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AUGI WORLD

The Official Publication of the AUGI Design Community

April 2021



Collaborate
Coordinate
Cooperate

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Sizing Up the Variables in AutoCAD

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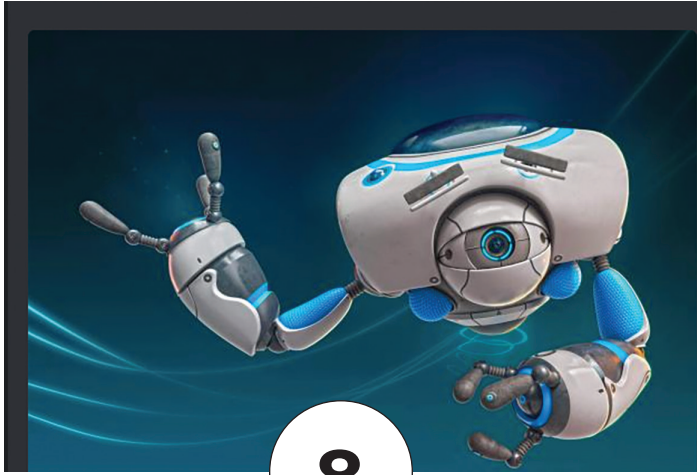


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*Based on Dell analysis using publicly available data, January 2020. The smallest refers to total surface area of the mobile workstations.

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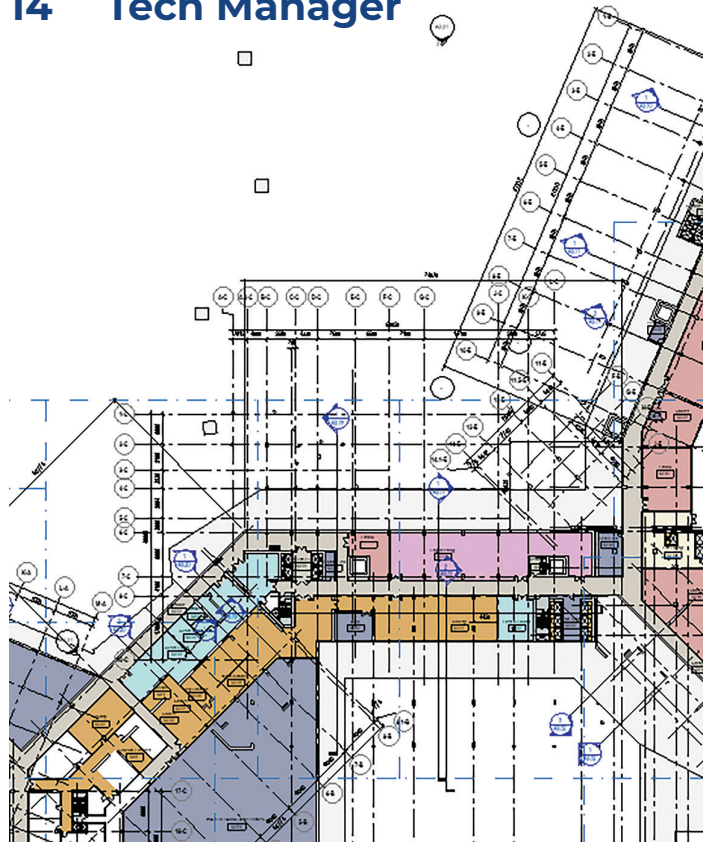
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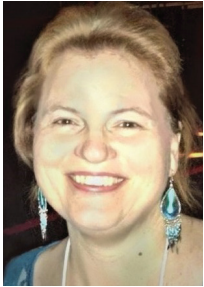


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From the President



Hello everyone and welcome to the April issue of *AUGIWorld*!

It's been over a year now since COVID-19 started changing the world as we know it. In just a few short weeks, companies moved employees in a mass exodus from corporate offices to work from their homes. For most of you this move changed your work environment in a drastic way. Over the past year I have heard many things I wouldn't have believed even 15 months ago. I have a friend in Los Angeles who shared that his work space was an ironing board because its height was easily adjusted, and it fit in the limited space he had to work with. I know many people that are not only working from home but also home-schooling kids at the same time. How many of us would have expected how tolerant we would be during an online meeting when we hear a toddler cry, a child ask about their school work, or see a teenager on their parent's camera? I know that I have learned a new level of compassion for everyone that I interact with on a daily basis.

I think we all can recite, without hardly a thought, all the negative things that the pandemic has triggered. But what about the positive things? I've spent more time with my family this year than I can even calculate. Prior to this year I did work from home, but I was traveling for training and client engagements at least twice a month which meant I was away from home about 40% of the month. Do I miss traveling? Yes, because it's something I enjoy, but I'm happy that I've been able to spend more time with my husband and my two youngest kids (who are 16 and 18).

What positive items can we attribute to the pandemic in our work life or rather, what positive things have human beings accomplished under the pressure of all the changes in the corporate environment?

I say a huge kudos need to go out to the IT folks of the world! These are the "MacGyver's" of our world that have figured out amazing solutions in a short amount of time. They have worked endless hours to bring us all to a place where we can accomplish our work, further our careers and provide for our families. So, take the time to say thank you to the IT professionals in your life (maybe bring them a homemade treat or a gift card for a cup of coffee)!

Another positive thing that has been accomplished is the rushed move to cloud solutions. What has taken years to develop and was painfully slow in happening, has blossomed ten-fold over the last year. Software companies are pouring their resources into expanding cloud services because employees are working from home. And surprises of all surprises (not really) many employees will continue to work from home even when the pandemic is over! Organizations have realized that employees can productively work from home. What seemed to be impossible situations, have been overcome by all of us coming together to make solutions happen!

What is all of this? This is a thing called collaboration! I believe that even though we are all working in what feels like a more isolated situation, we all are working very hard to collaborate.

This month's *AUGIWorld* issue is dedicated to collaboration, read on to discover articles with ways to collaborate that you may not have realized existed!

I'd like to personally dedicate this issue to the hardworking IT professionals who saved the day for many of us.

My best regards to all of you,
KaDe

AUGIWorld

www.augiworld.com

Editors

Editor-in-Chief

David Harrington - david.harrington@augi.com

Copy Editor

Todd Rogers - todd.rogers@augi.com

Layout Editor

Tim Varnau - tim.varnau@augi.com

Content Managers

3ds Max - Brian Chapman
AutoCAD - Jim Fisher
AutoCAD Architecture - Melinda Heavrin
AutoCAD Civil 3D - Shawn Herring
AutoCAD MEP - William Campbell
BIM Construction - Kenny Eastman
Tech Manager - Mark Kiker
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Inventor
Revit Architecture - Jay Zallan
Revit MEP - Nathan Mulder
Revit Structure - Jason Lush

Advertising / Reprint Sales

Kevin Merritt - salesmanager@augi.com

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A network diagram consisting of numerous purple rounded rectangular nodes connected by thin green lines. One node in the center-right area is highlighted in orange, standing out from the rest of the network.

Coordination

Now here's a topic. Coordination. I think I'm supposed to be writing an article about software. Specifically, BIM 360. Yeah, I guess I'll get to that. Coordination needs to start way before that though. Software isn't going to coordinate anything for you. You need to at least have a project BIM kickoff meeting. Actually, software generally makes it worse. Why do I say that? Well look at BIM 360. If you use it in a traditional manner it's great. My model is linked

into your model, and your model is linked into mine. When you sync your model, I can see the changes the next time I reload your model. Simple. But now there's model coordination. Some weird timeline where I need to consume your model only after you publish it. It actually goes into a folder called consumed. Or a folder called Shared. Or both. I have to do that for every model. I'm the MEP guy, so yeah, I have to coordinate every trade. We're using BIM to make our lives easier. That's not easier. The

only reason I learned how to do it is because I'm afraid were going to be a sub for an architectural firm someday that's going to make us work this way. Either I learn it or go to work at the local dump driving a Bobcat pushing garbage into a pit. That would be nice actually.

OK, I got that out of the way. Let's talk about coordination. We should start with making sure the models are actually lined up. Linking Internal Origin-to-Internal Origin is my favorite. Can't go wrong there. Here's the steps.

1. Go to any view that is an actual model view (not a sheet or drafting view).
2. Link the architectural model Internal Origin-to-Internal Origin.
3. Once it's linked PIN IT.
4. Go to Edit Type.
5. Turn on Room Bounding.
6. Look at the Phase Mapping. They might have some weird phase in their model that could screw everything up.
7. Copy Monitor the levels.
8. Link the structural model.
9. Pin it.
10. Copy/Monitor the grids.
11. Link all of the other trades.
12. Make a coordination view where all of the trades are turned on.

Congratulations you now have a chance to be coordinated. It seems simple though right? I know it's a pain to model pipe when there's ducts in the way. It's tempting to just turn the HVAC model off. Now you have all kinds of room! Sweet. Those 10' high ceilings? No problem if the other trades aren't visible.

BIM 360 FOR COORDINATION

OK, on to BIM 360. This becomes huge when you are consulting with an outside firm. The thought of having to grab a model from a file share site, and overwrite the current model on your server keeps me up at night. It is problematic on so many levels. I have personally screwed this up too. I put the architectural model in the wrong folder. I'm an idiot like that. So for me, I do need to rely on software to some degree. Using BIM 360 changes the game when it comes to that. It's as if that architect at the other firm is sitting in the cube next

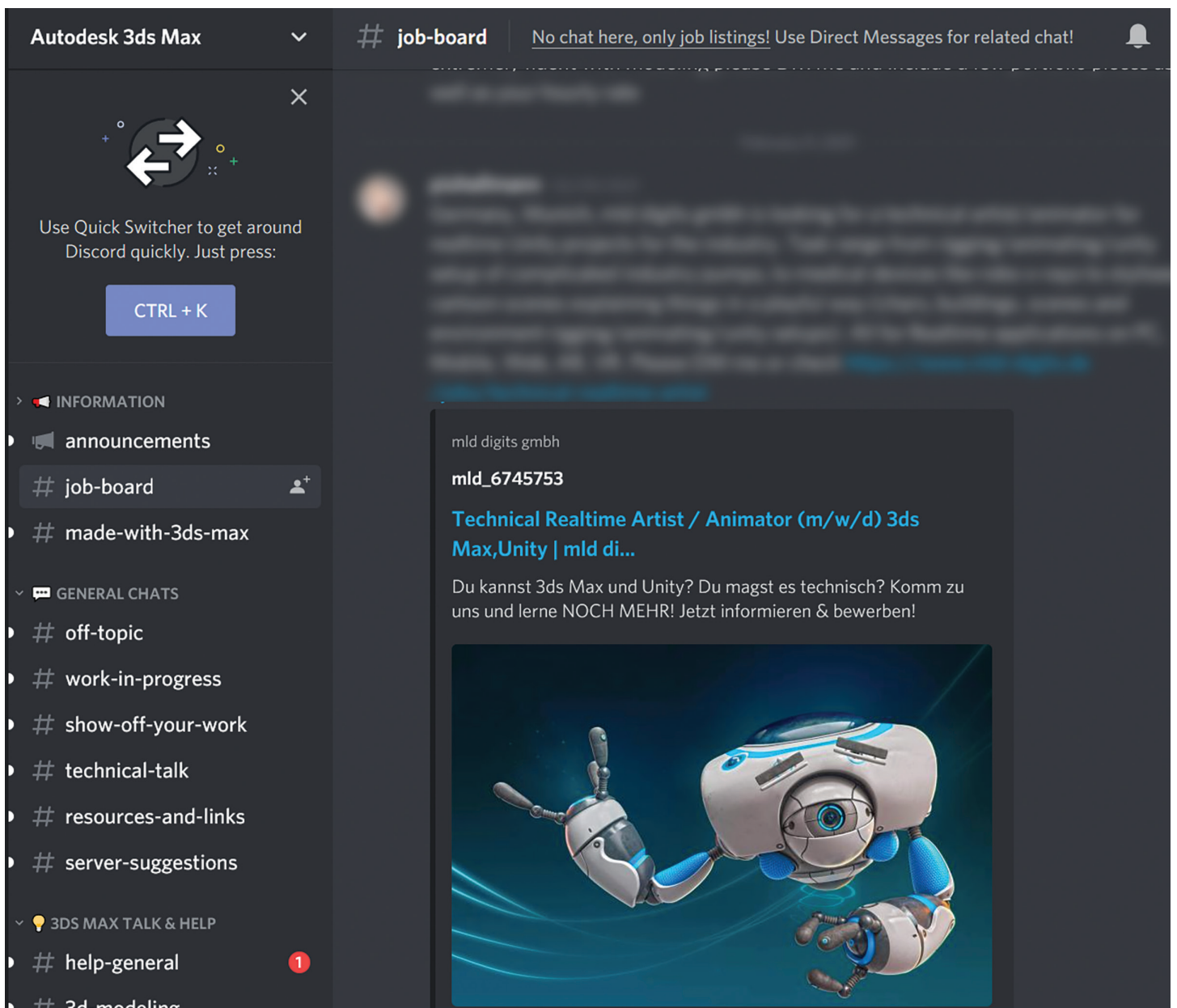
THE THOUGHT OF HAVING TO GRAB A MODEL FROM A FILE SHARE SITE, AND OVERWRITE THE CURRENT MODEL ON YOUR SERVER KEEPS ME UP AT NIGHT.

to you. You still need to do steps 1-12 of course, and actually turn on the other trades, but gone are the days of overwriting models. I know I just trashed BIM 360, but when used correctly, it is a lifesaver. If you don't have it, I strongly recommend getting it and using it.



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.

3ds Max Collaboration



Autodesk 3ds Max

Collaboration is fundamental to success for 3ds Max artists. While technology helps address challenging tasks facing artists, the need for 3-Dimensional content grows at record paces while projects increase in size, complexity, and requirements. With so many benefits for collaboration in general, I will share one of the most powerful ways artists are collaborating today to create the best work they can.

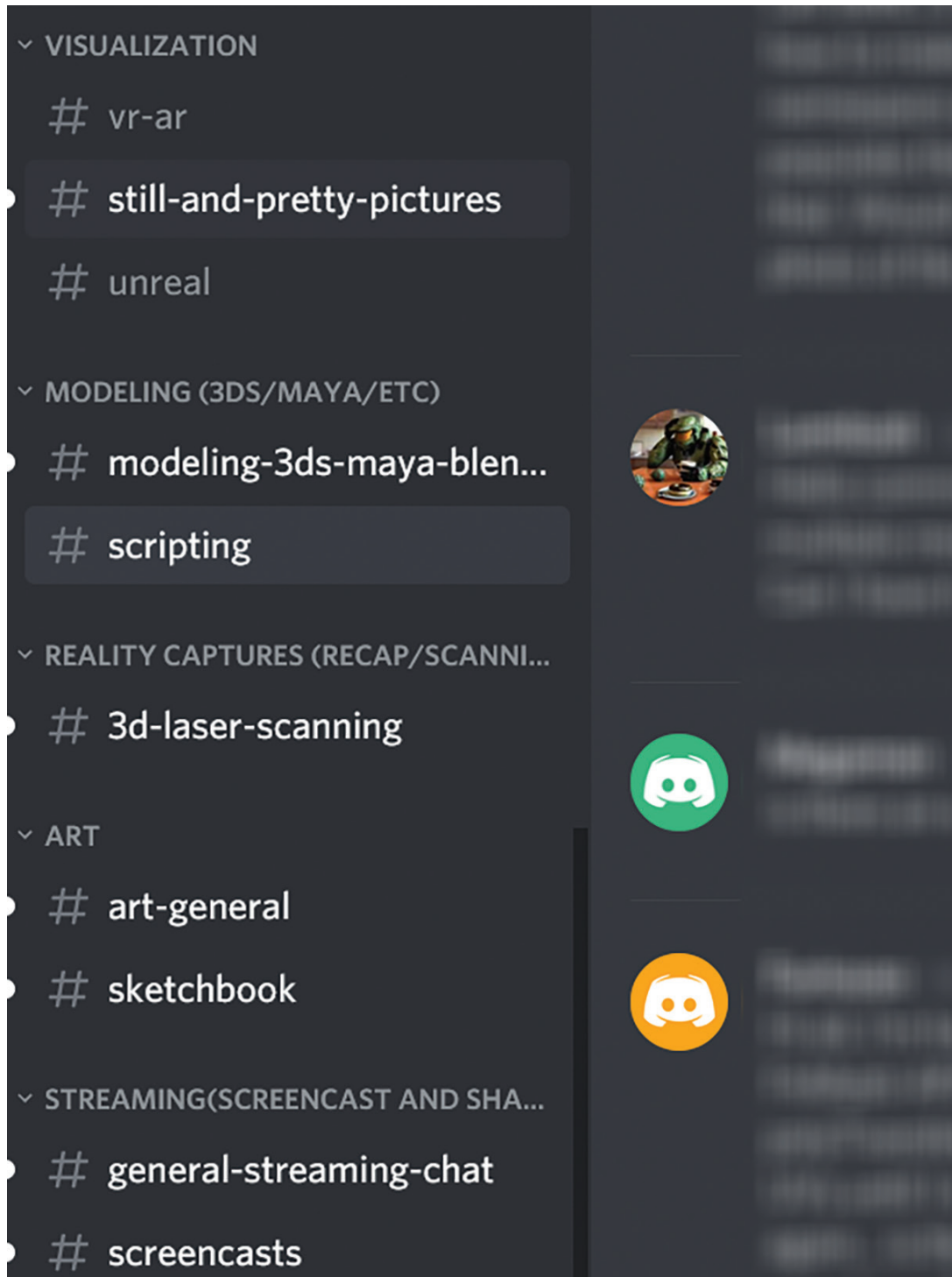
DISCORD

Discord has been around for a long time but with the recent pandemic users discovered its incredible interface for quick interaction and feedback. With Discord, users connect with so many people of varied backgrounds from around the world to find unfiltered (sometimes tactless) but honest input. I will share some of the most active communities where users can share and receive feedback, tips

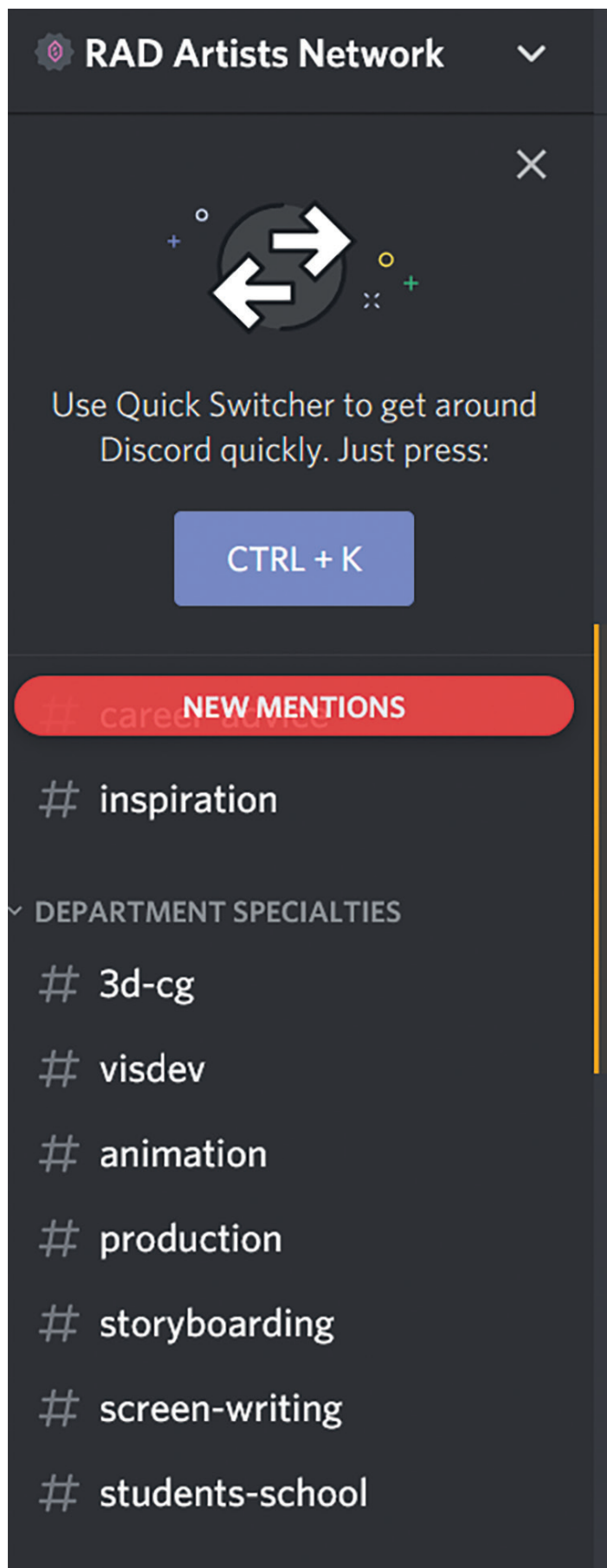
& tricks, stay up to date on new tools or assets, find users to collaborate with personal or professional projects, or just communicate with people of shared interests and experience. These communities continue to be support for creative individuals who often find success as an artist can be a real struggle (just like grandma said so).

Autodesk 3ds Max – Invite address is <https://discord.gg/7jyMa7FZ>

The Autodesk 3ds Max Discord community members are no strangers to helping others. Many have shared their experience and tools throughout the last few decades helping others. More are experienced working professionals. As you can see in Figure 1, just a few of their channels for discussion include everything from general discussion to animation and links. Some communities have dozens of helpful channels while almost all communities offer a place for users to just congregate for general



Autodesk Chat



discussion. The members in this community use 3ds Max every day in every industry.

Autodesk Chat – Invite address is

<https://discord.gg/kWXqKhr>

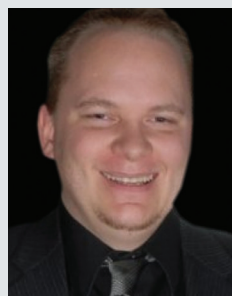
The Autodesk Chat community consists of users working with the primary AEC and M&E applications as well as Autodesk’s other software. For 3ds Max artists some of the primary channels to participate in cover visualization, scripting and art.

Rad Artist Network – Invite address is

<https://discord.gg/8UgHZEez>

One of the most important factors for success with collaboration is reaching out of our personal bubbles, or circles, to learn from others with different ideas. Utilizing communities like the Rad Artist Network that discuss elements like visual development, storyboarding, animation and production will help 3ds Max artists improve as they create their own work.

These are just a few great communities in the Discord universe. I myself participate in communities that range from crypto currencies such as Decentraland to various education and AEC related channels. I recommend everyone explore to find what they can discover.



Brian Chapman is an Autodesk Authorized Developer, Digital Artist, Designer, and a CAD Application Specialist for an engineering firm located in Las Vegas, Nevada. Brian shares tips and tricks at procad.blog with a portfolio of digital artwork and renderings at emptypawn.com. Brian’s email is procadman@pro-cad.net



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- *HotNews* (last 12 months)
- *AUGIWorld* (last 12 months)

DUES: Free



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- *HotNews* (last 24 months)
- *AUGIWorld* (last 24 months)

DUES: \$25



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- *HotNews* (full access)
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- ADN 2013 Standard Membership Offer

DUES: \$100

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Time to Think About Retirement

A photograph showing two people sitting on a grassy cliff overlooking the ocean at sunset. The sun is low on the horizon, creating a warm, golden glow over the water and sky. The people are silhouetted against the bright light of the setting sun.

We need to talk about retirement. Not your retirement... but that is something that you should be taking care of. You know, your 401k, investments, second career, etc. Will you have enough to fund your golden years? Will you be downsizing, relocating, or maybe just rightsizing? What are your personal plans for retiring? Oh wait, that is not my topic...

We need to talk about retiring old technology. You know, those old tools and hardware that just will not go away. Those items that were cutting edge back in the day but are like a dull set of knives now. Someone could get hurt by them and it might be you or your project. Time to move them along. Time to clean up the mess. Time to move toward the future and relinquish the past.

But it is so hard to do. They still work. They still get the job done (slowly but done). They are still loved by many at your firm. Many still remember how much that hardware cost and not want to e-cycle it just

yet. People may not want to learn new tools and are fine with the old ones. They are so much faster when using old techniques, old tools, and maybe even old hardware. They may cling to past achievements and remind you how they served so well for so long. But – it is time to say, “So Long”.

Old tools and hardware might be a security risk. No longer getting updates on old hardware or OS versions, like mobile phones, tablets, etc. can introduce security risks as folks continue to use old apps. Old software generates older format files that may get corrupted easier. Out of sync versions might limit project access by some team members.

Keeping old tools, hardware, data, and more is just poor housekeeping. You may have heard of Good Housekeeping magazine. It has been around since 1895 and has great concepts of how to stay tidy. Since its introduction, they have updated constantly and are now offering the latest content in print and online. It is not your grandma’s magazine anymore. But some of you may feel like you’re still using your

grandma's software or hardware. Time to get rid of it.

I am not talking about when to upgrade and when to look for new tools. I am talking about getting rid of the ancient boat anchors that still tie you down. And retiring the archaic software that still sits on your latest hardware. I am discussing the super old data that is still taking up space on your servers and backups.

If you are still paying for any older, unused, or seldom used software/hardware, then retiring it can save you some cash. No need for maintenance contracts and upgrade efforts to keep it alive. Just send it out to pasture and move on. This is called application or hardware decommissioning or sunseting.

RETIRING IN STYLE

Retirement means sleeping in, travel, new or expanded hobbies, no timelines or deadlines, more time with family and so much more. Oh... wait... that is for you, not the software and hardware that served you so well.

Convincing others that it's time to retire your old tools may be the hardest part. You need to start convincing them that they need to let go. One way is to agree to keep it alive... as long as it works without needing support. Think of it as a "Do Not Resuscitate" order. If it dies, it is gone, agreed? Before it stops working, get them to agree on what will be done when it fails. So many heroic Tech teams have spent countless hours keeping old tech alive for too long.

You might be able to prove that the data is no longer usable and must be migrated which needs to happen before hardware or software dies. Move it and then shut things down. (See Migration below). If you are like me, I bet you can dig up an old flip phone or iPhone 4 in some drawer that you just can't get rid of. Everyone saves some old stuff... but they should not just keep using it.

CONNECT RETIREMENT TO A MILESTONE

Tie retirement to an End-of-Life announcement by the vendor. Anchor it to an End-of-Support announcement by the vendor or your individual contracts for support. Link it to a Last Order Date by manufacturer (when you cannot buy any new devices just like it). Create your own milestones with a product lifecycle stand that defines how long you hold on to hardware.

For software, hook it to a file format change that is two to three cycles back. Connect the retirement to being so many versions back from the latest. Keep it rooted in current trends and cut off using tools that no one uses any more.

MIGRATE THE DATA

Before you close up shop, get whatever you need in a format you can use. For many projects, it is hardcopy prints of the design. It may also be digital prints of the final docs. Either way, you no longer need the data that generated the contract documents (other than calcs that support engineering, which can also be printed or digitized). The point is, that if the project is designed, built, and commissioned, you do not need to crunch numbers again, regenerate 3D views, expand details, or anything else, at least not in the same version of software that generated the data. Move it out and decommission the tools. Store legal docs, load things into the cloud (cold storage), then wipe the drives and move on.

HAVE A RETIREMENT PARTY

For those that really loved the tools or hardware or remember just how much you paid to buy that cutting edge tool back in 1998, have a party. Clink a few glasses, tell some good stories, play taps, and move on. I have a shelf in my office that has a collection of old tech hardware. It is nostalgic to talk with people about the tools, but it does not drag down my current tech use. And keep this same frame of mind about retirement for the great new tools you just embraced... at some time in the future, they too will also need to be retired.



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.

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.



PIPEFECTION

<https://apps.autodesk.com/ACD/en/Detail/Index?id=1742573526192703957&appLang=en&os=Win64>

Autodesk AutoCAD

Version: 2021, 2020, 2019, 2018

Pipefection allows you to quickly and efficiently size pipelines such as heating-cooling, firefighting, service water and waste water using pipe sizing tables and CAD settings.

The main features of Pipefection are:

- Pipefection allows you to work with your own layer, text and block settings in your drawings.
- You can design the pipeline almost entirely using Autodesk® AutoCAD® commands.
- By adjusting your own pipe sizing tables in Pipefection, you can size different types of pipelines such as fire, heating-cooling, waste/domestic water.
- If you need to define the diversity factor, define any number of diversity factor formulas for the desired range of total load values.
- Position and align the labels of the pipe diameter according to the requirements of the project. Also, Dimension labels can be Mleader or Mtext.
- Pipefection remembers which label belongs to which pipe. When a pipe is deleted, its dimension label will be cleaned automatically.
- If there are small gaps between the ends of the pipes in the drawing of the pipeline, those pipes can be joined by increasing “Node Effective Area”.
- You can create labels showing the total load values of the pipes.
- You can get Load values from the attributes of the blocks, for example, this feature is useful for fan-coil pipelines. Load values can also be fixed values.
- You can define as many floors as you need, and you can copy floors. Isometric or 3D works are also possible.
- Automatically get the quantities exported to Excel.
- You can create a list of pipes from equipment to the startpoint and export them to make calculations in your Excel sheet.

- Pipefection also has its own database and drawing tool. In this way, you do not have to waste time copying your drawing objects from another drawing.



HOLOBUILDER EU

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

BIM360 DOCS

BIM360 Field Management

HoloBuilder EU provides the fastest and most reliable site documentation workflow for construction teams around the world to capture and share 360° pictures of construction sites or buildings.

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Users have the option to sign into HoloBuilder EU with their Autodesk BIM 360 credentials. Users can connect floor plans and pictures managed in BIM 360 Docs and integrate them directly into HoloBuilder EU projects without having to download them first. All floor plans can be accessed directly within the HoloBuilder EU project at any time.

Once 360° images are captured within HoloBuilder EU, the user can create BIM 360 Field Management Next Gen issues directly within these scenes in the Web Editor. The created issues can be accessed both, inside HoloBuilder EU as well as BIM 360 Field Management. All issues can be managed in BIM 360 Field Management with each BIM 360 Field Management issue containing a link to the HoloBuilder EU 360° image for visualization.

Please note: the Autodesk “HoloBuilder EU” app only works in connection with your HoloBuilder account on our EU server solution. You cannot link your US-based Autodesk account with the HoloBuilder EU server solution. If you have any questions, please reach out to our support team at support-eu@holobuilder.com

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SIZING UP THE VARIABLES

Results are var-i-able! (Ok, really bad dad joke)

Join the Journey to the Center of AutoCAD. Join StarLordJames on a journey to the center of AutoCAD, which will take you on an adventure through building an AutoCAD Template while complying and enforcing CAD/BIM Standards.

Our first adventure will take us into the depths of the mystical monsters called “Variables” in AutoCAD. These can be a thorn in your side, inflicting inefficient workflows when you least expect it. On this adventure we will learn how to take back control from these little gremlins in the machine!

OUR START—WE MEET WITH ADVENTURES BY THE WAY

- Do you wish that there is a command to automatically set the layers when creating Text, Hatch, Dimensions, Xrefs?
- Ever wonder why if you open a drawing on your computer and then on another computer they act differently?
- Are you tired of AutoCAD randomly changing settings on you, either from a hard crash or even just closing and reopening?
- Would you like to be notified if something is not

set the way you want it?

- Would you like to know how to really take control of your AutoCAD?

You’re in luck, on this adventure below, we will work in little bits to break down what can be an overwhelming topic.

“Science, my boy, is made up of mistakes, but they are mistakes which it is useful to make, because they lead little by little to the truth.”

— Jules Verne, Journey to the Center of the Earth

QUICK STORY: HISTORY STROLL WITH STARLORDJAMES FIRST EXPOSURE TO THOSE LITTLE MYTHICAL MONSTERS...

Let’s start with a quick story, rewind back to my early days of AutoCAD, young, impatient, ready to hit that ESC key or CNTRL+ALT+DEL at the slightest pause in AutoCAD’s performance.

My supervisor was a great and powerful CAD-ian, been drafting since they used to use those things called “pens”, and “vellum”, and “lettering” (thankfully I only had to do letting once at school and had that green lettering template to cheat with, those folks who can make letting look like a computer are truly gifted)...

My boss had taught himself AutoCAD from the

beginning. When he would show me how to do certain workflows, I noticed he typed the “whole AutoCAD command”, never used quick keys (aliases), or back in those days, “toolbars” ... yeah, nobody had ever heard of a “ribbon” back then, I’m that old. It was like watching the sloth at the DMV on the movie *Zootopia*.

As I quickly rose through the ranks, he would start forwarding internal support issues to me. I remember that EVERY SINGLE time there was an issue, he would say, “it’s probably an AutoCAD variable”. To me, back then, a “variable” was this mythical monster that would just come out to play tricks on us, ON DEADLINES! I hated them! I never told my boss that thankfully, hopefully he isn’t reading this.

One day we were deploying a new version of AutoCAD, he comes over to my desk, and drops a million page <might be a slight over exaggeration> document on my desk. He says, here I printed this for me and figured you could use a copy too. It was EVERY AutoCAD Variable. I smiled and said thanks... then thought, what am I going to do with this.... and I ignored them for years...

Fast forward to now, some of the variables most people know are FILEDIA, VISRETAIN, MIRTEXT, and so on...

THE MONSTERS HIDING IN A SECRET CAVE - YOU PROBABLY MISSED THESE!

If you aren’t watching closely, these little monsters can just show up when you least expect it, like upgrading to a new release. AutoCAD has been slipping in new monsters for years that you may not have noticed, like: To answer one of the original questions at the start of this article “Do you wish that there is a command to automatically set the layers when creating: Text, Hatch, Dimensions, Xrefs”

DISCOVERING THAT THEY REALLY AREN'T MONSTERS AT ALL...

Some of the most exciting ones are Layer Controls!!!! Set your template to go to your desired XREF (XREFLAYER), Text (TEXTLAYER), Dimensions (DIMLAYER), Hatching (HPLAYER)!!! Huge, no more forgetting to set that Xref layer when linking in a Xref into drawing.

There is also a XREFOVERRIDE command that Controls the display of object properties on referenced layers by taking any Forced colors, linetypes, etc. to be BYLAYER!!! No need to go back to the Xref and fix all those blocks or bad drafting from other people. While you are there you should check out the VISRETAINMODE addition, lets you control what VISRETAIN will monitor or ignore. Xrefs have exploded with new variables since 2013,

Specifies a default layer*						
Version	Variables	Description	Category	AutoCAD ID	AutoCAD LT	Variable or Command
2020.1	TEXTLAYER	Specifies a default layer for new text and multiline text objects in the current drawing.	TEXT	X	X	New command
2018	XREFLAYER	Specifies a default layer for a new xref.	XREF	X	X	New system variable
2016	DIMLAYER	Specifies a default layer for new dimensions.	DIM, LAYER	X	X	New system variable
2017	CENTERLAYER	Specifies a default layer for new center marks or centerlines.	DIM, CENTER, LAYER	X	X	New system variable
2017	PDFSHXLAYER	Controls what layer is assigned to newly created text objects when converting SHX geometry to text objects.	PDF, XREF, LAYERS	X	X	New system variable
2017	PDFIMPORTLAYERS	Controls what layers are assigned to objects imported from PDF files.	PDF, XREF, LAYERS	X	X	New system variable

Linetypes							
Version	Variables	Description	Category	AutoCAD ID	AutoCAD LT	Variable or Command	
2017	LTGAPSELECTION	Controls whether you can select or snap to the gaps on objects defined with non-continuous linetype.	LINEITYP	E	X	X	New system variable
2015	HPLINETYPE	Controls how non-continuous linetypes are displayed in hatch patterns.	LINEITYP	E	X	X	New system variable
2013	PLINEREVERS EWIDTHS	Controls the appearance of a polyline when it is reversed.	LINEITYP	E	X	X	New system variable

Layer Variables						
Version	Variables	Description	Category	AutoCAD ID	AutoCAD LT	Variable or Command
2016	XREFOVERRIDE	Controls the display of object properties on referenced layers.	XREF	X	X	New system variable
2018	LAYEROVERRIDEHIGH LIGHT	Toggles the visibility of the background color highlighting for layers that have overrides.	LAYERS	X	X	New system variable
2017	SHOWNEWSTATE	Indicates whether highlighting new features in updates is active.	LAYERS	X	X	New system variable
2017	SHOWNEWSTATE	Indicates whether highlighting new features in updates is active.	LAYERS	X	X	New system variable
2015	SORTORDER	Specifies whether the layer list is ordered using a natural sort order or ASCII values.	LAYERS	X	X	New system variable
R12	VISRETAIN	Controls the properties of xref-dependent layers.	XREF, LAYERS	X		
2018	VISRETAINMODE	Controls the behavior of the VISRETAIN system variable when it's set to 1.	XREF	X	X	New system variable



New command/Variable	Description	Category	Version	AutoCAD	AutoCAD LT
COMPARE	Compare an selected object to the latest state of the referenced drawing file, highlighting the differences with color when revision clouds.	New command	2019	X	X
COMPAREOFF	Closes the Xref Compare toolbar and ends the comparison.	New command	2019	X	X
COMPAREONCURSOR	Zooms to the next change east of the xref comparison result.	New command	2019	X	X
COMPAREONPREV	Zooms to the previous change west of the xref comparison result.	New command	2019	X	X
COMPAREONREVERSE	Corralls the visibility of objects that are not visible in the xref comparison.	New system variable	2019	X	X
COMPAREONTEXT	Specifies the path where the backup xref file is saved.	New system variable	2019	X	X
COMPAREONVIEW	Sets the color of the folder when the backup xref file is listed.	New system variable	2019	X	X
COMPAREONWINDOW	Specifies the visual effect of objects in the foreground during an xref comparison.	New system variable	2019	X	X
COMPAREONXREF	Enables the comparison between an xref and the referenced drawing file.	New system variable	2019	X	X
COMPAREOFFTEXT	Closes the Compare toolbar and ends the comparison.	New command	2019	X	X
COMPAREONCLOUD	Enables the comparison results into a new drawing called a xrefcomparison.dwg and opens the drawing.	New command	2019	X	X
COMPAREONCLOUDTEXT	Imports objects from the compared file into the current drawing. Only the visible objects that exist in the compared file and not in the current file are imported.	New command	2019	X	X
COMPAREONCLOUDVIEW	Compares and highlights the differences between two versions of the same drawing in different drawings.	New command	2019	X	X
COMPAREONCLOUDVIEWTEXT	Using the Command window, compares and highlights the differences between two versions of the same drawing in different drawings.	New command	2019	X	X
COMPAREONCLOUDVIEWTEXT2	Shows you a brief or easy to properly information about the two compared drawing files.	New command	2019	X	X
COMPAREONCLOUDVIEWTEXT3	Set the color of the object that only exists in the first drawing in the resultant compared drawing file.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT4	Set the color of the object that only exists in the second drawing in the resultant compared drawing file.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT5	Set the color of the object that was identical in the two drawings being compared.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT6	Controls the default display order of overlapping objects in the compare result drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT7	Controls whether hatch objects are included in the drawing comparison.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT8	Controls whether a change to a non-geometric (display/hatch) is identified as a change between two drawings revisions.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT9	Specifies the offset distance from the bounding box of a revision cloud that contains the object differences in the compare result drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT10	Controls whether newly introduced changes are tagged as a single large rectangle or a series of smaller rectangles in the compare result drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT11	Displays the objects that exist only in the first drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT12	Displays the objects that exist only in the second drawing.	New system variable	2019	X	X

New Command/Variable	Description	Category	Version	AutoCAD	AutoCAD LT
COMPAREONCLOUDVIEWTEXT13	Checks for space for an additional plot to storage for an xref comparison.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT14	States common attributes for differences in the compare result drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT15	Specifies the behavior of an object during a comparison. You can specify whether the object is visible in the compared drawing, or you can specify whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT16	Checks whether the object is visible in the compared drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT17	Specifies whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT18	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT19	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT20	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT21	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT22	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT23	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT24	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT25	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT26	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT27	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT28	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT29	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT30	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT31	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT32	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT33	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT34	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X
COMPAREONCLOUDVIEWTEXT35	Checks whether the object is visible in the current drawing.	New system variable	2019	X	X

NEW XREFS - VARIABLES FROM 2013-2021.1

especially with the new Compare feature in 2021, PDF inclusion, Coordination Models and on and on. Maybe you are a CAD-ian that doesn't like some of the new commands, well I've got something special

for you. Below is my "Classic" AutoCAD variable, use these to turn off things like the "Lasso" for you 'Press and Dragg-ers' or bring back the old school layer box that is not a resource hog. And so many more! See [_StarLordJames_](#)



SET AUTOCAD BACK TO OLD SCHOOL

Version	New command/Variable	Description	Category	AutoCAD	AutoCAD LT
2019	FILLETPOLYARC	Determines the fillet behavior for polylines that include arcs, either current or legacy. Affects only the Polyline option of the FILLET command.	CLASSIC	X	X
2013	ARRAYCLASSIC	Displays the legacy Array dialog box.	CLASSIC	X	X
2009	PICKAUTO	Lasso "5" lasso on, "1" lasso off	CLASSIC		
2009	LAYERDLGMODE	"0" for classic, better performance	CLASSIC		
2020	CLASSICINSERT	Opens the classic Insert dialog box.	CLASSIC	X	X
2013	ARRAYASSOCIATIVITY	Sets the default behavior of new arrays to be associative or non-associative.	CLASSIC	X	X

CLASSIC - VARIABLES FROM 2013-2021.1

JourneyToTheCenterofAutoCAD_Variables for more great links and tables for Text/Annotation, Blocks, Geomaps and more.

Another great feature they gave to us was the System Variable Monitor! Well get to that in a minute.

WRESTLING THE BEAST (AUTOCAD)... WHY IT APPEARS TO HAVE A MIND OF ITS OWN FROM ONE COMPUTER TO ANOTHER!

Let me address that first question from earlier, “Ever wonder why if you open a drawing on your computer and then on another computer they act differently?”

Yup it’s probably like my boss said, It’s one of those SYSTEM VARIABLES... The issue is, some of these variables are stored in the DWG, and some are store in the computer. So, when AutoCAD is acting funny, it is probably a variable that is computer based. (Side note, could be a service pack too)

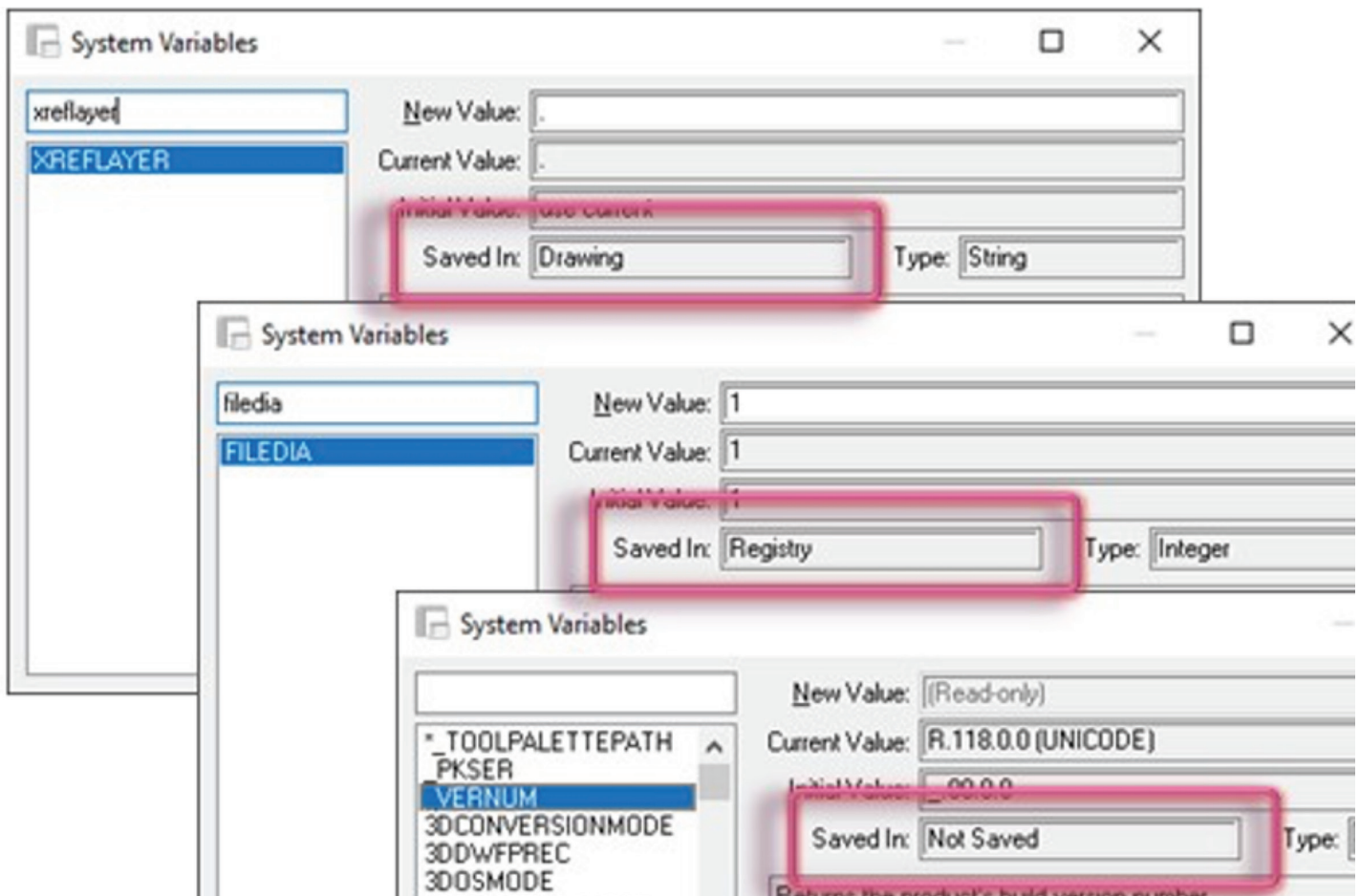
How can you tell if a variable is a DWG or Computer based?

You can use this old tool, that you probably never knew was there, I didn’t, and it’s called SYSVDLG (Express Tool). You can also use this tool to save/export from one computer to another. Some Monsters, I mean variables reside in the “Drawing”, some in the computer “Registry”, some are “Not Saved” at all. Because of this if someone’s computers variables controlled by the “Registry” is the reason you can get different results

Solution: You can use the SYSVDLG (Express Tool) To determine where a specific variable is “Saved in:”.

RELEASING THE STEAM, FROM YOUR FRUSTRATION! HOW CAN I KNOW WHEN A VARIABLE IS NOT TO MY PREFERENCE?

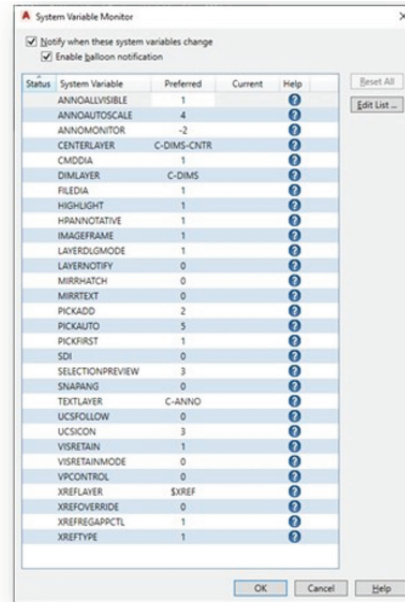
Well your wish is my command, well, it’s the System Variable Monitor Command. A slick tool that came out in AutoCAD 2016. There are tons of YouTube videos on the process, here is a quick one by Autodesk: System Variable Monitor:



System Variable Monitor (StarLordJames Settings)

- SYSVARMONITOR
 - UCSFOLLOW "0" Off
 - UCSICON "3" on and show at origin if possible
 - LAYERNOTIFY "0" Off
 - SNAPANG "0" Off
 - MIRRTEXT "0" text readable
 - VISRETAIN "1"
 - VISRETAINMODE
 - XREFOVERRIDE "1" to set forced objects in Xref to ByLayer
 - IMAGEFRAME "2" on, but does not plot.
 - VPCONTROL On
 - PICKFIRST "1"
 - FILEDIA "1"
 - ANNOALLVISIBLE "1"
 - ANNOAUTOSCALE "4"
 - ANNOAMONITOR
 - XREFTYPE "1"
 - HPANNOTATIVE "1"
- Layers
 - TEXTLAYER
 - DIMLAYER
 - XREFLAYER
 - CENTERLAYER
- Performance
 - PREVIEWFILTER "03" Ignore Preview Selection for Locked Layers, Xrefs, Tables, Groups, Multiline text, Hatches
 - LEVELOFDETAIL On/Off
 - XREFREGAPPCTL "1"
- Classic Mode:
 - PICKAUTO Lasso "5" lasso on, "1" lasso off
 - LAYERDLGMODE "0" for classic, better performance
 - FILLETPOLYARC - 2021 - "0" Legacy
 - ARRAYCLASSIC
 - CLASSICINSERT - 2021- Switches back to the original insert command

[System Variable Monitor Video](#)



SYSTEM VARIABLE MONITOR



ADD THIS ITEM TO YOUR PACKING LIST BEFORE SETTING OFF ON YOUR AUTOCAD VARIABLE ADVENTURE!!!

Below I have comprised a list of system variables that you might want to add to your variable monitor.

DON'T LET YOUR FELLOW ADVENTURERS (CO-WORKERS) GO IT ALONE, SHARING IS CARING...

Well, sharing these with others is not as easy from the computer located variables. You can create a custom profile and share that way. We can cover that in a future adventure (article), on the meantime go search the HUGE Autodesk University for Custom AutoCAD profiles.

OR!!!! You can use that same old tool I mentioned above, that like me, you probably never knew was there.... SYSVDLG (Express Tool) To transfer those variable settings from one computer to another. Here's a video by Autodesk-er Jeff Bartels.

GETTING MORE OUT OF AUTOCAD

To even further wet your appetite visit https://www.dropbox.com/s/frtmzkeyhjb7gk9/_StarLordJames_JourneyToTheCenterofAutoCAD_Variables.pdf?dl=0 for a list of variables and commands you might find useful. See [_StarLordJames_JourneyToTheCenterofAutoCAD_Variables](#) for more useful variables.

See you on the next adventure – StarLordJames



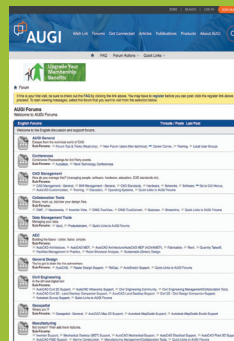
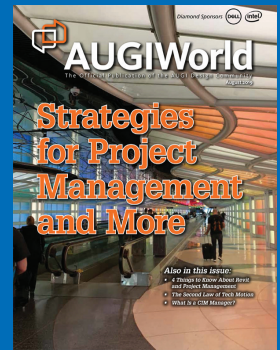
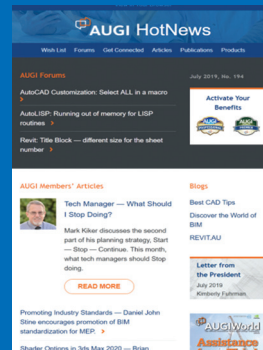
James Lord is 100% nerd at heart. I love all new technology, software and any futurist view I can get my hands on. I enjoy learning about new features or deciphering the inner-workings and I especially love discovering new uses for things not originally intended. Creating new workflows to

increase efficiency is always my goal in whatever I do. "Why do something the hard way or waste time just because that is the way we have always done it?" I love traveling, meeting new people and just listening to their stories, issues or concerns. It really doesn't matter if it is a personal or a technical issue, the joy comes from trying to figure out a solution to that issue, or just letting someone vent. Being helpful in any way is a truly rewarding experience. As a presenter, teacher, instructor and mentor, I am always trying to find a better and more entertaining way to effectively communicate with people. We all learn and process information differently, so I try to adapt on the fly when I can tell someone is just not getting it. If you can make it fun, then they are more likely to remember. Sometimes the content can be a bit dense, so it is entertaining to play a game or put a spin on it, like when I was tasked to create an instructional video about using a plotter. I threw in a little Star Wars to spice it up: <https://www.youtube.com/watch?v=VumIGDDYwzc>. Check out more of my published articles via my LinkedIn page: <https://www.linkedin.com/in/starlordjames>

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Interview With The Reader

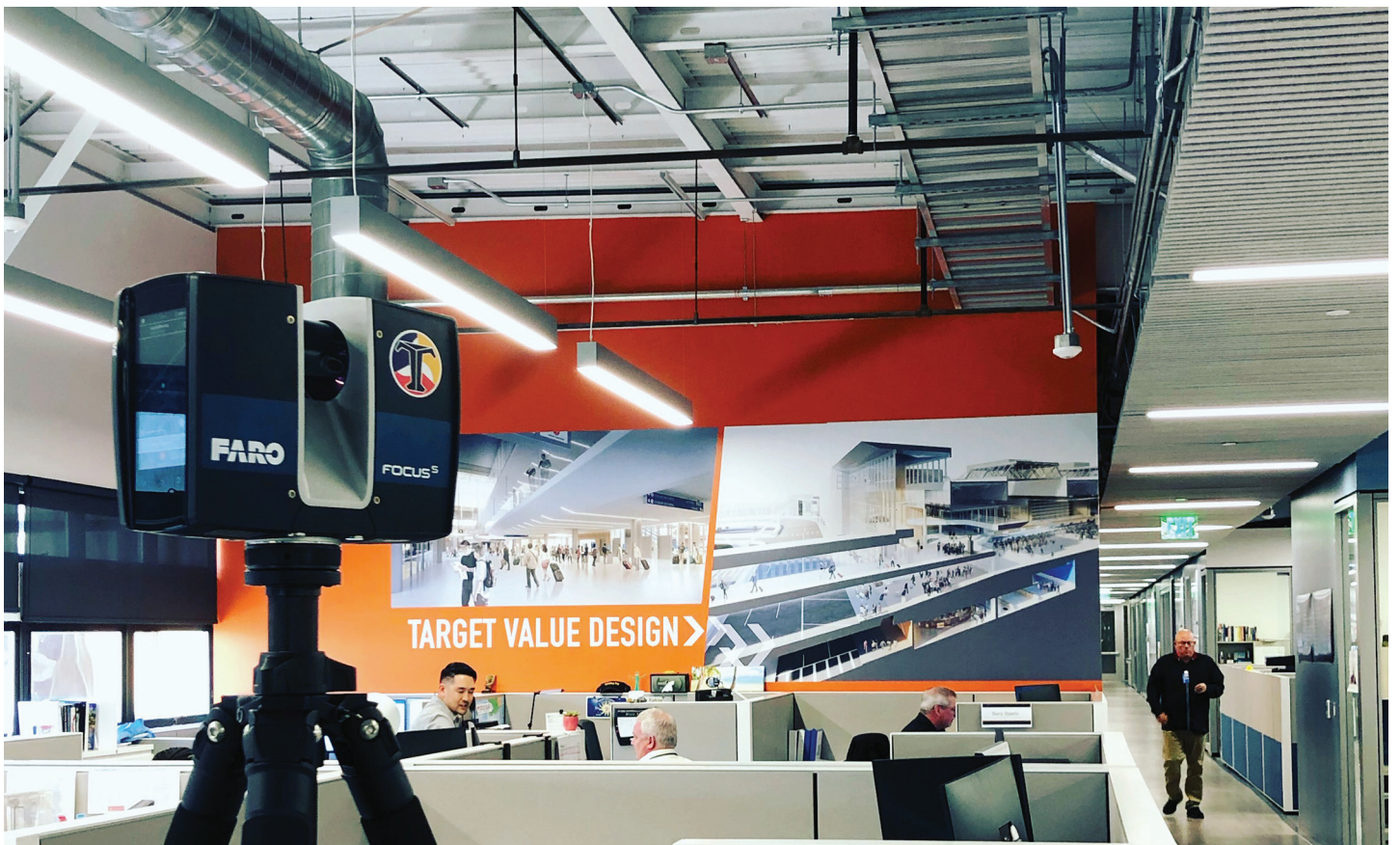


Image courtesy Team Titan AEC

Revit as we know is a moderately deep subject with many successes possible through its appropriate or best possible use. There are also numerous difficulties found, some in the software itself but many that lay outside of the 1s and 0s; namely, people.

If the axiom is true that our teams are only as good as the weakest link, we must address both the good and bad in order to drive productivity and better project creation, coordination and profit. Toward that end I am also trying something different: an interview with YOU. An interview with your internal conversations as it were, your internal voice(s) -you know; the one that is most always keeping up unconsciously and probably commenting at this very moment ;)

Rather than just another interview addressed to a single person, I want to try and elicit your direct participation to explore the answers that you seem

fit, whether just in those internal conversations or in writing the ideas out yourself. With that prefaced let's begin...

In regard to project delivery and managing submissions, which of the following are considered and to what degree does Revit benefit these efforts?

1. Design optioning
2. ADA and other accessibility requirements
3. Energy efficiency -such as carbon reduction, lighting performance, or are there other building and entourage performance tests either used or necessary
4. Code requirements
5. Coordination and Information management (including but not limited to the following)
 - a. Quantity assessments
 - b. Document production
 - c. Internal model coordination processes
 - d. External model coordination processes



Image of Revit model in Enscape | at Midnight

Is there any other basic requirement that you are leveraging Revit for, at each phase of the project lifecycle?

If these are not addressed within your Revit workflow, what are the main reasons? List and describe as fully as possible. This list will begin to point to upskilling opportunities ;)

regions and overlay CAD Imports instead.

Does Revit just need better Text tools?

How does the team(s) use the Text tool? Or is text rightly only used on General Notes sheets?

Are Revit Tags and Keynotes, along with 'magic'



Image Courtesy: TitanAEC

In managing individuals: how do you address the “over modeling” and “under modeling” issues?

1. These are “a bridge we cross when we get to them”
2. These are actively addressed in our weekly BIM briefings (or similar)
3. We constantly teach our staff what is expected and how to accomplish it, plus there are well defined project requirements and LOD matrixes we develop and follow
4. Threads on screws are not an example of over modeling
5. Modeling??? We issue DRAWINGS! The model is never correct, and we just cover it with filled

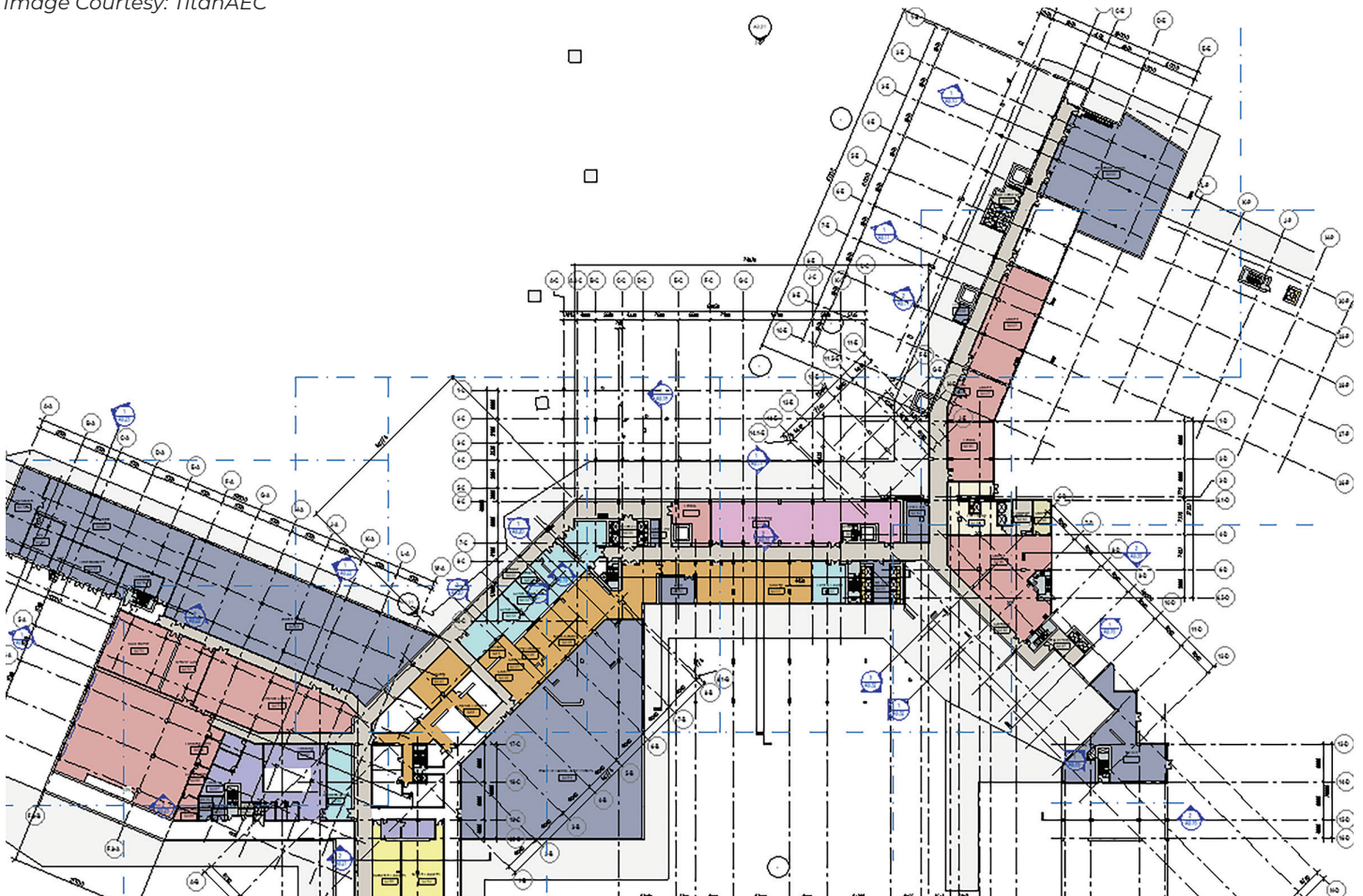
Multi-Category Tags and schedulable custom ‘Symbols’ used to reduce the amount of Text to 0% and raise the coordination and communication efficiencies?

How much of the process utilizes external programming, such as Dynamo for combining tasks and/or generating the following:

1. Design & Options
2. Information management
3. Geometry creation
4. Quality control
5. What-If scenarios
6. Component creation



Image Courtesy: TitanAEC



Revit Sheet Image | Schematic Design

What is the status of API development and/or visual scripting usage within your firm; is there an overall plan, is it per-project, 'as needed', hired out?

How much of this work may be reinventing a wheel that already exists in the wild? Could we be better using our time (thus money) through

partnerships of expertise?

How important is it to build VR and AR, MR, XR workflows in your project delivery chain?

What are the main drivers you find pushing AEC toward the inevitability of creating Connected

- 96" (2)
- Arch_FV (10)
- BackBar
- Banquette Casework_FrenchVietn
- Bar2
- Booth Surround
- Buffet_1450mm (3)
- Buffet_1828mmx609mm (5)
- Casework 1
- Column_1000x500 (16)
- Counter_Center_Island
- Custom_Guestroom_Bench_Shelf_Table...
- Frame_Molding_KidsZone_Elevator_157...
- GameLounge_Globe
- Generic_Booth_3742 2 (20)
- Generic_w_Tray_Rail (5)
- Generic_w_Tray_Rail (4)
- Juice Bar
- Lobby Column (10)
- No Lounge Chair and Table (3)
- Poo_Restaurant_Bar
- Reception_Desk_KidsZone (2)
- Reception_Desk 2
- Reception VIP Lobby
- Sauna (4)
- Sauna Seating1 (4)
- Screen (24)
- Shelf_3500 (4)
- Spa Retail Cabinet (13)
- Spa_Counter (2)
- Wall_Sloped_curving (2)
- Wood Beam 400x200 (10)

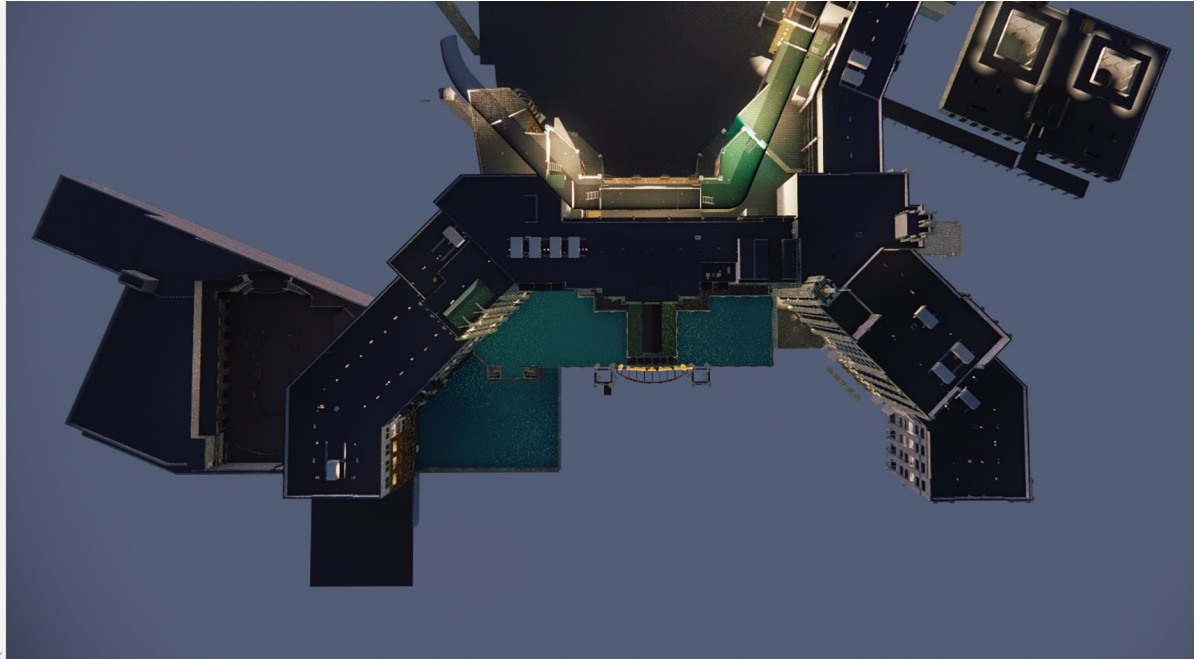


Image of Revit model in Enscape BIM View



and Smart Architecture to interface with the burgeoning Smart Cities initiatives, Carbon reductions, etc.? How is your firm positioned to work in these environments?

End of Interview ;)

I hope these questions and the few comments spur some thoughtfulness and a pause to review your processes, however brilliant they are. Cheers!



Jay B Zallan | AECO | VDC | Design/Construction Technology Conductor| Fine Artist

Jay brings wide-ranging Design, Delivery, Management, Mentoring and Teaching experiences to the readily changing AECO industries, founded on an expansive 35 plus year career.

He has focused on VDC planning, production, process development and research & development to help enable efficiency-generative creative project execution, delivery and success throughout the AECO landscape.

This JayZ is an educator, author and industry lecturer throughout the BIM world; Jz strives to inspire current and future generations to achieve and exceed beyond even their own expectations.

Being a Fine Artist (large format oil & mixed media canvases), Jay adds unique and collaborative insights and perspectives to every team he is part of.



Image Courtesy: TitanAEC

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