Implementing Information Modeling in a Large Firm

Jennifer Taylor – Dewberry
Seth Meyrow - Dewberry

B01410

Learning Objectives

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

- Create an implementation roadmap for your company

- Evaluate existing resources

- Collect feedback by exposing a sample group to new technology

- Build an internal support structure

About the Speakers

Jennifer Taylor, Director of Virtual Design

jtaylor@dewberry.com

As Dewberry's Director of Virtual Design, Jennifer Taylor is responsible for leading the strategic direction for the implementation of BIM throughout the firm for both horizontal and vertical practice areas. Jennifer has not only developed internal technical plans for implementing standards and corporate wide training objectives, but has also worked closely with Clients to help them understand the use in project work and how it's use translates to more efficient building methods. Additionally, Jennifer's expertise allows Dewberry the value-added service of working with Clients to develop the vision for how the Client will be able to utilize the technology after the project is completed.

Seth Meyrow, Virtual Design Analyst

smeyrow@dewberry.com

Seth has over a decade of experience with Autodesk design software. Until 2005, he taught a variety of courses at the high school and college level that incorporated flagship programs such as AutoCAD, Architectural Desktop, Inventor, and Revit. In 2006, he made the transition from education to the building engineering industry and advanced from CAD Operator to BIM Manager by leading Revit implementations at two different engineering firms.

In early 2010, Seth transferred from one of Dewberry's satellite offices to the Virtual Design Group to assist in developing an implementation plan and company-wide support structure for

BIM technology. He authored and delivered a multi-tiered instructional program for Revit MEP, Revit Structure, and Navisworks. Seth is currently involved in training and implementation efforts for Civil 3D and AutoCAD Plant 3D. He is a regular presenter and Advisory Board Member of the RevitDC user group and is considered one of the metropolitan DC area's top Revit MEP experts.

Evaluate

Strategies for Evaluating
Use the following strategies to evaluate your firm's readiness to implement new technology. Spend time with your groups and business units, identify the MVPs, and strive to understand their workflows, local markets, and types of deliverables.

- Participate in Autodesk's beta testing program
- Participate in conferences and workshops – AU, RTC, RUGs
- Model an old project using new software and workflows
- Identify potential subject matter experts (SMEs) in each office – who are your tech MVPs?
- Determine training strategy – Will you depend on outside consultants for all of your training, or can you train a couple of current employees to meet the internal demand?
- Identify the needs of your clients, both internal and external. What does your external client need in a deliverable, and what do your internal clients need in order to deliver it?

Cost Analysis (Hardware & Software)
Technology implementation can be costly. Make sure that you are aware of all potential costs, both current and future. Implementations can be designed as a standardization method for firms that are using multiple applications. If this is the case, emphasize this as a cost-saving measure to upper management.

- Yearly software licensing
- Hardware – are your workstations sufficient, and will they be sufficient in two years?
- Companion products – what is included in your license and what isn't
- Training
- Unscheduled upgrades

Client Requirements (Present & Future)
During the past five years, several prominent clients have been beefing up the model component of their required deliverables. Some clients simply require a model in addition to drawings and others have specific templates that they provide and graphic standards that they expect us to use on the job. Check to see if your clients have these types of requirements, and if so, plan accordingly when creating company templates, content, AutoCAD export setups, etc.

- GSA
- USACE
- U.S. Department of Veterans Affairs
- Local Government / Municipal
- State DOTs

Support Structure – Evaluation Phase

A technology support structure is a critical part of the implementation. Tech-savvy and forward-thinking individuals in each office should be identified and prepped for a minor role in local, end-user assistance. Implementation managers should plan to provide a more comprehensive level of support by identifying (and predicting) the company's specific needs. Create a foundation by establishing:

- Company Templates
- Content
- Graphic Standards
- Typical Details

Additionally, you will want to consider:

- Support of multiple software applications – Is it necessary, and do you have the expertise already?
- Support of multiple disciplines – Are you a multidiscipline firm, or an architectural studio?
- Feedback methods – Are you willing to entertain committees or focus groups?
- What about CAD Managers?

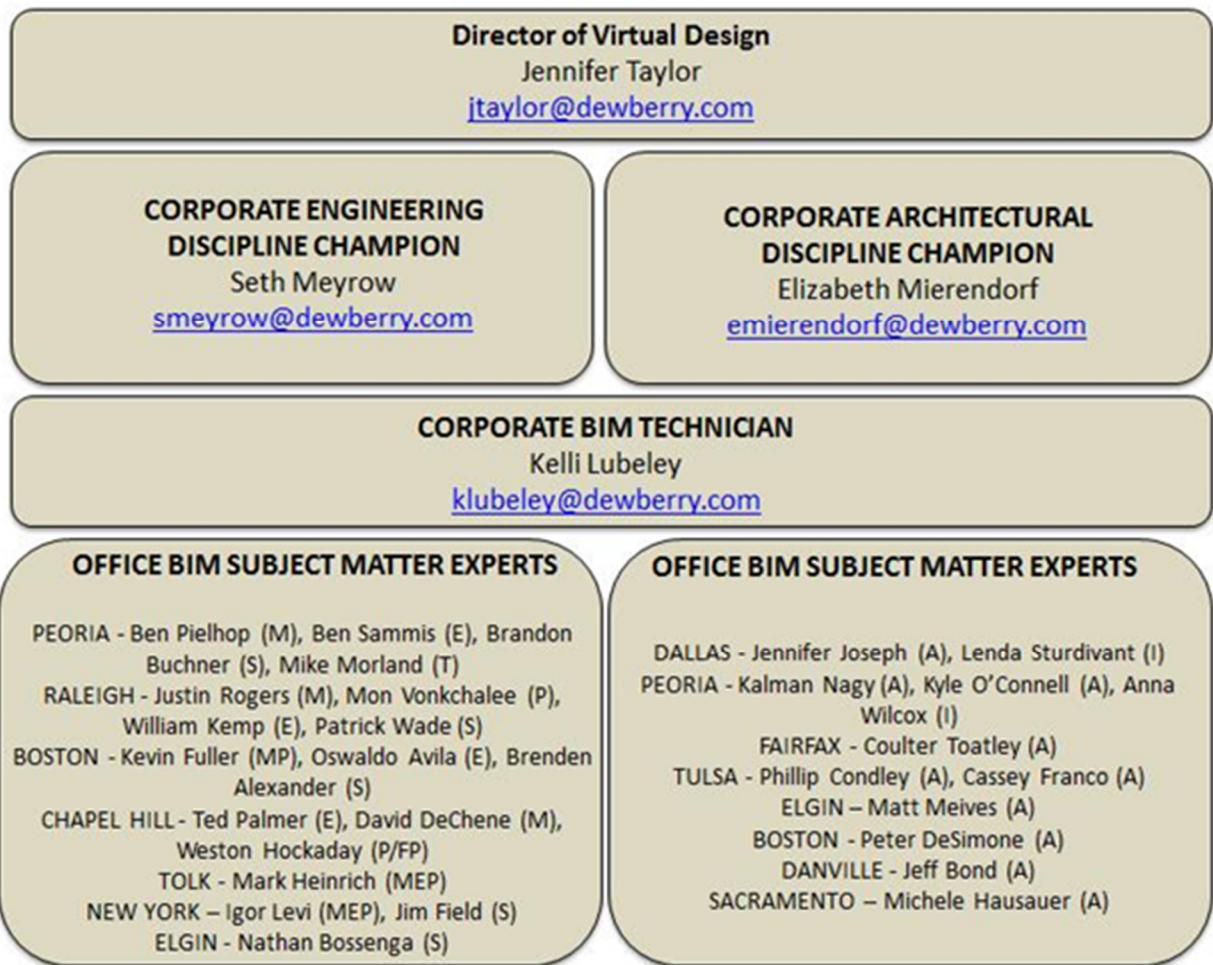# "Implementation REQUIRES due diligence and it is NOT billable work."

Adopt

Create a Support Structure

Your support structure is very important in your implementation process. Multi-discipline firms benefit from an internal support structure and require expertise in each discipline. First identify what expertise is needed. This will allow you to structure your team to provide the most bang for your buck. At the corporate level it is best to have a champion for each main discipline (architecture, structure and MEP). This gives leverage for directed support in each.

Next identify technical MVPs within each office. Each office MVP will stand as the point of contact for all BIM-related issues for project teams operating from their location. In addition to

maintain communication with the corporate champions, the MVPs will also be the office's first line of defense in troubleshooting problems that may occur during the creation of a building model. Should the problem not be able to be resolved locally and in a timely manner, the MVP should be responsible for relaying the information to the corporate champion for further examination.

MVPs should also be expected to ensure that project teams are adhering to company standards. They will assist with setup and maintenance procedures and provide constructive feedback to corporate champions as it pertains to workflow and best practices.

Director of Virtual Design
Jennifer Taylor
jtaylor@dewberry.com

CORPORATE ENGINEERING DISCIPLINE CHAMPION
Seth Meyrow
smeyrow@dewberry.com

CORPORATE ARCHITECTURAL DISCIPLINE CHAMPION
Elizabeth Mierendorf
emierendorf@dewberry.com

CORPORATE BIM TECHNICIAN
Kelli Lubeley
klubeley@dewberry.com

OFFICE BIM SUBJECT MATTER EXPERTS

PEORIA - Ben Pielhop (M), Ben Sammis (E), Brandon Buchner (S), Mike Morland (T)
RALEIGH - Justin Rogers (M), Mon Vonkchalee (P), William Kemp (E), Patrick Wade (S)
BOSTON - Kevin Fuller (MP), Oswaldo Avila (E), Brenden Alexander (S)
CHAPEL HILL - Ted Palmer (E), David DeChene (M), Weston Hockaday (P/FP)
TOLK - Mark Heinrich (MEP)
NEW YORK – Igor Levi (MEP), Jim Field (S)
ELGIN - Nathan Bossenga (S)

OFFICE BIM SUBJECT MATTER EXPERTS

DALLAS - Jennifer Joseph (A), Lenda Sturdivant (I)
PEORIA - Kalman Nagy (A), Kyle O'Connell (A), Anna Wilcox (I)
FAIRFAX - Coulter Toatley (A)
TULSA - Phillip Condley (A), Cassey Franco (A)
ELGIN – Matt Meives (A)
BOSTON - Peter DeSimone (A)
DANVILLE - Jeff Bond (A)
SACRAMENTO – Michele Hausauer (A)

"Managing" your managers
Upper management understanding and responsiveness will be a big part in implementation. The BIM process will challenge the way your firms business process has been in the past. Management understanding of what will change and how it will change is key. It is a good idea to thoroughly inform management on the following topics:

- Education – What is BIM, what does it mean and what can it do?
- Benefits of BIM – how will this process benefit your firm?
- Workshare splits – how will offices in different geographic areas work together? This will be very different than in the past. Make sure management understands this at marketing stages of a project.
- BIM Concepts – provide definitions on concepts such as coordination, clash detection, cost analysis, scheduling, sustainability, visualization, programming, space validation, 4D phasing, building system analysis, digital fabrication, energy analysis, design reviews, etc.
- Contracts – how do contracts change? Provide and explain AIA E202, does your company have a BIM Disclaimer, how does phasing change now?
- Fee Structure – Phase changes are different within the BIM process. Much of the work will be done in the beginning stages of the project. Help your managers understand how that affects the fee structure.
- BIM Project Team Structure – Understanding the importance of Model Manager on BIM projects is a must for managers to understand.
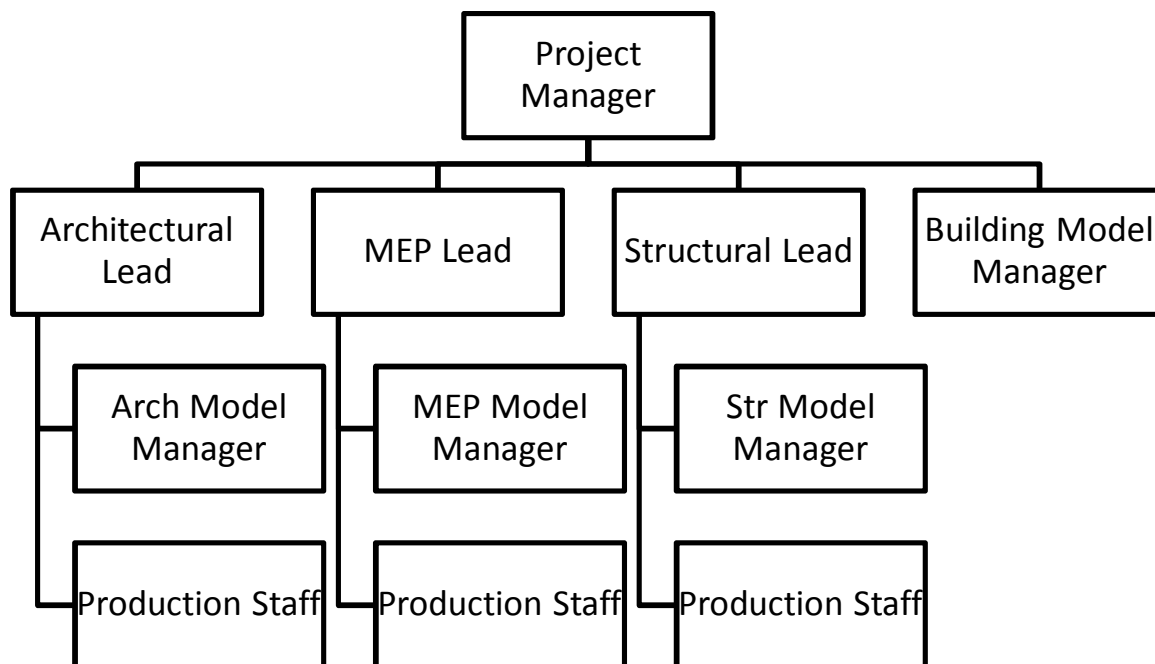
- Model Manager Responsibility – Help management understand the importance of managing models and who the responsibility falls upon. Each project should identify an overall building model manager. The overall building model manager should be required to have knowledge of how building systems integrate into a building. Responsibilities should include some of the following:
  - Prepare BIM Execution Plans
  - Aggregation of all building models from all disciplines

- ▪ Regular interval clash detection with reports distributed
- ▪ Review quality and accuracy of all models

Additionally, each discipline that is responsible for contributing modeling content should assign a model manager to the project. The model manager from each party should have a number of responsibilities including:

- ▪ Transferring modeling content from one party to another
- ▪ Validating the level of detail and controls as defined for each project phase
- ▪ Validating modeling content during each phase
- ▪ Combining or linking multiple models
- ▪ Participating in design review and model coordination sessions
- ▪ Communicating issues back to the internal and cross-company teams
- ▪ Keeping file naming accurate
- ▪ Managing version control
- ▪ DAILY AND WEEKLY MODEL MAINTENANCE
- • BIM Project Kick-off Meetings – IMPORTANT FOR EVERY PROJECT! Provide documents such as BIM Execution plans, collaborative processes, model planning, model content and Level of Development for discussion in kick-off meetings.

Standards, Standards, Standardize!!

The key to successful implementation and support is STANDARDS. It will be important to work with your companies Standards Committee to make sure the software reflects your standards. Identify and standardize the following:

- • Templates – Architectural, Structural and MEP templates for Revit applications
- • Single, centralized library of content – this will allow for all offices within your company to have access to all content created and provided.
- • Single Shared Parameters File
- • Discipline Specific Typical Detail Library – converted.
- • Discipline Specific Schedule Library
- • Standard Symbol Legend

Project Planning

As mentioned above, planning for your projects and having kick-off meetings for teams to understand process moving forward is extremely important. As part of your implementation process, create the following documents to help in the planning process for your teams:

- • BIM Execution Plan – this document should allow for teams to plan for collaboration process mapping, project phase milestones, modeling plans, planned model format, responsibility and version, model components, file naming structures, precision and dimensioning, detailed modeling plans for phases, analysis planning, analysis models, clash detection processes, and as-built modeling planning.

- Coordination Documents – these documents should be separate and include a detailed description of how the project process should be managed.
    - Level of Development worksheet – show definitions of each Level (100 – 500) and inform the team at which level they will be modeling at each phase of the project. This will help keep over-modeling to a minimum.
    - Element Responsibility matrix – help teams to understand what elements within the model will be their responsibility. This is helpful on items such as light fixtures.
    - Scoping Documents – these documents will help in understanding what reality within the modeling process is. Scoping documents should clearly define what is expected of each discipline model for integration and what will and will not be provided for each discipline.
    - "Managing your Manager" will be necessary during this process and helping them understand the tactics defined in the kick-off meeting documentation will smooth the process. After a few projects, all involved with start to fully understand what is expected in planning BIM projects and support will lighten.

Training

For large companies, it is best to have your training 100% in-house. This keeps all training customized for your company templates, standards and workflows. It will be very powerful when your users get back to their desks and utilize exactly what they were trained on. When writing training curriculum, make sure you understand the needs of your company and project teams. Large multi-discipline firms at minimum will need the following courses for production advantages:

- Revit Architecture – Basic and Advanced
- Revit Structure – Basic and Advanced
- Revit MEP – Basic and Advanced
- Navisworks
- Civil 3D – Basic and Advanced
- Project Management Training – utilize the information in the "Managing your Manager" section
- Model Management Training
- New Hire Training – this will be a never-ending process. Create the new hire training to adhere to your company. This could include an online course for users with Revit experience or a dedicated quarterly course for all new hires.

Centralize YOUR Resources!

All of your development should be compiled into one centralized resource for users and managers to easily access and navigate. All created documentation should be included as well as standards, workflows, training curriculum, etc. Online resource shops allow multiple

geographic locations to share and gain information effectively while allowing your support staff to refer users to the development created.

"BIM and Pizza"
The implementation process for large firms is so complex with information that communication is key. Get to know your users, understand their frustrations and help them be a part of the process. Bribing with food and drink is a great way to get everyone in the same room for a discussion. Inform everyone on your strategy, what expertise your team has and what their capabilities are. Communicate to them where you are in the process and where you are going.

"BIM Berry"
It is very important to recognize users, project teams, managers, etc. who are embracing the changes you are making. Awards, certificates and/or monetary encouragement help the "human factor" of implementing changes. BIM creates a fundamental change in the way we do business. Encouragement for progression and involving everyone in the process will greatly advance your progression.

"The "human" factor is just as important as the "technical" factor."

Maintain

Implement Maintenance Plan
Implementation is under way at your firm. Planning and adoption strategies have been executed and it is time to determine how to best keep up the momentum (and the morale).

- Lessons Learned / Model Audits
- Revisit Standards
- Advanced & Expert Training
- Refine Support Structure
- Cost Reducing Strategies
- Share Your Success

Lessons earned / Audits
Standardize the way you audit models. Create a set of criteria that can be applied to models from all disciplines which incorporates a wide variety of workflow topics, from Project Browser cleanliness to text height to in-place families. Make sure your users know what you will hold them accountable for and use the same criteria for every project.

- Distribute to entire project team, not just modelers
- Refer to past projects in audits and highlight areas of improvement

- Spend time with Project Manager to ensure that they understand issues/areas of concern
- Hold a round table discussion or conference call with project team to discuss audit

Revisit Standards

You will discover that some of the standards that were put into place during planning and adoption phases need to be tweaked. Create a discipline focus group to get issues and possible resolutions on the table.

- Focus group should include multiple offices to increase differing perspectives on issues discovered
- Focus group should be given a time limit to resolve issues
- Determining resolutions should be a democratic process (focus group-level, not company-level)
- Revisions to standards based on group's decisions
- Update standards and inform all users

Advanced and Expert Training

Users will discover additional capabilities of the software. They will also start asking questions about how to leverage the program to make their jobs easier. Take advantage of this situation and make sure that you are able to nurture it by offering a higher level of training.

- Add-ins
- Analysis programs
- Advanced techniques
- Encourage users who are comfortable with modeling workflows to start focusing on information

Refine Support Structure

Modeling technology is part of many industries, not just architecture and building engineering. If you work for a multi-discipline firm, visit the other branches of the company and find out where they are headed. You may find that support for other branches, such as Infrastructure or GIS, may be best handled by the team you've already put together. Think about what you need to support them properly and determine who you need to hire. Another option is to transition an existing support person into a new role and hire someone to take over for him or her. Always be thinking 2-3 years ahead.

- Make sure you have who you need now
- Think about who you will need in 2-3 years
- Hire the right people
- Be uncompromising on skill set and ability to communicate

Cost Reduction Strategies

During the maintenance phase, there will be opportunity to reduce costs associated with the implementation. These will vary depending on size of the company and scope of the implementation.

- Centralize the content creation service – By keeping content creation tasks out of project teams, it eliminates any project hours spent building content. This ensures that project fee is not eaten up by people who are fumbling around in Revit's Family Editor.
- Maintain a single content library. Your company's content, wherever it resides, will need to be managed on some level by a human. Multiply the locations and libraries and you are multiplying the work required to maintain them.
- Continue to promote internal training efforts. Have your trainer travel to office instead of vice versa. When a new application appears on your radar, secure quality training for your trainer instead of signing up 12 people for an external course.
- Encourage offices to "book you" for the week of a major deadline. Be on-site to make sure things keep moving and that the project goes out the door. This should reduce last-minute panics that result in people clocking overtime when they should be at home sleeping.

Share Your Success!

Explore opportunities to share your success and promote your company. If your firm has a marketing or communications group, work with them to "get the word out." The internal group responsible for the implementation should be involved in user groups, Autodesk feedback activities, and should attend conferences whenever possible.

"Technology is a moving target, maintaining equals progressing. Learning FROM the project is just as important as learning ON the project."