Case study of fast-track Design and Construct delivered using BIM

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420 Flinders Street

- 7 storey, 12635m² GFA commercial office building
- Base Building Cost - $30,000,000
- Programme - Fast Track Design & Construct
- Subcontractors engaged during DD
- BIM includes;
  - Architecture, Structure
  - Mechanical, Electrical, Hydraulics
  - Fire
  - Steel Fabrication
  - 4D, 7D

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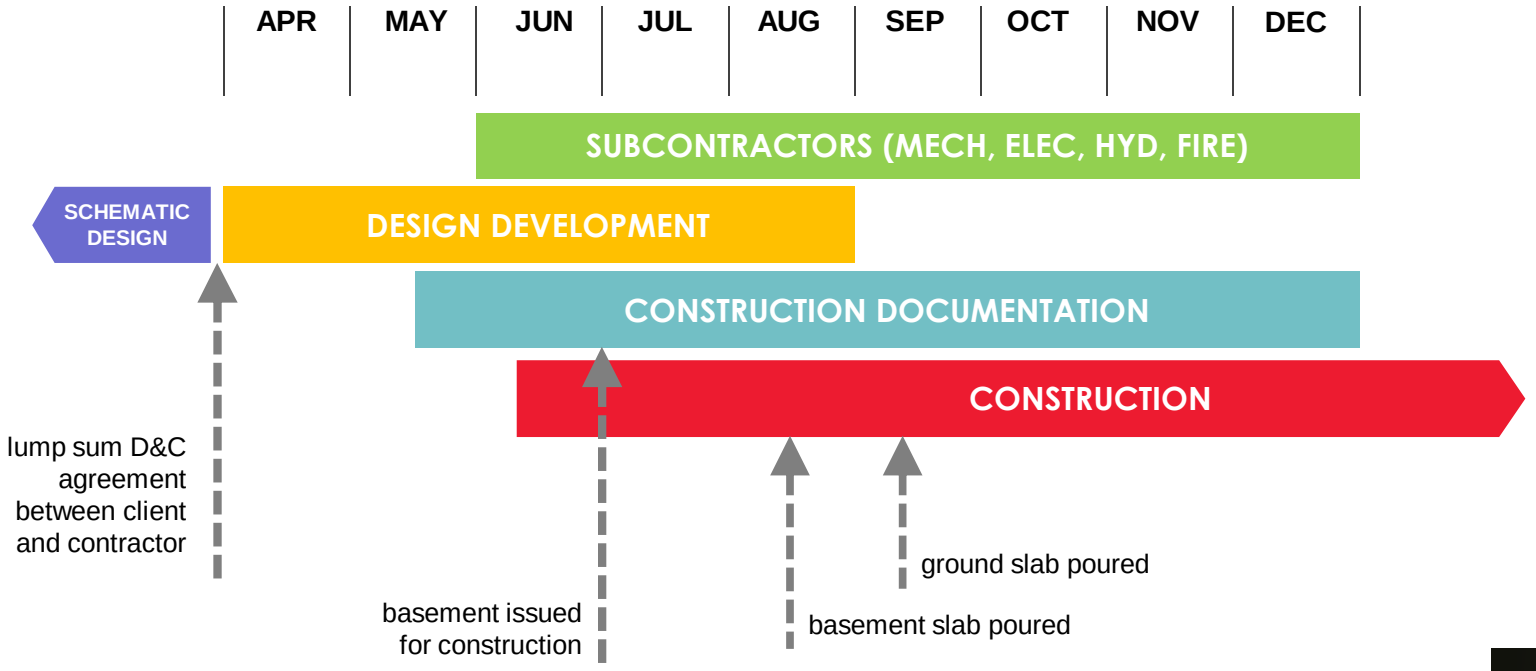
Programme



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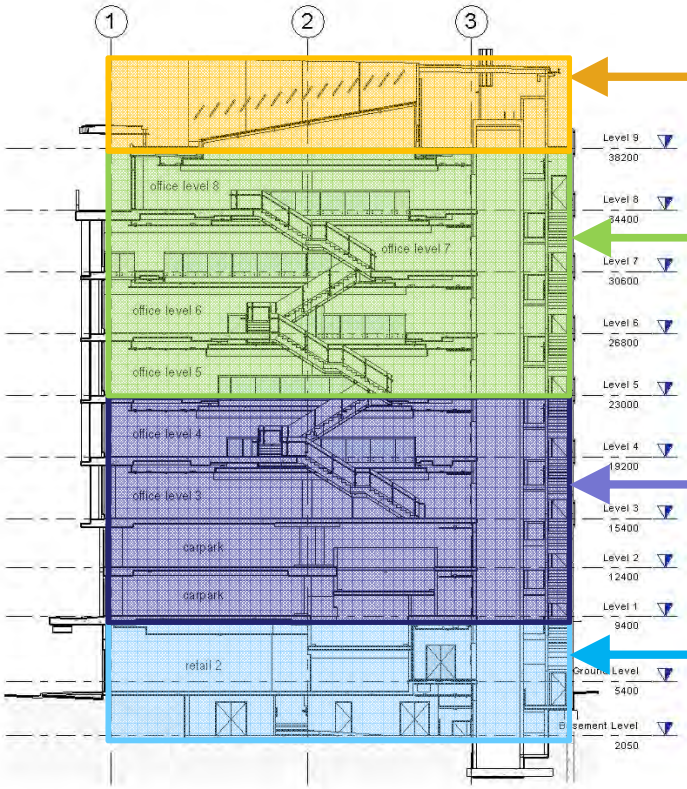
Staged Documentation



Issued for construction
30th November

Issued for construction
9th November

Issued for construction
7th September

Issued for construction
29th June

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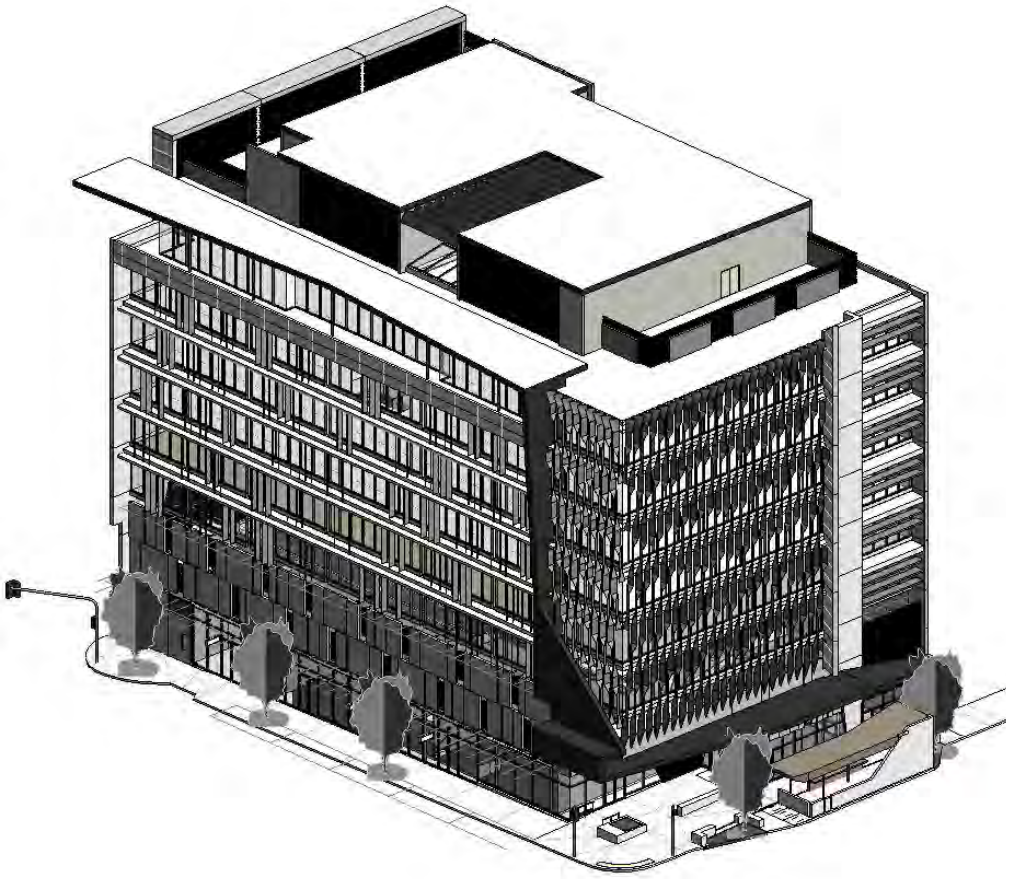

Architectural Revit Model

50% through Construction Documentation

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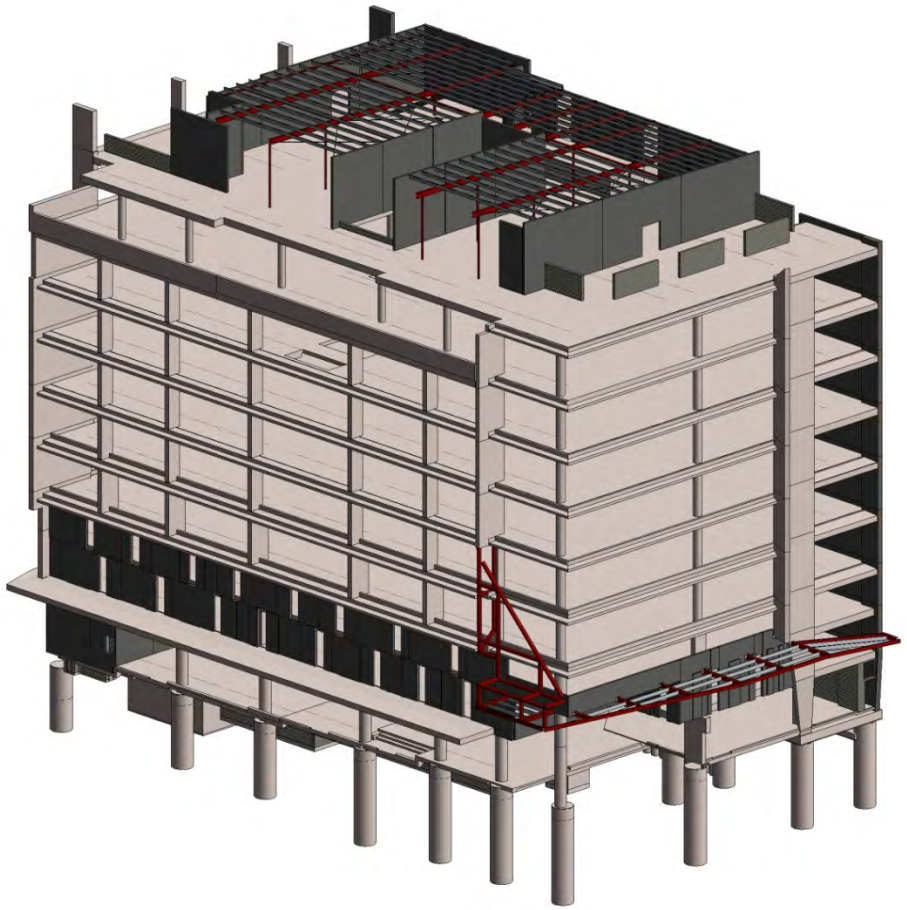

Structural Revit Model

50% through Construction Documentation

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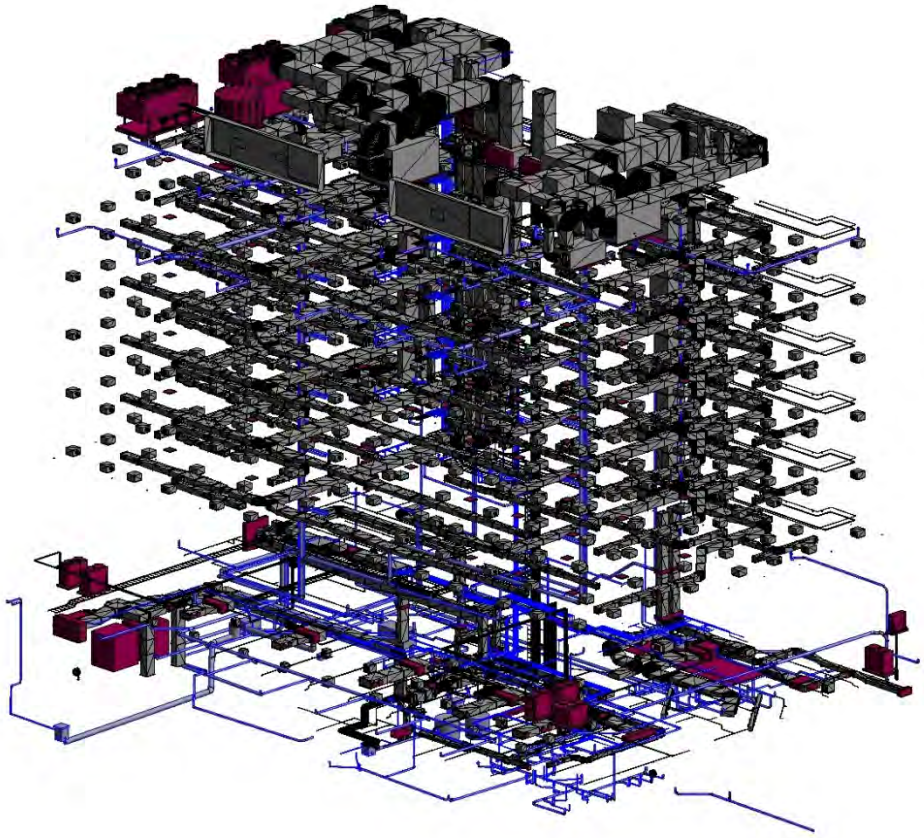

Subcontractor Services CAD Duct / IFC Model

50% through Construction Documentation

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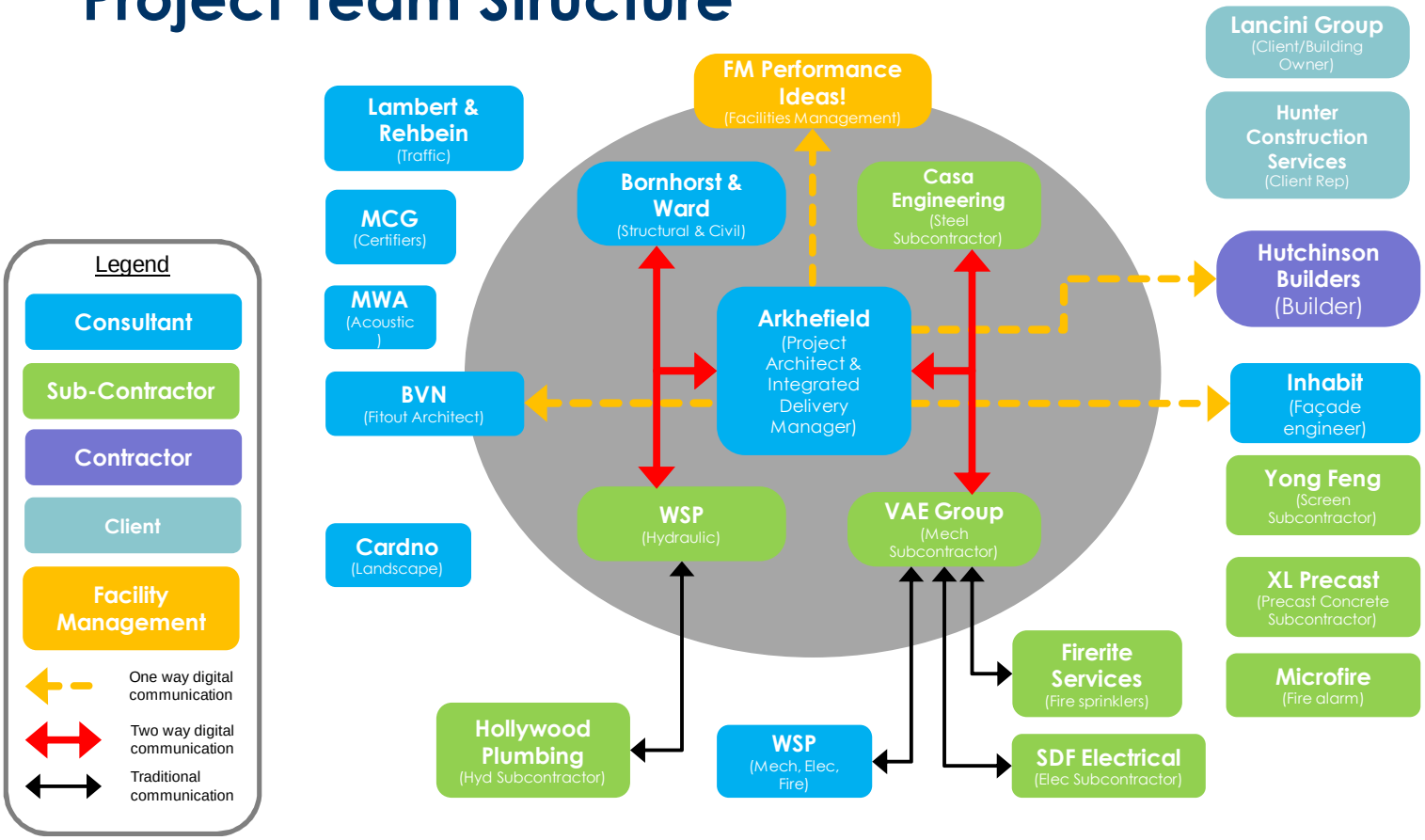
Project Team Structure



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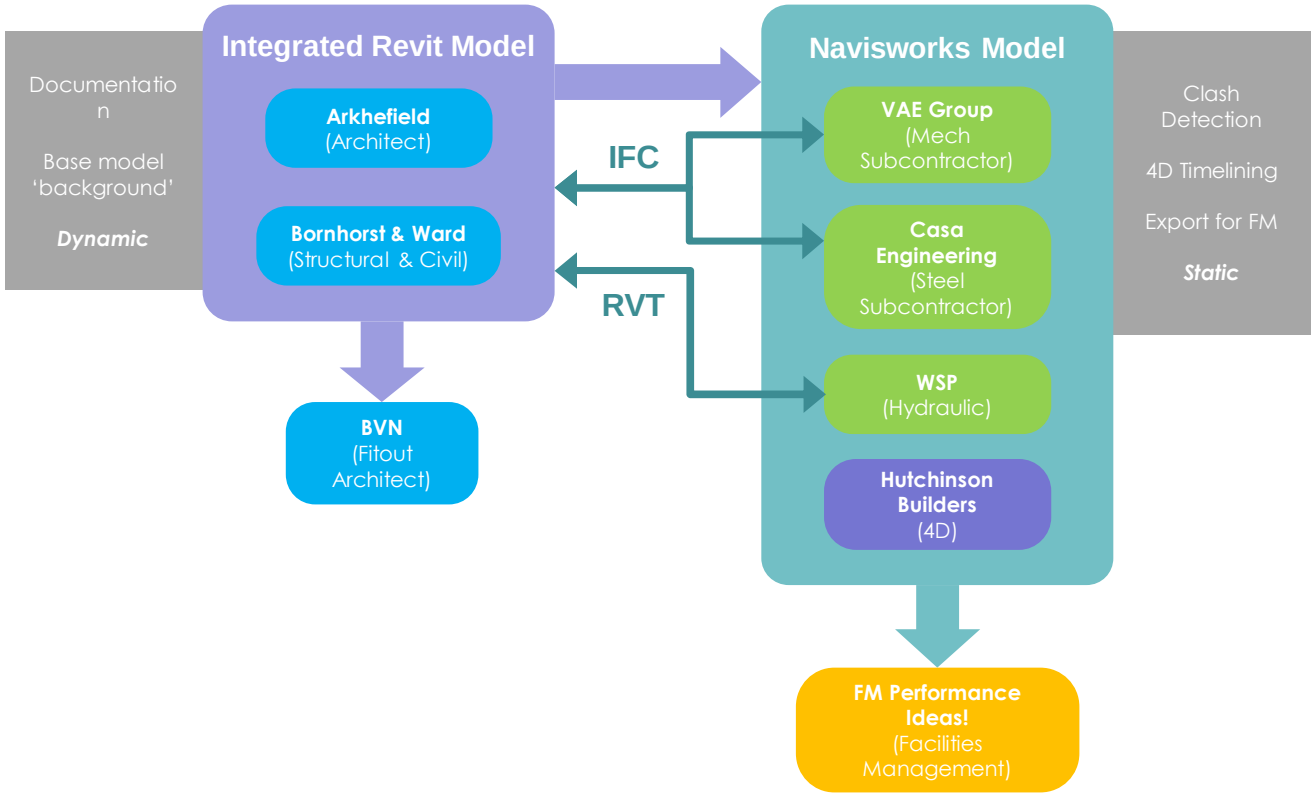
Model Workflow



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Embracing Change

- Structural engineer modelled concrete to architects dimensional set out requirements
- Architect used structural engineers and subcontractors services models for integrated documentation
- Communication urgency and forward planning
- Prototyping the build

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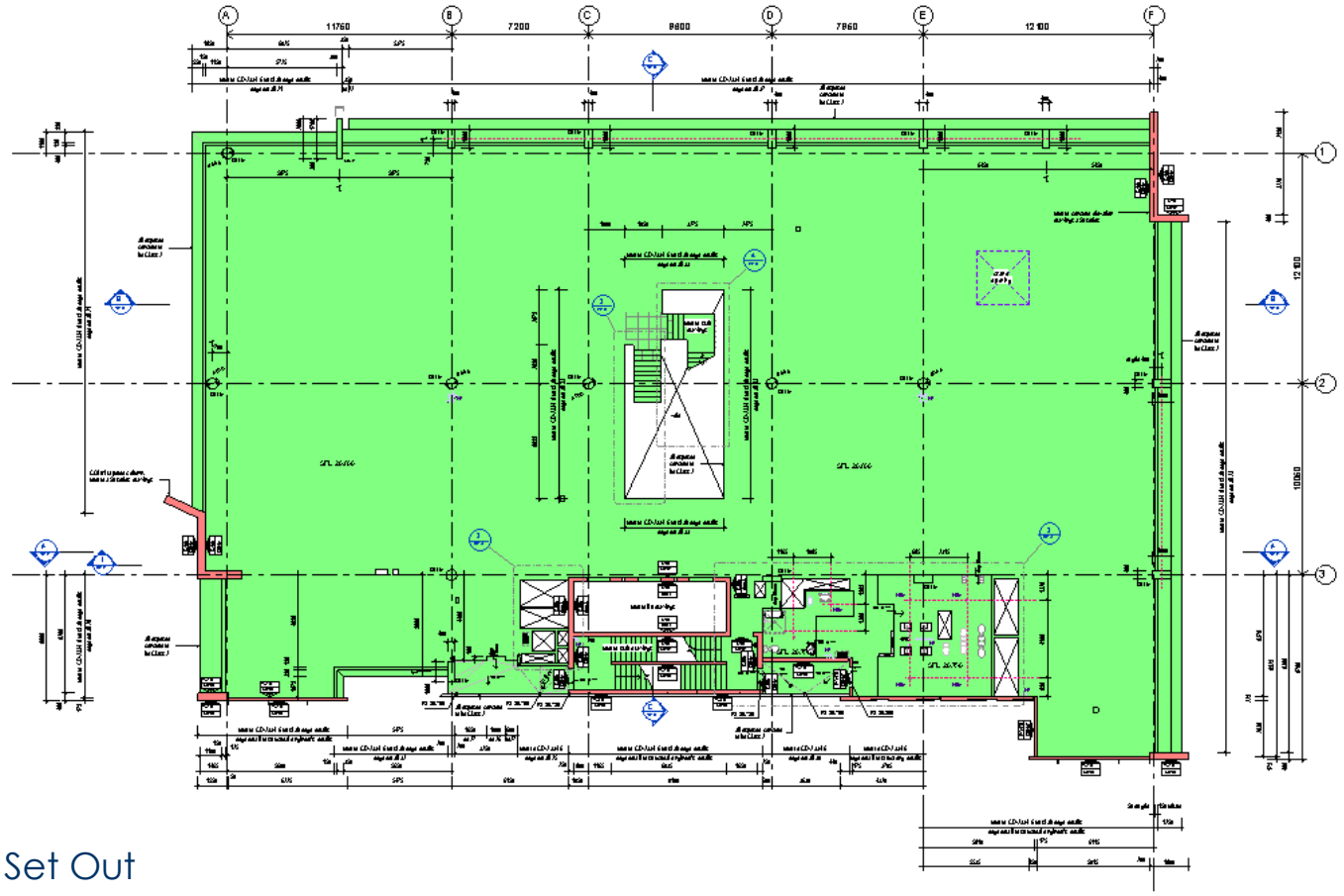

Concrete Set Out

Architecture

Structure

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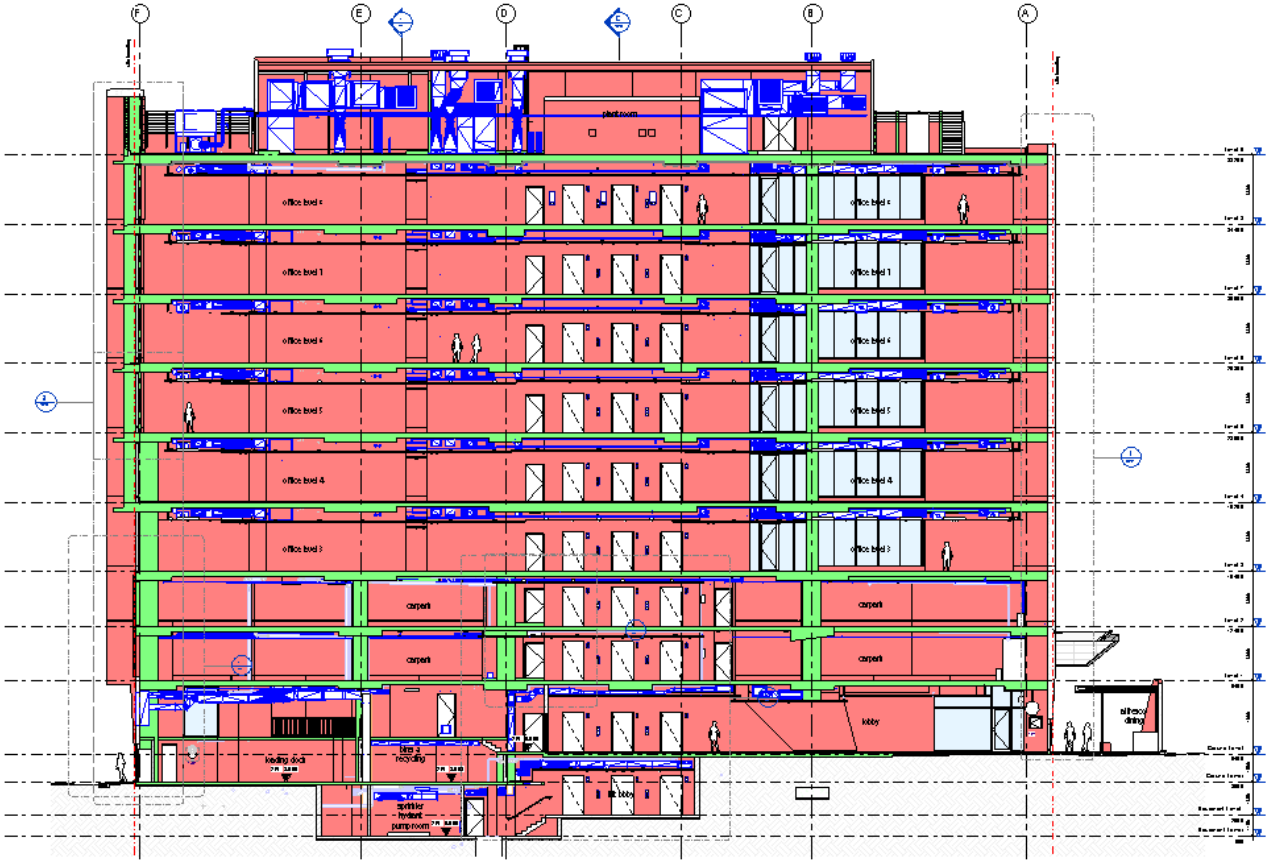

Leveraging Model Information

Architecture Structure Services

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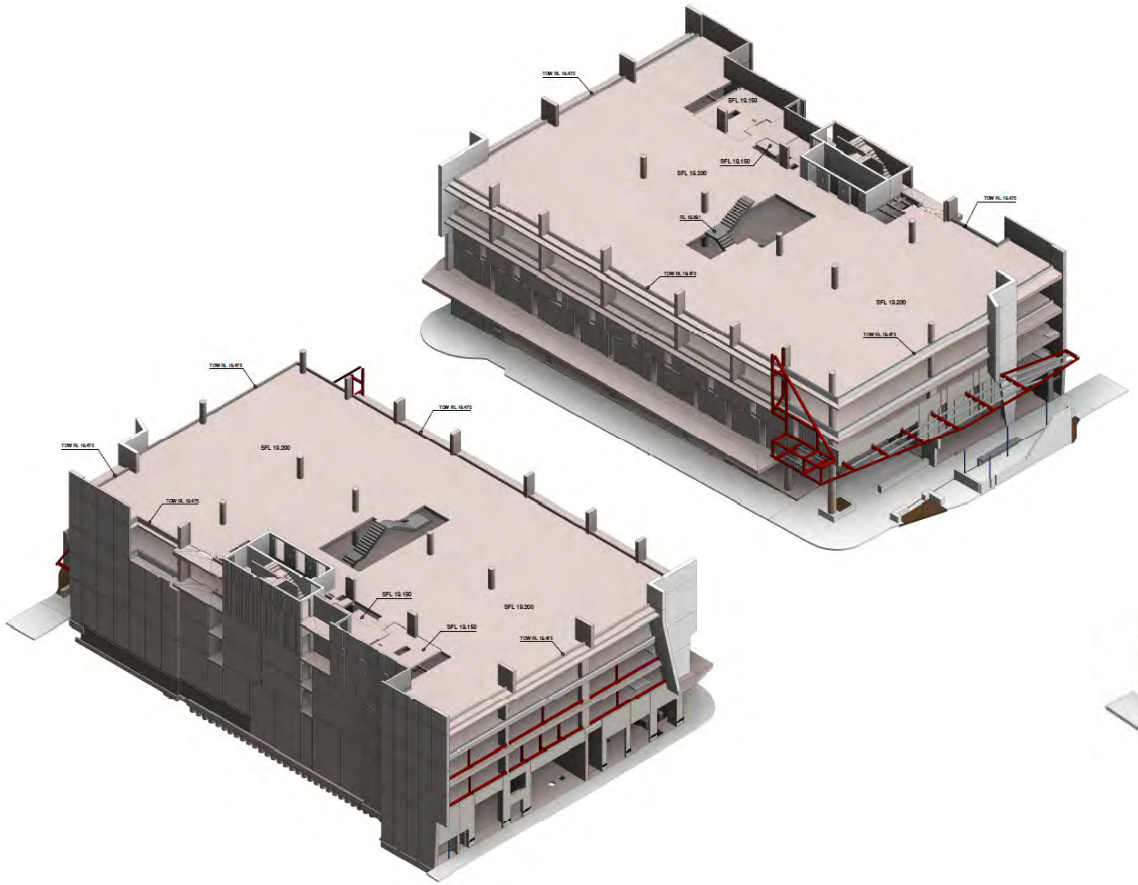

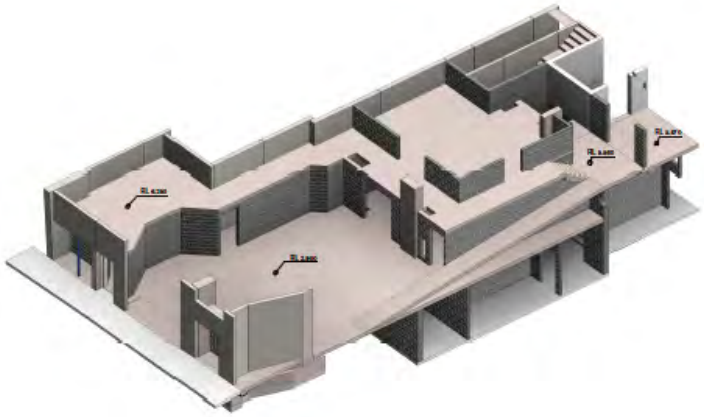

Leveraging Model Information

Additional set out visuals for concrete package

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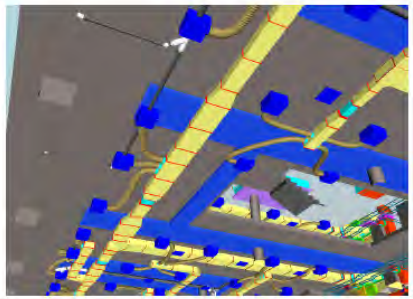
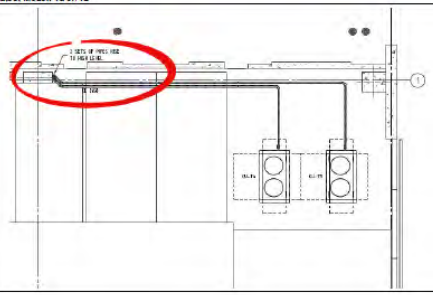
2

PROJECT TEAM ACTION LIST
3157 Ergon Energy Townsville
420 Flinders Street

Item	Discipline	Item	Location / Navisworks view	Comments	Action	Date	Status	Sign Off
2.8			Level 6 - beams to grids C & D	beams need to increase either to 600 deep or 3000 wide.	Enertec advise that ducts and lighting appear ok but raise concerns that hydraulics have multiple clashes in this location - email 11/10/12 WSP to advise	10/10/2012	open	
3.0	Civil	Bornhorst + Ward						
4.0	Mechanical	WSP / Enertec Latest Model: 18/07/12						
4.9			A/C plant to carparks	condeser pipes to be coordinated with car parks email 03/09/12	"Condenser pipes will not go through the substation, this is not advisable. They will need to come directly from the ceiling retail A/C units and co-ordinated within the car park, the pipe route will need to be on the northern side of the car park. Again we will detail this on our shop drawings for submittal." Enertec to advise if pipes can be located at column on grids E & 2	3/08/2012	closed	9/10/2012

Project Team Action List

Contains model views, sketches and notes

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4.1 Element Ownership

	Modelled by B&W	Modelled by AF	Owner	Transfer ownership	comments
Basement					
Shoring	Y	N	B&W	na	
Pad footings, Pile caps	Y	N	B&W	na	
Strip footings	Y	N	B&W	na	
Piles	Y	N	B&W	done	Deleted from architectural
Columns	Y	Y	B&W	6/6/12	AF to delete from model once new structural model received
Floor Slabs	Y	Y	B&W	6/6/12	AF to delete from model once new structural model received
- Construction joints	Maybe	N	B&W	na	Depends on what HB require for 4D
- Penetrations	Y	Maybe	AF	15/6/12	Anything over 150mm or through beams. AF may not model, but will coordinate.
- Falls	Y	na	na	na	None
- Topping slabs	N	Y	AF	na	
- Wet area set downs	Y	na	na	na	None
- Rebates (base plates, perimeter walls)	Y	N	na	na	None
Ramps	Y	Y	AF	15/6/12	AF to review ramp
Upstands / Downturns	Y	Y	B&W	6/6/12	AF to review once structural model received
Plinths	Y	N	B&W	na	Plinths required to pumps
Hobbs	Y	na	na	na	Extent unknown
Concrete beams	na	na	na	na	None
Blockwork walls (load	Y	Y	B&W	6/6/12	Refer 3.2 Walls

Element Ownership Schedule

Mapping out the dates of ownership exchange

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Integrated Revit Model

(Architectural, Structural and Services)

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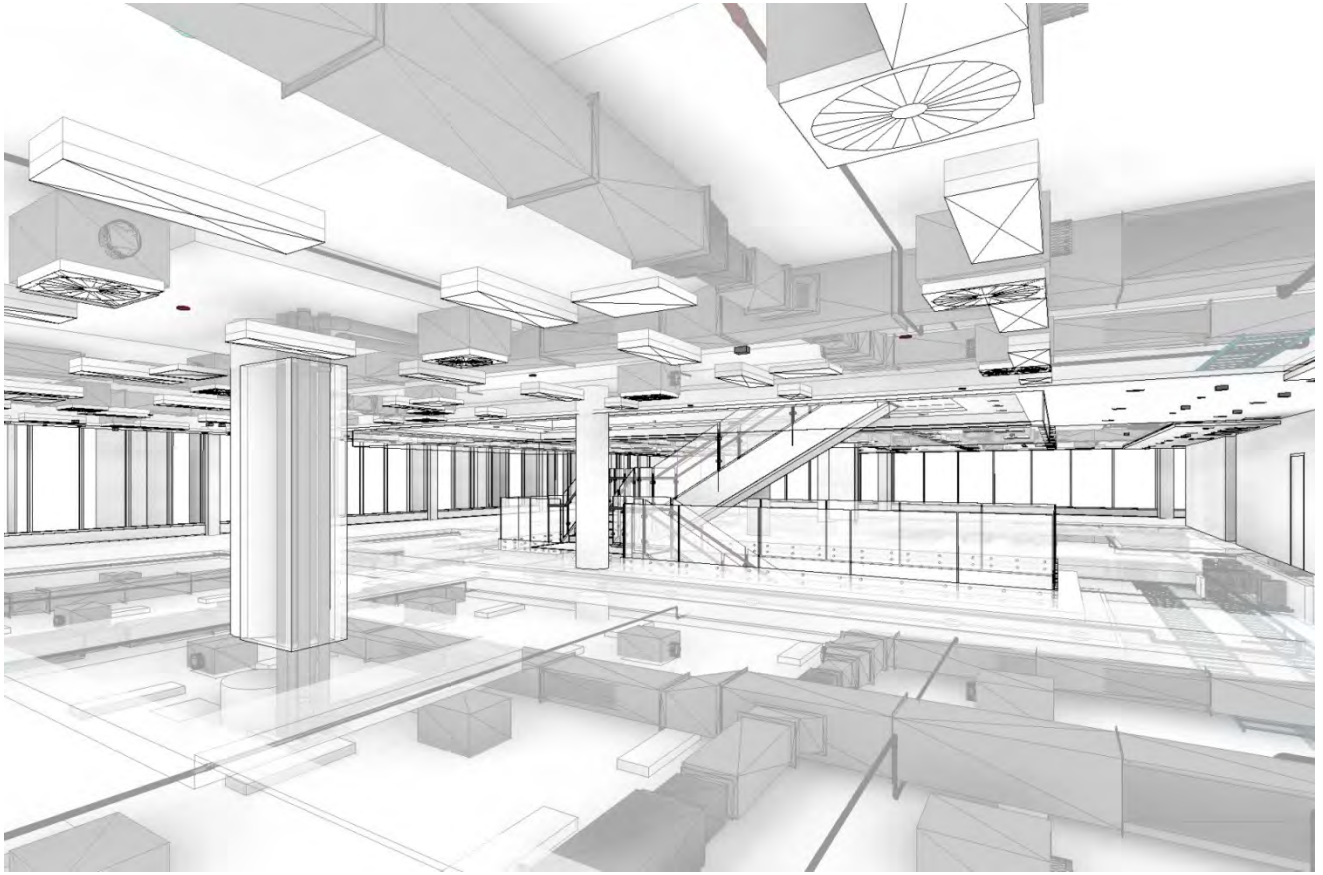

Integrated Revit Model

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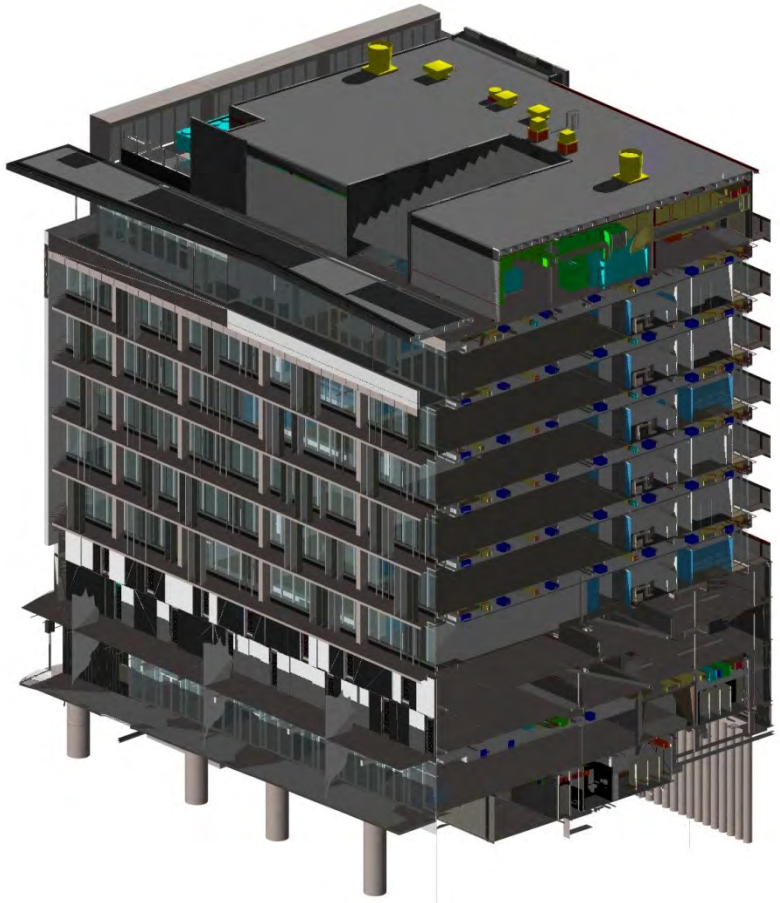

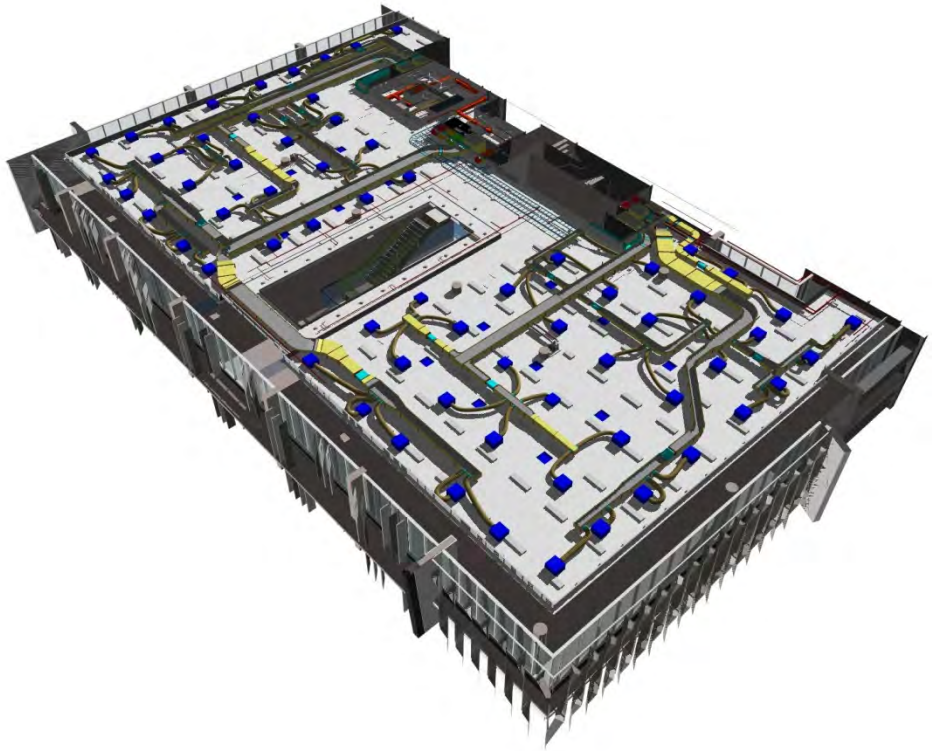

Sectional views through Navisworks model

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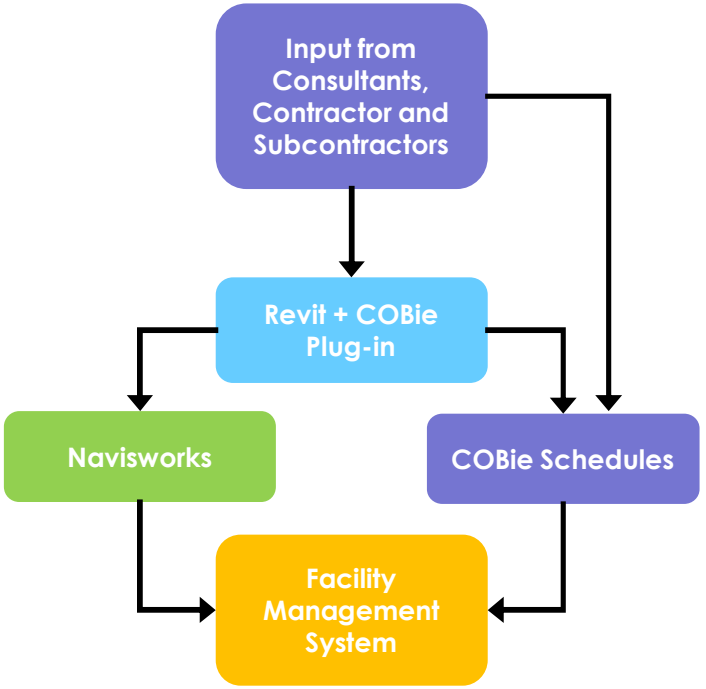
Facility Management

- Facility Management is being explored as a pilot project
- Process is more about identification and management of assets critical to operation
- Stakeholder and project team engagement and commitment is key



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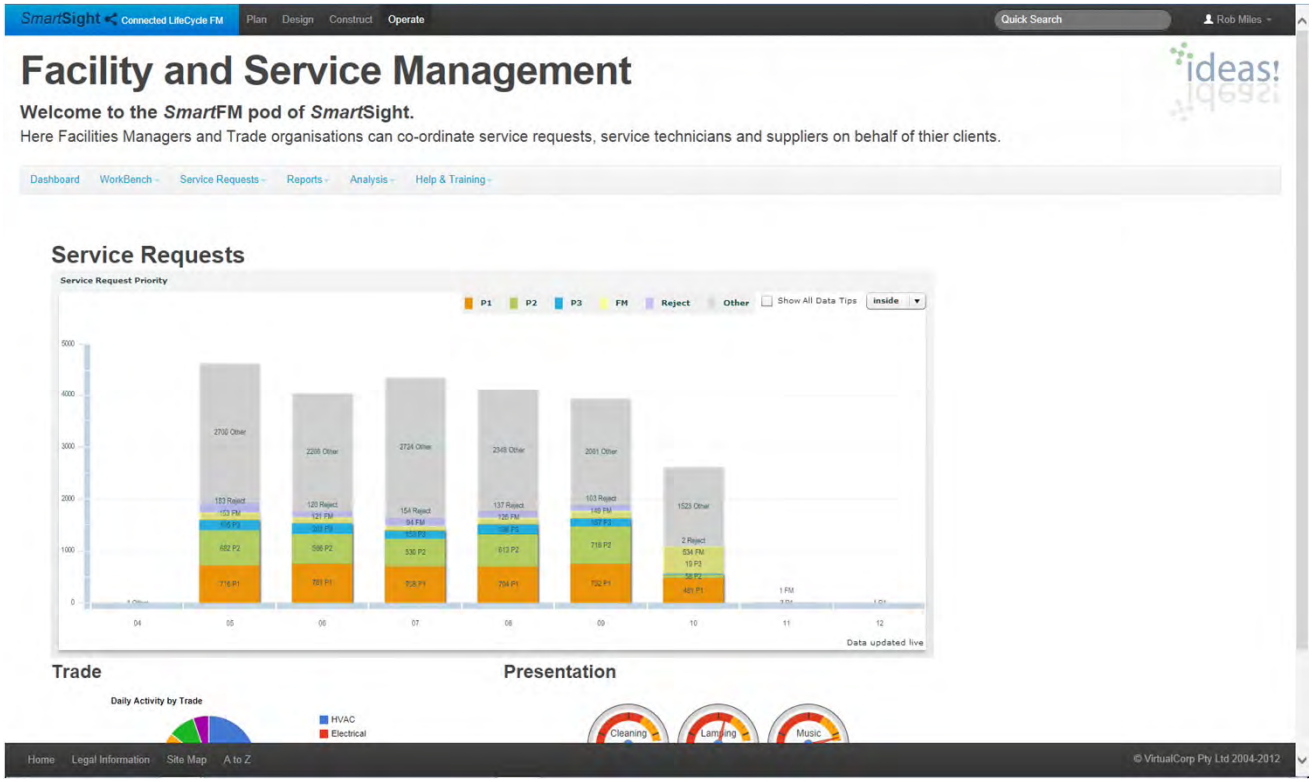

iBIM Video Demonstration

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Why 420 Flinders Street was successful

- We had an opportunity with little risk
- We gained access to the builder and **sub-contractors**
- We had an existing relationship with the structural engineer
- Opened up communication

and….

- We were in the right place at the right time

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