

BIM Outreach

08 *BIM for Interior
Designers*

08

BIM IN PRACTICE



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BIM Outreach

08 BIM for Interior Designers

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08 BIM for Interior Designers [Version 1 – October 2013]

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INTRODUCTION

As with many other professions in the building industry, Building Information Modelling and its application within the built environment has enhanced workflows and deliveries for Interior Designers. Along with this development comes a redefinition of roles, processes and responsibilities among Interior Designers who apply BIM on their projects. The division of model and element ownership gives an Interior Design firm the opportunity to reconsider and streamline their process within the wider built environment workflow.

BIM for Interior Design is one of the most prominent areas that requires clarity as interiors links to many facets of the information model. Despite strong alignment between BIM for Architecture (as described in document O2 of on this series) and BIM for Interior Design, there also exists distinguishing factors between the two approaches when it comes to their application in everyday practice.

This paper, which builds on the series of BIM Outreach papers (O1-O7) published by the Australian Institute of Architects and Consult Australia, will highlight the specific considerations that should be taken into account when working in BIM as an interior designer.

WORKFLOW AND COLLABORATION

Starting the interiors part of a project

The starting point for the use of BIM in interiors is usually substantially different from the architects and building designers. Interior designers usually start with an existing situation, or working alongside the project team that develops the base building. In order to commence their work, interior designers and architects depend on the quality, accuracy, and software interoperability used to produce the base building model. It is important for the interiors team to have boundaries set early so that integration of the interiors model is seamless to the base building, thus reducing rework. Understanding “who is responsible, for what elements” is critical. An example of this is to understand how a wall is constructed and divided. This insight allows the interiors team to define the materials and the finishes of those materials. If thought isn't given to these areas, an Interiors model will overlap and a more cumbersome workflow of managing the coordination will be needed. This is also prominent when looking at joinery, and when considering those elements and an architect needs to have a placeholder for the Interiors team to swap out at a later stage in the project.

There are many issues surrounding the area of coordination. The BIM workflow can lead to changing the traditional approach, so ensuring a structured set of processes is paramount. It is best to discuss the specific workflow during the procurement as part of generating and advancing a BIM Management Plan (as described in document P1-3 of this series). If the team has not defined the elemental ownership at project stages of the design in the BIM Management Plan, stakeholders will retain ownership of their elements beyond the stages required by them. This inhibits the interior designer from leveraging that information and further developing it.

BIM - Model and task subdivision

The definition of element ownership for the interiors team is dependent on the procurement and engagement methods of working within the greater project team. Interior teams use BIM authoring tools to share ownership of BIMs by breaking down a functional space into pieces or elements and by embedding information into those elements so that it can be used for construction, fabrication, purchase, occupancy and maintenance. Having all of this information in one platform and as one point of truth enhances the interiors **deliverable**. For example: by simply placing a joinery element in a room, one will have enough information in the model for the client to visually understand the design. Information for constructability or fabrication is maintained once the virtual element gets enriched with data so a true reference for downstream parties can be obtained. Based on this method, information such as the materials, joins, finishes and additional hardware is kept within a database for future maintenance or reference.

Interacting with consultants

Based on the approach agreed upon and documented in the BIM Management Plan (see document P2 - *What should be addressed within a BIM Management Plan?*) the team breaks down a building, facility or asset into smaller working parts and systems and defines them by categories, workflow and ownership. Certain elements link to the different disciplines and those elements can be accessed by stakeholders at different stages of the design.

In an integrated fitout the architectural and interior design teams work together, either within the same practice or as two separate consultants. It is common in these cases for the architectural model to be linked into the interiors model and vice versa. For example the architect may place a generic WC, the Interiors team will then swap the generic WC for a more defined model that allows the hydraulics team to locate and connect their pipes. This enables the structural team to locate the penetrations in the slabs or wall structure. In addition to the architecture workflow, interior designers must also consider the workflow with other disciplines such as services engineers. This workflow will also need to consider specific requirements and elements related to these disciplines. The benefit of collaboration with services engineers enables interior designers to see every electrical box and plumbing or light fixture which enables better correlation than traditional 2D. Being able to locate services items requirements with joinery elements in 3D allows interior designers to plan circulation around equipment and adequate equipment space and clearances.

INVESTMENT REQUIREMENTS

Augmenting staff skills and training

BIM for Interiors requires a richer level of detail and information compared to most other disciplines. This in return requires a higher level of competency among staff who add components to an Interiors BIM library. The emphasis on training methods are more around data, content creation; including joinery, furniture, fixtures, fittings, materials and schedules rather than base building elements such as roofs, external walls and site elements. Interiors are less reliant on 'off the shelf' architectural components (such as windows, doors, etc.), and more dependent on custom-developed objects such as furniture, joinery and partitions. This is because their workflow has a larger focus on purpose built elements such as custom solutions; therefore the investment in Interiors-focused training for staff will return greatly to the business.

The following pitfalls frequently occur when poorly trained staff develop custom BIM objects:

- unnecessary effort is put into the modelling process with time wasted on details that are irrelevant to either visualisation or documentation/data output
- inadequate file sizes due to a mismatch between an object's polygon count and its actual representation requirements (Fit for purpose setup of geometry is often misjudged)
- LOD (as described in P2 - *What should be addressed within a BIM Management Plan?*) need to be well defined as it can be time-consuming to modify content at a later date
- workflow/process for content creation insufficiently considering the ultimate documentation and specification/scheduling requirements of downstream parties.

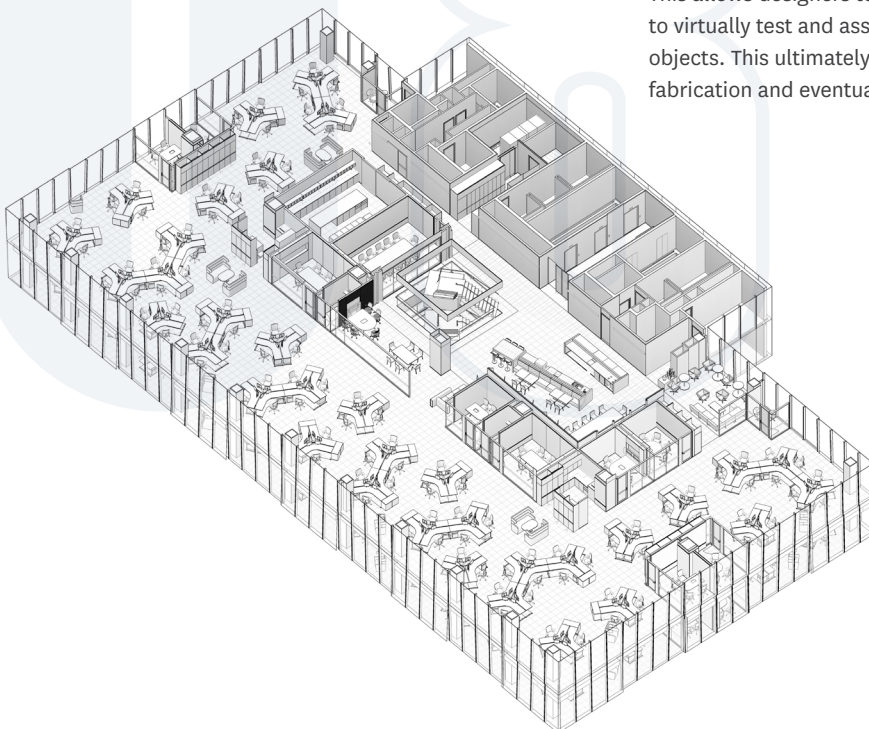


Image: (Source: GEYER)

Protocols for information exchange and data output

Next to facilitating traditional 2D plans and sections, BIM for interiors provides new opportunities for appropriating visual output such as the automation of interior elevations, interactive walk-throughs and 3D prints. On the data side, BIM enables the interiors teams to introduce various levels of automation for the generation of Room Data Sheets, **furniture, fixtures and equipment** schedules, links to specifications and the costing of interior elements.

Developing well-established company protocols to regulate how the above information gets appropriated will help to improve the quality and consistency of information and will assist in leveraging data efficiently downstream. The guidelines need to focus on the end-deliverables for interiors to output information in a format that can easily be shared with others and that can be managed by the entire team.

Adherence to well established guidelines and protocols will make BIMs and projects in general run more efficiently. The information that gets embedded in the library components needs to allow for variation, while the data needs to be consistent across all fields. It is crucial to maintain data integrity, as a break in the system will have staff trying to manually manipulate aspects of their project with associated high costs and risk. If content outsourcing is engaged, a firm is well advised to carefully define its processes and requirements with any third party developers in order to keep information links intact, no matter what individual elements are used for. Manufacturers' BIM data and BIM data in (freely) available third party object libraries is often inadequate as its authors often lack an understanding of the particular modelling requirements of the end users.

BIM enhances the interior designer's workflow when the BIM maturity of interiors staff has reached a saturation point and the creation of content fit for purpose is built and utilised. This allows designers to concentrate on space planning, and to virtually test and assess the information pertaining to the objects. This ultimately adds value to project delivery via fabrication and eventual maintenance and facility management.

CONCLUSIONS

BIM will continue to enhance interior designers' projects if efforts are made to structure and define the stages of delivery from within a team to within an office. BIM delivery enhances the interior designer's ability to innovate as they can test their solutions virtually.

Summary

- It is important for the Interiors team to have boundaries set early so that the integration of the interiors model is seamless.
- The information embedded in the elements needs to allow for variation, while the data needs to be consistent across all fields for maximum reuse
- It is best to discuss the specific workflow for interior design (element ownership during stages) during the procurement so all stakeholders understand how changing their workflow slightly will enhance the model deliverables
- BIM enables interior designers to convey complexity and illustrate spatial planning in a dynamic 3D representation, whilst maintaining the integrity of embedded information within a model enables more accurate scheduling of quantities, costing and FF&E schedules