Small Firms in the Big BIM World

Jerry Marselle
Director of Technology – SMBH Inc.
We've heard all about the successes that companies have had jumping into Building Information Modeling (BIM) using Revit software. But more often than not, these experiences come from the big players—large companies with hundreds of employees and multiple offices worldwide. But what about the little guy? Firms of 15 to 20 people, or even less. Can Revit software benefit them? We will dive into the special challenges that are faced by smaller firms wanting to take the leap to Revit software, and we’ll look at how living in the BIM world can help them to not just play, but also thrive, alongside the larger companies.
Key learning objectives

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

- Understand the importance information plays in the BIM Process
- Recognize the time and money involved in migrating to Revit
- Work in the larger collaborative world, not just in my drawings
- Provide larger firms with the high-quality models they need, while still being profitable
Understanding
Why do we need BIM?

“A study was commissioned to identify and estimate the efficiency losses in the U.S. capital facilities industry resulting from inadequate interoperability. The study included design, engineering, facilities management and business processes software systems and redundant paper records management across all facility life-cycle phases. Based on interviews and survey responses, $15.8 billion in annual interoperability costs were quantified for the capital facilities industry in 2002. Of these costs, two-thirds are borne by owners and operators, which incur most of these costs during ongoing facility operation and maintenance.”
REVIT IS NOT
What is BIM?

Building information modeling (BIM) is a process involving the generation and management of digital representations of physical and functional characteristics of places. Building information models (BIMs) are files (often but not always in proprietary formats and containing proprietary data) which can be exchanged or networked to support decision-making about a place.

What is Revit?

Autodesk Revit is building information modeling software for architects, structural engineers, MEP engineers, designers and contractors. It allows users to design a building and structure and its components in 3D, annotate the model with 2D drafting elements, and access building information from the building model's database. Revit is 4D BIM capable with tools to plan and track various stages in the building's lifecycle, from concept to construction and later demolition.

What does this mean?

- BIM IS A PROCESS! It is about how we gather information, how we use that information, how we convey that information to each other, and how we work together as a team.

- AUTODESK REVIT IS A BIM TOOL! It is a piece of software that we use to leverage that process. And just like any tool, it can be used incorrectly.
What is the BIM Process?

- No Single Definition
- Model centric
  - All about having access to models
  - Not all models are the same
- People drive the creation of high quality models
  - Everyone on the team is the backbone of the process
  - Keep the lines of communication open
The most important piece

NFORMATION B I M
Changes Workflow
The Paradigm Shift
Does BIM Deliver?
Any Star Wars fans in the house?
The Letterman Digital Arts Center, San Francisco, CA

- All team members were involved in creating the BIM models: LDAC Management Team, Architects, Structural and MEP Engineers, contractors and fabricators – even George Lucas himself
- Weekly meetings to check progress and correct any potential problems
- Used the BIM model to simulate emergency situations
- Over 200 design and construction conflicts were identified, most of which were corrected before construction
- Process resulted in an estimated savings of over $10 million on this $350 million project
What about the rest of us?
SMBH Project Study

- Ohio School for the Deaf/Ohio State School for the Blind

- Original Project
  - 2 Academic Buildings over 150,000 sq/ft each
  - Entire project completed in Revit over 1 year
  - Small Profit
  - Total Construction cost ran over budget
SMBH Project Study

- **REDESIGN!!!!!**
  - One building completely redesigned, second building half redesigned
  - Schedule compressed to 6 weeks
  - One given 25% of our original fee

- **PROFIT = 49%!**
SMBH Project Study

The Difference

- Created a ‘team’ of Engineer and BIM Specialist
- Shared the lines of communication
- Shared responsibility for project delivery
- The process was FLEXIBLE, not rigid.
The Process

- Team worked together to decide who was the best to perform each task
- Main Goal – Reduce Redundancy
- COMMUNICATION
- Process decisions were made without the bounds of any past or current processes
- The technical side of how Autodesk Revit was used was not tied to any past standards
SMBH Project Study

- What we learned
  - Communication is key to reducing redundancy
  - Communication has to be between everyone
  - Internal process had to change
  - Integrate our process with client’s process
  - Tell the client when we need info
  - Ask the client when they need info
  - Revit is a powerful tool – use it, don’t force it.
SMBH Project Study

Summary:
- We focused in mostly on PROCESS changes, not just on technical tips and tricks
- Changed information flow, duties and communication paths
- Used Autodesk Revit as it wants to be used
Money, Money, Money, Money, Money, Money – Mooooonnneeeyyyyyyyyyy
Computer Upgrades

AutoCAD Machine: $1000-$1500

Autodesk Revit Machine: $3000
Network Upgrades

- Need at least a 1gb/sec network
  - 10gb/s, 40gb/s, 100gb/s are soon to be realities
- Storage Space
  - You need lots!!!
  - Be sure your storage system is expandable
Miscellaneous Technology
Training

- An Autodesk Reseller that offers training programs, both in and out of house (recommend)
- Books - there’s lots out there
- Videos - There are different training courses you can get on video, or download from the web, which are a step by step teaching you the Revit Fundamentals
- MOOCS, Lynda.com, Youtube.com - You can learn a lot from web videos
- Mentor – you need someone that you can ask questions to and who can help vet ideas. Someone experienced, that you can trust. (More than one!)
NEVER STOP TRAINING!
NEVER STOP LEARNING!
There are dangers in not recognizing these costs

- Every one of the previously mentioned costs feeds the BIM Process

- ‘Skimping’ on, or even flat out ignoring them will make you less efficient and a hindrance on the project
Time Investment

- Setting up new standards
- Define workflows
- Create reusable content
- Create new templates
- Use your early projects for this content
You need a BIM CHAMPION!!
BIM Champion

- Sole purpose is to understand BIM and master Revit
- Must be excited about what BIM and Autodesk Revit can bring to your firm
- They will have to wear many hats:
  - Tech support
  - Advisor
  - Problem solver
  - Marketer
  - Liaison
  - Bridge builder
BIM Champion

- The firms we work with will judge our entire firm by the BIM Champion
- Must be confident in their abilities
- Comfortable with the BIM Process
- Represent the firm PROFESSIONALLY
Working in the Larger World
Building Relationships

- Outside of the office
- More than just attending required meetings or a phone call or email
- Must be ACTIVE part of the process
- Be flexible, willing to hear everyone’s opinions
- Don’t be afraid to make our opinion known and ask for what we need

- BIM Champion must develop a relationship with their counterpart
Building Relationships

- Inside the Office
- Workflows will change
- Office dynamic will become more collaborative
- Will need to develop new standards and processes

- BIM Champion must have a team building philosophy
- Will encounter roadblocks and challenges
Building Relationships

“The Roundtable”

- Partnered with an Architect and an MEP firm
- Monthly, 2-3 hour meeting, where we could discuss all things BIM and Autodesk Revit
- Discussed issues facing our firms in general
- At times the meeting was technical in nature, sometimes business oriented, sometimes just “philosophical”
- Didn’t worry about sharing any trade secrets or someone gaining some kind of ‘edge’
- Our interest was only to help us work better with each other
Give the People What they Want!!!
Quality Work
Accuracy

- Accuracy is of the **UTMOST IMPORTANCE**!
- Avoid the “close enough” mentality
- Without accuracy, Revit becomes a drawing tool
  - Counterproductive
  - Costs the entire team time and money
  - Coordination will be worthless
- In the future, the model will become our deliverable
  - Start thinking in those terms now
Accuracy
Model What is needed

- This can vary per project
- Level of Detail (LOD) Standards is a good guide
  - LOD300(350) is ideal for a design intent model
- Discuss this EARLY!
- Keep an open mind
  - You may have to model for the Design Team, not just yourself
- Reduce Redundancy – define ownership
Coordinate Often

- Determine that frequency early and STICK TO IT!
- Not simply a model share, need communication about the model
  - What has changed
  - What we’re doing
  - What are our goals going forward
  - Without communication, we’re flying blind
Defining Standards - tips

- Use Revit Content as much as possible (especially for model elements)
- Create a library of symbols/reusable content
- Create a standards manual
  - Model Standards
  - Drawing Standards
  - Project Set-up Guidelines
  - Collaborate
  - Worksharing
Defining Standards - tips

- **Template Guidelines/Best Practices**
  - Keep the template as clean as possible
  - Include MOST COMMON types for model elements
  - Include ALL symbols, whether “Out-of-the-box Revit” or custom created
  - Setup standard schedules
  - Include all Dimension and Test Families
  - Create Drafting Views for Standard Details
  - Load all Title Blocks
  - Create View Templates for different types of views
Defining Standards - tips

- Legacy Standards vs “The New Way!”
- Revit provides a fair amount of flexibility in making drawings look a certain way
  - Very difficult to make drawings look 100% like AutoCAD
- What’s important, the look or the functionality?
In Summary:

- The BIM Process thrives on information and communication
- Count ALL of the costs, not just software, and be willing to make the investments
- Build as many relationships as we can
- Accuracy is the key to building high-quality models that saves us time and money
How did I do?

- Your class feedback is critical. Fill out a class survey now.
- Use the AU mobile app or fill out a class survey online.
- Give feedback after each session.
- AU speakers will get feedback in real-time.
- Your feedback results in better classes and a better AU experience.
More Questions? Visit the AU Answer Bar

- Seek answers to all of your technical product questions by visiting the Answer Bar.
- Open daily from 8am-6pm Tuesday and Wednesday; 8am-4:30pm Thursday.
- Located outside Hall C, Level 2.
- Meet Autodesk developers, testers, & support engineers ready to help with your most challenging technical questions.
Questions?