

IDC ExpertROI SPOTLIGHT

Westfield Uses Building Information Modeling to Reduce Design Time and Eliminate Rework Across the Property Development Supply Chain

October 2009

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Overview

Westfield is one of the largest multinational owners of retail properties — shopping malls — throughout North America and the rest of the world. A vertically integrated shopping center company, Westfield manages all aspects of shopping center development from design and construction through leasing, management, and marketing. Given that Westfield owns hundreds of retail properties worldwide, efficiently and effectively designing and building renovations and expansions is an important critical success factor to the firm's business.

Drivers for Autodesk BIM Implementation

Because Westfield is a vertically integrated owner/designer/builder, multiple departments within the company are involved in any given project. Before the advent of building information modeling (BIM), designs and documents were shared between departments using 2D and paper-based designs. Each department then reinterpreted, or "redesigned," the relevant portions of the project in its own systems, resulting in great inefficiency and errors that crept into the process.

About two years ago, in an effort to eliminate this inefficiency, Westfield turned to BIM. According to David Reitz, Vice President of Project Management and Technical Design, "BIM was the best way to share the design between departments that we could come up with." The firm is now testing a wide variety of Autodesk® BIM products, including Autodesk® Revit® Structure, Autodesk® Revit® MEP, Autodesk® Revit® Architecture, Autodesk® Navisworks®, and Autodesk® Quantity Takeoff (QTO) software.

Currently, Westfield uses BIM on about half of its projects, and this proportion is growing. These projects include the largest jobs, which require the most FTE hours and represent the most complexity and risk.

Business Value Highlights

Industry: Retail property development

Location: International

Challenges: To reduce inefficiencies caused by "redesign" of 2D design documents across in-house groups and improve final build quality to increase leasing revenue from retailers

Example project: \$200M

Specific benefits:

- Reduced design time by 25%
- Reduced RFI rework by 20%
- Improved project timelines
- Improved quality on final project

Benefits Overview

Westfield points to a number of benefits to using BIM, including a better end product (better buildings), clash detection resulting in fewer construction errors, improved processes resulting in less rework, and shorter time to revenue (see Table 1).

Table 1. Key Project Benefits

Key Benefits of BIM	
	%
Reduced design time	25%
Reduced time to fix RFIs	20%

Better End Product

BIM allows Westfield to reduce errors in design and construction documents, helping achieve a better end result for its investors. Specifically, this shows up as more and better leasable areas within the shopping center projects. Because the firm's business model is based on its ability to lease tenant space (i.e., to retail chains), the more and better leasable areas it has available, the more revenue it can generate. "I know that designing and constructing projects in BIM has helped us verify project yields, helping projects to move forward," states Reitz.

With Westfield's building plans and documentation being done in software based on the Autodesk® Revit® platform, the firm has been able to integrate directly with consultants' and contractors' BIM models that are also done in software based on Revit®. By integrating their models into Westfield's model, the developer can confirm that the building is meeting the overall project requirements, identify and address problem areas earlier in the process, and strengthen confidence in the process.

Clash Detection Leads to Fewer Errors in Construction

Westfield communicates with subcontractors directly in Navisworks. By sharing native BIM files directly from the structural designer with subcontractors such as steel fabricators, the firm can perform more accurate clash detection in software and rework identified issues during the design phase. "It allows us to solve issues that would have potentially happened as the building was being constructed," says Reitz. "This results in fewer change orders and saves everyone time and money since structural changes cost more if they are already in place."

Reitz estimates that the use of BIM has led to an approximately 20% reduction in rework change order costs. While the change order budget varies by project, Reitz estimates that for the developer, it can easily be at least 10% of the overall project cost, meaning that the reduction in rework by performing clash detection in BIM can save about 2% of the overall cost of projects.

Improved Processes Save Design Time and Rework

In the project workflow before BIM, the designers would create their designs using 2D computer-aided design (CAD) software and then hand off the designs to the next group on paper, and so on. Each group would reinterpret the design in its own software package, resulting

in a great amount of redundancy and rework throughout the various groups involved in a construction project.

In contrast, with BIM, Westfield can take the project from start to finish in one software package. "That saves us redesign time for developers, designers, and production departments, maybe 20–30% of the total design time associated with the project," estimates Reitz. As Westfield estimates that design time can reach about 8–10% of the total project budget, redundancy savings due to BIM can be as high as 2–3% of the overall project budget.

Getting Projects to Market Faster Speeds Time to Revenue

Using BIM, the design and production teams can work faster and more efficiently. While BIM-enabled efficiencies have not caused Westfield to reduce the number of people it has on staff or who work on any given project, they have allowed the firm to compress the end-to-end time required to complete a project. The firm estimates that before BIM, it took about five months to create a complete set of construction documentation; now, with BIM, the time required has been reduced to three and a half months.

This reduction in design time allows Westfield to start construction sooner and to open malls sooner. And the sooner the developer can open malls, the sooner it can begin collecting on leases. "For a typical project, it's all about how much we can collect on leases. So BIM's ability to speed our time to market is a real revenue benefit to us," states Reitz.

Future Direction

Westfield is already planning a number of ways to build on the successes it has already achieved through BIM. Future plans include implementing construction simulation to allow it to perform just-in-time design, designing parts of the building as it is being built. This would allow Westfield to better customize builds for tenants, which would improve revenue. The developer expects to begin rolling out this capability in the next two to five years.

Another planned improvement is performance simulation. Westfield is currently "in the R&D phase" with this initiative and is planning to implement it sometime between 2010 and 2011. Products it is considering to support this initiative include Autodesk® Green Building Studio® web service.

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