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# AUGI WORLD

The Official Publication of the AUGI Design Community

November 2021

## Education and Training

*Also in this issue:*

A Day at the Home Office

Continuing Education

Corporate Training for Everybody

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# CONTENTS

## FEATURES



6

- 8 Visualization**  
Civil Engineering Still Lags  
Architecture in Visualization

- 6 Remote Office**  
Some AUGI Humor

- 12 Continuing Education**

- 16 AutoCAD**  
One Key Shortcuts

- 18 GIS**  
Site Scan for ArcGIS

- 22 3ds Max**  
3ds Max and Creative Professionals:  
Their Role as Mentors

- 24 Corporate Training**  
Corporate Training for Everybody



12

## COLUMNS

- 4 Letter from the President**

- 26 Tech Manager**

- 30 Inside Track**



26

## From the President



### HAPPY NOVEMBER!

**O**ur focus this month is on education & training. I just realized that over half of my life has been dedicated to this topic, so it's obviously something I'm passionate about.

I'll share a little something with all of you, when I was in high school and planning what I wanted to do with my life, I wanted to be an elementary school teacher. Due to financial situations, that career was pushed outside of my reach. Instead, I found myself in a technical school studying drafting & design and learned AutoCAD (which is my first love). I quickly realized that my love for education could be applied in helping others learn AutoCAD. I assisted other students in my program and at the same time, I taught AutoCAD one evening a week for a night school program. After finishing school and working as a drafter, I started teaching AutoCAD part-time at a local community college in a corporate training program. At this point I realized that what I wanted to do was to provide AutoCAD training for adults who needed to know how to use it in their career. Three years later, I achieved that goal of working full-time as a corporate trainer. I've progressed in that career, learning new software and skills that have served me well.

I've looked back a few times and thought, what if I was an elementary school teacher? The answer for me is that I wasn't meant to be and I'm exactly where I was supposed to be! Sometimes our goals shift and change due to our circumstances, but we can and should take advantage of opportunities that come to us. We should work to make things happen if we need a change. We should not stay in a situation (job/career) that isn't right for us (even if it was at one point). We should overcome a fear of change and embrace opportunities that will help us grow.

If you think about it, our entire lives are about education & training. We should always be learning. To quote Sam Waterston, "If you're not moving forward, you're falling back."

I hope you all enjoy the articles in this month's issue of *AUGIWORLD*.

Take care,

KaDe

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# Some AUGI Humor

**H**ello AUGI friends. It is 7 am and the alarm is going off at full blast, so time to get up. Unfortunately, for some of us, this type of alarm you cannot snooze. That alarm is my beautiful toddler wanting a bottle of milk and to watch some PAW patrol.

As I make my way into the kitchen, I realize I forgot to close my laptop the night before and my cat picked out all the keys to my keyboard.....GREAT! Now I have a REAL SCRAMBLE problem right before my 8 am meeting. Fortunately, we have two beautiful buttons at every meeting and those are "CAMERA OFF" and "MUTE". I can finally get situated while they talk about the deadline due at 12 pm.....AT 12 PM! Have these clients gone mad? What happened to lunch hour? Oh, that's right, it's out on COVID Leave. Until when? I think we can all answer that question, right? Well maybe not. So, time to get to work.

Well, thanks to AUGI and its very intriguing monthly

tips and tricks, I have been able to pick out a few myself and have really become efficient with a few production and design tasks; and the 12 pm deadline was a piece of cake. I recommended it to all my co-workers. Especially my boss. I "accidentally" sent him the latest release, Salary Survey. Page 29, Section 3, Drafter/Designers. "Sorry boss I was having tech difficulties and totally did not mean to send you that specific one", the email said.

## **DON'T GIVE UP...**

While still looking at the data released by AUGI, I was quite impressed on how much salaries seemed to have jumped now that there is a remote work option. I am very fortunate to say that I began working remote 3 weeks into switching companies at the beginning of 2020, as some others did not have that opportunity, and either got laid off or furloughed. All I can say to that is, to not lose any hope. And most importantly, do not stop searching

for the next opportunity to either prove yourself or reinvent yourself, as there are numerous amounts of companies that genuinely care for people with passion and potential that will give you the opportunity to take on challenges alongside of them.

It is November 2021, and I am still working from home which has had its challenges more so on the psychological side. Even though one does have the flexibility to work from home and avoid the commute downtown, the days do not seem to get any longer, and deadlines seem to get shorter every week. Time has really been lost for me, as for some of you that are reading this, I would assume. Lost in the sense that it is quite hard to keep track of the days as there is no disconnect between home and work, even on the weekends. For me, it is even harder to disconnect because I am always looking for the next challenge or development stage in my career. I would say this is due to a couple of observations I made at the beginning of 2020 when everyone in the company got sent home.

The first observation was that the office was running on about 95% workstations, which then brought up the only question in my mind, "What made leadership choose workstations vs desktops way before the pandemic came about?"

And the second observation derived from the first one. In what way can I take that same approach into my life, even though I may not be forced to take such decisions? From that moment forward I began creating my own environment where I would pressure my self to not get comfortable while having the commodity of being at home where no one is watching me. If there is any advice that is universally applicable, in any industry or personal life, it is to constantly seek discomfort as there is growth in it.

"Engineers like to solve problems. If there are no problems handily available, they will create their own problems." -Scott Adams

## DIVIDE AND CONQUER

Every project brings its own individual sets of challenges, and here at Walter P Moore, it is embedded in our DNA that "We are driven by the challenge". There is no other way to be successful at the firm but constantly be driven by those challenges imposed by both design criteria, and the ones that come from mother nature at each site.

The way that I have found success in achieving deadlines is through a saying we have among a few peers; and that is to divide and conquer. It does not matter how big or small the project might be, we all have that reliability on each other that they will do their part (often times more) to achieve such deadlines. The main key pointer to dividing and conquering is communication, especially being behind a screen and not having direct contact with them across the bullpen or right next to you. While it may seem like a burden to get on a coordination call, I have found that 100% of the time, a misunderstanding of how something was intended to be drafted or designed, could have been solved with a simple call. One call can really solve a thousand questions.

On the same topic of communication, it is very easy to get multiple phone calls/messages from different groups if you work for a big firm, like myself. I can say that coordination among the Project Managers to delegate the work rather than you wanting to really help and piling up more than you can do will often solve that issue and not create delays. And as my peers always tell me, "It is okay to say no", as the work can get passed on to someone else that might have a lesser load of work than you.

In conclusion, we all have goals, ambitions, and obstacles that can often derail us from enjoying the "now" and steal away our happiness. Now more than ever, it is important to be present and continuously create memories with our loved ones. Don't forget that "together we are driven by the challenge" and can overcome the obstacles that we face in the future.



*Marco Oregon is a Civil Engineering Drafting Tech with 3 years of experience in the Civil Engineering field. His passion for learning and determination to excel in both production and design has allowed him to work for distinguished companies in the Greater Houston area. Now he works at Walter P Moore where he is constantly involved in complex projects that require thorough experience in Civil 3D and is on the path to become a distinguished designer.*

# Civil Engineering Still Lags Architecture in Visualization

## This is How We Catch Up

### THIRTY YEARS AND ONE DAY OLD

**W**orking as an employee and walking across a scorching hot campus wasn't where I wanted to be on my 30<sup>th</sup> birthday, but there I was.

I remember the day vividly, not just because it was my 30<sup>th</sup> birthday but because the civil engineering/construction company was working for had hired me to start a visualization group and we had an important meeting that day. Not only were we trying to secure a contract to provide 3D

visualization services for a research project, but the meeting was on the campus of my alma mater, the University of Nevada, Las Vegas.

It was a walk I had done hundreds of times before as a student- westward across campus, passing the music buildings and to the engineering college. This time, however, I was an employee and my reflection walking in business casual alongside a co-worker is seared in my memory as I looked over at a building with reflective windows. It's the same set of windows I had looked at my reflection

countless times before, albeit previous iterations of my reflection were in college attire and a backpack deflecting my posture.

I had promised myself several years before that I would start my own 3D visualization company and leave my day job before my 30<sup>th</sup> birthday so in that reflection (and associated memory) is the emotion involved in realizing I hadn't achieved that goal. Here I was, still working for someone else and helping *them* win the 3D visualization work.

My co-worker was frustrated by the meeting. He felt the potential client was using us to learn how to do the visualization themselves leaving us without the work we were seeking. I disagreed, feeling even if that is what they were interested they would be unable and need our help in training or the visualization itself.

It was a subtle but powerful disagreement. I went home from work that day, discontented on this significant day. Because of this, and during a birthday celebration with my family that very night, I announced to my wife that now was the time to leave the job and start Civil FX – the 3D visualization firm I had been planning for some time that would focus solely on civil projects.

I quit my job the next morning and started Civil FX the next afternoon, missing my goal by a single day.

## THE VALUE OF INTERACTIVE VISUALIZATION

While I had used 3D modeling to enhance class reports in college, I really fell in love with visualization a year into my formal career after graduation in my first job as an engineer-in-training. I also believed that visualization in civil engineering could use newer real-time game engine technology, inspired by a brother who had worked in the video game industry for many years and by watching what was possible in racing video games.

What is a transportation visualization if not a slightly altered racing game?

Civil FX was a ride. Six years and hundreds (thousands?) of rendered and interactive visuals later I experienced another introspective birthday. I signed the letter of intent to sell Civil FX on my 36<sup>th</sup> birthday and finalized the sale about a month later to Parametrix. Summarizing the incredible people, technology, and projects I experienced during those six years in a single paragraph is hardly fair, but Civil FX can't be



Image Credit Civil FX- Project Neon

the focus as the entire experience personally was only a step in the larger goal of changing visualization in civil engineering.

## CIVIL VISUALIZATION IS INCREDIBLY DIFFICULT

Over a near-decade of focusing on visualization full time I learned many things. One of the most important was that, while me and some incredible artists and programs had done our part to push the technology as far as we could, visual fidelity for civil projects still lagged architectural visualization (on average, of course).

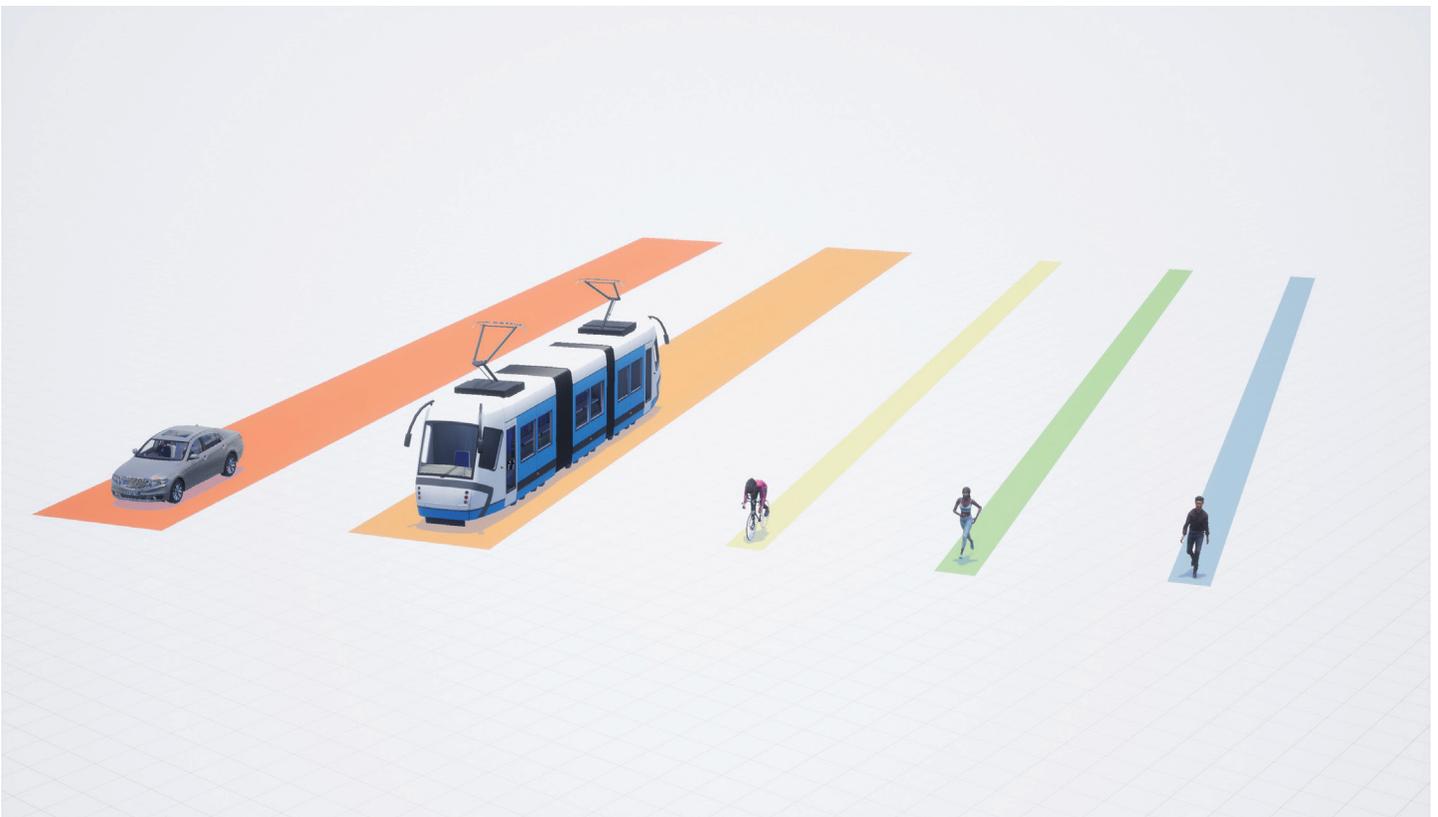
To be fair to myself and our industry, visualization for civil engineering projects is especially difficult. Combine massive scales of projects, cuts and fills into terrain, 4D phasing, obscure design data formats, complex traffic movements and hosts of other complications and the picture (render?) of the challenges in good 3D visualization for infrastructure project becomes clear. Objects such as roadways signs, traffic signals and striping often isn't even modeled in 3D during the typical civil design pipeline.

I still can't get over the fact that it is 2021 and bridges are often still designed in 2D.

Getting the disparate data from design into photo-realistic visuals leaves a few options. One is to visualize straight out of the civil design software which will likely give renders that might look like they are out of the 80s or 90s. Another is to use modern visualization engines typically built for architecture projects- though you may run into limitations in realistic traffic placement, integration with civil software, lacking civil assets in the 3D library, real-time navigation for large projects or visual graphics for transportation projects. Even more options often include general 3d modeling and visualization programs with steep learning curves and little thought in the way of infrastructure projects.

To date, the best results have come from a team that is trained to take complex projects with incomplete data and essentially turn it into a video game using real-time game engines and 3D modeling software-similar to the workflow we created with Civil FX (and they still do, BTW). The results are good to great and flexible enough to handle a range of projects with unique feature requests.

I've become intimately familiar with these limitations over the years in building a visualization team and in countless conversations with clients and fellow visualizers. While some of the disparity in visualization quality between architecture and



civil projects can be attributed to the challenges we face in the civil world, the lack of civil focused visualization tools can be blamed as well (the two are likely related).

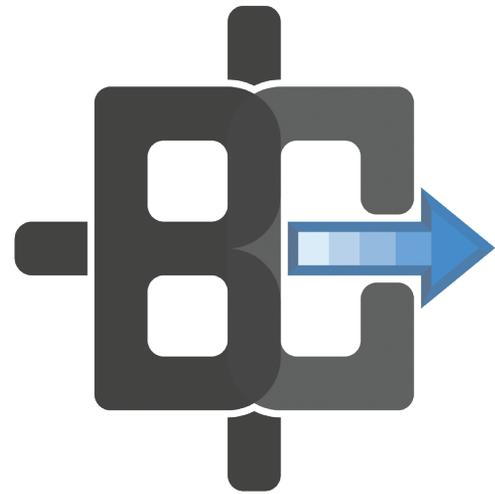
## AN OPPORTUNITY FOR A BETTER VISUALIZATION TOOL

Seeing an opportunity in the complexity we had faced, we started creating an infrastructure focused visualization engine in 2019. Built upon Unreal Engine (we received an Epic Megagrant), this software program would be developed with civil projects in mind and, hopefully, make photo-realistic 3D visualization more accessible for more engineers, designers and contractors in transportation and other civil-related industries.

It's been two years (and a business sale) since we started work on Beyond CAD and, while it is still a work in progress, it continues to get better every day. Our goal of making visualization easier for civil projects is already being realized. Loftier ambitions of solving more problems directly and indirectly related to this type of visualization (rapid typical section creator, terrain import and streaming, Vissim-based traffic, .dwg and other proprietary file format support to name a few) are on the immediate horizon. All-new features such as a 3D custom sign creator, bounding box and advanced traffic system supporting 5 traffic types (Vehicles, Rail, Bike, Run and Walk) already are working wonderfully and making visualization on these types of projects more accessible.

## HOW CIVIL CAN CATCH UP TO ARCHITECTURE IN VISUALIZATION

I'm not alone trying to build new or improve existing software to solve some of these challenges. Even with the years and investment we've poured into our own solution, Beyond CAD is still in early access and we have much work to do in improving our product and building a solid user-base. The improvements and a user-base that can take Beyond CAD from powerful visualization engine into industry-altering software are even loftier goals. But even in these early days and with countless challenges facing us, hopefully the seeds have been sowed. I don't know if civil will ever truly catch up to architecture in terms of visualization. But, if we plan to make up any ground, better civil focused visualization tools seem like the right place to start.



## BEYOND CAD

With my 40<sup>th</sup> birthday only a few years away, I can already imagine a world where I'm celebrating that momentous day reviewing the latest renders from Beyond CAD users. Who knows, maybe they will even be better than some of the architecture visualization in 2024.

On average, of course.



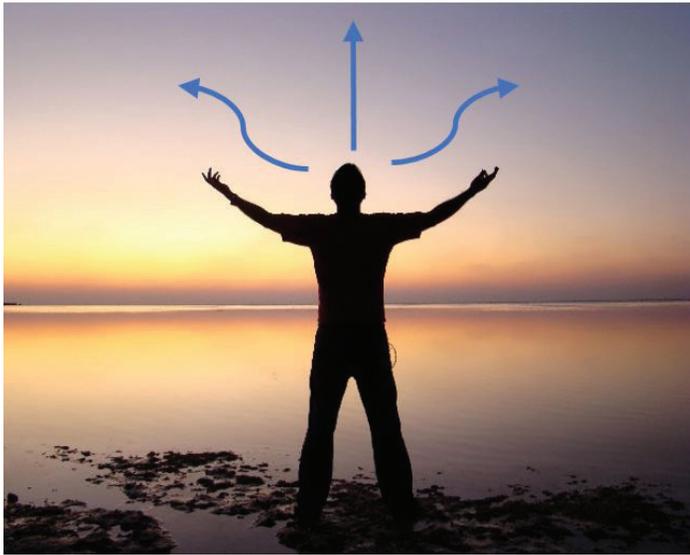
*Sam Lytle, PE, is the founder and creator of Beyond CAD, a brand-new better 3D visualization tool for civil engineering projects. Prior to becoming a software publisher, Sam started and later sold Civil FX (now a division of Parametrix) which provided 3D visualization for transportation and other civil projects.*

*Sam has worked in the public and private sector building interactive visualization workflows and teams over the past decade following his graduation from the University of Nevada, Las Vegas with a Bachelor of Science in civil engineering.*

*Sam lives in southern Nevada with his wife and 4 kids and enjoys basketball, golf, and community service.*

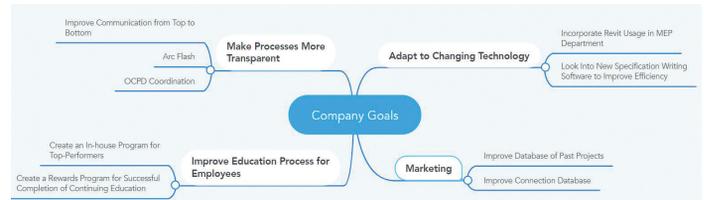
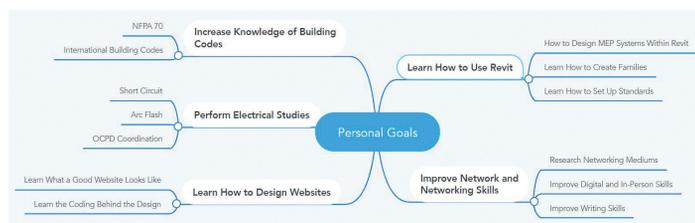


the information overload with family life, the little time left over had to be utilized effectively.



## BRAINSTORMING

Choosing which training “adventure” to invest your time and money starts with developing or identifying topics of interest. Depending on if you are just starting your career or if you are many years into it already, you may or may not have these topics already determined. If you are not sure where to start, sometimes it helps to talk to some mentors or someone who holds a position that you might have interest in years down the road. They might be able to explain what it took them to get from your current position to where they are now in their career. Attentively taking notes shows effort and may further the conversation. After one or two of these conversations, you should have some thoughts on a couple of topics of interest. The next step is to create mind maps with personal/professional interests along with some interests that might align with your employer’s goals. This will require an additional conversation with a supervisor, which is always a good thing as long as they are open to it! This may also help to convince your company to cover some of the costs associated with training if it is mutually beneficial.



## SETTING CLEAR GOALS

One of the most important parts of continuing education is setting clear, measurable goals. This is different from picking a broad topic like “Learning Revit.” Setting a goal needs to be something measurable to determine when it might be time to move on to a new or more complicated goal to “continue your education.” Without a measurable goal, learning efficiency is at risk. Looking into details that are interesting but might not prove useful to your everyday “working knowledge” is one of the pitfalls of being interested in everything but finishing nothing.

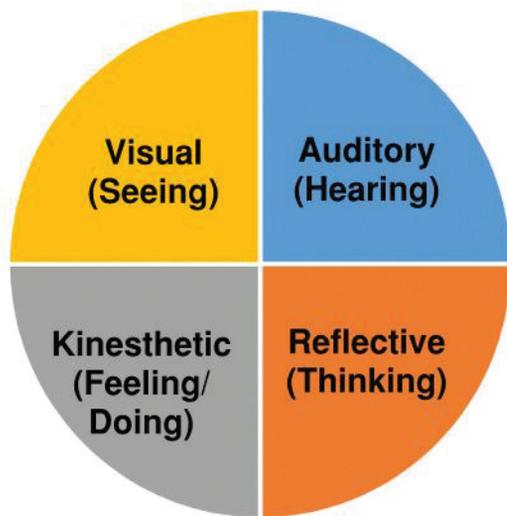
Setting my goal of learning Revit, I quickly realized it was much too broad. I then determined it would benefit me the most by learning how to design electrical systems within Revit. Setting up specific electrical load parameters, demand calculations and linked panelboard schedules were measurable goals and would quickly improve my Revit design approach. I was able to look back after the first project completion and each of the goals were incorporated in the design documents. Subsequent projects that utilized these goals became more profitable and accurate. At this point, I realized it was time to set a new goal but not switch overall topics. I then learned how to coordinate and document mechanical and plumbing within Revit with the input of senior engineers. For a short time, I almost spent significant time on Energy Modeling training until I realized this was not related to my next measurable goal and I needed to refocus. With a minimal knowledge base to start, in regard to a newer technology, everything seems flashy and exciting but typically, someone with practical knowledge, even if not with the technology or software, can provide beneficial guidance in the feasibility or applicability of technology in every day usage.

## PREFERRED FORMAT AND SCHEDULE

Once you have set a measurable goal for continuing education, the next decision to make

is regarding your preferred format of training and allocating appropriate time throughout the week. These should both be more of acknowledgements and not decisions since by this point in your life, you should have identified what type of “learner” you are and what time of day you function best. Some people learn from reading, some by listening or watching and others learn by doing.

## Learning and Communication Styles



Personally, I prefer reading to start the learning process and then follow up by applying what I read. When initially learning Revit, I was able to dedicate three hours before work to reading a great walk-thru/tutorial book. After spending about two months working thru the book and walk-thru demonstrations within Revit, I was able to find my way around the program. These methods still work best for me because I can break up the reading into smaller chunks of time. Breaking training up into smaller periods has become necessary now since having kids. One issue I have found with reading is maintaining a boundary between actual training and casual reading. I have a love for reading and am typically reading at least three different books at a time. When you add all of the articles and white papers to the mix, it can become very easy to lose focus. I find sticking to a schedule or time of day to study or read training material to be very helpful. When deciding on training material, I also set a consistent time to dedicate to the material until I am finished. The key is to not become distracted by alternate material that is interesting but unrelated to the initial training goal.

## DRIVING THE CONCEPTS HOME

By identifying your preferred format of learning prior to jumping into the training, the “doing” step might not be necessary for everyone. However, immediately utilizing any skills obtained reestablishes the concepts and forces you to fully understand the skills gained. Sometimes utilizing these skills forces you to go back to the training material and re-read or watch the training to reinforce details you may have missed.

I lobbied for, and was fortunate enough, to be incorporated into a project within my firm as the lead electrical designer using Revit. The project manager and my supervisor both knew I was putting in the effort to learn on my own time and no one else had any experience in Revit, so it seemed like an easy decision. There were certainly some “growing pains” throughout the whole project, but it was completed successfully. As the first project was mostly complete, I advocated for the next project to be done in Revit as well. I became involved with not only the electrical design within Revit, but I also worked with our mechanical and plumbing engineers to design and document the entire MEP systems within Revit. Next, I became involved with developing Revit MEP standards within the whole firm. This was to stay active in the Revit process and it increased my responsibilities using Revit.

I was lucky to be incorporated into actual projects directly after having dedicated the time to learn. Fortunately, most supervisors can recognize when someone is investing their own time to improve himself or herself and will likely want to pitch in where they can to help. If this is not the case, it is always easy to create a “test” project to work on to improve knowledge or volunteer to help create standards.

## LEARNING BY TEACHING EFFECT

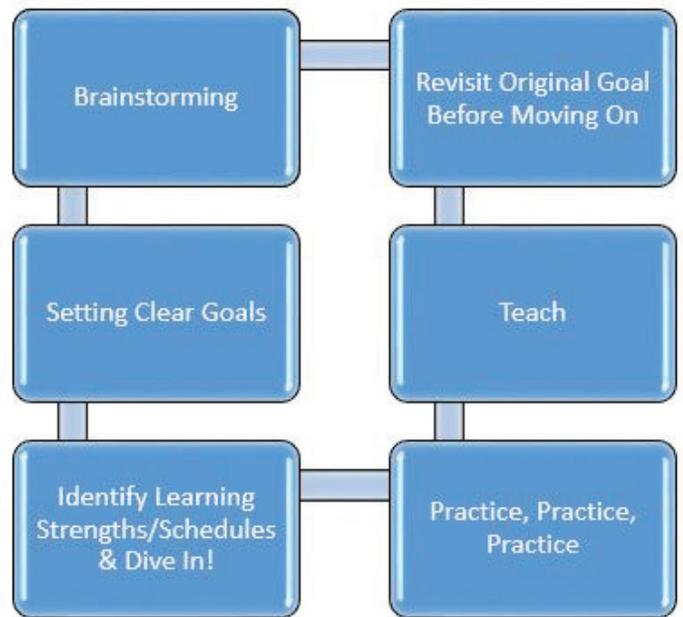
An additional step that has been proven to help a learner better understand and retain what has been learned is to teach others. Preparing a training session reestablishes the details of the topic and you may even discover other details you were not aware of originally. In addition, teaching others can help you discover gaps in your knowledge of the topic. When someone asks

a question that you are unsure of, responding “I’m not 100% sure, but let me look into it and get back to you,” allows you time to investigate the details questioned but also forces you to revisit the information further reinforcing your knowledge base. A side benefit of teaching is becoming more comfortable speaking in front of others, which most people in our industry struggle with at one point or another.

After independently learning about Revit, utilizing my knowledge on multiple projects, working on the creation of company standards and revisiting my measured goals, my last step was teaching what I had learned to others. I started a Revit Users Group within the company to cover the largest possible audience across the company’s multiple offices. Utilizing on-line meeting software, I setup bi-weekly meetings to share computer screens and teleconference from the different offices. While these calls were open for anyone to teach anything they learned using Revit, I typically ended up doing a lot of the planning and teaching. Planning the sessions continued my learning process and it was inevitable that questions would be asked that I could not completely answer at that time. It also really prepared me for my current firm where I teach all the new designers and engineers how to use Revit and how to take advantage of the standards I set up when we were a firm of two people.

## CONCLUSION

Continuing education can always be something to look forward to and enjoy rather than dread. Following a simple process to determine what you want to focus on, identifying the most efficient learning methods for yourself, practicing what you learned and finally helping others learn what you have experienced will provide fruitful results. You may find yourself rising up the ranks faster than you expected, but at the very least you will be consistently improving your arsenal of knowledge, and that is the best ending of a “choose your own adventure” that anyone could ask for. Just do not stop learning, because as Albert Einstein also famously quoted “Once you stop learning, you start dying.”



Luke Flowers is a licensed electrical engineer and has been using Revit since 2012. Luke is also a LEED AP and an Autodesk Certified Professional. He serves as AJC Professional Services’ office manager, IT leader and Revit expert. Luke has 15 years of experience in electrical engineering, designing buildings from offices and restaurants to health care centers and schools. His passion in engineering is to help his clients meet their goals by working with them to achieve their vision on time and on budget, all while enjoying the process. When Luke isn’t working, he enjoys spending time with his family, reading anything he can get his hands on, home renovation projects and running long distances when time permits. Luke can be reached at [luke.flowers@ajcpros.com](mailto:luke.flowers@ajcpros.com) for any questions or comments.

# One Key Shortcuts

**T**he first release of AutoCAD was 38 years ago. Back in the days, the focus was on computers itself as a promise of profound impact on the way we do things. Nobody really thought about ergonomics, the goal was to provide functionality first. Therefore, we had rectangular mouse bricks. Another thing is the numpad location. Placed on the right-side it forces you to move hand from mouse to numpad every time you required to enter a number. Probably the original intention was making it easier for the right-handed people to use numpad as a calculator. It was before the mouse became a common input device. As a result, we have unnecessary friction of moving hand between mouse and numpad. The software was also designed to provide functionality first. It was not considered how many letters a person had to type to access a command or how long the mouse path had to be and how many clicks needed to be done. Many moons have passed but we can still see the ergonomics flaws which were planted at the dawn of computer technology.

## HOW THE IDEA WAS BORN

When I was faced with tight deadlines and pressure at work I collapsed like a house of cards. Then after calming down, I started to think why AutoCAD does not have simple one key shortcuts... Other software packages have them. I have tried aliases and realized that they often require to type 2 or 3 letters which are all over the keyboard and press spacebar at the end. Not only do I have to make around 3 keystrokes, I also need to move my left hand all over the keyboard while my right hand is resting



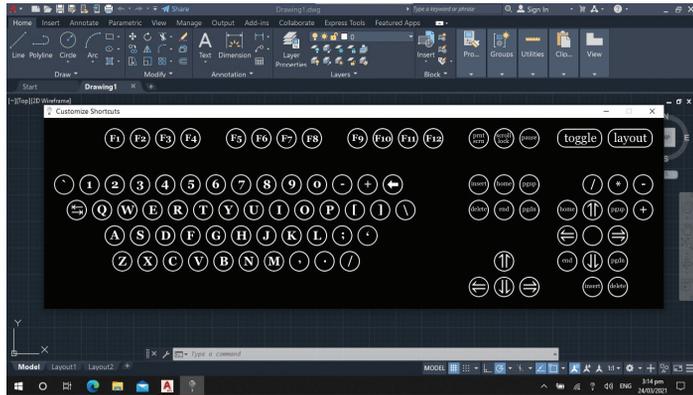
on mouse. On the other hand, when using mouse, I have to dig into menus, aim for icons and then put the mouse pointer back to where it was before. After exploring these options, I became determined to create my own solution which will bring a smoother, better, more enjoyable workflow. It was back in 2014. My goal was to make single key shortcuts which I can put under fingertips of my left hand without the need to run all over the keyboard. And those shortcuts can be anything that can be typed in the command line. Insert a certain block you frequently use? No problem! Make the viewport scale 1:50 in one keystroke? Done! Purge all without any prompts? Too easy! You name it and you will have it at your fingertips. This is how the One Key Shortcuts plugin was born. Over the years I have been using it in my drafting work and continuously improving it. At some point even Autodesk recognized the importance of single key shortcuts, and they created a default shortcuts reference named "one-key shortcuts". In reality, it is an alias reference card and should be called accordingly.



## WHY SHORTCUTS?

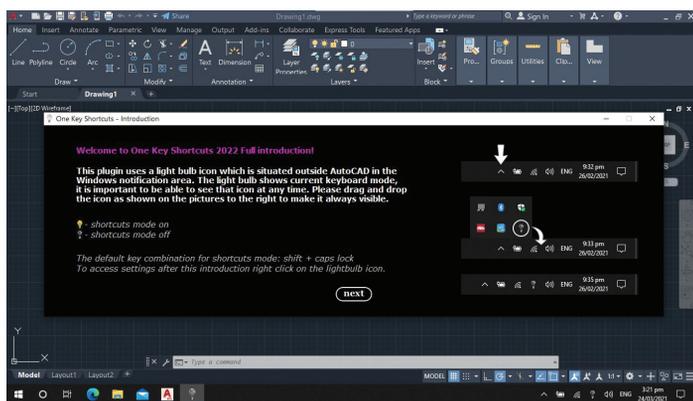
Simple one key shortcuts can dramatically improve productivity while using AutoCAD. You will feel that you are accomplishing much more with less effort, and it is satisfying to see that with just few button presses, you make your computer work hard for you.

Typing aliases, digging into menus, moving mouse all over the place creates friction in the workflow which can be eliminated. Saving a few seconds a hundred times does add up which results in saved time, reduced eye strain, less frustration and overall feeling good at the end of the work day.



## HOW DOES IT WORK?

What if I want to type a command instead of shortcut? The solution here is the special keyboard mode for shortcuts. It is similar to having an extra language layout except those unused keys do not change. Once a command is started or when editing text, the keyboard is always in standard mode to allow typing. If you have a certain workflow with most used commands set up it is rarely required to toggle the shortcuts mode. The toggle shortcut consists of 2 key combination such as “shift + caps lock” and can be changed to other options.



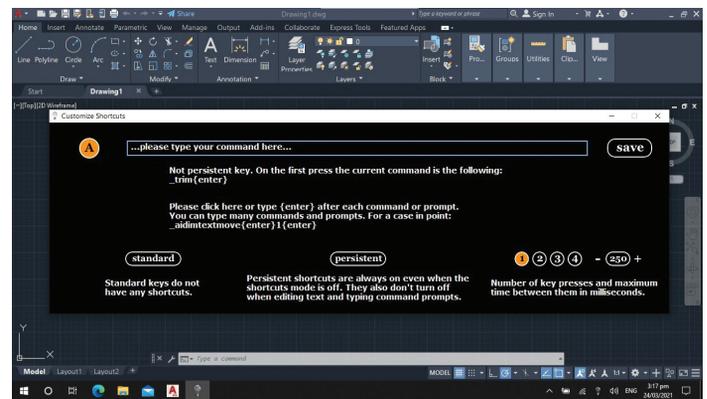
## FUNCTIONALITY

To setup a shortcut simply click on the letter you want to use and type the command to be launched. A command can include prompts which is handy for quick access for commands requiring long chain of prompts. For example, move solid face has this line: “solide[enter]f[enter]m[enter]”. It is 11 keystrokes!

Shortcuts can be persistent which means they do not turn off while typing prompts. It is useful for commands such as snap to middle between 2 points. Typing m2p is not convenient because these keys are all over the keyboard. Accessing this command using mouse requires digging into menus, searching for “mid between 2 points” text which is unnecessary eye fatigue.

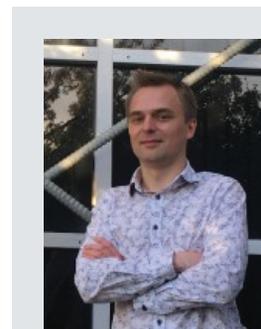
It is possible to assign up to 4 commands to a single key. It can be useful for accessing blocks. Press once – insert a chair block, press twice – insert a table block. The command line in this scenario looks like this: “-block[enter]block1[enter]”.

Since you have the freedom of typing anything you want in the command line for a shortcut the possibilities are endless! By the way, no need to worry about having conflicts with default shortcuts. You have the special shortcuts mode layout which is all yours!



## AVAILABILITY

The One Key Shortcuts plugin is available from the Autodesk AutoCAD App Store. If you have any requests or comments, feel free to contact me.



*Ivan Shchitov has been in the construction industry for about 14 years. Originally from Moscow he went to New Zealand to help with Christchurch rebuild after the earthquakes. Identifying workflow gaps and finding solutions in combining construction industry knowledge with software engineering skills is one of his passions. You can reach him at [onekeyshortcuts@gmail.com](mailto:onekeyshortcuts@gmail.com).*

# Site Scan for ArcGIS



## SUMMARY

In 2016, the US Federal Aviation Administration (FAA) opened the airways to commercial drone operations by adding Part 107 rules to the Remote Pilot Certificate program. This new Part 107 amendment lowered the barrier to entry for drone operations and made drones one of the hottest topics within the AEC industry.

Early adopters cautiously invested in small, controlled test groups while others chose to stay on the sidelines. These 1–2-person test teams formed within the survey, VDC, and BIM groups to test for accuracy, efficiency, safety, and feasibility. Pilot projects ran in parallel to existing production workflows, and then a comparison of results would be performed to evaluate the feasibility of the drone-based workflow.

Five years later and the results are clear: **Drones are here to stay.** Drone technology adoption within the AEC industry has moved out of the early adopter's stage and into the majority stage.

Some of the more common, repeatable, and

accepted use cases that have emerged in the AEC industry include:

- Mapping small, focused areas.
- Mapping linear features
- Performing high-resolution reality capture
- Creating maps of hard-to-reach areas
- Monitoring sites for progress, safety, environmental compliance
- Conducting visual inspections
- Managing assets
- Performing land analysis

AEC firms are now moving drone use out of the proof-of-concept phase and into standard operating procedures. Many of these test teams relied on technology from multiple vendors to support different steps of a drone operation. There was value in testing all the options, but now these teams are looking for an integrated, end-to-end drone solution that simplifies the process and can scale as their drone operations grow.



## INTRODUCING ESRI'S SITE SCAN FOR ARCGIS

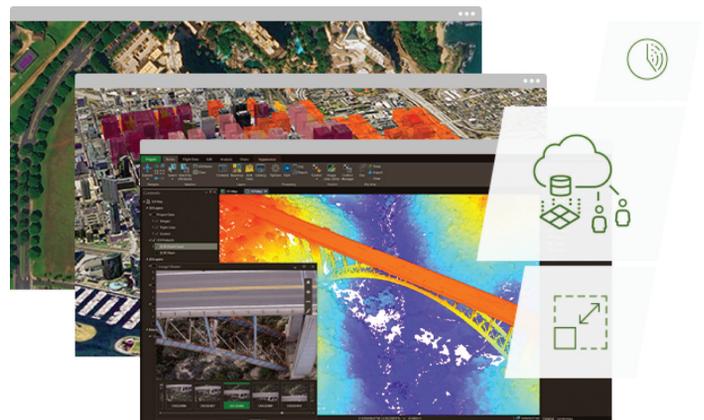
Site Scan for ArcGIS is cloud-based drone mapping software that provides a comprehensive, end-to-end drone mapping solution. It includes flight planning and fleet management tools that help an AEC project team save time and keep drone operations running smoothly. It lets you securely process drone imagery in a scalable cloud environment to create high-quality 2D and 3D imagery products at scale. In addition, it provides analysis and measurement tools that streamline AEC workflows like surveys and inspections. You can easily share drone datasets and information products across the project team for improved communication and collaboration.

With Site Scan for ArcGIS, an AEC professional can:

- **Reduce drone capture time.** Site Scan streamlines the process of designing drone flight plans and conducting drone flights. Drone operators can use overlays from ArcGIS to plan optimal flight paths in 2D or 3D, then autonomously execute flights and capture project data with their drone of choice. Once they've captured their project data, they can upload and validate that data while still on-site. Together, these capabilities help you save time on drone capture and survey workflows.
- **Track and manage drone fleets.** Site Scan includes a web-based dashboard that lets you track flight histories for every drone, battery, camera, and pilot in your fleet. This project view gives drone operations managers the visibility they need to monitor and maintain their drone operations, manage risk and compliance, and proactively identify and resolve problems.
- **Process and store unlimited drone imagery.** Site Scan provides unlimited photogrammetric and 3D processing in the cloud, allowing flexibility and scalability of drone operations,

so teams can quickly process data for multiple concurrent drone projects.

- **Accurately georeference your drone imagery.** With Site Scan, you can use ground control points (GCPs) to georeference your drone-captured imagery. By setting GCPs, you can achieve up to 0.25-inch horizontal accuracy and up to 0.5-inch vertical accuracy.
- **Gain new insights from your drone imagery.** Once you've processed your drone imagery, you can apply cloud-based analytics to uncover actionable information. For example, you can create historical volume surveys for resource stockpiles or generate inspection reports with annotated photos.
- **Improve communication and collaboration.** With Site Scan, there are multiple options for sharing drone mapping products with project stakeholders that need to monitor and inspect assets, track project status, or support other project-level needs.



## SITE SCAN DATA OUTPUTS

Site Scan for ArcGIS generates several types of files, some of which come in multiple formats. All are available for sharing and downloading from within the Site Scan mobile and web apps:

- **Orthomosaics (.tiff)** is the georeferenced, orthomosaic map of the flight area. Orthomosaics can be opened and manipulated in Google Earth Pro, ArcGIS, QGIS, AutoCAD Civil 3D, Infracore, and other GIS programs.
- **DEM (.tiff)** is the georeferenced Digital Elevation Model associated with the orthomosaics. The value of each pixel corresponds to an elevation above the ground. DEMs can be opened and manipulated in Google Earth Pro, ArcGIS, QGIS, AutoCAD Civil 3D, Infracore, and other GIS programs.

- **DTM (.tiff)** is a vector data set composed of regularly spaced points and natural features such as ridges and break lines. A DTM augments a DEM by including linear features of the bare-earth terrain.
- **Mesh (.rcm, .fbx, .obj)** the three mesh formats generated by Site Scan for ArcGIS. rcm is the Autodesk ReMake native format, optimized for viewing, flythrough videos, and simple volume measurements. fbx is a second Autodesk mesh format optimized for media and entertainment. obj is the open mesh format shared across many platforms.
- **Point cloud (.rcs, .las)** the two-point cloud formats generated by Site Scan for ArcGIS. .rcs is the Autodesk point cloud format. Open and edit in ReCap, Civil 3D, InRoads, or any other Autodesk product. .las is the open point cloud format. Open in PointCloudViz or any CAD software, including Autodesk products.
- **Contours (.dxf, .shp.zip)** lines that connect locations of equal value in a raster dataset representing continuous phenomena such as elevation, temperature, precipitation, pollution, or atmospheric pressure.
- **ArcGIS Online and ArcGIS Enterprise.** A direct integration makes it easy to publish and share drone mapping products created in Site Scan with ArcGIS Online and ArcGIS Enterprise organizations.
- **ArcGIS Pro and ArcGIS Image Analyst.** Perform deep learning and advanced raster analytics to detect objects (like roads or damaged bridges), classify land cover types (like impervious pavement), and turn this information into feature services for ArcGIS maps and apps.
- **ArcGIS Field Maps.** Improve the value of your Field Maps with up-to-date aerial imagery created with Site Scan and added to ArcGIS Field Maps.

BIM | Site Scan for ArcGIS has seamless data sharing capabilities with:

- **Autodesk BIM 360** A direct connection to Autodesk BIM360 allows a user to pull in plan files from Autodesk BIM 360. View the project drawings and models within the drone data context and perform some analysis using the tools of Site Scan. Typical use cases include QA/QC, issues creation, and RFI creation.

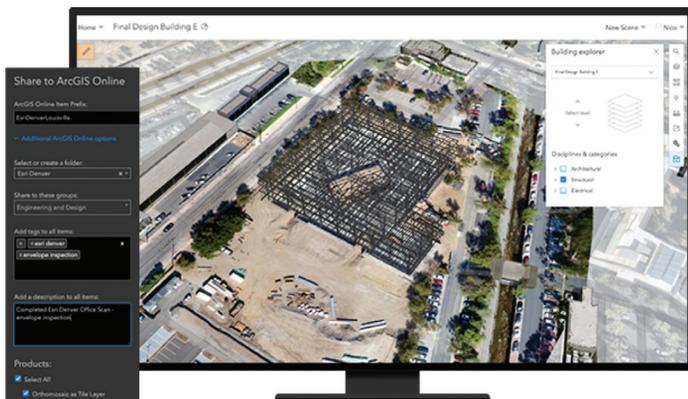
## WHAT'S NEW

The drone technology ecosystem is still rapidly advancing and improving. As the number of drone operators goes up new use cases, workflows, and needs are being realized and so we at Esri pay attention to those emerging needs and use cases.

Below are some of the recent product enhancements we've made to support drone operations in 2021:



- **Enterprise Fleet Management.** Site Scan's redesigned fleet management dashboard allows drone program managers to oversee their organization's drone operations in a centralized and dynamic view. In addition, new pages for aircraft, batteries, pilots, and flights



## BIM & GIS INTEGRATIONS

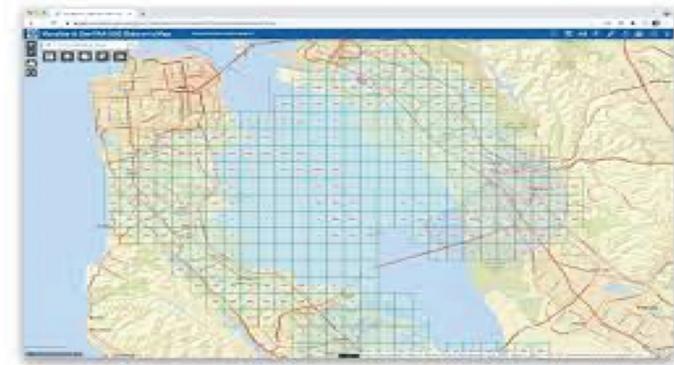
Site Scan for ArcGIS can stand on its own as an end-to-end drone operations platform, but the datasets created can become incredibly value when layered into GIS maps & apps. Furthermore, BIM professionals need access to drone datasets for planning, engineering, and coordination work. In response to this industry need, the Site Scan team has made it very easy to use Site Scan for the entire drone operations but then easily connect the data into downstream software and users in GIS & BIM roles.

GIS | Site Scan for ArcGIS has seamless data sharing capabilities with:

record details that are critical to ensuring safe and legal drone operations.



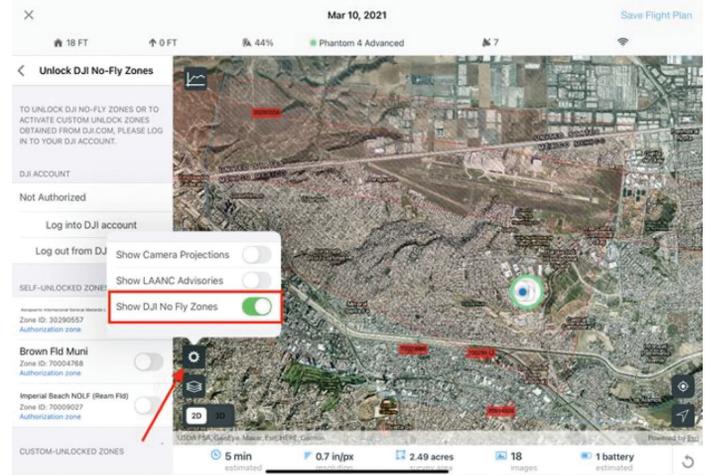
- **Terrain Follow.** Terrain Follow lets users create 3D flight paths that maintain a steady altitude relative to the ground. As a result, users achieve proper overlap when capturing data in areas with variable elevation, so their processed outputs can be more consistent.



- **Airspace Link Integration (US Only).** Site Scan users in the US can take advantage of a new integration with Airspace Link's Low Altitude Authorization & Notification Capability (LAANC) solution. This allows drone operators to use FAA airspace information when planning flights in Site Scan Flight, get notifications when a flight will enter controlled airspace, and request LAANC authorization directly within the app.



**SURE for ArcGIS Integration.** Site Scan uses a new processing engine, SURE for ArcGIS, to provide 3D textured meshes. You can look forward to more detail, sharper edges, and higher resolution textures in your 3D meshes. With this new integration Site Scan also generates georeferenced meshes natively compatible with ArcGIS making it easier than ever to use within your organization.



- **Display and unlock DJI no-fly zones.** Site Scan Flight allows drone pilots with a DJI verified account to view these no-fly zones and unlock them for DJI flights.



Matt Torma - AEC Accounts & Partners at Esri

*I love the world of designing and building. I've been a laborer, an estimator, CAD technician, project manager, drone pilot, and most recently a sales person for AEC technology. I love to learn new things and very passionate about supporting Esri's customers as they design and build the future on a canvas dealing with challenges like urbanization, population growth, rising sea levels, and a failing infrastructure.*

# 3ds Max and Creative Professionals: Their Role as Mentors



In Homer's *Odyssey*, Odysseus left his son in Mentor's care when traveling to the Trojan War. Mentor was Homer's elderly friend and a wise counselor who would prepare Homer's son to take over family responsibilities. Mentor's name would evolve through books and language to become defined as we know it today: "a trusted counselor and guide." For this reason, the role of a mentor must be understood, treated seriously, and approached purposefully.

Like those of us who gravitate to software like 3DS Max, creative professionals share a kindred spirit; this might be because creative work is a long journey with a similar destination. While some of us are further along the road, creative professionals

share the same path and face similar obstacles. Mentors choose to stand beside others in these paths to help push past obstructions, set a pace, and conquer obstacles. For this reason, mentors can alter the direction of lives for better or worse. Perhaps dramatically. It's not that hard to imagine mentors being the foundation or backbone of society. Mentorships develop into kinships, which evolve into fellowships, which grow to build thriving communities, and so on. For this reason, I'd like to take this opportunity to highlight and celebrate a few of the lone wolves out there. These working professionals build these fellowships, pushing to improve creative communities and skills everywhere.

## MELS MNEYAN: IMPROVE YOUR ART AND STORYTELLING (TUTORIAL WITH MENTORSHIP)

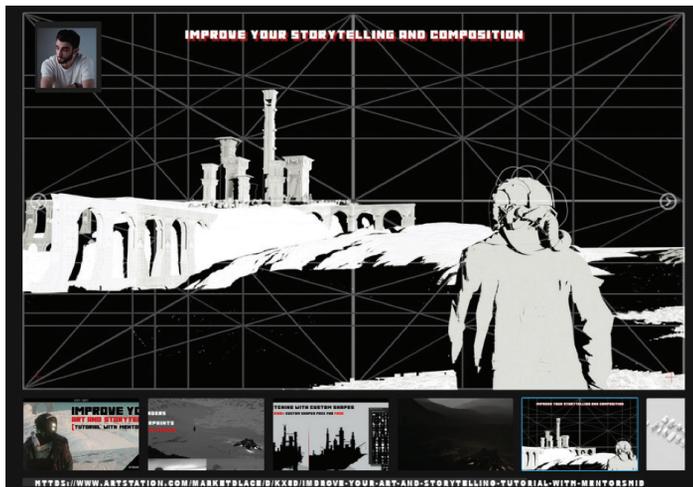


Figure 1: Mels Mneyan's Work

Mels is a visual developer and producer. In addition to creating and selling a massive amount of assets online, he offers a mentorship and five-part series for advancing storytelling and art skills, along with many assets for Photoshop and ZBrush. He covers sketching, sculpting, terrain, World Creator, rendering in Octane, and more.

## SPICER MCLEROY: CHARACTER CREATION FOR COLLECTIBLES



Figure 2: Spicers Work

In addition to helping sculpt characters for licensors like DC, Marvel, Disney, Warner Brothers, and more, Spicer spent his professional career supporting others in their pursuit of 3D art. He offers a one-on-one mentorship through XMD Academy with a 22 part series covering the entire process of developing collectible content in 3D.

## MIGUEL NOGUIRA: MENTORSHIP SESSIONS

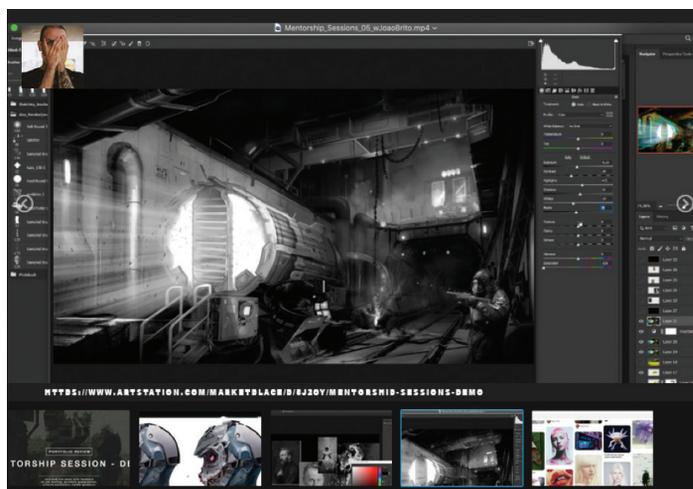


Figure 3: Miguels Work

Miguel uses his experience in the entertainment and game industry to share content online. He offers tutorials on generally every aspect of development, from graphics and details to skin shaders, material creation, level design, paint overs, and much more. His mentorship material, in particular, covers live demos with feedback, fundamentals of color theory, forms, visual language theory, portfolio presentation, post-processing fundamentals, industrial design fundamentals, and feedback for applications and cover letters.

### Conclusion

To all the mentors out there, we thank you!



Brian Chapman is an Autodesk Authorized Developer, 3D Artist, and Application Specialist in Las Vegas, Nevada. He can be reached at [pictelforge@gmail.com](mailto:pictelforge@gmail.com)

# Corporate Training for Everybody

I know this is an odd title. Where do you even start with that? Training for what? For who? Everybody? Also, how big is your firm? 5 people? 10,000 people? A gazillion?

OK, we can dial back from that. Let's take it from step 1. The duct button is the same duct button for everybody. The pipe button. Yep, that's the same for everybody as well. I've spent years of my career stressing over the different scenarios that we as engineers, architects and designers encounter on a daily basis. It doesn't matter. The tools are the same. Do you see that hammer in your hand? Hit that nail until it is all the way in the wood. Could be a roof, a framing job... finish carpentry? A hammer's a hammer and a nail is a nail. Yeah, yeah there are different kinds of hammers and different kinds of nails so stop distracting me from the point here. We can teach everybody how to swing a hammer.

## DELIVERY METHODS

There's a few different ways to go here. Over the years I have done every delivery method that exists. I've even tried interpretative dance. That won't be on the following list.

## VIDEO RECORDING

I'll start with my favorite. Recording videos. Talk about bang for your buck. The problem here is learning how to do it. It seems hard but it really isn't. The first step is to get yourself either a headset with a mic, or a table based mic. I like the Yeti Blue USB mic the best shown here. You can get them at Best Buy and I think even Walmart has them. Or just order the thing off Amazon.

For recording software, I like Camtasia, but it's around 300 bucks. When I record for LinkedIn, they have me using Bandicam. I don't like it as much as Camtasia, but it's around 50 bucks. Camtasia has editing capabilities whereas with Bandicam, you need Bandicut...which is an additional 50 bucks. Either way, when I'm recording I just go through the entire video. Ehen you screw up, just pause and keep going. Finish the video and edit out the umms, coughs, and in my case, the occasional profanity.

Once you get a nice collection of short videos (I don't like exceeding the 5 minute threshold) it really pays off. Most firms have an internal SharePoint type system where you can post them, or just send links to network locations.

## VIDEO CONFERENCING

This never used to be my second go-to but in 2021, this is the gig. This one can be tough. Click training via Zoom, when you can't see everybody's computer screen takes patience. My advice is, record it when you are doing it. Then with your handy new video editing software, you can edit out the areas where you are saying "Click the Door button...nope it's up...up...nope too far up... to the right now...too far... down...got it!"



## IN-PERSON CLASSROOM STYLE

Is this even a thing anymore? To be honest, I said recording was my favorite. This is my favorite. It's just still the best method. I know it's a burden. People sometimes need to travel, you need the equipment, projectors or whatever, but you just can't replace the live interaction. I know the debate is out there where working from home is the best. I disagree here. Sitting down as a group asking great questions, and actually preparing a class can't be beat. It's annoying and time consuming, but the reward is actually getting a great learning experience. Plus it gets you out of the basement, and wondering what the heck that think is in your neighbor's trash this morning. Oh, record it! Then edit the recording with your fancy new software.

## STEP-BY-STEP WRITTEN INSTRUCTION

Yes, this is effective as well. Talk about time consuming though. Having written a book, I've become weary of it just because it's hard to not take a screenshot for every little thing. It takes hours to get good comprehensive instructions laid out only to change it when the software manufacturer decides to change their logo to something ridiculous that has no meaning to anyone outside of the small group that voted on it.

## CONFERENCES

Meh... I don't know here. Again, do we do that anymore? Autodesk doesn't, and I personally feel AU just turned into an internal marketing campaign where the keynote basically says they're not going to address any issues or incompatibilities but hey, look at the newest underdeveloped software we just

acquired. But hey. If you can get something out of sign up. It's not like to takes really any time or cost.

## WHO DO WE TRAIN?

Like I said, everyone.

## ONBOARDING

When I am pulling training together I first think about onboarding training. This is so important. So many times I have missed onboarding someone only to have them "trained" by their cubemate. That's a real hit or miss situation. At least have a plan in place, and make sure they know who to reach out to. Oh hey videos work great for this!

## PRODUCTION STAFF

My focus is here. These are the teammates who are in the trenches. These are the people who will eventually... possibly be training you. If not training you, then telling you where the training may be lacking or stuff they see people consistently doing "wrong". I'm not saying this training needs to be ultra-high-end, but it should be consistent. I like to work through a topic then record it!

## PROJECT MANAGERS

"As someone who doesn't know Revit" ...Ever hear that from a PM? I do; I hear it all the time. These folks need training too. When you see somebody not being able to print their own sheets, there's an opportunity for training. It's the easiest training you can do, but it can be extremely effective to have a project manager at least know what it takes for some of the BIM processes.



*Eric Wing lives in Syracuse NY where he is the Director of BIM Services for C&S Companies. Eric is a popular speaker at events around the country speaking on many BIM-related topics.*

*Eric has authored several books including Autodesk's official training guide for their BIM solution "Revit" called Revit for Architecture No Experience Required. Eric is also an author for **LinkedIn Learning** where he has authored around 60 full courses on BIM management, Revit, AutoCAD MEP, Navisworks and Virtual Design and Construction (VDC)*

*Eric has truly been a leader in the architecture, engineering and construction industry since the conception of BIM and 3D design, and has specialty skills in BIM coordination, training and development of technical staff along with daily application of these tools on multi scale, multi-disciplinary projects.*

*Eric is also currently a Professor at Syracuse University teaching BIM and Advanced BIM at the School of Architecture, and at the School of Engineering.*

*Eric has also taught courses at the Rochester Institute of Technology and Clarkson University on the subjects of Analytical tools for Facility Management, BIM, and Integrated Project Delivery.*



# Educate Me

**T**his time around I want to focus on education at the Community College level and how many offer CAD training that could lead to a career in Engineering, Architecture, Manufacturing or more. I contacted Robert Garza, who is an adjunct faculty member at a community college where he teaches CAD. Robert and I both work for SIATech. SIATech exclusively serves high school students that did not get a high school diploma. As a Charter School, it is a tuition-free public high school that gives students a chance to earn a standard high school diploma. I wanted to get his perspective on CAD training at the Community College level.

*Mark: Tell me about yourself: Like many, you have a “day job” and you also serve students at other times. What is your day job? And the additional work, is that at a college/trade school?*

**Robert:** For my day job I help students learn math at a SIATech school within the San Diego Job Corps center. [Job Corps is a program administered by the United States Department of Labor that offers free education and vocational training to young men and women ages 16 to 24.] The college courses that I have taught are in the evenings at a local a community college

*Mark: Tell us about the college.*

**Robert:** Southwestern College, a public community college in Chula Vista, California. The college was founded in 1961 and offers courses in five locations in Southern San Diego County. The main campus is in Chula Vista and the other locations throughout the South San Diego County. Southwestern College offers many transfer and vocational/career programs in a variety of departments. The CAD courses, certificates, and degrees are part of the CAD program and are administered by the program coordinator, myself. The CAD program along with the Architecture, Automotive Technology, Construction Management, Environmental Technology, and Landscaping programs are part of the Applied Technologies Department which is within the School of Business & Technology at Southwestern College.

*Mark: Tell me about your background in CAD and how you got involved with the college?*

**Robert:** I have used a number of design products over the years. I got my start with CorelDRAW and Adobe Photoshop where I used them to design plates and decorative wall plaques. I started at a time when there were not a lot of online resources available for learning technology so I had to learn by trying out each tool to see what it did. I was fortunate to have a good learning environment and a supportive boss that allowed me to develop creative solutions to design problems. A few years later I enrolled in an AutoCAD course at Southwestern College. I did well in the course and the instructor referred me to a job teaching AutoCAD at the school where I now work, SIATech. I started teaching at the college when the same instructor contacted me again and asked me to teach an evening course. After teaching several semesters of AutoCAD courses at the college I started teaching the SolidWorks course. The full time CAD instructor at the college eventually retired and I started coordinating the CAD program.

*Mark: What other products have you used/taught?*

**Robert:** In addition to AutoCAD and SolidWorks I have also taught the Autodesk Inventor course a few times and at my day job I have helped students learn Autodesk Revit, ArchiCAD, Adobe Illustrator and Photoshop.

*Mark: What is your function at the college? How long have you been involved with the program?*

**Robert:** I started teaching at the college about fifteen years ago and for the last six years I have also coordinated the CAD program. As coordinator I work with the department chair and the school dean to plan the schedules for CAD courses each semester. As coordinator I have also revised course outlines and developed new courses. Coordinating also involved maintaining a budget and making requests for equipment. The program has been fortunate to get funding for multiple 3D printers and desktop CNC machines.

*Mark: Tell me about the college's CAD programs – tools taught, how long have they been doing it, how big is the faculty for CAD.*

**Robert:** The CAD program shares a building with the Architecture program. Our courses are offered mainly in two classrooms within the building. The Architecture program also teaches architectural CAD courses and the full time Architecture instructors have done a good job of advocating for both programs and recently got funding for new computers that have been installed in the shared classrooms within the building. The CAD program at Southwestern College focuses mainly on teaching CAD software, but it also teaches a Geometric Dimensioning and Tolerancing course and a project-based course. While we have some 3D printers and desktop CNC machines we have not yet fully utilized them in our courses. I look forward to seeing the program grow and provide more opportunities for students to get hands-on experience with these machines.

There are currently four other instructors teaching courses in the CAD program. Three instructors teach courses that focus on using CAD for mechanical design. One instructor teaches a Maya 3D Modeling course and a Maya 3D Animation course.

*Mark: Tell me a little about the typical class – length of class, what is covered, what equipment do the students use, what curriculum is used?*

**Robert:** A fall and spring semester course is usually 15 weeks in length and meets twice a week in the evenings. Our class sizes can range from 18 to 24 students. Most of our beginning courses focus on learning how to use the software and follow the chapters of a textbook. Our higher-level courses cover Geometric Dimensioning and Tolerancing and the creation of working drawings for multi part assemblies.

*Mark: How did COVID impacted in-person classes, student advancement and how did the school respond?*

**Robert:** During COVID the college closed down the campus and the courses switched to remote instruction. On Saturdays the college had a setup in one of the parking lots where students could drive through and pick up a laptop or Chromebook and other technology that the college was providing. The college's IT experts also set up classroom computers in multiple rooms so that students could access them remotely to run the CAD software.

The programs at the college that had 3D printers were able to make use of them to help the college staff and students by providing them with face shields. Between April and August of 2020, the Architecture and CAD programs used their 3D printers to fabricate face shield frames. The Architecture facility and I assembled and delivered several hundred face shields to the college. I had three of the CAD program's 3D printers going at the time and was able to print and deliver over 700 frames.

*Mark: When the student graduates do they have certificates/associates' degrees?*

**Robert:** Students are able to earn a certificate by completing the required CAD courses and if they complete the general education they can also earn an associates' degree. We also offer students the opportunity to take SolidWorks certification exams when they are enrolled in courses that use SolidWorks.

*Mark: What careers might be open to students when they graduate?*

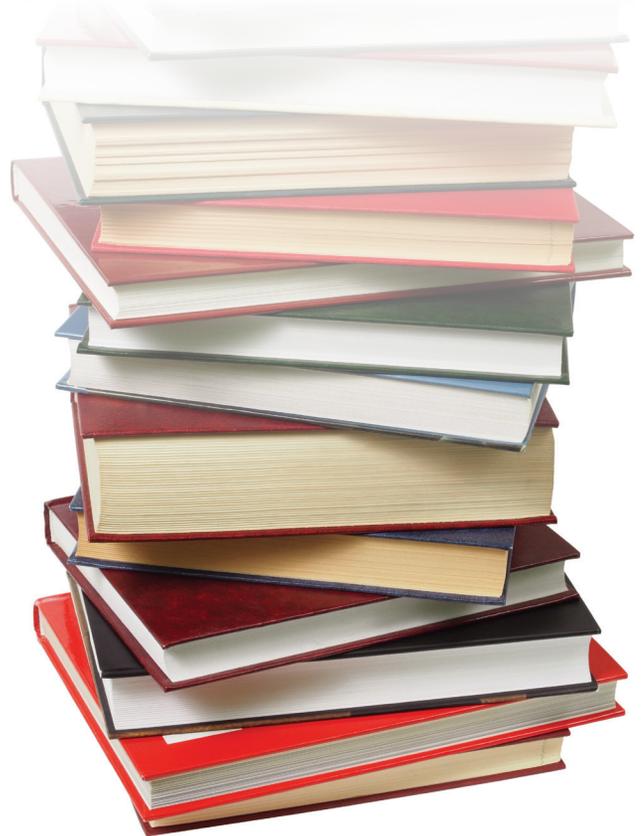
**Robert:** Students with a foundation in CAD can pursue drafting careers but they will find more opportunities in design and engineering fields with additional education in those areas.

*Mark: So what advice would you offer a student, or even someone changing careers, about taking classes?*

**Robert:** I would advise taking a CAD class to try it out and to see if it is something they are interested in. There are multiple types of CAD software programs, so even if one is not a fit, then another might be. They should talk to other students and ask them about their experience in a class. A common question I get asked is if computer-

aided design (CAD) classes require a lot of math or knowledge or computer programming. They do not require programming and while knowing basic algebra may help it is not a requirement for an introductory CAD course.

*Mark: Thanks Robert. Education is critical to success and taking a Design Technology class like CAD can open students to a world of opportunity. It might all start with a love for CAD.*



*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](http://www.caddmanager.com) and [www.bimmanager.com](http://www.bimmanager.com).*

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## Xi PowerGo™

Our PowerGo CAD Laptop line starts with the 8-core Intel i7-11800H and RTX 3050 from \$1378. The XL model with Quadro T1200, A2000, A3000 & A5000 is priced starting at just \$1727.00. The XT goes up to i9-11900K, RTX 3080-16GB & 128GB DDR4.



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## PLANTDATAMANAGER

[https://apps.autodesk.com/PLNT3D/en/Detail/Index?id=3843653490065846291&appLang=en&os=Win32\\_64](https://apps.autodesk.com/PLNT3D/en/Detail/Index?id=3843653490065846291&appLang=en&os=Win32_64)



**Autodesk AutoCAD Plant 3D: 2022, 2021, 2020, 2019, 2018**

PlantDataManager was developed for project team members who use plant project data in their daily workflows. With Autodesk® AutoCAD® Plant 3D, project teams can only access and modify project data through the Autodesk applications which typically require workstation grade machines to run on.

With PlantDataManager, project engineers, process engineers, instrumentation engineers, and designers can access plant project data in an intuitive tabular user interface. PlantDataManager allows multiple users to edit project data even while the drawings containing the data are open in production.

Until now users of AutoCAD P&ID and AutoCAD Plant 3D could only capture data for objects placed in drawings or into a model. A key new feature of PlantDataManager is the capacity to create non-placed objects or NPOs.

NPOs enable project teams to create and manage plant project components from the PlantDataManager interface that are typically not represented by graphics or 3D components.

Also, because NPOs can be converted into P&ID objects, project teams can pre-populate project components into the plant project database even before creating P&ID graphics.

Extending the functionality of AutoCAD P&ID further, PlantDataManager also allows users to define and create relationships between plant project objects.

PlantDataManager significantly extends the native data handling capabilities of AutoCAD Plant 3D, providing increased flexibility and functionality of your workflows.

You can link external and internal databases to your project's objects within PlantDataManager to push data integration ahead.

## PROJECT WIPE-OUT

<https://apps.autodesk.com/RVT/en/Detail/Index?id=5578837825858587294&appLang=en&os=Win64>



**Revit: 2022, 2021, 2020, 2019, 2018**

The app will help you to clean your project. You do not need to manually delete all the things.

Main functions:

- Wipe reference planes
- Wipe all views
- Wipe all levels
- Wipe all Autodesk® Revit® links
- Wipe all Imported instances

## PULLDOWNIT 5

<https://apps.autodesk.com/MAYA/en/Detail/Index?id=4911620326233257850&appLang=en&os=Mac>



**Autodesk Maya: 2022 , 2020**

Pulldownit is a dynamics plugin intended for destruction effects as well as massive rigid bodies simulations. By using it, digital artists are able to shatter objects in different styles, create surface cracks and easily animate the fracture of 3D models. The power of Pulldownit solver allows computing thousands of objects in dynamics in a stable and realistic way.

This trial version includes exactly the same dynamics solver than version Pro. However, there are some limitations in the UI:

- Force fields per object not supported
- 1024 fragments per object maximum
- 1 fracture body in scene maximum
- 3 clusters per fracture body maximum
- 100 frames of simulation limit for more than 300 objects/fragments in a scene

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](mailto:brian.andresen@augi.com)

**AUGIWORLD brings you recent developments in Autodesk and related software items**





# REVIT Up and Go!

Optimize performance and maximize ROI with BOXX hardware purpose-built for Revit.

## APEXX S3

Save \$500 on APEXX S3, the world's fastest Autodesk workstation featuring an Intel® Core™ i9 at 5.3GHz, two NVIDIA RTX™ GPUs, and purpose-built for Revit, AutoCAD, 3ds Max, and more.

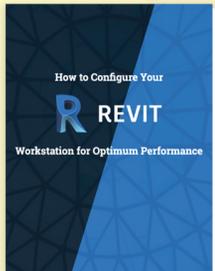


## GoBOXX SLM

Save \$200 and take your Revit workflow anywhere with the ultra-light laptop featuring an NVIDIA® RTX™ GPU and purpose-built to accelerate Revit, AutoCAD, Inventor, and other CAD applications.

## APEXX DENALI

The benchmarks prove it. The AMD Ryzen™ 5000 series processor inside APEXX Denali empowers you to reach the summit of Autodesk performance in Revit, Inventor, 3ds Max, Maya, and more.



Download our exclusive eBook, **How to Configure Your Revit Workstation**, packed with vital details and expert insight you won't find anywhere else.

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