OCTOBER 2013

BUILDING A WORLD OF DIFFERENCE

CAD MIDWEST TECHNOLOGY EXPO

RAPID VISUALIZATION IN REVIT
WE’RE BUILDING A WORLD OF DIFFERENCE. TOGETHER.

- Founded in 1915
- Global workforce of more than 10,000
- Employee-owned corporation
- $3.3 billion in annual revenues in 2012
- More than 110 offices worldwide
- Completed projects in more than 100 countries
- Conducts 7,000+ active projects globally at any one time
INTRODUCTIONS

Dave Willard – BIM Coordinator, Water
Black & Veatch Corporation

For the past 25 years, Dave has focused his efforts on visualizations and the implementation and development of new technologies, workflows and best practices for both the Civil and Architectural/Engineering industry.

Since 2000, Dave has led BIM implementations efforts in several firms representing multiple industries, and has contributed to the development of various industry related technologies emerging in the market today.
PROJECT PORTFOLIO

BIM Project Portfolio:
H&R Block Headquarters – Kansas City
IRS Campus – Kansas City
Sprint Center – Kansas City
Hammons Field – Springfield, MO
Power & Light District – Kansas City
Mizzou Arena & Practice Facility, Univ. of Missouri – Columbia, MO
Navy-Marine Corps, Memorial Stadium – Annapolis, MD
West Edge Development – Kansas City
49ers Football Stadium – San Francisco, CA
San Diego Airport Expansion – San Diego, CA
LAX International Airport Expansion
Terre Haute Water Treatment Plant – Terre Haute, IN
GSA BIM As-Builts
Sacramento Regional Wastewater Treatment Plant – Sacramento, CA
SR-99 Alaskan Way Tunnel - Seattle, WA
Sacramento Regional Advanced Wastewater Treatment Plant

Industry Technology Contributions
M-Six Veo Platform – Cloud based Construction Sequencing Toolset
SkyBIM – Advanced Cloud-Based Cost Estimating and Field Tools
Mastering Revit Training Guide- Revit Architecture 2011
A FAMILIAR PROJECT SCENARIO?

Your boss tells you on a Monday afternoon that you have a preliminary design approval meeting at 8:00am Wednesday morning for client “X”.

The target is to fill the walls of the meeting room with plans, elevations, sections & renderings, and gain approval on your proposed preliminary design.

You immediately go into shock and start gathering all of the resources you’re going to need to pull off a miracle.

- Designer
- Interior Designer
- BIM Modeler
- Visualization Specialist
<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
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<tbody>
<tr>
<td>Monday</td>
<td>4 HOURS - Your Designer spends coming up with an idea, which in turn is relayed to your BIM Modeler</td>
</tr>
<tr>
<td>Tuesday</td>
<td>10 HOURS - Your BIM Modeler deciphers the hand sketches given to him, builds the Model, immediately exports camera views out to be used by the Interior Designers, then generates plans, elevations and sections. (don’t forget the back and forth needed with the designer).</td>
</tr>
<tr>
<td>Tuesday</td>
<td>2 HOURS - Your Interior Design department spends coming up with a material palette that will be used in the renderings</td>
</tr>
<tr>
<td>RED-EYE SHIFT</td>
<td>8 HOURS - Your Visualization Specialist digest the model someone else built, scans all the materials in and begins the process of lighting, texturing, and rendering views in 3d Max.</td>
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**GUESS WHO GETS TO WORK ALL NIGHT?**

**24 HOURS!**
THE EFFORT PRODUCED WHAT?

A meeting room with these images pinned up on the walls:
Your client (CEO of Company “X”) is immediately stricken with fear by the bold colors you’ve chosen for their new office. Apparently magenta and yellow, when adjacent to each other result in a poor choice of colors.

Within the first 5 minutes of your meeting, the client is in “shut-down” mode, unable to look past the brightly colored walls, and unable to have a clear understanding of the space you decided.

“Magenta and Yellow together...really?”

FAILURE!
THE RETURN ON YOUR INVESTMENT?

1. Your Client’s first impressions of your design were lower than you hoped for.
2. Your Visualization Specialist just worked all night generating photorealistic renderings which might be beautiful in your mind, but will never again be shown.
3. Someone wasted hours selecting a material palette too early in the design process, of which just masked the “Truth” of your design. BTW...you were verbally schooled over magenta & yellow being a poor choice.
4. Your client didn’t give their stamp of approval, and...
5. At the end of the meeting, the client request that you provide more rendering perspectives of the other areas, using different multiple colors/textures combos...adding another 20 hours to your level of effort before your client hands you approval on the design.

“THAT DIDN’T GO AS PLANNED.”
WHERE DOES YOUR FIRM STAND?

Think about how you would have approached this last minute request, and answer the following questions

• Have you or others at your company ever experienced the above scenario?
• Have you ever, or do you continue to go overboard on your visualization deliverables if you were to compare efforts needed against the goals you want to achieve?
• Have you ever covered the walls in your meeting room with printouts of plans, elevations, sections, and 3D renderings, in hopes of building a better understanding of your proposed design to your client?
• Have you noticed that your Visualization Specialists sink twice as many hours on a project than what your top designers do?
• Do you have a “Default” approach to all of your visualization needs?

If you’ve answered “yes” to any of these questions, you might be ready for a new approach to your visualization needs…
ENTER “RAPID VISUALIZATION”

What is this new concept?
Well, it’s not really a new concept. It’s simply been cast to the side by many as technology entered the picture.

Rapid Visualization is a combination of techniques and workflows that allow designers to develop and present ideas from early concept all the way through finished product, while never starting over along that path of development. It is a visualization technique that "evolves" as you keep moving forward in design.

It’s all about “Creating the “Right” visuals at the “Right” time, with the “Right” tools.”
RAPID VISUALIZATION

A successful implementation of Rapid Visualization begins by asking and answering the following questions prior to getting started on any visualization project. These simple questions will help you develop your own internal Rapid Visualization Plan.

1. What’s the primary goal for your visualization...What are you trying to sale and when?

2. What should be the deliverable given our primary goal...live presentation, print outs, etc?

3. What level of detail does my primary goal demand in the Visualization?

4. Who is responsible for building the model and or the visualizations?

5. What tools and workflows should we use to create this visualization?

6. Would it benefit us to reuse this info down the road as the design evolves?
SAME PROJECT, NEW APPROACH

Your boss tells you on a Monday afternoon that you have a preliminary design approval meeting 8:00am Wednesday morning for client “X”.

You immediately go into Rapid Visualization mode and answer these questions prior to starting.

1. What’s the primary goal for your visualization...What are you trying to sale and when? To sell a preliminary Design (Form/Layout) of the Bldg
2. What should be the deliverable given our primary goal? Live model viewing with client
3. What level of detail does my primary goal demand in the Visualization? Low...only trying to sell the Form/Layout at this point. No Materials Needed.
4. Who is responsible designing, building the model, and the visuals. The Designer.
5. What tools and methods will be used to create this visualization? Revit
6. Would it benefit us to reuse this info down the road as the design evolves? Yes
THE LEVEL OF EFFORT SPENT?

Monday Afternoon
4 HOURS - Your Designer spends coming up with an idea, info gathering, napkin hand sketches, etc.

Tuesday
12 HOURS - Your Designer spends modeling the design concept in Revit, creating plans, elevations, sections, perspectives and real-time presentation views...all in one application

Wednesday
30 Minutes – Designer spends turning on the Dell Laptop, and loading the model.

GUESS WHO GETS TO SLEEP ALL NIGHT?

16.5 HOURS!
THE EFFORT PRODUCED WHAT?
THE EFFORT PRODUCED WHAT?
Your client (CEO of Company “X”) is immediately excited to see how much thought went in to the design of his new bldg. He was thoroughly impressed by the immersive environment you presented, and your ability to generate new views and make minor design changes, right there in the room.

Your client walks away with a clear idea of your design intent, and is excited to move forward.

“I Like it!”

APPROVED!
THE RETURN ON YOUR INVESTMENT?

1. Your Client’s first impressions were positive.
2. Your Designer was able to spend more time designing.
3. You created deliverables that can evolve as you move forward.
4. You managed not to drag in additional resources for the effort, but instead created the “Right” visuals at the “Right” time, with the “Right” tools.
5. Your client had a clear understanding of the proposed design and gave their stamp of approval.
6. At the end of the meeting, both you and your client walk away in confidence knowing you can move forward in the next phase of design.

“THAT WORKED GREAT!”
WHAT REVIT TECHNIQUES CAN BE USED TO PROMOTE RAPID VISUALIZATION?
Model What You Know When You Know It.

- Keep it simple in early Design...use “Placeholder” elements
- As design swap out your placeholders with more defined content. Revit is great at swapping out low res objects for high res.
  - Walls
  - Doors
  - Mech Equipment
  - Piping

Use “Detail Levels” in Content
Almost all family content created in Revit allows you to control the display of geometry based on the detail level settings of your view. Consider how you can take advantage of “Coarse, Medium, and High” Detail levels as your building content.
“Create Parts” for Unique Cutaway Views

Revit’s “Parts” functionality is typically used by construction modelers to help plan and document the delivery / installation of smaller pieces not typically modeled by designers. “Parts” is a non-destructive feature that preserves the original model element you want to break into smaller pieces. Why is this important?

- Your original Revit elements are safe, you can make major visualization changes in geometry without starting over.
- Ability to Create Parts from Linked model elements.
- “Create Parts” allows you to break objects into multiple pieces, of which you can then individually control their graphics.
RAPID VISUALIZATION – VISUAL TIPS & TRICKS

Visibility and Graphics
View Specific Visualization settings allow you to override multiple Revit Categories, and offer even more flexibility when using linked models.

Graphic Display Options
Provides View Specific Lighting, Shadows, Edge styles and Backgrounds

View Filters
Can build unique visuals based on Model/Element Properties and or Param Data.
RAPID VISUALIZATION – VISUAL TIPS & TRICKS

View Templates
Create the Look using Visibility and Graphics, Graphic Display Options, and View Filters, then save that look as a View Template using “Create from View”. It can then be quickly applied to many views at once for a consistent looking presentations.

Graphic Overrides
Unlike Visibility and Graphics, Graphic overrides cannot be stored in a View template.

• By Element
• By Category
• By Filter
Phasing to Control Visuals
Applying Phase Filters to views provide a great way to visually override materials on all elements, without changing any properties of those elements.
RAPID VISUALIZATION – PRESENTATION MATERIALS

Go Real-time
Real-time Presentations using Revit are the best way to spend the least amount of effort presenting, while providing the most flexibility.

• Ability to change things on the fly in front of the client (object locations, materials, etc)
• Create new cameras upon request
• Can quickly turn on/off multiple design options
Exporting High-Res Images from Revit
In many cases the level of detail coming from the native Revit views will suffice for many design presentation/approval needs.

- If raster images are needed, use Revit’s “export images and animations” feature to quickly create high-res images.

- Remember you can save a pre-selected list of views to export, meaning you can easily re-export these views as the design progresses.
Cloud Rendering
This is a very efficient way to create higher quality renderings, very little effort needed, and they’re produced in a short amount of time.

- View settings set within views
- Use advanced exposure settings to tweak views.
- All render processing done while you work.
RAPID VISUALIZATION – OTHER TOOLS TO CONSIDER

• **Autodesk Design Review** – don’t under estimate usefulness of this free tool for design approval and coordination meetings. Has a nice integration with Revit.

• **Autodesk Navisworks Simulate** – Supports Native Revit model linking and or NWC’s and has some decent visuals for renderings.

• **Autodesk Showcase** – interactive walkthrough for standalone and or web viewing

• **3ds Max** – Revit model Linking with advanced lighting and material, special effects