BU24217 - Driving Owner BIM Value in South East Asia

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Solutions Architect: UNIBiM Services

Class summary

This session shows in detail how developers in South East Asia are getting value through the implementation of BIM beyond design. In this session a review of 2 separate BIM implementations in the Philippines shows how they are achieving returns and the specific challenges that are being overcome in the emerging markets.

Key learning objectives

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

- Understand the importance of having a purpose for BIM
- Understand how owner/developer organisations obtain value from BIM
- Understand how a life cycle approach to BIM drives return
- Understand the differences and challenges faced in different regions

Driving Benefits in BIM Through the Project Life-cycle



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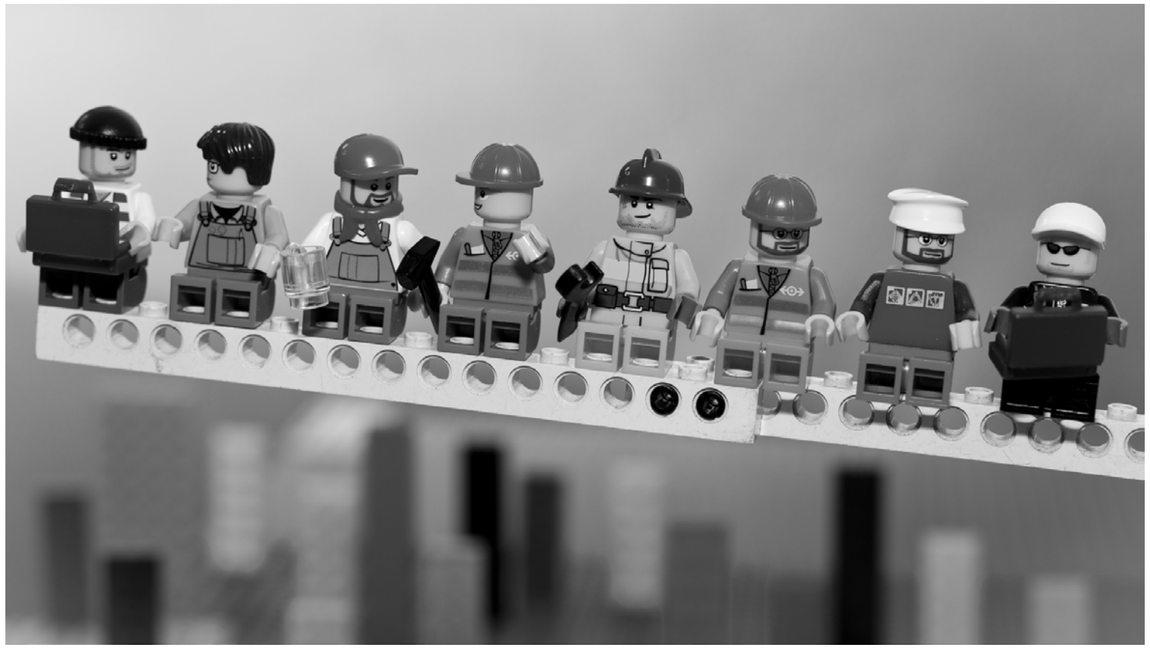
Lego and Movie Scripts

- Common question: Where are these benefits of BIM?
  - Construction cost is the same
  - Design cost is the same/rising
- The true benefits to BIM are measured across the whole project

The Lego Analogy

- Seeing BIM benefits (to a whole project) from only design is like:

- Asking how fun is LEGO when you have only instructions and no bricks!



istock.com/Droopy76

The Script Analogy

Seeing BIM benefits
(to a whole project) from
only design is like:

Asking how great was that
movie when all you have is
a script!



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What reason do contractors have to treat information differently if the information presented the same way?

The Realities of the Philippines Construction Industry



istock.com/Pishit

Philippines Construction

- Atypically long construction periods (average 5 years+)
- Design with poor results in coordination
- Traffic conditions raises major logistics issues
- Systemic Corruption



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Case Study of Residential High-Rise Construction



istock.com/Fazon1

Organisation is happy to share results but not their name.

Sorry

Challenges

- Design issues are impacting construction in;
  - Speed of construction
  - Quality of construction
  - Procurement
  - Vastly different business cost profile
    - Very low labour cost
    - High (relative) cost of technology and materials

Solution

BIM in Design

- Coordination
  - Resolve issues prior to bidding
- Quantities and cost
  - Coordinated and feasible model used for quantity measurement

Driving Construction

- Build trust through bidding
  - Transparent communication with model supplied
- Build results in construction
  - Add model for visual communication

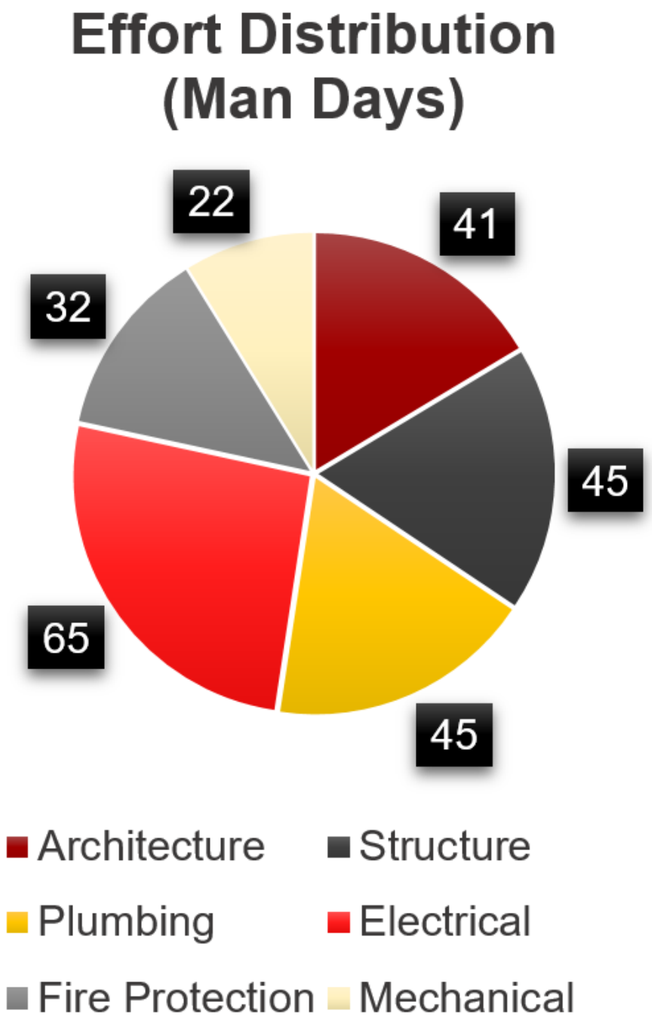
Stage 1 (Complete)
BIM in Design

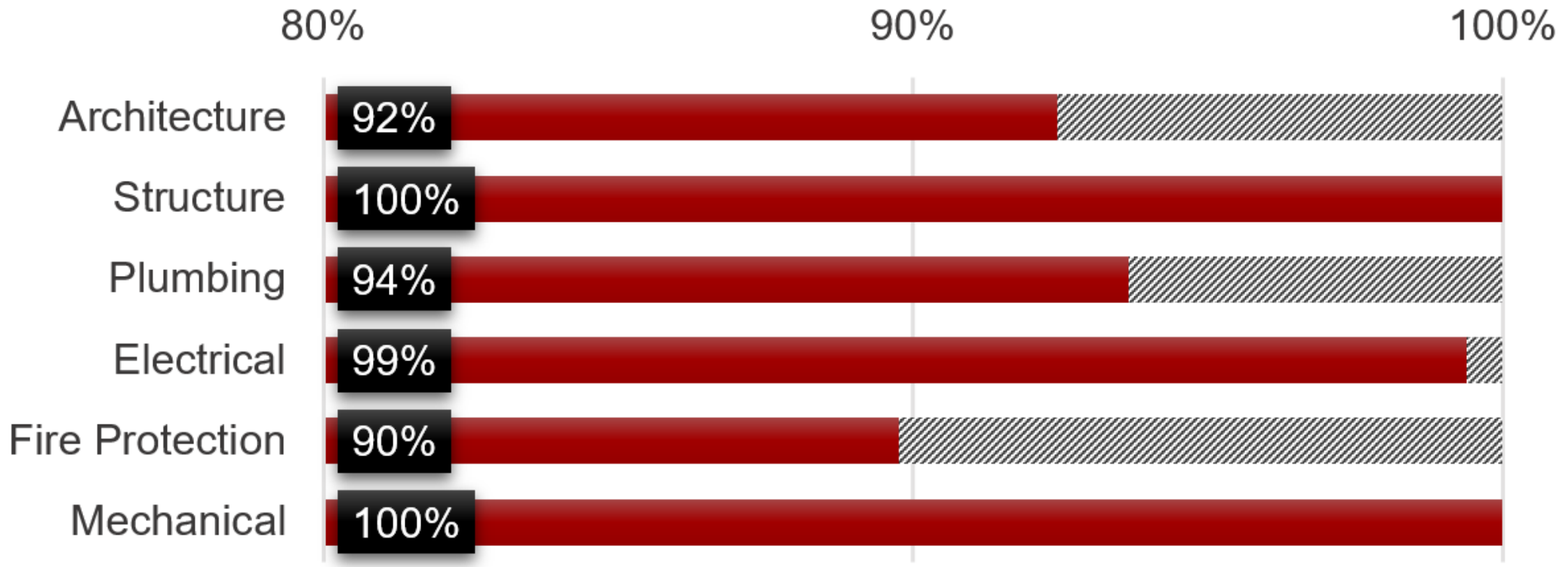
- Resolve coordination issues
- Measure quantities from coordinated model
- Track results;
  - Issues
  - RFIs
  - Time
  - Performance

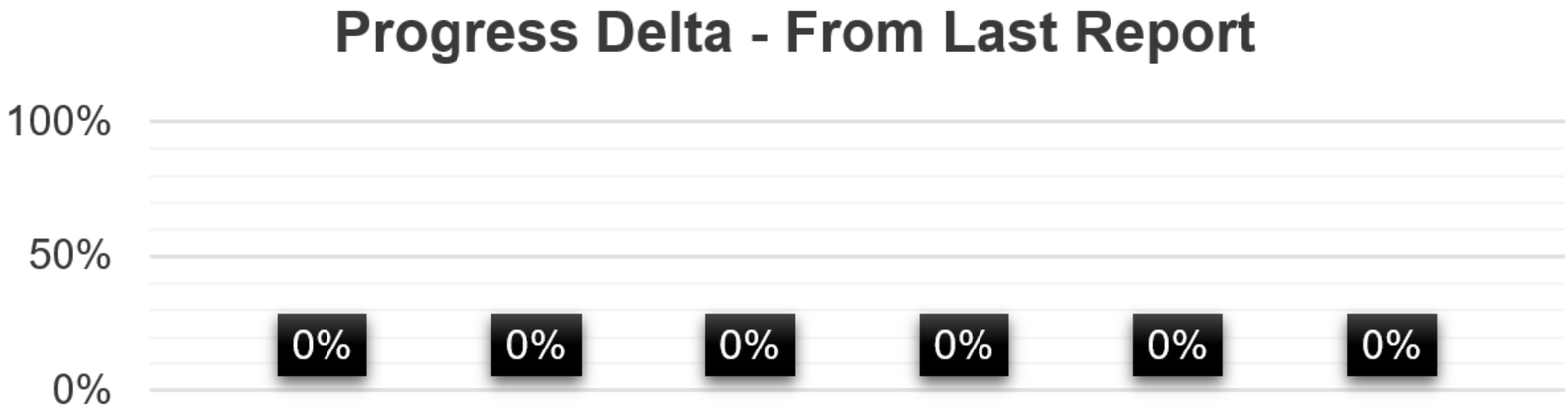


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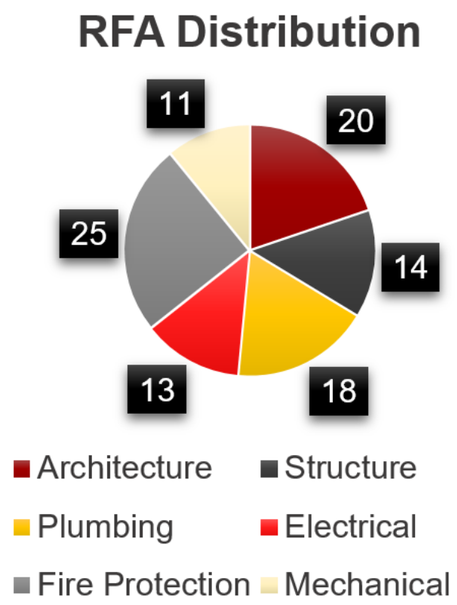
Tracking Results – Project BIM Status

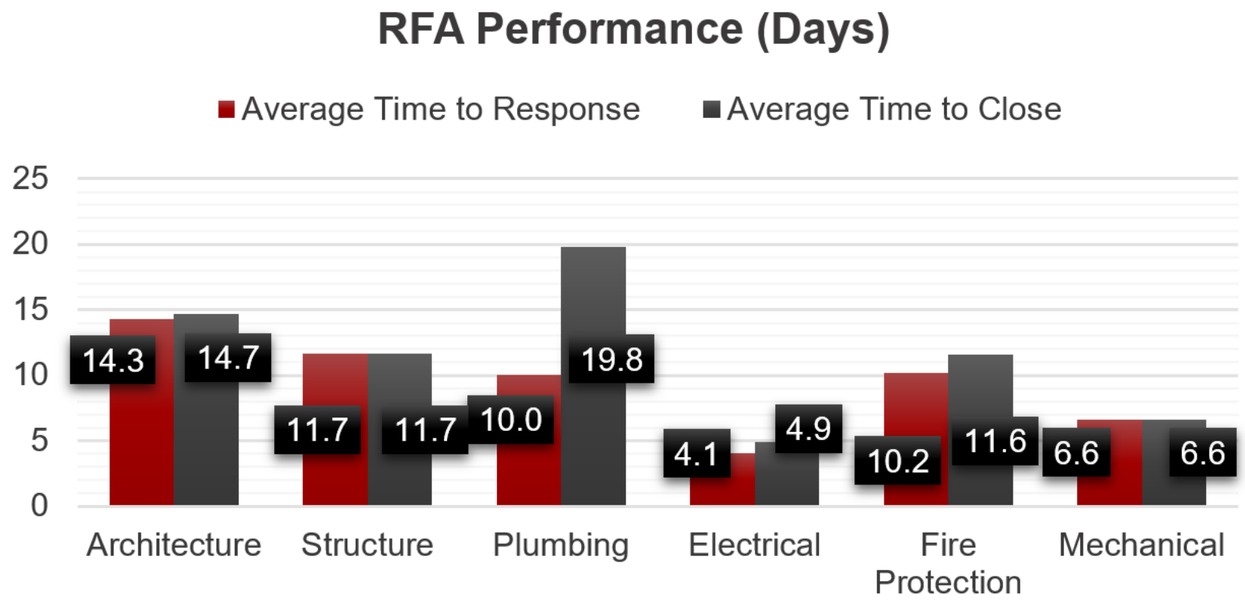


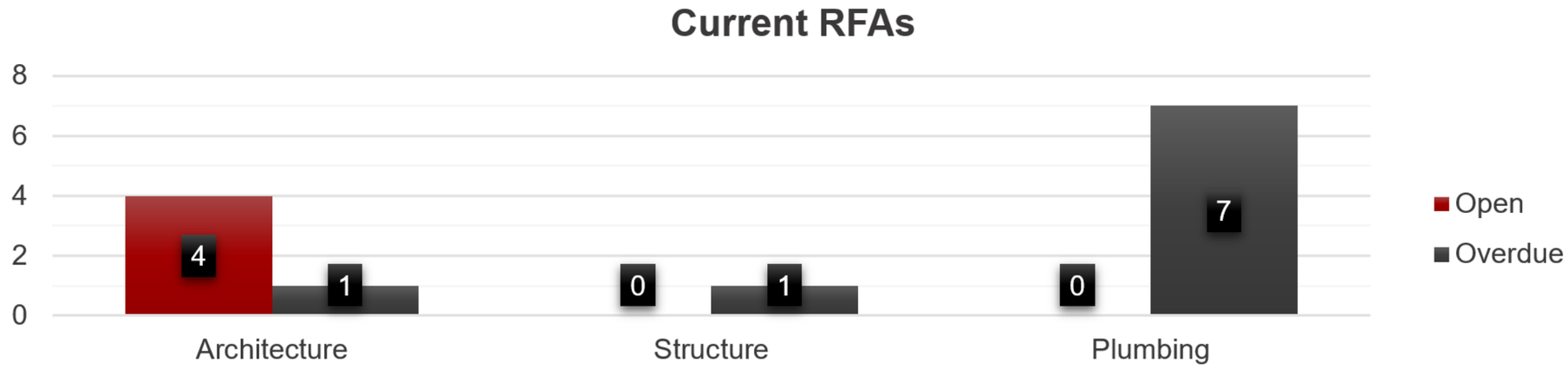




Tracking Results – RFA & RFI Management

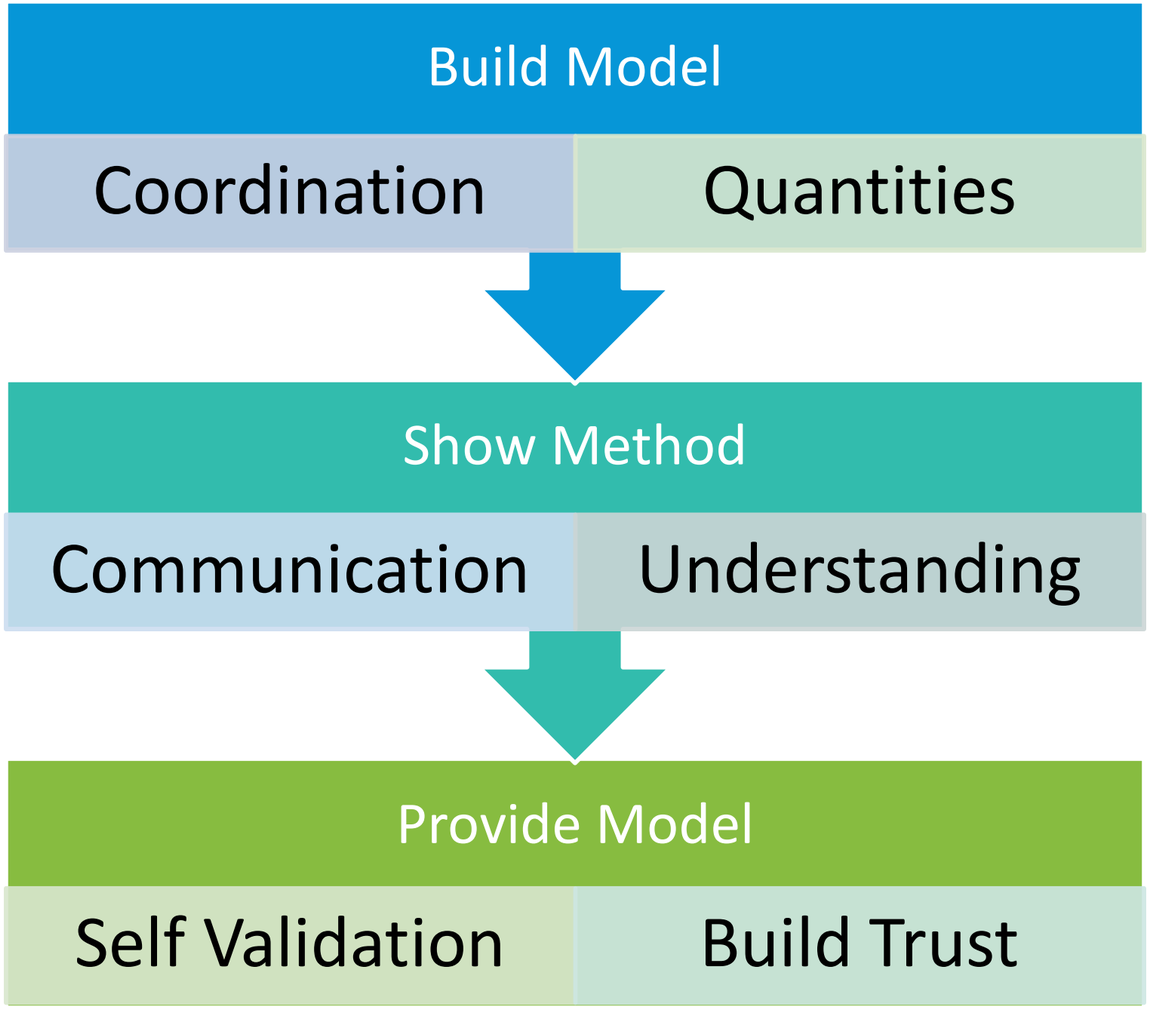




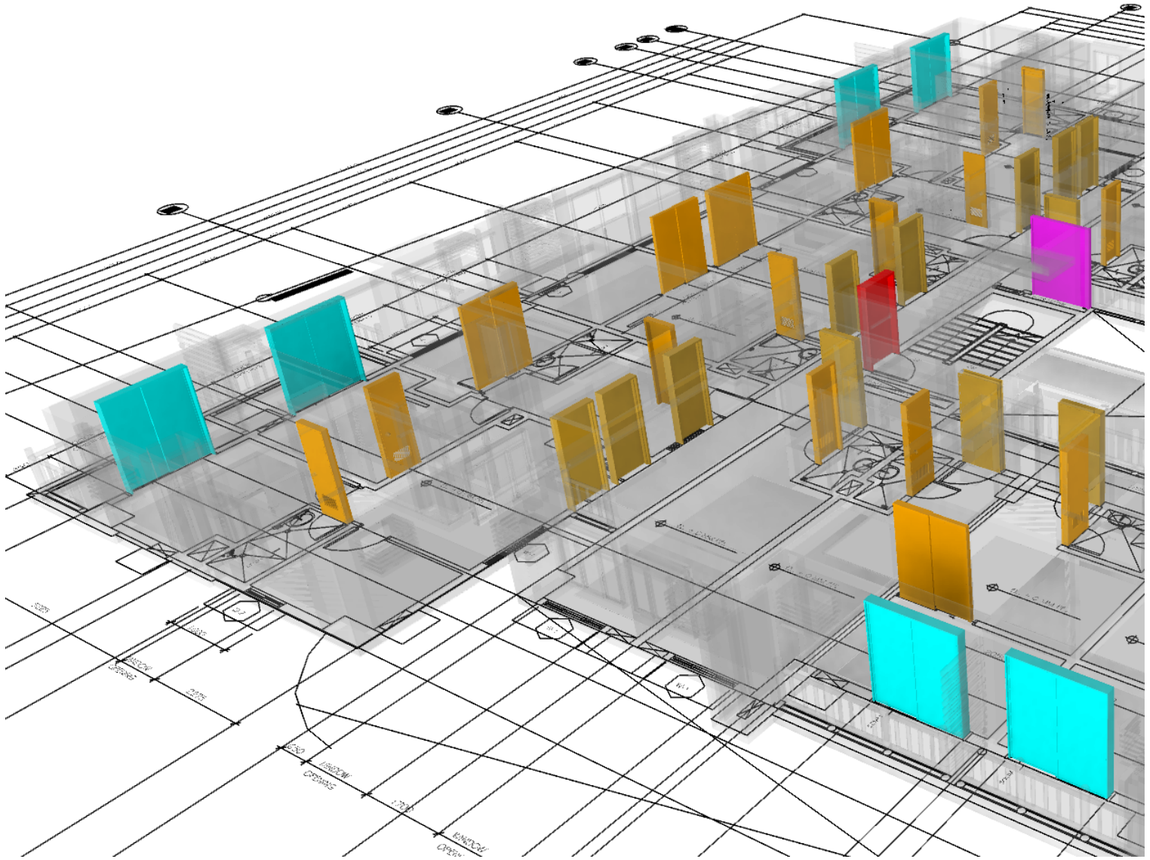


Stage 2 (In Progress)
BIM in Bidding

- Communicate BIM results
- Transparency of information
  - Provide model to bidders
- Greater justification for quantity variances



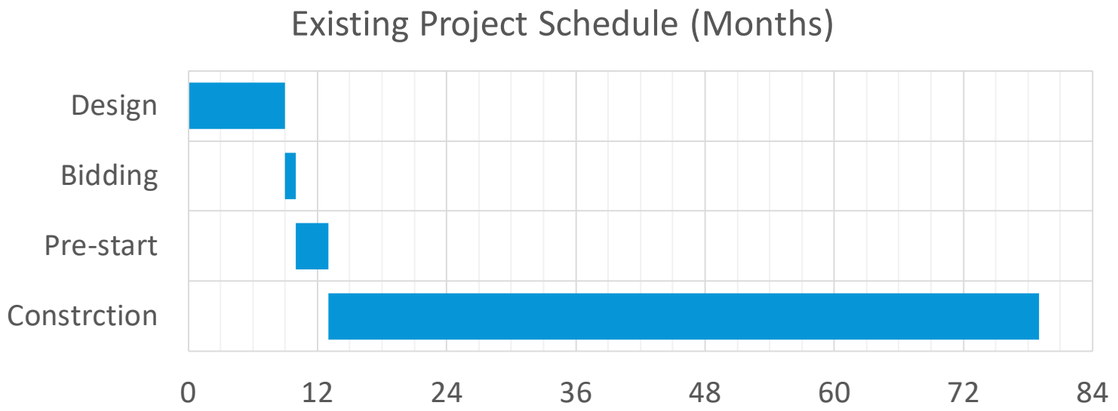
Bidding Transparency

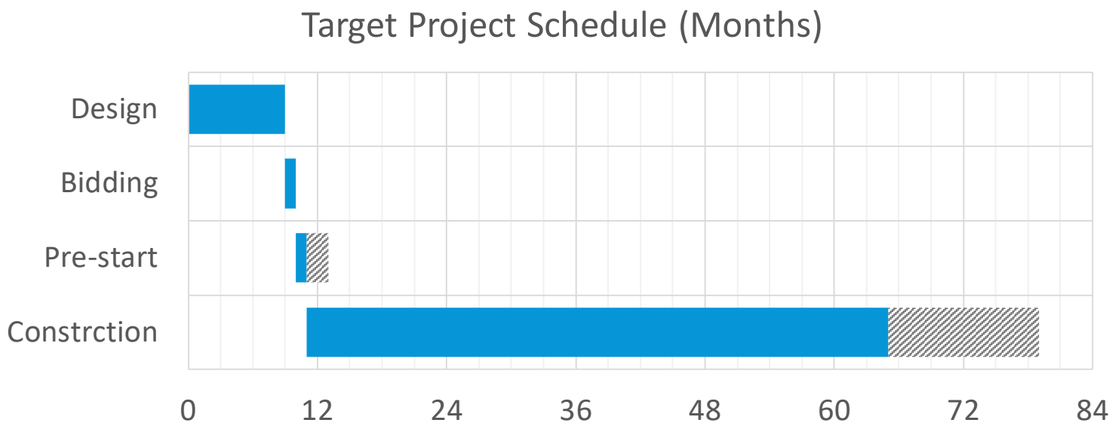


Architectural BOQ	Quantity	Contingency
Row Labels	Sum of Quantity	Contingency
3.1 Walls, Doors and Glazing		
Ground Floor		
3.1.1 Exterior Walls		
3.1.1.1 150 CHB Wall	203.64	3.00%
3.1.1.2 100 CHB Wall	59.53	3.00%
3.1.2 Interior Walls		
3.1.2.1 150 CHB Wall	707.94	3.00%
3.1.2.2 100 CHB Wall	395.77	3.00%
3.1.3 Doors, Jambs and Hardware - Installation		
3.1.3.1 Steel Doors, Jambs & Hardware		
3.1.3.1.3 H1(1600mmx2100mm Accordion Hollow Metal Door)	2.00	0.00%
3.1.3.1.4 G1(800mmx2100mm Hollow Metal Door w/ Grill)	2.00	0.00%
3.1.3.2 Timber Doors, Jambs & Hardware		
3.1.3.2.1 C1(900mmx2100mm Solid Core Wood Panel Door)	24.00	0.00%
3.1.3.2.2 D1(800mmx2100mm Wood Pocket Sliding Door)	8.00	0.00%
3.1.3.2.3 E1(800mmx2100mm Hollow Core Flush Door)	2.00	0.00%
3.1.3.2.4 E2(700mmx2100mm Hollow Core Flush Door)	24.00	0.00%
3.1.3.4 Emergency Egress Doors, Jambs & Hardware		
3.1.3.4.1 F1(1000mmx2100mm Metal Door w/ Vision Panel)	2.00	0.00%
3.1.3.7 Glazing Doors & Hardware		
3.1.3.7.3 A3(850mmx2100mm Tempered Swing Glass Door)	2.00	0.00%
3.1.3.7.4 A4(1800mmx2100mm Two Panel Tempered Swing Glass	2.00	0.00%
3.1.3.7.5 A5(1800mmx2100mm Two Panel Tempered Swing Glass	2.00	0.00%
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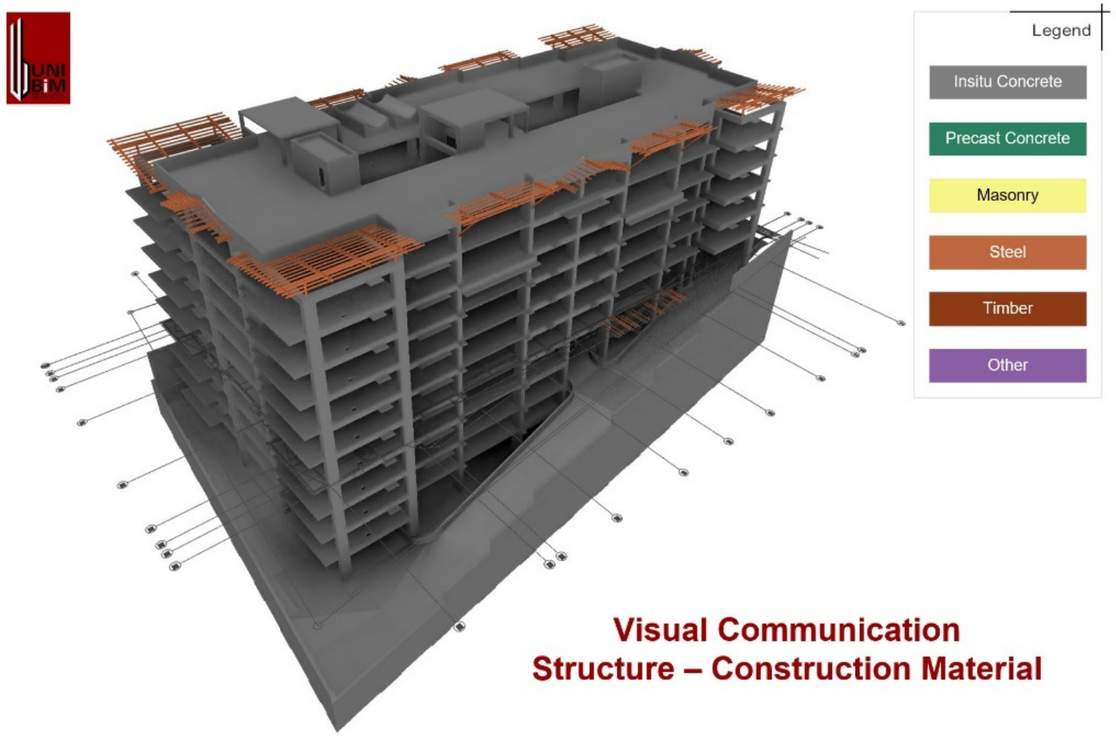
Stage 3 (To Start)
BIM in Construction

- Target construction time reduction of 15%
- Use model for added communication and understanding

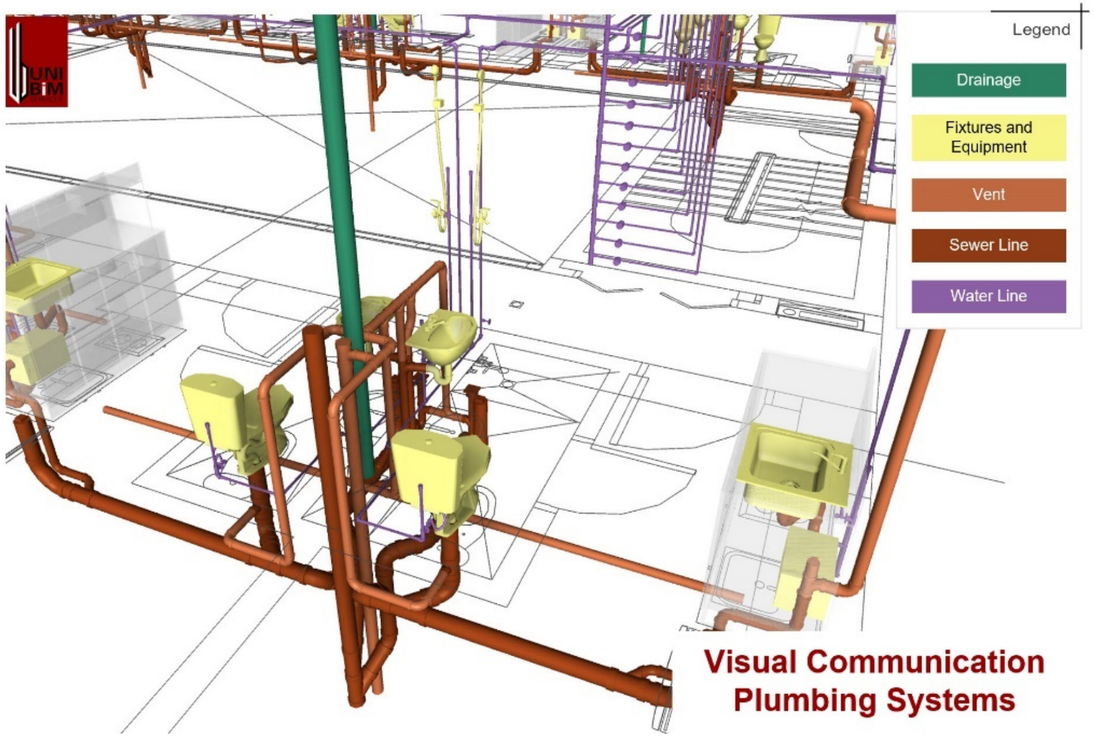




Visual Communication



Visual Communication
Structure – Construction Material



Visual Communication
Plumbing Systems

Colour schemes tested for visual clarity in colour blindness

Residential Summary



istock.com/Fazon1

Breakout:
Building BIM Quantity Systems



istock.com/Milan_Jovic

BIM Quantity Systems – Development Stages

1. Business structure (QTY archetype)
2. BOQ classification structure
3. Model methods for classified items
4. Model sorting
5. Checking methods
6. Cost integration method

Business Structure

- 3 main BIM QTY archetypes
  - Direct Model Data Export
    - Internal model creation + no specific QTY roles
  - Combined Model QTY Extraction
    - Separate QTY and Cost roles
  - Coordinated QTY + Cost
    - Combined QTY and cost roles
- Types 2 & 3 mostly differ by technology and responsibility of measurement teams
- Type 1 matches discussed residential developer

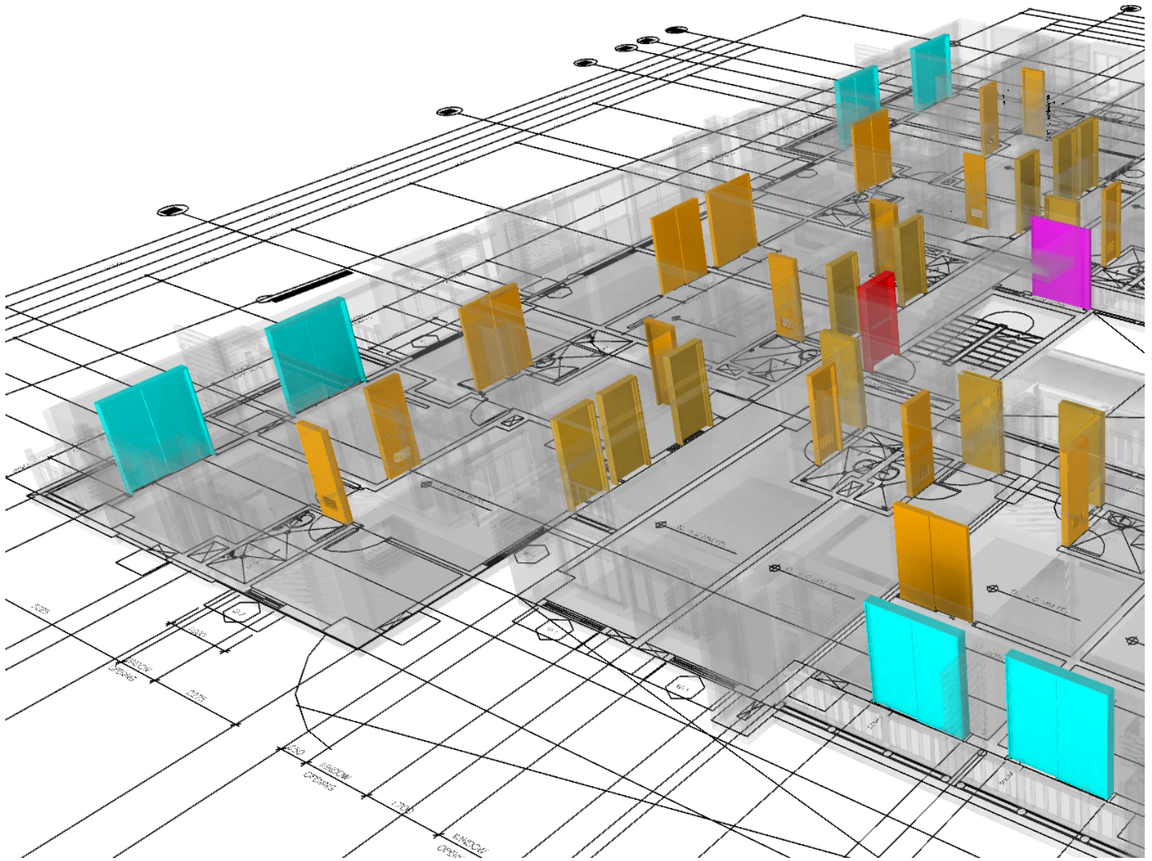
BOQ Classification Structure

- How is the BOQ broken down?
- How does the BOQ need to be summarised?
- Can determine feasibility of archetype

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Model Method for Classified Items

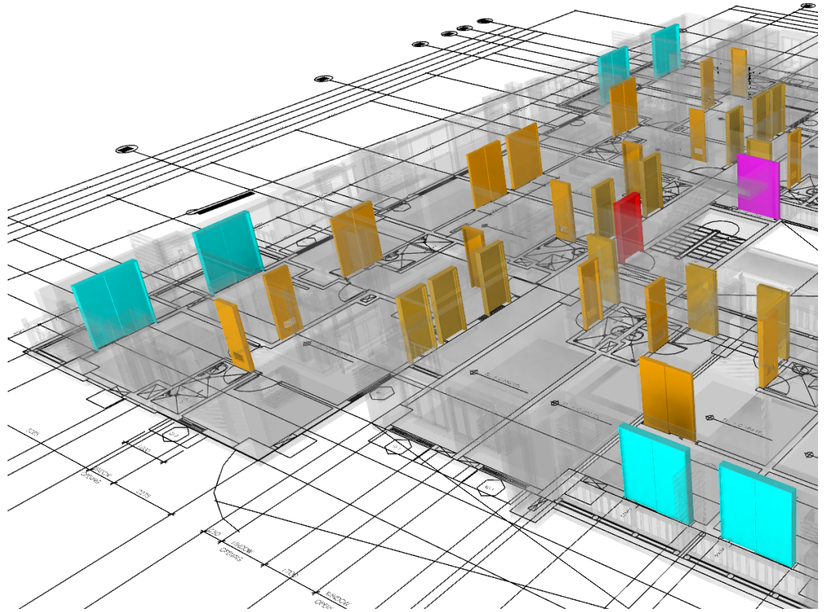
- For each classification how are the elements modelled?
- Does that method already include the required QTY data?



Model Sorting Methods

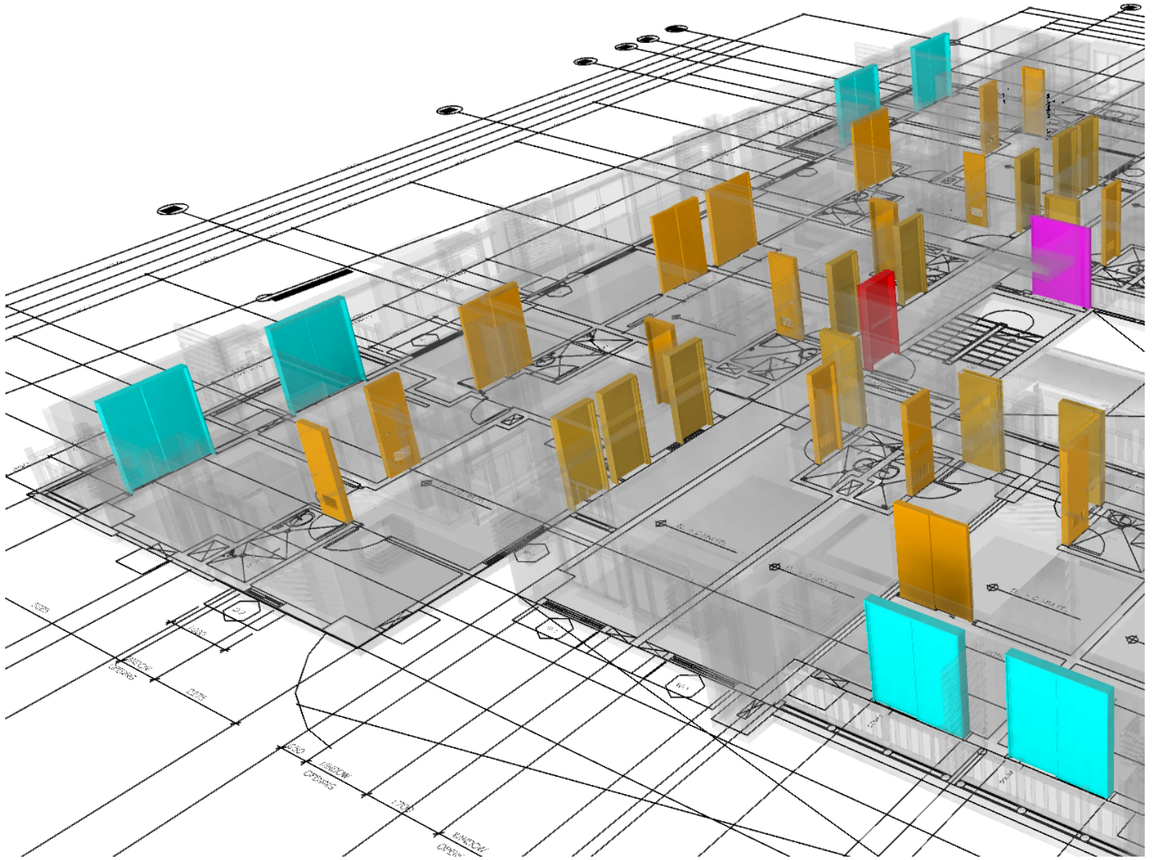
- How to identify each type of element?
- Typical methods are;
  - Classification system (Omniclass, etc.)
  - Cost Code tables (e.g. AUS QSID code)

- Who completes the classification data?



Checking Methods

- Biggest reason BIM QTY systems “don’t work”
- Lack of trust of information during change to BIM QTY
- Self checking
- Audit Checking



Cost Integration

- Model authors do not typically have access to cost data
- Where is cost data stored?
- Driven by delineation of responsibility

Limitations

- Only material measurement
- Very difficult to measure items that are not modelled
  - (e.g. formwork)
- QTY is final used materials
  - Not stock lengths
  - Openings will be removed from QTY

Implemented Methodology

- Model created and coordinated
- Classification added
- Colour coded checking of classifications
- Export raw data tables (Revit schedule exports)
- Data pasted to pre-formatted Excel sheet
- Cost rate table filled in excel
- Pivot tables used for BOQs



Case Study for Impacting Maintenance Through Construction

UNIBIM SERVICES PVT. LTD.

Riverside Medial Centre

- Private Hospital
- In operation for more than 30 years
- Undergoing expansion
- Part of a group of hospitals in the region

Challenges – Hospital Expansion

- Delays in completion impact delivery of Critical Services
- Old facilities have maintenance issues
  - Lack of maintenance data
  - All understanding within the minds of maintenance staff (retired)
- Design “Completed”

Solution

BIM in **Pre-Construction**

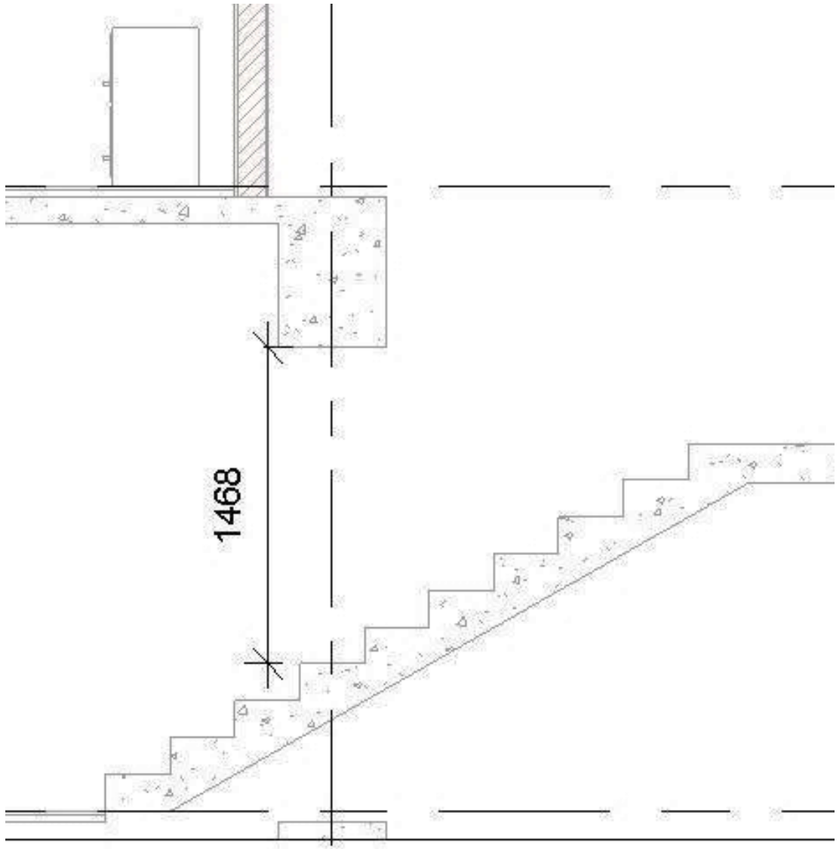
- Coordination
  - Resolve issues prior to bidding
- Add maintenance requirements
  - Provide volumes for maintenance space in coordination

Built for Maintenance

- Build trust through bidding
  - Transparent communication with model supplied
- Build results in Construction
  - Add model for visual communication

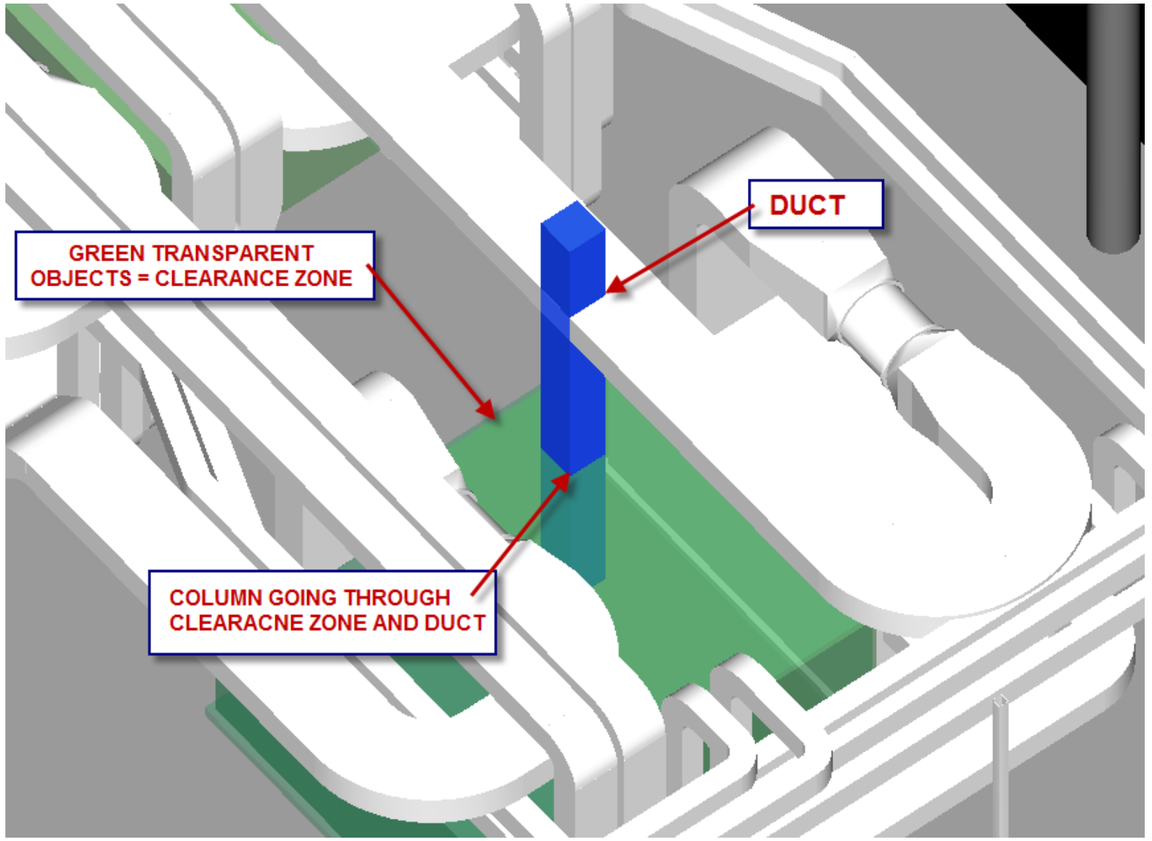
BIM in Pre-Construction (Complete)





Built for Maintenance (in progress)

- Visual review of maintenance access
- Maintenance space modelled to allow clash tools to identify issues
- Maintenance data collected during construction for building operation





Riverside Medical Centre Summary

UNIBIM SERVICES PVT. LTD.

Summary



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Driving Owner BIM Returns

Drives project returns through;

- Understanding what your returns should be
- Selecting methods to impact areas for returns
- Utilising BIM within the construction phase

Super Short Summary:
To Get BIM Results…
Know WHY you are doing BIM

How did I do?

- Your class feedback is critical. Fill out a **class survey** now.
- Use the AU mobile app or fill out a class survey online.
- Give feedback after each session.
- AU speakers will get feedback in real-time.
- **Your feedback results in better classes and a better AU experience.**





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