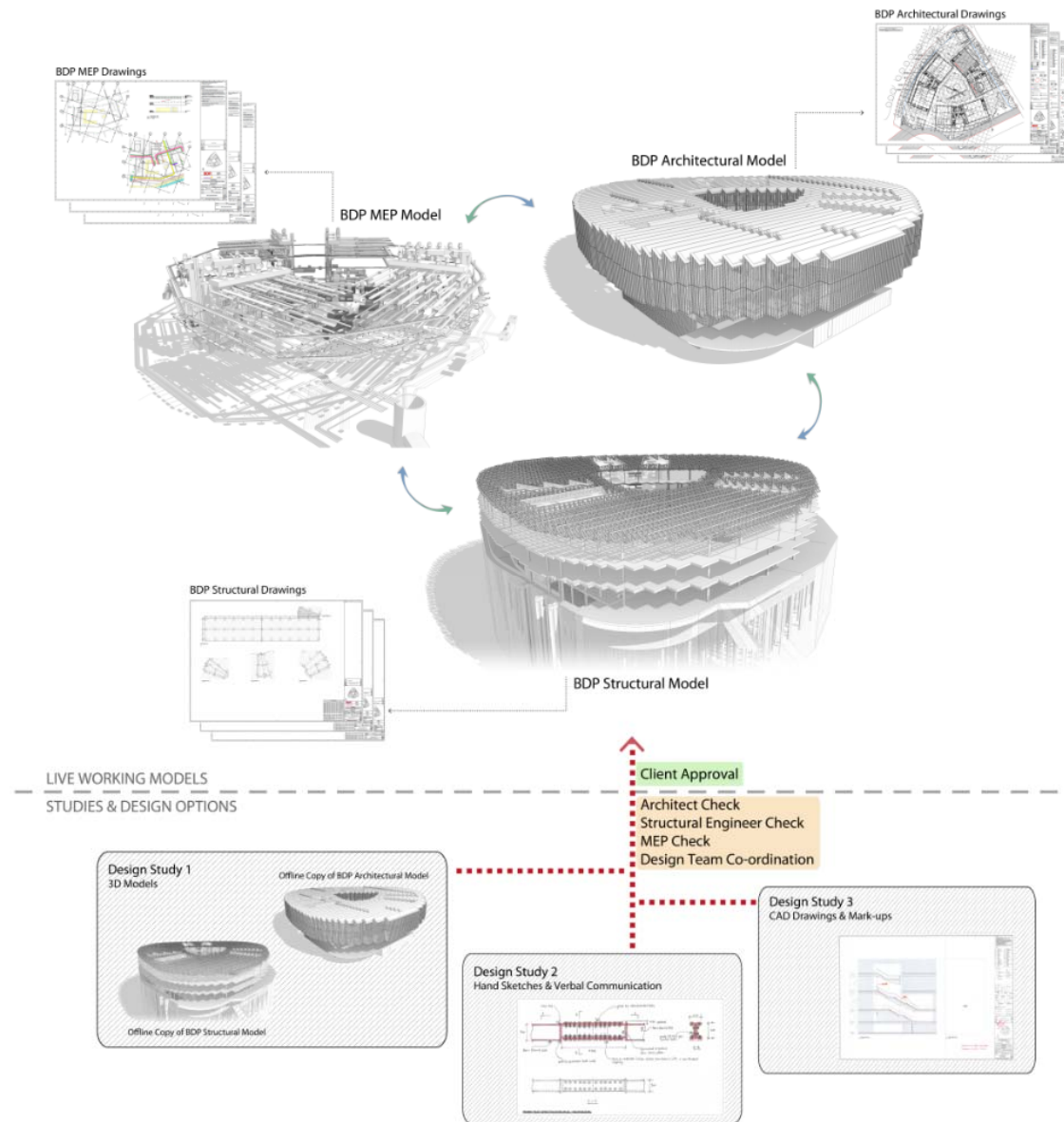
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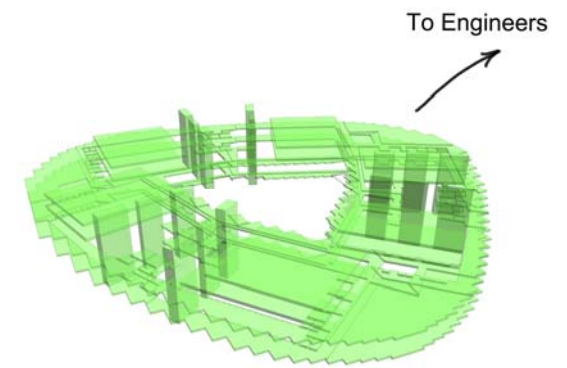
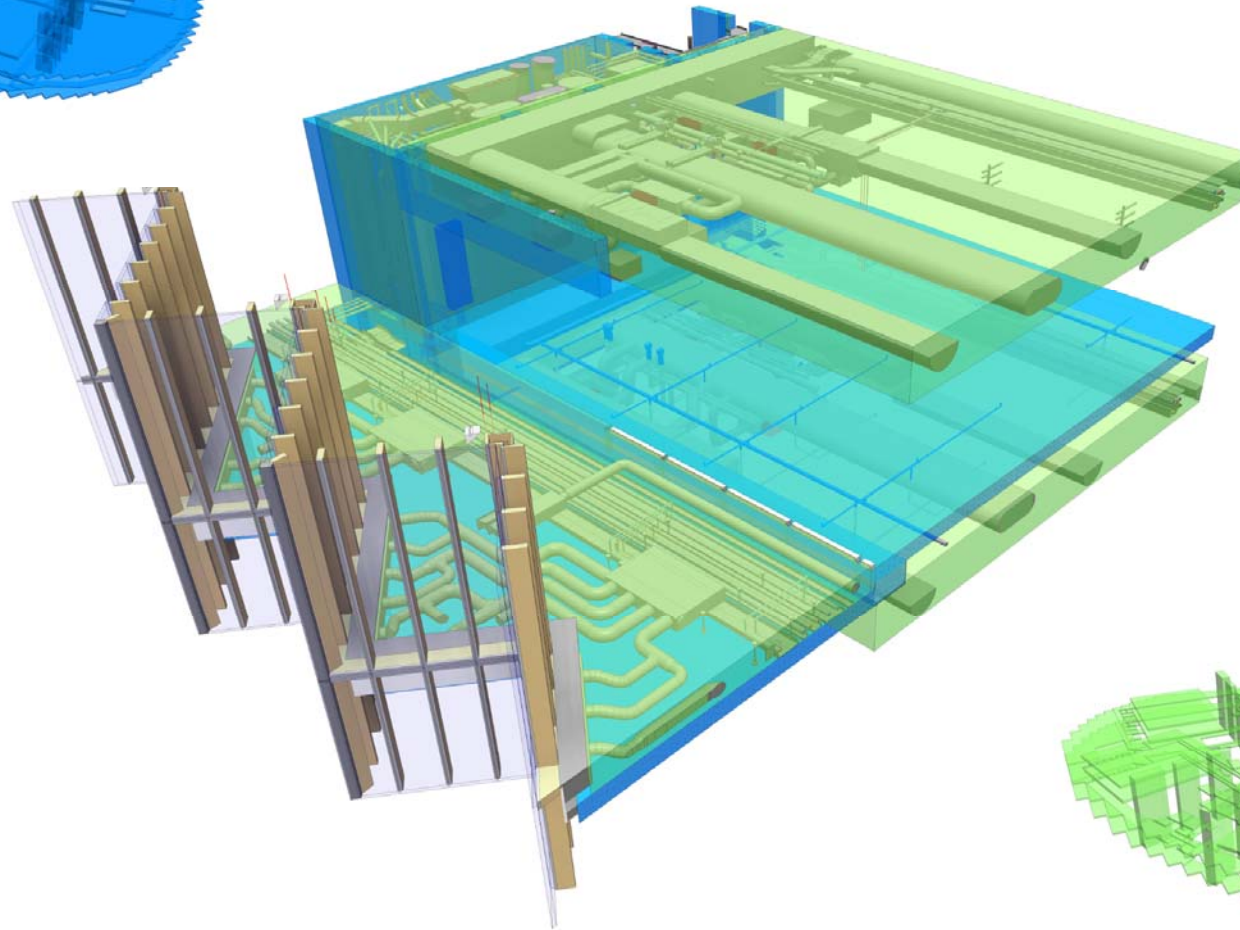
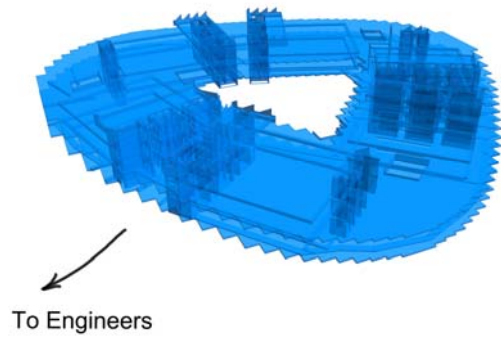
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CB000-BDP-XX-XXX-M3-L-208002	North Plot Proposed Landscape	n/a	.nwc, .rvt	n/a	BDP - L	n/a	BDP - L	BDP - L		L/BIM	100 Mb
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CB001-BDP-XX-XXX-M3-Z-208801	R&D Building Federated Model	n/a	.lfc, .nwd	BDP	BDP	BDP	BDP	BDP		Z/BIM	400 Mb
3D MODELS - R&D Enabling Building											
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3D MODELS - Energy Centre											
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CB005-BDP-XX-XXX-M3-A-208202	Rooms	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	10 Mb
CB005-BDP-XX-XXX-M3-S-208601	Structure	n/a	.nwc, .rvt	n/a	BDP - S	BDP - S	BDP - S	BDP - S		S/BIM	60 Mb
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CB005-BDP-XX-XXX-M3-N-208704	Lighting	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - N	BDP - N		M/BIM	100 Mb
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3D MODELS - Service Corridor & Misc											
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CB051-BDP-XX-XXX-M3-S-208601	Services Corridor	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP	BDP		S/BIM	30 Mb
CB051-BDP-XX-XXX-M3-M-208701	Services Corridor	n/a	.nwc, .rvt	n/a	BDP - M	n/a	BDP - M	BDP - M		M/BIM	50 Mb
CB051-BDP-XX-XXX-M3-N-208704	Lighting	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - N	BDP - N		M/BIM	100 Mb
CB052-BDP-XX-XXX-M3-A-208101	Gas Store	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A		L/BIM	20 Mb
CB053-BDP-XX-XXX-M3-A-208101	Cycle Store	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A		L/BIM	20 Mb





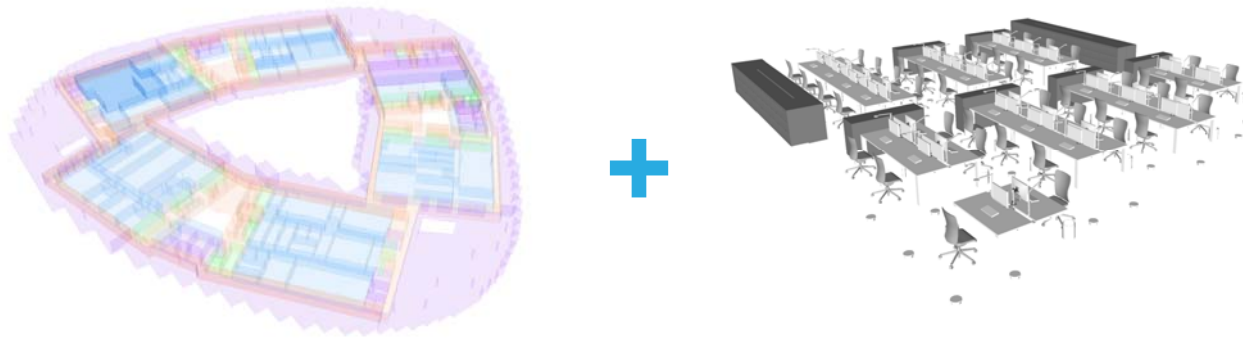








The Problem with... Linked Rooms

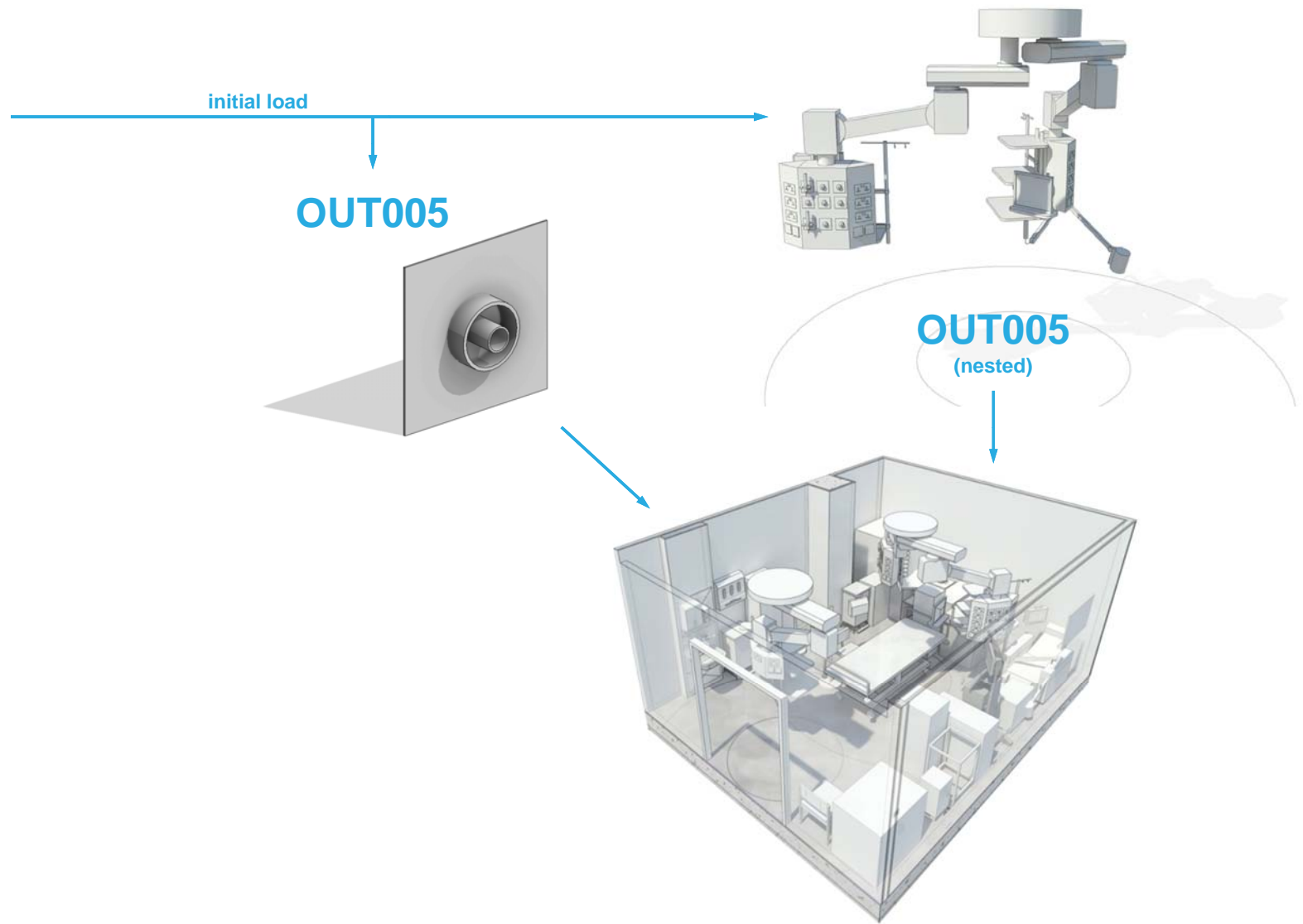
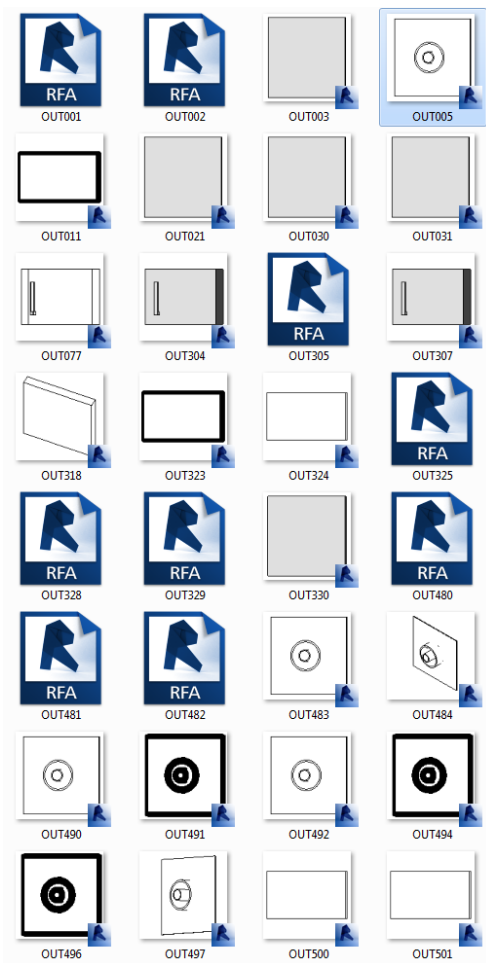


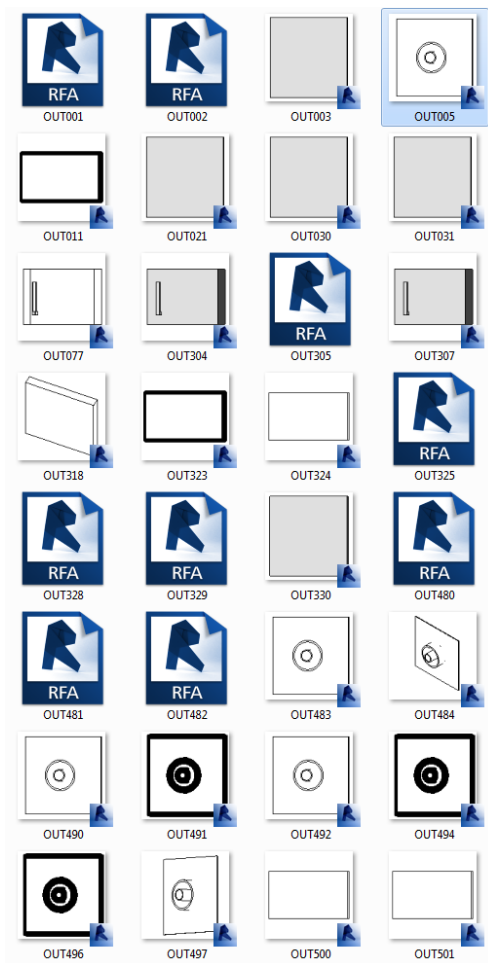
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Qty	Code	Description	--	Group
17	CHT102	CHAIR; task; adjustable arms		84
2	DSK122	DESK; double; 6 Person; 4800mm (width) x 1600mm (depth) x 730mm (height)		84
1	DSK110	DESK; Single Bench; 1 Person; 1600x800mm		84
1	DSK119	DESK; single side; 4 Person; 6400mm (width) x 800mm (depth) x 730mm (height)		84
17	ACO122	LIGHT; task; desk clamp		84
17	ACO110	MONITOR ARM; clamp; single		84
17	ACO125	MONITOR; with keyboard; desktop		84
17	WST104	WASTE BIN; office desk		84
7	SLO130	STORAGE; 1 unit (3 linear metres); 3 draws		85
1	SCO130	STORAGE; coat		85
17	STP100	STORAGE; pedestal		85

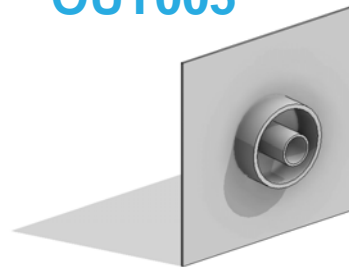
The Problem with...

Revit Families





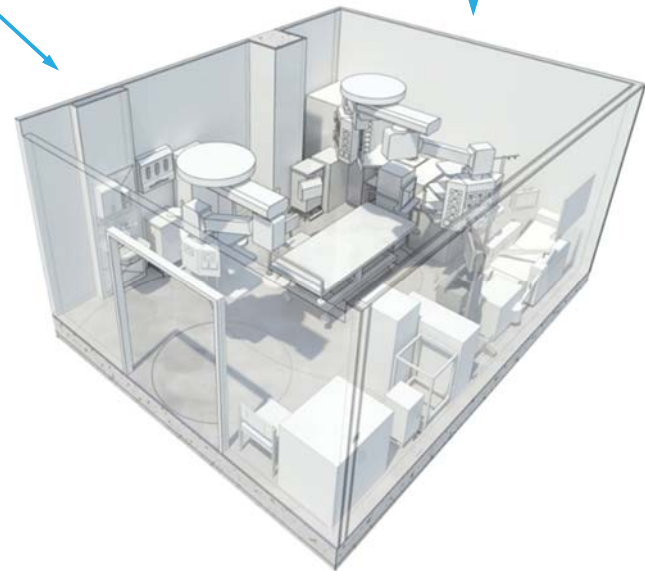
OUT005



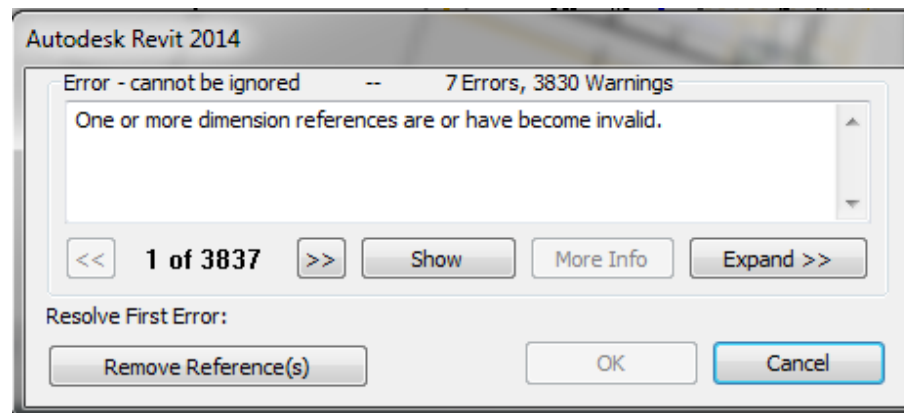
edit & reload

≠

- OUT001
- OUT2
 - OUT005
 - OUT005 2
- OUT002
- OUT005
 - OUT005
- OUT011
- OUT021
- OUT030
- OUT031
- OUT077



The Problem with... Container Files



\\LN-SFS6\.....

vs

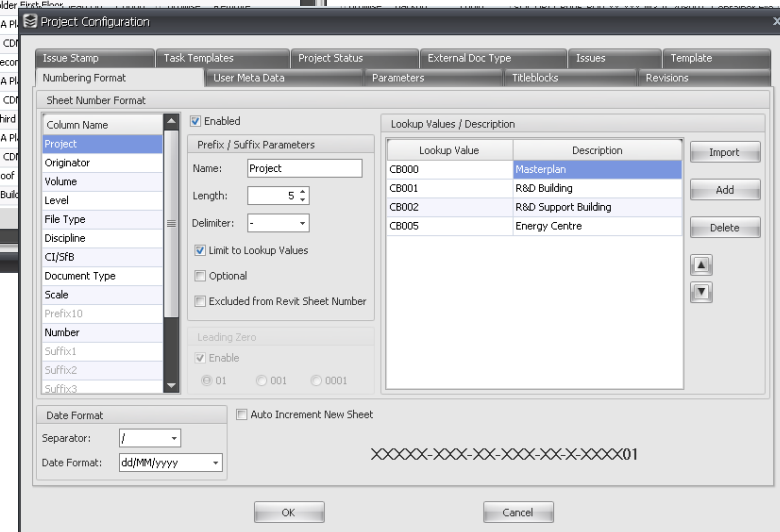
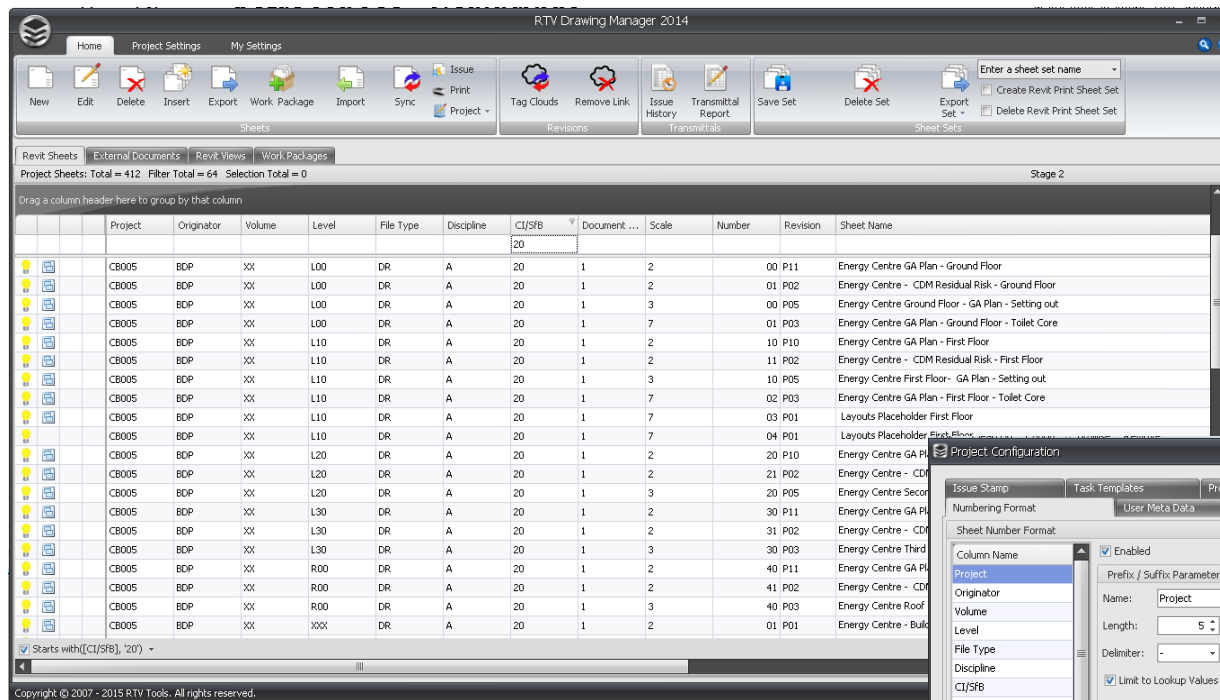
L:\.....





Stage 4: Technical Design







**1 project, 1 month:
572 Drawings issued,
25 hours saved.**

\$250 software.

Verification



Dynamo

Technical Project Audit
P2001234: Project Name

BDP.

BDP. Technical Project Audit

<insert project name/ file name> <sheet no.>



BDP. Technical Project Audit

<insert project name/ file name> <sheet no.>

Additional data to be include in the report

Documented List of all Warning Classification

- Status of the errors & what is wrong



Performance advisor report

- What needs to be fixed



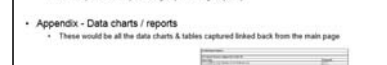
Glossary - Error Guidance

- How to fix specific errors uncovered. (consulting information)



Error Data Parsing - Group errors so you can access ID's by type

- All id captured so they can be group & managed quickly



Appendix - Data charts / reports

- These would be all the data charts & tables captured linked back from the main page





CodeBook



BDP.

10489 Room Data - Environmental

Level:		
Department:		
Room:		
Room Number:		
Temperature	Summer degC	27°C not to be against CIBSE
	Winter degC	21
	Relative Humidity%	Humidity not to
Ventilation	Supply ac/hr	10 litres per sq
	Extract ac/hr	10 litres per sq
	Relative Pressure	Balanced
	Final Filtration	0.1.0
Mechanical Notes		
Safety	Hot Surface Temperature deg C	43
	Hot Water Temperature deg C	-
Safety Notes		Hot surface temperature radiant panels.
Lighting	Lighting Level Normal lux	300 lux at desk
	Lighting Level Night lux	30 / 200 lux - see
	Lighting Level Local lux	0 -
	Standby Lighting Grade	A - Lighting of provided by no
	Colour Rendering Lighting Notes	General lighting Separate select facility. Unified glare ra
Sound	Intrusive Noise NR LAeq, 1hour	40 dB LAeq, 1h
	Mechanical Services Noise NR LAeq, 1hour	NR 35
	Rain Noise NR LAeq, 1hour	>20 dB above lower
	Impact Sound Insulation from above L _n T,w dB	65 dB L _n T,w
Sound Insulation Criteria	Privacy	Moderate
	Noise Generation	Typical
	Noise Sensitivity	Medium
Fire	Fire Detection	- Smoke

BDP.

10489 Room Data - Finishes

Level:		
Department:		
Room:		
Room Number:		
Finishes	Floor Finish	Surface smooth
	Floor Finish Spec.	Refer to Skirting
	Skirting	Coved to
	Skirting Spec.	Refer to
	Wall Finish	Surface normal
		2.4
	Wall Finish Spec.	Refer to
	Ceiling Finish	Surface Resistant
		(HTM 68)
	Ceiling Finish Spec.	Suspend imperfor
	Window surrounds and	n/a
	Glazed screen	n/a

BDP.

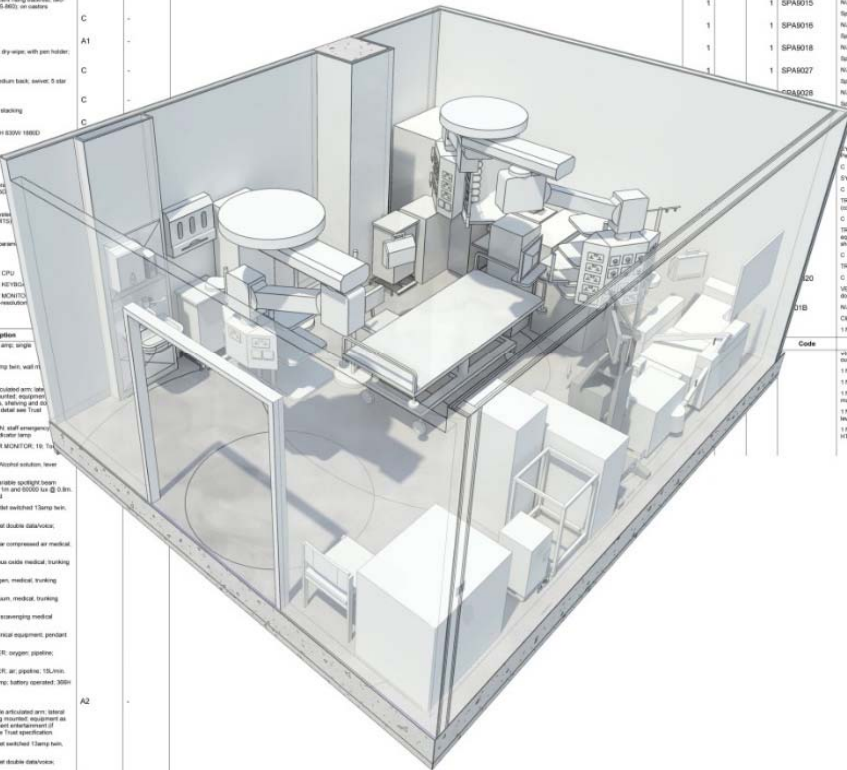
10489 Room Data - Activities

DS_T0211b

Level:		
Department:		
Room:		
Room Number:		
Design Criteria	Area Designed (sq m)	8.6 m ²
Occupancy	Personnel	1 - 4 x Staff (2x Staff(AI-cl)) (Up to 8 Seated(CCA))
Activities	1. Managerial tasks associated with departmental organisation. 2. Observation of patient monitoring systems/indicator panels. 3. Writing notes and/or reports. 4. Holding working supply of stationery. 5. Using computer workstation(s). 6. Using printer. 7. Dealing with enquiries. 8. Using telephone(s). 9. Accessing and viewing digital images. 10. Holding current patient records (in a notes trolley)/accessing electronic records. 11. Staff supervise and observe patients. 12. Staff notices; information and/or messages displayed. 13. Monitoring of visitor arrival and waiting (CCA)	
Design Notes	Changes to QS	Refer to 'Schedule of UG Deviations from Output Spec' document for details
Adjacencies	Should allow good observation of the areas in which it is being used (i.e. waiting areas; clinical rooms) as appropriate	
Windows	Windows Type	(HTM 55) N/A or clear, solar control
	Spec. - External	see drawings & 31003 with document reference D2.6F Finishes statement & D2.7F Glazing strategy
	Internal Glazing	(HTM 57) N/A
	Spec. - Internal	refer to document reference D2.7F Glazing strategy
Doorsets	Door Width Type	(HTM 58) N/A
	Specification	Refer to document reference D2.8F Kit of parts/Assemblies
Fire	Fire Enclosure	the actual room fire rating may result in a different fire rating depending on the adjacent room(s); refer to the fire strategy drawings ref.



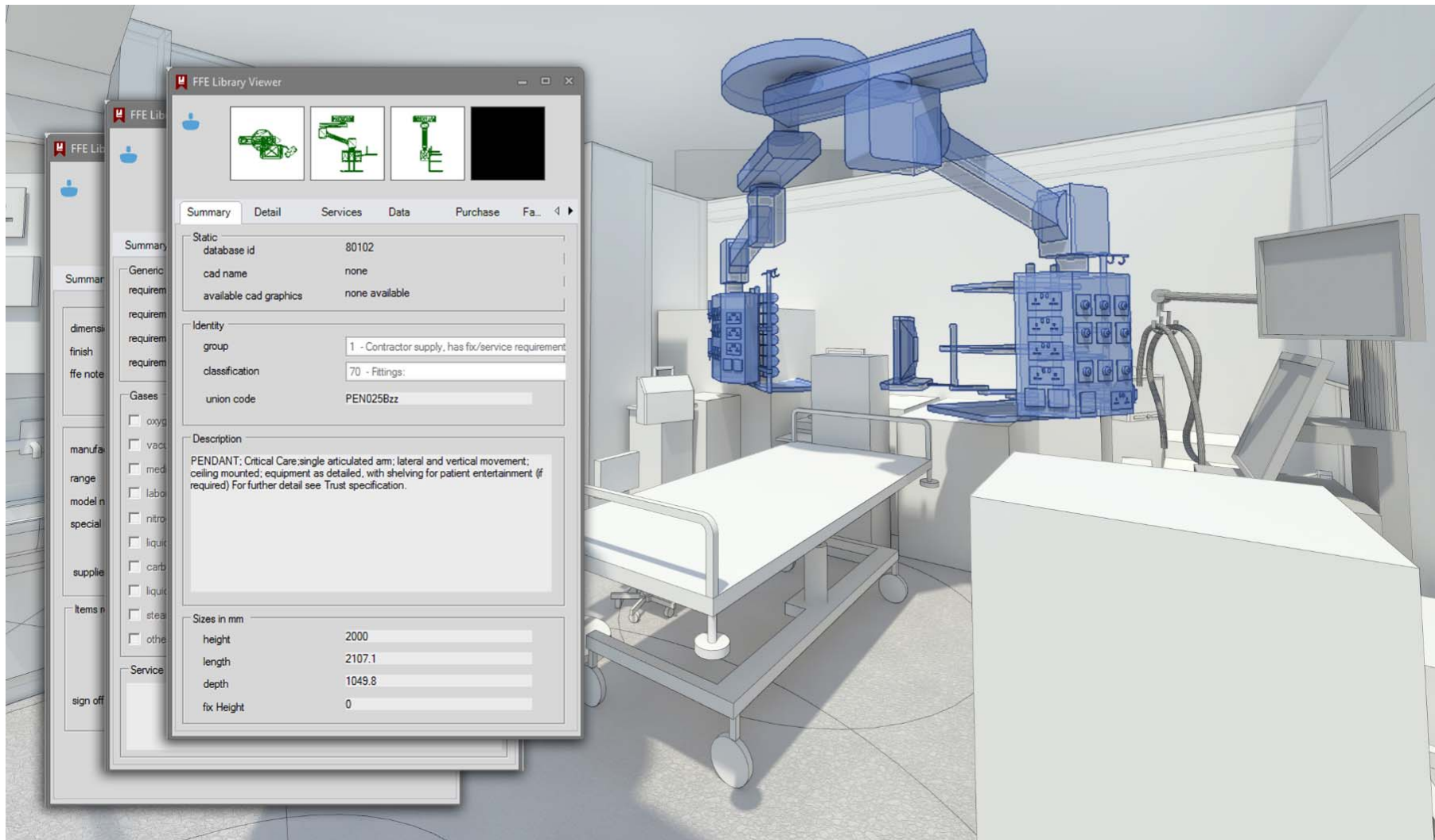
P000004		Schedule of Components by Room				CRI.026.SS058/1 6	
Project:		Alder Hey					
Department:		Q26 CRI: Beds/ITU					
Room:		Bedroom CCU					
Room Number:		CRI.026.SS058/16				Revision: 20/02/2013	
Notes:							
New	TrEx	Qty	Code	Description	Category	Group	
1		1	AIR001	A1	A1	-	
		1	BE0016	C AIR temperature sensor.	C	-	
		1	BIN054	C BED: CO2/ET/HR: non-translucent rising backrest: two-way 10' height adjustable (205.400) in casters	C	-	
		1	BOA034	C Storage Bin on wheels	A1	-	
		1	CHA002	C A1 BEDHEAD: marker: adjustable: 21" deep, with pen holder: wall mounted: 1500H 1000	A1	-	
		1	CHA017	C C/HR: height adjustable: medium back, select: 5 star base: on casters	C	-	
		1	CHA001	C C/HR: upright, adjustable: reclining	C	-	
		1	CHS436	C CHAIR: vinyl, reclining: 1500H 1000H 1000D	A1	-	
		2	HOL006	C DEFENSER: disposable glove: 10" long: 10" wide: 10" high: 10" deep: 10" wide: 1			



New	TrEx	Qty	Code	Description	Category	Group
1		1	SPA006	Space for Mobile Fluoroscopy Unit	N/A	-
		1	SPA007	Space for Mobile Suction Unit	N/A	-
		1	SPA008	Space for Chest Suction	N/A	-
		1	SPA009	Space for Mobile Operating Light	N/A	-
		1	SPA010	Space for Radiant Heater	N/A	-
		1	SPA011	Space for Crib / Crash Cart	N/A	-
		1	SPA012	Space for EMCO System (see estimate provided by RTD)	N/A	-
		1	SPA013	Space for Haemofiltration Machine	N/A	-
		1	SPA014	Space for High Frequency Vent	N/A	-
		1	SPA015	Space for NITRO PAD unit	N/A	-
		1	SPA016	Space for Oxygen Cylinder on trolley	N/A	-
		1	SPA017	Space for an oxygen on trolley	N/A	-
		1	SPA018	Space for an oxygen on trolley	N/A	-
		1	SPA019	Space for an oxygen on trolley	N/A	-
		1	SPA020	Space for an oxygen on trolley	N/A	-
		1	SPA021	Space for an oxygen on trolley	N/A	-
		1	SPA022	Space for an oxygen on trolley	N/A	-
		1	SPA023	Space for an oxygen on trolley	N/A	-
		1	SPA024	Space for an oxygen on trolley	N/A	-
		1	SPA025	Space for an oxygen on trolley	N/A	-
		1	SPA026	Space for an oxygen on trolley	N/A	-
		1	SPA027	Space for an oxygen on trolley	N/A	-
		1	SPA028	Space for an oxygen on trolley	N/A	-
		1	SPA029	Space for an oxygen on trolley	N/A	-
		1	SPA030	Space for an oxygen on trolley	N/A	-
		1	SPA031	Space for an oxygen on trolley	N/A	-
		1	SPA032	Space for an oxygen on trolley	N/A	-
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		1	SPA040	Space for an oxygen on trolley	N/A	-
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		1	SPA042	Space for an oxygen on trolley	N/A	-
		1	SPA043	Space for an oxygen on trolley	N/A	-
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		1	SPA070	Space for an oxygen on trolley	N/A	-
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		1	SPA078	Space for an oxygen on trolley	N/A	-
		1	SPA079	Space for an oxygen on trolley	N/A	-
		1	SPA080	Space for an oxygen on trolley	N/A	-
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		1	SPA082	Space for an oxygen on trolley	N/A	-
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		1	SPA100	Space for an oxygen on trolley	N/A	-









ASE

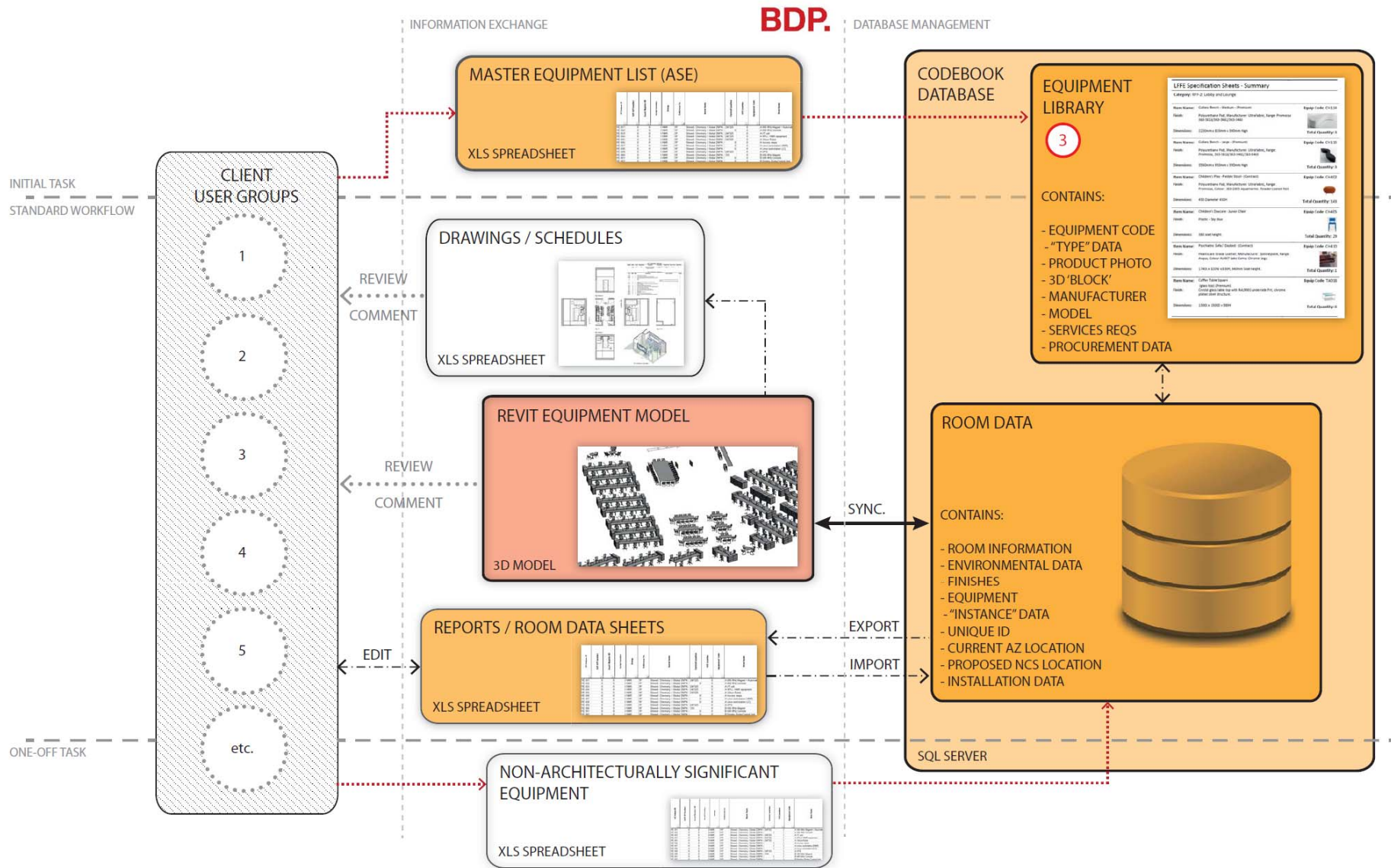
‘Architecturally Significant Equipment’

- 1. Architectural Significance > 750mm**
- 2. Servicing Requirement > Typical Provision**
- 3. Structural Significance > Designed Loads**



14'529 Specialist Equipment Items
42% 'ASE', 58% 'Non-ASE'







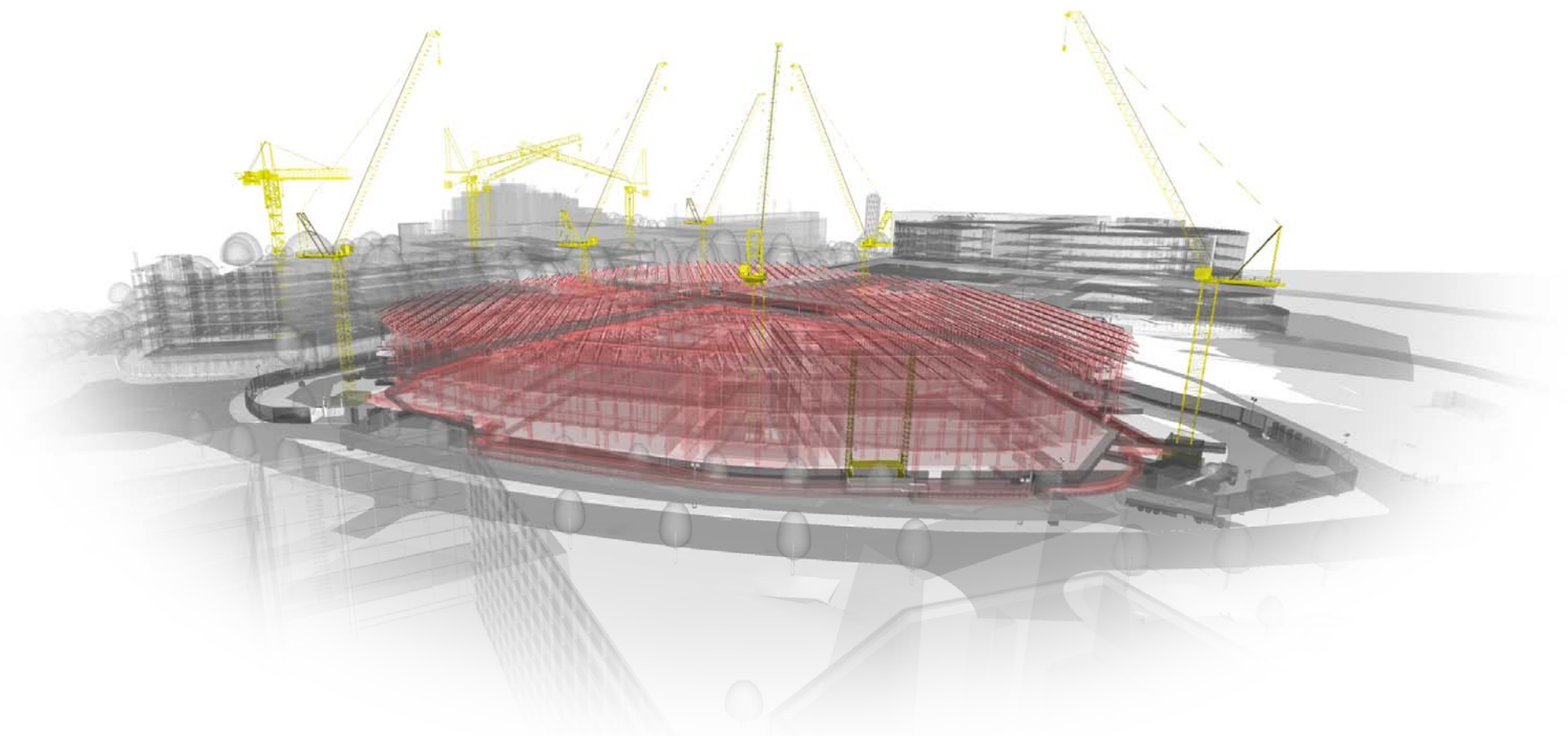
Name	CreatedBy	CreatedOn	Category	Description	AssetType	Manufacturer	ModelNumber	WarrantyGuarantorParts	WarrantyDurationParts	WarrantyGuarantorLabor	WarrantyDurationLabor	WarrantyDurationUnit	ExtSystem
ALA026	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	FIRE ALARM break glass; push button release	fixed	-							CodeBook
DSK129	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	NOT EWT; -; DESK	fixed	-							CodeBook
U_SED011	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service dado for 1800mm bench incl. Power and data; bench mounted.	fixed	-							CodeBook
DET004	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	DETECTOR smoke; 430 to 470Hz	fixed	-							CodeBook
MSC160	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	SAFETY CABINET; CLASS II RECIRC; SAFETY CABINET	fixed	-							CodeBook
BEN008	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 750mm (depth) x 450mm (wide) x 910mm (height)	fixed	-							CodeBook
VEN008	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	IVC Rack and 70 Cages; STANDARD; VENTILATED ENCLOSURE	fixed	-							CodeBook
BIN108	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Diet bin; BIN; STORAGE	fixed	-							CodeBook
SET001	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Service trunking 1000mm; wall mounted	fixed	-							CodeBook
GRI900	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	GRILL; Extract grill	fixed	-							CodeBook
U_SEP020	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service Pod + Receiver plate for IVCs Greenline incl. power; data; C02; C02 and LAGS; hi	fixed	-							CodeBook
U_SER004	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service Pod + Receiver plate for IVCs Greenline incl. power; data; C02; C02 and LAGS; hi	fixed	-							CodeBook
U_SER003	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service Pod + Receiver plate for IVCs Greenline incl. power; data; C02; C02 and LAGS; hi	fixed	-							CodeBook
U_SEP010	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service pod for Microbiological Safety Cabinets incl. power; data; Vacuum; Compressed air	fixed	-							CodeBook
U_HYG002	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Hygiene WHB; IPS wall mounted; left hand	fixed	-							CodeBook
U_SET020	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service Pod + Receiver plate for IVCs Greenline incl. power; data; C02; C02 and LAGS; hi	fixed	-							CodeBook
U_HYG001	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Hygiene WHB; IPS wall mounted; right hand	fixed	-							CodeBook
BEN001	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 900mm (depth) x 1800mm (wide) x 910mm (height)	fixed	-							CodeBook
BEN002	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 900mm (depth) x 1500mm (wide) x 910mm (height)	fixed	-							CodeBook
VEN006	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Equipment	IVC Double Deck Rack and 16 Cages; STANDARD; VENTILATED ENCLOSURE	fixed	-							CodeBook
SUR003	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Anaesthesia And Scavenging; ANAESTHESIA; Surgical Device	fixed	-							CodeBook
U_SED020	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service dado for 1500mm bench incl. power and data; bench mounted.	fixed	-							CodeBook
U_SED010	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service dado for 1800mm bench incl. power; data; Vacuum; Compressed air; C02 and Nitro	fixed	-							CodeBook
MSC157	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Portable VHP Unit; CONTAINMENT; SAFETY CABINET	fixed	-							CodeBook
MSC161	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	VHP Aeration Unit; CONTAINMENT; SAFETY CABINET	fixed	-							CodeBook
CYL004	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Helium Cylinders - mobile; GAS CYLINDER; ANCILLARY	fixed	-							CodeBook
SNK003	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory sink; left hand drainer; 750mm (depth) x 1500mm (wide); bench mounted with	fixed	-							CodeBook
BEN005	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 750mm (depth) x 1500mm (wide) x 910mm (height)	fixed	-							CodeBook
STO010	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Unberbench storage unit; 500mm wide x 600mm deep	fixed	-							CodeBook
BEN003	test@bdp.com	2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 900mm (depth) x 1200mm (wide) x 910mm (height)	fixed	-							CodeBook
FCA012	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	FUME CUPBOARD; STANDARD; Fume Cupboard	fixed	-							CodeBook
LSF001	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	REFRIGERATION; FREEZER / -20; Lead Shielded Freezer -20	fixed	-							CodeBook
DDT003	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	VENTILATED ENCLOSURE; STANDARD; Downflow table	fixed	-							CodeBook
DDT005	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	VENTILATED ENCLOSURE; STANDARD; Downflow table	fixed	-							CodeBook
VET002	test@bdp.com	2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Ventilation Duct	fixed	-							CodeBook
FRZ004	test@bdp.com	2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	REFRIGERATION; RESSPOKE; Freezer - 80	fixed	-							CodeBook

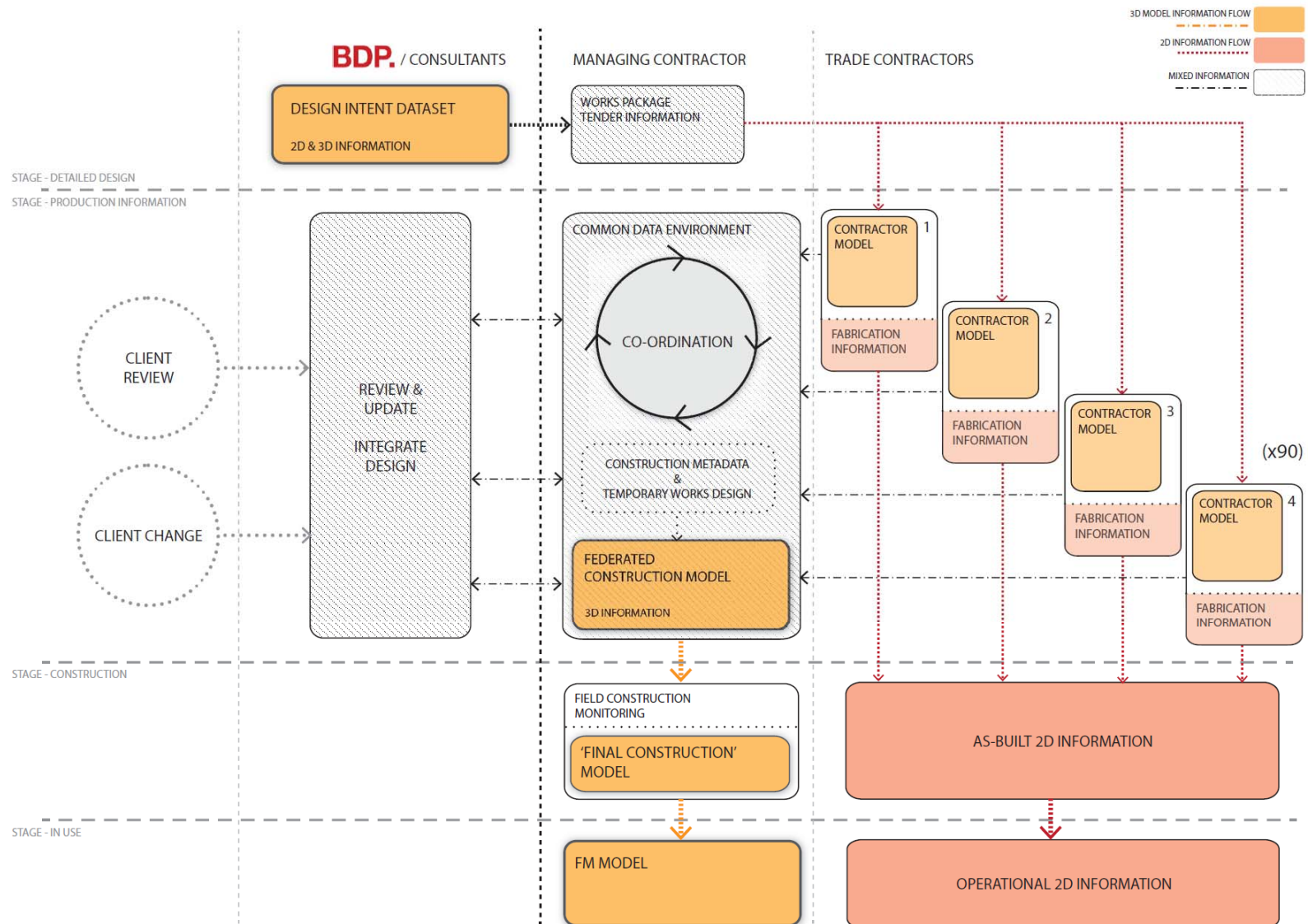
75'169 Components Placed
All FF&E & MEP Terminals



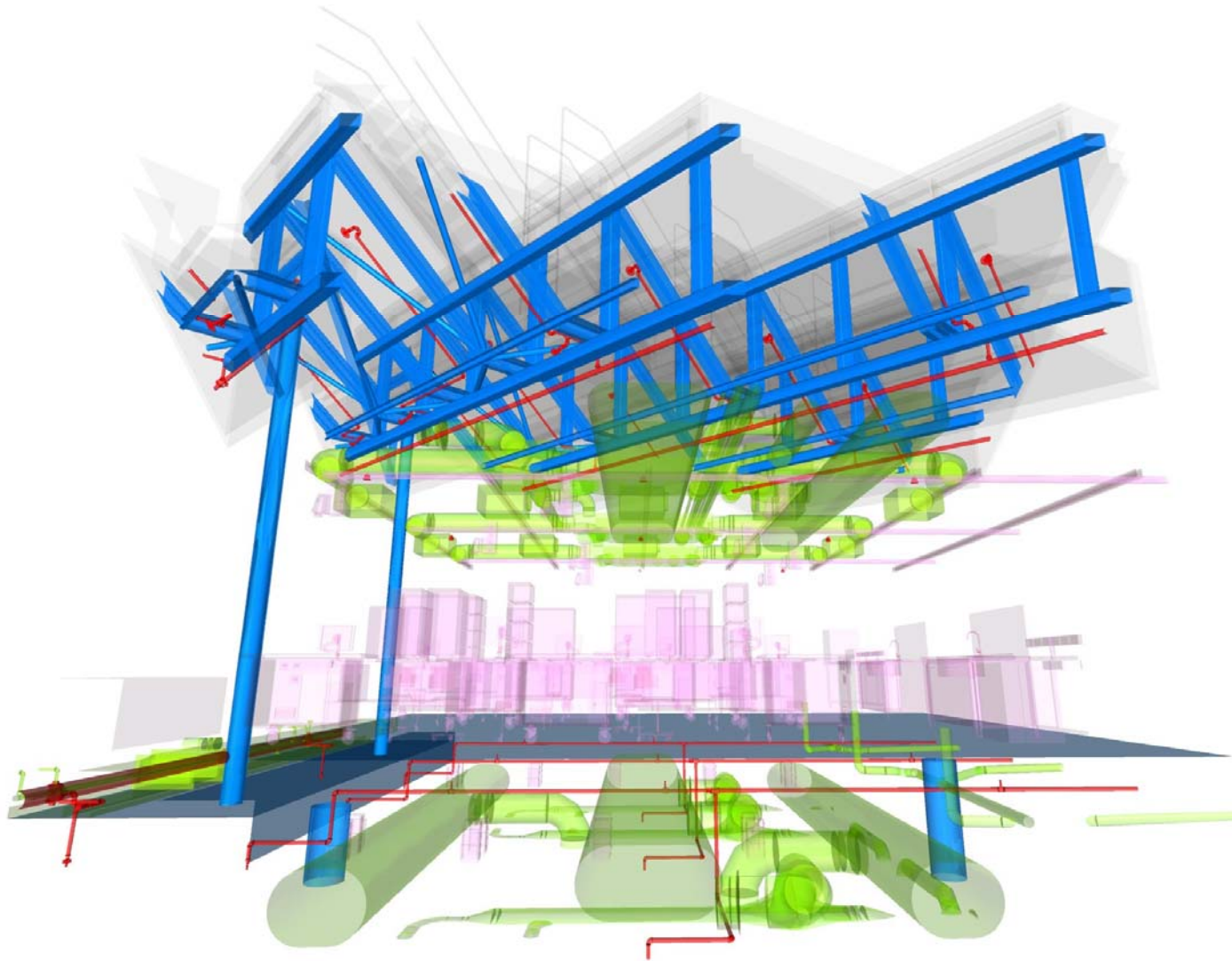
Stage 5: Construction








AUTODESK® BIM 360™ GLUE®



AUTODESK® BIM 360™ FIELD



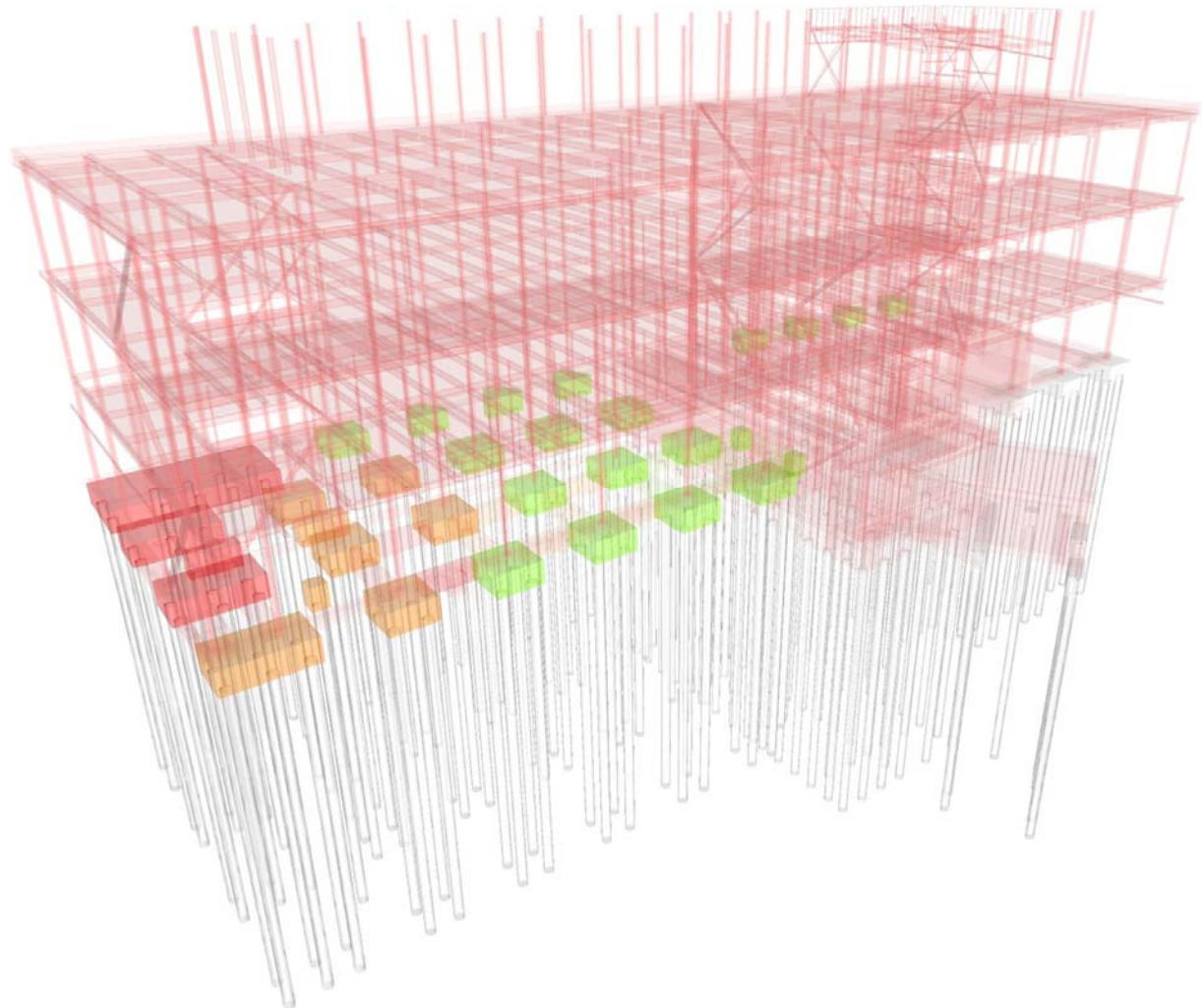
AUTODESK® BIM 360™ FIELD



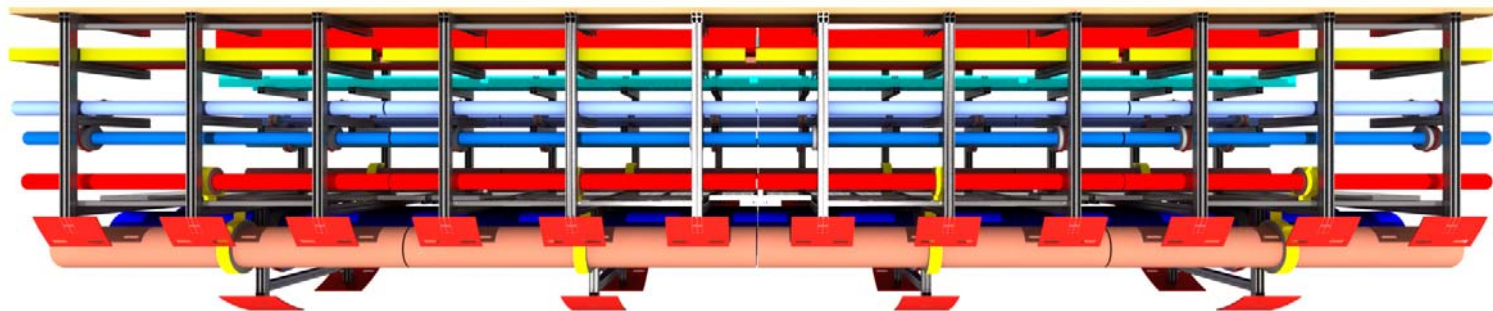
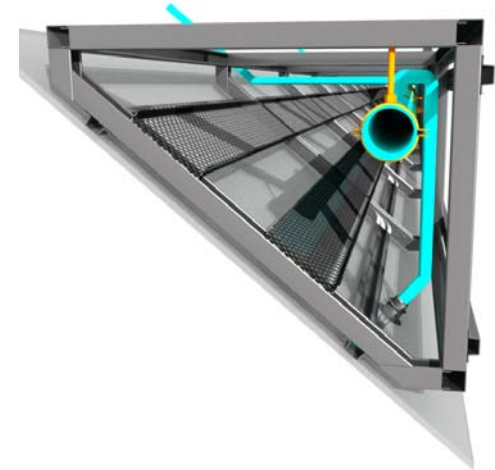
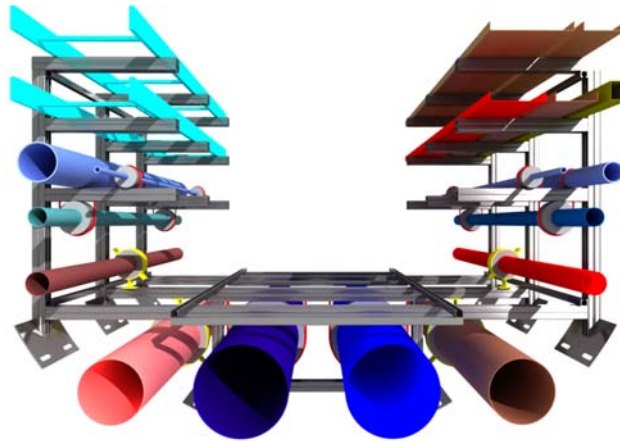
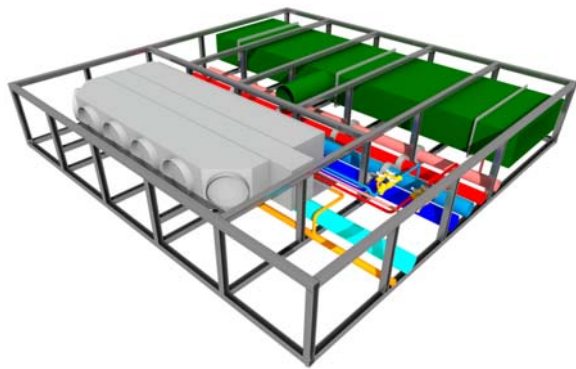
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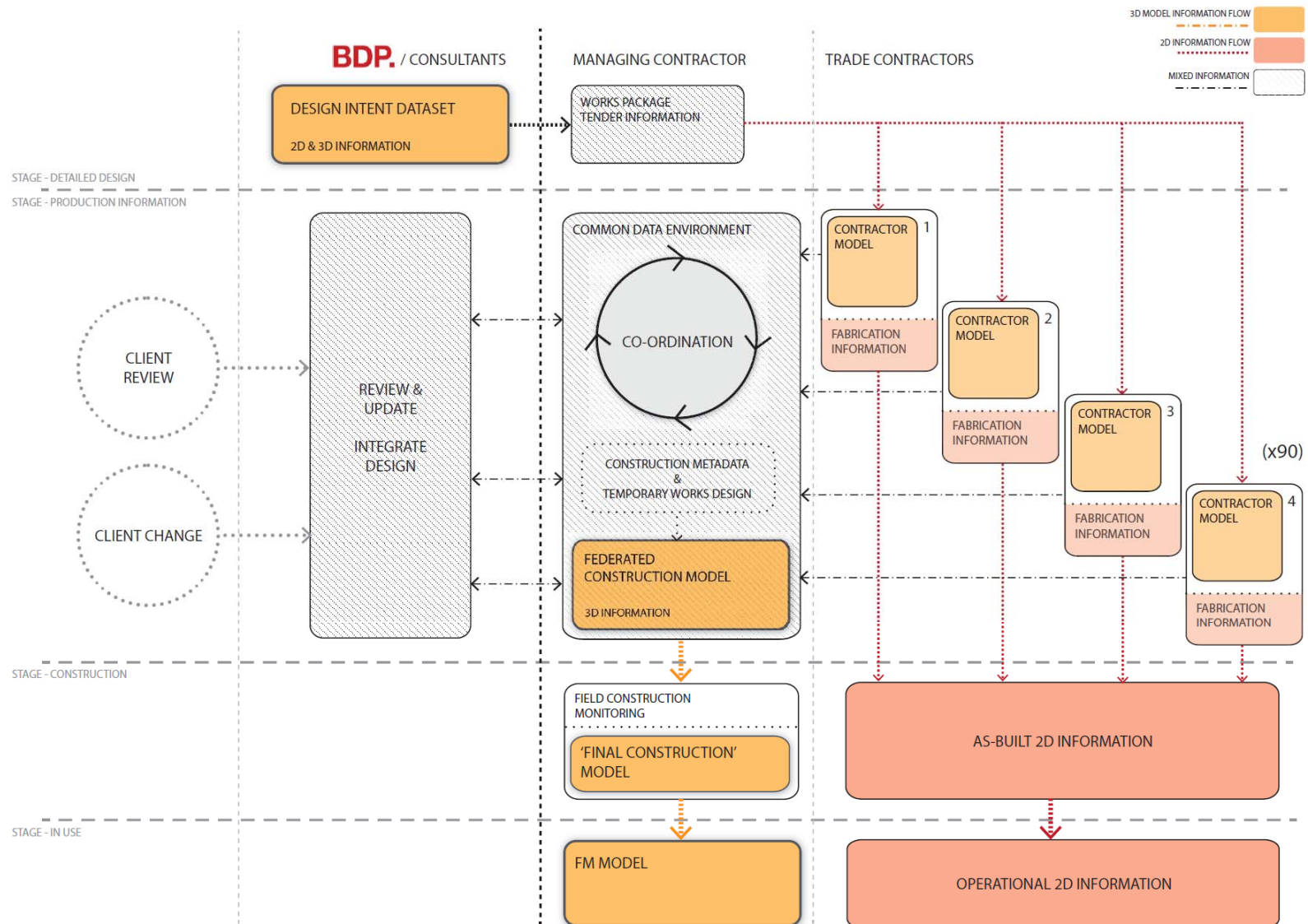
ObjectEquipmentParent

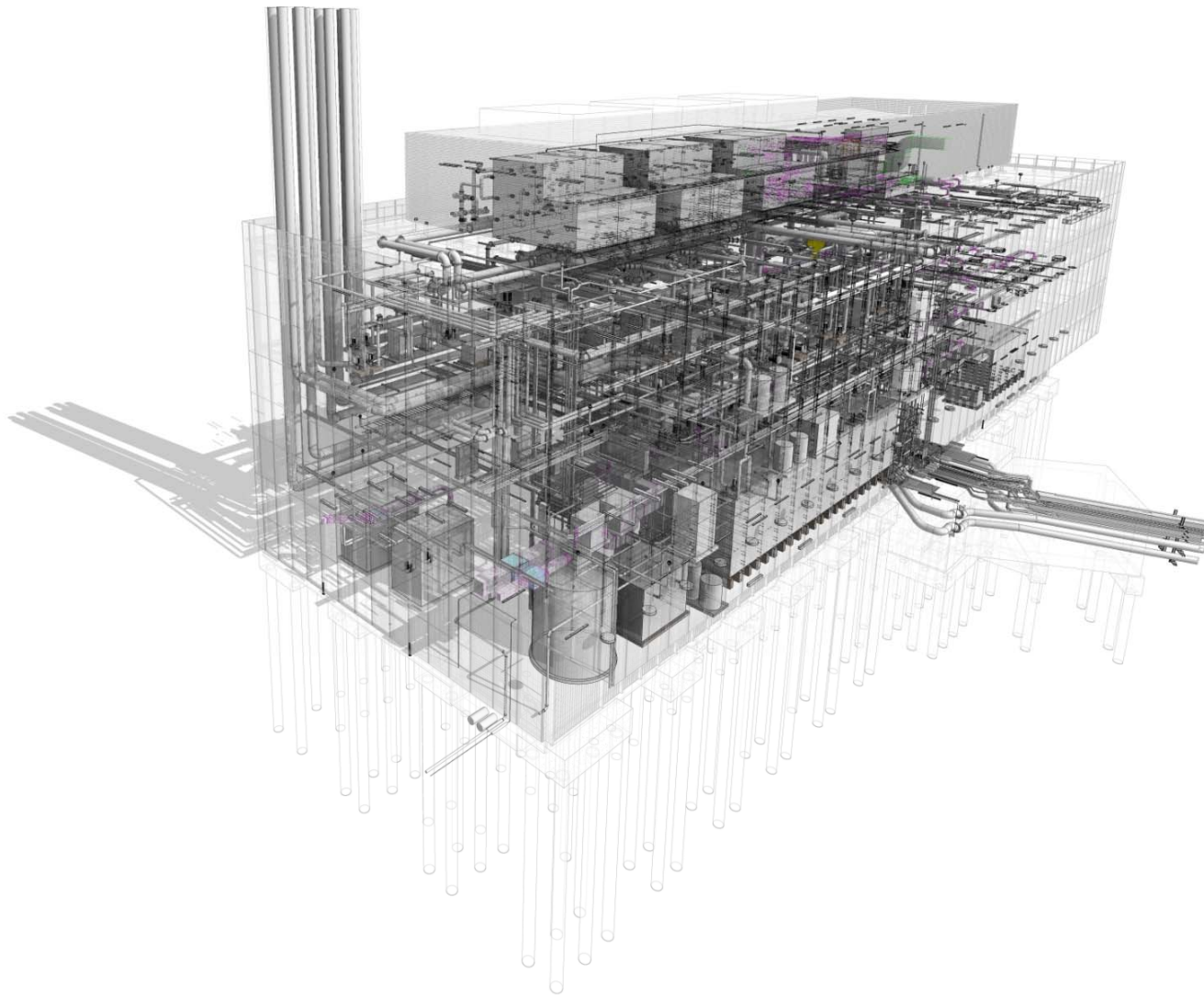
Excavation Date	2015-10-15
Name	3476769
Type Mark	PC4
Poured Date	2015-10-27
Caged Date	2015-10-22
Location	CB005 - Energy Centre>FND - Foundations



The Problem with... Interoperability









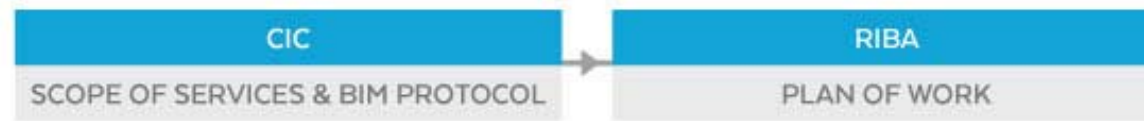
Summary: The Future of ‘Success’

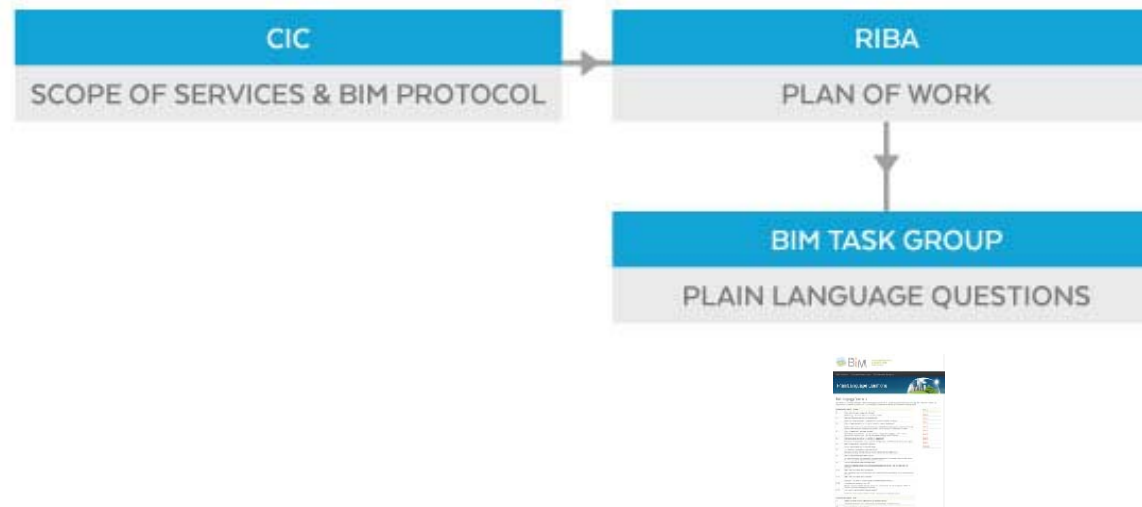


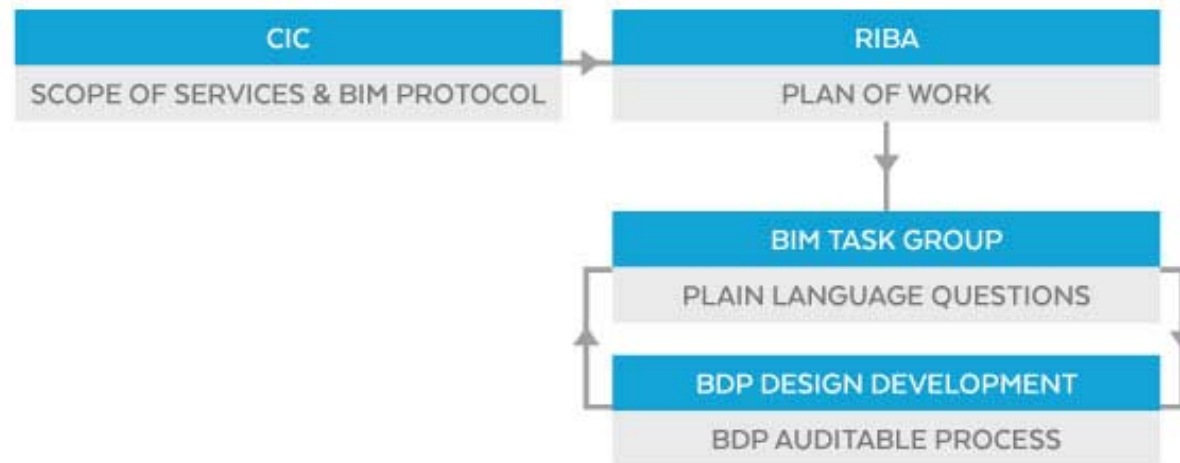
CIC

SCOPE OF SERVICES & BIM PROTOCOL

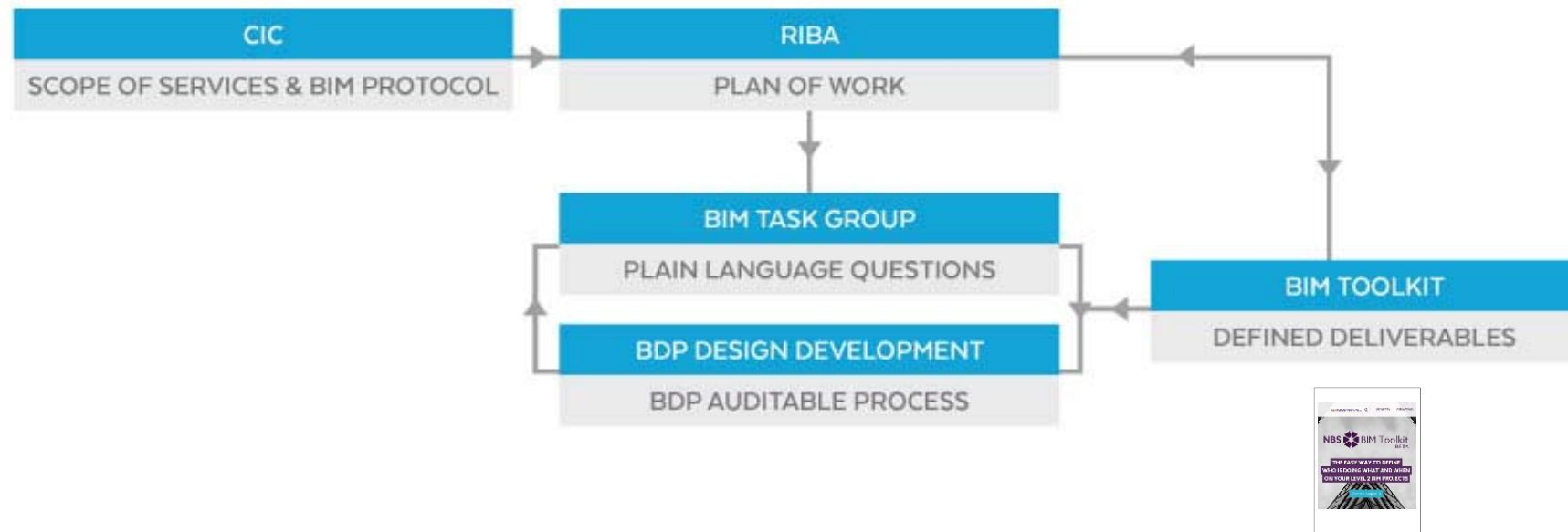


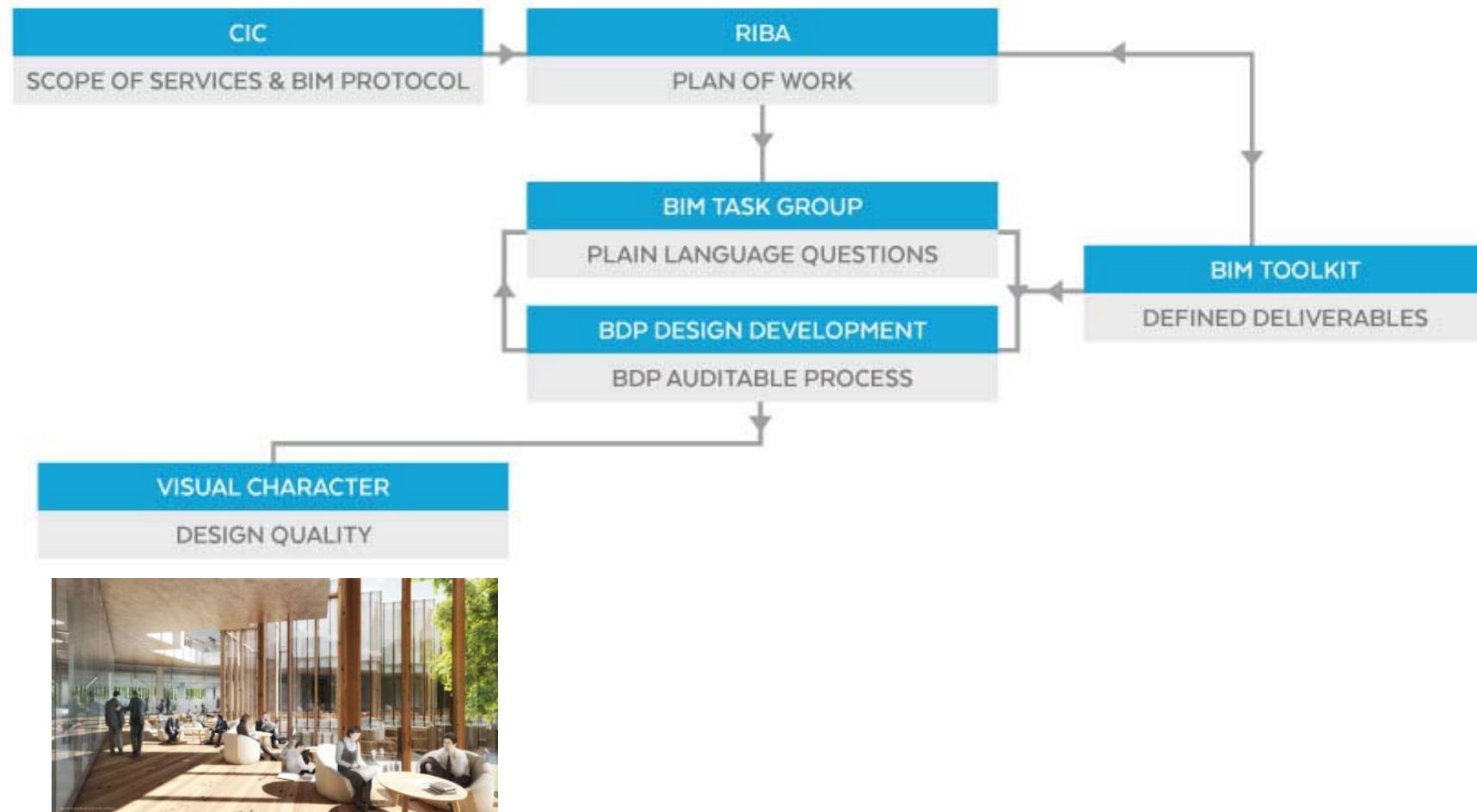


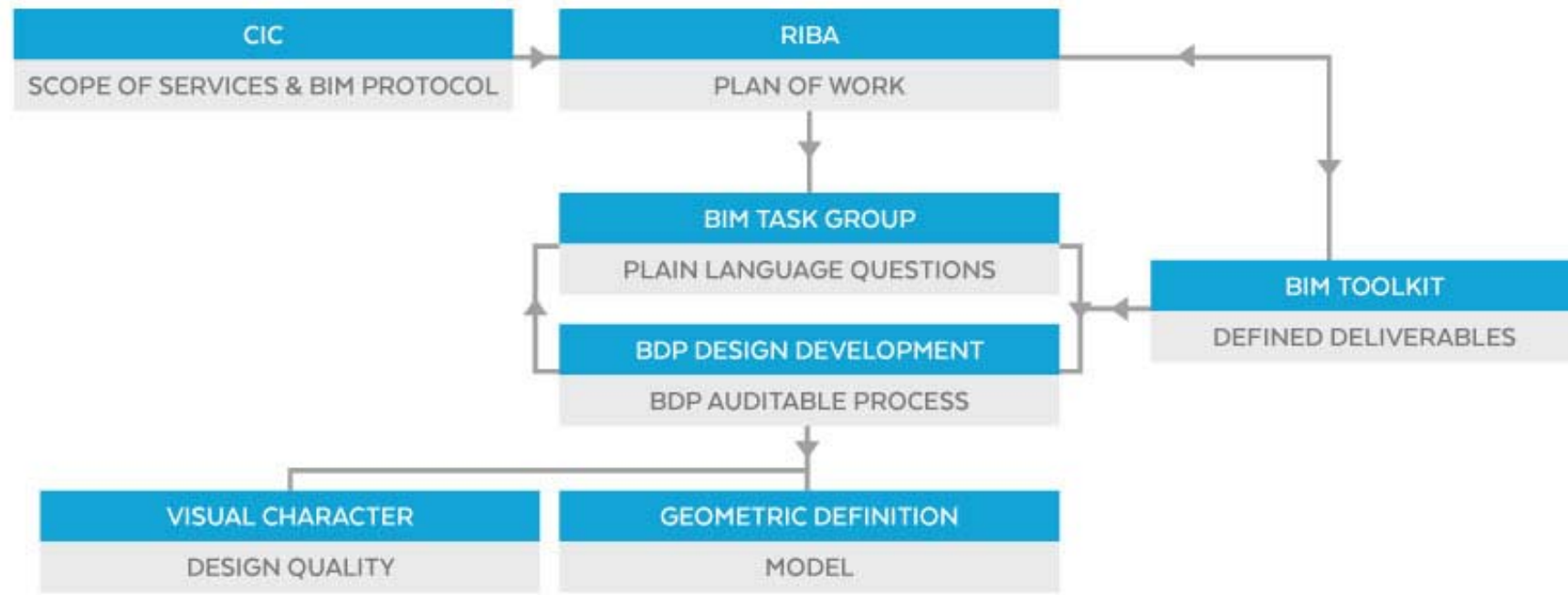


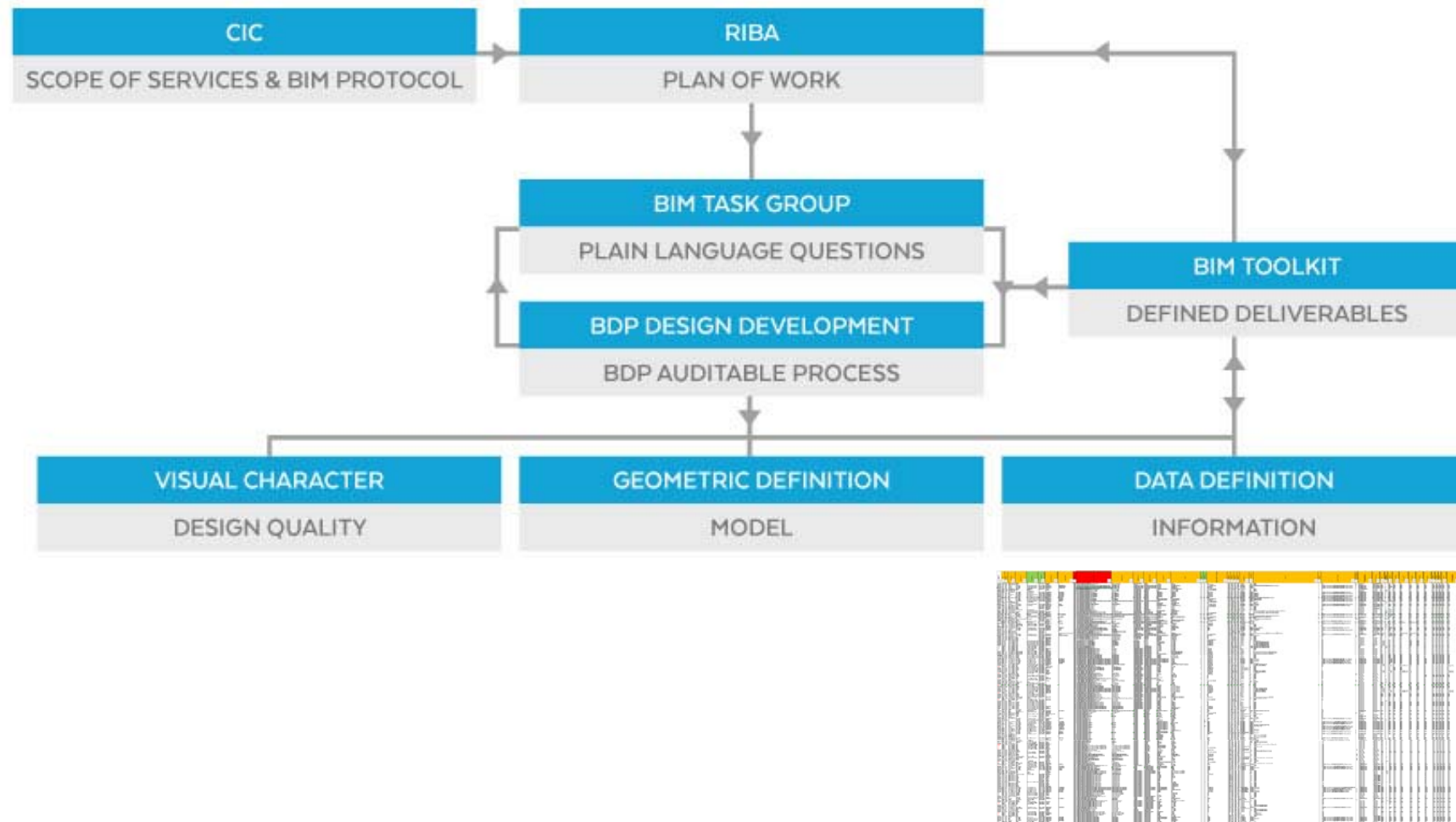


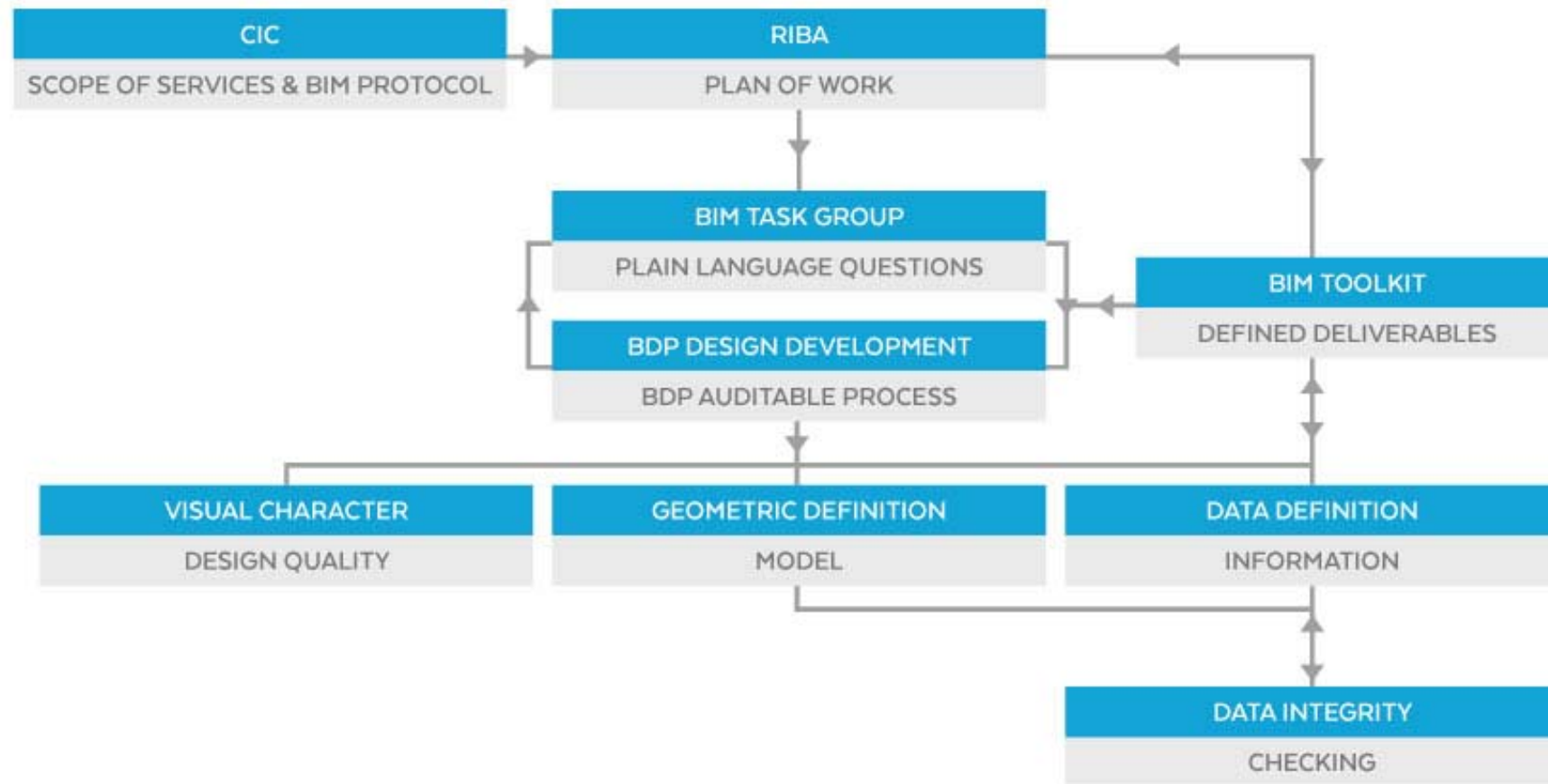
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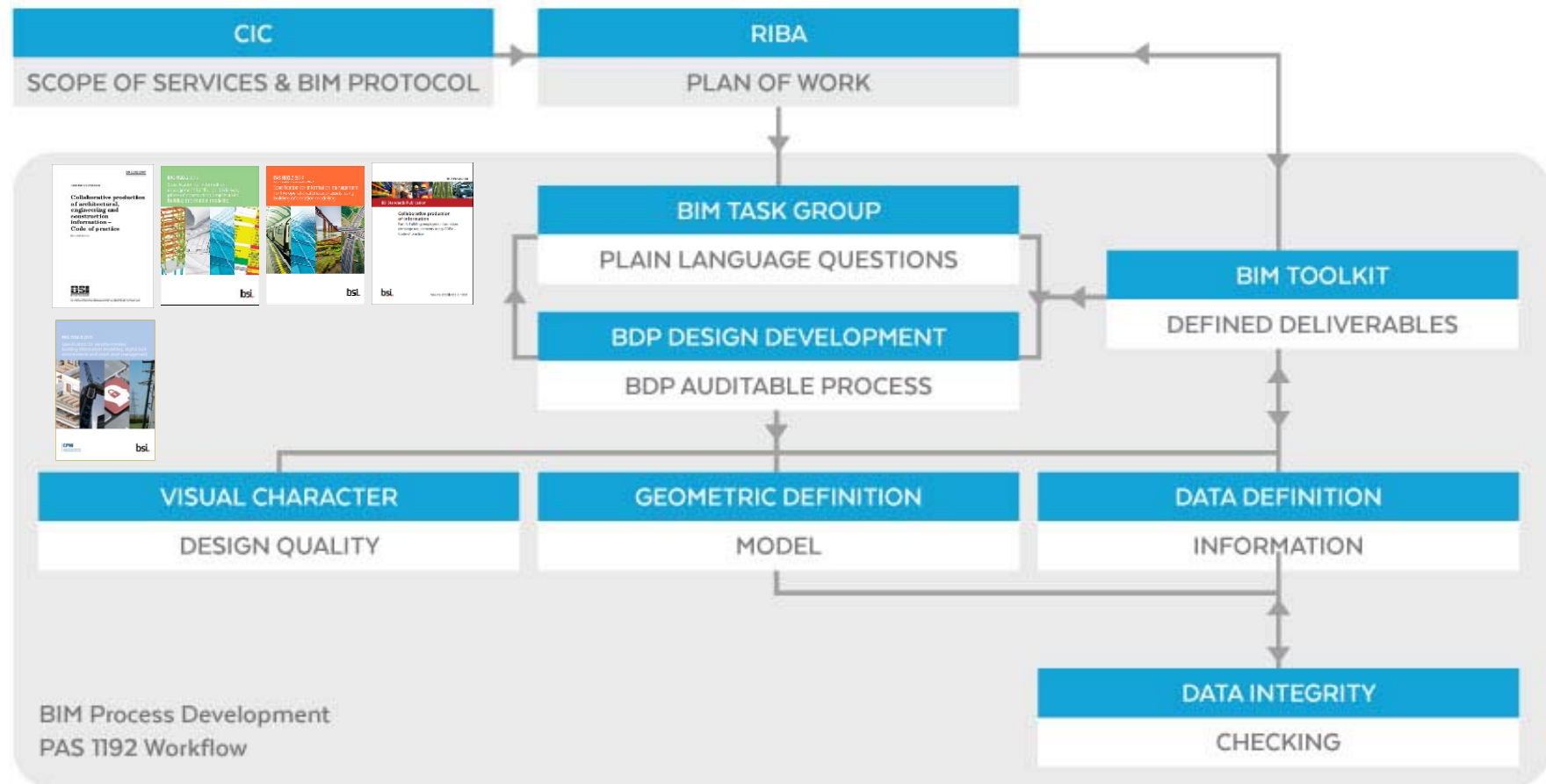




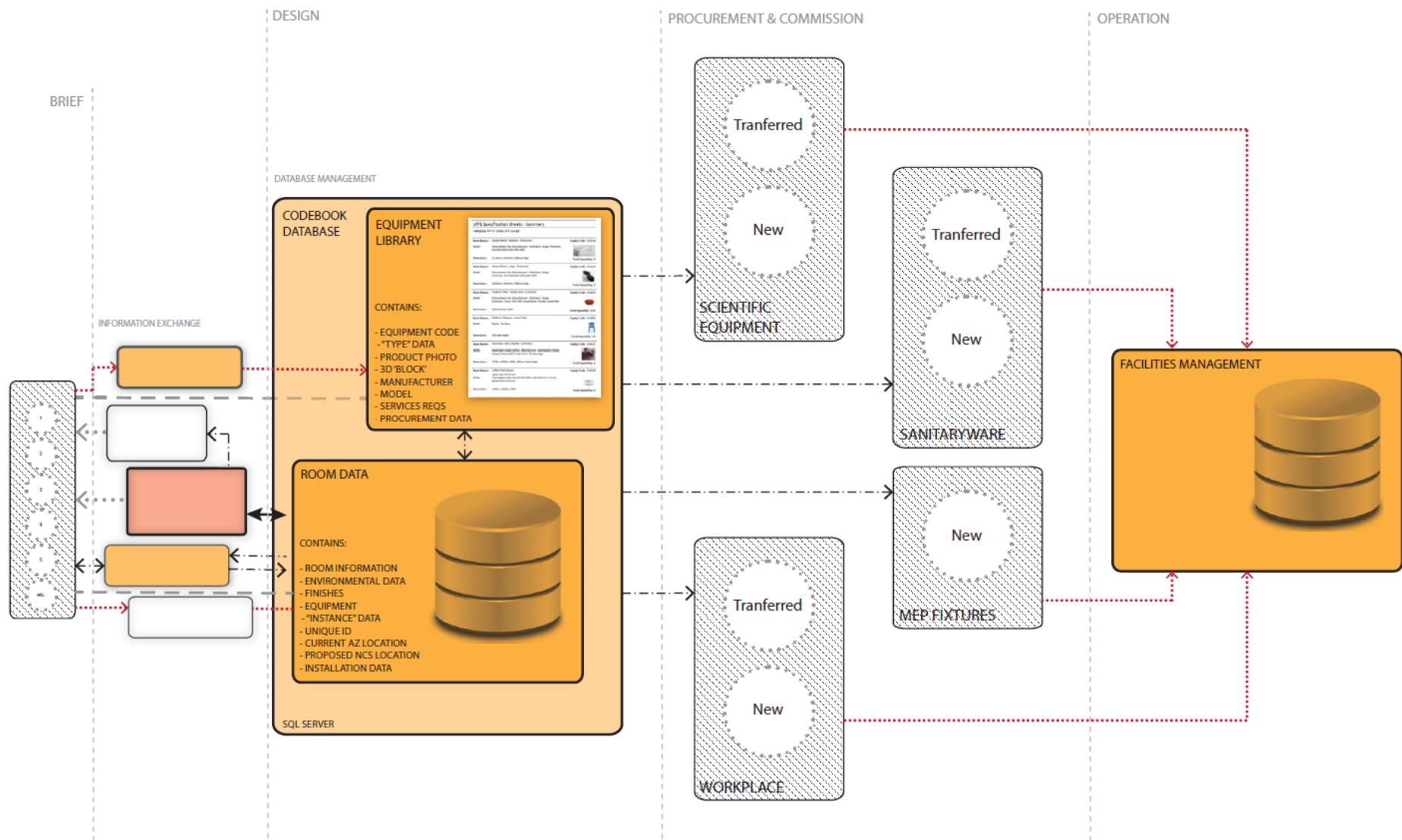












BIM & BDP

what you need to know and do



10 PRINCIPLES OF BIM

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BIM isn't a 'thing'.



