

## Owners – What Should You Do About BIM?

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February 1, 2010

Owners are hearing about projects coming in at 10% lower than budgeted when architects and engineers created their drawings and specifications using BIM as their modeling tool. We are now getting early reports of projects coming in at 20% lower than budgeted when IPD (Integrated Project Design) is used on a project; this is where the contractors and sub-contractors add detailed construction modeling to the architects and engineers BIM projects prior to bidding and construction. Conflicts are worked out in the model and not in the field. Prefabrication is possible because dimensions are very accurate and there is confidence that the prefabricated items will fit. Owners are also starting to realize that if they have many architects working on their projects they are not getting an integrated set of data from the collection of projects, and therefore, the downstream value of the BIM projects for facilities management, operations and maintenance is compromised.

BIM is very new. Many people have different ideas on what it means, where it is going and what it will accomplish. While this is being sorted out, there is little disagreement that BIM is a new era and will result in tremendous change for almost everyone dealing with buildings. This paper gives examples of what can be improved for owners when they require BIM projects be created with consistent and coordinated requirements and guidelines.

Architects, engineers, contractors, suppliers, building product manufacturers (BPM's), facility managers all are directly or indirectly paid by the owners of the property. How we do our jobs greatly influences the value of the property, usability of the property, and its long term value. A great design, well executed and with the right materials provides the owner with a tremendous asset. Well done buildings provide a great work environment, reduced operating expenses and value as a real estate asset. BIM is a valuable tool in helping the design, construction, and operations professionals provide these results to owners. These designers and contractors are fundamentally single project oriented, they use BIM to make the individual project the best possible. This is good for the single property owner, but is only part of the story for the multi-property owner. The multi-project owner needs consistency across all their projects. This paper looks at what multi-property owners need to do.

Architects and Engineers fall into three primary groups at this time.

1. CAD – Designers are still using CAD and are creating collections of non-integrated files that collectively generate a set of paper drawings, schedules and specifications. This has been the standard of practice for the last couple of decades. Most major owners provide guideline plans, details and finishes to their designers in CAD.

2. BIM – Designers are using BIM to model their projects for the creation of paper drawings, schedules and specifications. The document creation process is more accurate and faster than CAD. For architects and engineers to be productive they need the objects (building products – doors, windows, equipment, furnishings) that will be included in the design, if they are not available then the designer must create the objects, it is not logical that each firm create their objects.
3. BIM and IPD (Integrated Project Delivery) – the designers, contractors and sub contractors work together to design, layout and detail the project. Construction cost savings in the 10% to 20% range are being reported. At this time most of these projects for owners are unique projects where the team comes together for the single project, the objects and modeling techniques are unique to the project and not standardized for the long term needs of the owner. The owner needs to set guidelines to insure consistency across their projects in the future.

Next Phase – the next few years will find a significant refinement to our practices

4. Detailed BIM – the designers will move away from modeling for paper drawings and towards modeling for construction on all projects. The IPD concept of complete models will become the standard for modeling, even on non-IPD projects, as it is the increased accuracy and completeness of the model that is of tremendous value. The future will be different for AEC professionals, one or all of these conditions will exist:
  - a. Architects and engineers will need to learn more about construction
  - b. A new line of consultants may emerge to advise designers on constructability
  - c. Contractors and sub-contractors will take over the “contract document” phase and architects and engineers will end their work at “design development”.

The cost savings of today’s IPD will be the new “standard of practice”.

## Facilities Management

Once #4 above becomes the standard of practice the construction process will be individually better, but most owners have multiple projects under construction and a few to thousands of properties that are in use. Owners need to look beyond the individual projects. At this time a handful of owners are thinking this far into the future, at some point, they all will.

As long as owners are getting unique models with no consistency for assemblies, objects and property data the tremendous savings from BIM will not be realized. The operations, maintenance and facilities management of owner’s buildings will exceed the original cost of construction in ten to twenty years depending upon the building. A few years ago, I was the CEO of company that created one of the first suites of Internet based facilities software products. I meet with scores of major companies and agencies around the world and the stories I heard were almost unbelievable, for example:

- When an air conditioner breaks in an embassy a person from the US must fly to the site to see what model is on the roof.
- A major worldwide bank did not know how many buildings they had in the UK, the range was 25 to 50.
- A major insurance company ordered 300 chairs for a major meeting, but then realized they could not store them because the storage room at their facility was full with 400 chairs (yes, they could have used them).
- A major automobile manufacturer has a complex of 15 buildings, they move over 100 people a day, they have no idea what they have available for desks, chairs, computers. They are not sure what rooms and cubes are connected to what networks.
- A REIT decided to decrease their portfolio of buildings in several states; they believed it had a value of \$300M. They discovered they had no drawings or photographs, so they sent teams out to survey the buildings, when they were done they discovered they had assets of only \$45M.
- We surveyed all the banks in California for a major worldwide bank, we found several locations where they thought they had two buildings one on First Street and another on Jones Street, what they had is one building at the intersection, with an address on both streets.

When these stories are multiplied over and over again the cost implications are tremendous. Major companies occupy thousands of buildings. Often they hire management companies to maintain, operate, clean and even take responsibility for facilities relocations and rebuilding so the expense may just be a single line item in their profit and loss statement, they do not see the wasted money. I have no doubt that if they had BIM projects of all their buildings, furniture, equipment and employee locations that their savings would be in the 20% to 50% range.

## The Future

5. Integrated BIM – Owners need to start immediately setting standards for their BIM projects. They need to provide the objects that their designers will use, or they need to get the manufacturers that they work with to provide the objects. They need to be consistent across all projects. Standardization on space designs, assemblies and objects and the data attached and associated is critical. The SMARTBIM site ([www.SMARTBIM.com](http://www.SMARTBIM.com)) shows the concept, the Spaces section shows how an owner could create complete models of each of their spaces populated with the equipment and furnishing needed, including services like power, communications, etc. During construction, the BIM project must be updated with changes and substitutions. These steps will insure the downstream value and use of the BIM projects. These BIM projects can be integrated into companies GIS systems. The sooner owners get integrated BIM projects (BIM, IPD, and FM) the sooner they will see unbelievable savings.

## Conclusion

BIM projects and the data most likely touches several departments within your company, 1) architecture and engineering, 2) site selection, 3) operations, 4) procurement, 5) franchising, 6) HR, 7) estimating, 8) FM, and more. We are already seeing departments individually looking into what BIM means to their operations but false starts and misdirection will happen if a collective plan is not put in place. We are also seeing a lot of misconceptions about what BIM can do. Care should be taken to insure you are getting accurate advice or you will believe BIM may do more than it can, or it will be easier to implement than it is.

There are some actions you can take immediately that will have significant value. Start by creating or standardizing on, assemblies and objects and have your architects and engineers use them on all your projects now.

Owners need to understand the total impact of BIM. Put together a committee to bring all that will be impacted together and start to guide your consultants down a path that will save you time and money. Facilities are usually the greatest expense of a company, after employees, and we are now entering an era where the savings can be 20% to 40% on all facility related costs. All companies will do this eventually; the sooner you act the sooner you start saving.

SMARTBIM can help in this process; contact me if you are interested in learning more.

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