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August 2022

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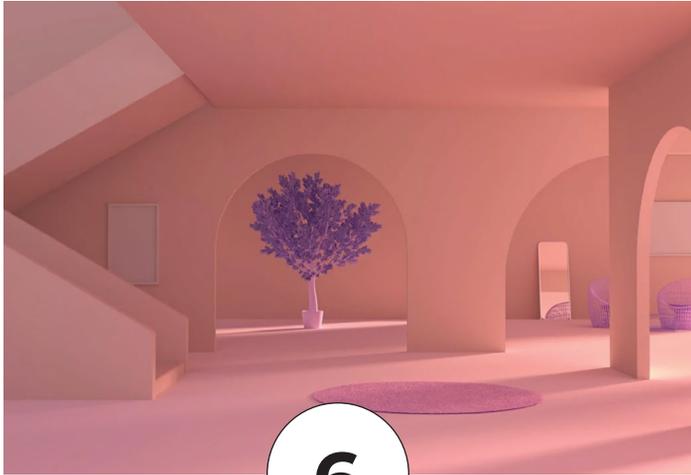
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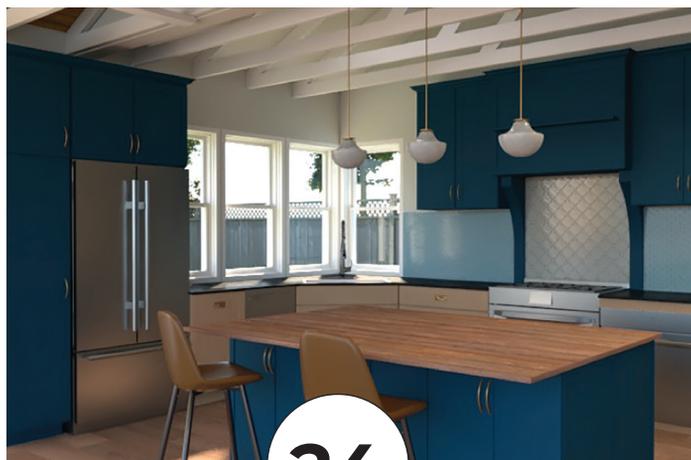
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From the President



Welcome to the August edition of *AUGI WORLD!*

This month our topic is “Management” and the world of CAD/BIM Management. I have spent a good portion of my career, not only training people how to use CAD, but also providing companies/organizations with consulting CAD management services.

Having said that, you now know this is a topic I am very passionate about. One of my favorite things is to learn how other CAD/BIM management specialists have handled the same tasks and issues. I truly believe that none of us are an island and to provide the best service we need to constantly learn about new technology, new processes, and new ways of doing things (or just new to us!).

Approximately 29 years ago, I was working for a natural gas pipeline company. We were in the process of switching from an old mainframe CAD system (CADAM) to AutoCAD. I was sitting in a meeting where the entire team was discussing the CAD standards that we were using. Primarily this discussion was centered around what color our layers would be (color 5 blue anyone?). This discussion quickly became very heated, as you all can imagine.

Several years ago, I realized something about that meeting and that company, we had no CAD manager...lol. But I do think it sparked a desire in me to help drive consistency in CAD drawings.

If you are a CAD or BIM manager (officially or not), I encourage you to constantly look outside yourself at what others are doing. You might find some inspiration on better ways to do things. This month’s edition of *AUGI WORLD* is a great place to start, as well as looking at the past issues of *AUGI WORLD* from our website. The Autodesk University archives are another resource that I strongly recommend.

I’ll leave you with the following quote that made me smile.

“People who enjoy meetings should not be in charge of anything.” — Thomas Sowell

Sincerely,

KaDe

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Collaboration and Design with 3ds Max

Hello my name is Anastasiya Hunt. I'm a 3ds Max Visualization Artist that owns a small visualization company focused on jewelry, fashion, salon, hotel, medical, and airline industries. For this article, I want to provide some tips about visualization and interior design using 3ds Max from a small business perspective. These steps help us provide quality work and collaborate.

In most cases, the first step to a project is developing a mood board. By collaborating with your client, you can collect a wide range of references online to discuss the direction of their project. The purpose of the mood board is to collect the essence of your client's vision. It allows you to discuss the elements and capture the "mood"

the client wants to share. If you consider each project is an extension of the client themselves, understanding how they want to represent the project from their perspective is an incredibly important part of the collaborative process.

There's lots of great software to organize and collect reference images. We've used everything from Google Spreadsheets to software like Pure Ref and Photoshop. You'll need to review which software is best for collecting, organizing, and sharing images with your client to discuss. Most of our clients prefer in person or online meetings for review. In that case, Pure Ref and images compiled in Acrobat work very well. Pure Ref is software that allows us to quickly drag and drop images from a browser onto an



Figure 3

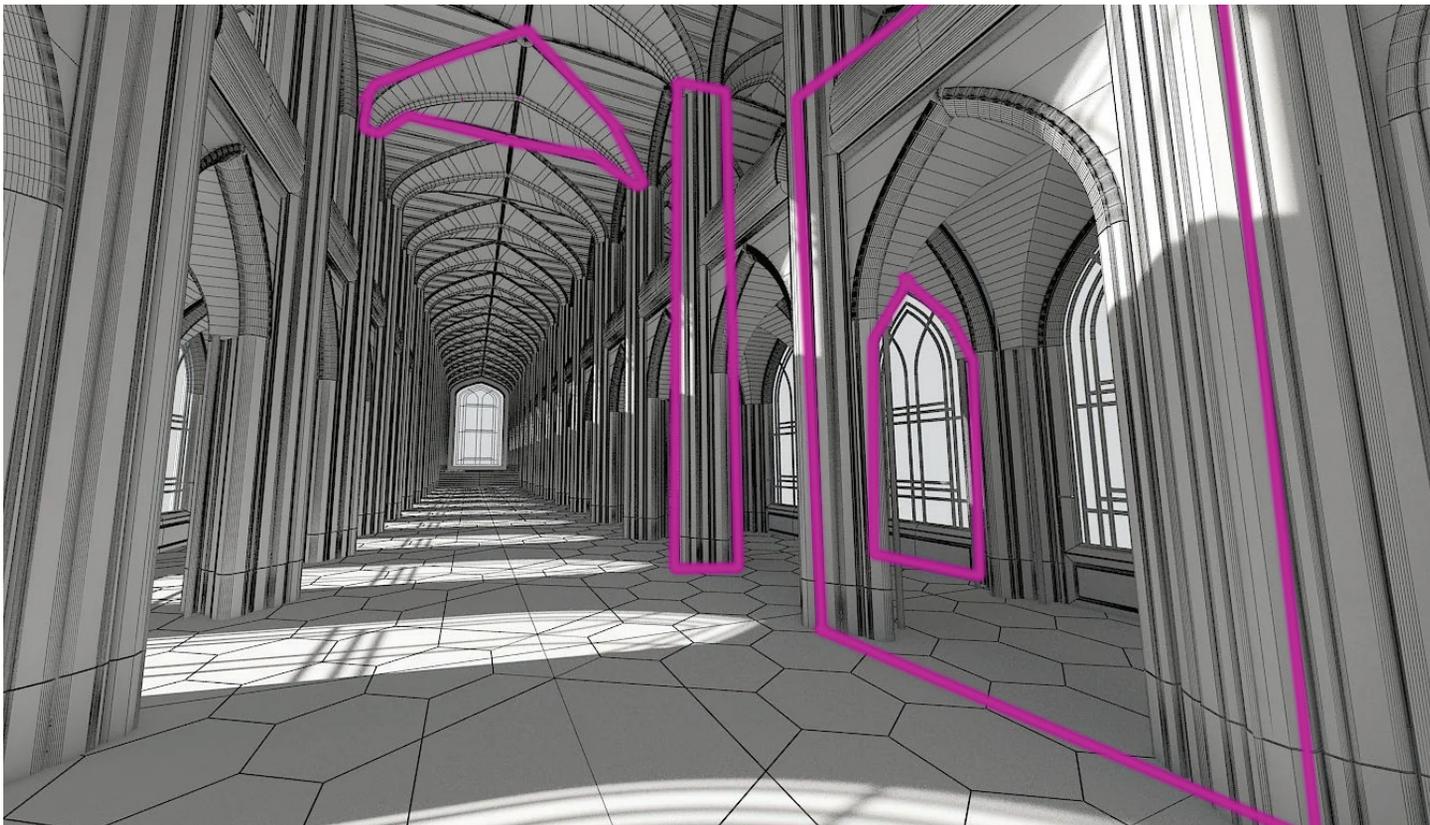


Figure 4

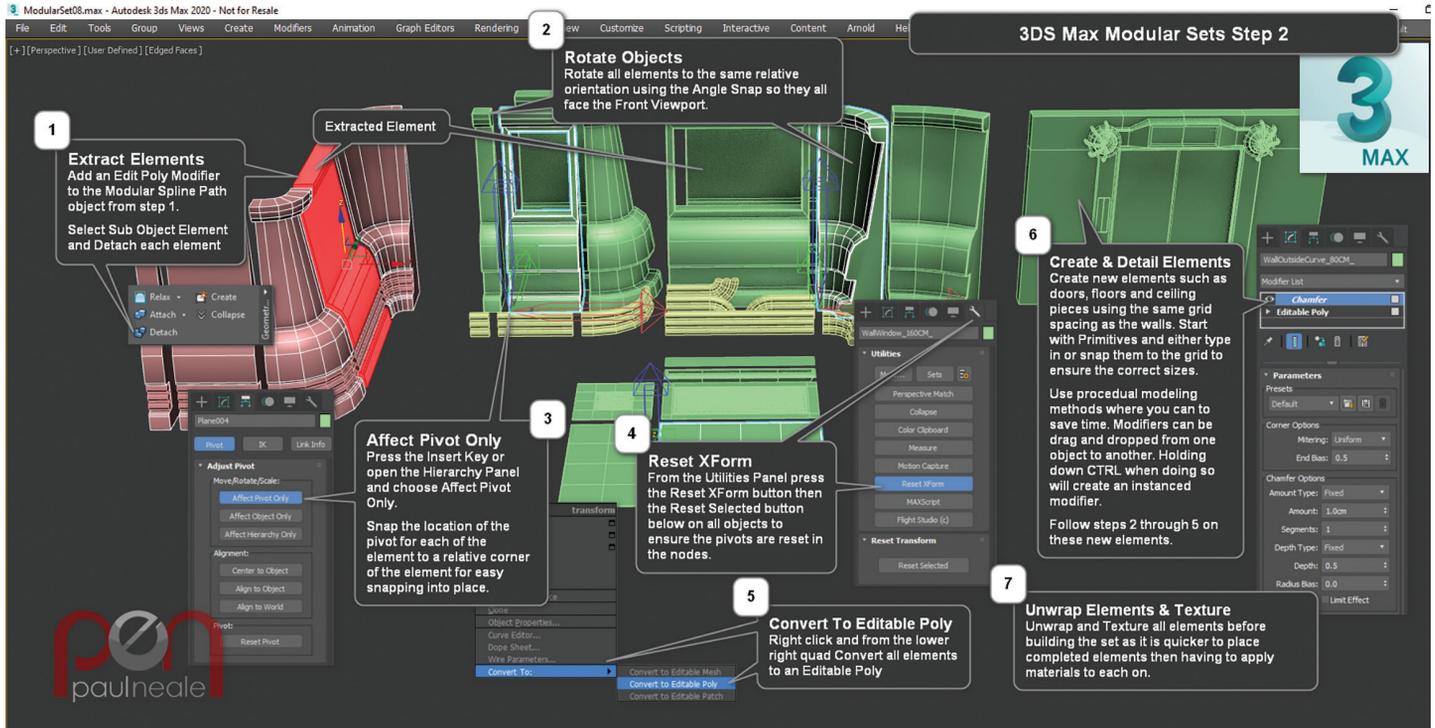


Figure 5

In fact, I've found clients often prefer lower quality sketches and renderings during the collaboration process to ensure they are comfortable with the direction everything is heading. The more communication during this process the better.

The next step is modelling. Here we break down the scene requirements and determine the modular components that can help save time by spreading tasks between team members and instancing. Building and structures are generally constructed from repeatable elements to save cost and avoid complications. In many ways, they are modular by nature. By building models in a modular way, they can be multi-purposed by rearranging them and adding minimal components to enhance them to provide a lot of detail. Furthermore, if these components are organized in a scene or library, they become more useful across a wide range of projects. See Figure 4 to notice the many repeating elements identified that can be constructed individually and copied to create large structures.

3ds Max's modifier, sweep, and spline tools have always been especially powerful for modular construction. Take a look at a few of the tools mentioned by Paul Neale in the provided image.

The final step with clients involves a lot of iteration, repeating the processes above. The main thing to remember is to enjoy the process!



Anastasiya Hunt is a visualization expert that eats, sleeps, and breaths the world of visualization and design. With a decade of experience working with many industries, lots of enthusiasm, and a bunch of grit Anastasiya helps bring little and big dreams to life. She can be reached at anastardesign@gmail.com



Presentation Enhancements

Something wonderful happened around the year 2011. Autodesk introduced a new product called Autodesk Inventor® Publisher. That product brought a new way of exploding assemblies, as well as documenting these. It was fantastic, and gave everyone a nicer environment to deal with exploded view documentation—much nicer than the archaic Presentation environment in Inventor.

Unfortunately, Publisher was a bit of a resource hog, and while rumors of its demise are still circulating, the product is still selling on the shelf; Autodesk, always guarded with its plans, is only willing to say that there is no definitive plan to stop it.

Additionally, true to Autodesk's statement that Autodesk Inventor is being continued into the future as their go-to mechanical engineering CAD software, 2015 and 2016 releases have delivered a very nice set of enhancements. One of these is the Presentation environment, the topic of this article.

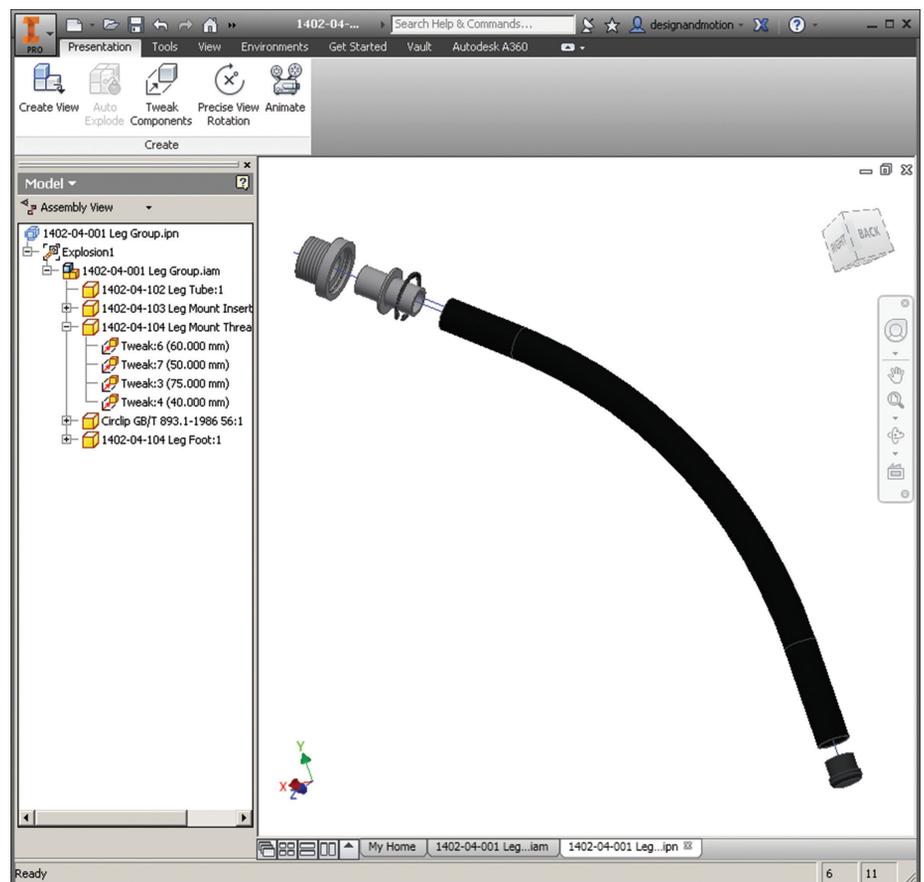


Figure 1: Inventor 2016 Presentation environment

While these enhancements are not a replacement for Publisher, they do make creating exploded views much simpler and smoother. The following is a list of the changes and a few of my observations.

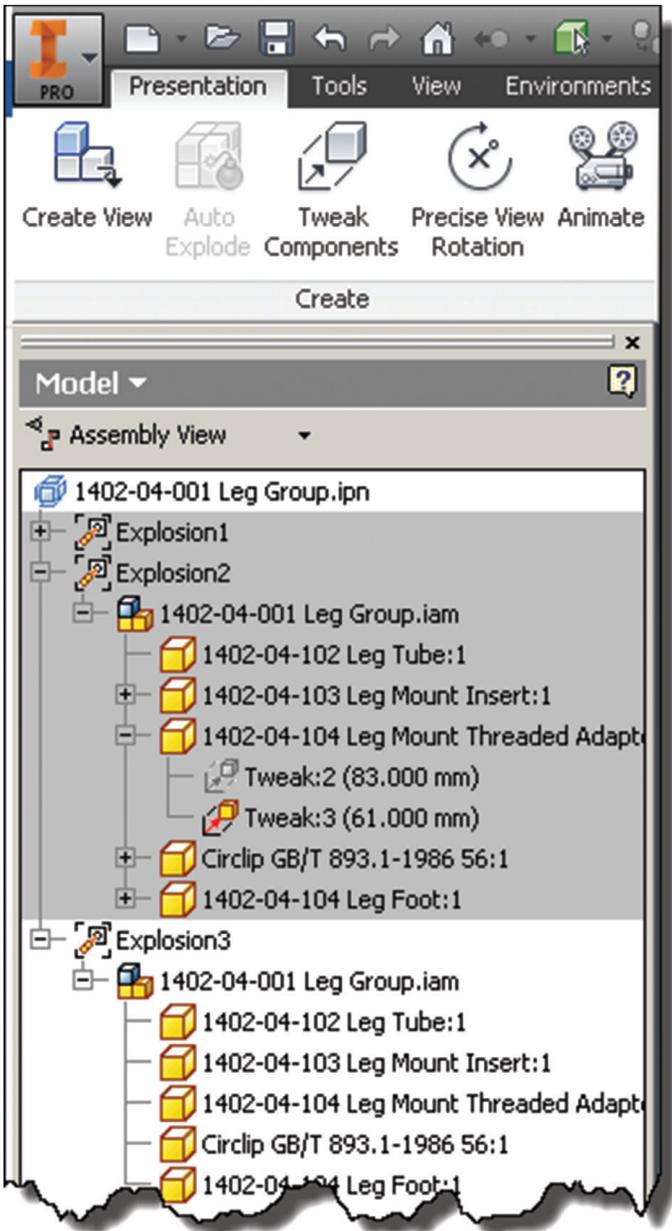


Figure 2: Presentation ribbon and browser

USER INTERFACE CHANGES

The terminology such as tweaks and trails are all the same, but the way you manipulate items is different.

Selection Priority

Selection Priority of Components, Parts, and Trails has been added to the Quick Access Toolbar.

Create View and Explosions

Users can create numerous explosions in a single Presentation file using the Create View command on the ribbon. Each retains the position and trail settings independently.

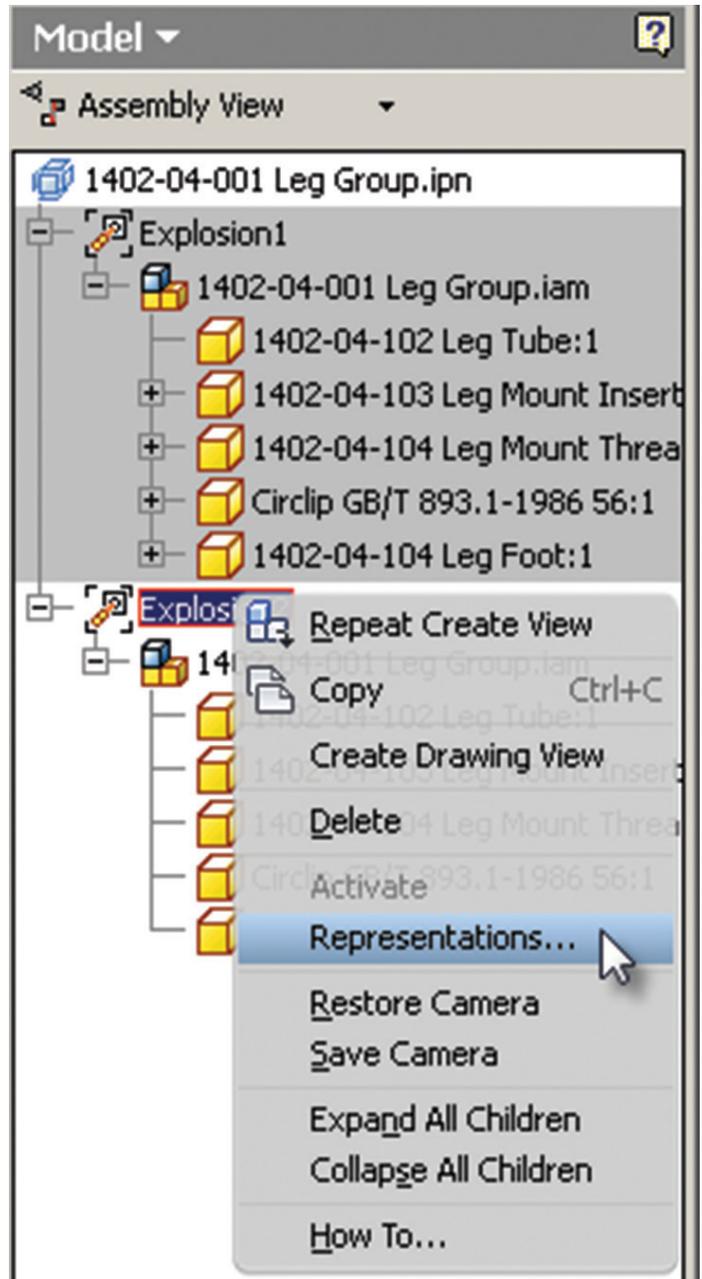


Figure 3: Representations on the Explosion view context menu

Design View Representations

Users can connect Assembly Design View Representations to individual explosions and make these associative (or not) if desired. So far it appears as though it only affects the visibility and appearance, but not the camera angle. Note: the association with Assembly Design View Representations is one-way. Attempting to make alterations such as appearance will invoke a dialog asking you to disassociate the representation.

Presentation Browser Modes

The Presentation browser can be viewed in one of three different modes:

- Assembly View

- Tweak View
- Sequence View

Each of these displays the assembly tree along with a list of the respective features, with components organized under these in expanding branches.

Auto-Explode

Auto-Explode has been enhanced and added to the ribbon and the Create View command. The command remains inactive on the ribbon until an assembly header is selected.

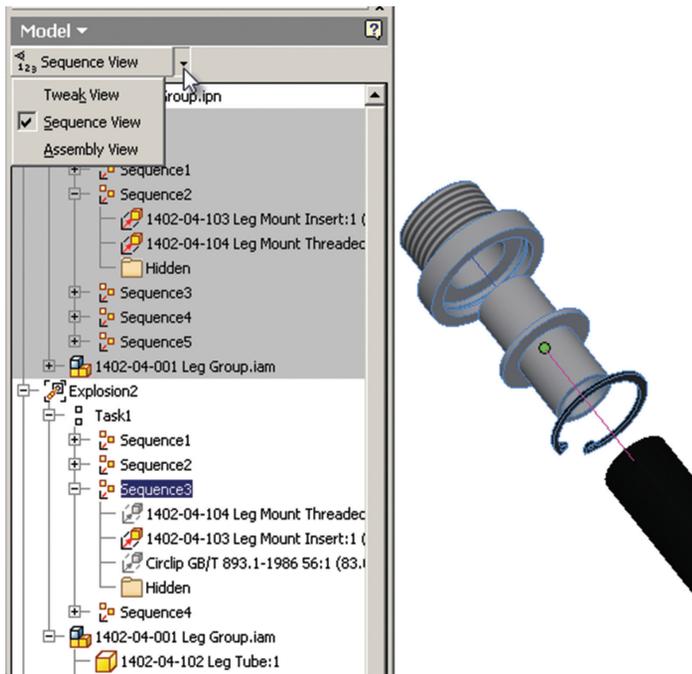


Figure 4: Presentation browser in Sequence View mode

MANIPULATION CHANGES

The terminology such as tweaks and trails are all the same, but the way you manipulate items is different.

Tweaks

I have to say that I am quite impressed with the ease and intuitiveness of the command. The command starts as expected in noun or verb mode, meaning you can select a component(s) and start the Tweak command, or start the command and select the desired components. Once started, the mini-toolbar appears.

Move – Creates tweaks in a single-use scenario, clearing the selection set made during the last operation when Apply is picked.

Continuous Move – Functions the same as Move,

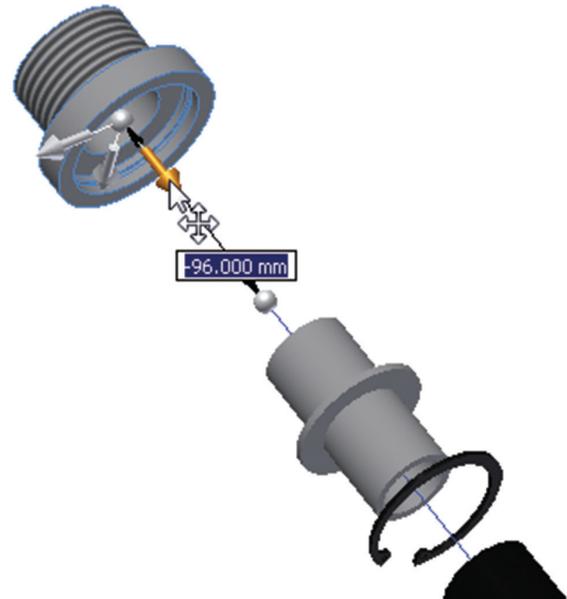
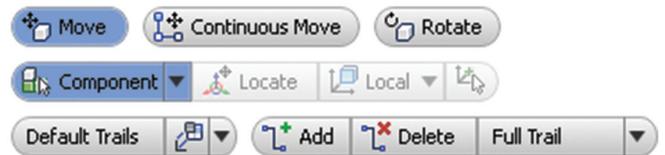


Figure 5: Component tweaks and the tweak mini-toolbar

but keeps the selection set active until components are removed or the command is ended.

Rotate – Creates rotation tweaks.

Component and Part Selection Toggle

Locate – Associates the Move Triad with a part, at a selected feature, and aligns to that part's local coordinates by default.

Local and World Coordinate toggle – Switches the Move triad orientation between the two options.

Align Triad button – This allows users to align the Move triad to the axes of geometries within the part that the triad has been associated with.

Default Trails - The options under the pull-down are: None

- All Components – Trails applied to all components
- All Parts – Trails applied to all Parts
- Single Parts – Trails applied to only a single part (This I love; it makes cleaner exploded views easier)

Add Trail – This creates an additional Trail during the current tweak operation.

Delete Trail – Deletes the current operation’s trail.

Full/Single Trail toggle – option applied to the Add and Delete function.

USING THE TOOLS

The first thing that I like about tweaking parts is starting with the triad placement. After selecting a part geometry to set the triad, that same component is automatically selected (default) to tweak, if one wasn't already selected (you can always select something else if desired). The triad takes on the part's coordinate alignment, and away you go.

The next thing I really like is component selection on the fly. If a tweak is in progress, selecting other components will automatically snap them into the tweak relative to their respective locations prior to starting.

The effect is as if you had selected them all from the onset. This works really well with the single trail option. Select a single part, as well as the single trail option, and when you are satisfied with the placement, pick the remaining parts you wish to include. These will snap to the new location without creating individual trails for each. Then pick Apply before moving on.

When I tried to use the Auto-Explode feature, the command errored-out, noting that the joints and constraints that I used were inadequate. I adjusted one set of constraints from an automated Mate/Flush combination to the almighty Insert constraint. When I tried again, the process automated without a glitch. I think this is a logical solution to making something as awkward as Auto-Explode work in a predictable manner by limiting its behavior to coincide with the logical joint placement. Joints such as Mate/Flush are too arbitrary for Auto-Explode to do anything useful.

I must say that changes to the Presentation environment make it much more comfortable to use. The changes are far more intuitive and the mini-toolbar actually works well in this application.

Will it replace Publisher? No! (I wouldn't want it to. Is there more room for improvement? Yes.

However, this is a great start to an overhaul that is long overdue. I actually enjoyed using the Presentation environment for a change.

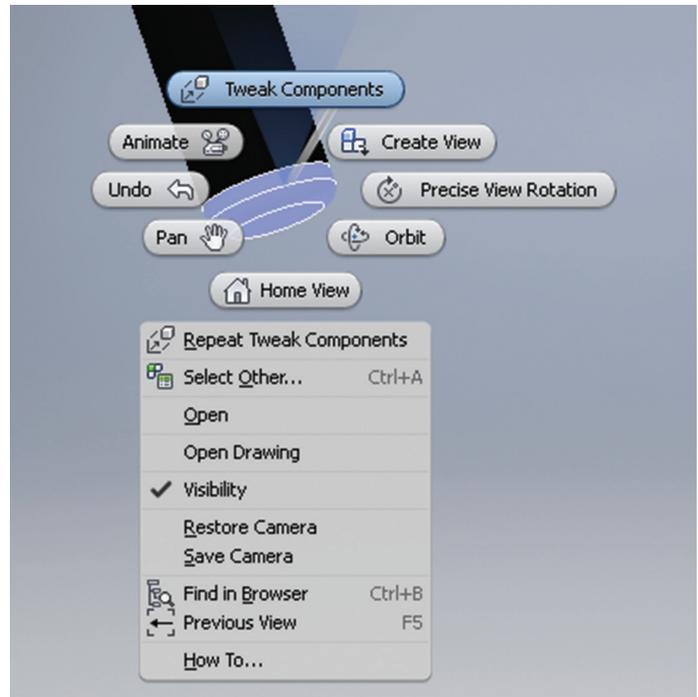


Figure 6: Component context menu



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Collaboration and Kit Bashing for Concepts with Unreal

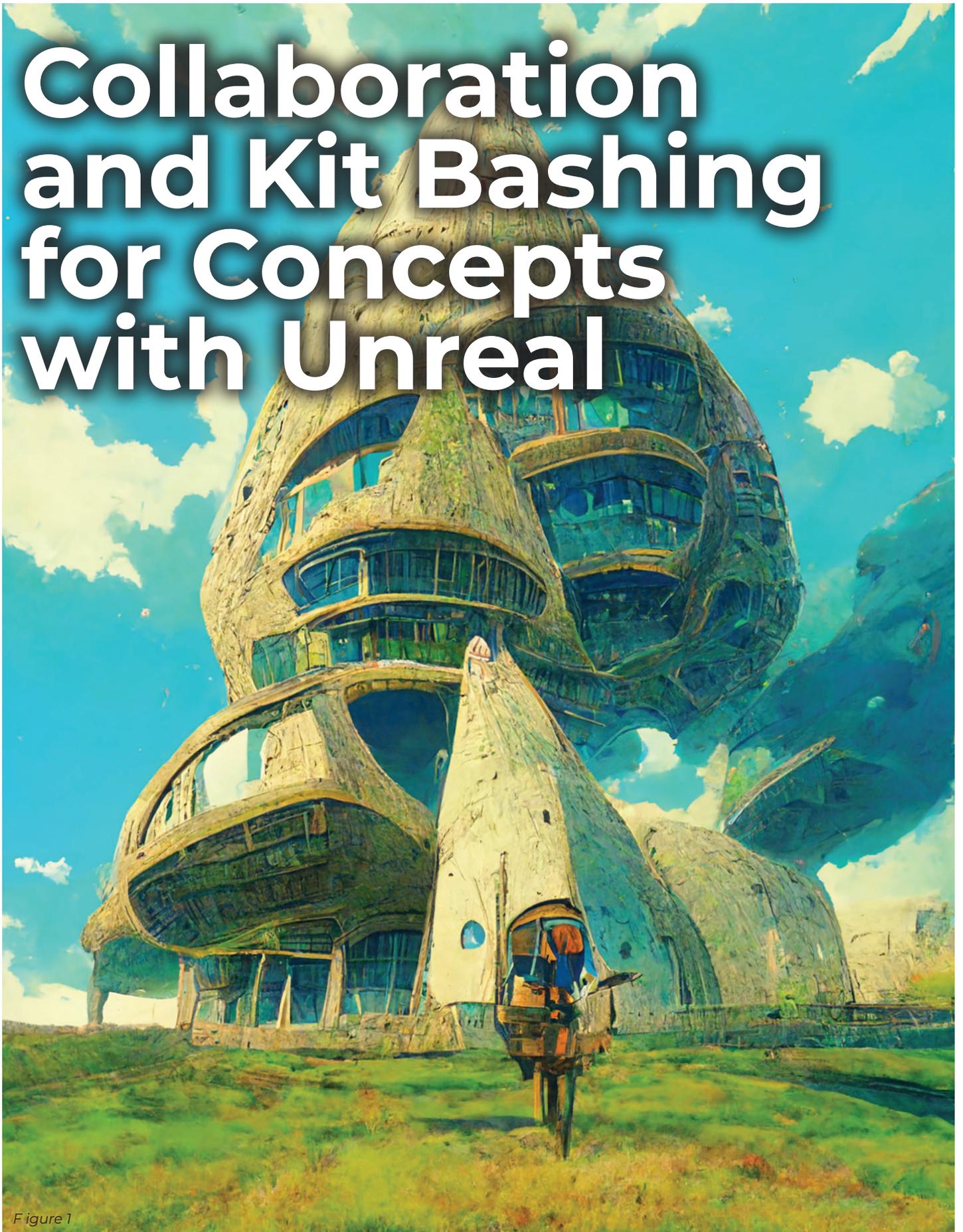


Figure 1

Unreal Engine can play an influential role in building concepts for conceptual work, an essential part of the collaboration process that allows clients and teams to discuss design elements before committing resources to design and build it. This article will review some resources and methods I use to help produce results.

GETTING STARTED

First, I'll list some available areas to find content for bashing scenes together.

Unreal Engines Marketplace – The marketplace contains libraries of content built by artists worldwide. Many are free, and many more are not.

3D model sites – I use several sites to assist with my work daily. These include CGTrader.com, 3DSky.Org, Turbosquid.com, Evermotion.Org, Sketchfab.com, and Gametextures.com. There are many more available sites as well.

Communities – 3D work is an art; artists share and collaborate in many of them. These artists provide tutorials, assets, tips, and tricks to assist professionals. Searching the libraries in these communities exposes lots of tools available. Some of these include Gumroad.com, Artstation.com, and Patreon.com. Professionals can find powerful tools while helping to support artists in their efforts.

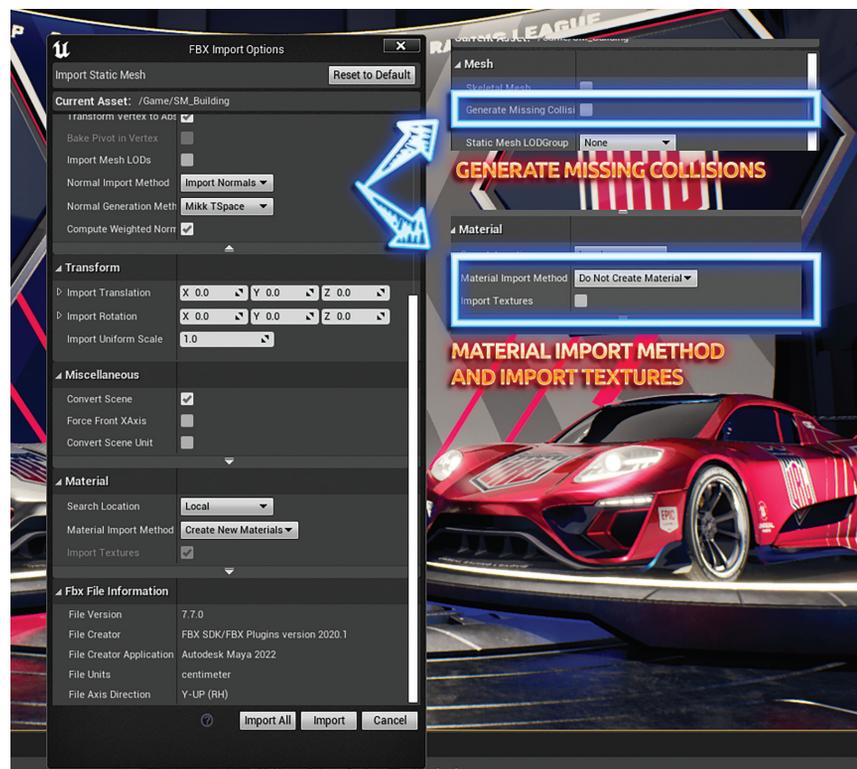


Figure 2

ASSET MANAGEMENT

The next step is importing outside assets, which is essential to blocking out scenes for collaboration with teams. Here are a few tips to help maintain organization, keep files clean and organized, and take advantage of Unreal Engine's unique abilities.

Drag and drop – Unreal Engine allows us to drag and drop files into the content browser. One tip is this also applies to browsers that implement drag and drop file features. For example, if you find a texture or piece of artwork you want to display in your scene on the Firefox web browser, you can drag it directly into the Unreal Engine content browser to import it. Additionally, you can drag a texture from the content browser onto an object, which will auto-generate a related material.

Importing FBX/OBJ – Fbx and Obj is also directly imported into the content browser through drag and drop; however, some crucial elements to help organization and structure (even when bashing scenes together) can be necessary. First is the option to generate missing collisions. Collisions in Unreal Allow the characters and objects to interact. However, these auto-generated collisions are often too expensive from a software development perspective and utterly useless from a film and architectural perspective. The best option for almost everyone is to turn this option off, and if you need

to create collisions, learn about building them from scratch: most efficiently and accurately. The second element to consider is the material import and texture import options displayed in Figure 2. While it seems counter-intuitive, the best course of action is to turn these off.

I've found it's simpler to create new folders in Unreal before importing assets, and creating an individual folder for each imported object seems the most efficient for the organization. These standards are different from organization to organization, but if you have the choice to organize how you want, that is my recommendation. To move objects between folders, it's necessary to open two content browsers, and objects can be dragged and dropped between them—however, Unreal Engine stores data behind the scenes. So, if you relocate everything inside one folder to another,

MATERIALS AND TEXTURES

The node-based system in Unreal provides a powerful resource to manipulate materials and textures to apply across objects, even those that haven't been unwrapped for specific UV projection. To address this, we use the Absolute World Position node and techniques like Triplaner projection displayed in Figure 4. Tri-planer projection blends textures in all three planes (x,y,z). While the projection method has some minor artifacts for conceptual work, this is a potent tool. By combining tri-planer projection with the Absolute World Position

node, we can tile textures across unmapped objects seamlessly at any scale we want.

In Figure 5, I provided a graphic where I combined tri-planer projection with absolute world position for demonstration.

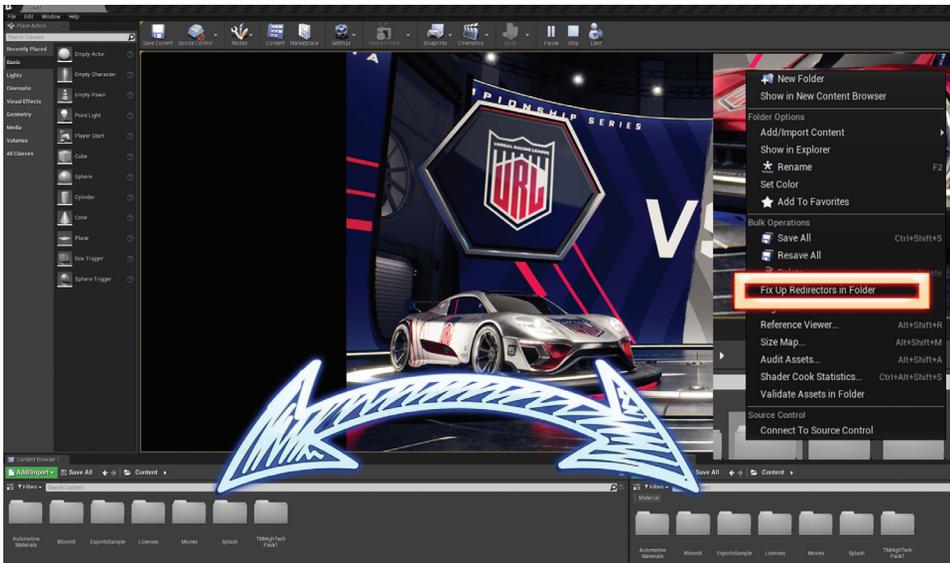


Figure 3

you'll find you can delete the old folder. To rectify this, right-click on the old folder and select the "Fix up Redirectors" option displayed in Figure 3.

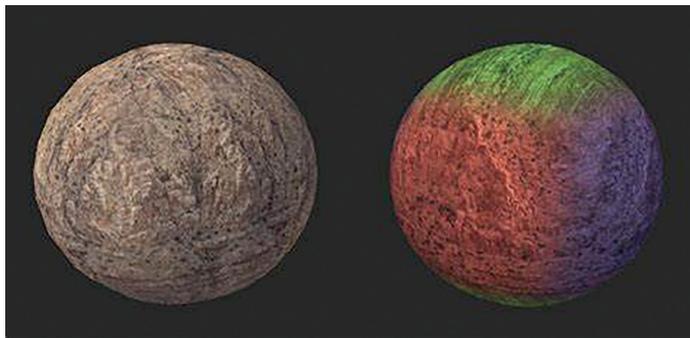


Figure 4



Brian Chapman is a 3D Artist located in Las Vegas with an extensive history of building 3D content for AEC, game, film, and software development. In addition to 3D art, Brian has experience with graphic arts and software development. Brian can be reached procadman@pro-cad.net

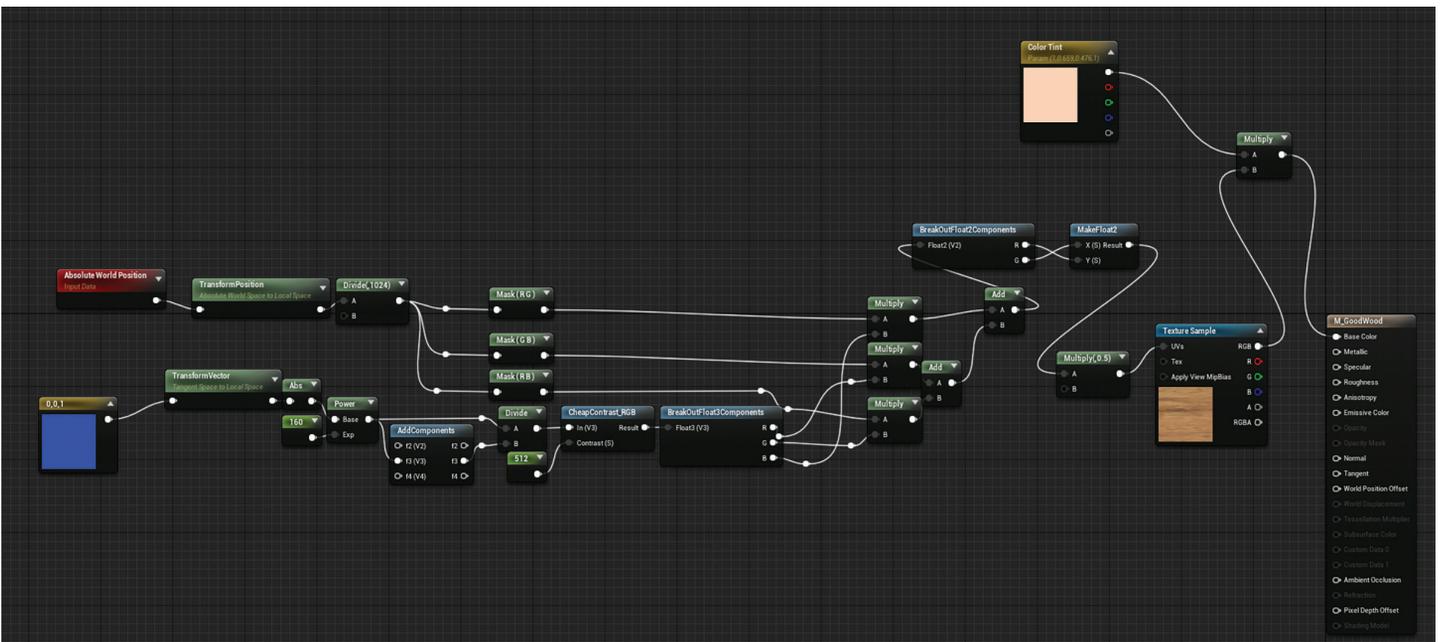


Figure 5

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Defer It or Delete It



For the last two past months I have discussed getting things done and how a book helped me move things along that I had coming my way. In “Getting Things Done: The Art of Stress-Free Productivity” by Paul Allen, the author reminded everyone of his methods... Do it. Delegate it. Defer it. Delete it. Take a few minutes to go back and read the last couple of articles.

DEFER IT

I mentioned in the first article his concept of quick review which Paul Allen calls his “2 minute” question. I expand that to 5 or 10 minutes and added other questions, but you will get the idea. You should ask yourself if you are the person to do the job and if so, how long will it take, and if it won't take long, then is it more important than what you are currently doing? You should only ask these things once. Process it only once, decide what to do and move in the direction of your decision. Don't push off an item and come back later to ask the same questions. Define it once and move ahead. If the answer is that

it should be you doing the work and it is worth doing and it will not take that long then “Do It” ... just get it done now.

Let's say that it should be you doing the work, but it will take more time than you have right now, or it is not as important as what you are doing at the time. Then you “Defer It”. This does not mean you ignore it. It means that you put it on your task list. You need to decide if it is the next item you do or if it can be deferred even longer. If it is not going to be at the top of your list, then try to define when it needs to be done and put it in the proper spot on your list. If it is deferred longer than a day or two, set a reminder of some kind to come back to it. Maybe put it in as a calendar reminder. The concept is... you will go back and do this... not just keep deferring.

If it is a task given to you by others, work with them to define the timeline they can expect your attention to their needs and talk out a deadline. It may be a quick back and forth conversation that defines a due date as a few hours, days or whatever. Once you get

agreement, the person knows that their item will be addressed.

When you start working on the task you deferred, go back and ask the person if the need is still there or if the situation has changed. They may have figured out an answer, or it may have been completed by someone else in the meantime. The priority may have changed. They may have another issue that is more important to them than the original trouble. It also lets them know that you are now working on their issue. If you do not check in and just start working on their problem, you may spend time doing something that is no longer needed.

DELETE IT

What if the task that comes your way is not something that needs to be done. I have things that I want to do that are important to anyone but me. They go on my “wish list” of things that I wish I had time to do. Or maybe on an idea list of things to research when I get time. But sometimes there are things that just do not need to be done. Others bring you their “great ideas” or their “wouldn’t it be nice if” tasks that they do not have time to do, but seem to want you to do it.

Don’t delete other people problems. If something is broken, failing or blocking project progress, get on it. Problems are your bread and butter. You are here to help. Drop what you are doing and go help, unless you are working on another person broken item. If that happens, quickly prioritize and do the most urgent.

But, if something comes your way that seems to fall into the “not really needed” category, then you should delete it and not put it on any list. This is hard to do for some. And there may be few items that really are “worthless”. You don’t want to be known as the person who ignores everyone’s needs. And if someone brings you something, they think it is a real need. When this happens and it is an idea and not a problem, I try to hand it back to the person who brought it to me. “That sounds good, can you make that happen?” Or you can tell them there is just no time right now and ask them to come back to you in a week/month and ask again. When deleting other people’s task that are trying to get on your list, be gentle. It might be very important to them. But some things are best done by others (delegate it) or not done at all (delete it).

DISCLAIMER

Now that I am done with this series of articles, I thought I would put a disclaimer at the end. Lists work well for me and a lot of people, but not everyone. Santa makes lists, but I am not sure the Tooth Fairy or Easter Bunny make lists. Your mileage may vary. You should define your best way of working (and make sure that it fits with those you work with and for). Collect great ideas and build your own system.

Overreliance on Lists

Don’t let this system get you locked into a process that does not work for you. The list might get long and make you feel like a failure for not getting it all done. It is not that big a deal to work without lists for a while. Free yourself from the constant nagging of a list of things that need your attention. Use your system, don’t let it use you.

For those that don’t like Lists

Chances are there a few (or more) of you reading this that are done with lists. You are thinking that lists do not work. They are tyranny. They kill creativity. They reward those with OCD. I get it. Lists can be overused. They can give a false sense of calm and organization. If these statements ring true for you, then do not try to fit your work life into these last few articles. It is not the way you work. Find your own method and make it work for you. One size does not fit all.



Mark Kiker has more than 30 years of hands-on experience with technology. He is fully versed in every area of management from deployment planning, installation, and configuration to training and strategic planning. As an internationally known speaker and writer, he is a returning speaker at Autodesk University since 1996. Mark is currently serving as Chief Technology Officer for SIATech, a non-profit public charter high school focused on dropout recovery. He maintains two web sites, www.caddmanager.com and www.bimmanager.com. He can be reached at mark.kiker@augi.com and would love to hear your questions, comments and perspectives.

Better BIM Collaboration

Want to get the most collaboration out of your BIM Team? These recommendations, based on many years in the BIM trenches, will help your BIM coordination efforts run more smoothly.

GETTING THE MODELS THE WAY YOU NEED THEM

Have each discipline that uses Revit create a specific 3D view called “3D BIM Coordination” using the “Duplicate View” command. Hide all elements that have no relevance to 3D model coordination (movable furniture layouts, grid lines, and so on). This will assist in keeping the file sizes as small as possible and make the models less confusing. Make sure all section boxes in the “3D BIM Coordination” view are hidden. This view, once set up properly,

will contain the correct visibility settings you wish to export and will be always set up for future model version updates.

If a discipline does not have the appropriate 3D object that represents a specific component of their model, have them use a 3D “placeholder” shape in the form of a cylinder, sphere, cube, or rectangular object to indicate your element, making sure it is the same general shape and physical size as the actual object. This placeholder can be replaced later by the specific component or element.

WHAT'S IN A NAME: ESTABLISHING ELEMENT NAMING GUIDELINES

Each discipline should be requested to name model elements and components based on a

Model Element Responsibilities Checklist	Discipline								
	Architectural	Structural	Plumbing	Electrical	Mechanical	Fire Protection	Framer	Civil	Landscape
Stairs, concrete									
Stairs, metal									
Fixture locations									
Slab on grade									
Decking slabs									
Topping slabs									
Toilet fixtures									
Bath, tubs, and showers									
Sinks									
Urinals									
King studs									
Backing studs									
Soffit framing									
Overhead cabinet bracing									
Headers									

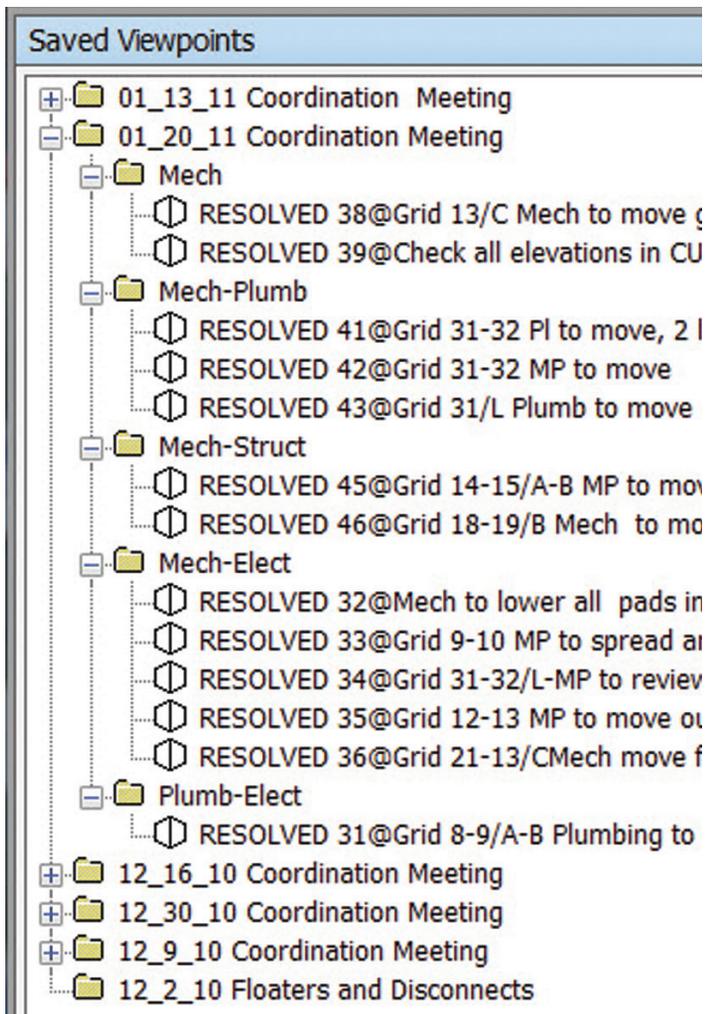
logical system agreed upon by the BIM Team. A BIM project is a 3D data base from which meaningful information is to be extracted and sorted.

Get a sample list of element family naming conventions from all disciplines to be used to compile a master Element Naming Guidelines document for the team. Whatever naming convention is chosen, it should be descriptive, logical, structured, and consistent. Create unique short names, using natural language that describes how the object is identified in the real world and include the general class of object or the family category as the first part of the file name. When you mouse over an object in Autodesk® Navisworks with “Quick Properties” turned on, you should be able to know precisely what the object is in the Item Name tag that pops up.

DON'T FORGET

Maintenance or Serviceability Zones consist of clear space necessary for maintenance and repair access in front of electrical or equipment panels, ceiling access panels with clear space above and free space below, or access to valves. Indicate equipment (pumps, valves, VAV boxes, etc.) accessibility areas with rectangular massing





objects that go from the floor to the ceiling or in front of access panels.

“No-fly Zones” consist of spaces above electrical and equipment rooms that need to be clear of trades other than electrical to accommodate the copious conduit runs necessary or space below roof access openings that should be clear of any system elements. Indicate No-fly Zones and Maintenance Zones with semi-transparent rectangular massing objects next to their respective element(s). “Crop circles” objects indicate approved distances by the structural engineer between locations of anchors attached to decking used to fasten hangers. Crop circles cannot overlap and can be modeled using flat cylinders.

Major equipment with ducting or piping that travel overhead or through walls may need to be modeled (stoves with hoods and exhausts, boilers, overhead cabinet seismic bracing, and the like.). Also, turning radii for wheelchair access can be indicated by red 5' diameter semi-transparent cylinders.

DON'T DOUBLE UP

Doubling up on model geometry must be avoided. Have BIM Team members include in their models only the elements checked below for their discipline. Architects and structural engineers will duplicate or use the same model for most of the structure; architects and plumbing disciplines often model their own version of plumbing fixtures. Resolve between disciplines the elements that should be contributed in each discipline's model in order to eliminate elements that could create duplicate clashes or confusing results.

Create a chart like the one below, indicating all elements to be modeled, and then share it with the Team. The elements listed below are often disputed, but choose only one discipline to contribute these elements for the Consolidated Model.

OMISSION DETECTION

Examine each discipline's model to look for obvious errors and omitted elements such as “floaters” (floating objects that are too low or high) and “disconnects” (elements such as pipe or duct lines that are not connected), along with making sure drain and waste pipes are sloping. Disciplines should be encouraged to do their own internal clash detection and to coordinate with each other, behind the scenes, so that coordination meetings take less time.

To communicate to the disciplines where floaters and disconnects are located, create a Viewpoint that is zoomed into a floater or disconnect and redline each issue with a circle and place them in a dated folder called “mm_dd_yy Floaters and Disconnects” in the Saved Viewpoints window.

CREATE A KEY PLAN

A clash test “key plan” is the best way to see all issues on a relevant story and is a helpful visual summary for each established test. This top view will reveal the “nests of clashes” that comprise issues needing to be resolved.

Redline each issue with ovals and name them accordingly with a number along with the grid line closest to the issue: “1 @ A-5”. Export this image as a JPG and save it into the “Clash Reports” folder in the relative week's Coordination Folder. Continue creating key plans for each established test.

GROUPING CLASHES INTO ISSUES

Think “issues,” not clashes. Issues are the problem areas we ultimately need to resolve. An issue is often made up of several clashes in close proximity. To discover conflict issues, select an area around a grouping or “nest” of clashes using a rectangular Select Box from the Select/Arrow. This is best done from the top view in the 3D Scene View. The “Select Filter” assists in isolating only the clashes that involve the items you’ve selected in the 3D Scene View.

Make this issue a Group and name the Group folder based on the issues identified in the key plans made above and indicate the closest grid lines; for example, “1 @ A-5.”

ORGANIZED VIEWPOINTS AS INTERACTIVE CLASH REPORTS

Viewpoints are the best way to visually summarize the issues we have isolated in order to communicate to other stakeholders or members of our design team. Consider all the potential reviewers of the BIM Team’s work. Create and redline Viewpoints so that someone who was not a part of the meeting would know what you are trying to communicate.

Create a dated folder for each week in the “Saved Viewpoints” palette (Example: 01-13-12 Coordination Meeting). Within the BIM Coordination folder, create a folder for each test (e.g., Plumb-Elect, Mech-Elect, etc.) Name each Viewpoint the same as the corresponding Group name you gave each issue in Clash Detective, e.g., 1@A-5. Viewpoints redlined and notated can also be reviewed by others using the free Navisworks Freedom viewer or printed out and distributed to detailers, especially to those who do not have Navisworks Manage.

As an alternative to comments or tags, put abbreviated instructions on what to do as part of the Viewpoint name. The big advantage is that these instructions can then be seen in the Freedom file by anyone reviewing the work of the BIM Team.

When issues get resolved, rename each Viewpoint by placing **RESOLVED** in bold letters in front of each Viewpoint name. This makes it easy to see what issues are resolved and what issues are still open. Each issue that gets resolved is a “mini win” that is OK to shout out in bold.

Maintain a Viewpoint trail. Don’t overwrite the old Viewpoints with every new report. Keep them in their dated folders as a history of the coordination process, allowing the Team and other stakeholders to see at a glance how far you have come. Don’t create clash reports and simply say, “Here you guys go; see you next week.” Assign measurable tasks to make progress and hold all Team members accountable for their results.

COME FLY WITH ME

Load Navisworks Freedom on all stakeholders’ computers to facilitate having as many eyes as possible flying through on the Consolidated Model. Encourage members of the design team to review the Consolidated Model during design meetings, along with traditional 2D paper drawings. Meet with maintenance staff to show where items to be accessed are, with ceilings transparent and using Search Sets to help in navigation. To make it easier for non-technical people to navigate through the model, create a folder called “Rooms” to store Viewpoints named for each room. Navisworks is good at finding collisions, but cannot find design issues. Only trained professionals can.



John Stebbins is the Director of Operations for Douglas Pancake Architects in Newport Beach, California. Since 2008, his BIM projects total over \$1.3 billion, specializing in BIM facilitation, BIM execution planning, and 3D BIM constructability modeling. John teaches BIM classes in the University of Southern California’s Construction Management Department and Orange Coast College’s Architecture program. Since 1988, John has been a leader in transitioning the building industry to BIM technology. He has given countless lectures and seminars, as well as led user groups and organized workshops throughout California and Arizona on the subject of virtual design and construction and the power of BIM.

Autodesk Transforms Small Design + Build Firms' Capacity to Deliver Major Projects

Autodesk's software suite has been game-changing for my Boise-based design + build and remodeling firm, Ethos. Autodesk products serve customers across the manufacturing, architecture, building, construction, media, and entertainment industries. All while aiding in the development of robotics,

Augmented and Virtual Reality, and 3D printing. Practically speaking, Autodesk offers powerful planning tools and GIS systems to build projects, enabling site mapping from multiple sources overlaid in one spot. For 40 years, not much in our industry has changed on the tech side. But because of Autodesk we can now spot mistakes from

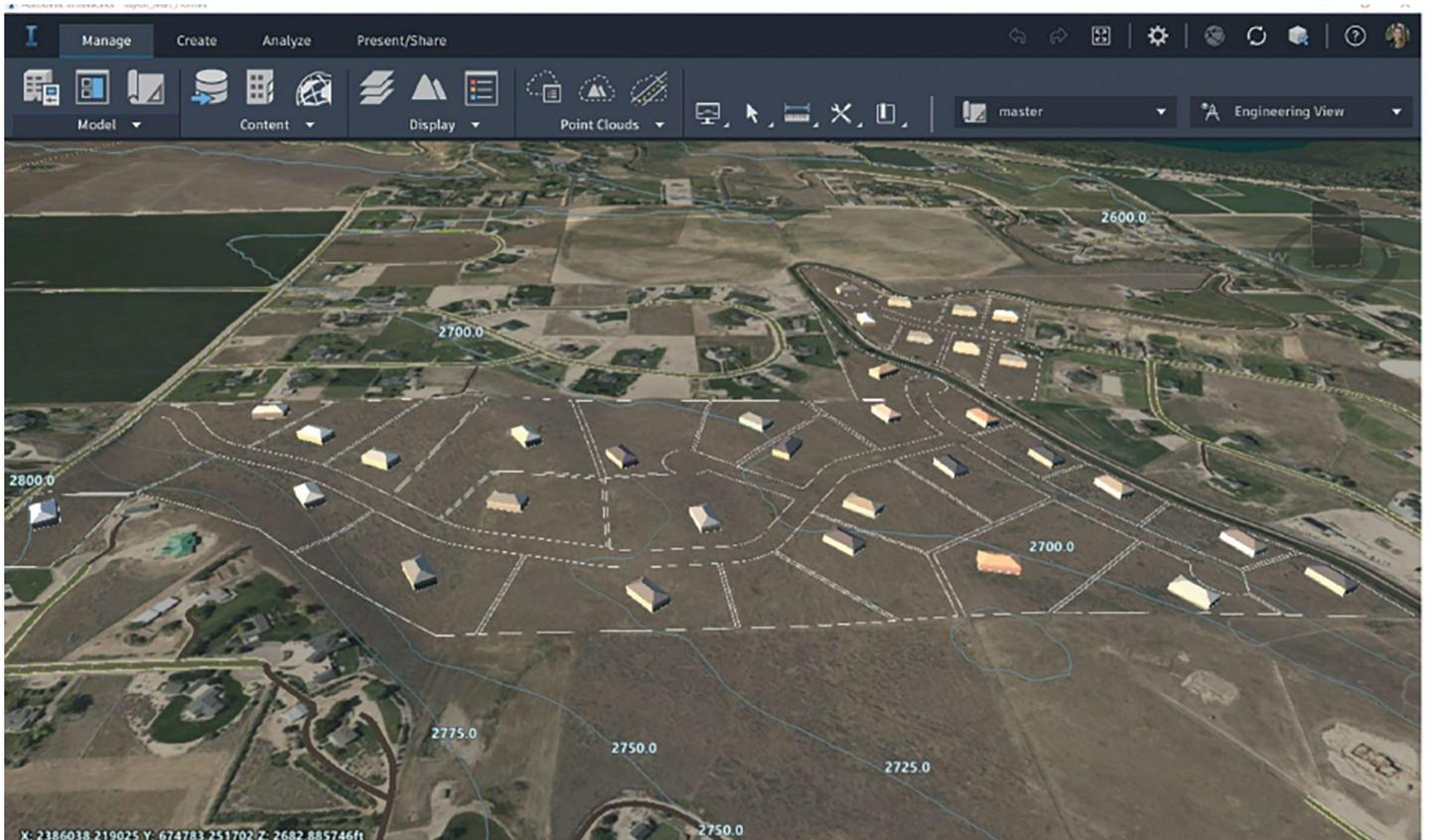


Figure 1: 122-acre residential project using Autodesk InfraWorks

vendors (like if the wrong plan was sent over) and it offers ways for multiple vendors or contractors to collaborate for the higher good of delivering on homeowners' dreams.

For our small but mighty team of nine, this tool means we can compete with much bigger firms, instead of being the perpetual underdogs in our community. Autodesk tools allow for accuracy to improve our bids, allowing for 3-D models



Figure 2: Rendered project



Figure 3: Actual build

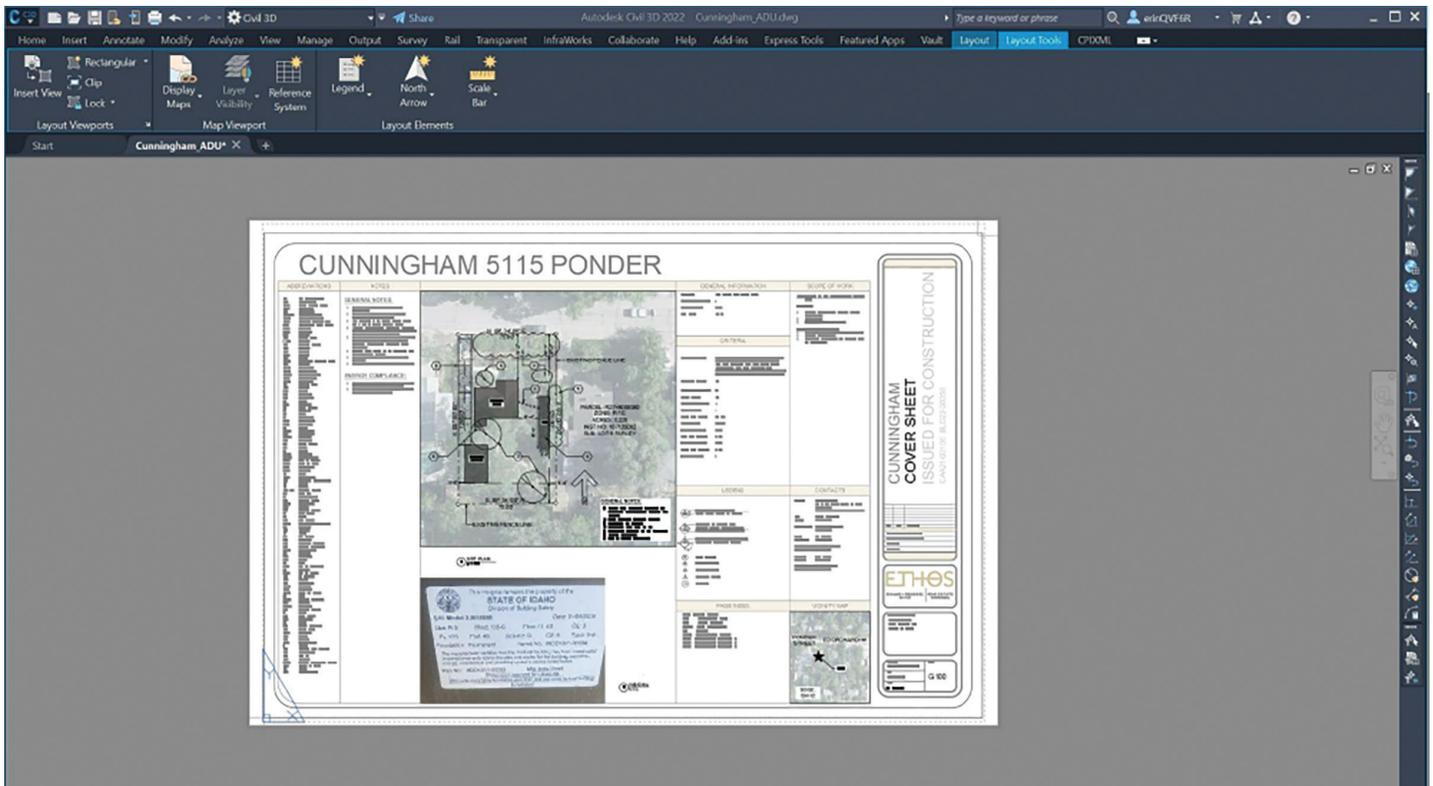


Figure 4: Site Plan and project cover page from Civil 3D project. We use the aerial imagery from Civil 3D and the location maps from the set location feature that is available out of the box

of projects, which means fewer mistakes than traditional 2-D drawings that can cause cost overruns later.

TAPE MEASURES BE GONE

Autodesk is advantageous for remote teams or hybrid organizations because it allows our team of contractors and designers to use a cell phone to scan homes and take entire work site scans using Apple technology. This technology used to cost tens, if not hundreds of thousands of dollars, but now, with a \$1,300 Apple phone we are able to seamlessly upload point clouds and model meshes directly into our project plans. Autodesk makes it easy with Recap, Civil 3D, AutoCAD Architecture and the entire suite of products in the AEC (Architecture Engineering and Construction) collection. This LIDAR scanning involves a remote sensing method that I previously used at a large power utility job years ago to plan for infrastructure. Right now, I use an app called PolyCam to export files for use within the AEC Collection, which can export 15 file formats and is user friendly.

This also has major benefits to small firms that use the AEC Collection for drafting, which is now far more affordable than drafting with the AutoCAD programs of the past. This AEC Collection allows

small teams to enjoy the bells and whistles that previously were available only to large firms. What used to take hours, multiple visits over days, or even weeks because of hand-measuring and re-measuring, now takes 10-20 minutes and a cell phone. This efficiency saves money and is more effective because, in construction, when mistakes are made, it's due to improper planning. Autodesk products offer accurate models, drawings, and therefore, accurate costs.

STOP UNWANTED SURPRISES IN A HISTORIC HOME REMODEL

Recently, our firm was tasked with a major remodel to the kitchen, primary bedroom and bathroom, and living room of a large historic home in Boise's North End. The couple had moved in from another state and wanted to know what exactly they were dealing with when it came to the structural issues of their home. As eco-minded consumers, they did not want to cut corners when it came to the environmental health and energy efficiency of their remodel.

We uncovered a structural issue in the middle of remodeling and using Recap we were able to upload a scan and communicate with the structural engineer in a virtual meeting where measurements were made.

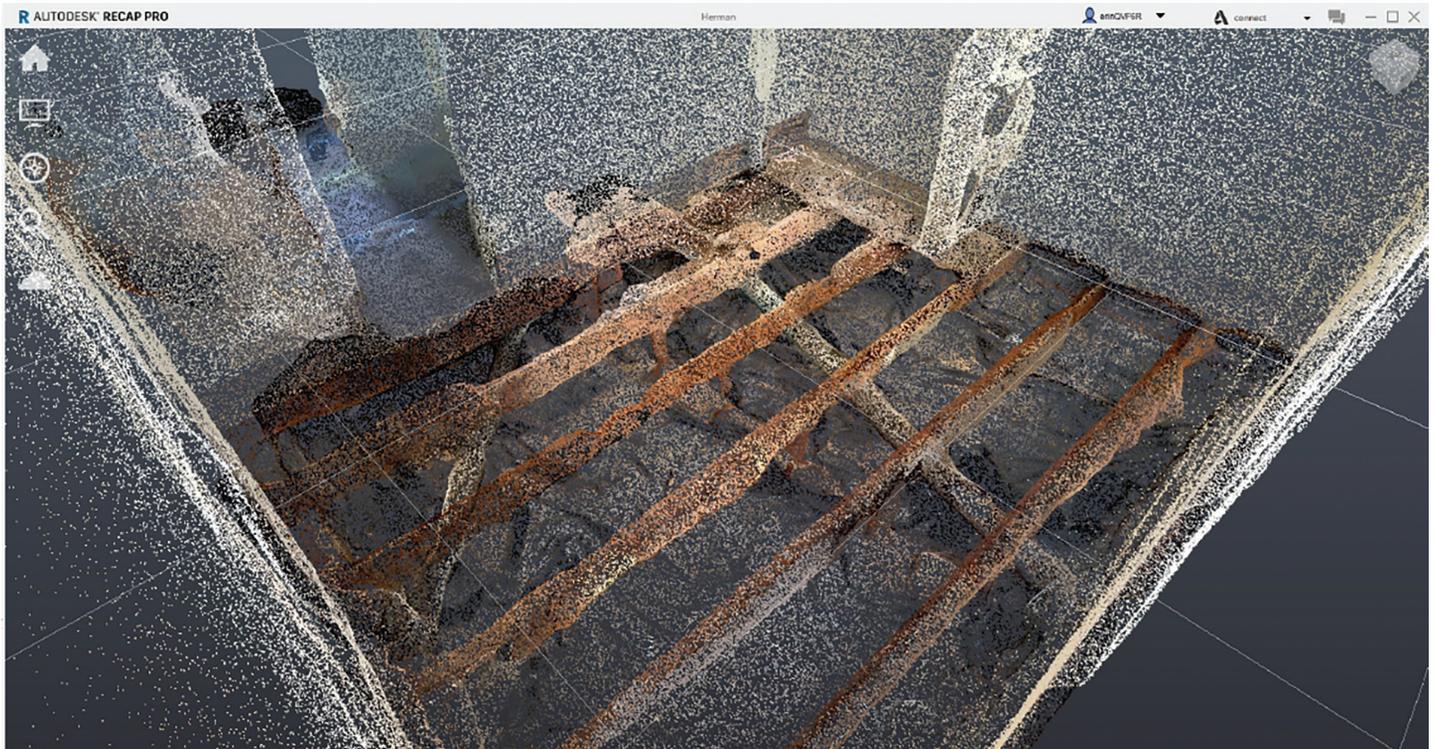


Figure 5



Figure 6: Rendered project

As you can see in Image 5, with the floorboards removed you can easily measure distance between floor joists and make other structural observations.

Our team knew there was a structural issue

because the floor was sinking near a door about an inch and a half, but the crawlspace was inaccessible when we first took on the project making it hard to see the root cause of the sinking floor. While in the demo phase, we realized a major wall was



Figure 7: Completed project

completely unsupported with heavy material resting solely on floorboards, which was very unsafe. This was during the height of the pandemic, so it wasn't easy to get an engineer into the home to inspect it, but because of Autodesk and our scans, we could work with them virtually, determining measurements, lumber needs, and saving weeks of time.

Autodesk has helped us reduce costs and save time by merging preservation and technology. When you take on a project involving a house that is 100+ years old, there is a lot of uncertainty. This technology allows a small civil engineering, architectural and design firm like ours to serve the needs of our clients. There is a lot of value in this technology because we can answer homeowners' questions without leaving the office. It tells the story of how a home has changed over time, and we can document it with records that inform each aspect of the design and build project.



Erin Sorensen is VP Engineering and Construction at Ethos. She has a Bachelor of Science in Engineering from Boise State University and has a Credential of Readiness from Harvard Business School. She holds coveted eco-friendly certifications, Zero Energy Ready Homes and Passive House Builder (pending), is an OSHA 30 card holder and a certified Renovation, Repair and Painting (RRP) remodeler as are others on the team. Erin has launched several businesses including a community preschool, residential and commercial property management company, and affordable housing made from shipping containers. From 2018-2020, working as a member of a design and development team, Erin helped build 93 affordable living units in the states of Idaho, Colorado, Virginia, and California. At Ethos, Erin leads development and construction projects. She oversees design, engineering, entitlements, permitting, and construction of historic preservation projects, new residential and commercial structures.



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Welcome to *AUGIWorld* Inside Track! Check out the latest opportunities to advance your skills, processes, and workflows in your firm with the most current AEC-related software and hardware updates available.

It is with a sad heart that I type these words, and I wholly echo the condolences from all the AUGI community to Brian's family and friends. I normally met Brian on an annual basis in the same place every year, the AUGI booth, at Autodesk University. Due to the pandemic, I had not seen him for some time and was saddened to hear the news of his passing. With a ready smile and genuine friendliness, we often chatted about various things, ranging from his love of bikes all the way to how something might work in an Autodesk application. He will most definitely be missed.

I have been asked to continue Inside Track for the moment, and I see it as an honor to have been asked. I just hope I can do it justice for Brian, so here are the latest opportunities to advance your skills, processes, and workflows in your firm with the most current AEC-related software and hardware updates available.

– Shaun Bryant



DiRootsOne – 8 PRODUCTIVITY TOOLS (FOR REVIT)

<https://apps.autodesk.com/RVT/en/Detail/Index?id=6035794126247149351&appLang=en&os=Win64>

Autodesk Revit

Version: 2023, 2022, 2021, 2020, 2019, 2018

DiRootsOne gives you EIGHT free Autodesk Revit plugins to make your life easier.

SheetLink – Revit to/from Excel.

FamilyReviser – Manage your Revit families.

OneFilter – Quickly find your families in your Revit models.

TableGen – Import your spreadsheets into Revit as Legend Views, Schedule Views, and Drafting Views.

SheetGen – Create multiple drawing sheets, place views on templates, and manage drawing sheet revisions.

ReOrdering – Easily renumber Revit instance parameters by using a prefix, a suffix, and a multiplier.

ParaManager – Manage Revit parameters inside project and family environments.

PointKit – Boost your productivity when working with Point Clouds.



DRAWING PURGE (FOR AUTOCAD)

https://apps.autodesk.com/ACD/en/Detail/Index?id=3773138176974634673&appLang=en&os=Win32_64

Autodesk AutoCAD

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Electrical

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Mechanical

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Architecture

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD MEP

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk® Civil 3D®

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Map 3D

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Plant 3D

Version: 2023, 2022, 2021

(NOT compatible with AutoCAD LT versions)

Drawing Purge gives you TWO free tools to enhance the Purge function in Autodesk AutoCAD.

DWG-PURGE – Purge the current drawing of all DGN unreferenced LineTypes, RegApps, and Annotation Scale. It will also allow for the manage of purging attached XREFs.

DWG-PURGE-BATCH – Purge multiple drawings without opening the files. Select the drawing from the 'Select drawing' button, by selecting a folder, Copy/Paste a folder path, and Drag and drop.



COINS TRANSLATE (FOR AUTOCAD)

https://apps.autodesk.com/ACD/en/Detail/Index?id=8420095543248601052&appLang=en&os=Win32_64

Autodesk AutoCAD

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Electrical

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Mechanical

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Architecture

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD MEP

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk® Civil 3D®

Version: 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Map 3D

Version: 2023, 2022, 2021, 2020, 2019, 2018

Autodesk AutoCAD Plant 3D

Version: 2023, 2022, 2021, 2020, 2019, 2018

COINS Translate gives you a one-stop translation tool within AutoCAD. Translate text, MTEXT, attributes, and multi-leaders directly inside of Autodesk® AutoCAD®. This AutoCAD plug-in uses the Microsoft Translator

service to translate from one language to another and supports Autodesk AutoCAD 2016 to 2023 versions.

NOTE: This app does not support Autodesk® AutoCAD® LT and uses a custom installer (and not the standard Autodesk App Store installer).



COINS AUTO-SECTION BOX (FOR REVIT)

<https://apps.autodesk.com/RVT/en/Detail/Index?id=8920075109543819118&appLang=en&os=Win64>

Autodesk Revit

Version: 2023, 2022, 2021, 2020, 2019, 2018

The COINS Auto-Section Box tool gives you tremendous speed and agility to manage three-dimensional views when analyzing model areas of particular interest. It allows for quick and easy creation of temporary and permanent views to be used for immediate interrogation of the model or for construction document deliverables. This works by allowing you to focus on the model instead of managing views or a view's properties.

NOTE: This app uses a custom installer (and not the standard App Store installer).



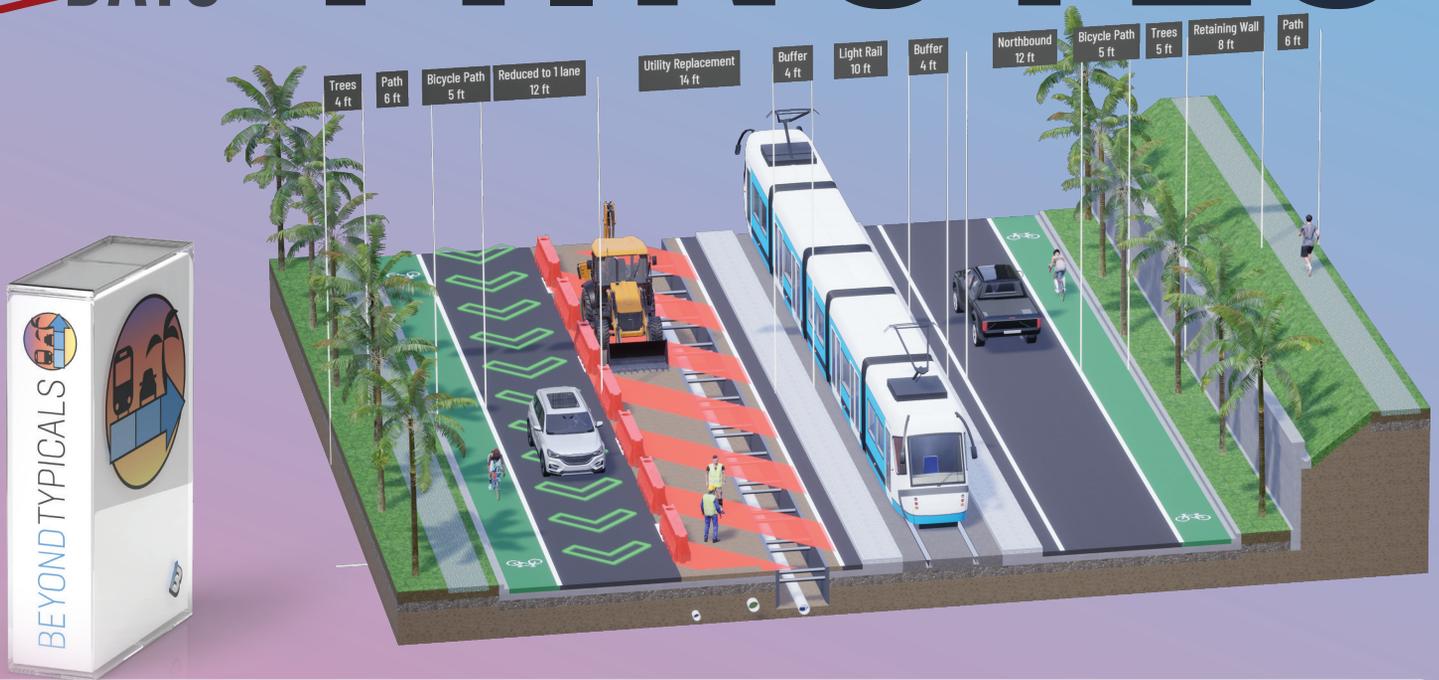
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MAKE DESIGN DECISIONS IN

~~MONTHS~~
~~WEEKS~~
~~DAYS~~

MINUTES



Beyond Typical is the all-new, drag and drop 3D typical section creator from Beyondware that allows urban designers, contractors, transportation engineers and more to design, phase and communicate roads and streets in real-time. This PC application is easy enough for anyone to use, but powerful enough save your project time and money and amaze your clients.



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