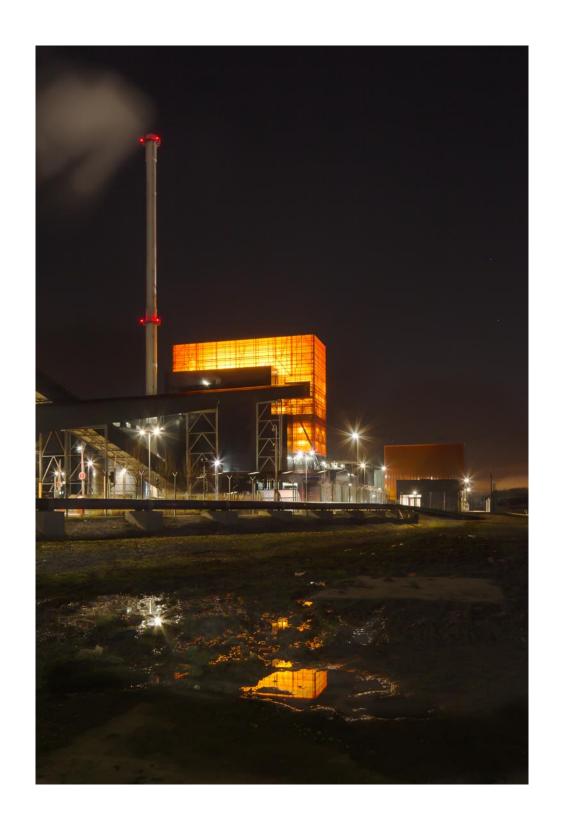


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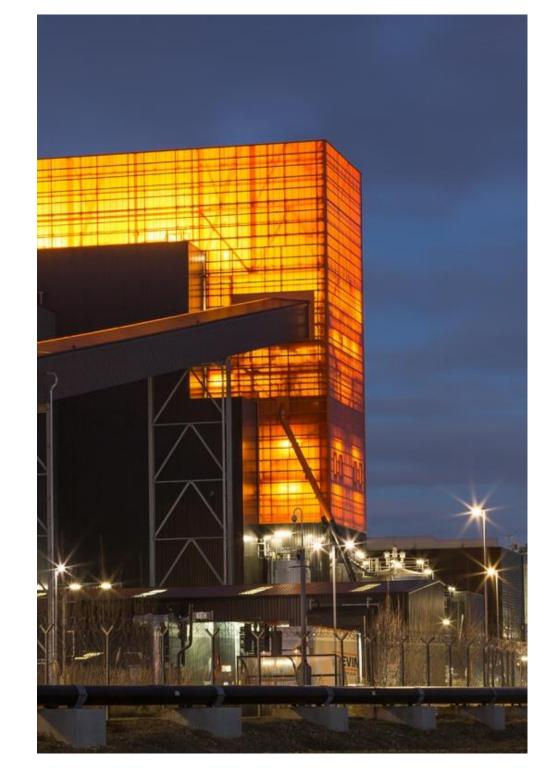






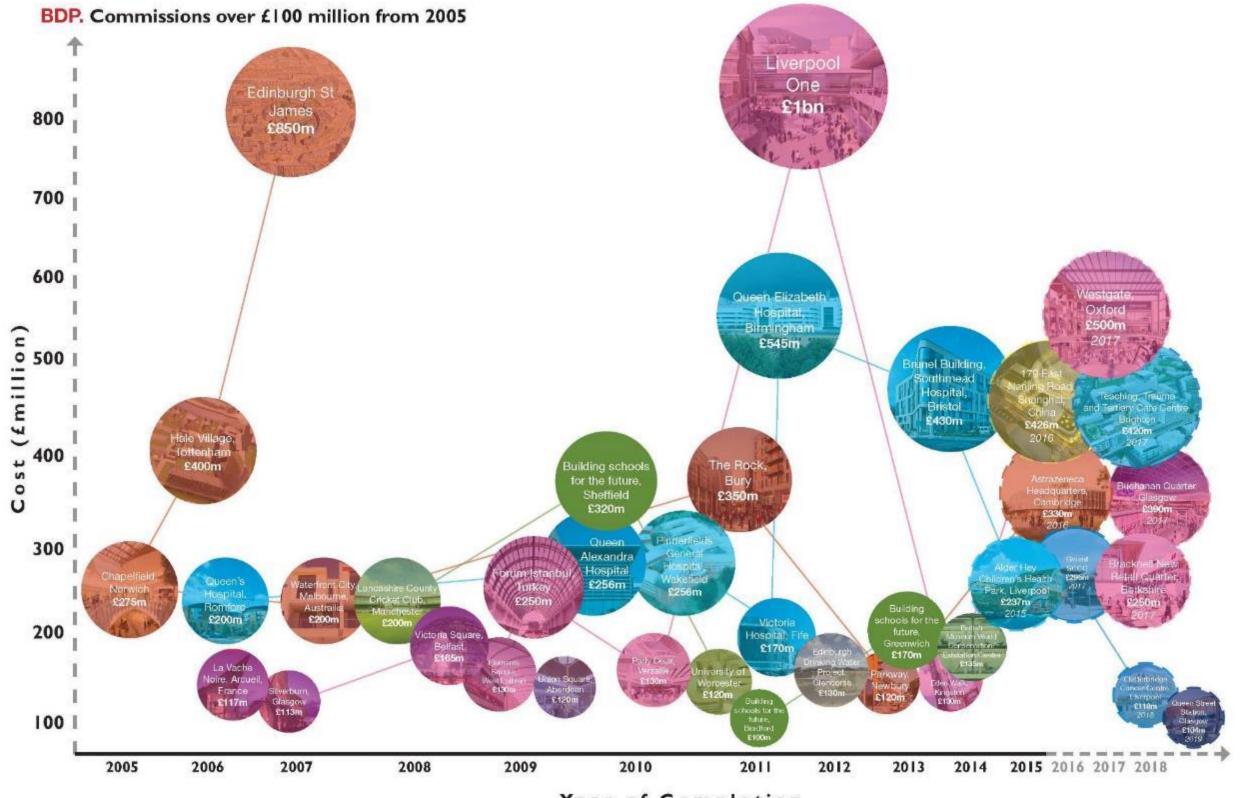












Year of Completion



"Anyone who believes infinite growth is compatible with a finite world is either a madman or an economist."

#### **Lower Costs**

**33**%

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

#### **Lower Emissions**

**50%** 

Reduction in greenhouse gas emissions in the built environment

#### **Faster Delivery**

50%

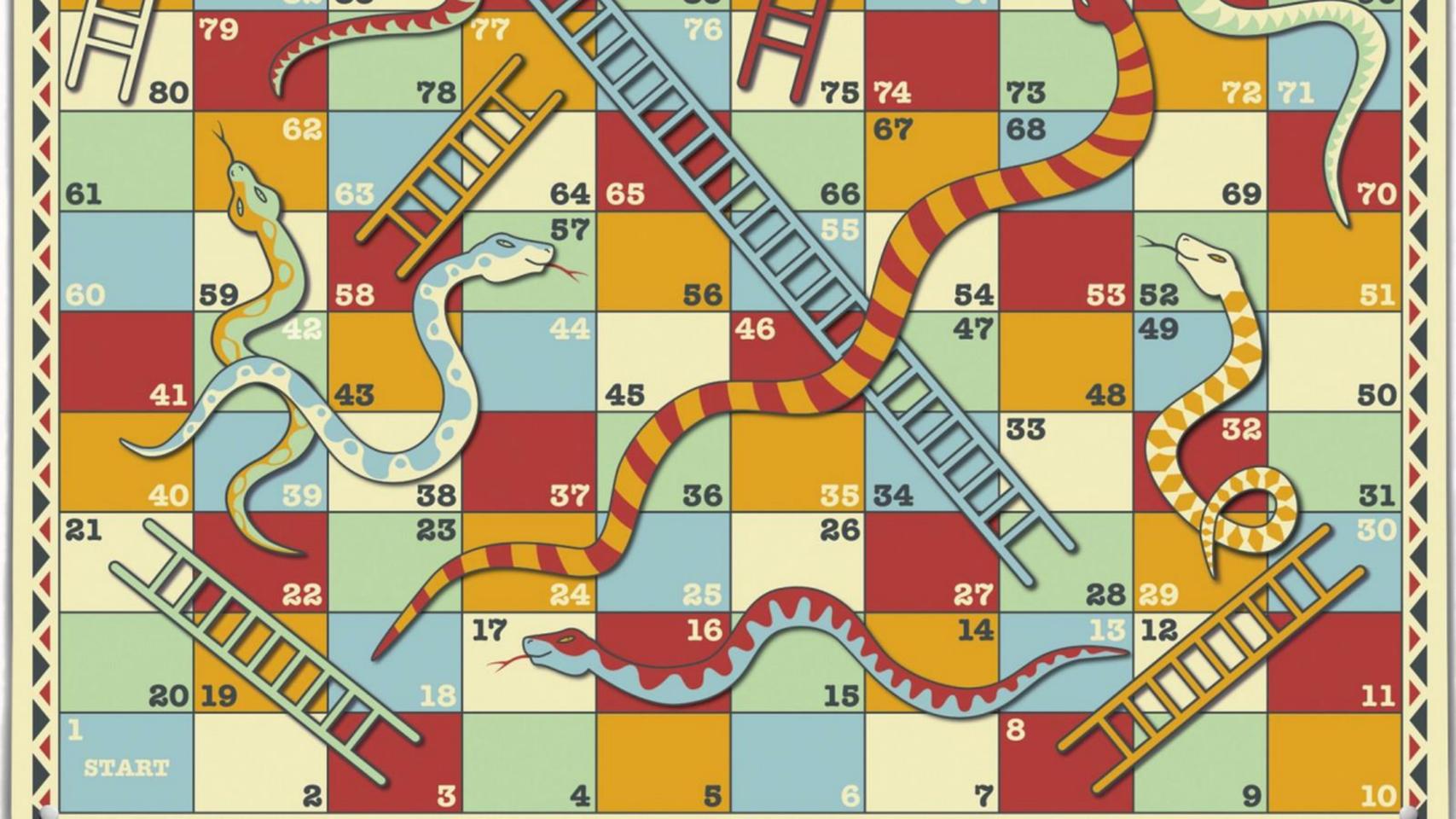
Reduction in overall time, from inception to overall completion, of newbuild and refurbished assets

#### Improved Exports

**50%** 

Reduction in the trade gap between total exports and total imports for construction products and materials How can we design complexity (cost) out and quality in?





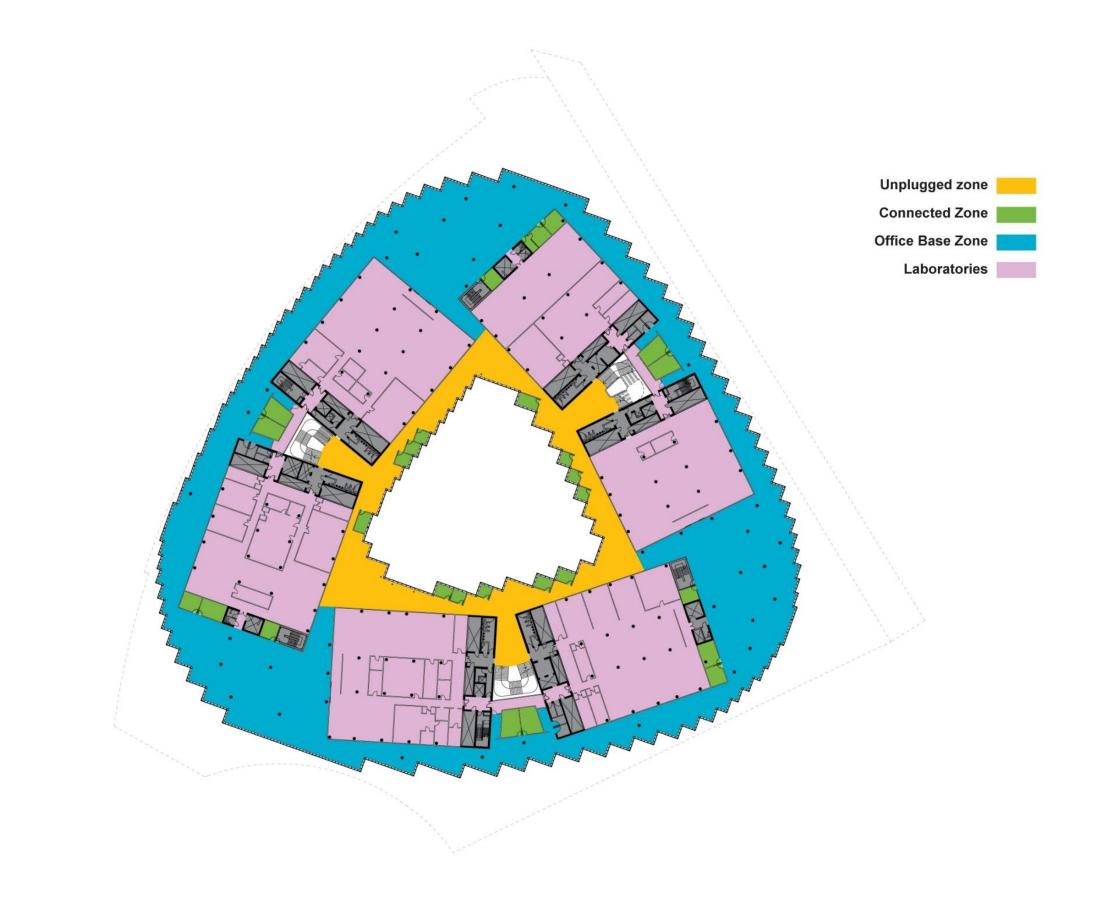












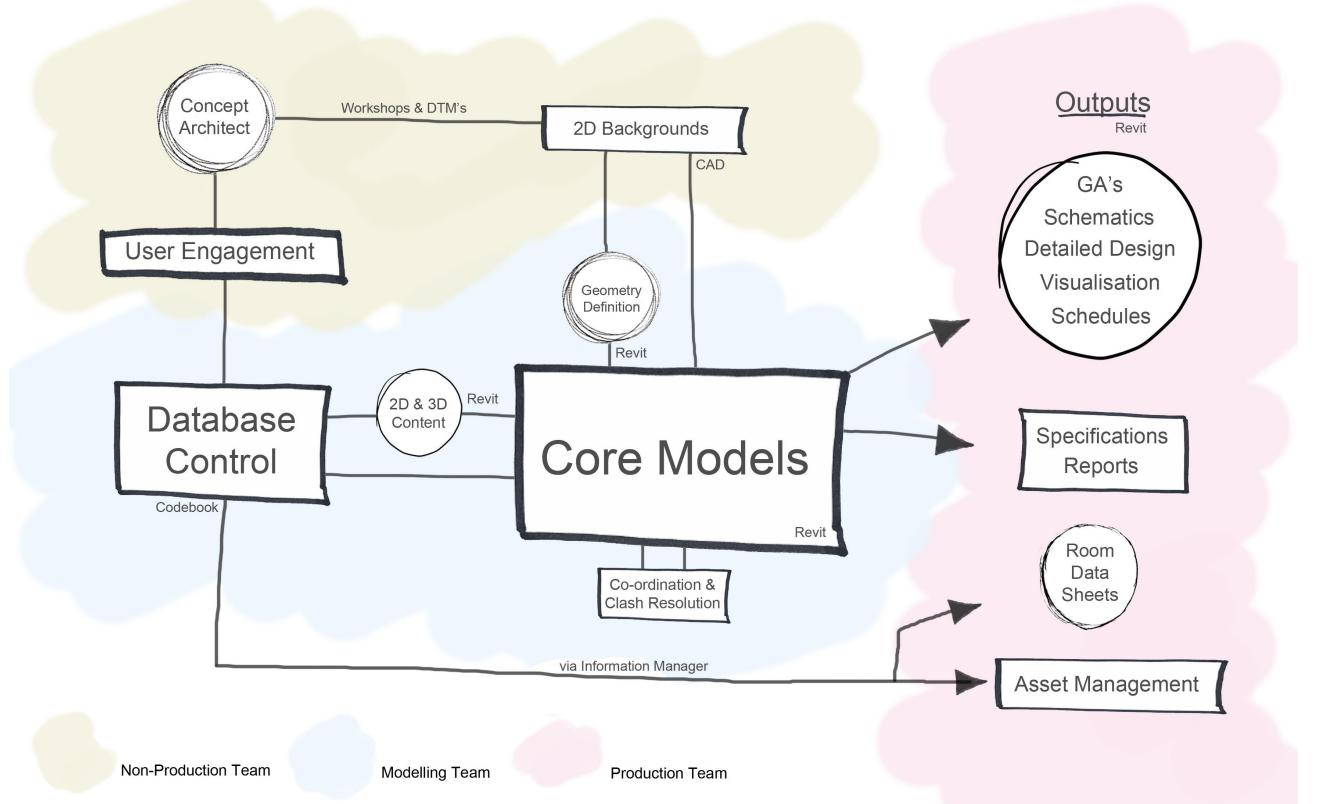








# Harness a Culture of Trust within a Project Team to Deliver a Single Vision









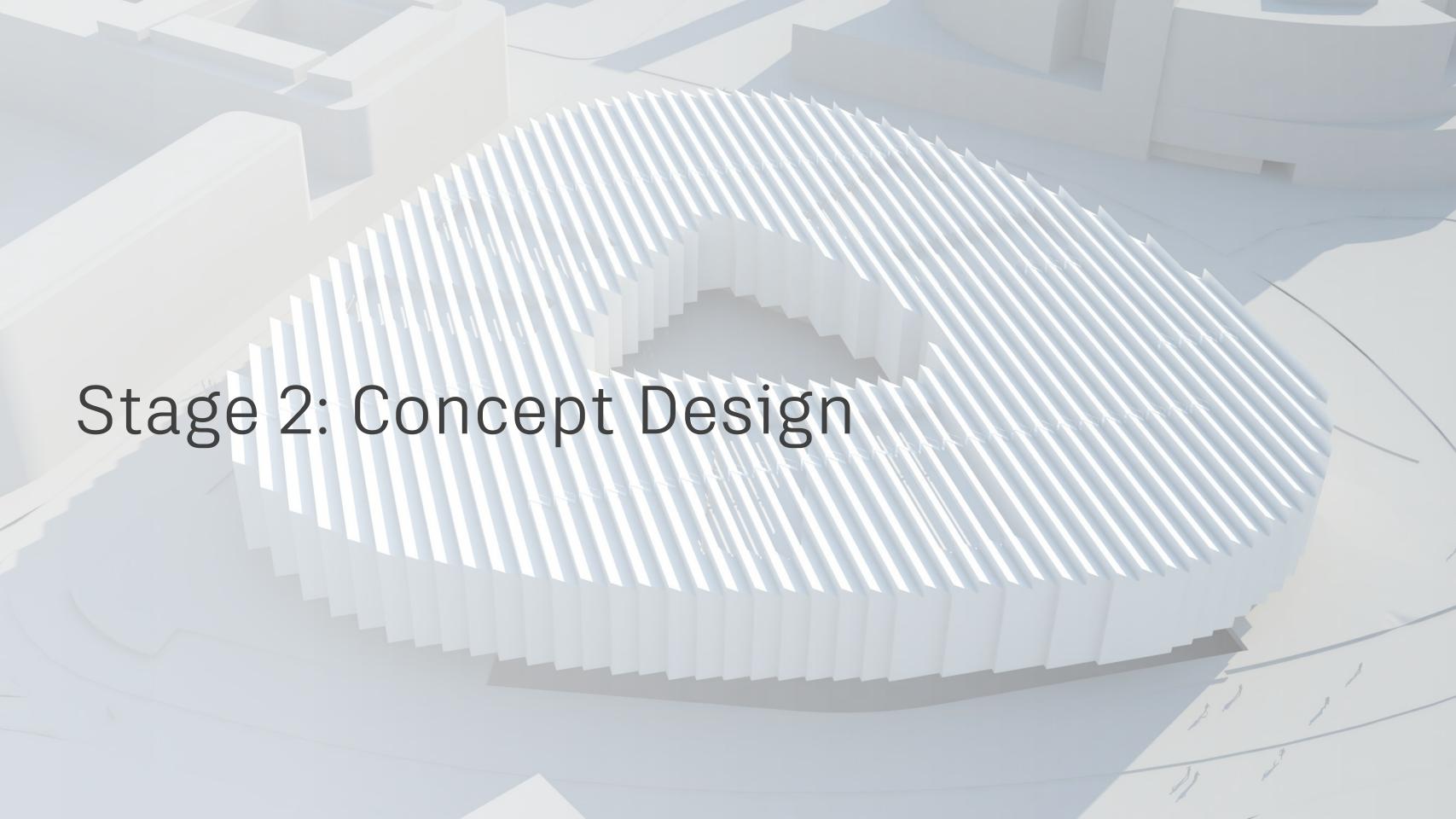


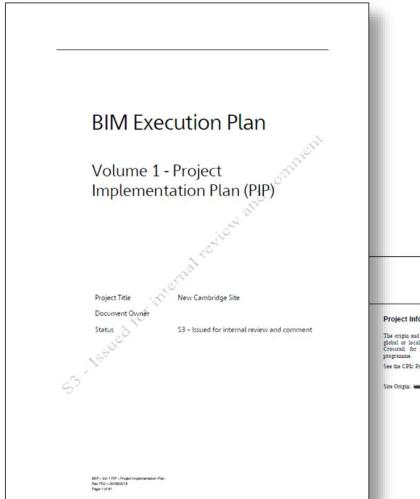


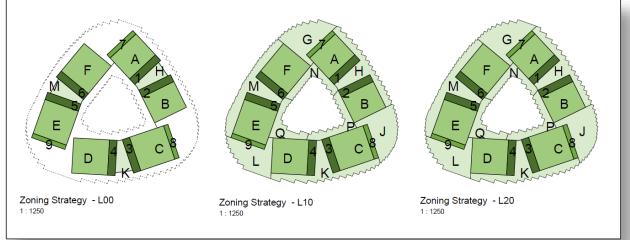


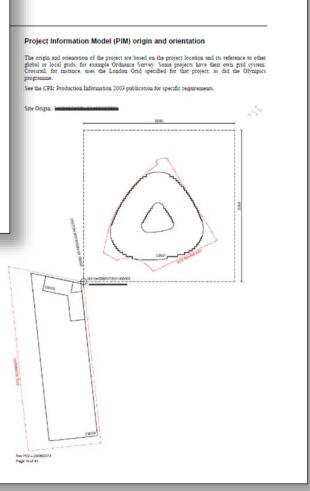


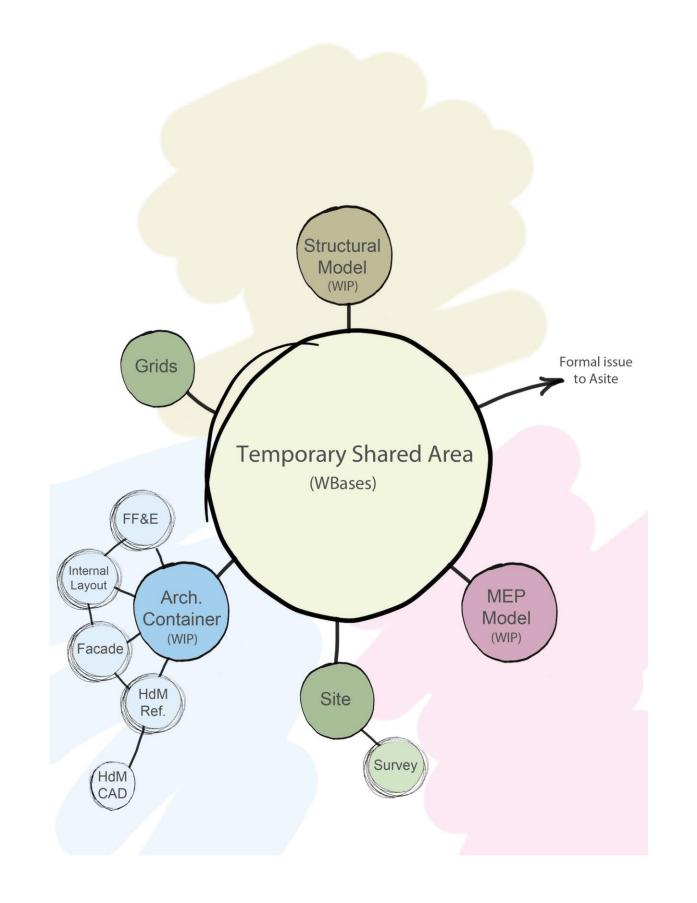


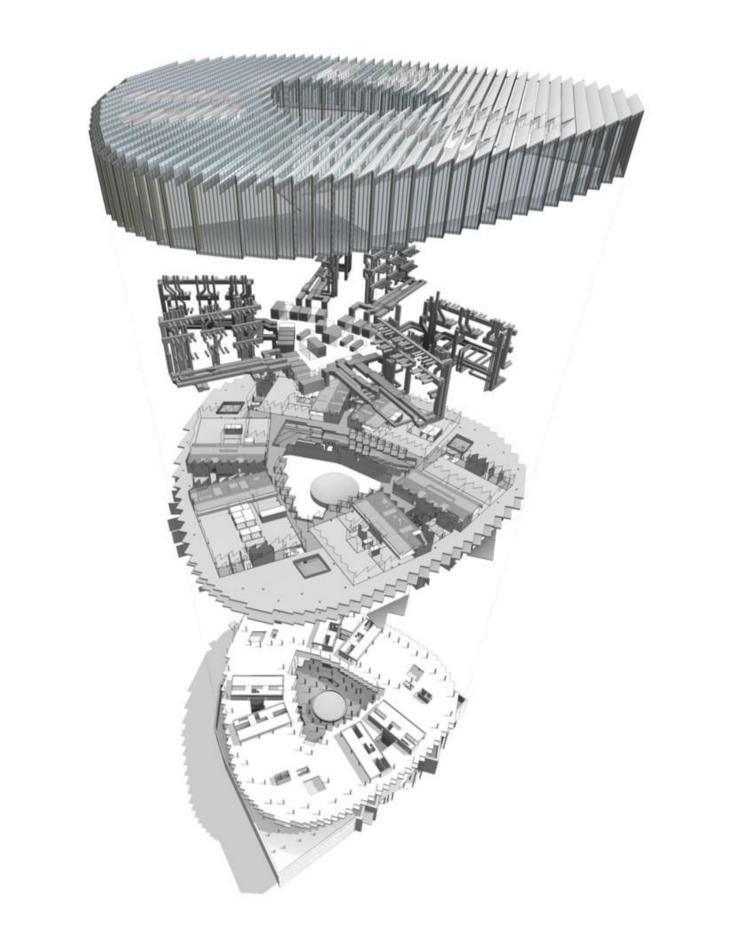




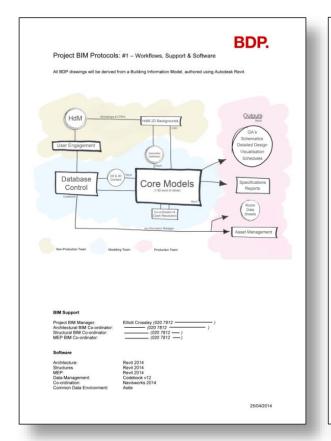


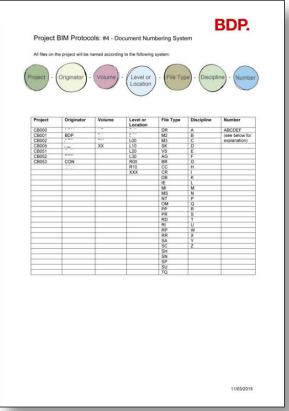


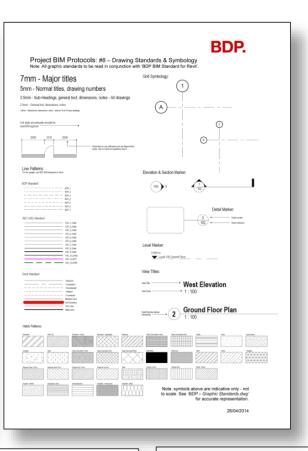


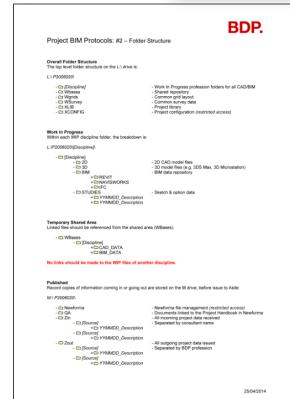


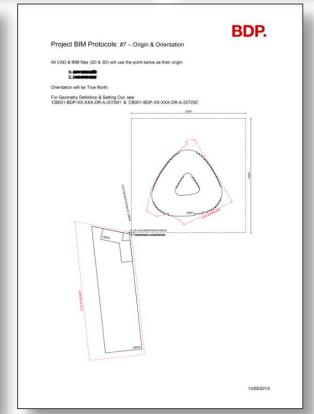
### Plain Language Isn't Just for Clients!

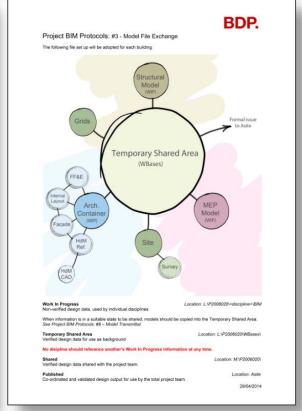


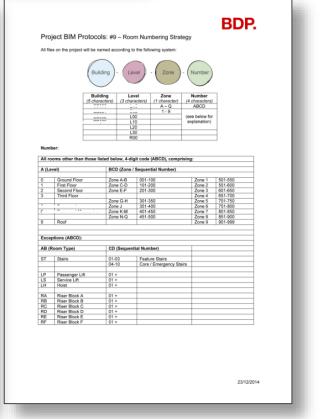




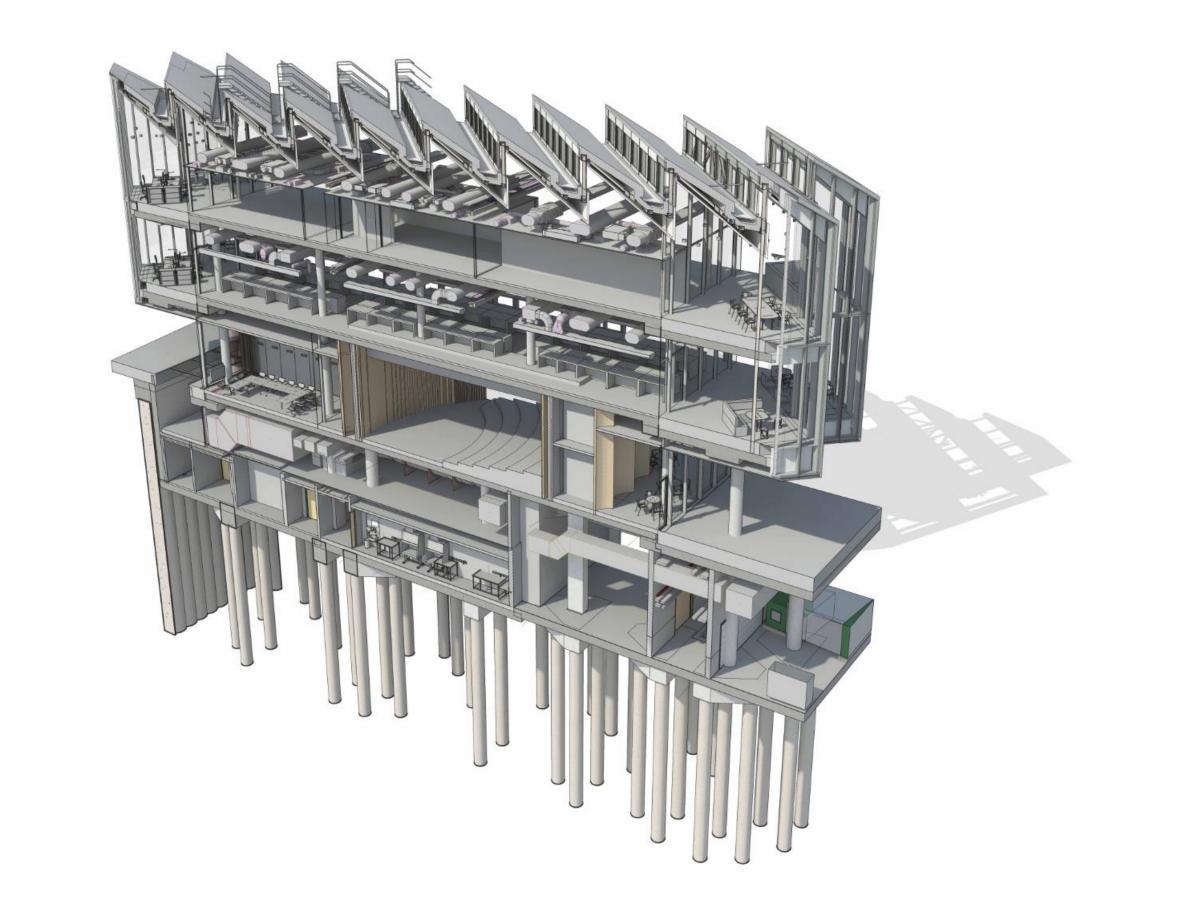


















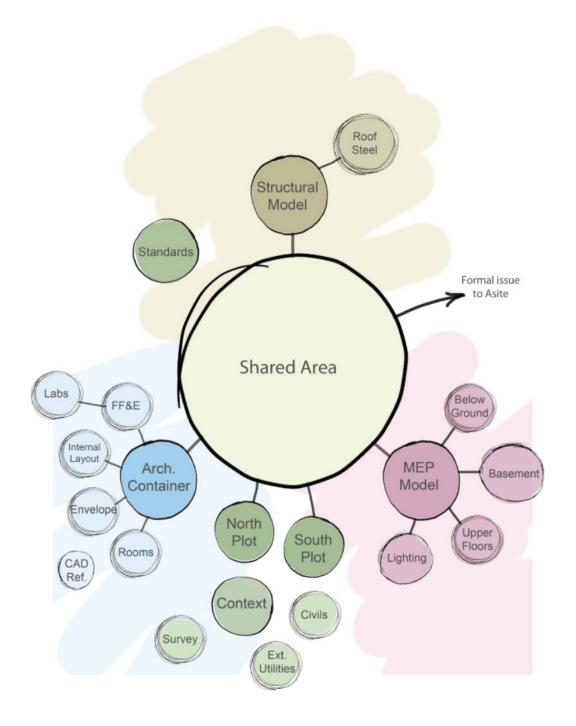




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03.08.2015

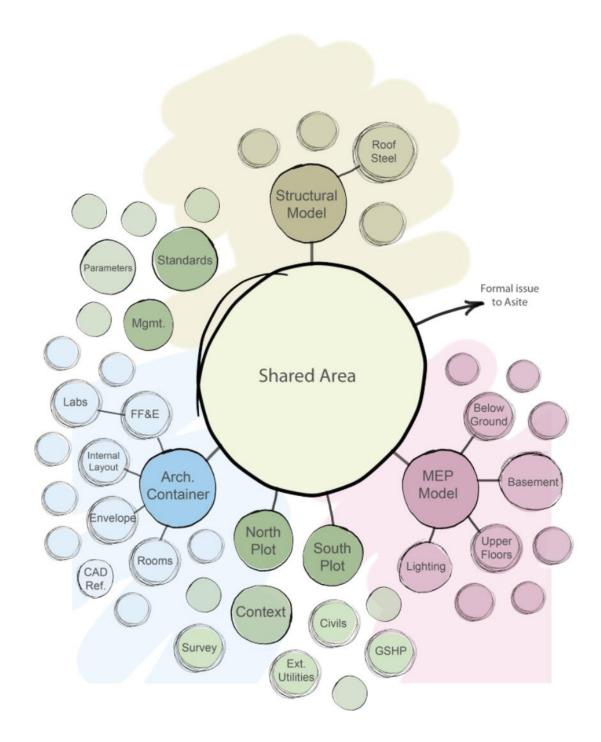
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CB000-BDP-XX-XXX-M3-Z-208801	Masterplan Federated Model	n/a	.ifc, .nwd	BDP	BDP	BDP	BDP	BDP		Z/BIM	30 Mb
CB000-BDP-XX-XXX-M3-A-208901	CAD Reference	n/a	.nwc, .rvt	n/a	n/a	n/a	n/a	n/a		wBases	60 Mb
CB000-BDP-XX-XXX-M3-L-208002	North Plot Proposed Landscape	n/a	.nwc, .rvt	n/a	BDP - L	n/a	BDP - L	BDP - L		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		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		M/BIM	100 Mb
CB000-BDP-XX-XXX-M3-C-208601	External Drainage	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - C	BDP - C		L/BIM	100 Mb
CB000-BDP-XX-XXX-M3-L-208004	Existing Context Model	n/a	.nwc, .rvt	n/a	BDP	n/a	BDP	BDP		L/BIM	100 Mb
CB001-BDP-XX-XXX-M3-A-208001	3D MODELS - R&D Building Container File	n/a	.nwc, .rvt	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	120 Mb
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CB001-BDP-XX-XXX-M3-A-208302	Laboratory FF&E	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	200 Mb
CB001-BDP-XX-XXX-M3-Z-208501	Grids	n/a	.nwc, .rvt	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	10 Mb
CB001-BDP-XX-XXX-M3-S-208601	Structure	n/a	.nwc, .rvt	BDP-S	BDP-S	BDP-S	BDP-S	BDP-S		S/BIM	150 Mb
CB001-BDP-XX-XXX-M3-M-208701	MEP - Basement	n/a	.nwc, .rvt	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M		M/BIM	200 Mb
CB001-BDP-XX-XXX-M3-Z-208801	R&D Building Federated Model 3D MODELS - R&D Enabling Buildir	n/a	.ifc, .nwd	BDP	BDP	BDP	BDP	BDP		Z/BIM	400 Mb
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CB002-BDP-XX-XXX-M3-Z-208801	R&D Enabling Building Federated Mod	e n/a	.ifc, .nwd	BDP	n/a	n/a	n/a	n/a		Z/BIM	200 Mb
00002 001 7007000 110 2 200001	3D MODELS - Energy Centre										
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CD005 DDD V// V/// H2 1 200204		n/a	.nwc, .rvt	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A		wGrids	10 Mb
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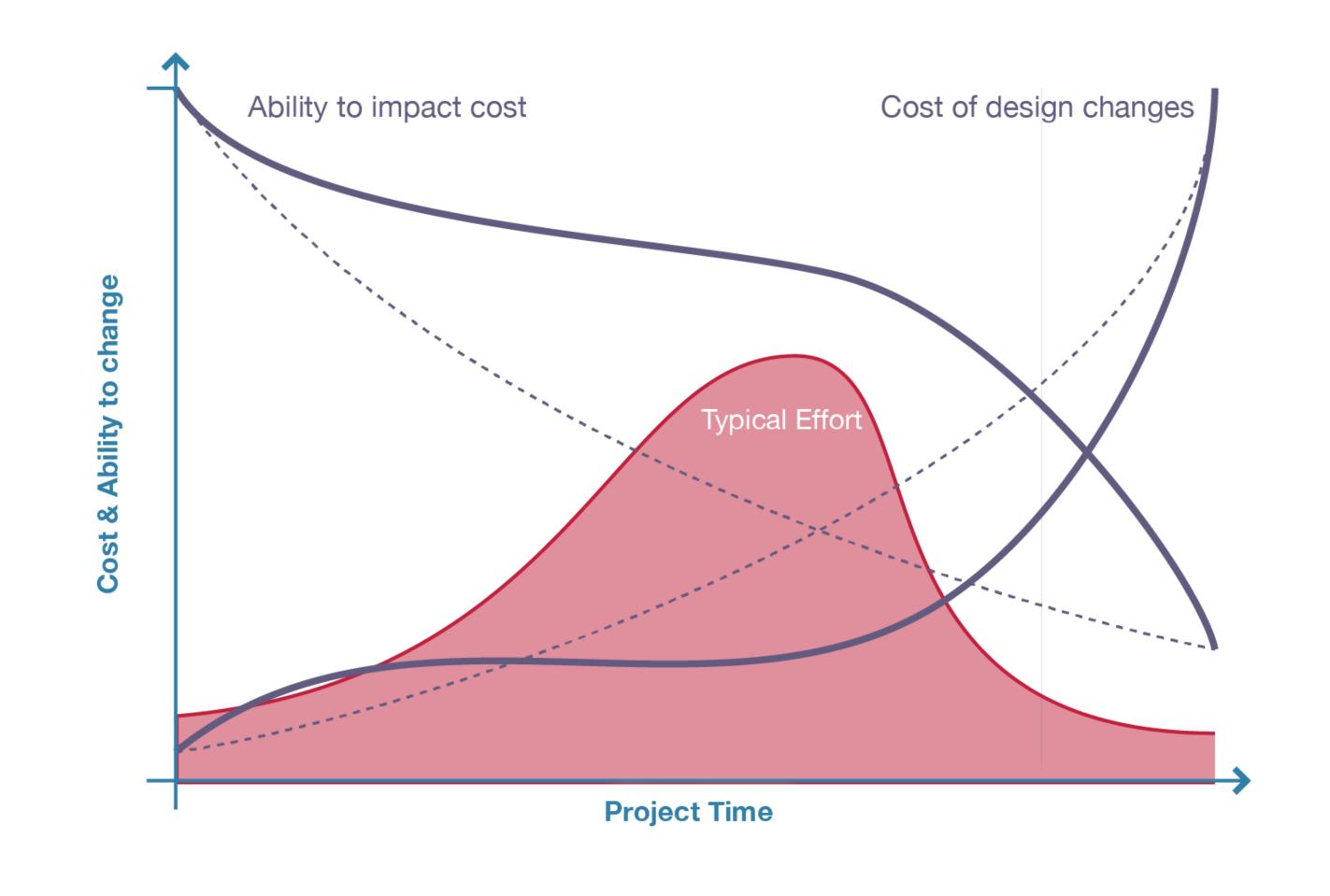
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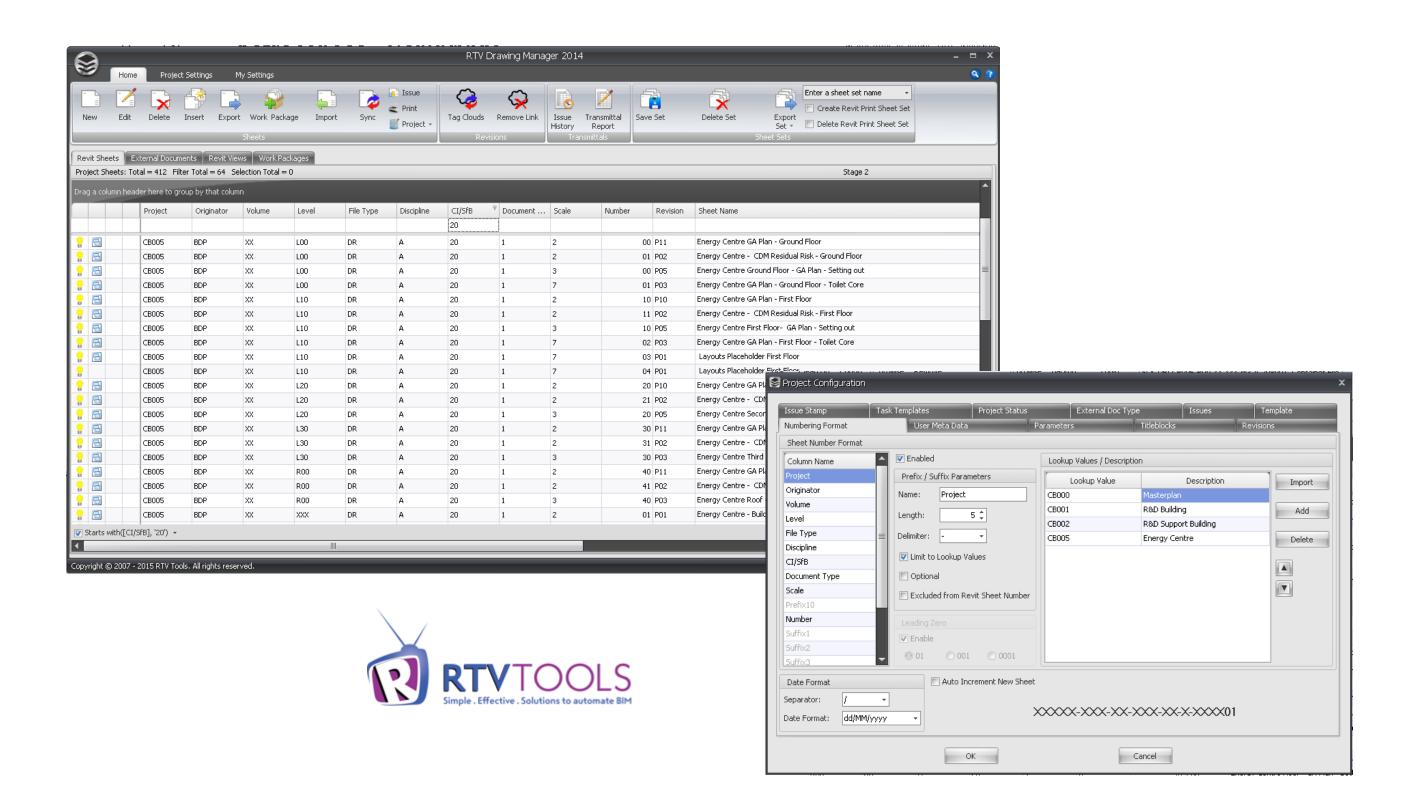
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CB000-BDP-XX-XXX-M3-A-208901	CAD Reference	n/a	.nwc, .rvt	n/a	n/a	n/a	n/a	n/a		wBases	60 Mb
CB000-BDP-XX-XXX-M3-L-208002	North Plot Proposed Landscape	n/a	.nwc, .rvt	n/a	BDP - L	n/a	BDP - L	BDP - L		L/BIM	100 Mb
CB000-BDP-XX-XXX-M3-L-208003	South Plot Proposed Landscape	n/a	.nwc, .rvt	n/a	BDP - L	n/a	BDP - L	BDP - L		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		M/BIM	100 Mb
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CB000-BDP-XX-XXX-M3-C-208601	External Drainage	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - C	BDP - C	•••••	L/BIM	100 Mb
CB000-BDP-XX-XXX-M3-C-208602	Proposed Surface	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - C	BDP - C		L/BIM	100 Mb
CB000-BDP-XX-XXX-M3-L-208004	Existing Context Model	n/a	.nwc, .rvt	n/a	BDP	n/a	BDP	BDP		L/BIM	100 Mb
	3D MODELS - R&D Building										
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CB001-BDP-XX-XXX-M3-I-208301	Non-Laboratory FF&E	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A		D/BIM	200 Mb
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CB001-BDP-XX-XXX-M3-Z-208501	Grids	n/a	.nwc, .rvt	n/a	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	10 Mb
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CB001-BDP-XX-XXX-M3-M-208703	MEP - Below Ground	n/a	.nwc, .rvt	BDP - M	BDP - M	BDP - M	BDP - M	BDP - M		M/BIM	200 Mb
CB001-BDP-XX-XXX-M3-N-208704	Lighting	n/a	.nwc, .rvt	n/a	n/a	n/a	BDP - N	BDP - N		M/BIM	200 Mb
CB001-BDP-XX-XXX-M3-I-208201	Interior Design	n/a	.nwc, .rvt	n/a	BDP - D	n/a	BDP - D	BDP - D		D/BIM	200 Mb
CB001-BDP-XX-XXX-M3-Z-208801	R&D Building Federated Model	n/a	.ifc, .nwd	BDP	BDP	BDP	BDP	BDP		Z/BIM	400 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		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		S/BIM	60 Mb
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CB002-BDP-XX-XXX-M3-Z-208801	R&D Enabling Building Federated Mode	n/a	.ifc, .nwd	BDP	n/a	n/a	n/a	n/a		Z/BIM	200 Mb
	3D MODELS - Energy Centre										
CB005-BDP-XX-XXX-M3-A-208001	Container File	n/a	.nwc, .rvt	BDP - A	BDP - A	BDP - A	BDP - A	BDP - A		A/BIM	40 Mb
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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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	Lighting		.ifc, .nwd	BDP	BDP	BDP	BDP	BDP		Z/BIM	200 Mb
CB005-BDP-XX-XXX-M3-Z-208801	Energy Centre Federated Model	n/a	.nc, .nwu	DUP	DUP	טטר	שטט	יוטט		Z/DIM	200 MD
CDOE4 DDD VV VVV NO 7 000504	3D MODELS - Service Corridor & Mis	sc n/a	nwe nd	n/a	BDP - A	n/a	BDP - A	BDP - A		wGrids	30 Mb
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CB051-BDP-XX-XXX-M3-A-208101	Services Corridor	n/a	.nwc, .rvt	n/a	BDP - A	n/a	BDP - A	BDP - A		A/BIM	30 Mb
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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... Change Management







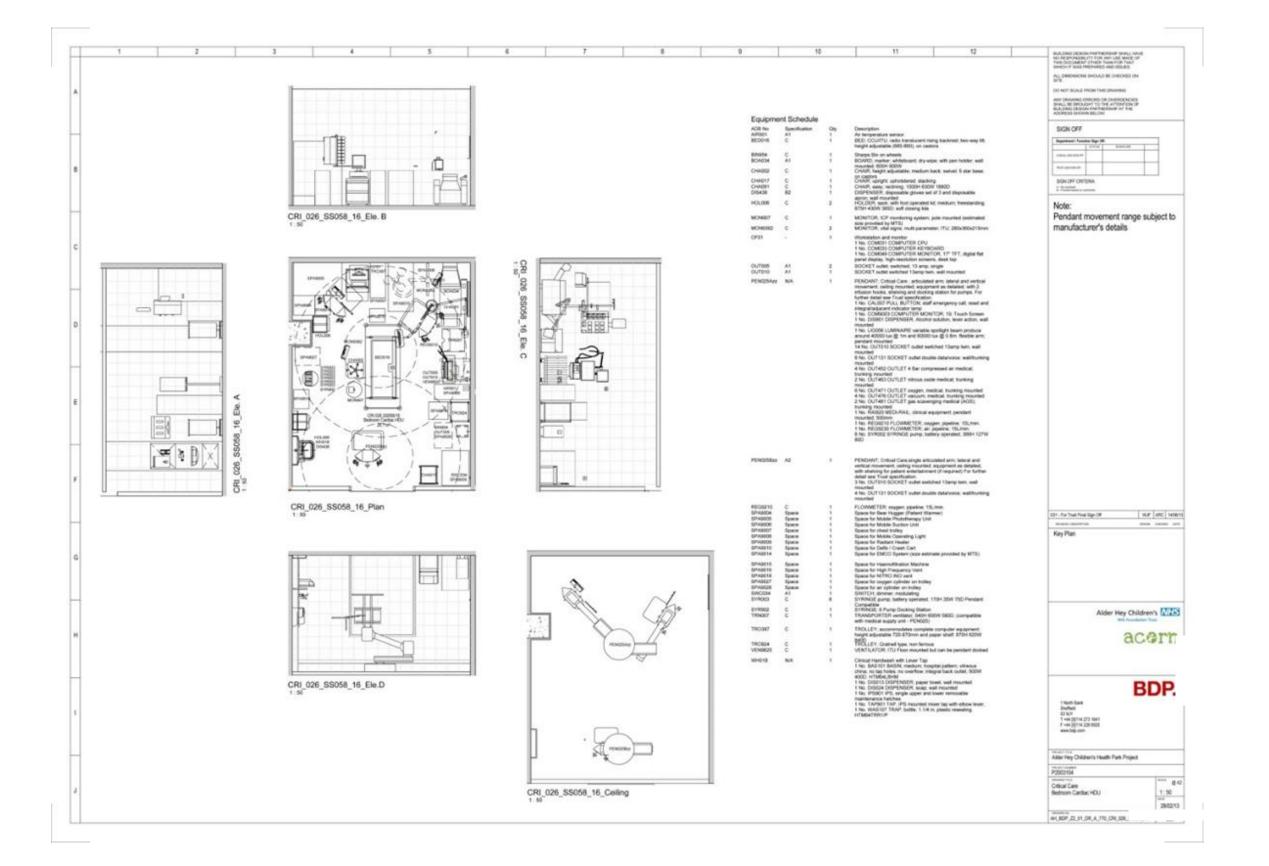


# 1 project, 1 month: 572 Drawings issued, 25 hours saved.

\$250 software.

# We are able to realise Greater Benefit when intelligent Project Information is used beyond Construction





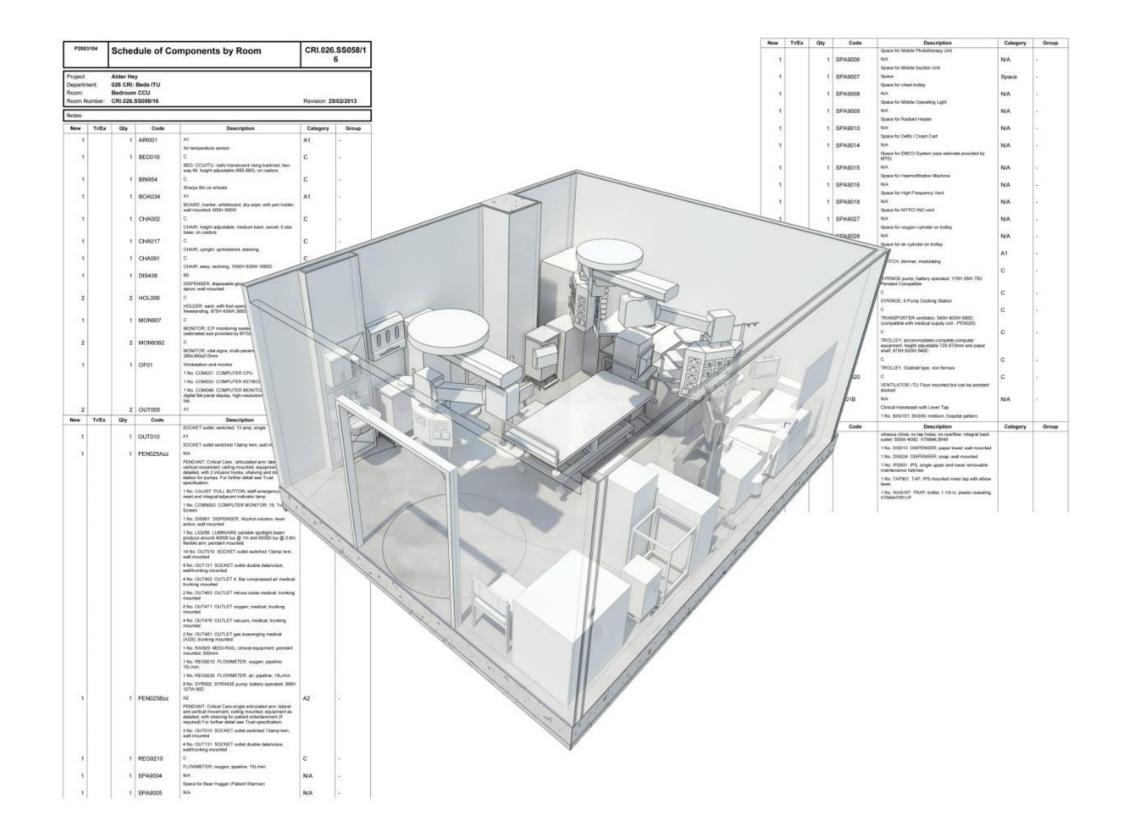
#### BDP.

10489	Room Data - Envir	onmental					
=							BDP.
Level: Department:							DDP.
Room:							
Room Number:			10489	Room Data - Finis	chae		
Temperature	Summer degC	27°C not to be against CIBSE	10100	Room Data - Finis	siles		
	Winter degC	21	Level:				
Ventilation	Relative Humidity% Supply ac/hr	Humidity not co 10 litres per sec					
	Extract ac/hr	10 litres per sec					
	Relative Pressure Final Filtration	Balanced 0 \ 0	Finishes	Floor Finish	Surface F	10489	Room Data - Activities
Mechanical Note		010			smooth F		1100111 2414 71011111100
Safety	Hot Surface Temperature deg C	43		Floor Finish Spec. Skirting	Refer to d Coved to Refer to d	Level: Department:	
	Hot Water Temperature deg C			Skirting Spec. Wall Finish	Surface P	Room: Room Number:	
						Focom Number:	

	Winter degC	21	Level:
	Relative Humidity%	Humidity not co	Departm
Ventilation	Supply ac/hr	10 litres per sec	Room:
	Extract ac/hr	10 litres per sec	Room N
	Relative Pressure	Balanced	
	Final Filtration	0 / 0	Finishes
Mechanical Notes			
Safety	Hot Surface	43	
_	Temperature deg C		
	Hot Water Temperature		
	deg C		
Safety Notes		Hot surface ten	
		radiant panels.	
Lighting	Lighting Level Normal lux	300 lux at desk	
	Lighting Level Night lux	30 / 200 lux - se	
	Lighting Level Local lux	0 -	
	Standby Lighting Grade	A - Lighting of t	
		provided by no	
	Colour Rendering	General lighting	
	Lighting Notes	Separate select facility.	
		Unified glare ra	
		Emergency ligh	
Sound	Intrusive Noise NR	40 dB LAeq, 1h	
o o a ma	LAeg: 1hour	40 ab 240q, 111	
	Mechanical Services	NR 35	
	Noise NR L90		
	Rain Noise NR Leq;	>20 dB above In	
	1hour	lower	
	Impact Sound Insulation	65 dB L'nT,w	
	from above L'nT;w dB		
Sound Insulation Criteria	Privacy	Moderate	
	Noise Generation	Typical	
	Noise Sensitivity	Medium	
Fire	Fire Detection	- Smoke	

Surface F	10489	Room Data - Act	tivities	DS_T0211b
smooth F Refer to d				
Coved to	Level:			
Refer to o	Department:			
Surface F	Room:			
normal he	Room Number:			
2.4				
Refer to o	Design Criteria	Area Designed (sq m)		
Surface F	Occupancy	Personnel	1 - 4 x Staff (2x Staff(Al-cf)) (Upto 8 Seat	
Resistant (HTM 60):	Activities		associated with departmental organisation. 2 findicator panels, 3. Writing notes and/or rep	
Buspende			indicator panels. 3. Writing notes and/or repo . 5. Using computer workstation(s), 6. Using :	
nperfora			elephone(s). 9. Accessing and viewing digital	
/a			ds (in a notes trolley)/accessing electronic re	
			ve patients, 12, Staff notices; information an	
/a			itor arrival and waiting (CCA)	
	Design Notes	Changes to OS	Refer to 'Schedule of UG Deviations from	m Output Spec'
			document for details	
	Adjacencies		Should allow good observation of the a	
			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 state	ement & D2.7f Glazing
		Internal Glazina	strategy (HTM 57) N/A	
		Spec Internal	refer to document reference D2.7f Glazin	na etratoric
	Doorsets	Door Width/Type	(HTM 58) N/A	ng an mugg
	50015015	Specification	Refer to document reference D2.8f Kit o	f parts/Assemblies
	Fire	Fire Englosum	the actual room fire rating may result in	
	1	2.10100010	depending on the adjacent room(s): ref	
			drawings ref:	and the same and an arrangy

BDP.





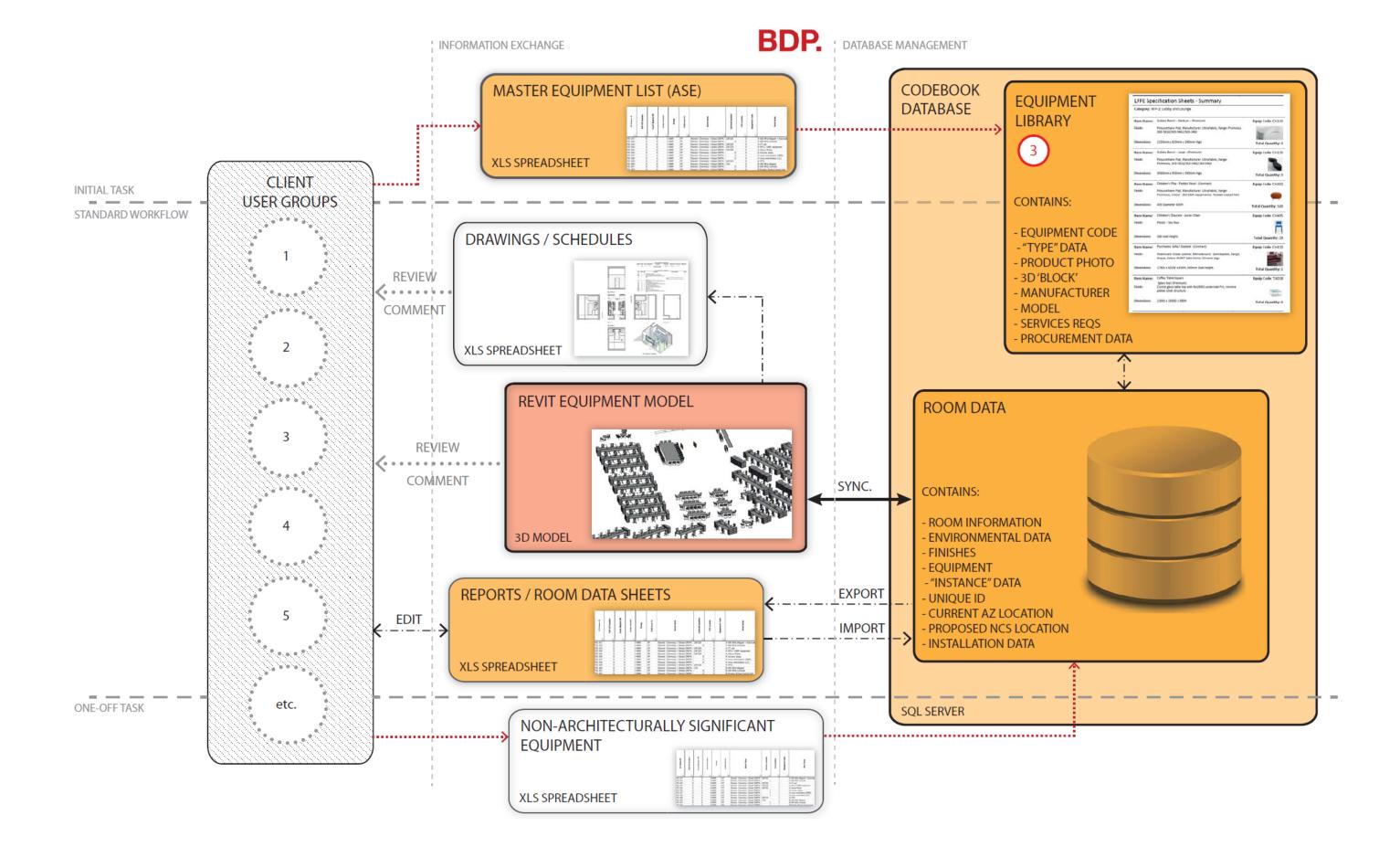




#### ASE 'Architecturally Significant Equipment'

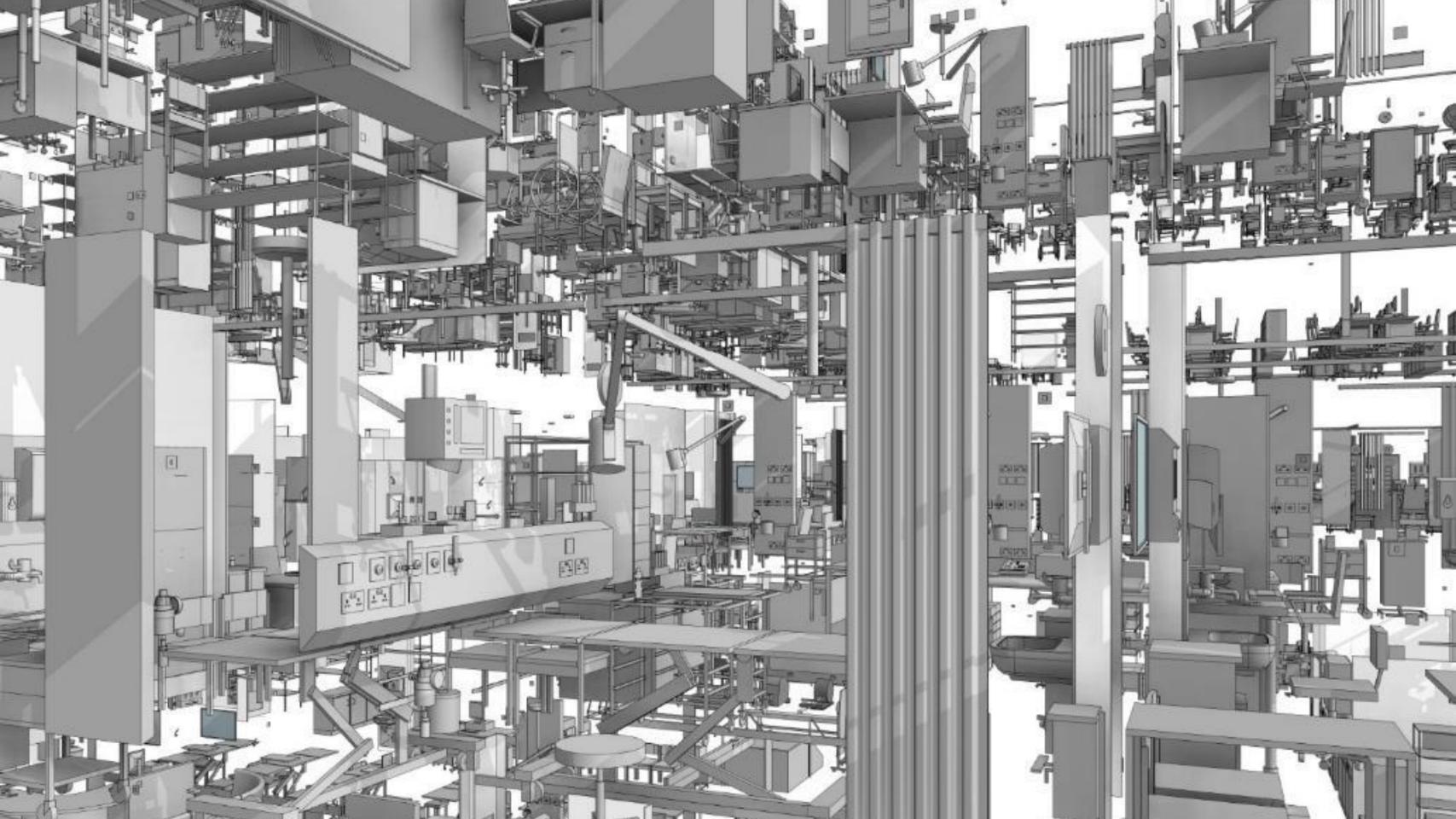
Architectural Significance > 750mm
 Servicing Requirement > Typical Provision
 Structural Significance > Designed Loads



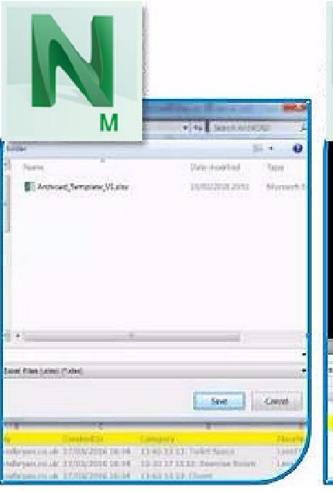


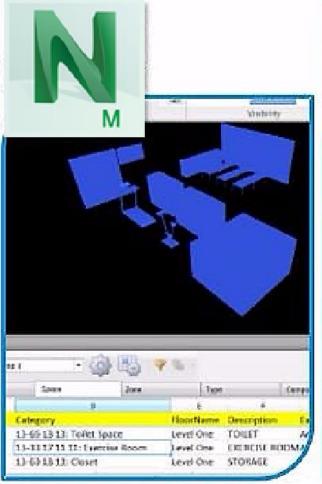


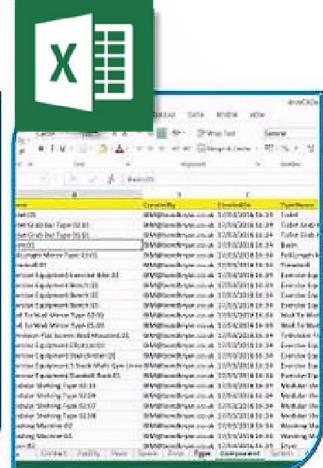
	8	C C	U			100	9.10	1	2	160	62	193	1.90
	Name CreatedBy	CreatedOn	Category	Description	AssetType	Manufacturer	ModelNumber	Warranty Guarantor Parts	WarrantyDurationParts	Warranty Guarantor Labor	WarrantyDurationLabor	WarrantyDurationUnit	ExtSystem
ALA026	test@bdp.con	m 2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	FIRE ALARM break glass; push button release	fixed	-							CodeBook
3 DSK129	test@bdp.con	n 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	NOT EWT ; -; DESK	fixed	-							CodeBook
U_SED011	test@bdp.con	m 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.con	n 2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	DETECTOR smoke; 430 to 470Hz	fixed	-							CodeBook
MSC160	test@bdp.con	m 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	SAFETY CABINET; CLASS II RECIRC; SAFETY CABINET	fixed								CodeBook
7 BEN008	test@bdp.con	n 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 750mm (depth) x 450mm (wide) x 910mm (height)	fixed	-	9						CodeBook
3 VEN008	test@bdp.con	m 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	IVC Rack and 70 Cages; STANDARD; VENTILATED ENCLOSURE	fixed								CodeBook
BIN108	test@bdp.con	n 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Diet bin; BIN; STORAGE	fixed	-							CodeBook
SET001	test@bdp.con	m 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Service trunking 1000mm; wall mounted	fixed	100							CodeBook
GR1900	test@bdp.con	n 2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	GRILL; Extract grill	fixed	-							CodeBook
2 U_SEP020	test@bdp.con	m 2015-11-18T15-14-60 0 60	Services: Lectarian Electrical	Service Pod + Receiver plate for IVCs Greenline incl. power; data; C02, power and AGS; hover to a Strong Company of the Compan	fixed	+							CodeBook
U_SER004	test@bdp.com	n 2015-11-18T15-14-00-0	Services: Amarical Electrical		fixed				Į.				CodeBook
U_SER003	test@bdp.con	m 2015-11-18T15-14/00-05-00	Services: Nechanical Electrical	CV + BSDs Service), do tru ki g	fixed								CodeBook
U_SEP010	test@bdp.con	n 2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service pod for Microbiological Safety Cabinets incl. power; data; Vacumm; Compressed	afixed								CodeBook
U_HYG002	test@bdp.con	m 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Hygiene WTB; IPS wall mounted; left hand  Vertical Service Tricking for RSF Holding and Proceedings 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	fixed								CodeBook
U_SET020	test@bdp.com	n 2015-11-18T15-14-00-05-00	Services: Mychanica / Electrica	Virtical Scyce Tricking for RSF Holding and Posetherman 1 D O	fixed	-							CodeBook
U_HYG001	test@bdp.con	m 2015-11-18T15-14-00-05-00	Fittings: Grand aboratory	Higiene (HF); IPS w/ mounted right hand C	fixed								CodeBook
BEN001	test@bdp.con	n 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 900mm (depth) x 1800mm (wide) x 910mm (height)	fixed	-	9						CodeBook
BEN002	test@bdp.con	m 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 900mm (depth) x 1500mm (wide) x 910mm (height)	fixed								CodeBook
L VENO06	test@bdp.con	n 2015-11-18T15-14-00-05-00	Fittings: General Equipment	IVC Double Deck Rack and 16 Cages; STANDARD; VENTILATED ENCLOSURE	fixed	-							CodeBook
2 SUR003	test@bdp.con	m 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Anaesthesia And Scavenging; ANAESTHESIA; Surgical Device	fixed	-							CodeBook
U_SED020	test@bdp.con	n 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.con	m 2015-11-18T15-14-00-05-00	Services: Mechanical / Electrical	Service dado for 1800mm bench incl. power; data; Vacumm; Compressed air; C02 and Nitr	refixed	-							CodeBook
MSC157	test@bdp.con	n 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Portable VHP Unit; CONTAINMENT; SAFETY CABINET	fixed	-							CodeBook
MSC161	test@bdp.con	m 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	VHP Aeration Unit; CONTAINMENT; SAFETY CABINET	fixed	F							CodeBook
CYL004	test@bdp.con	n 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	Helium Cylinders - mobile; GAS CYLINDER; ANCILLARY	fixed	-							CodeBook
3 SNK003	test@bdp.con	m 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory sink; left hand drainer; 750mm (depth) x 1500mm (wide); bench mounted with	hfixed								CodeBook
BEN005	test@bdp.con	n 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.con	m 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Unberbench storage unit; 500mm wide x 600mm deep	fixed								CodeBook
L BEN003	test@bdp.con	n 2015-11-18T15-14-00-05-00	Fittings: General Laboratory	Laboratory bench; 900mm (depth) x 1200mm (wide) x 910mm (height)	fixed	-							CodeBook
PCA012	test@bdp.com	m 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	FUME CUPBOARD; STANDARD; Fume Cupboard	fixed								CodeBook
3 LSF001	test@bdp.con	n 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	REFRIGERATION; FREEZER / -20; Lead Shielded Freezer -20	fixed	-							CodeBook
DDT003	test@bdp.com	m 2015-11-18T15-14-00-05-00	Architecturally Significant Equipment	VENTILATED ENCLOSURE; STANDARD; Downflow table	fixed								CodeBook
5 DDT005			Architecturally Significant Equipment	VENTILATED ENCLOSURE; STANDARD; Downflow table	fixed	-			<u> </u>				CodeBook
5 VET002			Services: Mechanical / Electrical	Ventilation Duct	fixed								CodeBook
FR702/			Architecturally Significant Equipment		fived	Lanca Lanca	AND STREET	Total token	0		· Post		CodeRook
(5.00)	Instruction Contact Facility	y Floor Space Zone	Type Component System A	Assembly Connection Spare Resource Job Impact Document Attribute	Coord	illiare la	2TE	ickLists	<b>(+)</b>		3 4		



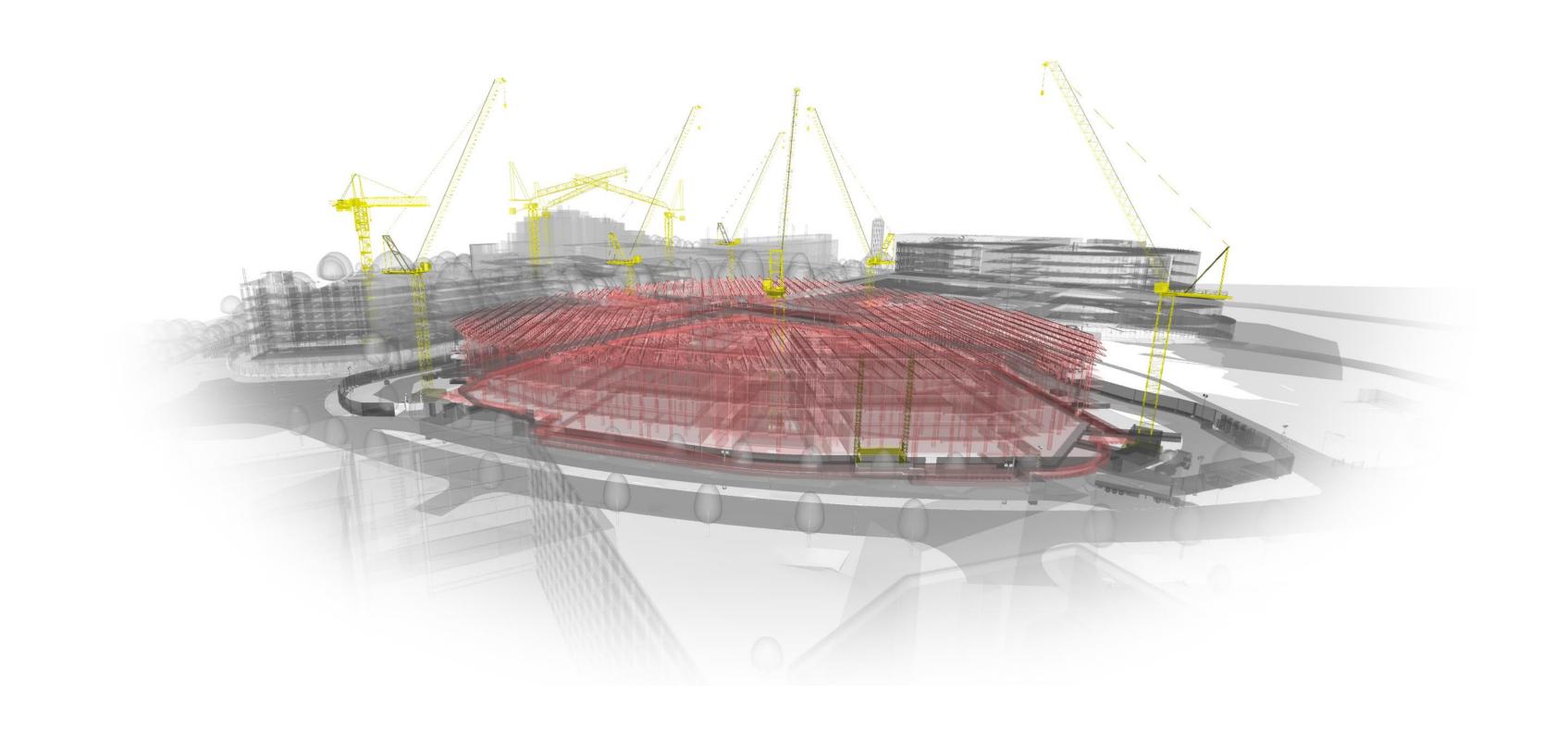






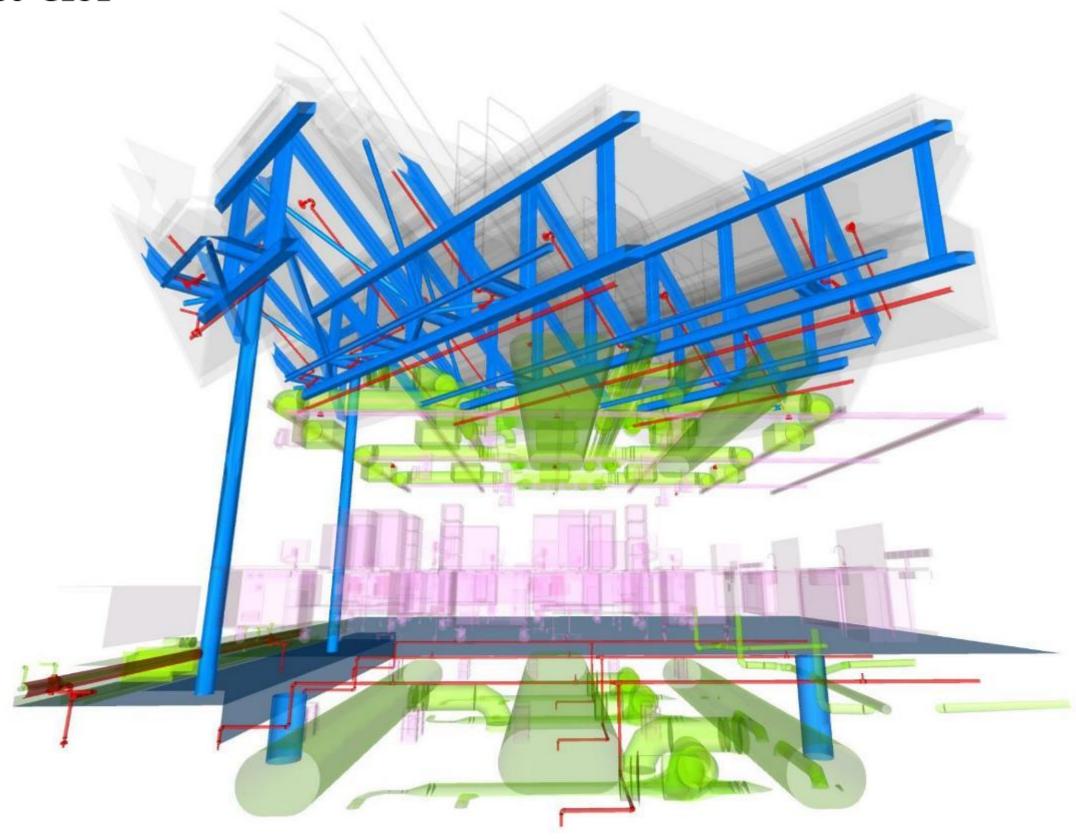






#### AUTODESK® BIM 360 GLUE®





#### AUTODESK® BIM 360° FIELD









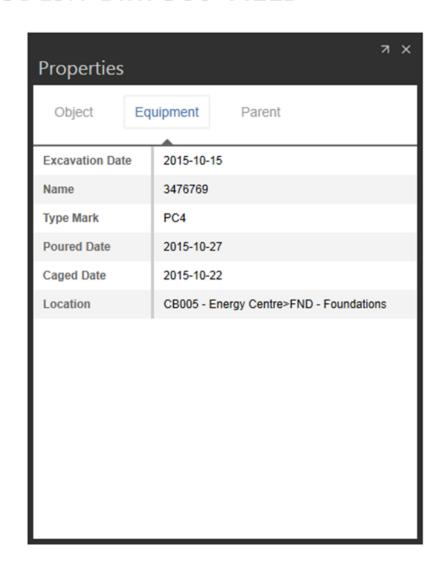


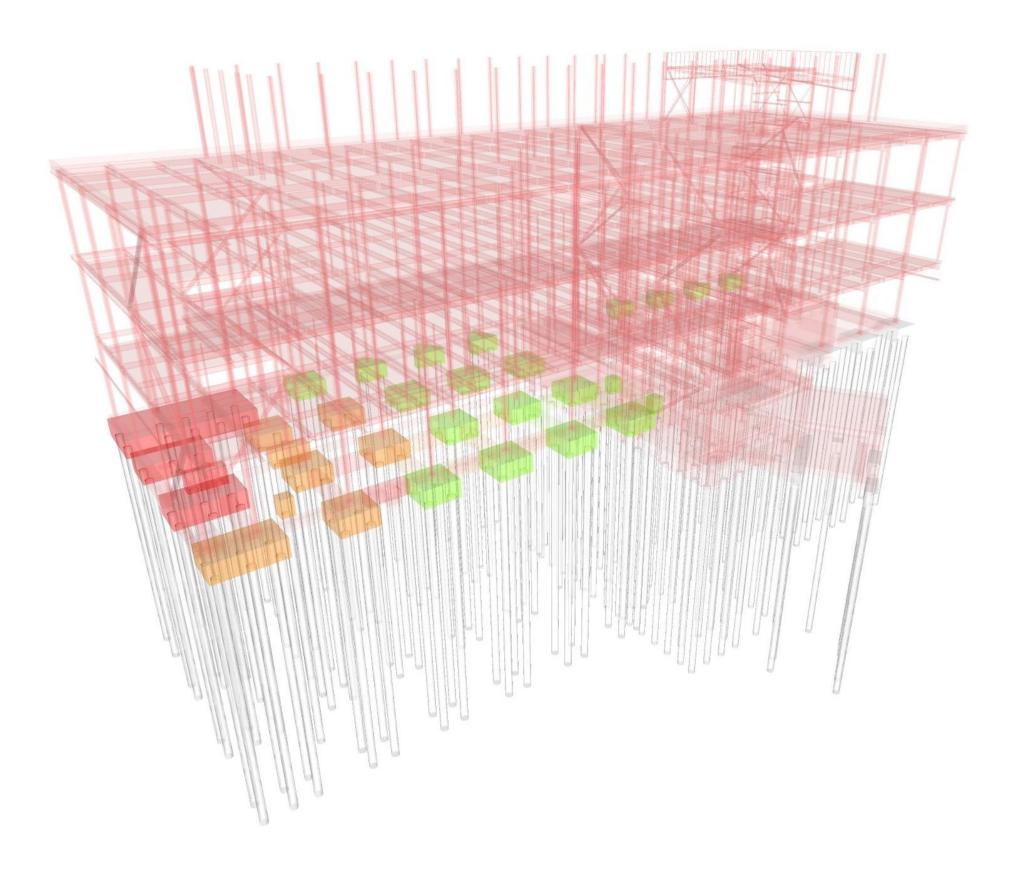




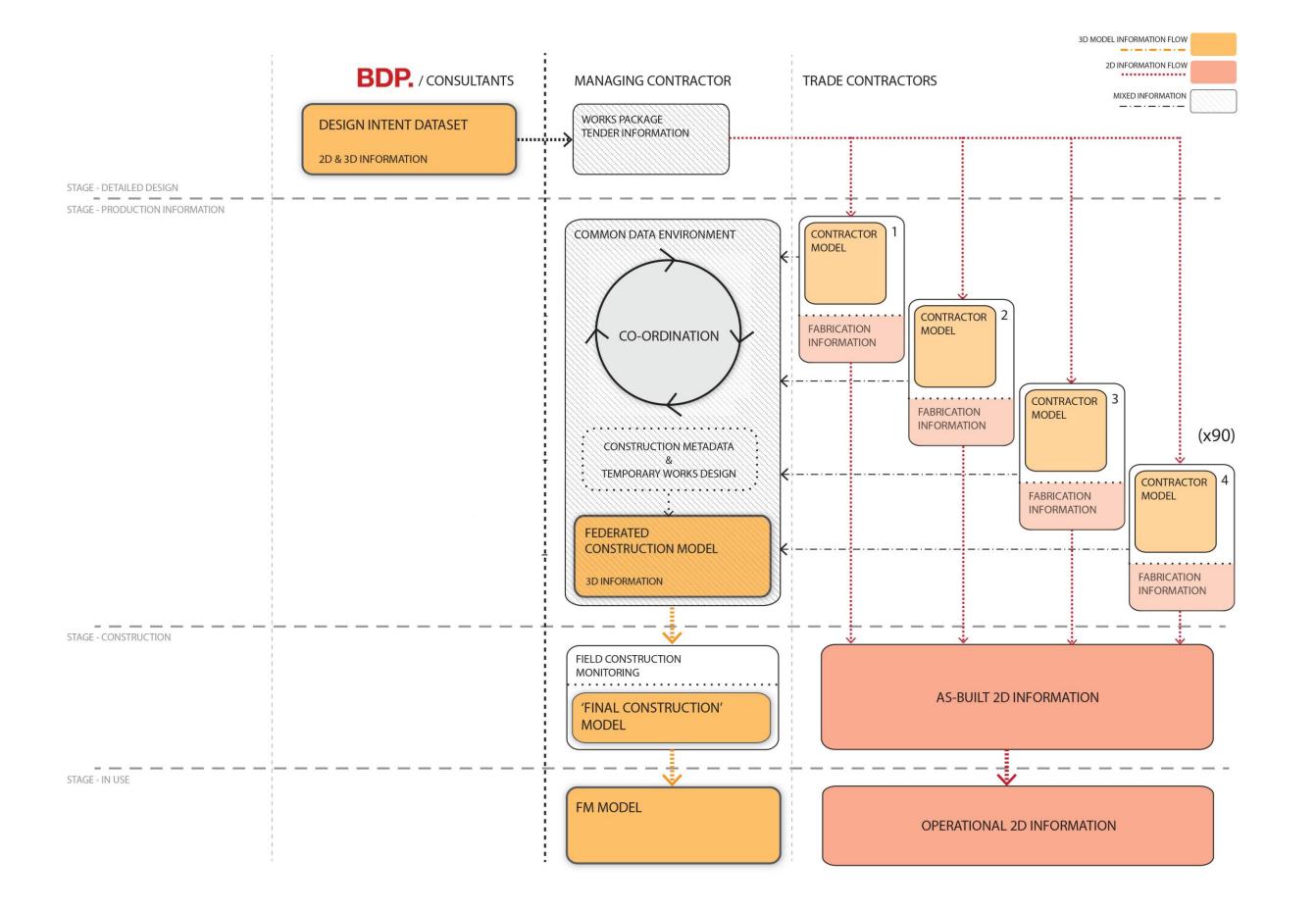
#### AUTODESK® **BIM 360™ FIELD**

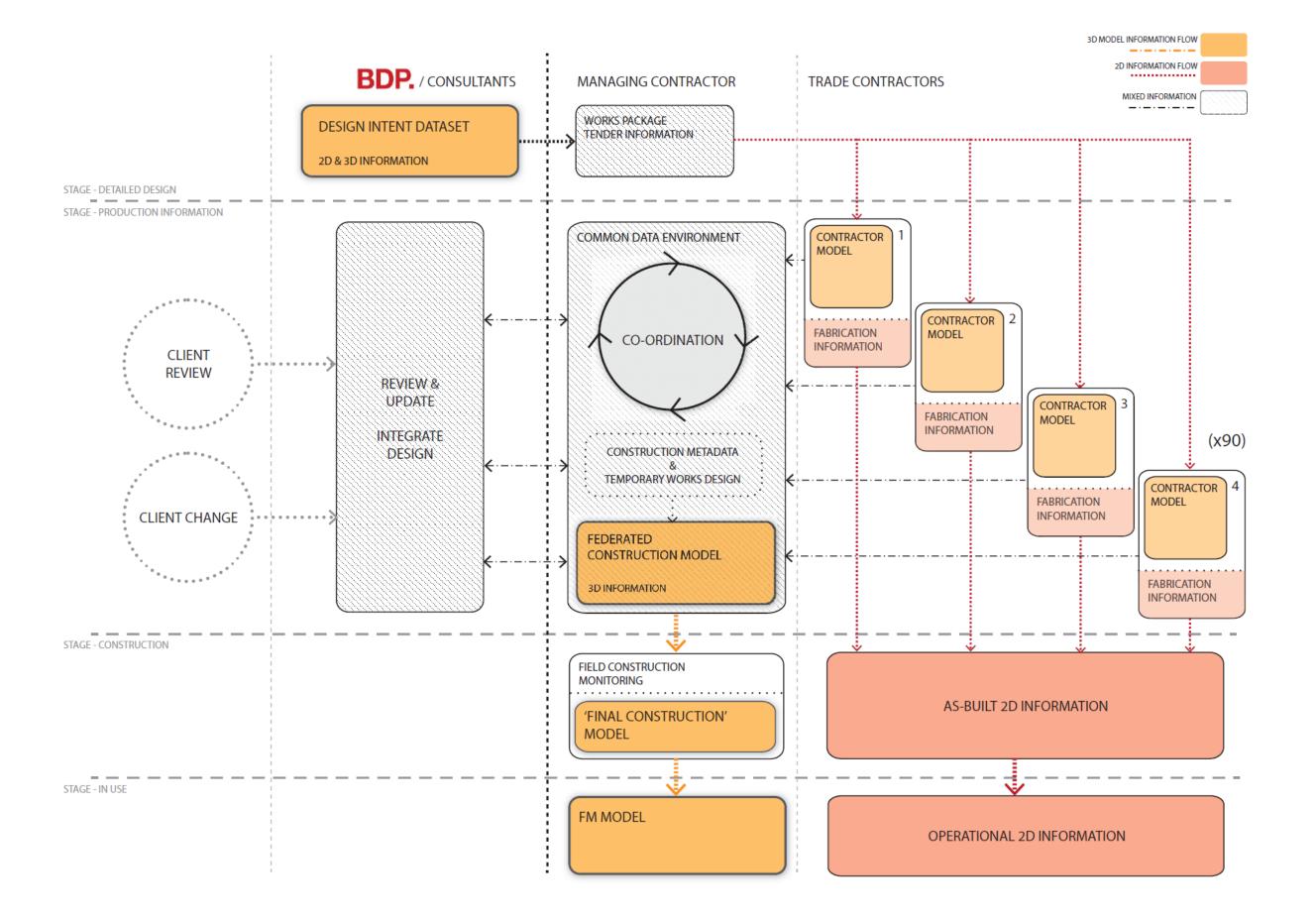


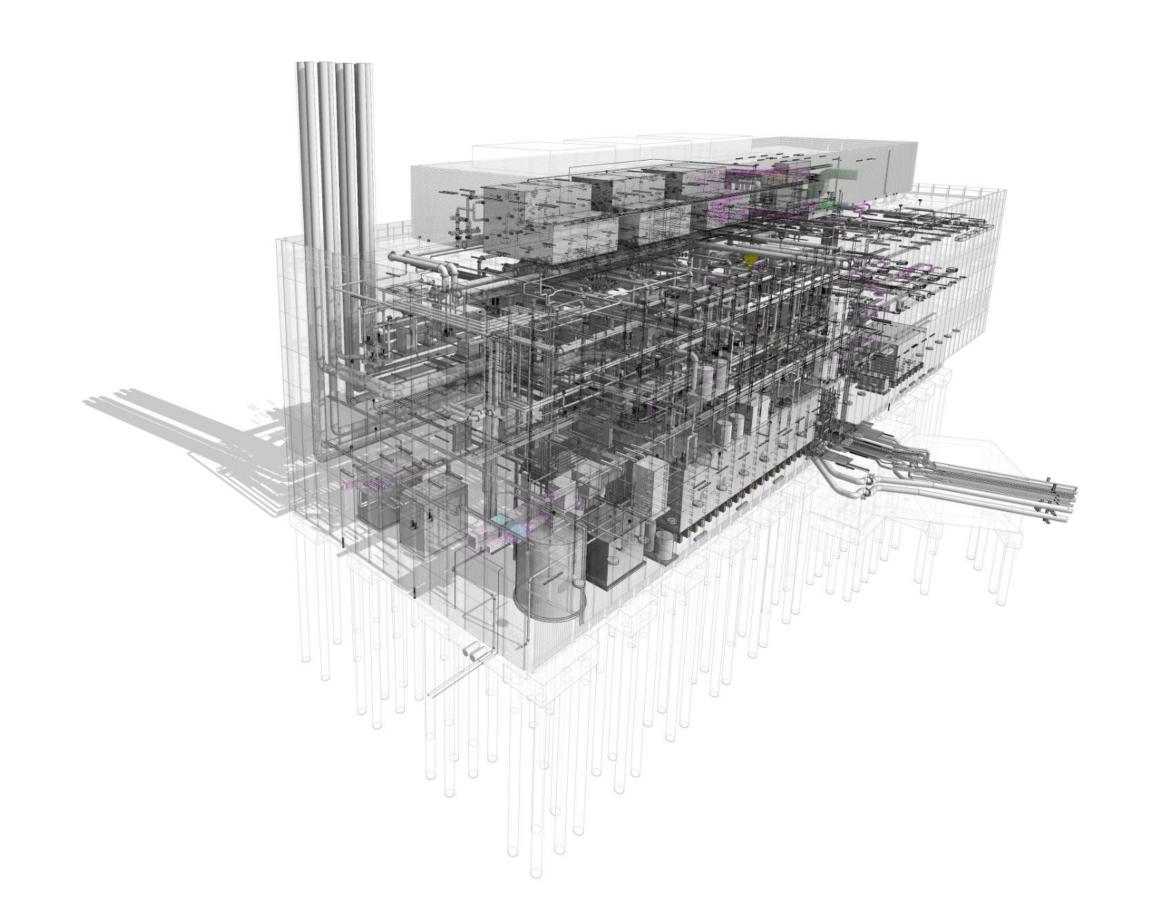




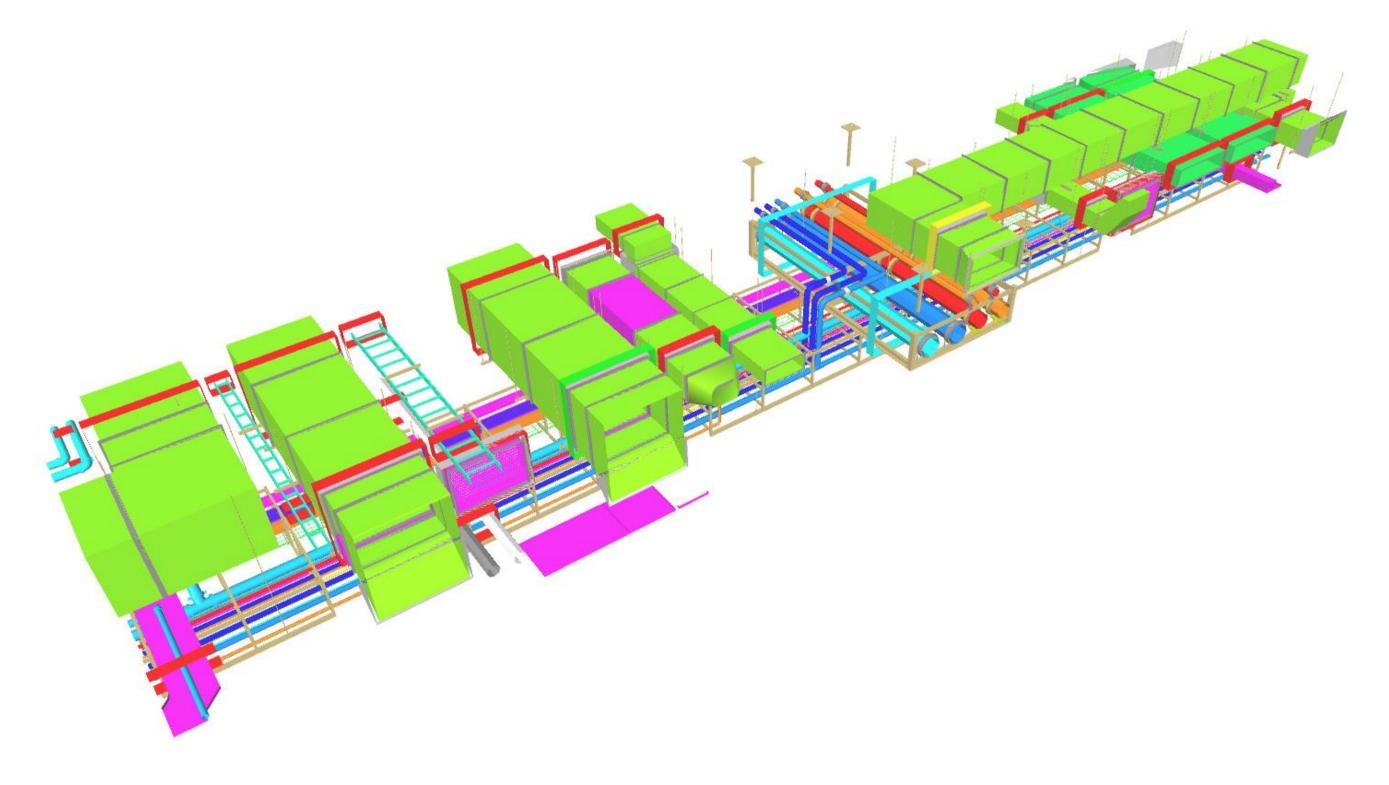
### The Problem with... Procurement





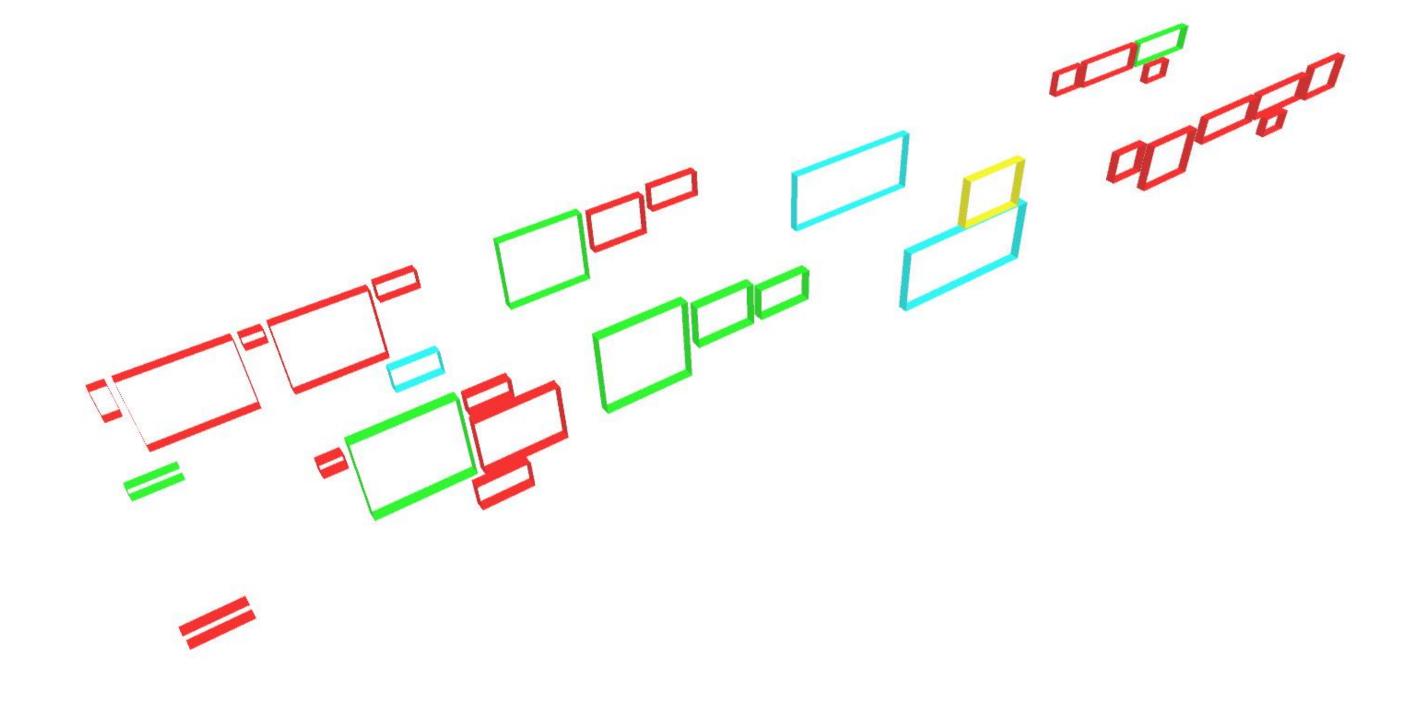


#### Achieving a Fully Co-ordinated Design





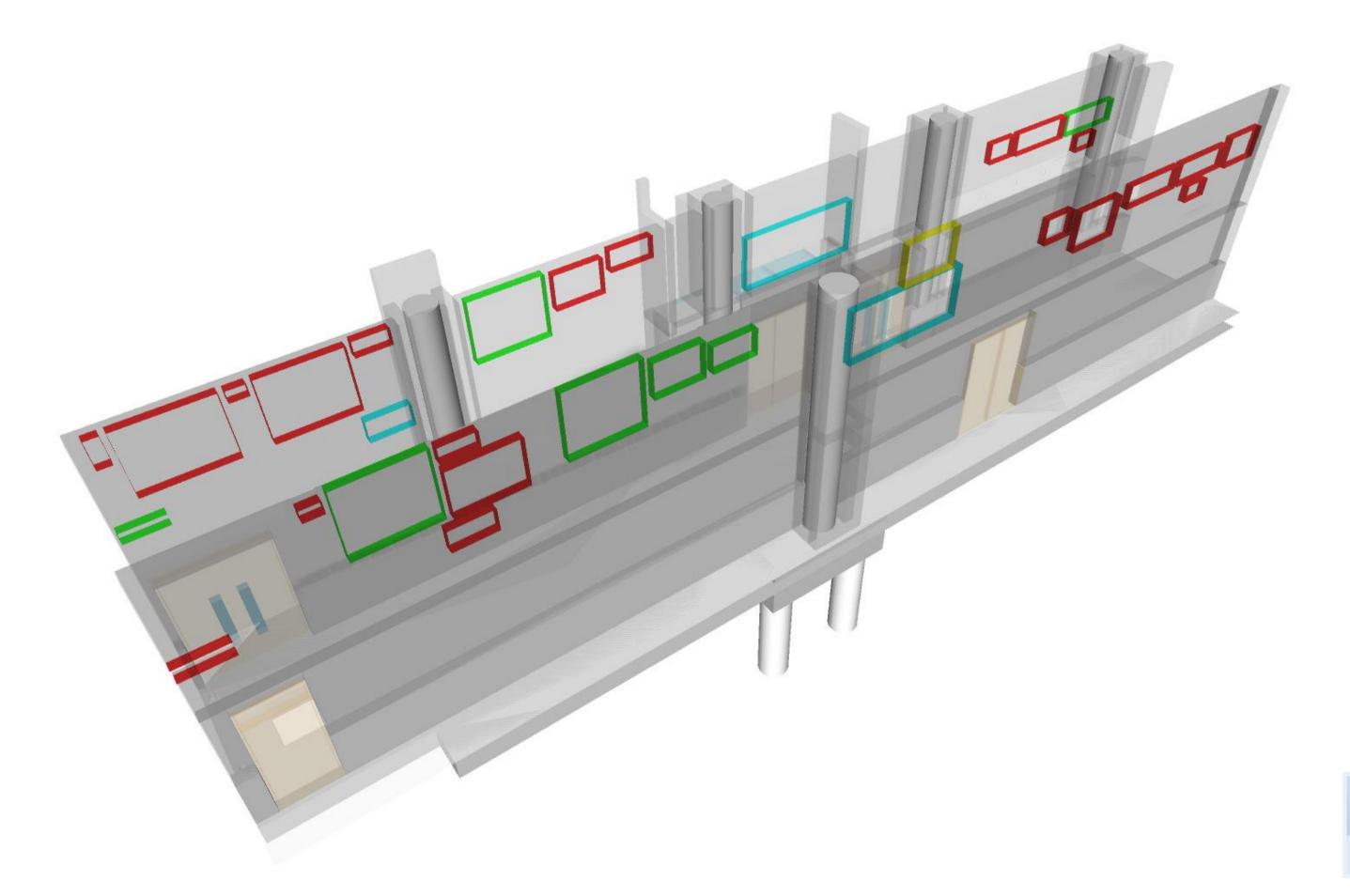




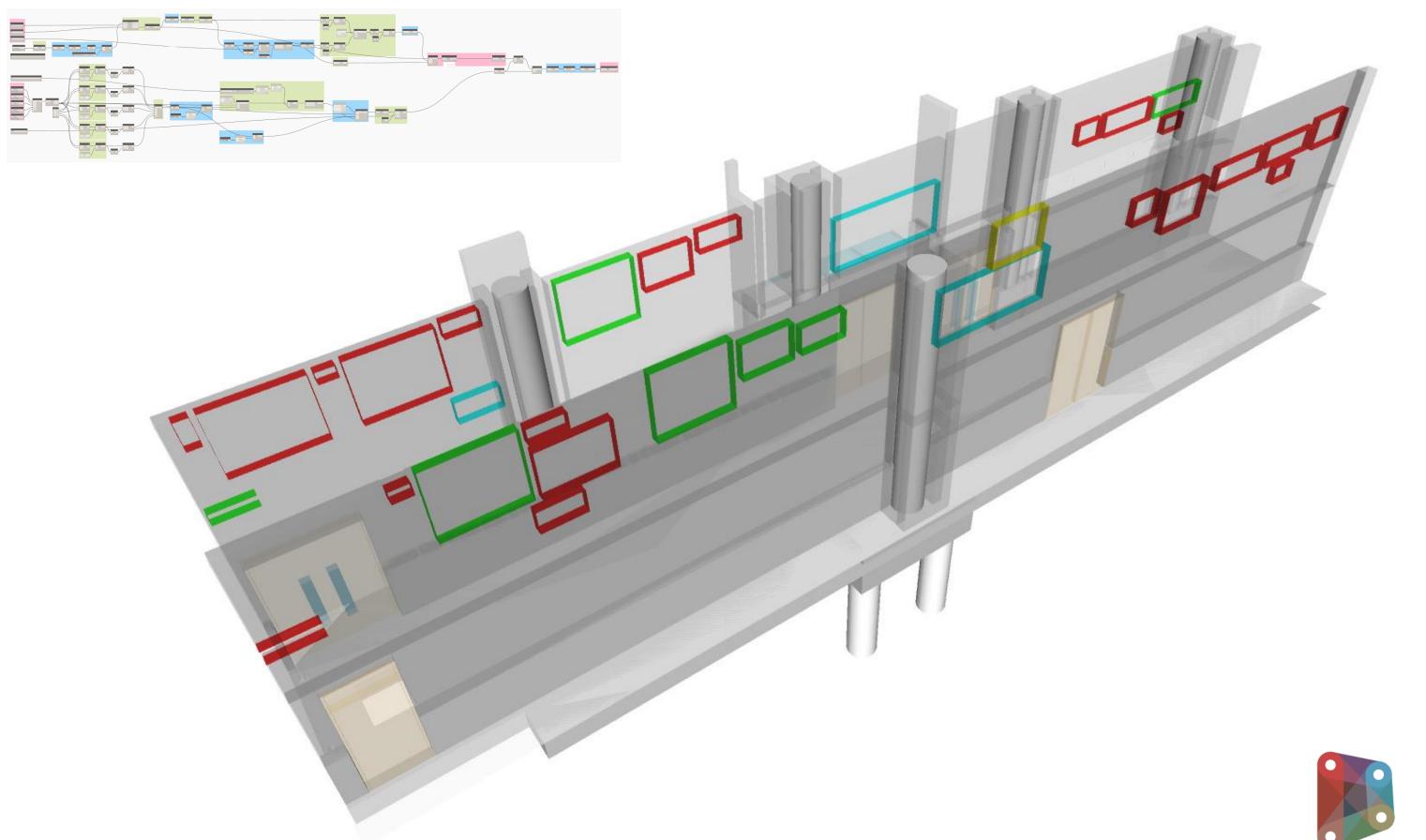






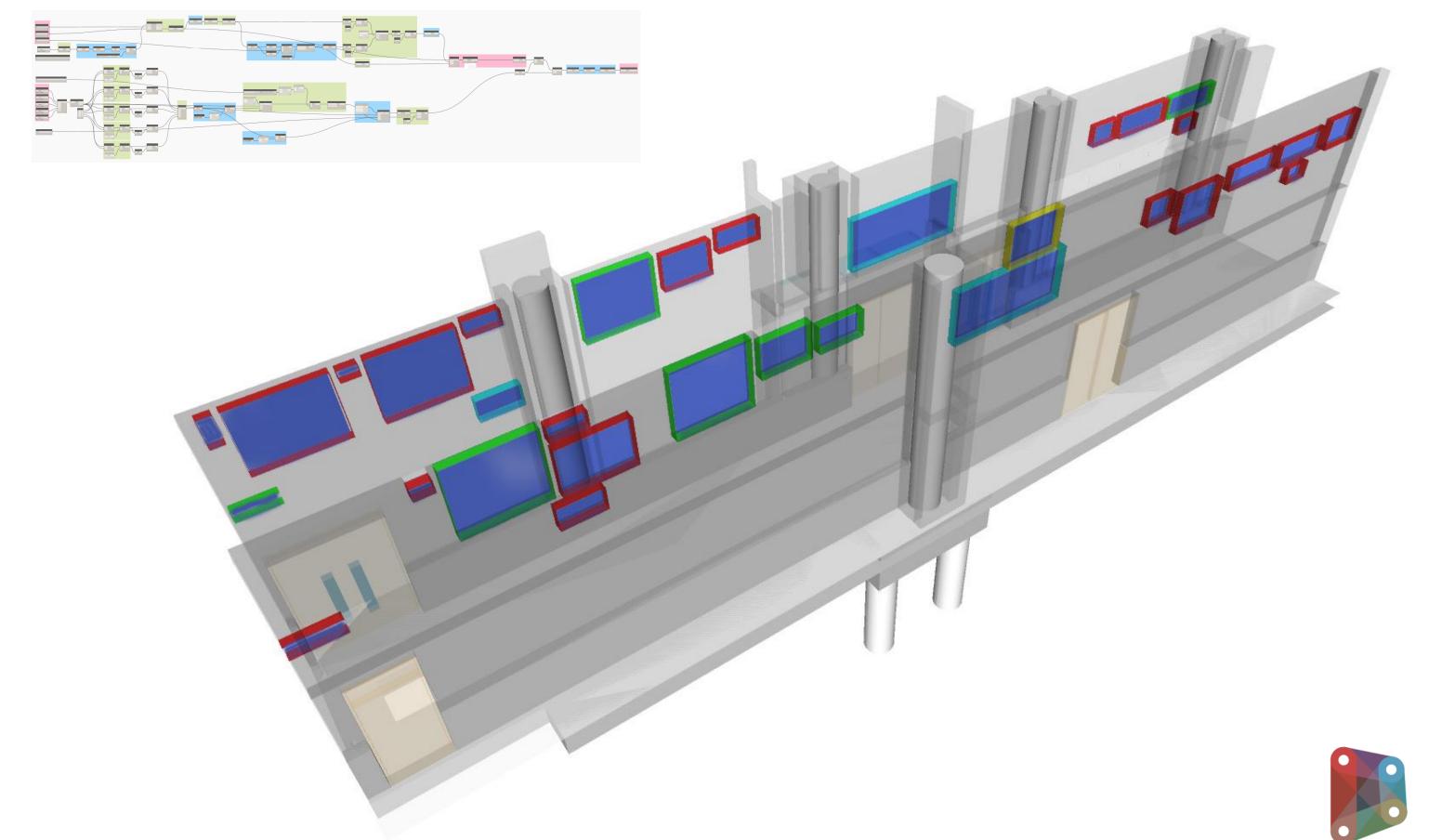




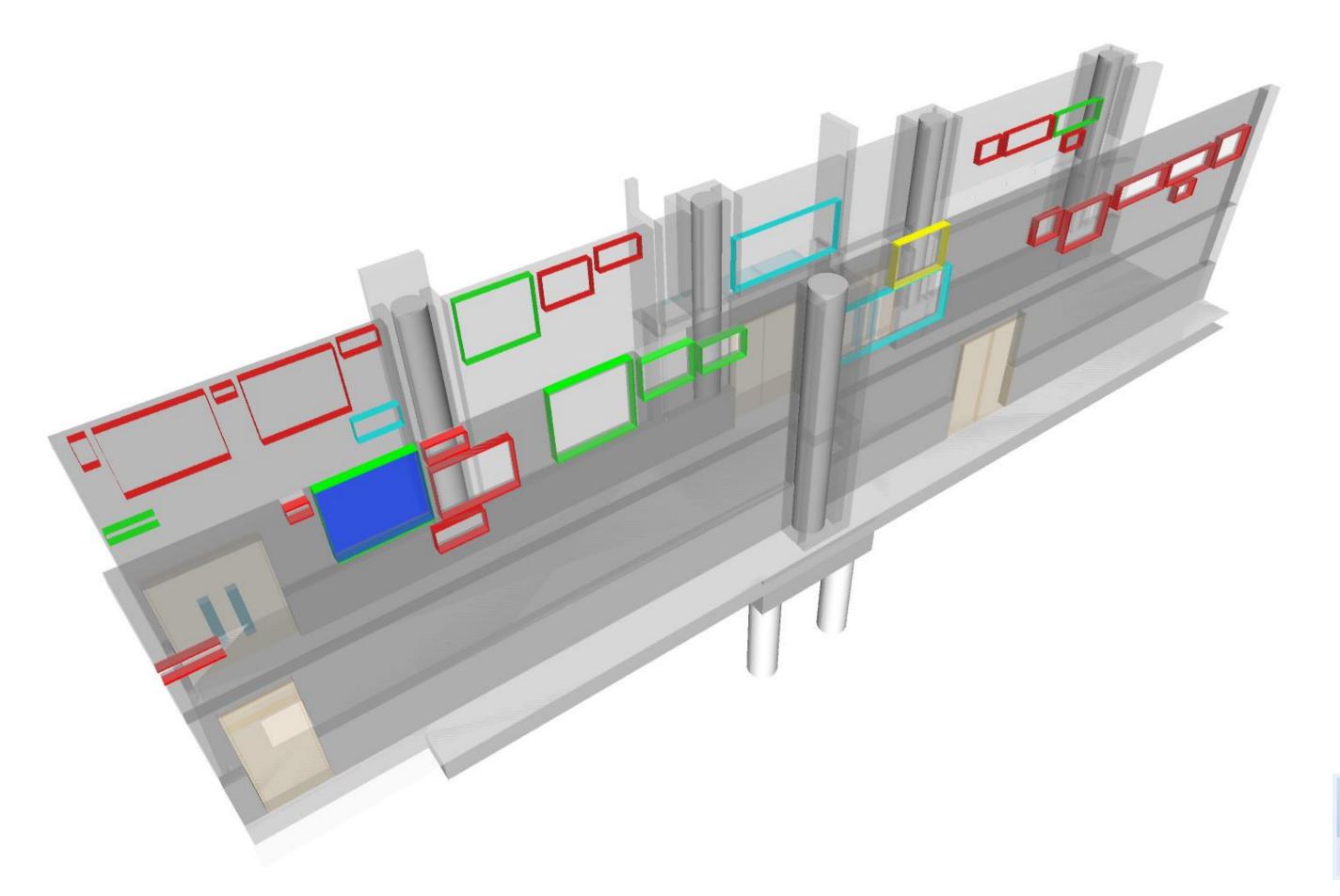




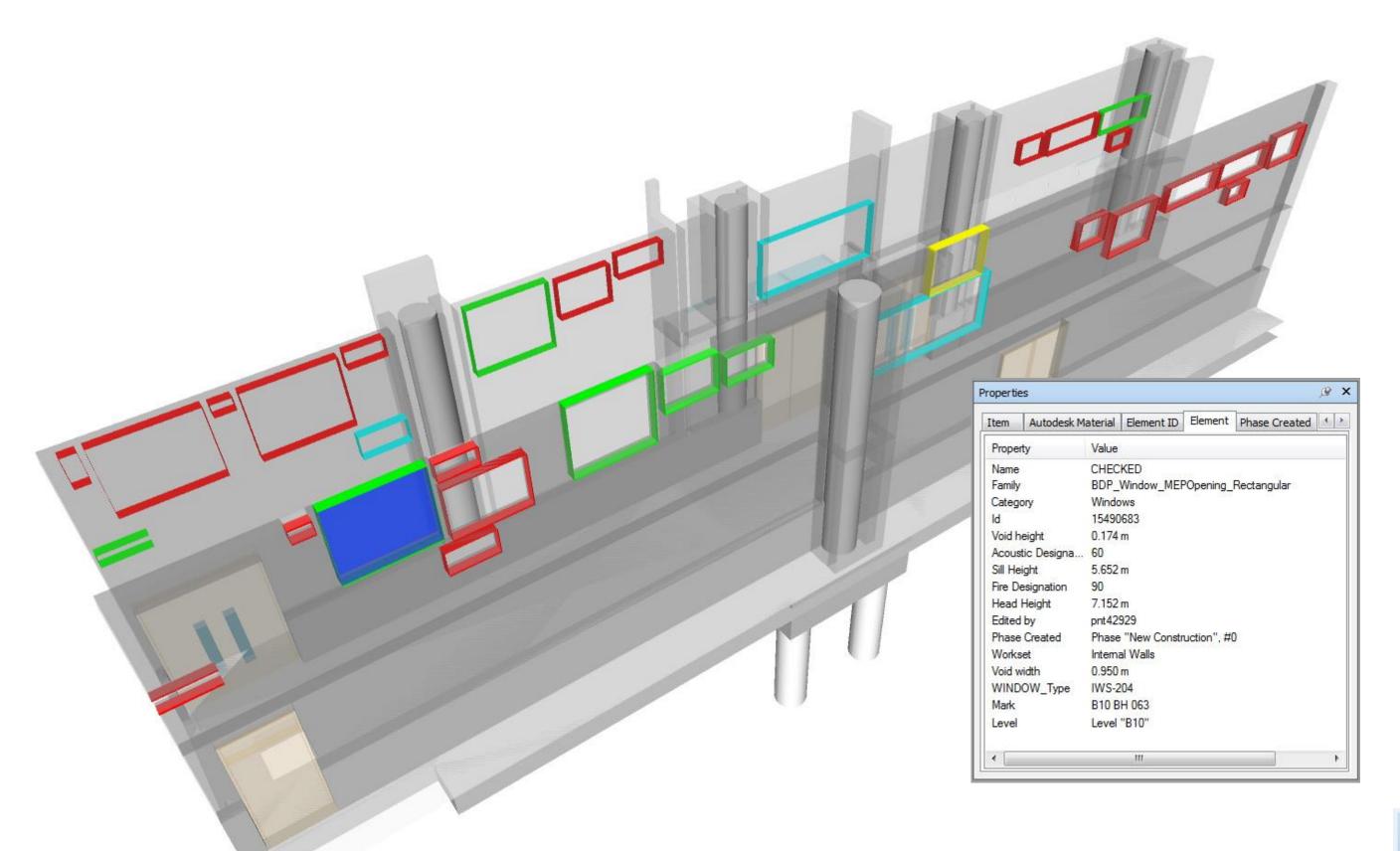




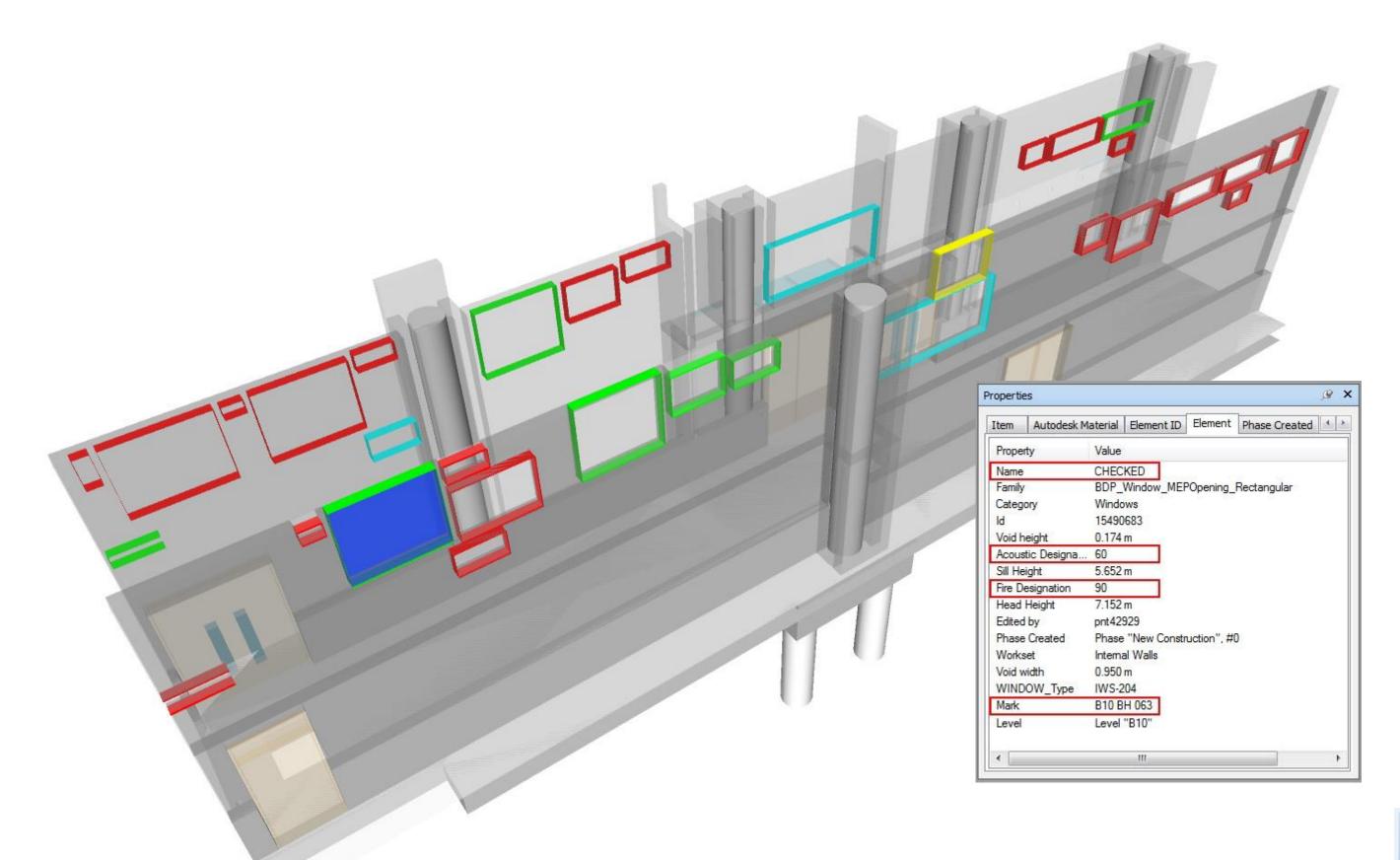




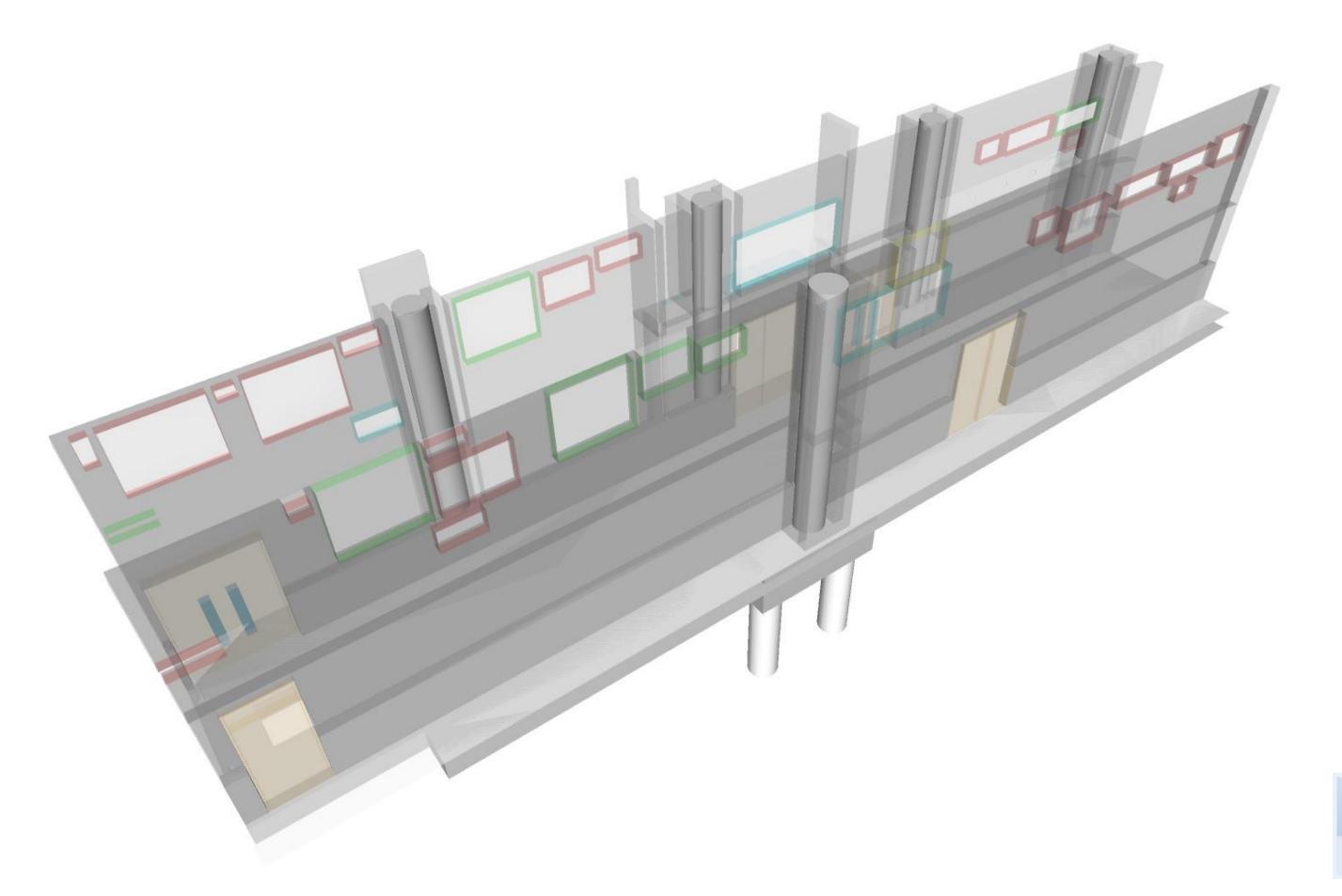




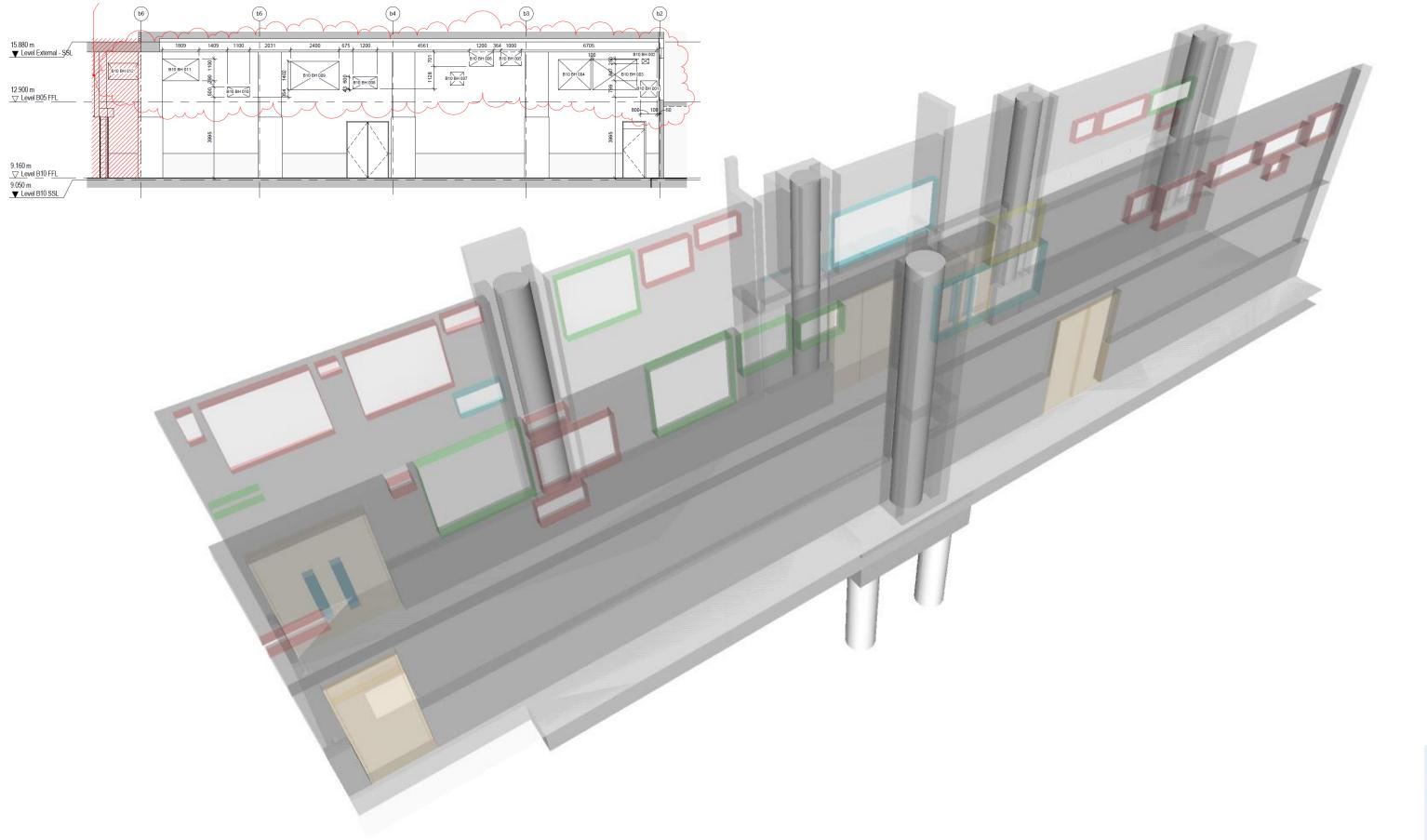




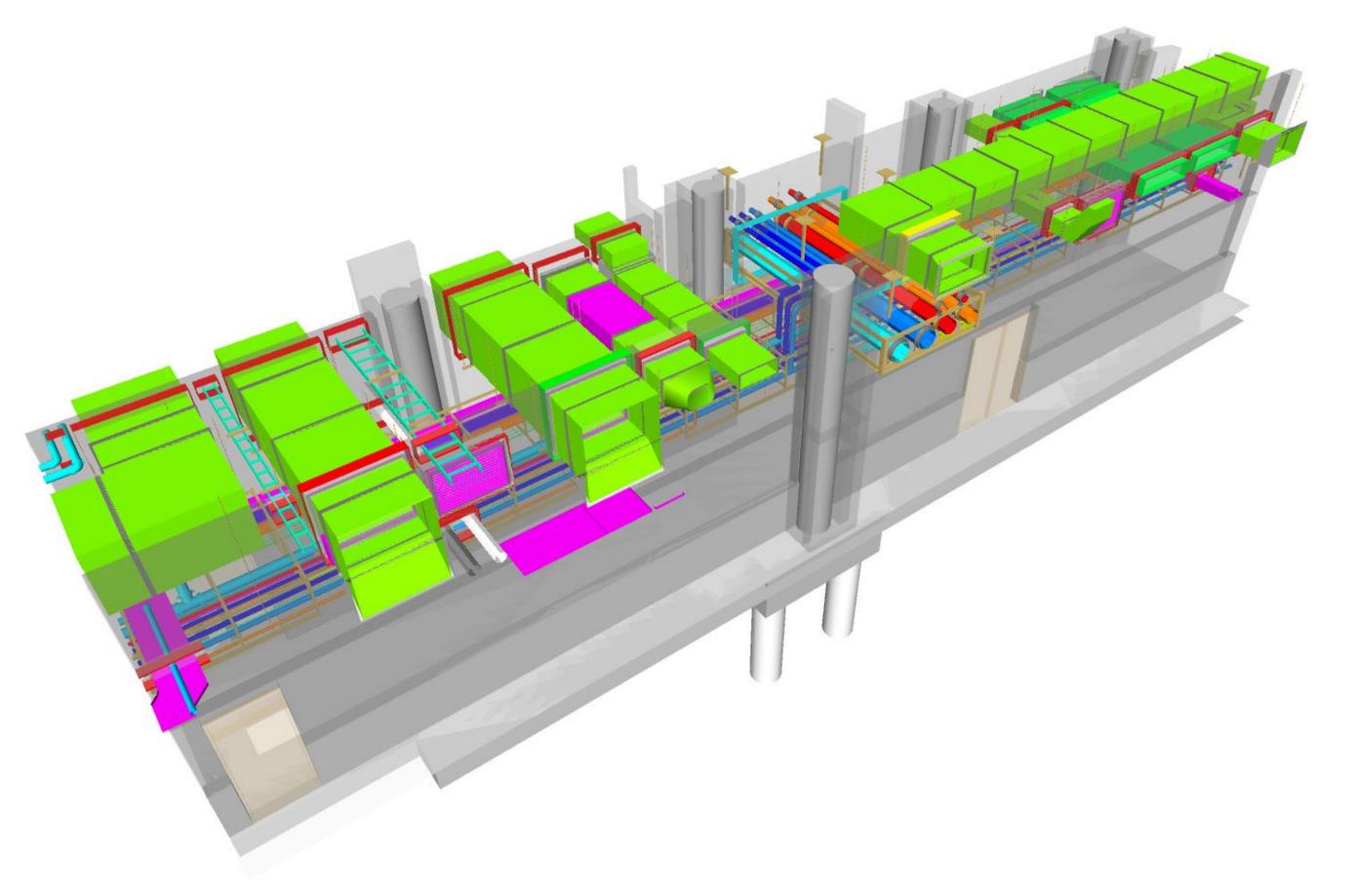




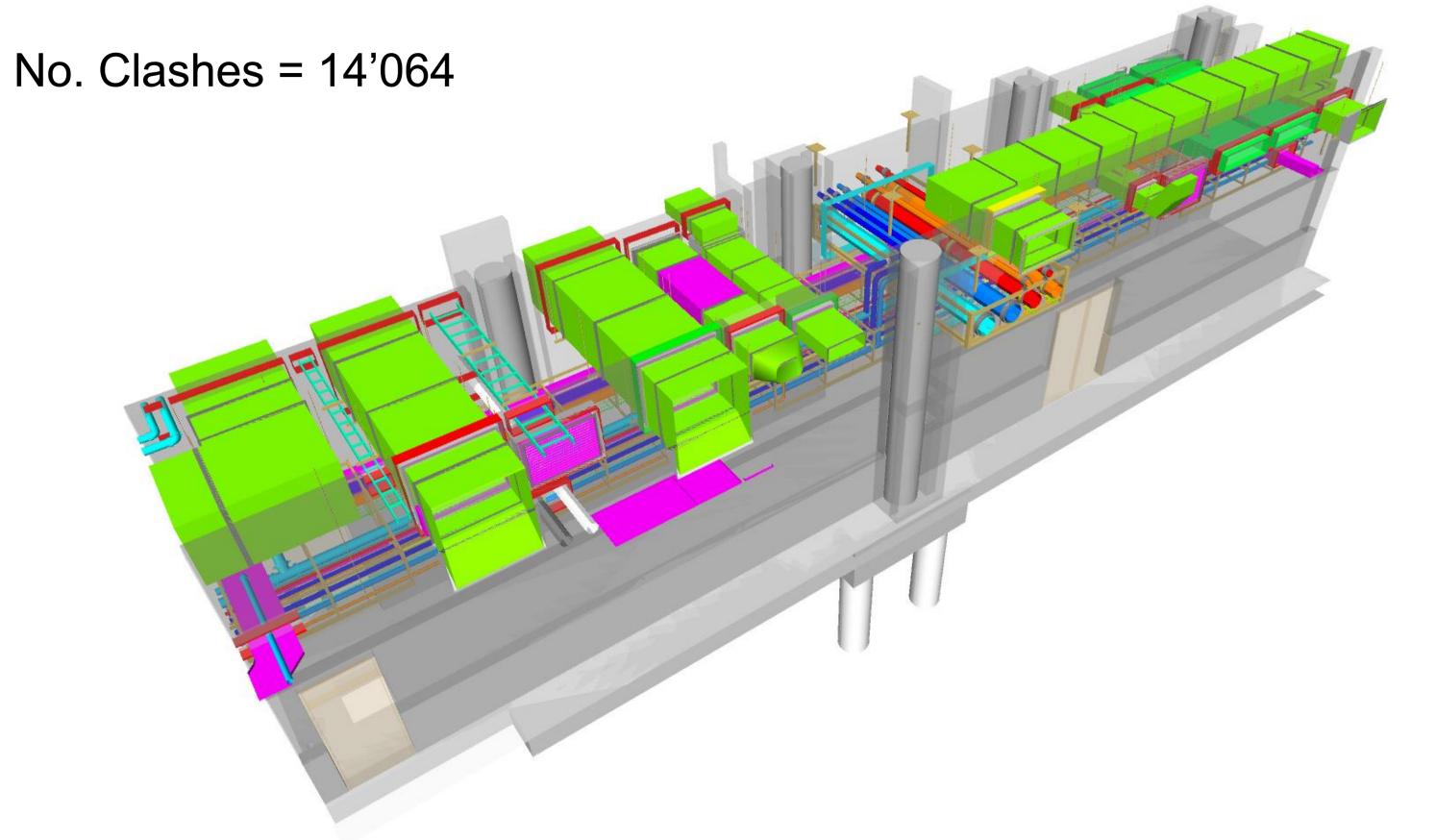




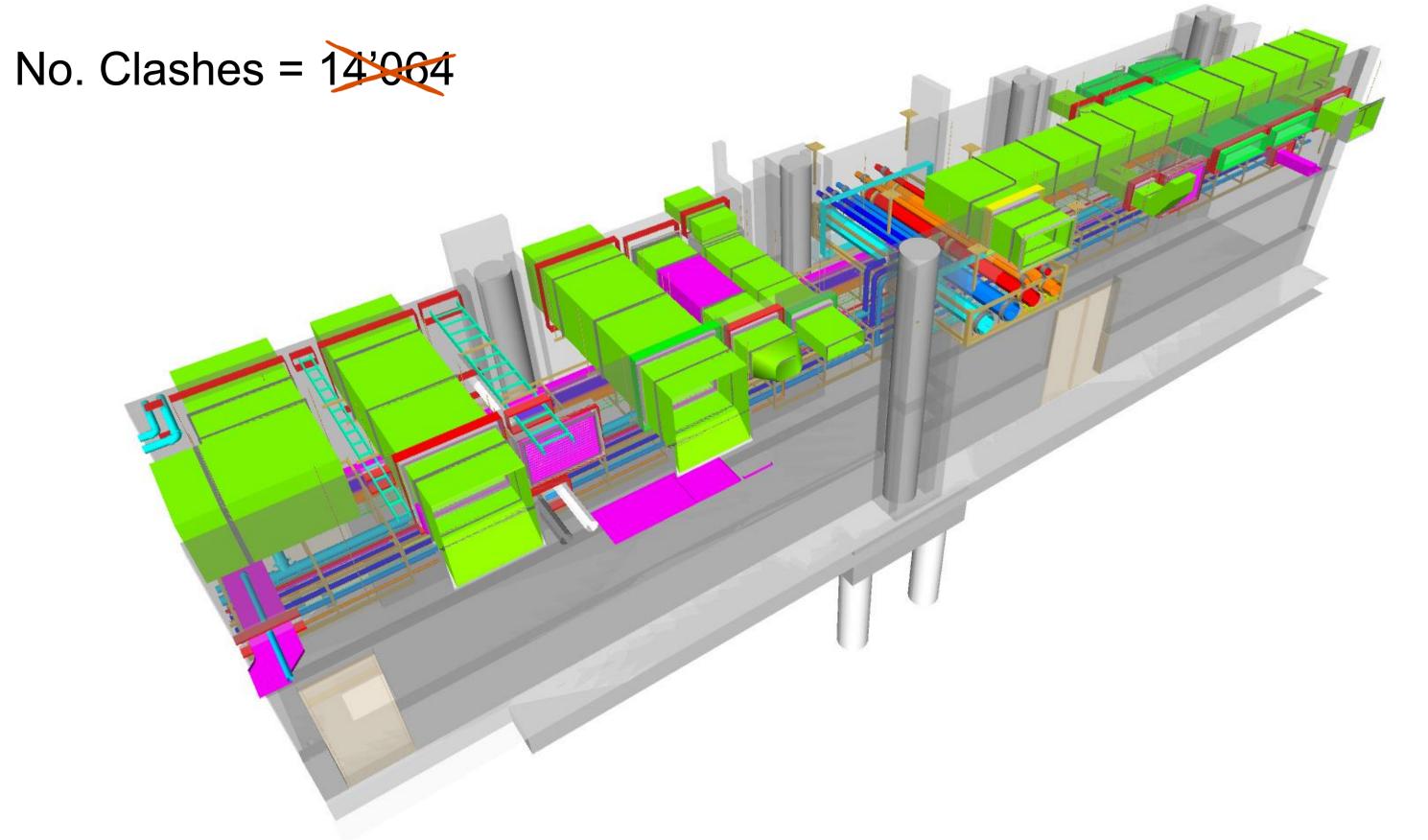




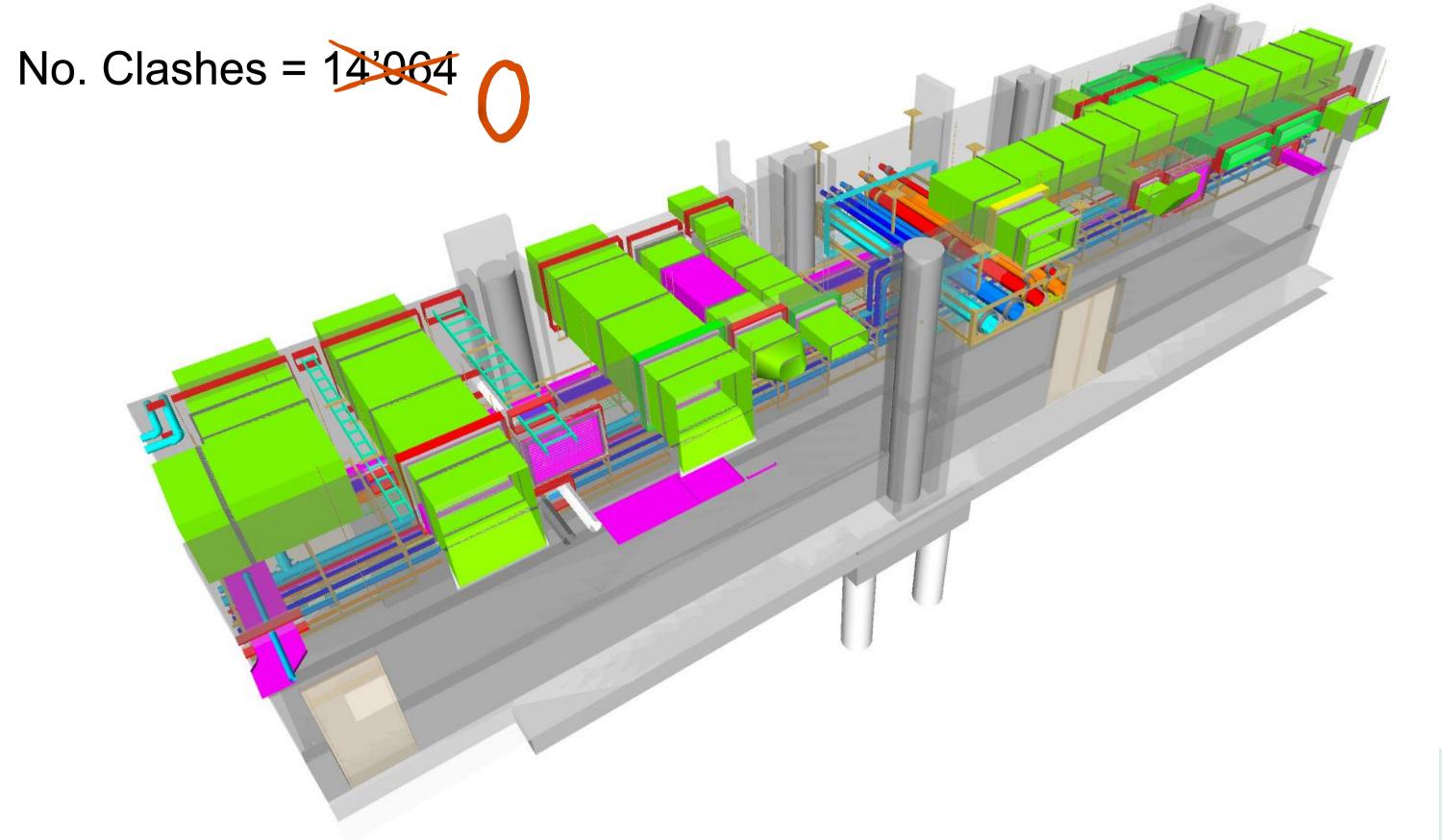




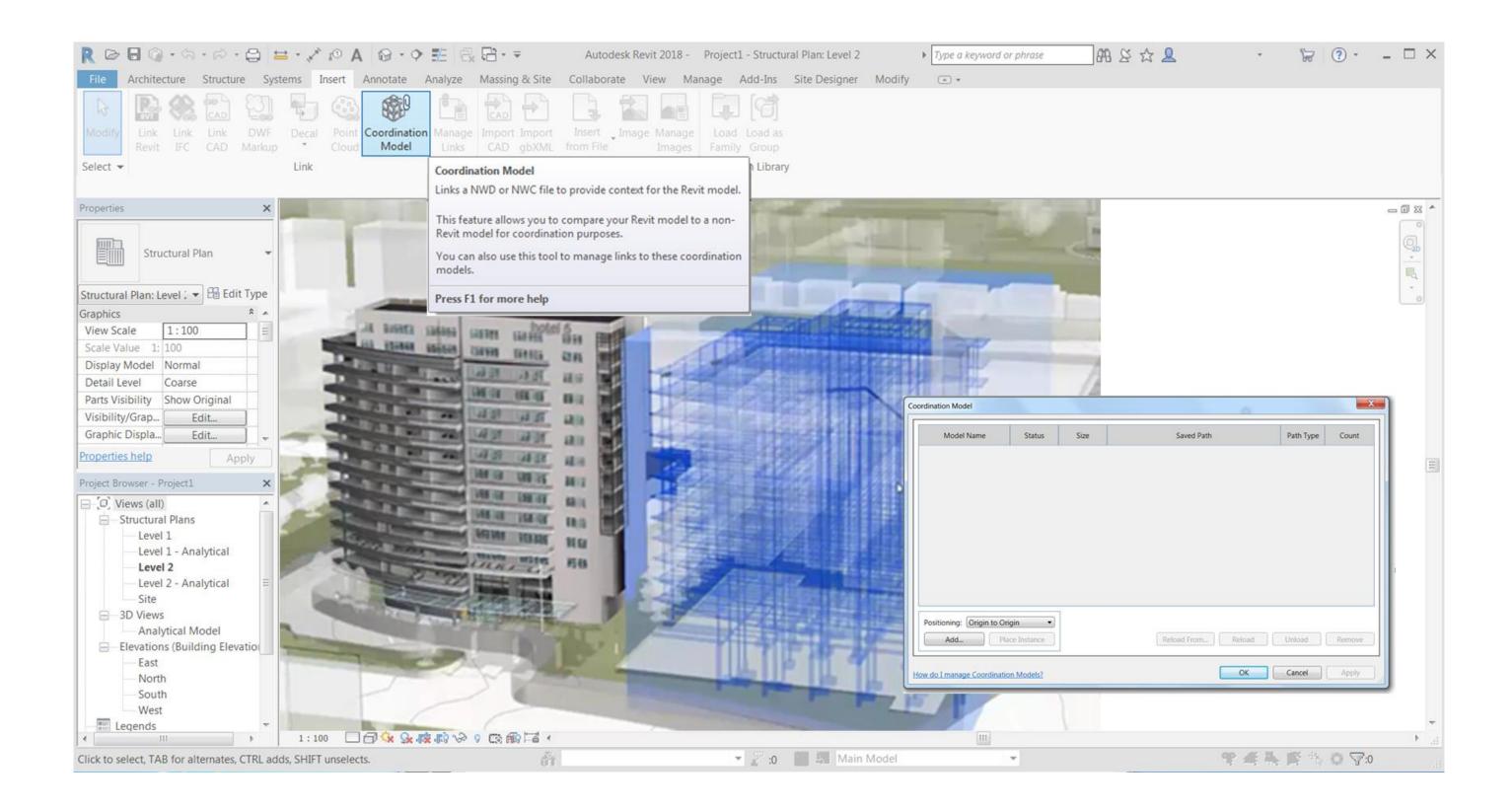












## Digital Processes facilitate Off-site Manufacture

Speed of Install Reduced Assembly Cost Higher Quality Less Waste Shorter Assembly Time Improved Accuracy Better Reliability Fewer Defects Improved Health & Safety Reduce Onsite Commissioning Less Risk

## Standard Parts doesn't mean Standard Design



"Change has never happened this fast before, and it will never be this slow again"



Make anything.

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