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June 2018

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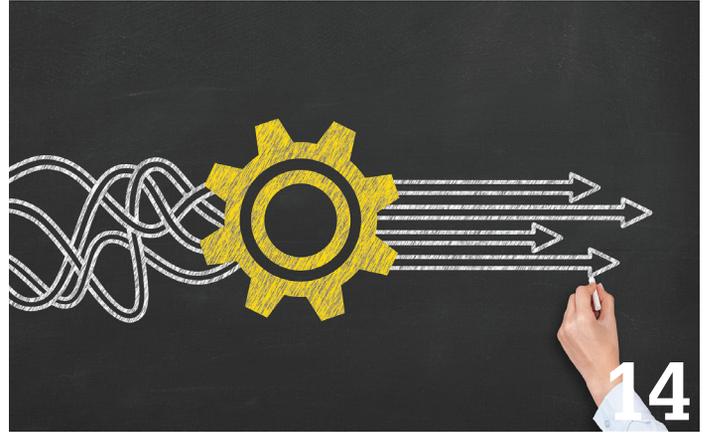


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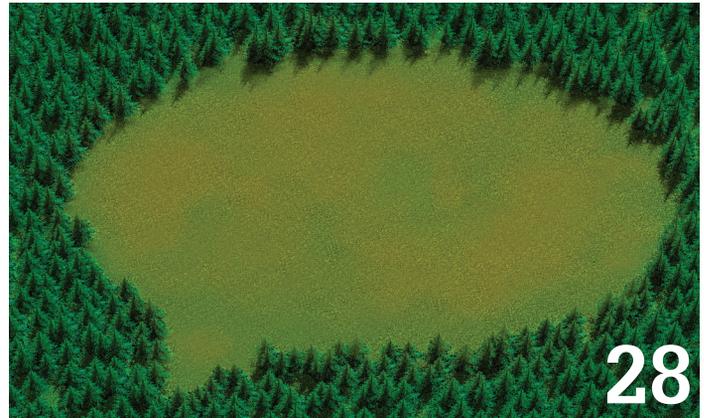
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Letter from the President



AUGI



Earlier this spring, the *Washington Post* published its “Spring Cleaning” list—10 things they think we’d all be better without. (Nominees included sit-ups, open offices, replay review, and homework.) Ordinarily, I’m all for decluttering, but you can’t just toss things or discard traditions willy-nilly. You need to look at them and see what purpose they serve before you can decide if they’re worth keeping.

And what AUGI tradition did this article remind me of? Our annual spring meeting! Historically, the Board of Directors meets monthly by phone and twice a year in person—at AU in the fall and at an Autodesk office (usually San Francisco) in the spring.

You may be wondering, with all the technology available to us these days, whether it’s still necessary to meet face-to-face. I think it is, and here’s why.

Spontaneous Personal Interactions. You’re probably familiar with the “water cooler effect,” even if your office doesn’t have a literal water cooler. Contrary to the appearance of “wasting time,” time spent chatting with colleagues can often have a positive impact on morale and productivity. If you’ve ever gotten a helpful tip from a coworker while discussing a problem by the coffee machine or offered advice of your own after overhearing team members talking in the break room, you’ve benefited from the water cooler effect... and it only works if you’re all in the same place.

On-boarding New Directors. Every year there are new members elected to the Board, and while sometimes they’re returning to serve another term, often they’ve never been on the Board before. During the first few months of their term, they get to know us somewhat during our regular calls, but it’s still no substitute for an actual introduction. Meeting in person is the opportunity to put faces with names, and see what people are like outside a conference call setting.

More Efficient Agendas. The Board of Directors is composed entirely of volunteers with day jobs. We all bring the best we can to our calls, but it can be difficult to switch gears after a long day at the office (or in the middle of it, depending on the Director’s time zone). When we meet in San Francisco, we have two-and-a-half solid days to work together and focus on the task at hand. Having this concentrated block of time allows us to have more extended conversations, or to leave a topic for a while and come back to it, without having to reset our focus each time.

We weren’t able to meet in person last spring, and I really missed it. But we were back this year, and better than ever!

We structured this year’s agenda to take advantage of the fact that we would be in the same building as several of our Autodesk partner teams—everything I said above about the value of face-to-face meetings for the Board applies to external relationships as well, of course. Over the course of our day and a half at One Market, we met with people from Expert Elite, AutoCAD Q/A, User Research, Forge, Community, Autodesk Knowledge Network, and of course Autodesk University. These were really great conversations with people working on really great things—it’s exciting to see the direction a lot of these projects are taking, and I’m looking forward to finding new ways for AUGI and Autodesk to partner that can benefit us all.

On Saturday, we had a full day with just the Board and Management Team to talk about the state of the organization and what we hope to accomplish in the coming year. I don’t have room to describe all the initiatives we discussed, but stay tuned... we hope to have some exciting announcements later this year!

It’ll be hard to wait until AU Las Vegas to see all of these terrific people—and hopefully many of you!—but I think the time will pass quickly. You can make it go faster by putting in a proposal to speak at AU... there are still a couple weeks to go in the Call for Proposals! (Hint, hint.) It’d be great to see the speaker list just packed with AUGI members.

A group photo at the Autodesk Gallery is shown on the right. If you’re ever in San Francisco, you should definitely check it out!

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Bridging the Gap Between Drone and CAD



Drones are everywhere and drone data is at everyone's fingertips! The fact that this simple machine flies through the air, captures photos, and then somehow returns usable, actionable data is just fantastic. But what do we do in AutoCAD® and Civil 3D® with the data? We can bring in the ReCap file, but then what? Connect some dots, draw some lines, but it all just seems too much of a manual process.

I've been in the reality capture industry for years and have really taken to the drone space, but have always struggled with creating a useable existing conditions map from the data within Civil 3D, until now!

Recently I was introduced to Virtual Surveyor (<https://www.virtual-surveyor.com/>) and feel that this is one of the best, if not THE best, tools out there to bridge that gap between drone and CAD. This article looks at some of the many features within the software.

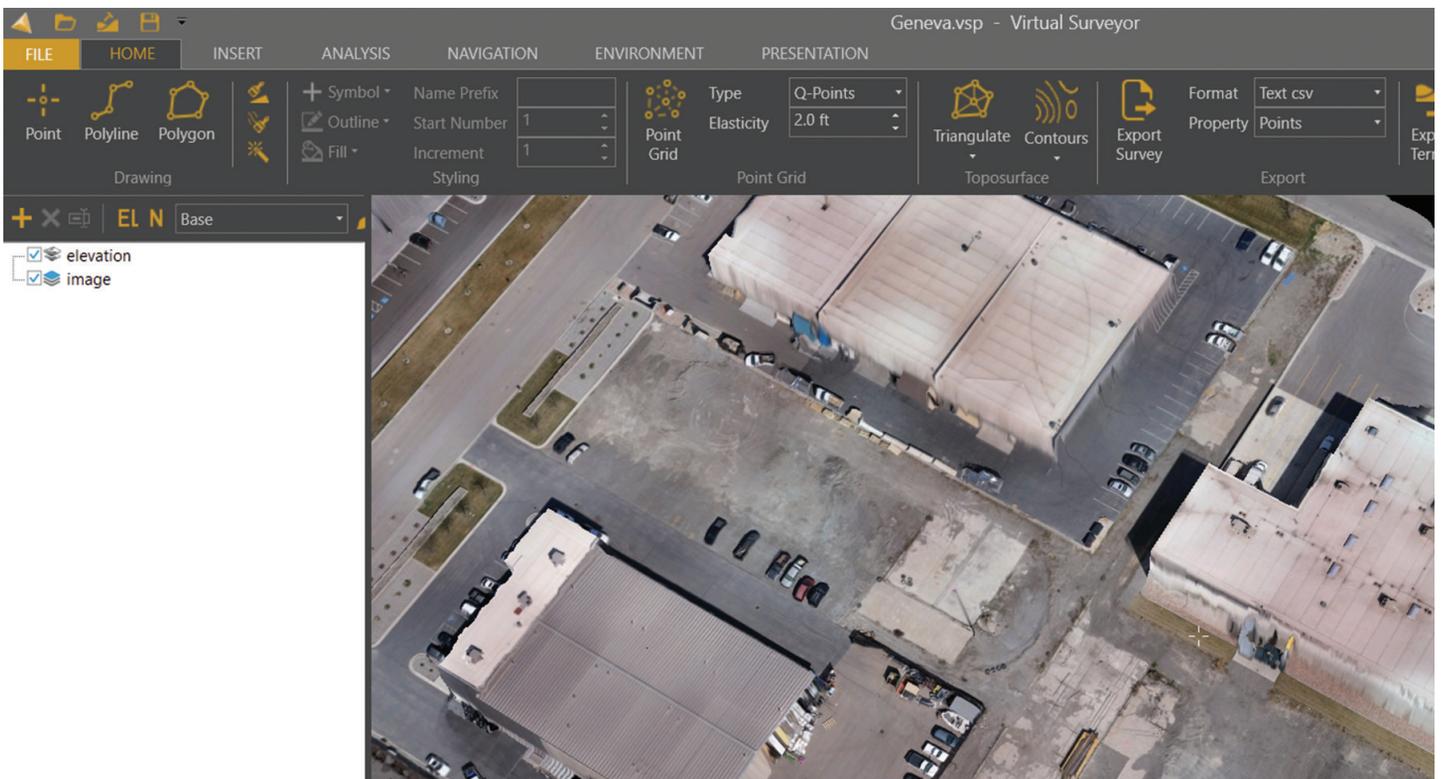


Figure 1

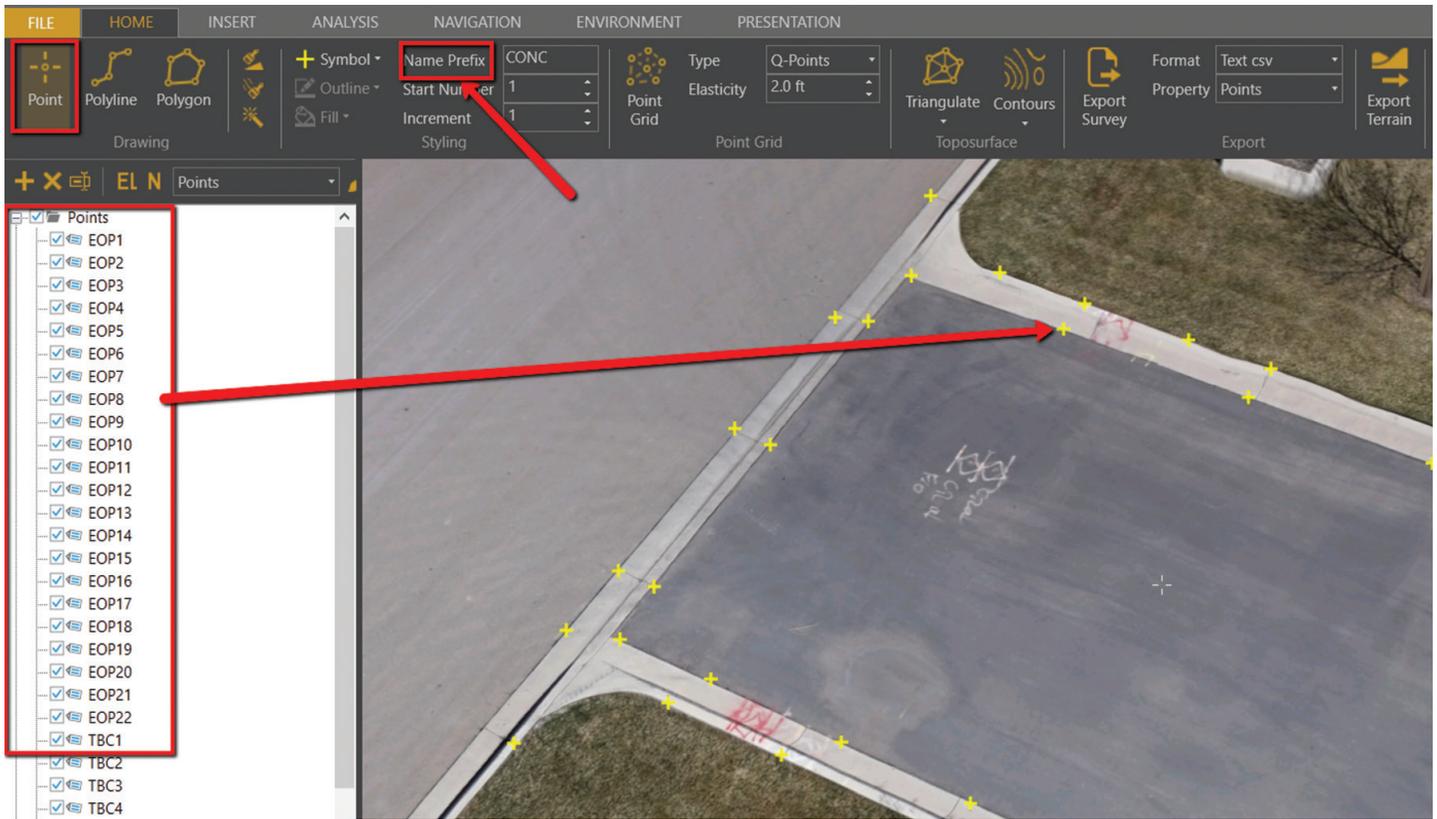


Figure 2

IMPORT DATA

The creation of a new project is very simple and takes only a few minutes regardless of project size. All you need is a raster image file (.tiff) and an elevation file such as a DEM. Combine those two and you are off and surveying in your virtual world. With software such as Pix4D and 3DR SiteScan, these formats are immediately available upon successful processing.

SPEED YOUR PRODUCTION PROCESS

Accelerate your survey workflows with the productivity tools in Virtual Surveyor (VS). The software produces the bulk of the output. You only need to review, remove, and add some points or breaklines to complete the job.

You will see that Virtual Surveyor has a simple user interface. There are not a ton of overbearing tools within the software. Along the left side you will find your project data. As you create layers for points, breaklines, topo, etc., they will show up in this dialog box. See Figure 1.

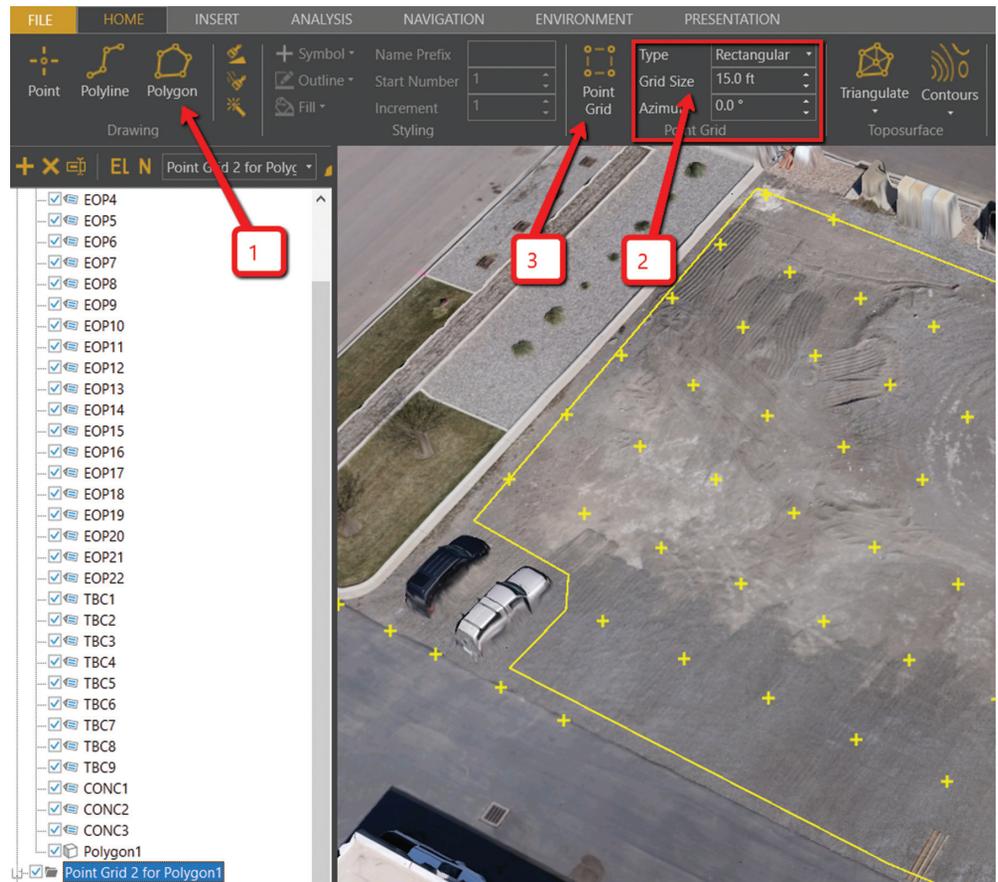


Figure 3

Surveying Tools

Analyze the virtual environment and draw points, point grids, lines, and polygons where you would measure them if you were in the field. Fly around and look at different angles to make sure your survey is accurate.

You can add descriptions to your points as you pick them on screen. And if your Civil 3D is set up to run the automated linework, creating these points and importing into Civil 3D is an extremely streamlined workflow. See Figure 2.

Have a big field and want to create a grid of points? VS allows you to create a polygon around an area and perform multiple functions such as creating a grid or even removing vegetation. To create the polygon, simply choose the polygon tool from the ribbon, then draw your area of interest on the screen (Figure

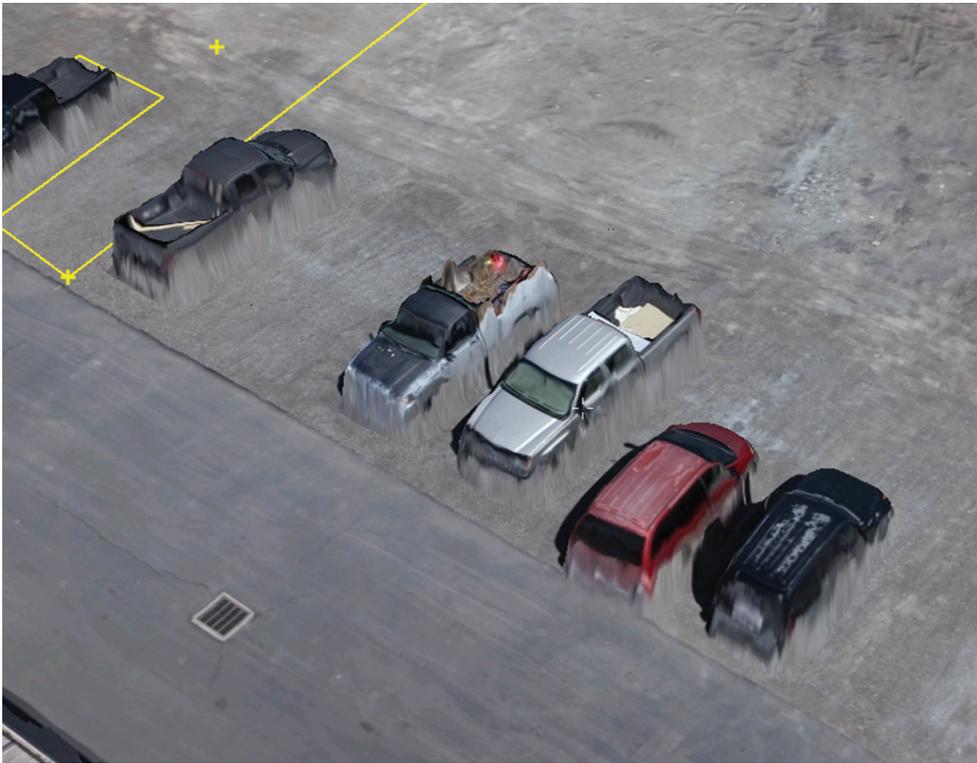


Figure 4

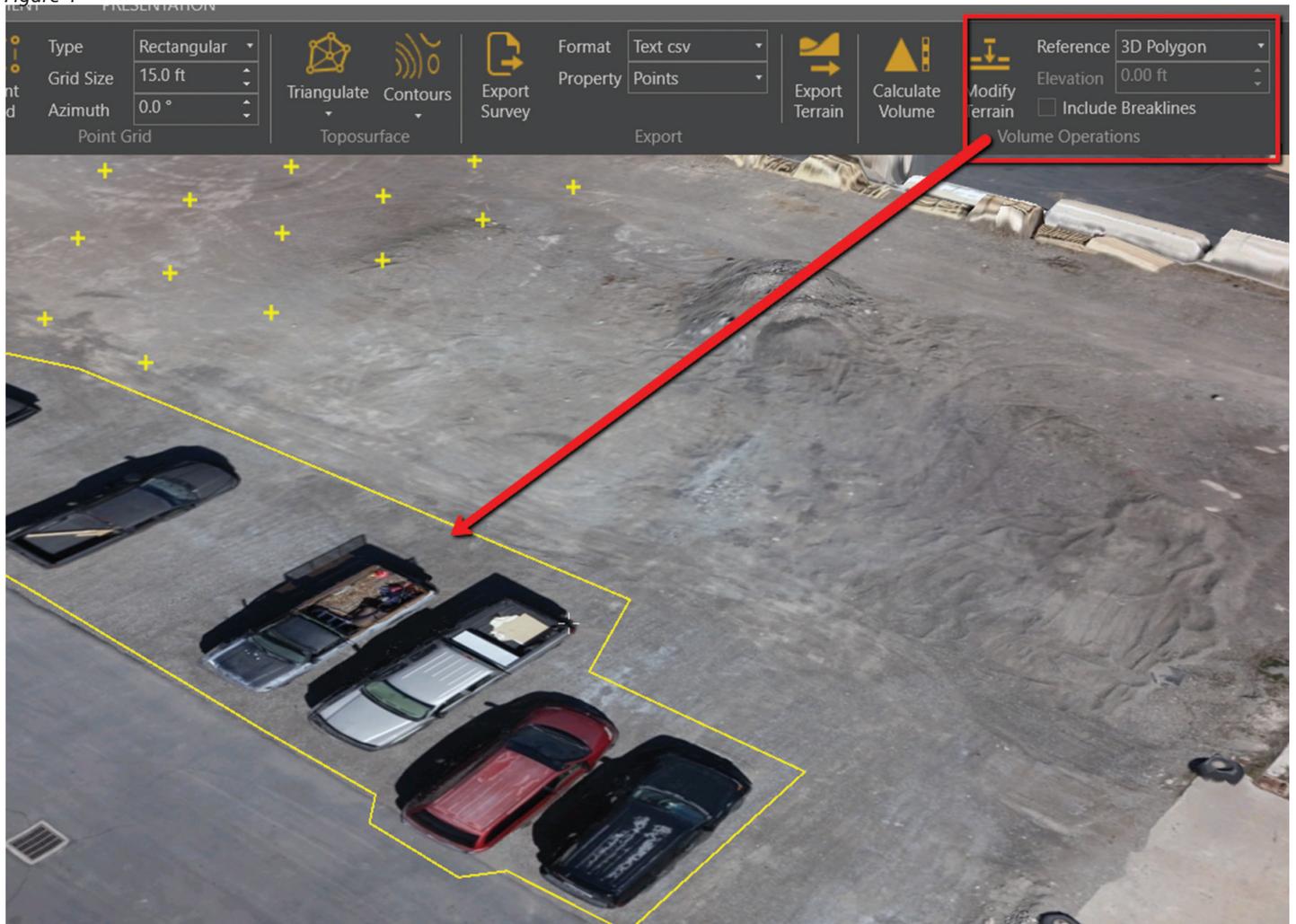


Figure 5

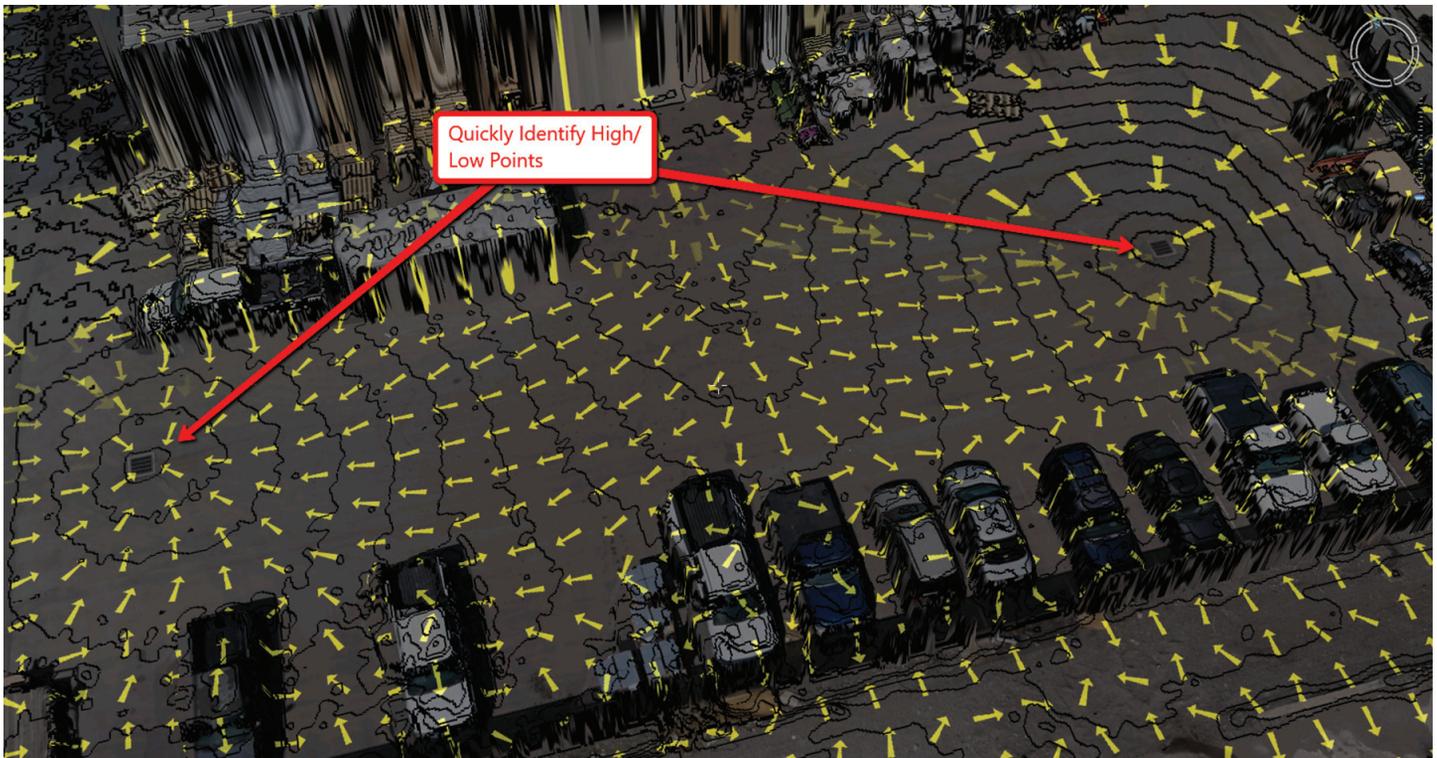


Figure 6

3). Once that is drawn in, select your option and grid sizing from the ribbon and your points will be created. This is a great way to minimize the amount of data you bring into Civil 3D.

One more tool in the survey workflow I use a lot is the modify terrain tool. One of the biggest pains with UAV data is to remove things such as vegetation, buildings, and cars. There are plenty of classification tools out there and we even have tools in Civil 3D and InfraWorks that help a little, but with the Modify Terrain tool in VS, the process has become very simple.

Figure 4 is a photo before the modification.

To perform the task, draw a polygon around the area you wish to modify and select the Modify Terrain command. That's it! The terrain is adjusted based on the 3D Polygon you just created, and just like that the problem areas have been removed. But don't worry, if you don't like the results, you can either remove the data from the project info along the left, or modify the results in several simple ways. This makes quick work of cleaning up the terrain on even the largest projects!

Figure 5 is a photo after the modification.

Analysis Tools

There are plenty of easy-to-use analysis tools within VS. From the measurement

tools you can quickly check slope, distance, and height of objects. From the terrain analysis tools, you can quickly display your contours in multiple different intervals, modify terrain and slope colors, and also turn on slope arrows showing the direction of flow. In Figure 6, you can see the contours turns along with the slope arrows. This is a good example of how detailed and accurate drone data can be, and just how easy it is to consume that data without bogging down your machine.

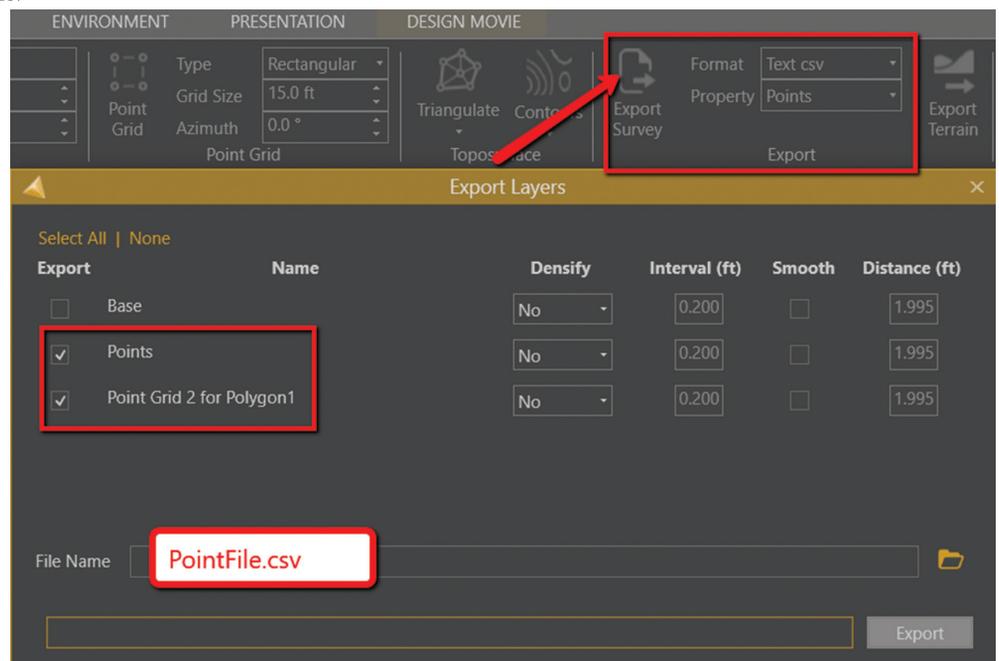


Figure 7

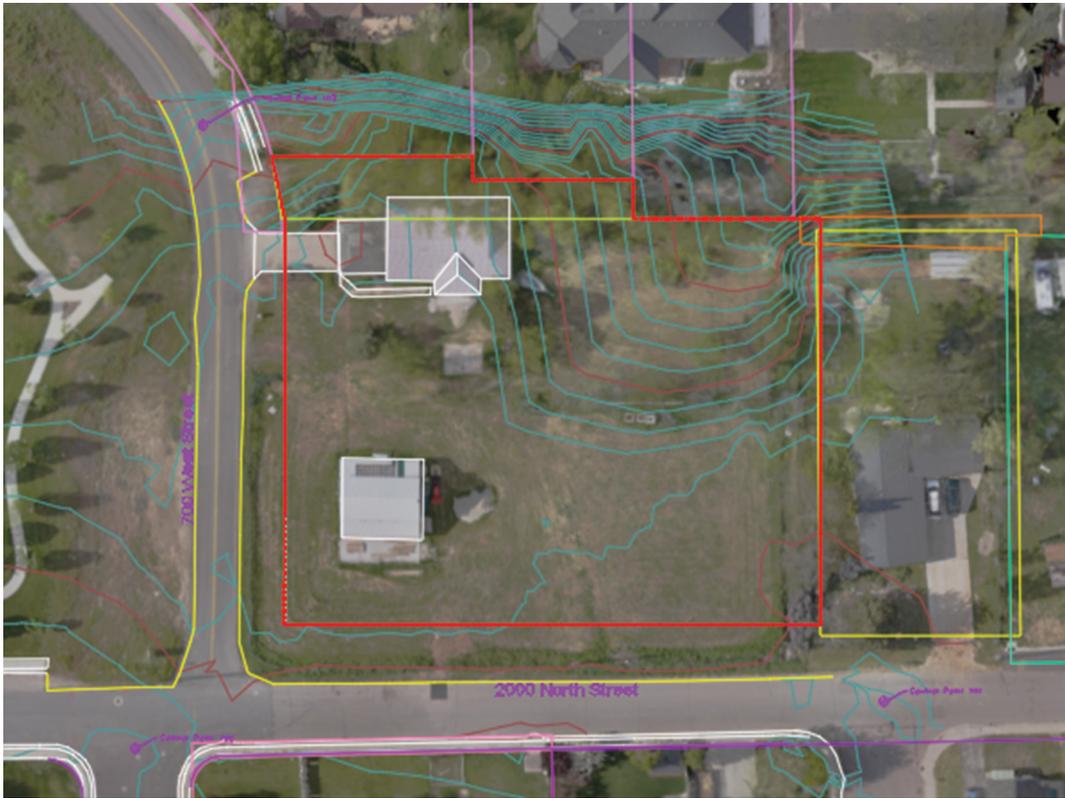


Figure 8

There are several additional methods of terrain analysis. You can create a quick profile, view line of sight from several vocal points, and create a viewshed of anywhere on site.

Miscellaneous Tools

Navigation/Environment

You don't need a powerful computer to make a big impression. Virtual Surveyor runs on a simple laptop. Your data is displayed fluently and you have full control over all movements you want to make.

Presentation Tools

Understanding a problem is one thing, but communicating it to other people is quite another. Virtual Surveyor has a set of tools that allow you to present your work as video or interactive presentations.

Share Your Data Easily

Do you need to deliver your work to a customer or share it with a colleague? VS offers a free version that allows you to bring your virtual site to the desk of your clients and customers.

BRINGING IT ALL TOGETHER

At the end of the day, we still need a useable CAD file of the existing conditions. Whether it is a boundary and topo drawing, an ALTA, or just a surface within Civil 3D, we still need that data. It has to be consumable by the whole team of designers, drafters, and engineers.

Virtual Surveyor makes this process extremely simple. I see a couple different workflows here.

1. Create points in VS, export to CSV, and import into Civil 3D for automated linework.
2. Create breaklines in VS, export to DXF, and create basemap from there.

Either way, VS gives you multiple options to create your CAD file. An Export panel on the Home tab allows you to export data in multiple formats. To export points, simply choose the format (DXF, CSV), choose the property, and select Export Survey (Figure 7).

You can then export any linework you have created in VS. You can export linework as a DXF file or a Shapefile.

The final export option allows you to export the terrain you created in VS. VS allows you to triangulate and contour

your data as you create it, and then export your final surface if you'd like. You could also just export points and breaklines and create that surface inside Civil 3D. See Figure 8.

CONCLUSION

Being able to use all this awesome data is key. Flying a site and having a cool point cloud is just the beginning, but there has long been a gap between drone data collection and what most surveyors and engineers still need in Civil 3D. With Virtual Surveyor we have now been able to bridge that gap and make a final deliverable that can be consumed from one aspect of the project to the next.



Shawn Herring has been a part of the design engineering community for roughly 13 years in all aspects of design, construction, and software implementations. He has implemented and trained companies across the country on Civil 3D and other infrastructure tools and their best practice workflows including many reality capture workflows. Shawn can be reached for comments or questions at awautocad-civil3dcm@augi.com.

new CAD find replace

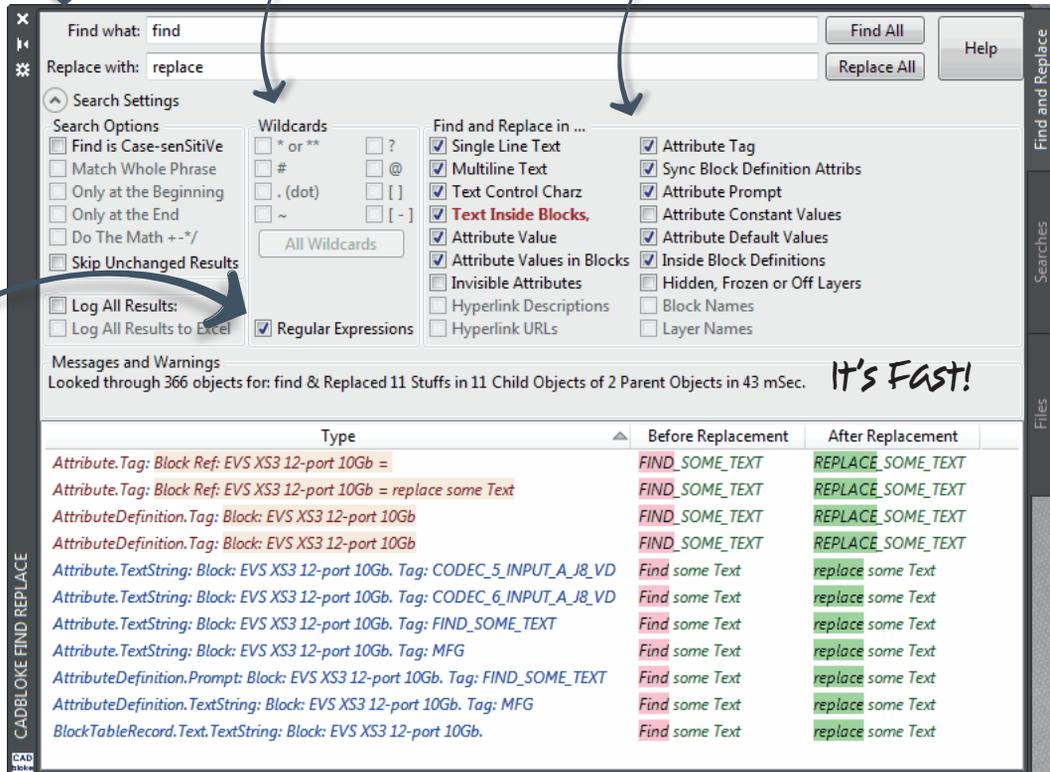
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Convenient
Tool Palette

Any Wildcards
& settings
You like

Attribute Tags, Prompts & defaults
Inside Blocks with auto ATTSYNC

Regular Expressions
(Wildcards on steroids)



It's Fast!

Know EXACTLY
what you found

Results & Replacements
you can actually see

To Lots of searches all at once. Save & Load Your Lists of Searches
Search Lots of Your Drawings all at once. (Coming soon)

The convenient tool palette means you never need to close it so you never lose anything.

You can select any of your results and just replace those, or select them in the drawing.

Some search options in this screen-shot are grayed-out because it is set to use regular expressions, otherwise you can use any combination of wildcards and settings you like.

You can save your lists of searches and load, edit, or combine them later in the 2nd palette tab.

Run your list of searches on a list of files and see those results in Excel, from there you can tag them to be replaced or ignored - coming soon to the 3rd palette tab.

You're looking at a pre-release version of CAD replace for AutoCAD™.

I wrote the first version of CAD replace 10 years ago, this version started 5 years ago and has more than 1,100 code-commits, so it has stood the test of time. I use it and improve it every day.

I believe that software should work for you, the way you want. Please give CAD replace a try and let me know what you like, what you want, I'd love to hear from you.

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Location, Location, Location

Everyone knows this is the mantra shouted by every real estate agent from millennia past. I can just hear King Tut getting a sales pitch from the Executive Tomb Builder “You want to be right here. In the Valley of the Kings. Nowhere else has a better location.” Today you may hear it as buying the right home in the right place. Locations near good schools, parks, shopping, etc. All of this improves your life.

Speaking of location, I did a search on the web for “where to sit in a movie theater” and got over six million results. Crazy as it might seem, a lot of people have opinions about the exact best place to watch the silver screen and eat popcorn. If you want to

get a good laugh, search on “Sheldon - the acoustic sweet spot” to get a short clip of how Sheldon Cooper finds the best place to sit at the movies.

Any application of this mantra will do. So I will apply it to CAD/BIM/Tech Managers to say that you need to check your location in many ways. How can location improve your work life, enhance your career, and set you on the right path toward advancement?

WHERE DO YOU SIT?

I have always requested a specific location for me and my team in the building or floor I work on. As Tech Managers, we need to be in the thick of it. You do not want to be off in some corner.



YOU DO NOT WANT TO BE OUT OF SIGHT FROM THE FIRM'S LEADERSHIP. OUT OF SIGHT, OUT OF MIND. DON'T LET THAT HAPPEN TO YOU.

You might think that you can get more done if others would not pester you so much, but that is not your lot in life as a manager of technology. You want and need to be right in the center of project flow. I usually desire a spot that others might consider too noisy or chaotic. I want to be right off the traffic flow. I want to be next to the place people congregate. That is usually close to the printers/plotter or by the lunch room or maybe right off the main entry hall.

This gives everyone access to me as they pass by. It allows them to stop and chat or complain or ask a question. If I am distant from their desk, I stand little chance of them passing by and stopping. I will take a smaller office, with no windows, if it gets me closer to the action.

It will be noisier and you need to get used to that. If you like library sound levels, then you may bristle at the thought of being in a "shared space" office location. You may feel like you get less done, but others will appreciate what you will do for them. And that is what this is all about—serving the customer, not yourself.

If I happen to have a team member or two that support tech with me, I encourage them to sit away from me. Better they be scattered around the office next to the design crew. I do not want my whole team to be down some hallway and clumped together. Station them on the factory floor where the work is being done. You would be amazed at how much you might be able to address and fix just by overhearing conversations around you. You stand out by blending in with the project team.

WHERE DO YOU WALK?

When I am not in my office, which should be a good portion of the day, I walk around. I do not try to find the quickest way to the lunch room and dart back as to avoid people. I want to see people and talk to them. I walk around the plotters, break room, manager's row, and any other place that might be an opportunity to talk with people. When I walk, I stop and talk. I keep it brief, but I do make a point of engaging. If people are busy, let them get back to work quickly. If they do have something that needs to be addressed, they can mention it. "Are things going okay?" is a simple question that can open a large topic or they can move past it quickly if they are busy.

WHERE DO YOU NOT WANT TO BE?

You do not want to be in a location that makes it hard for folks to come to you. I am amazed at how some staff do not want to walk to your office. So bring the office to them by sitting closer. I actually have moved to open desks for a few hours to work just so I am closer to the design teams as they wrestle with the software. Being close to them, I can answer questions, suggest workarounds, or just get a feel for what works and what does not.

I have heard of tech team fortresses that have locked doors and make people knock to get in. That will frustrate them and they will soon stop coming to you. You do not want to be in another building or on a different floor from the production work.

You do not want to be out of sight from the firm's leadership. Out of sight, out of mind. Don't let that happen to you. By mixing in with the project teams, you are right in the thick of it. Ready to assist as needed. You can listen to what causes delays and gather ideas for improvement.

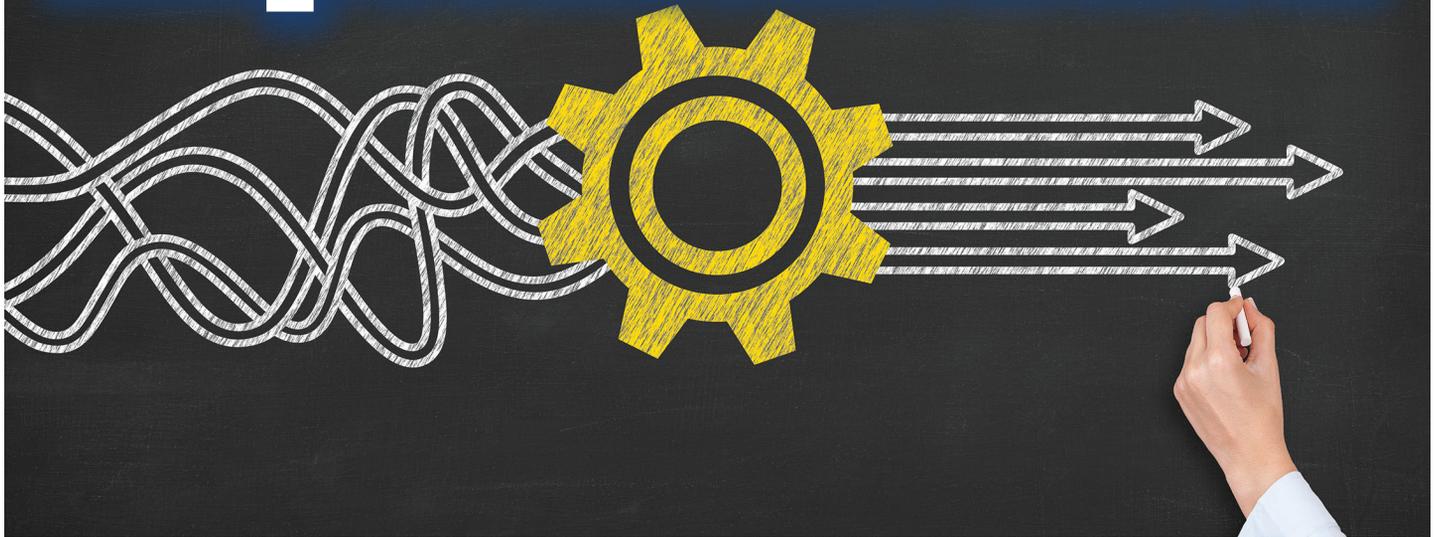
WHERE THE ACTION IS...

That is where you want to be. Right in the center of the activity. Get in there and stay in there. Location, location, location.



Mark Kiker has more than 25 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 Director of IT for SIATech, a non-profit public charter high school focused on dropout recovery. He maintains two blog sites, www.caddmanager.com and www.bimmanager.com.

The Challenge of Implementation



➔ **I**mplementing anything new can be a huge challenge, whether you are implementing some new solutions, such as new piece of software, new set standards, or even a training program.

No matter how large your organization—from one person to thousands of people—implementation needs careful planning

Let's take Building Information Modeling (BIM) as an example. When we were first introduced to this new process I think many people just saw this as a 3D modeling tool (me included), but now we know that BIM is far more than just creating a 3D version of the structure.

SOFTWARE

Let's be honest, most of us love having something new. For example, when Autodesk release the latest version of Revit®. We all look to see what great new tools have been included or how a tool has been enhanced to make it better than before.

Say you're the company's software account manager who has to continually look for new software solutions and make sure the company gets the right tools to do the job.

Then it is up to you to manage what software solutions your users can have installed. Say you have an organization of 20 staff members. Two are only admin staff, but need to print drawings, and the rest are designers, engineers, and technicians. You need to decide what software solutions they all need or if they need any. It is pointless buying software that will sit unused on a shelf. On the other hand, you don't want to have an inadequate supply.

There will be some employees who are high/heavy users of the software and it is going to be a must that they have a license. Let's say these are the technicians who are modeling the structures. These users would need the Autodesk Collections, which would allow them to use Revit, AutoCAD®, Navisworks®, Advanced Steel, and any other solutions that come with the suite of software.

If your engineers are doing design, then they may use Robot Structural Analysis so they could benefit from the collection also. If each is using the software only a small percentage of time, then a network license could be shared among a pool of engineers.

Take into consideration all your company's needs so everyone gets what they require, and you don't end up with people sitting around doing nothing because they can't get a license. I have seen

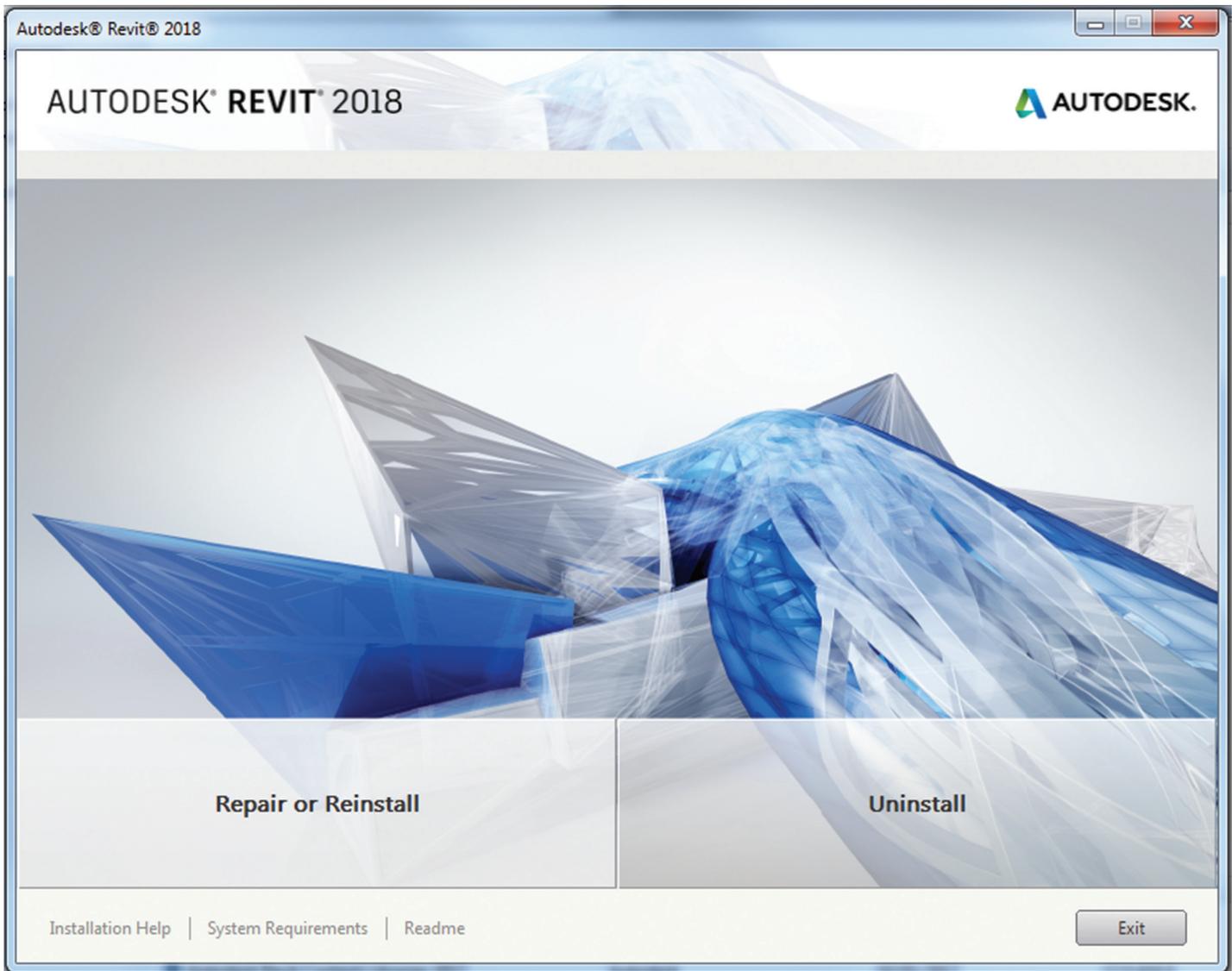


Figure 1: Software installing

that happen: a user takes a full AutoCAD license just to view a drawing rather than using something else such as DWG Trueview.

Managing the type and number of licenses is not easy as this can vary from week to week, project to project. The way Autodesk and other software companies now offer their licenses is helpful. The rental option makes good sense to me as it allows companies to increase the number of licenses over a set period then they have the option to relinquish them once they are no longer required.

Remember when someone first used a certain piece of software and might not have been able to export it into another software format? Stopping another application from reading that information renders team members unable to collaborate. Like before, Revit models could be taken into analysis software such as Robot Structural Analysis or even into Advanced Steel to produce fabrication models/drawings.

Being able to collaborate with other members of a design team is an important part of designing structures today. If we can't do this it makes the design difficult and opens the door for us to miss major

design flaws. It can also cost large amounts of money in rework on-site. Most design team meetings are held with each design team running through their models. Looking at clash detection at any design phase during a project—engineers, architects, and contractors sat around a table just looking over hundreds of drawings laid out on the table. This is where the Autodesk BIM 360 cloud solutions have come in. You can do this from anywhere in the world now.

Note: Consider testing any software installation, update, or bug fix before it goes live across the organization. You wouldn't want all the users having problems at the same time.

NEW SOFTWARE VERSIONS

When I get wind of the latest version I am looking to get it installed as soon as possible so I can try out the new tools.

You're going to get some users who just love a piece of software so much they demand the new version installed the minute it is released, even though it might be months or could be over a

Revit 2018 – Structure

year or two until they use it. So is there any real point installing it straight away?

There is a real argument for installing the new version or update. It is likely to have some great new tools, which can help users be more efficient and effective, help them collaborate with others, or just give them better tools to do their jobs. On the other hand, it could be worse and hinder how they work.

The next question you will need to ask is does the project you're working on have a real need to upgrade to that version.

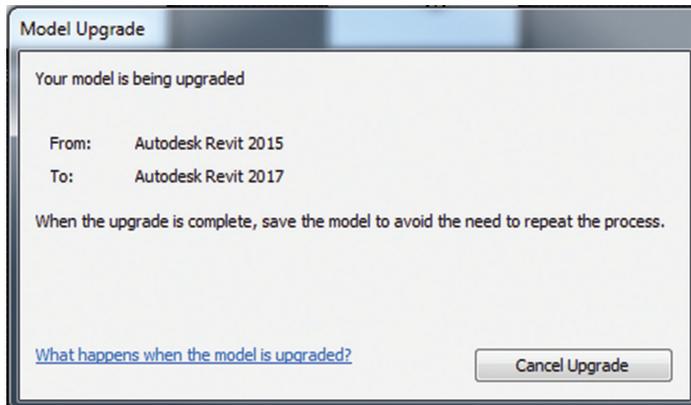


Figure 2: Model upgrade

THIRD-PARTY APPLICATIONS

As much as I love software such as Revit and AutoCAD, it does not always do everything I need it to do. This is where the third-party applications come in. I have several third-party apps that enhance how my applications work. I would be lost without them. We need to consider these just as much as the software itself.

- Will those third-party apps work in other versions or has the provider written for that version yet? If not, what are you going to do?
- Does the software now have those tools built in?
- Dynamo, for example, has opened so many ways to work with Revit now and is integral to many users. Don't forget Dynamo is open source and there many users out there doing some wonderful things with it. If you're not using it please check out <http://dynamobim.org>. You will need to make sure your scripts continue working with any upgrade or new version.

TRAINING

I have presented the considerations in this article in no particular order, but before you jump the gun and think training needs to be top of list, stop and think first. This is the biggest challenge implementing change—training all your staff to use any application.

I had some basic training in AutoCAD at college and picked it up quickly. When I started using Revit, the company I worked for allowed only one user to go for training. The person returned and gave the others about three hours to get an understanding. The

rest of the time we had to just figure it out. I don't mind doing this, but I believe it cost the company more time and money in the long run. It is not something I would have recommended.

A big part of user training and development requirements is planning. If you get this wrong it will not only cost you time, resources, and money, but you could lose work and clients because you are unable to do the work.

If you invest in training in the right way you should get some good return on investment (ROI) such as the following:

- Happy employees, who are likely to be more loyal.
- Higher skilled workforce.
- Enhanced operational efficiency.
- Possibly decrease turnover.
- The ability to bid for work in other markets.
- A likely competitive advantage over other companies.

Don't stop there—make sure you continue the training and development and keep moving forward. Before you undertake any training, plan it out correctly and make sure the training is provided at the right time to avoid wasting time, resources, and most of all, money.

Tip: Assess your users' skill levels by asking them to take a test to see where they may need further training. You could have them get certified in the software they use.

SOFTWARE TEMPLATES

With every new software installation, you will need to configure it to suit your users and company needs.

If you just continue using the out-of-the-box templates, you and your coworkers will be constantly recreating things. So, create your own company-wide templates with all the general requirements you need.

And don't forget you will need to build yet another template and add it to the deployment so all users use the company project template and not a random out-of-the-box one. Make sure all of your library components work.

HARDWARE

It is okay to buy the best or latest software to do your job, but also make sure your hardware is up to running the software. You hear it so many times: someone buys a new piece of software and installs it, then the user just sits there watching the screen and waiting for the computer to complete a task.

If you're implementing change, do not leave out the hardware. It will only come back to get you. Here are a few things to consider:

- Check the system requirements. Don't go for the basic entry-level – you may end up buying new hardware more regularly than you think.
- Graphic cards – if you're looking to do things like rendering you will need a good one.
- Memory – don't leave the machine short.



Figure 3: Two screens

- Storage – the hard disc space can fill up very quickly.
- Leave some room for expansion to your machines if you can.
- Monitors – give users two monitors as it helps viewing information and saves on printing drawings.

Tip: Check the Autodesk system requirements webpage before you buy, then talk to your authorized Autodesk reseller. They usually know what is best.

STANDARDS

One of the biggest considerations for every organization will be the company's standards. The absence of standards will create many problems as users will do whatever they like. The quality and style is likely to vary across everybody's work.

If you have a CAD and modeling standard, then don't just set it up once and think it will be fine forever. It will need to evolve along with your software and hardware.

Client standards are another thing to consider as some may wish to accept your work as it is, but others may set out their standards and request you follow them. If they have a template, make sure they supply it to you. Also check that the client's requirements have been clearly identified before you begin working. Ask your team if it is possible to implement the client's requirements.

FEEDBACK

One thing I have learned over my working life is if you don't ask for feedback you will never know if the change worked or was for the better. It does not matter how much you like the new software solution, it is essential to ask for feedback from other users during the process.

It is critical to understand any shortcomings at the initial phase. You don't want to invest a lot of time, money, and resources into something that does not work.

FINAL THOUGHTS

Just think... by the time you have done all this an update will have been released or a bug fix required. Then the next version is here so you will need to start all over again.

The boss will be asking if you have done any work on live projects. The answer would be no because you spent every working hour doing all the above.

Then the bill comes in for your subscription and the next task is asking the boss to pay it.

There is not that much to consider when implementing change is there?



Gareth Spencer is currently the CAD and BIM Manager at The University of Manchester, in the UK. Previously a trusted application engineer, consultant and BIM specialist at two of the UK's Autodesk Platinum Resellers. He is a certified professional in Revit Architecture and Structures. Has twice been a speaker at Autodesk University in Las Vegas. Follow Gareth on Twitter @TheDarkAsset, his blog <https://thedarkasset.wordpress.com> or email gareth.spencer@live.com.

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.

MAPBOARDS



<https://bit.ly/2K8gGAS>

MapBoards is a utility that maps component bodies in a model to the available board types specified. It is intended to be used with two types of woodworking projects. Assemblies made from plywood to be cut out using a CNC or traditional cabinetry project cut using a table saw or bandsaw.

Options are available to select a mapping arrangement type, output a cutlist, output a sketch only, label components, or to add spacing to board edge.

DOCUFLOW



<https://www.archigrafix.com/>

Publish all your documents in one operation.

Now it's easy to get high-quality PDF, DWG, IFC, and a drawing list from the same tool. Just select your sheets and you are good to go.

Intelligent

Docuflow detects sheet sizes and orientation and takes care of all the complicated stuff. All your documents are

exported in one operation exactly like the sheets in Revit®. You no longer to spend time doing the manual selection of sheets, matching paper sizes or orientation, and separating print jobs.

Easily select your sheets

Finding your sheets is now quicker with project revision sorting. In addition to alphabetical order, Docuflow sorts by revision that groups the drawings inside the last revision.

Drawing list included

A proper drawing issue is not complete without a revised drawing list. Docuflow communicates with Archigrafix Reports (sold separately) to generate on the fly your drawing list in PDF format.

Speed

Docuflow is one of the fastest document publishers for Revit. Built from the ground up. No annoying saving dialogs prompting for filenames.

Follows your standards

BIM managers will enjoy the ease of configuring the usage of office standards via `revit.ini`. Printing styles, DWG and IFC standards all can be enforced for document consistency.

Trial

The software runs as a fully functional trial for seven days.

Licenses and Pricing

Docuflow is sold online as perpetual and subscription licenses. Browse and buy, using a Secure Sockets Layer (SSL) on the software section of Archigrafix webstore. Payment is processed via Paypal: all major credit cards accepted.

INSTALL SCRIPTS OR ADD-INS FROM GITHUB



<https://bit.ly/2KNVYYd>

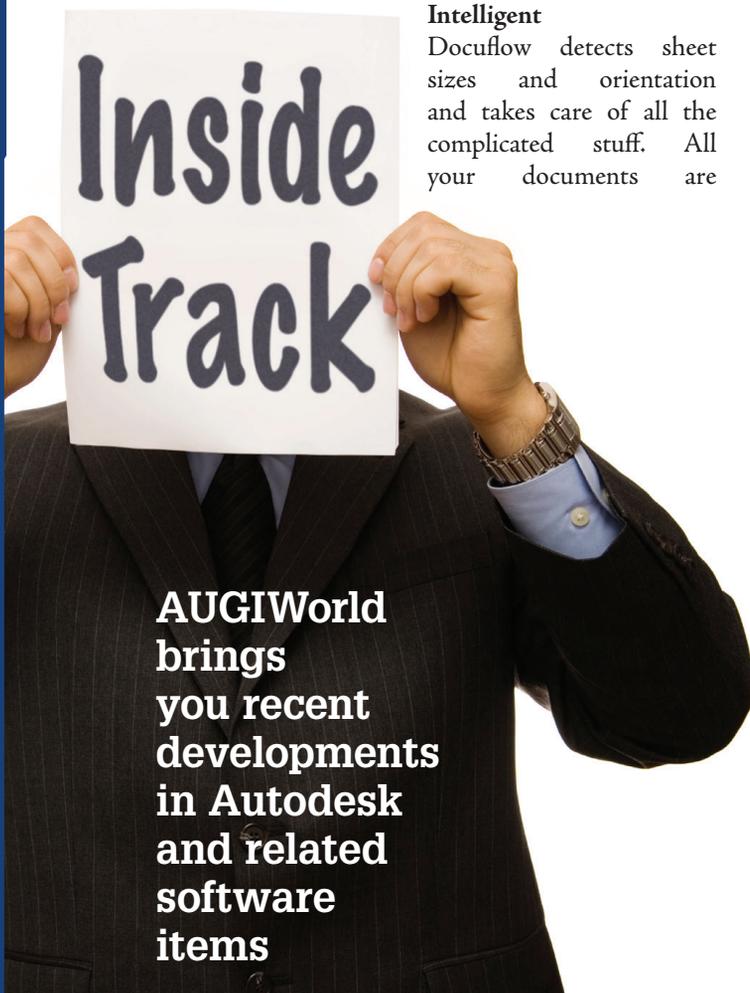
This app allows you to automatically install scripts or add-ins from GitHub in Autodesk® Fusion 360™. No need to manually download and unzip files. No

need to worry about target directory location. Follow these steps:

- + Launch the app
- + Enter the URL of the GitHub repo
- + Click OK and it's done

The script or the add-in is now installed in Autodesk Fusion 360.

If you have some news to share with us for future issues, please let us know. Likewise, if you are a user of a featured product or news item and would like to write a review, we want to know: brian.andresen@augi.com



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TAYLOR DESIGN USES REVIT AUTOMATION TO SAVE TIME ON INTERIOR PROJECTS



➔ **T**ools that automate data collection and reporting present a big opportunity, finds Taylor Design.

California-based [Taylor Design](#) specializes in healthcare architecture and interior design projects. As part of their service to the client they produce furniture specification reports that assist with procurement, assessing costs, and ensuring confidence in the final product.

Taylor Design team members have been doing specification reports for more than 30 years, but moving to Revit made generating the reports more complicated and required the use of external apps.

It was a 20-step process for each furniture item in the sheet, and on average it would take ten minutes per sheet to set up. The amount of time that it was taking and the manpower required to produce the reports was no longer sustainable according to Jamison Delfino, Lead Interior Designer.

“It was one of those painful tasks you weren’t excited to spend a day doing,” says Jamison.

““ It has completely automated the process and is saving hours and hours on our projects. ””

“It was an unintuitive process that was too complicated to remember without guidance. Realistically we needed to find a better solution.”

RTV Tools Reporter addin collects useful stats from parameter data in Revit and automatically assembles them into a simple report, making it an ideal tool for interior designers. Jamison and the Taylor Design team have been using the RTV Tools Reporter addin for two months now.

“It has completely automated the process and is saving hours and hours on our projects. We were having to budget time for those specification reports, but now we are delivering faster times on top of having new functionality.”

Taylor Design utilizes the Reporter tool to scan their Revit models and extract data on each furniture item, how many items there are, what room they are in, and even a 3D representation of each piece along with a preview of material patterns, and it automatically assembles this information in a report.

“This is really useful because often we review bills from furniture dealers on behalf of clients to make sure they’re accurate, and the reports are a quick and easy way for us to show them exactly what is being ordered,” says Jamison.

“Dealer quotes are very technical – basically a list of numbers pulled out of software designed for manufacturers that wouldn’t make sense to anybody outside of the furniture industry. But the documents we are now able to produce from Revit are more

visual, explaining quickly what you are getting with each furniture specification.

“In fact, one of our larger clients is now insisting on this type of visual report so that when the furniture arrives on site they can verify they are getting what was designed.” But it’s not just saving time and money that has added value, says Jamison.

“Because we are not wasting time labouring on reports, it has allowed us to be more detail oriented in the way that we’re doing our specifications. We have more time to really think through our

dynamo file that works with all the different features and flavours of Revit with your first script.”

“RTV Tools takes care of all that with the Reporter addin and we know it consistently works. With this process I have a training document built that tells staff exactly what they need to do to make this tool work, and it is consistently repeatable,” says Steve. Another advantage is that the application works entirely within Revit as a plugin, meaning it has been easier for regular users to pick up with less training required for staff to build reports for themselves.

“The younger generation in particular are more apt at doing everything in Revit and using the software to its full capability. Now anyone can build these reports whereas formerly only two employees knew how to use the external software,” adds Jamison. Making use of the power of automation has enabled greater control of the appearance of the final product.

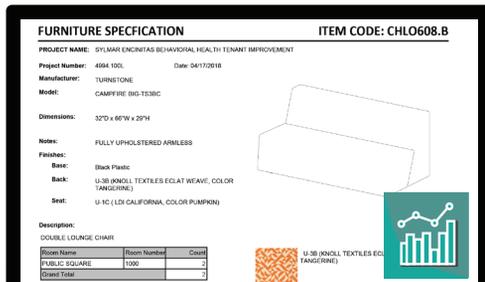
“We are able to create a template for how the report should be set up including items such as layout, logo position and titles. The tool will use this template and automatically assemble each page in the report,” says Jamison. “Previously there was too much room for user error with set up, and we couldn’t guarantee consistency from page to page. This tool is precise and represents the accuracy we like present in our work. It’s a huge bonus.”

Like many firms, Taylor Design has a specific format that is used for all major projects that needed to be carried through into the new workflow.

“Simon from RTV Tools collaborated with us to build a template that would produce exactly what we needed. I sent him our Revit families and some examples, and he came back with a template. In the end we had a tool giving us the report exactly how we wanted it,” says Steve.

According to Jamison, the next area for improvement that the industry could look towards is using this tool to automate material take-offs.

“As the industry moves in the direction of utilizing Revit to build more accurate models, contractors could really benefit from the automation of material take-offs. They could easily inquire on the quantities of materials in the project and use the tool to provide a visual of what each material is to ensure accurate ordering. This would align the design team and contractors, providing better pricing to the client to avoid budget changes at later stages of the project,” she says.



design context. We’re not just worrying about putting together a deliverable, we’re actually thinking through the solution more, ultimately providing a better design.” Automation is a priority for Taylor Design going into the future, according to BIM Manager Steve Bennett.

“It was taking 10 minutes a sheet before, but now we can pump out hundreds of sheets in a few minutes.”

“This process has been a big time saver. It was taking 10 minutes a sheet before, but now we can pump out hundreds of sheets in a few minutes - that’s a huge time savings for our company,” says Steve. “If there is something we can automate, then I am all for that. Reducing the amount of bits and clicks that people have to do to put information together is something that is near and dear to my heart.”

Before Taylor Design came across the RTV Tools Reporter addin, they were trying to develop their own solution in Dynamo, a DIY visual programmer. Steve warns against other interior design firms going down that route.

“If things weren’t set up just right, it wouldn’t work, and it required a lot of handholding between the script developer and the interiors people. There’s nobody that can provide you with a

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Four Favorite Plug-ins



This month I am presenting four of my favorite plug-ins for 3ds Max®. I start with those developed by JokerMartini, a creative studio founded by John Martini.

With over a decade of experience in a wide range of fields using 3ds Max, JokerMartini produces some of the most useful plug-ins for production in use today.

JOKERMARTINI'S ZIPPY PAINTER

Zippy Painter is a simplified tool to simulate the effect of gravity on objects we place (paint) in our scenes. The plug-in is simple. Select the object to paint on, then the object to paint with, and start painting. As soon as the mouse is released, gravity and physics kick in and simulate the collision and settling of the objects.

JOKERMARTINI'S KIT BASHER

Kit Basher allows us to store and automate the attachment and placement of apparatuses and parts to our objects to quickly produce exciting work. The interface is intuitive. We select a brush

(mesh), then select the face or faces on our object where we can choose to preview and commit the change.

JOKERMARTINI'S OTHERS

JokerMartini has exceptional developers with experience across a wide range of fields. Over 40 plug-ins and scripts are available for various prices and can be purchased and downloaded from their website (<https://jokermartini.com>).

SIGERSHADERS V-RAY MATERIAL PRESETS PRO

For those in the visualization industry, SigerShaders V-Ray Material Presets Pro comes with high-quality materials available through a user-friendly and intuitive interface. The included material library is enormous, but the application also allows users to generate libraries of their own that can be accessed and applied using the interface. See Figure 3 for a sample of a few of the materials available.

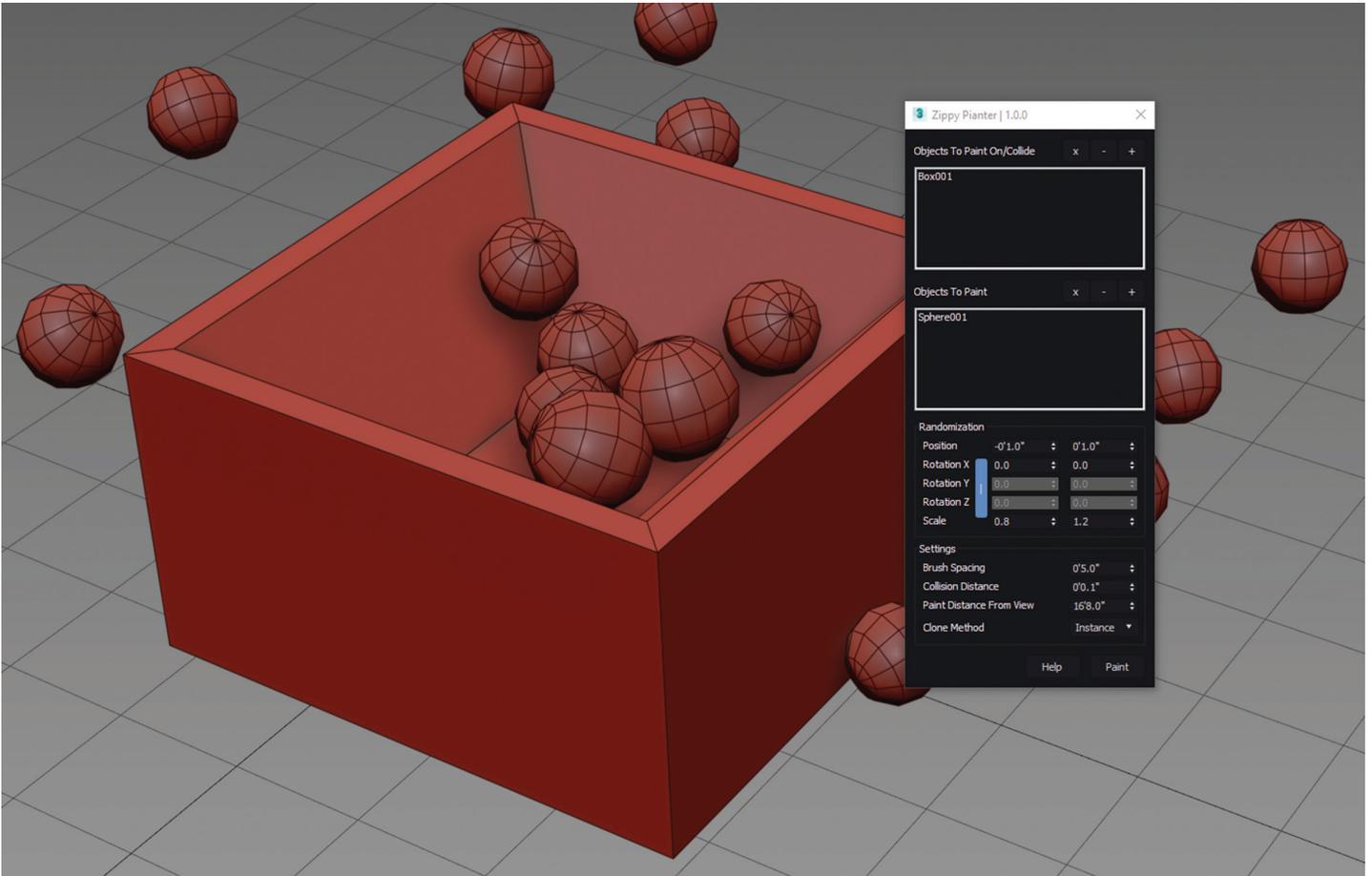


Figure 1: Zippy Painter

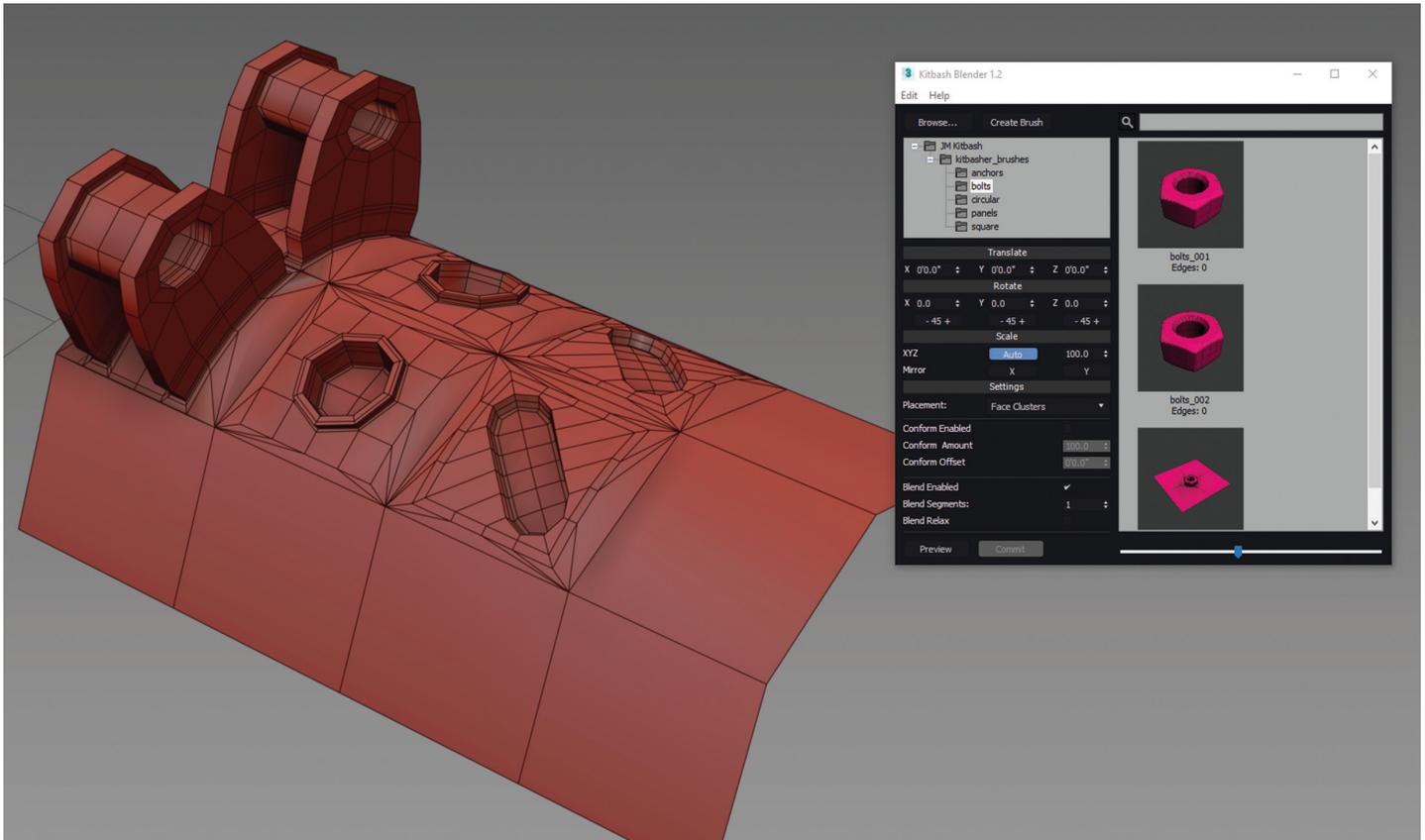


Figure 2: Kit Basher

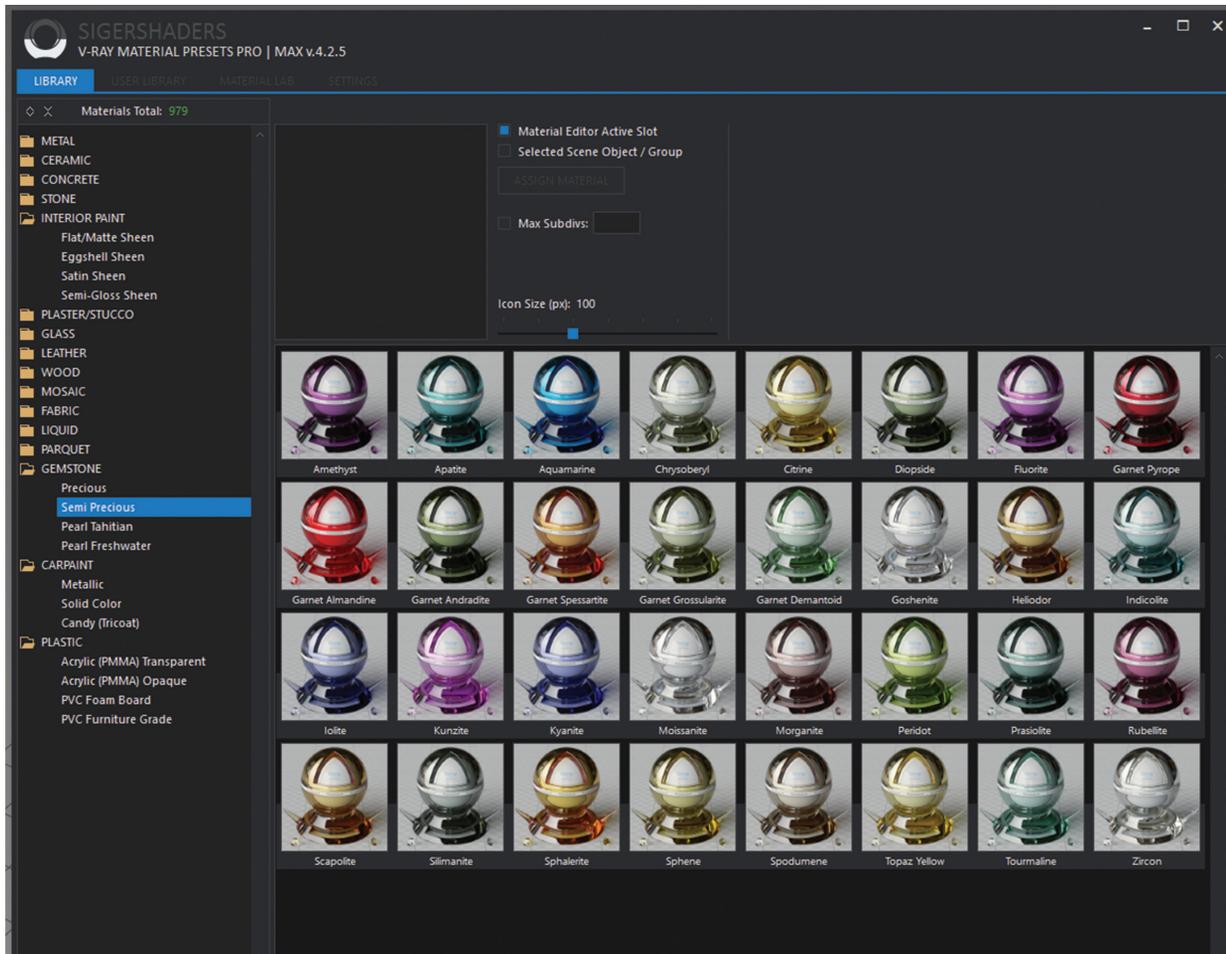


Figure 3: SigerShaders V-Ray Material Presets Pro

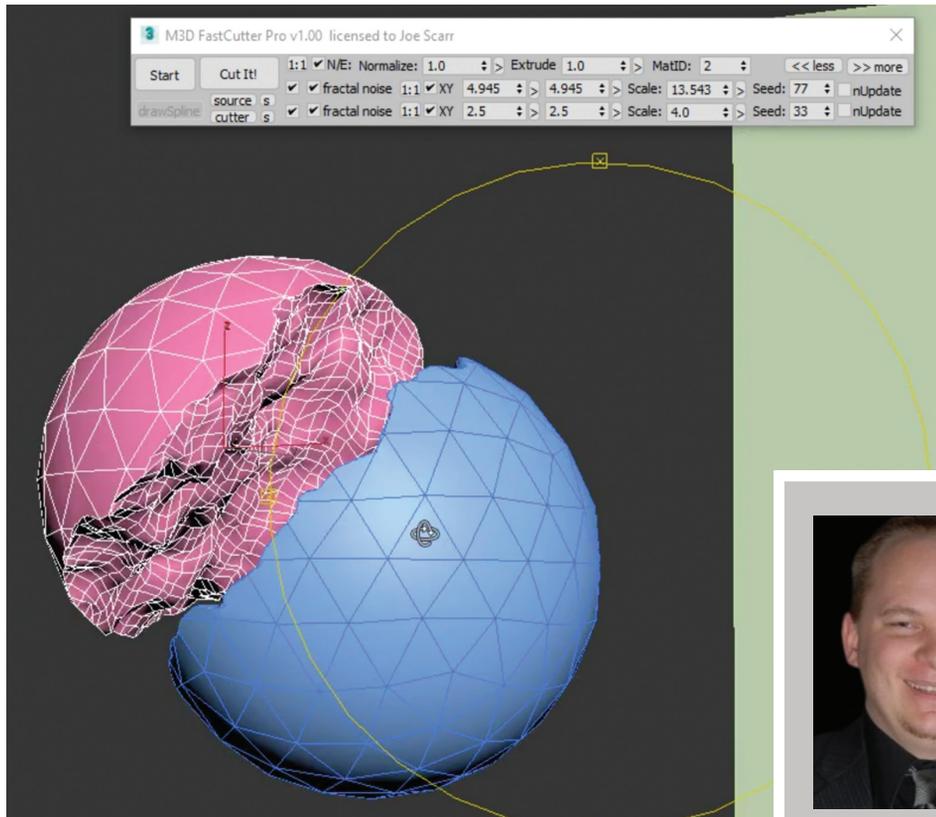


Figure 4: Fractal cut with FastCutter Pro

FASTCUTTER PRO

FastCutter Pro is a tool developed by Joe Scarr, which can be purchased and downloaded from Effectivetds.com. Simply put, it is the most powerful tool for fractal cutting objects I have come across to allow us to generate rough and unique meshes. At first, the interface can appear complicated, but I found that in most cases I hardly needed to adjust any of the settings. By dragging the mouse across my object, it generated the fractal cut I wanted. See Figure 4 for an example.



Brian Chapman is an Autodesk Authorized Developer, creator of Pro-Cad.Net and Senior Designer for Slater Hanifan Group, a civil engineering and planning firm dedicated to superior client service. Brian can be reached at procad-man@pro-cad.net.

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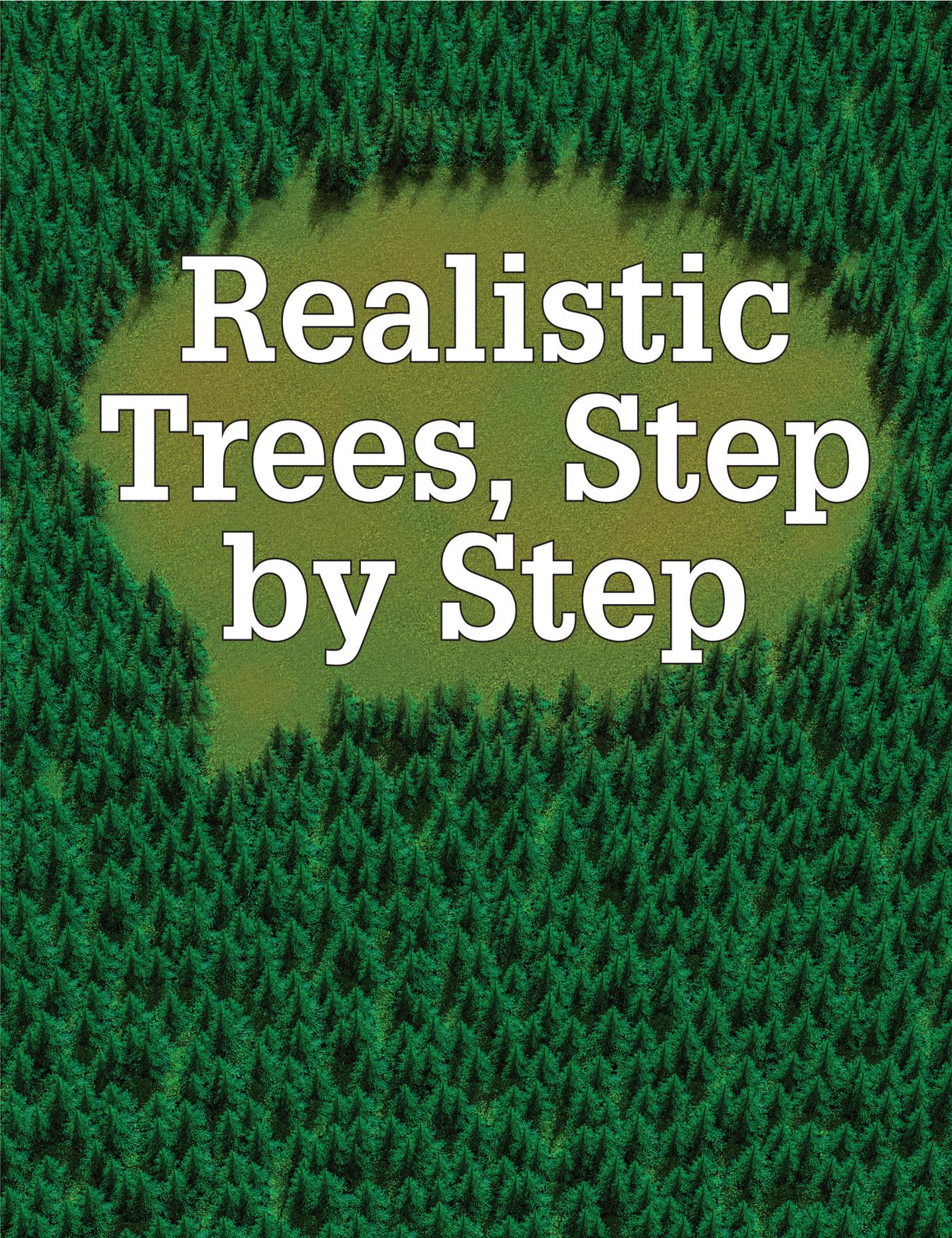
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An aerial photograph of a dense forest of evergreen trees. In the center of the image, there is a large, irregularly shaped clearing or meadow. The text 'Realistic Trees, Step by Step' is overlaid on this clearing in a large, white, bold font with a black outline.

Realistic Trees, Step by Step

There have been a lot of videos and articles produced lately that outline the workflow of pushing an InfraWorks® model into VR, specifically 3ds Max® Interactive (previously known as Stingray) so I'm not going to focus on the ins and outs of that. Rather, I'd like to focus on how to bring your InfraWorks trees to life by adding a few nodes in the material's Shader Graph in 3ds Max Interactive. This workflow eliminates the need to replace the InfraWorks trees with 3ds Max trees.

To begin, we need to remove the opaque, black background of the leaves for each tree and its associated material.

To find the associated material, select the leaves from one of the trees and in the Explorer panel on the right you'll see the unit highlight (Figure 1).

From there, click on the Goto resource button below in the Materials section of the Transform panel. The material is then highlighted in the Asset Browser (middle-bottom) and the Asset Preview panel shows the material (Figure 2).

Make sure the material is still selected and then click the Make Unique button in the Parent Material section of the Property Editor on the right-hand side (Figure 3). The button will then change to say Open Shader Graph.

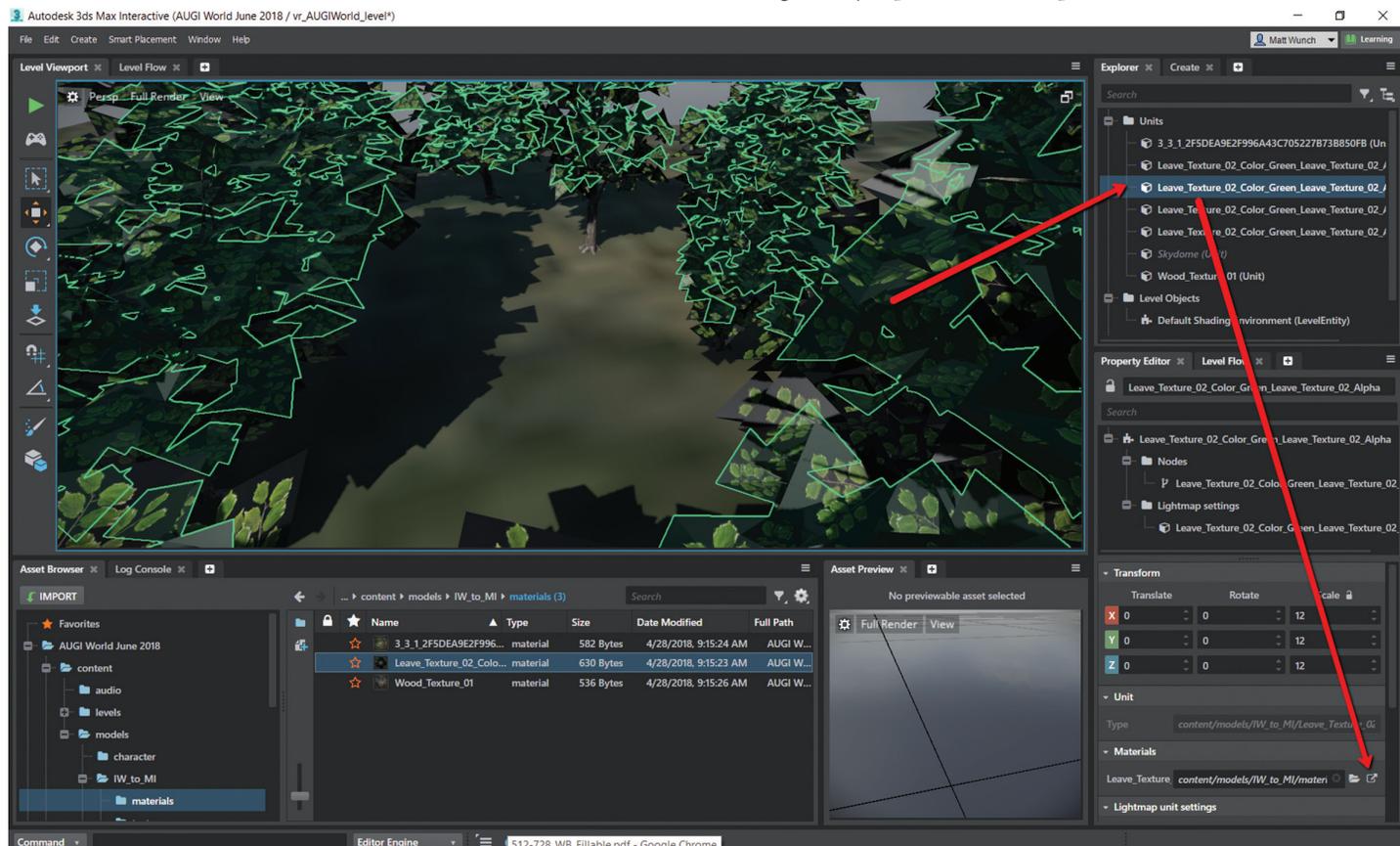


Figure 1

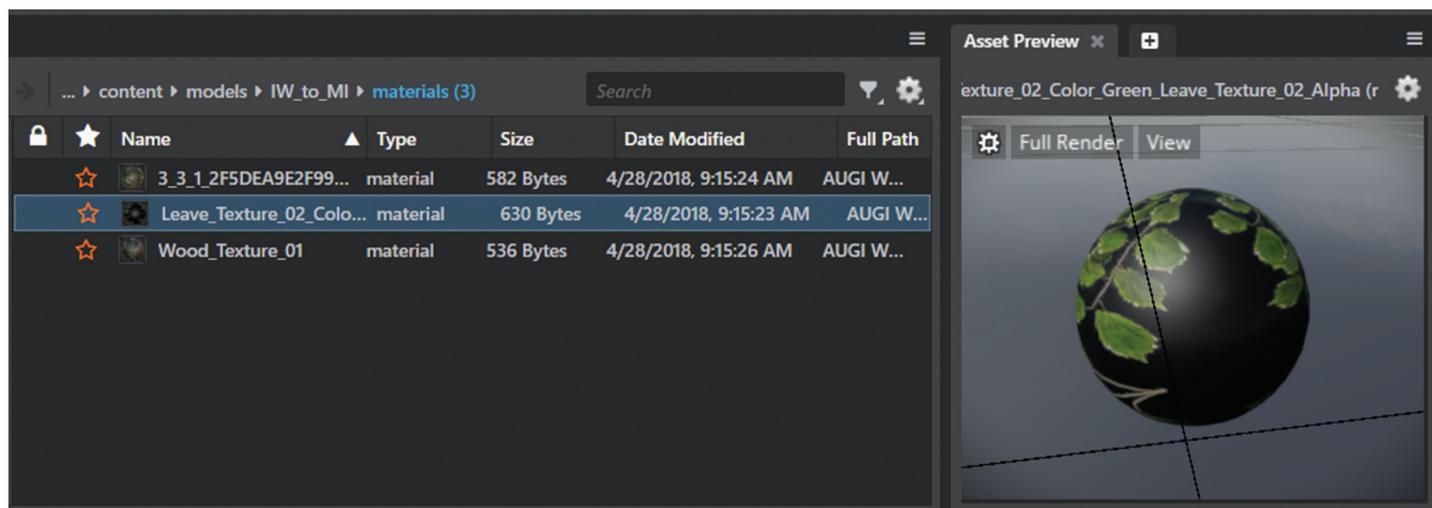


Figure 2

InfraWorks

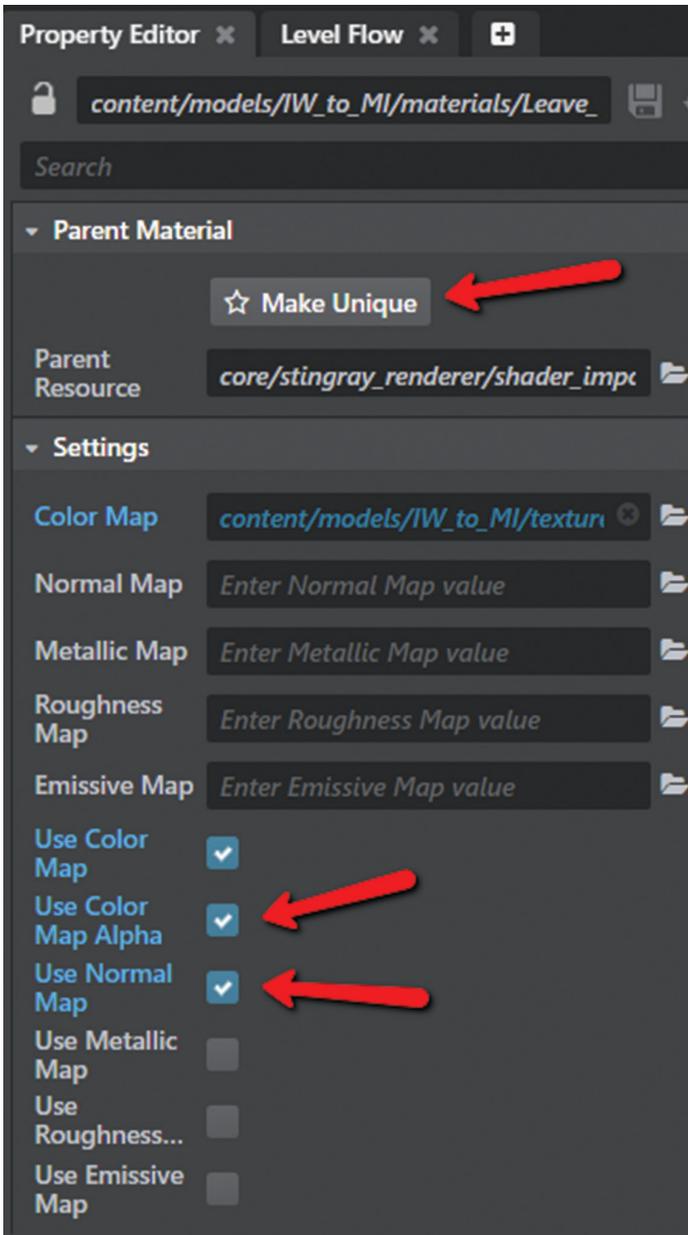


Figure 3

At this point you'll need to toggle on the Use Color Map Alpha and Use Normal Map options (Figure 4). This will remove the opaque, black background, making the background transparent and giving the leaves a more realistic look.

The next few steps will make the trees look and feel more realistic by making the leaves look fuller as well as translucent. With the material still selected, open the shader graph to display a Dynamo-esque interface (Figure 5).

You'll need to partially minimize the Shader Graph so you can see both the Standard Base node and the Property Editor at the same time (Figure 6). Select the Standard Base node, and its properties become available for editing. Make the following changes to the node in the Options section of the Property Editor:

- **Material Type:** Translucent
- **Face Culling:** None (double sided)
- **Shadows Casting:** Alpha Clip

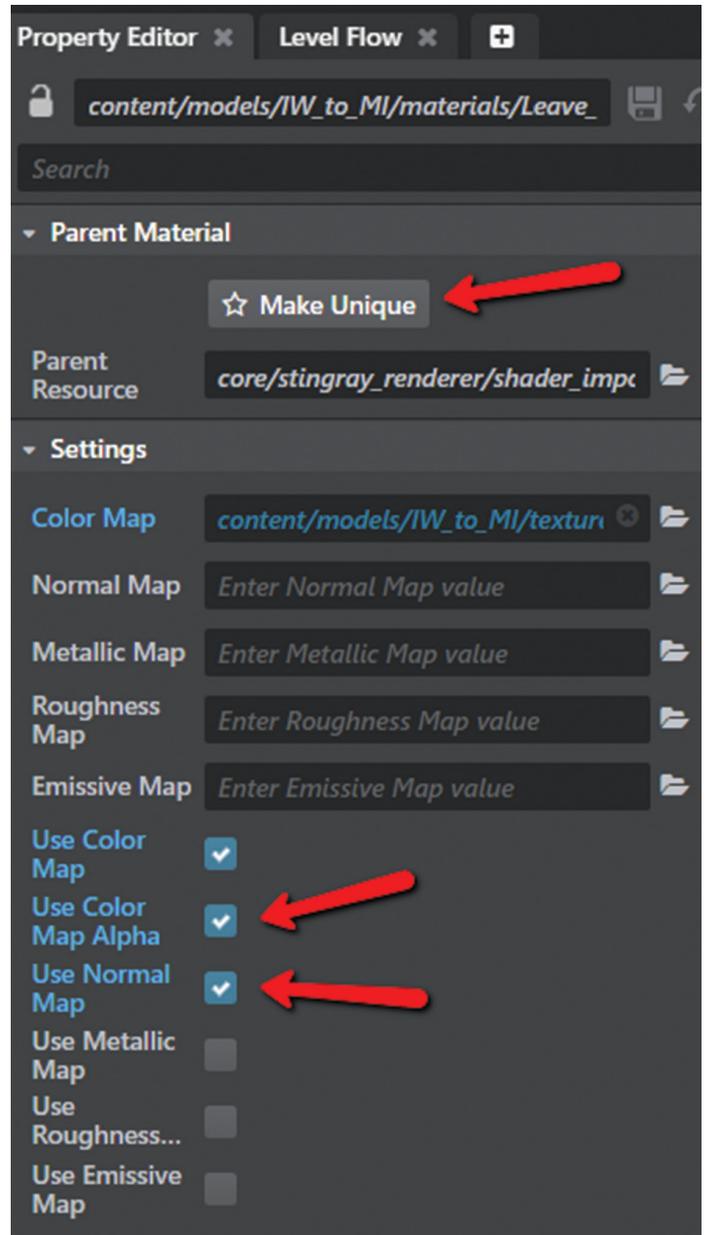


Figure 4

At this point our material has been modified so that it is transparent between leaves (we've removed the black background), translucent (so it will let some light pass through), and we modified the face culling (to make the leaves look fuller).

We're now ready to add a few additional flow nodes to the Shader Graph to really bring our trees to life.

To add nodes, simply click the right mouse button (RMB) and select Add and whichever node you need. For our trees we'll add the following nodes:

- RMB ⇒ Add ⇒ Animation ⇒ Vegetation Animation
- RMB ⇒ Add ⇒ Input ⇒ Time
- RMB ⇒ Add ⇒ Vertex Input ⇒ Color0
- RMB ⇒ Add ⇒ Vertex Input ⇒ Position
- RMB ⇒ Add ⇒ Vertex Input ⇒ World Normal

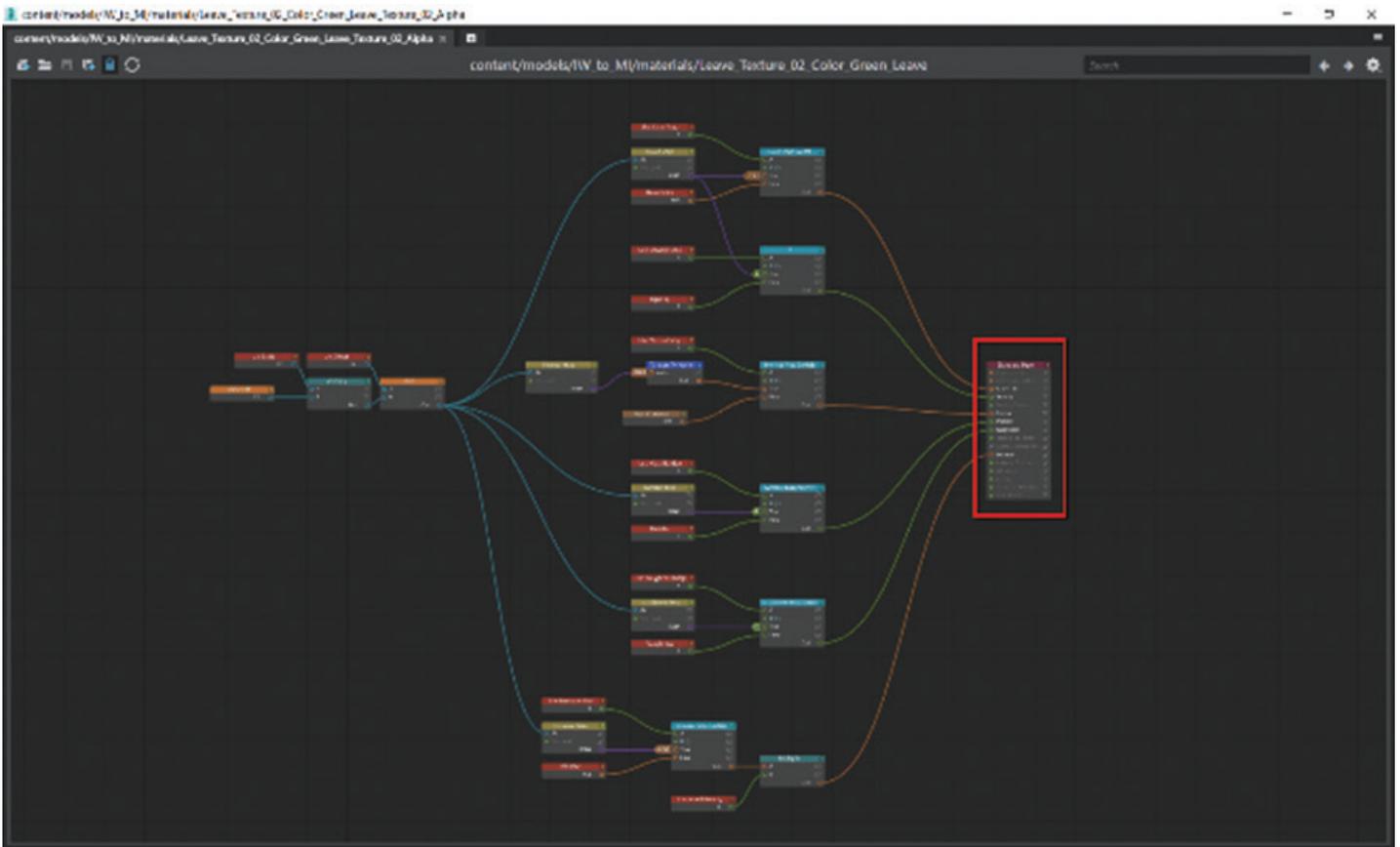


Figure 5

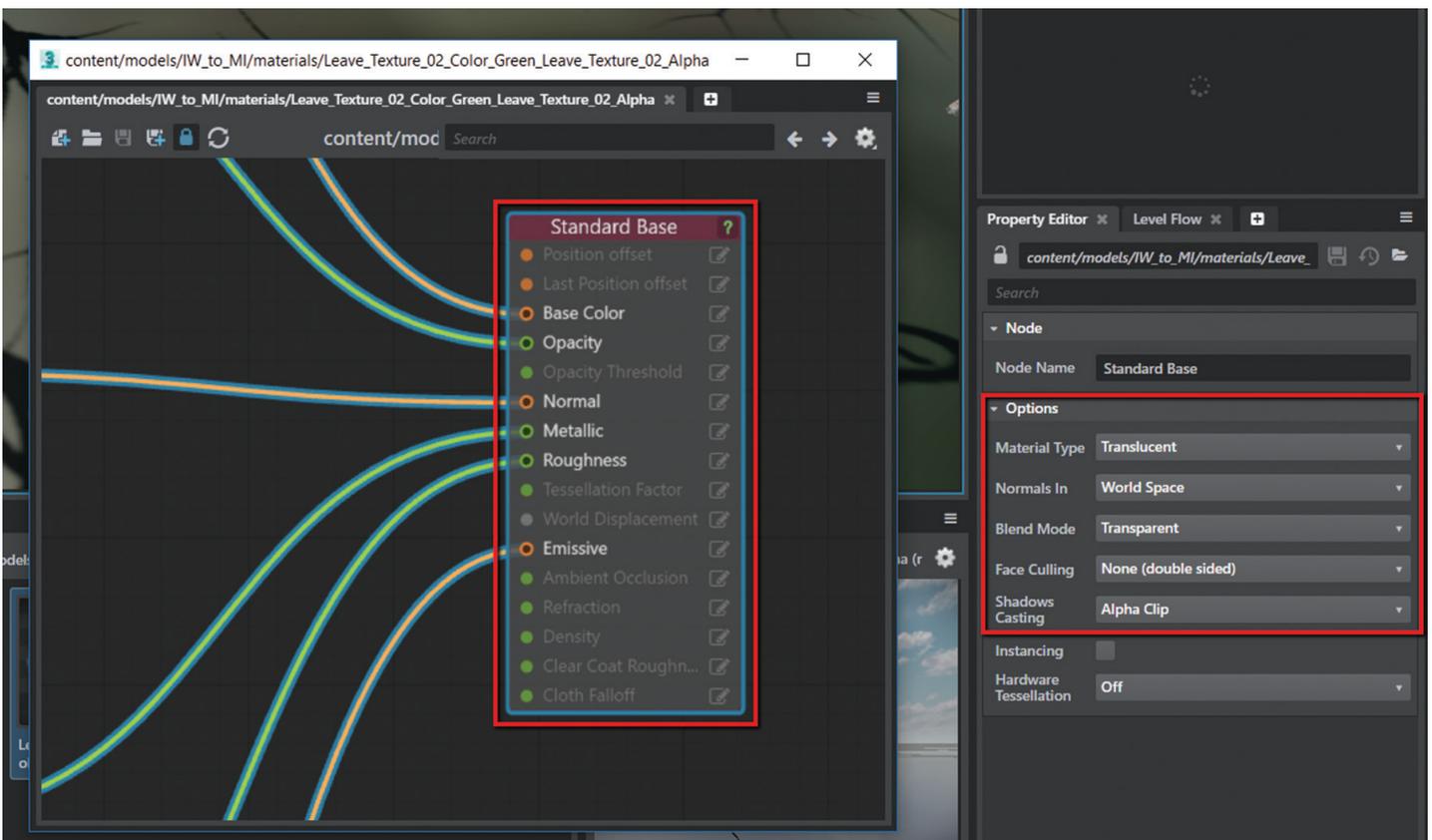


Figure 6

InfraWorks

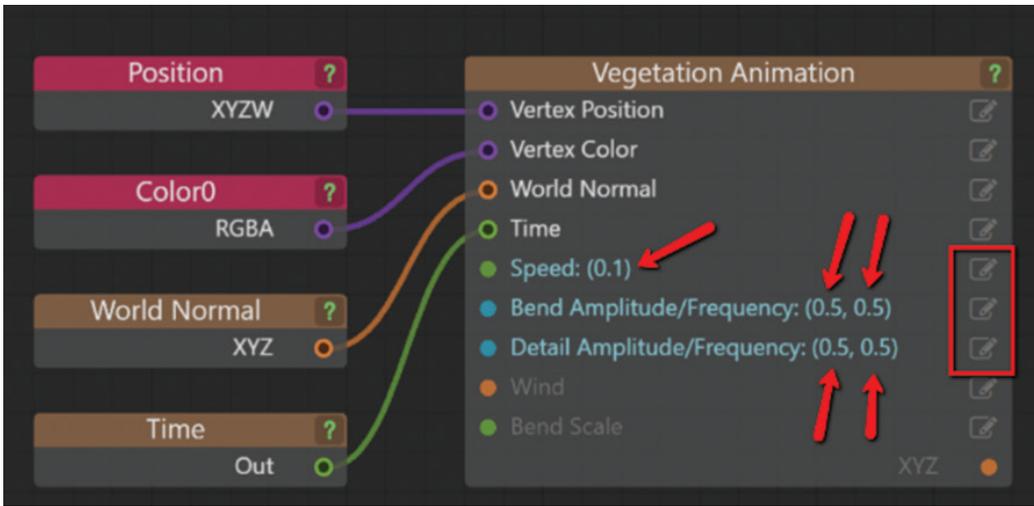


Figure 7

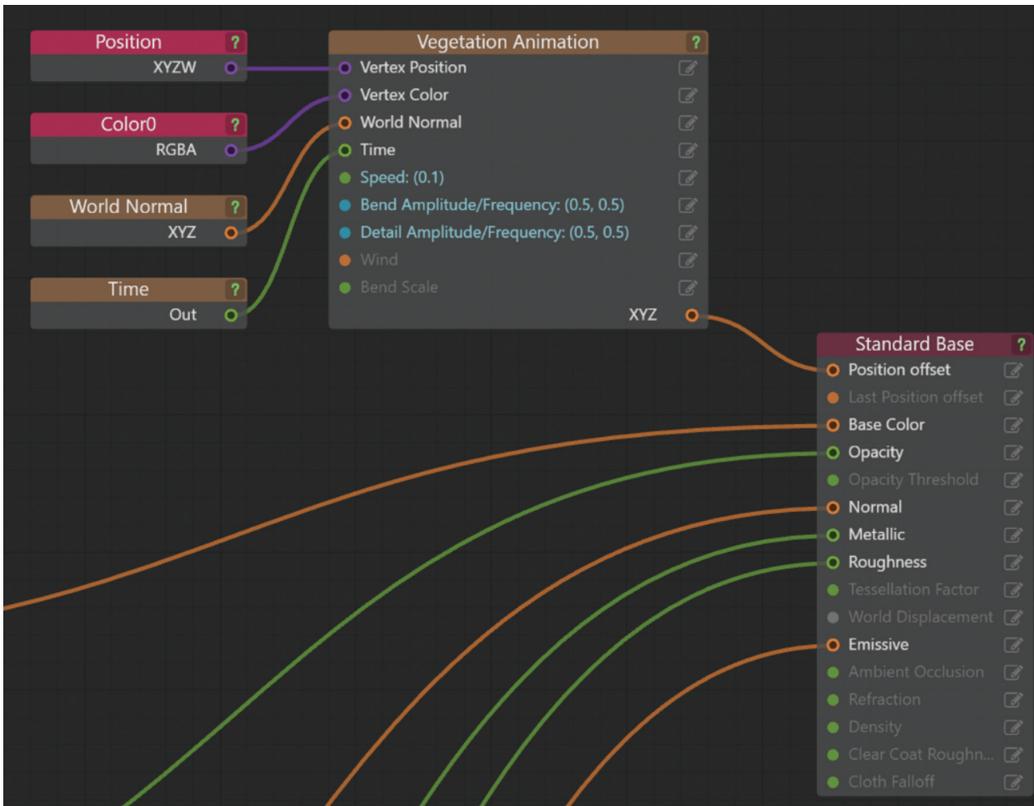


Figure 8

Add the values for Speed (0.1), Bend Amplitude/Frequency (0.5, 0.5), and Detail Amplitude/Frequency (0.5, 0.5). See Figure 7.

By using the RGB values of the material, we can achieve a more realistic movement due to the randomness of the RGB values throughout the material.

The Red channel is used to control the stiffness of the leaf edges; the Green channel controls the movement of the individual leaves; the Blue channel controls the overall stiffness of the leaves. The leaves are bent by deforming the edges using the R values of the vertex color and the deformation is controlled by the xy direction of the World Normal vertex. The Blue channel controls the per-leaf bending along the z direction of the World Normal vertex. And each leaf's movement is varied based on the Green channel.

When combined with the Speed and Bend and Detail Amplitude variables, the leaves begin to look as though a gentle breeze is making them move. The higher the Speed value, the faster they move.

The last step to bringing our trees to life is to connect the Vegetation Animation node to the Position Offset variable of the Standard Base Node and save the material.

Once it recompiles, the asset preview window will show the animated material based on the settings you've given it.

If you've done everything right and connected the nodes correctly, the final product should look as shown here: <https://tinyurl.com/yclzfb8e>

For additional information outlining the workflow for pushing an InfraWorks to 3ds Max Interactive, check out the InfraWorks webcast and a couple of Autodesk University classes below.

InfraWorks Webcast – Immerse Yourself in Your Infrastructure Project! Intro to VR

Autodesk University 2017 – CI121477: Driving Austin: An Urban Simulation of Austin, Texas, Using InfraWorks and Stingray

Autodesk University 2016 – DV21503: Visualize Your InfraWorks 360 Design in a

Gaming Environment with Stingray



Matt Wunch is the BIM Manager for Svigals + Partners in New Haven, Connecticut. He is an Autodesk Expert Elite member, Revit Certified Professional in Structure, Architecture, MEP – Mechanical and MEP – Electrical, a member of the planning committee of the Construction Institute's BIM Council and an FAA licensed sUAS pilot. He can be reached for comments or questions at mwunch@svigals.com or on Twitter @MattWunch.

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This Time It's Okay—Keep Your Head in the Clouds

By Glen Hines

I remember receiving my first set of drafting supplies when I was in Junior High School. A T-Square, lettering guide, angles, pencils, lead, erasing brush etc. There they were, sitting on the tray next to me, with me studying each item. And what was on my mind at that time?

“What exactly am I supposed to be doing with these things?”

In front of me, a drafting board. A blank canvas waiting for me to strike my first line of lead across it and just waiting patiently for me to begin my career as a designer.

Standing behind me, Mr. Stevens, my drafting instructor.

“Hines, that technology sitting next to you won't get any better than that, so start drawing.” He gruffed at me.

Thirty-five years later, and after being in the AEC industry for well over 20 years, I often think of that comment. “That technology sitting next to you won't get any better than that.”

I'll admit, I'm a tech geek. Yes, a geek in its finest and true sense of the word. Especially anything BIM – AEC – VDC related. However, there are times I miss those supplies. Thirty-five years ago, life seemed to be moving much slower.

That “Technology” he referred to didn't drive me, I drove it.

Mr. Stevens, let me tell you a little secret that will freak you out. Today, I can now work on a drawing, yes, the same exact drawing, with multiple designers in multiple locations. I can even work with any engineer or architect, located anywhere in the world, all at the same time. That old drafting board, as you know it, is not part of that workflow.

Kaboom...mind blown...right? Oh, trust me, I know.

Now in all fairness, I've been born and raised in Autodesk® products. They're all I know. So, it's safe to say I've sat through many presentations regarding the software I use and manage every day. I'll admit, I've often said to myself, “Well, that's nice, (but under my breath) that'll

be dead by Tuesday.” Or “Eh...I can see me using that, but not very often.” But almost three years ago, I found myself sitting in the back of the room and listening to “Another Presentation” to show me another “Idea,” where we were talking about the infamous “Cloud.”

Was I paying attention? Sure. Was I totally focused? Not really. I had just sat down from a busy day at the office and was interested in the food that was being served more than I was watching the presentation that consisted of slide after slide after slide.

I looked up and heard, “Music on the cloud?” Got it, I already do that...Back to my plate.

“Documents on the cloud?” Got it, I've started doing that...Back to my plate.

“Movies on the cloud?” Now I'm getting bored with this presentation and this plate of food.

“Revit projects on the cloud?” Yeah, I wish we could do tha... Wait, what? Choking on a mouthful of food.

Excuse me, but did you just explain to me that I can now have a workflow where:

1. I don't have to email Revit® models back and forth?
2. And at the same time, I can collaborate in real time with a consultant in Oregon, or from any location, while I'm in South Carolina?

Kudos to you, Autodesk, K-U-D-O-S to you...if that really works.

Glowing from the front of the video projector lit room, up on the screen I saw the words that changed my thoughts on the workflow in the AEC Industry, Collaboration for Revit® (C4R) and BIM 360®.

Glancing to the presenter and back to the screen that evening, my plate of food was never touched again. For the next hour, my mind was racing back and forth. I even felt my eye twitch from almost going into a seizure thinking about all the struggles in the past where I could have used this on many many many many many many...big inhale... many many many projects.

So now, one must ask...Does it really work like Autodesk says it does?

Listen to me closely, especially for the naysayers, the holder backers, the ones who have been down that road before where you were shown one thing, and yep, it always dies on a Tuesday, right after you implemented it just that Monday.

I can give you 150 reasons. That's the number of projects we have pushed and currently host on BIM 360.

Not good enough? Ok...how about 190 reasons? That's the number of my licensed users who operate on BIM 360 and use C4R in those projects.

What???? Still not good enough?

Okay okay, you like to play hardball. I get it. Let me throw this number out there at you. 1.5 billion. That's a million, minus the M and then replace it with a big fat B. That's the approximate dollar amount in construction costs we currently host and work on using C4R and BIM 360®.

So, let's ask it again, does it actually work?

Get ready, because you just freed up your Mondays, Tuesdays, and even the rest of the week. Yes, it works that well.

Again, K-U-D-O-S to you, Autodesk. In fact, let me stand up and applaud you. You hit it spot on with this one. Thank you so much for freeing up the rest of our week from either needing to find something new or fixing what keeps breaking over and over.

Now let me pull up a chair and focus my attention back to you naysayers or the words I like to use, the holder backers. Ummmmmm, what's taking you so long?

Often we tell people, "Get your head out of the clouds." But in this case, please keep your head up there. Stay there, don't move, see what's up there because what you'll discover is exactly what happened to Mr. Stevens...Mind Blowing.

If you holder backers are unsure, take it slow. It's okay to ask a ton of questions because that's what I did. But don't fake your questions like I do when I'm studying a used car at some shady lot location. I've been bitten many times, so I ask a ton of questions and try to find anything wrong when I don't know what I'm doing or talking about. I'm far from a mechanic so usually my discussions with the dealer made it clear that, well, I was just an idiot.

"So, it looks like the intake valve here next to the muffler sounder thing that keeps the lug nuts working needs to be replaced. Oh, and I see the fuel gizmo is clashing with the other fuel thingy that keeps the hood on. Yeah, you should get that adjusted before I buy this thing," I said with a serious and straight face.

Don't do that. You know this car that you're driving. It's Revit. The concepts are the same from project to project, you know that. You know your workflow, don't be afraid to give it a good test run, kick the

tires, and ask a ton of questions.

I drove this thing like I had just been given the keys to a Formula One race car. I flat laid an inferno of a trail from Charlotte, North Carolina to Atlanta, Georgia. Greenville, South Carolina, to Charleston, South Carolina and once I saw that it worked, I gave it a cross-country road test. If you've ever driven the Pacific Coast Highway in California you know exactly what I'm talking about when I tell you that those curves combined with that Formula One race car means I test drove it like I was in a car chase scene from "Mission Impossible."

Back at the Autodesk dealership, I handed my keys back to the dealer.

"Well, what do you think?" the dealer asked.

As cool and as calm as I could be without showing my excitement, I pulled away my sunglasses, picked a dead bug off the hood, and gave the spot a final polish. I leaned down into the side mirror to make sure I was hiding my excitement. Don't want this dealer to see my weakness. As I was looking calm I noticed in the reflection a sight I had not seen in years.

I stood up, turned around, and faced Mr. Stevens, holding a cardboard box. Inside, a T-Square, lettering guide, angles, pencils, lead, erasing brush. The man I once knew, who believed that he was holding the best technology in the world, knew those days were gone.

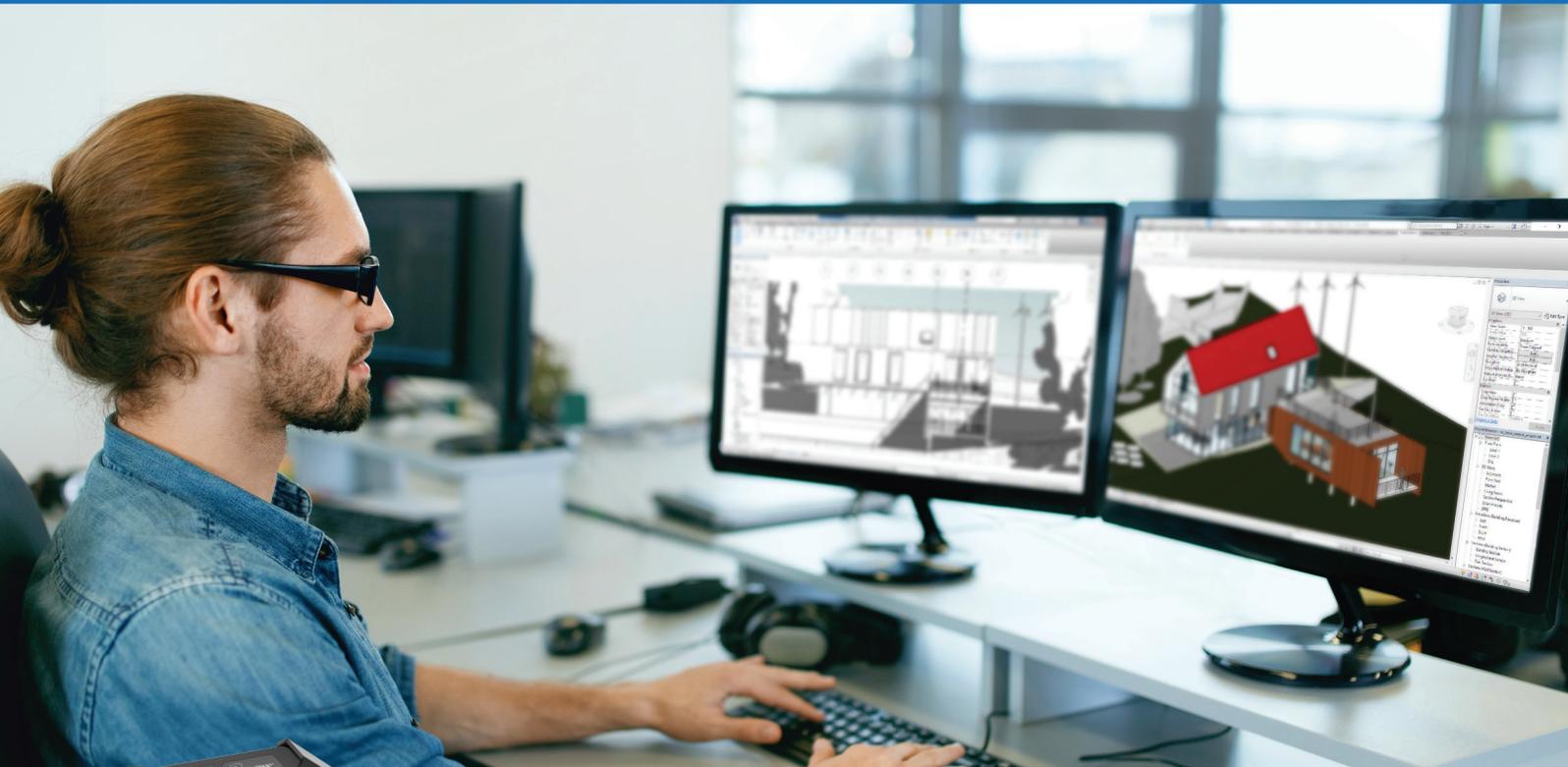
He studied the contents of the box, looked back up at me and in one final gruff I heard him tell the dealer as he was handing him the box in exchange for the keys: "We'll take it."

And to me he said, "But I get to drive."



Starting out in front of an old-style drafting board, Glen Hines has since expanded his 20+ year career in the AEC industry to embrace technology and utilize it to its fullest potential. From AutoCAD to Revit, and now to the implementation of cloud technology to over 200 users at McMillan Pazdan Smith, he has taken the project design experience gained over those decades and applied it to his understanding of what it takes to keep McMillan Pazdan Smith a step ahead in this high-paced industry. Glen loves sharing the "Aha Moments" from his career, as he feels that each of these revelations changed his relationship to the industry in some meaningful fashion. Today he will tell you, "Even with twenty years under my belt, I'm not an expert by any means, but as long as I keep having my aha moments, then I know I'm headed in the right direction. And that's something worth sharing with others."

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