

BUILDING INFORMATION MODELLING (BIM)

Delivering high quality assets in Vietnam with BIM.

Executive Summary

Indochine designs in BIM/Revit by default now, with the benefits far outweighing the costs.

Benefits to Projects

Key benefits to the project include.

- Reduced CAPEX/ OPEX
- Improves Design Process
- Better Visualization
- Improved Collaboration
- Reduces Costs/ Waste
- Improves Productivity
- Reduces Conflict & Change
- Clash Detection
- Integrates Technologies
- Facilitates BoQs and procurement

Process

BIM should not be considered a 'software package' but as a 'process'.

Ideally, BIM should be adopted by the entire design team such that Architectural, Structural and MEP consultants each contribute to a single coordinated design model.

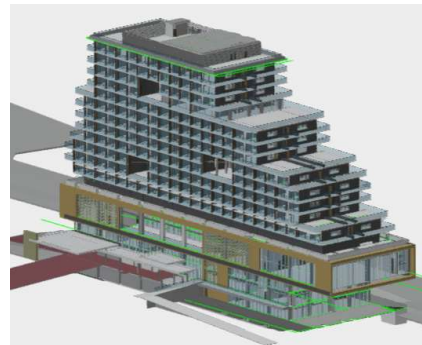
Adoption of BIM should be made early-on in the design process, and continued through the design, procurement and construction phase.

Online implementations using cloud sharing features are possible from Vietnam.

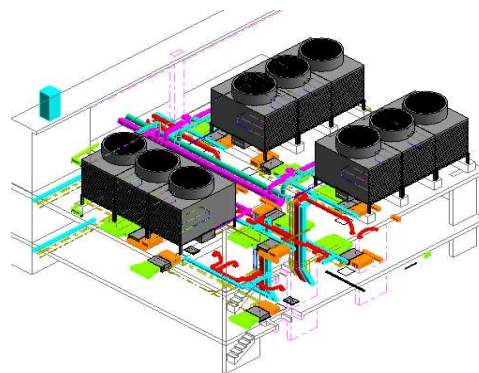
The MEP Contractor can utilize the BIM design model for the preparation of coordinated shop drawings. Noting, where different sub-contractor are engaged on site, this process is sometimes difficult to manage.

Cam Ranh Flowers Resort

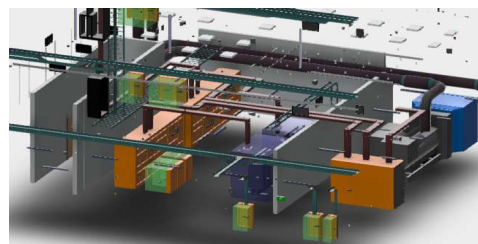
Resort Hotel development, Cam Ranh Bay Vietnam



Main building view



Plant space layout – Cooling towers



Plant space layout – Electrical rooms

Recommendations

BIM modelling should be considered on any complex project where multidisciplinary coordination is an issue and quality is paramount.

Conclusions

The utilization of BIM expedites a project's delivery during the design, procurement and construction phase.

Quality of outcome is enhanced due to better coordination through the design process

Supporting information

Software implemented

- Revit 2017
- Navisworks

Key considerations

BIM modelling incorporates the inputs from architectural, structural and MEP disciplines within a common model.

This facilitates better collaboration through working on a single platform.

Architects can more easily convey their design intentions, and engineers can more clearly understand the demands and constraints.

Design issues become more visually obvious, with better integration of architectural & engineering a direct result.

Clash detection can be managed via Navisworks

Cost estimation of plant and equipment quantities can be effected directly from the model's data base

The BIM model can in addition be utilized during the construction phase of the project, providing clarity of detail while on site.

Online access to the model via a web interface such as A360 allows a light weight processor such as a tablet to access, which can be utilized in the field such as the review of construction details on site.

3D coordination of services within a BIM model allows coordination issues to be identified prior to construction, minimizing clashes and rework on site

The BIM model / equipment database can later be adopted by the buildings Facilities Management team for maintenance activities, or for facilitation of tenancy and fit-out works.

Similarly, IT managers could adapt as a separate layer on the model for the allocation of IT assets, desk numbers, IP number allocations and the likes.

Examples

- Better understanding of floor to floor constraints and the floor/ ceiling sandwich.
- Better visual understanding of space connectivity, and circulation.
- Automatic area calculations, reducing area creep.
- Visualization of air flows for plant eg generators.
- Visualization of plant so that gets incorporated earlier.
- BoQ Generation

Family and Type	Length	Size	Comments
Cable Tray with Fittings: Channel Cable Tray	14325	300x100	300
Cable Tray with Fittings: Channel Cable Tray	725	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	800	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	800	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	1000	350x100	COMM
Cable Tray with Fittings: Channel Cable Tray	1245	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	1265	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	1285	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	1285	150x100	COMM
Cable Tray with Fittings: Channel Cable Tray	1305	150x100	COMM

Revit BoQ Export to Excel

Discussion

Indochine has now completed the design for buildings with Revit, and contributed to over a 100 more.

Some of the lessons we have learnt so far are;

- There is a learning curve, for individuals, but especially teams... and even more for new teams.
- Relay transfer of models is possible and workable.
- In cloud working on models is ideal but suffers from low internet speeds (low latency).
- 3D documentation is a more easily achievable goal.
- Further integration (parametric modelling) is harder.
- Automatic takeoffs for BoQs may only achieve the easiest 80%.
- Coordination is still a tough task.
- Sometimes the design looks further progressed than it actually is.
- Old habits such as paper markups can reduce the benefits.