Autodesk University 2012

The Value Proposition for Using BIM for Facilities Management

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FM2689 Everyone is being bombarded with information about Building Information Modeling (BIM) for facilities management, but how does it really bring value to your operation? This class will go beyond the hype and use over six years of real-world case studies and experience to explain the real return on investment. We will include examples of how to maximize the value proposition for owners and designers from design through construction and to post-construction applications. After this class, owners will better understand the issues and designers will be able to better sell the value of their BIM services.

Learning Objectives

At the end of this class, you will be able to:

- List several opportunities for using BIM applications for facility management
- Explain the value of BIM during project design
- Identify what is BIM hype and what is BIM expertise
- Calculate the ROI for BIM on a specific project

About the Speakers

Mike Whaley *is the founder and leads the technology group known as TURIS SYSTEMS. Prior to his current role, he spent the first 26 years of his career as an architect, the last six years of this career he has worked with a major construction company (Findorff) leading their Revit implementation.*

At TURIS Systems, he leads collaboration and integration between owner, designer and contractor through the use of technology. Mike's technology initiatives have led TURIS Systems to be an industry leader in the use of construction modeling software. These advancements have improved project understanding, increased productivity and efficiency in the field; and saving projects money.

He has spoken at Autodesk University, Colleges and Universities around the country and AIA conventions. In addition, for the last two years he has been a contributing author on construction applications for the 2011 and 2012 book on Mastering in Revit Architecture.

Josh Lowe *is a graduate of the University of Wisconsin–Milwaukee, where he received a Bachelor of Science degree in architectural studies and a certificate in urban planning. In 2004, Josh joined the J.H. Findorff & Son team, where he is was a construction visualization and integration specialist. TURIS Systems was formed in 2011 as a technology spin off from JH Findorff & son where he is now a Project Lead. He is responsible for integrating trades during construction as well as promoting Lean construction by leveraging the power of building information models in the field to increase productivity. In addition to the utilization of BIM models for projects, Josh also is involved in the research and development of new BIM applications and recently contributed to Mastering Autodesk Revit Architecture 2012.*

Part I

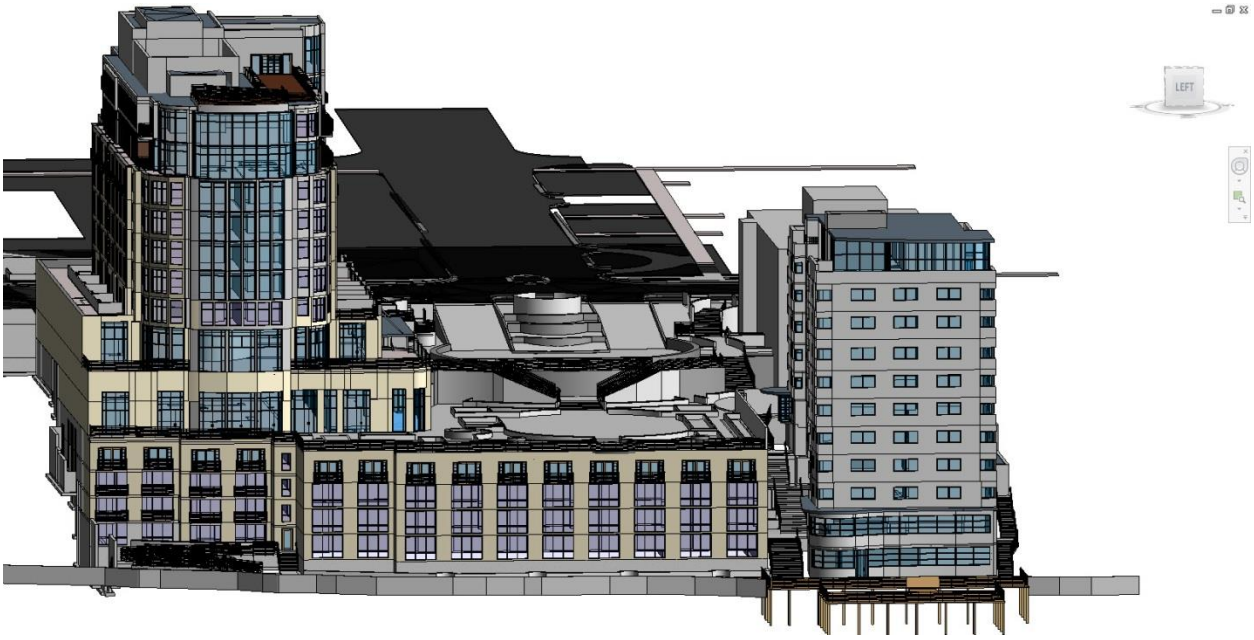
Who we are? / Our background

Over 9 years of BIM experience in A/E/C industry

Over 7 years of BIM experience focused on construction applications

3 years working on BIM in the facilities world

Contributing authors to the 2011 and 2012 “Mastering Revit”



Part II

Glossary of Terms

It is critical to understand the terms and how we are using them for our presentation. There are a lot of ways to describe and use these terms so we will take a minute to define them.

BIM:
What we really want to focus on is the “I” in BIM. This the missing component in many Revit models today.

Value:
1. Relative worth, merit, or importance: the value of a college education; the value of a queen in chess.
2. Monetary or material worth, as in commerce or trade: This piece of land has greatly increased in value.

3. *The worth of something in terms of the amount of other things for which it can be exchanged or in terms of some medium of exchange.*
4. *Equivalent worth or return in money, material, services, etc.: to give value for value received.*
5. *Estimated or assigned worth; valuation: a painting with a current value of $500,000.*

Summary: Value is only value if the end user can use it!

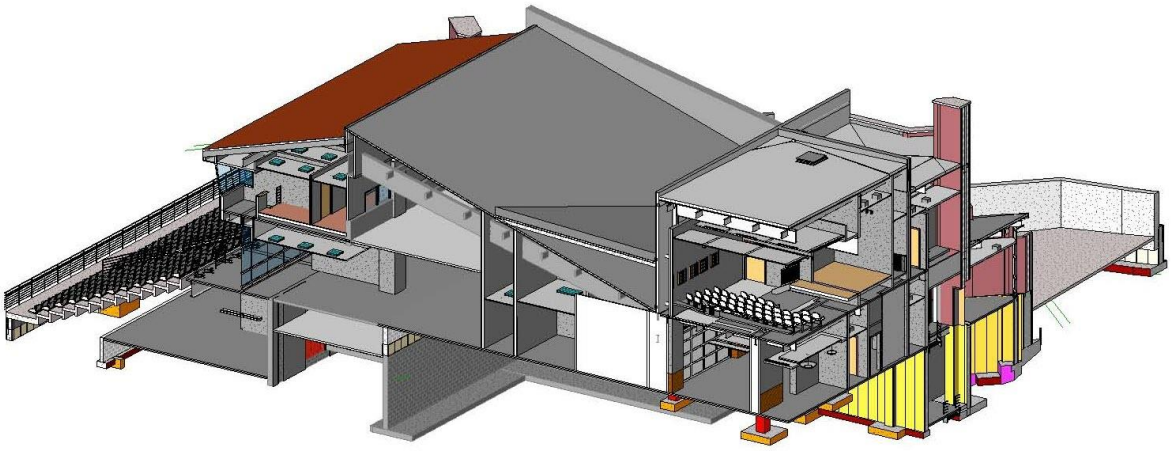
Facility Management:
(From Wikipedia, the free encyclopedia) Facility (or Facilities) management (FM) is an interdisciplinary field devoted to the coordination of space, infrastructure, people and organization, often associated with business services functions such as offices, arenas, schools, convention centers, shopping complexes, hospitals, hotels, etc. However, FM facilitates the business on a much wider range of activities than just business services and these are referred to as non-core functions.

According to the International Facility Management Association (IFMA), facility management is "a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, processes and technology."

For our purposes, "Facility Management" is utilization of structure from design through operations for the life of a facility from cradle to cradle!

Part III

Value Studies



Design

Design is probably the most developed and understood aspect of BIM; with documentation of how it brings value to Facility Management. The power in design is in the applications of BIM as:

- *Visualization Tool*
- *A design tool for improved understanding*
- *Ultimately, when fully mastered and implemented it is a document efficiency tool for the entire A/E/C industry*

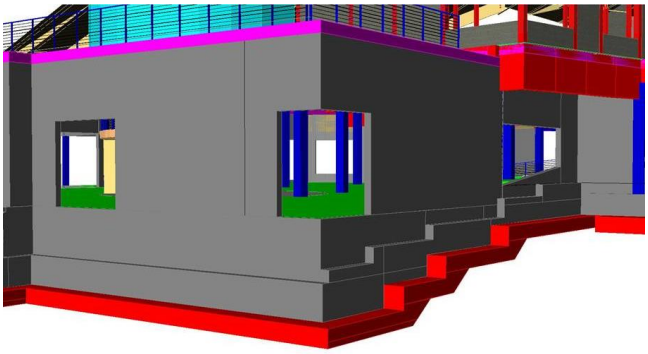
Design produces a wide variety of returns on the investment (ROI) in effect the "Value Proposition", some of those include:

- *Improved owner acceptance of design concepts faster and more efficiently. The power of visualization if a very efficient tool in a 3D world as opposed to 2D plans.*
- *Documentation efficiency is a huge aspect of the Design "Value Proposition" with the full implementation of the power of tools such as families and templates the delivery of a design can be more efficiently delivered.*
- *Quality analysis with the Power of BIM for things like clash detection during design is the third category of bringing value to a project.*

Construction

Recent Autodesk statistics have shown that the growth of software licensing is faster in the construction industry than any other industry. Obviously this must mean that there is a realization that there is value. So where is the value of BIM to construction? Four major areas are emerging:

- *Utilizing BIM to improve the overall process of delivering a building from site utilization, estimating to complicated coordination documentation to improve staff efficiency. Traditionally, construction has been a very waste producing process. BIM brings waste reduction to the construction process. Consequently improving the projects profitability.*
- *Better information presented to the sub-contractors and craftsman in the field means improved project understanding. Improved project understanding and communications equates to improved productivity. Another cost savings!*
- *The power of BIM to assist with safety analysis is an essential tool to contractors. Using the BIM model to test for issues like fall protection provide a valuable resource to the staff in the field.*
- *Finally, the overriding theme of the LEAN discussion is to reduce waste at every aspect of a project. BIM becomes the essential tool to eliminate the need for rework, change orders and countless project delays.*



Virtual

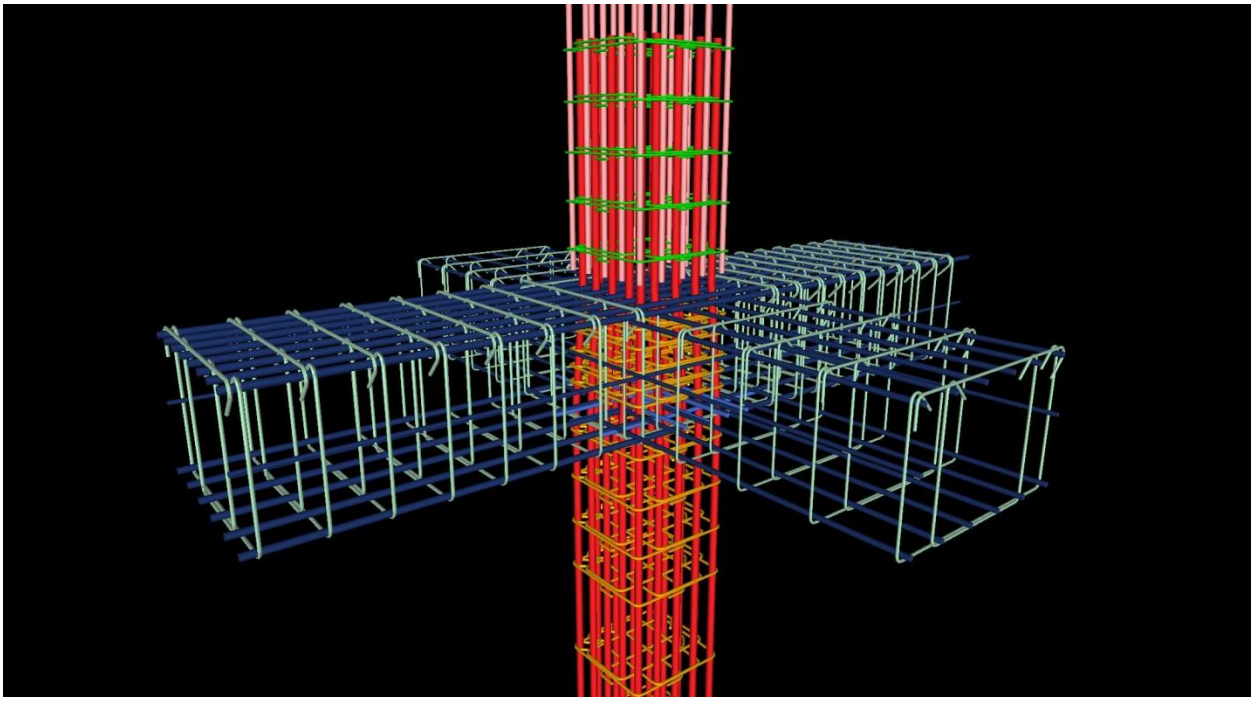
Reality

Case Study #1

On a multi-story building the modeling of rebar in a complicated intersection of a concrete column and beam, clearly demonstrated that the quantity of rebar would not allow concrete to flow through the rebar. BIM allowed this condition to be tested prior to it becoming field condition with materials installed. In the model we could adjust the rebar before it was fabricated or installed saving the project a huge amount of money.

Case Study #2

Using a BIM model of foundations for new $90 million project, a contractor documented all of the foundation lift drawings. These lift drawings showed each individual concrete pour. During the development of these lift drawings numerous questions and details were resolved allowing the project to precede very efficiently. The resulting savings in productivity were significant.



Part IV

Facility Operations

Although many people think about the power of BIM as a design tool, an owner will spend less than 10%- 20% of the total cost of a facility on the design and construction phase. They will spend in excess of 80- 90% of the total cost of the facility after construction. So the use of BIM during this phase of project is essential to the realization of the “Value Proposition” for Facility Management!

The world is going to cloud based mobile applications. If you don’t believe it just look at the explosion in the number smartphones and laptops over the last three years. The next generation, whatever comes after X and Millennium will never know a hard wired phone, computer or access. Now is the time for us to prepare our data for this transition. Unfortunately, we are all still very reliant on stacks of drawings and three binders for our buildings.

So we all know the “super BIM model” can keep it all in one tidy place. Right? I am not so sure this is the best approach.

Look at the smart building and what it can do. No question this is a lot of information and there is value in this this it is what the owners want? And the bigger question is can and how do they maintain this and do they want to?

The real question related around the Value Proposition is what brings the value. And what brings the best and fastest ROI. In the future maybe the “smart building” is what everyone will have, expect and demand. So let’s look at some examples/case studies of what owners really want and need in the models.

Banks:

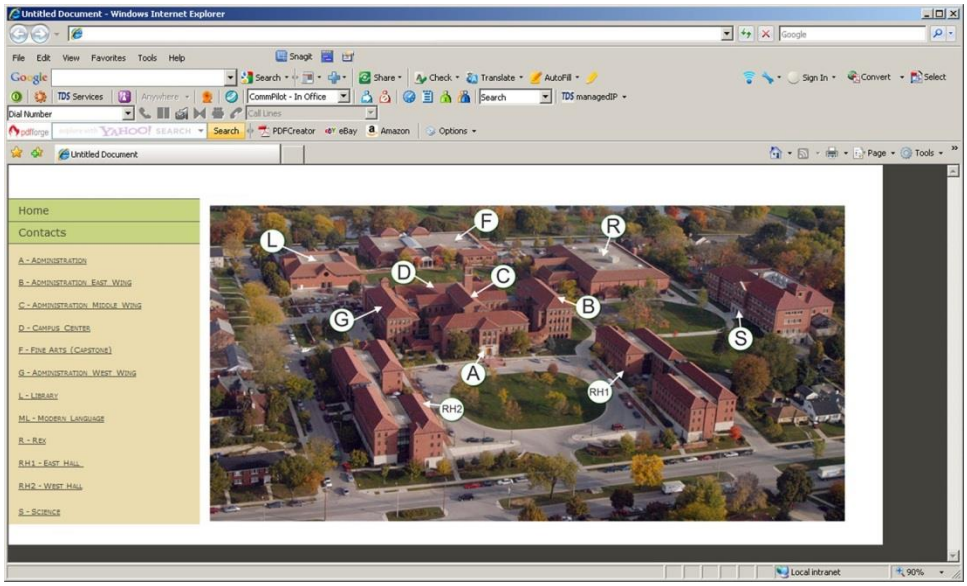
- *Desires of the model:*
  - *Every spaces is an asset and needs to be tracked as such*
  - *Quantities of element that will be bid out for maintenance, such as glazing, landscape materials, hard surfaces*
  - *Maintenance quantities*
  - *Locks and keying*

Colleges:

- *Desires of the model:*
  - *Class room utilization*
  - *Departmental area calculations*
  - *Maintenance information*
  - *Capital improvement data*

Healthcare:

- *Desires of the model:*
  - *Area calculations for medical reimbursement*
  - *Life safety zone documentation*
  - *Departmental area allocations*
  - *Maintenance information by system*
  - *Systems shut off locations*



Implementation

When you get down to it our job is not to model what we want or what we think is Chester the Cheetah COOL! Our job is to develop models that bring value for the life of the Facility Management "Cradle to Cradle".

- *It is not what you want in the model.*
- *It is what the owner needs in the model.*
- *Every owner is different in what they need and want.*

So let's look at how you find that out.

New Hospital Project:
We are working on the development of a new free standing hospital for a client that currently occupies over 2 million square feet of space in their current hospital. One of the goals of this project is to push how we use BIM for total facility management starting at design. Our role as the consultant is to orchestrate this entire BIM effort.

So here is an outline of what we are doing:

The New Hospital is a great opportunity for this healthcare system to reevaluate processes and how information is accessed. It also brings with it great challenges when confronting the status quo.

1. Information Gathering
2. Prioritization
3. Protocol Creation

So in summary here are the eight steps to implementation:

1. Plan the Plan
2. Document Management
3. Persona Development
4. Priority Analysis
5. BIM Protocol
6. Prototype
7. Implementation Plan
8. In-house Training

BIM Implementation Issues:

So why isn't this happening? We see three major factors:

1. *It is a lack of understanding by owners of what the model can do and what they want in a model.*
2. *It is generational; the idea of data stored on a cloud or in a data base can scare some people that have not grown up with this. Questions of: "well where is it? How do I know it is there? How is it protected?"*

3. *The other reason is comfort with how we do things now. The story we tell is of "Bob". It seems he is in every major facility. "Great guy he knows where every valve is in a facility. We need data, we just call Bob! We don't need BIM we have Bob"*
    a. *So when does Bob retire?*
    b. *Does Bob have a plan to pass on his knowledge?*
    c. *How secure is Bob?*
    d. *Kind sounds like the same questions we hear about cloud data storage?*

Implementation planning to get "Value":

So we need to get a plan in place so that we can capture value!

For design and construction, the plan is pretty well started. But we need to come up with a way to tell the A/E what we want documented. We need to decide who is the correct person to load the data and when. I would claim that to a large degree data loading should not be done by the design professionals. The correct tool to develop the answers to these questions is a BIM Protocol and Procedures Manual specific to your organization and needs. There are some templates and examples out there, but our experience is they need to customize based upon your staff and your need.

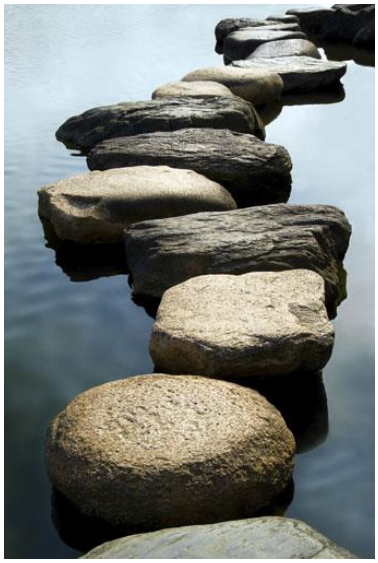
Part V

BIM Bunk & Hype

- Ignore the “cool”
- Ask about Process more about process than software.
- Owners need to prioritize their needs
- Ask about staff certification and ongoing training
- Owner need to avoid hype themselves don’t get hung up on the visuals
- Manage expectations, lots of “stuff” is just clutter

Part VI

Summary



Learning Objective 1

Design Opportunities

- *Visualization*
- *Understanding*
- *Document Efficiency*

Construction Opportunities

- *Graphical interface for planning*
- *Productivity documentation*
- *Delivery process improvement (pre-fabrication)*

Facility Operations Opportunities

- *Information access*
- *Facility specific component documentation*
- *Asset management at the facility level*

Learning Objective 2

Design Value

- *Design efficiency*
- *Production efficiency*
- *Quality improvement*

Construction Value

- *Waste reduction*
- *Productivity enhancement*
- *Safety*
- *Lean process tool*

Facility Operations Value

- *Access to information*
- *Process improvement tool*
- *Staffing efficiency tool*

Learning Objective 3

BIM Hype!

- *Process not software*
- *Beware of the Cool Cheetah!*
- *Prioritize the users value*
- *Manage Expectations*

Learning Objective 4

ROI

- *Visualization*
  - *Design understanding*
  - *Coordination*
  - *Marketing*
- *Productivity and efficiency to an industry that needs it!*
  - *Field information*
  - *Quantification*
  - *Productivity*
- *Access to data!*
  - *Facility operations efficiency*
  - *Process improvement*
  - *Document accuracy*