



Solibri leads the way to Model-Based Expedited Permitting

A PERSPECTIVE FROM THE U.S.

BIM, as a practice and a process has been steadily evolving and will continue to do so for many years to come. In many circles, BIM is too often equated with a solution or a particular tool. As has been stated in many forums, and even in this magazine, the true sustainable value associated with BIM is the information or the data that is associated, or nested, within the model(s). If we take a close look at the stakeholders on any project, we usually find that the BIM discussion is related to the design team, the construction project team and eventually the owner (in the ideal situation). The explanation for this is simple. These are the parties that have found value and benefits by adopting a collaborative approach to project delivery..., which is identified as virtual design and construction (VDC) or BIM.

There is no doubt that the benefits of BIM are real, tangible and becoming more predictable and measureable. *But there is something missing.*

As design and construction introduces more quality assurance and quality control (QA/QC) through the use of 3D models and BIM, an entire community of building officials and agency plan reviewers remain totally entrenched in the 2D paper review process. In some of the more innovative jurisdictions they have begun to work with digital content (e.g. pdf files), or online submittals, but these are still primarily in 2D. This group of professionals has been left out of the BIM dialogue, for years. *It just doesn't make sense.*

When you consider the typical workflow, the designer may be quite proficient at building data-rich 3D models, but when it is time to submit the design for plan or code review, they must 'flatten' the model to 2D, print on paper (most of the time at least 10 sets) and then submit to the reviewing authority. The cost to manually process the review is dependent upon the urgency that the customer indicates. Sometimes the review might take in excess of 2 months. But, for a steeper fee, it might be possible to expedite the review and deliver comments within a day or two. Those comments are then addressed by the design entity, again in 3D, flattened again to 2D and re-submitted to the agency for approval. This process of model...flatten to 2D...re-model...re-flatten and eventually gain approval is extremely inefficient and potentially very costly, both in dollars and the possible delays associated with gaining the final approval. So, there are really 2 problems (or challenges if you prefer). Firstly, the 3D>2D>3D>2D>3D exchange is reflective of a disjointed and potentially dysfunctional process. Secondly, the real adoption of BIM *requires* the inclusion of the review community. Without their involvement we will not be able to accurately predict our project schedules, not just for construction, but also possibly for financing, cost control and especially for operational timelines.

Solibri is in a unique position. As the developer of a QA/QC technology solution that 'requires' a model in order to deliver value, we are acutely aware of the broad market we need to serve. We have a solution that can play an

instrumental role in addressing both of the challenges identified above. We can solve the initial issue by providing a platform that enables the reviewing authority to accept, and even encourage the submission of models, rather than just paper drawings. The second issue was a matter of inclusion. Once the reviewing entities begin to review models they will become critical members of the broader BIM community. Their role will be extremely influential, as they will be responsible for streamlining the design>permit>construct continuum.

The one aspect that wasn't discussed here was 'what does the reviewer check the model for, and how do they actually accomplish this?'. This is a significant undertaking and needs to be addressed in a systematic and methodical fashion. Solibri is currently engaged in the initial phase of a Proof of Concept Project that will deliver the capability to begin the transformation from 2D to BIM for this entire industry segment. This project, sponsored by the FIATECH Organization is known as AUTOCodes (for Expedited Permitting) and is being conducted in the US. The details of the project are included in the announcement below. This is an example of the Solibri commitment (as well as our committee co-members) to delivering innovation to the global building code and review process.

In this project Solibri is working together with FIATECH, The International Code Council (ICC), Avolve Software, and Target Corporation.

Please see the related Announcement on the following page.

Nationwide Automated Code-Check Project Underway

Even with the best efforts of code officials to expedite approvals and permitting, regulatory compliance remains a tedious, time-consuming, and costly discipline. While building officials, construction owners, architects, designers, and engineers have long understood the critical importance of timely, accurate and uniform code-review, relatively little progress has been made with respect to improving and modernizing an outdated regulatory process. Only modest focus has been placed on the significant impact code review and permit approval has on business and consistent economic growth.

Now all of that has changed. Current economic conditions have raised awareness of deficiencies in the regulatory process to the highest levels of government. Across the country there is an urgent call to apply new thinking and technology to the challenges facing jurisdictions. Forward-looking building and planning departments are investigating methods for streamlining their processes, including faster, more consistent code checking.

The growing use of three-dimensional, building information model (BIM) technology by the construction industry presents a significant opportunity to accelerate code reviews and expedite permitting. Through the application of programmable software rules, BIM data can be queried and analyzed for the purpose of determining regulatory compliance. This method utilizes the power of computers to perform the majority of the code review while maintaining, and even improving, the fundamental safety and design integrity standards which are intrinsic to the regulatory process.

In January 2011, the FIATECH Regulatory Streamlining Committee launched a proof-of-concept (POC) project to develop automated code-checking rulesets. With the support of the International Code Council (ICC), jurisdictions from different regions of the United States and independent software developers, the initial phase of the project (named "AUTOCodes") will demonstrate the viability of using software rulesets to check the Accessibility and Egress provisions of the ICC's International Building Code. To achieve this, the Project team is conducting a comparative analysis between traditional, manual plan reviews and the results of a BIM-based checking process.

In April, code officials and plan-check engineers from the participating jurisdictions were given a set of 2D plans derived from a Target Corporation store prototype BIM. The jurisdictions were instructed to perform a standard Accessibility and Egress plan review per their own standard building codes and methods. Collecting results from these jurisdictions provided the Committee with key insight into the way plan reviews are conducted.

The Target store BIM was shared with a software development team for the purpose of checking the model for Accessibility and Egress compliance. The results were to be assessed and analyzed to determine the need for creating or modifying machine-language rulesets. As the 2D plan reviews were completed, the results were passed to the software team to serve as a baseline for the ruleset development effort. The Target store BIM and POC rulesets will soon be distributed to the jurisdictions for a model-based review and report. The results will be analyzed and published in a final POC report.

The initial 2D review exercise is now complete. A findings summary of the project work to date will be shared at the ICC Annual Business Meeting in Phoenix, Arizona (Oct 30 – Nov. 3).

Long term AUTOCodes Project objectives include the development of an extensive, open-source ruleset library which is approved and adopted by industry and regulatory bodies alike. The rulesets are to be used by technology developers in commercial companies and code officials for the next generation of design, construction and facility management.
