



# Insite

ENRICHING COMMUNITIES FOR LIFE

Steed | Hammond | Paul

Taken from the pages of Insite magazine

## Changing the Way We Design Building Information Modeling

Over time, everything changes, and this is certainly true for architecture as well. While designing a building used to entail someone sitting at an old drafting table with a slide rule and a pencil, it now involves modeling an entire building in a totally integrated approach. Through the use of Building Information Modeling (BIM), 2enCompass Integrated Design and Construction incorporates all electronic documents into a single virtual three dimensional model, resulting in a faster, higher-quality process that has the potential of saving the customer time and money while aiding in the creation of dramatic and exciting architecture.

“2enCompass is leading the charge for the integration of BIM technology into the design/build industry,” Tom Wikol, BSD Regional Sales Manager for Autodesk, makers of the Revit® software program, said. “They are working tirelessly to get other design disciplines and construction firms on board as well.”

### Complete Visualization

Wouldn't it be great if you could see your entire new building within a few hours rather than after it is completely designed? Or what about how moving a wall changes the design? Better yet, how does moving a wall affect the mechanical system, structural system, or building technology locations?

With BIM technology, all of these things are possible. Autodesk's Revit®, the software behind the innovation, transforms the information put in the floor plan into elevations, sections, renderings, allowing for the complete visualization of the concept in two and three dimensions.

“2enCompass was able to provide us with a visualization of our building in the very early stages of design,” says Mount St. Joseph Chief Financial Officer Anne Marie Wagner. “That is something we typically didn't see until after the design was complete.” BIM makes instantaneous visual representations available such as stop action

or animated walk-through sequences, 3D presentation views and multiple design perspectives. This ability enables architects and clients to view and display concepts much earlier and more often in the design process allowing more design to take place in the same amount of time thereby creating high value for the client's design dollar.

“We were also able to see great potential with the use of BIM for fundraising efforts as well,” Wagner added. “As we go to potential donors in the future, it will be such an asset to use the 3D images and the movies.”





### **Saving Time, Saving Money**

2enCompass's integrated design and construction methodology is all about creating high design solutions in less time with greater accuracy and less financial risk for the client. Frequently, the end result of a 2enCompass job is a project that saved the client time and money. Therefore, BIM fits the business model perfectly. As each of the design disciplines makes changes, each change is automatically and immediately recorded into the model. Design updates that before could take up to two weeks for all disciplines to acknowledge and record, now only takes a matter of minutes. Coordination errors, often the source of countless change orders are minimized, if not eliminated by all disciplines working simultaneously in one virtual model in real time. BIM even has the capability to run interference checks within the program, automatically identifying coordination issues between building elements. This feature alone has increased drawing accuracy and has contributed significantly to major reductions in change orders in the field.

In addition, as changes are made, cost data can be incorporated into the model for real time cost estimates. By facilitating the production of frequent cost estimates, designers, builders and clients can evaluate how much money their building is costing as design solutions change and/or become more refined. During meetings, universities are able to see different scenarios and compare them for aesthetics and cost implications.

"If a client decides to move a wall and wants to know how that will impact the design and the cost of the project, we can show them that almost immediately," Dick Thomas, executive director of 2enCompass said.

BIM also creates a huge time-savings in documentation time for architects and construction managers by allowing for more time to be spent on producing creative designs for universities. Now the client can look at multiple interactive solutions rather than just one in the same time frame. In addition, the integration inherent in the use of BIM leads to greater efficiency and accuracy in the design and construction process, reducing actual construction schedules.

"Using BIM creatively enables us to develop solutions so well integrated and coordinated that it lessens the building time because of increased efficiency, which is something every business officer can value," Thomas added. "By saving time and reducing error, 2enCompass has more time to create inspiring designs for our clients."

### **Building Green**

Another aspect is the incorporation of green/sustainable design. As the trend of building green is sweeping across the nation, BIM makes designing a LEED® (Leadership in Energy and Environmental Design) certified building easier. It is no secret that educational buildings are following the trend of LEED® certification, taking this opportunity to lower operating costs, conserve the environment and be good stewards of the public and private dollars used to fund the buildings.

For example, as the building is being modeled, the architect can run the calculations to show the effect daylighting can have on the quality of the space and the energy loads of the building. For even the slightest change in window size, the percentage of daylight and energy consumption can be calculated. Once the MEP (mechanical, electrical, plumbing) drawings are

incorporated into the model, the actual dollar figures and costs can be attached to the design as well. All of the figures are up to LEED® certification and ASHRE 90.1 certification standards making it easy to correlate them to LEED® points.

### **Facilities Management**

We all know that the total cost of ownership of a building doesn't stop when the building is finished. There are numerous warranty and maintenance issues that need to be planned for. Using BIM, all maintenance equipment and procedures can be incorporated in the drawing file during design and production. By incorporating the maintenance information into the design drawing, the end user has the ability to select any piece of equipment and see the required maintenance tasks. When the project is complete, it is possible for the client to have as-built drawings in 3-dimensional form that can serve as a live, inter-active model of the facility and the foundation for the facility management tool. Using BIM facilitates opportunities for a smooth transition and application of knowledge from the design side to the occupancy side leading to more efficient and successful operation of buildings.

"So often owners don't realize the amount of maintenance a building entails," Thomas said. "By giving the owner the ability to click on any system and see the warranty and maintenance information, owners can better take care of their facilities resulting in longer-lasting systems."

### **Changing the Way We Design**

There are so many benefits to integrating BIM technology into building projects but finding a company fully committed to BIM isn't easy. 2enCompass has embraced this new concept by integrating it into all of their projects. This dedication will lead to better design, less owner risk in construction, which translates to high potential for cost savings, and undoubtedly, better educational facilities.

