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November 2018

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- Tech Managers Get Interactive
- The "Not So" Easy Button

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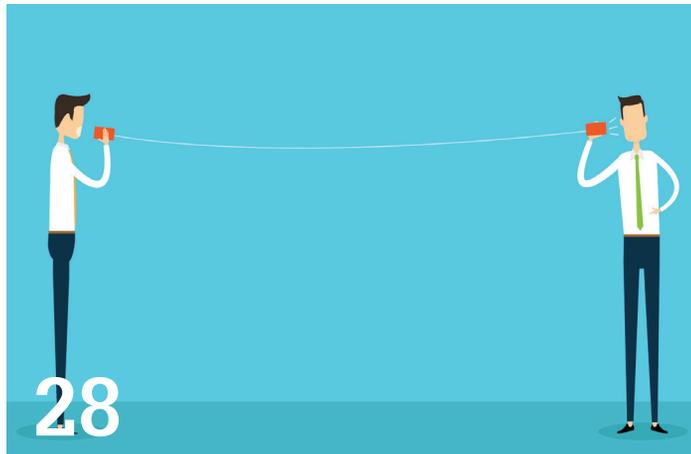
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Letter from the President



When I was a young engineer fresh out of school, I watched my colleagues go off to attend professional development events and conferences. I was a bit envious, but I figured my turn would come eventually.

Then, in just my second year of work, I heard about Autodesk University. I knew immediately that I wanted to go... but how? No one at my office had ever been before. I was pretty sure they'd never even heard of it. What could I do to convince my boss to give it a shot?

True confession time: I called my mother. (Hey, I was really young! Plus, my mom is super smart.) Following her advice, I was able to write an email that persuaded my boss that the conference would be worth my time—and the office's funding. Since then, I've used a version of that email to get approval to attend many events, and I've been able to share it with my colleagues to help them launch their own professional development efforts. And today, I'm going to share it with you.

I like to write my conference pitches by answering the six core questions of journalism: Who, What, Where, When, Why, and How (and its companion How Much). Your manager will need information from you to decide whether to send you—giving her all the facts up front will make the decision process that much easier.

Answering a few of these questions is practically trivial: *When* and *where* is the conference, who would be going, and *how much* will it cost? (Remember to include that last one, counting time out of the office and travel time and expense. Otherwise it'll be the first thing you'll be asked.)

Describing *what* the event is requires a little more attention. If your boss is probably already familiar with it, don't bother with too much detail. If it's new to your firm, you'll want to include more information. Most conference websites have a summary page that you can get text from. Be sure to attribute any quotes ("According to their website, Conference X is...") so that the more formal language doesn't sound out of place. Or paraphrase it so it's in your own voice.

A lot of things can fall under the answer to *how*. They could be as simple as travel logistics. (Do you need a hotel?) You might want to address where the event falls on the office calendar. (How will you manage deadlines?) You could also reassure your boss about the smooth running of the office in your absence. (Will you take a computer? Will a colleague cover for you?) Try to anticipate what resistance you might get, and provide solutions up front.

Most of the space in your pitch will be dedicated to *why* you should go to this conference. Will you get technical or practical information? Will it be more about networking opportunities or "thought leadership"? Will the information you get be useful to your colleagues as well—and if so, what's your plan for sharing it with them when you get back? (Honestly, if the answer to more than one these questions is "no," maybe you should rethink whether it's actually worth attending.)

Be specific here. If the session list is already published, pick a few of your favorite classes or speakers and include their title and description. Since networking is also a key part of the conference experience, try to include the names of clients (or competitors!) that will also be in attendance.

I don't have room to put an entire sample letter here... but fortunately, the AU folks have written one for you! Head to <https://au.autodesk.com/convince-boss> for a template and a cost calculator. You'll probably want to tweak the language to make it sound more like you, but it's a great start.

Looking for a shortcut to conference approval? Be a speaker! If your firm is as dedicated as mine is to sharing knowledge with our fellow industry professionals, one of the best ways to get funding to an event is to present a paper or class. It's a lot of work, but it's really rewarding.

Good luck with your conference pitches, and I hope to see you at an event soon!

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NEWSLETTER

Inside Autodesk Certified Instructor Training

 I completed the Autodesk Certified Instructor (ACI) program back in 2013. Before this program, I had my own method of teaching class. This method consisted of me, the instructor, leading the class in lessons. The students would follow along with me. Come to find out, this was all wrong.

Autodesk Certified Instructors are globally recognized as technical experts who have mastered the requirements to provide official Autodesk training. By earning this credential, you join an exclusive network of instructors who stand out through the high-quality instruction and accreditation from Autodesk. Instructors in this prestigious community gain a competitive advantage through the additional industry training, knowledge of the latest trends, networking opportunities with industry professionals, and career development through the Autodesk Certified Instructor program.

This article will cover what the ACI program is, what is required, the method that was used to shape and mold the ACIs, and the effectiveness of the program within the Autodesk community.

WHAT IS THE ACI PROGRAM?

The ACI program was designed to produce a group of highly qualified instructors who can train users and organizations to get the greatest return on their Autodesk software investment. The teacher training provides instructors with in-depth education principles for adult learners as well as practical applications including instruction technique, content organization, and adapting teaching style. Candidates receive comprehensive coaching, evaluation, and resources to ensure that they know how to successfully prepare their learners for the challenge of working in industry.



HOW DO I BECOME AN ACI?

Among the qualification criteria is that you must be affiliated with an Autodesk Training Center (ATC). You must also be or pass the Professional Certification to the software you will be teaching. For example, if you are getting certified to teach Civil 3D, you must pass or be a Civil 3D Certified Professional. You must also have an instructor ID issued from an affiliated ATC or an Authorized Academic Partner (AAP). Lastly, you must have an Autodesk profile.

HOW DO I MAINTAIN MY ACI STATUS?

To maintain your ACI, the instructor must complete the below requirements annually:

- + Complete 20 hours, minimum, of Autodesk product or workflow training;
- + Teach a minimum of 40 hours on an Autodesk product;
- + Complete at least 10 hours of continuing development training on improving instructional skills and/or teaching the future of design;
- + Submit one article or a featured contribution to a published journal or Autodesk Knowledge Network (AKN), or a presentation at a professional or educational conference.

ACI PROGRAM TIERS

Instructors who choose to maintain their ACI credentials will continuously receive a tier award, shown below.

- 3-year ACI maintained – Silver Tier
- 6-year ACI maintained – Gold Tier
- 9-year ACI maintained – Platinum Tier



HOW SHOULD AN ACI TEACH A CLASS?

One of the first things that was covered in our training was to stay away from “buttonology.” The standard definition of buttonology is: the basic training required to start using a piece of software; what the components of the interface are, what they do, and how to accomplish basic tasks. This type of teaching does not encourage critical thinking. It is frequently focused on showing how to use the software rather than reflecting on a workflow or how to accomplish a certain task.



One of the most important aspects of the ACI training is the method used to deliver the material. The first portion of becoming a successful ACI is to create a PowerPoint presentation. The first slide should consist of the overall class name, with the instructor’s name and title. The next slide would be a brief background of the instructor and his or her credentials.



Next, the instructor will want to present some slides relative to the dataset that will be used to teach the class. For example, show a picture of the area, or the finished product(s). You will also want to explain the intent of this, and why.



The next slide should show the duration of the course and what will be covered during those days. A timeframe is a great way to get the students prepared for what they will be learning on a given day.

Time	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:25-9:05	Breakfast Arrival Activities Morning Meeting	Breakfast Arrival Activities Morning Meeting	Breakfast Arrival Activities Morning Meeting	Breakfast Arrival Activities Morning Meeting	Breakfast Arrival Activities Morning Meeting
9:05-9:55	LANGUAGE ARTS/LITERACY: Shared Reading, Phonics, Guided Reading, Integrated Science and Social Studies				
9:55-11:10	Art (9:55-10:45)	Library (9:55-10:45)	WORK CENTERS (9:55-10:35)	WORK CENTERS (9:55-10:35)	World Library (9:55-10:45)
	Message Time Plus (10:45-11:10)	Message Time Plus (10:45-11:10)	Writing Workshop (10:35-11:10)	Writing Workshop (10:35-11:10)	Message Time Plus (10:45-11:10)
11:10-11:40	Lunch	Lunch	Lunch	Lunch	Lunch
11:40-12:30	Rest	Rest	Rest	Rest	Rest
12:30-12:45	Snack	Snack	Snack	Snack	Snack
12:45-2:00	Writing Workshop (12:45-1:30)	Writing Workshop (12:45-1:30)	Message Time Plus (12:45-1:10)	Message Time Plus (12:45-1:10)	Writing Workshop (12:45-1:30)
	WORK CENTERS 1:20-2:00	WORK CENTERS 1:20-2:00	Gym (1:10-2:00)	Gym (1:10-2:00)	WORK CENTERS 1:20-2:00
2:00-2:30	Math Workshop	Math Workshop	Math Workshop	Math Workshop	Math Workshop
2:30-2:45	Afternoon Meeting	Afternoon Meeting	Afternoon Meeting	Afternoon Meeting	Afternoon Meeting
2:45-2:55	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal

Once you have established this, you will want to show a course overview with bullet points of the class. The preferred method would be to have a PowerPoint per day. For example, if your class is a three-day class, then you will want to provide a PowerPoint presentation that includes the introduction, the class schedule for the day, and a class summary for the day. Keep in mind, the first day should have an extra slide showing the summary for the entire class.

COURSE OVERVIEW

- Topics Covered Tonight (Continued)
 - Parking Operations Analysis
 - Sight Distance Analysis
 - Braking Distance Analysis
 - Pedestrian Facilities



These PowerPoints can be quite large because this isn't the only material recommended to put in the slides. The next part of the ACI training procedure is how you deliver the content. First, you must have a slide explaining what you are about to cover. You can also use a whiteboard for drawing or writing while you are explaining.

Next, you will want to demo it. In other words, you will want to show the class how it is done, while they watch you do it. Lastly, you will bring up a slide with step-by-step instructions of what you just showed them. Now the students will try to do what you just showed. This allows you to be free while students are working on the exercise. You can walk around the class and evaluate each student's progress. This is also a chance for you to engage and answer any questions the students may have.

It is also recommended that at the end of each exercise, you have a slide with questions about the exercise. This is to keep the student engaged and focused. Usually about five questions per exercise is sufficient.

On the last day, and end of the class, you should have a Q&A session. Let the students know that you can revisit any exercise they are unsure of. You will then need a slide with all the topics that were covered in a bullet point summary for the entire course. Finally, the last slide should have your company name, your email address, phone number and anything else you feel is important to let students know that you are available for them after the class.

CONCLUSION

There are several different methods in teaching. This method has been extremely successful for me in the past and continues to be. If you are eligible to become an ACI, I highly recommend it. You will receive a badge from Acclaim that you can showcase as you like. Ironically, the biggest inhibitor to putting a training program in place is the perception that it will take too much time. Keep in mind, there is no investment you can make that will do more to improve productivity for your students.

Therefore, being too busy to train the correct way is the moral equivalent of being too hungry to eat. Furthermore, it's not that hard to create basic training courses.



Todd Rogers is a certified Partner Service Expert (P.S.E.) and certified Autodesk instructor with more than 23 years of experience in teaching, managing, and providing hardware and software solutions for hundreds of engineering firms throughout the greater Houston, Texas area. Todd is a valued member of Walter P Moore, where he works as a BIM Manager. He also holds the "Autodesk Expert Elite" status, a program to recognize individual community members who have made extraordinary contributions with helping customers by sharing knowledge, providing community leadership, and exemplifying an engaging style of collaboration that drives a healthy and valuable Autodesk customer community. He is an active blogger. Through Todd's personal blog website (civil3dj.wordpress.com), he shares tips and solutions with Autodesk software issues.

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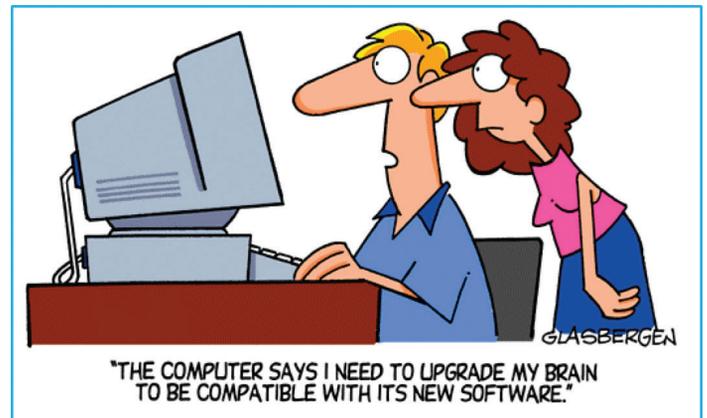
How Do I Learn InfraWorks?



“Education is the passport to the future, for tomorrow belongs to those who prepare for it today.” – Malcolm X


I still remember the first time I read this quote, even though I was a preteen and had no idea what life had in store for me. But I did know that learning as many things as possible and feeding my brain with as much as I could find would help me find my passion and a clear path in life.

The first time I saw Project Galileo in 2011, I knew that I needed to learn this tool. In my first interaction with this platform I understood that this was the future. At the very beginning it was difficult; as with any new tool, there were not many resources available to learn, practice, and test this new program. It then became Autodesk Infrastructure Modeler and finally Autodesk InfraWorks as we



know it today. As time has passed and InfraWorks has continued its evolution, training materials have followed along, today offering innumerable training aids that are available to anyone who wants to utilize this immersive and dynamic software.

Training is a very complicated topic for firms in our industry: companies that do not budget for any training but still want to use software efficiently; others that budget barely enough but still demand high performance and quick deliveries from their users; and still others that budget efficiently but do not properly invest in the correct training methodologies and still require the most optimal results from designers. Where do we find a balance within all these scenarios, knowing that we all follow different learning paths and acquire new information in different ways?

The key that I have found to this conundrum is YOU! Yes, YOU, the actual program user, and how you take advantage of strengths and even weaknesses as a learner to efficiently investigate the tools at your disposal. It may not be fair, but in an ever-changing world full of updates, hot fixes, upgrades, new installs, and more, in order to stay relevant and competitive in the marketplace and regardless of the tools provided by our employers, it is us—the actual program users—who are going to make this work. At the end of the day, remember that the wealth of knowledge and experience gained stays with you wherever you go.

One of the first things to do is establish where you are in the learning curve in InfraWorks. To this end, ask yourself: Do I know the basics of 3D modeling? Do I know how to manage metadata? Do I know basic coding principles and, more specifically, JavaScript? Do I know multiple software integration tools? I realize that these questions may sound as if you need to be knowledgeable on many complicated subjects; from my experience, I have found that people who are interested in InfraWorks are typically more than competent and experienced in these topics and more. Nevertheless, if you must start from scratch, there are plenty of resources for you and some are even free. Let's talk about them.

If you are a beginner with InfraWorks, I recommend you visit the Autodesk Civil Engineering Community Center, a website developed by Autodesk to "Learn, experience and inspire with the civil infrastructure community." (<http://civil-community.autodesk.com/>)



Over the last year and a half, this website has been extremely helpful to me for keeping track of the latest news, learning materials, ideas, forums, etc. that are emerging almost daily. Within this website, you will find a learning option that will provide you a diverse list of tools for learning InfraWorks.

This site not only provides access to Autodesk training materials and actual program users, but also gives tips, tricks, and trending topics from other users to make workflows easier and more efficient.

Other site features to explore are the webcasts that have been presented for over two years now. They provide an in-depth approach to specific design uses of InfraWorks such as rail, bridge, and roadway design; drainage analysis; point cloud management, etc.



<https://knowledge.autodesk.com/>

LEARNING



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May 29, 2018

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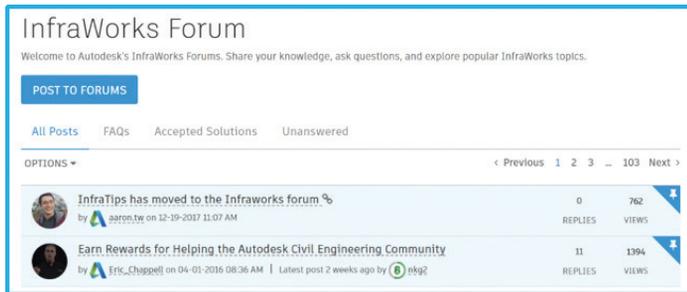
By Autodesk

♥ ➔

InfraWorks

Another source of training material is the Autodesk Knowledge Network (AKN), where you can find tutorials, documentation, and downloads for different Autodesk programs, as well as technical support and answers to common (and sometimes uncommon) issues we find when working with InfraWorks.

For the most experienced users, there are also free resources available. I have found that the most useful ones are coming from users all over the world in blogs, YouTube channels, and discussion forums in the AKN. For example, did you know you can ask any question about a specific project issue? You will then get a response from someone who has cleared your hurdle in the past, providing solutions or at least pointing you in the right direction to solve the problem.



<https://forums.autodesk.com/t5/InfraWorks-forum/bd-p/509>

Other free resources that are good to keep in your toolbox include the following.

Autodesk 360 Learning Experience: Tutorials in a step-by-step basics foundation to take you from getting started to efficiently creating your first fully integrated model across the communication of several platforms:

<http://docs.autodesk.com/IW360P/2016/ENU/Autodesk-InfraWorks-Learning/index.html>

Autodesk InfraWorks YouTube Channel: Access to tips and tricks, what's new in the latest releases of InfraWorks, specific workflows to modeling/design tasks, and more:

<https://www.youtube.com/user/InfraWorks360/about>

Civil Immersion and AEC Connection blogs: An excellent tool for day-to-day users, these blogs have been created by Jeff Bartels and Jerry Bartels with the helpful collaboration of Alan Gilbert. I strongly encourage anyone who is interested in learning and/or improving their InfraWorks skills to visit regularly these links. Your time spent will be rewarding:



http://civilimmersion.typepad.com/civil_immersion/

AEC Connection

Sharing Autodesk cloud collaboration ideas & workflows

<http://www.aec-connection.com/>

Last but not least, there are the training tools that we pay for—either ourselves or our employers. Some of the most helpful that I have used are Lynda.com, CTC classroom center, Ascent training materials, and CAD-1 + Applied Software. Many of these tools are very well structured to follow a specific path of learning that can accommodate almost any learning style in consideration of your time availability, willingness to practice, and application of the concepts learned.

The most important thing to recognize and understand is that, like many other computer programs, the software is ONLY AS GOOD AS ITS USER! Hence, the need for our designers to be as proactive and committed as possible. With so many InfraWorks resources at our disposal, coupled with our time management skills and learning aptitudes, only our imagination sets the limit as to how far we use its capabilities to connect, interpret, propose, and resolve our design problems in a fully integrated 3D environment. Regardless of the challenges, presenting the end result in a VR and AR setting allows clients to clearly understand the intended solutions.

Recognize your learning style and know your experience level before jumping into the first lecture, video presentation, or book/document chapter. From there, enjoy this fun, enriching, and rewarding journey to design in real-time with real-life data in InfraWorks.

Let's keep moving forward!



Oscar Castaneda is a Professional Engineer at Infrastructure Engineers Inc. with 13 years of design experience working in projects for multiple jurisdictions across the United States. He is proficient in numerous software applications such as Civil 3D, Infraworks, Revit, ReCap Pro, ReCAP Photo, AutoCAD, Microstation/GeopaK, Pix4D, Navisworks, and Revu Blue Beam, among many others. As an avid flying enthusiast, Oscar is a certified airman for small UAVs under FAA Part 107 and is currently developing and implementing precise workflows for the use of these technologies within transportation design projects. He is a regular instructor at national, state, and local training events where he shares his experiences with fellow colleagues.



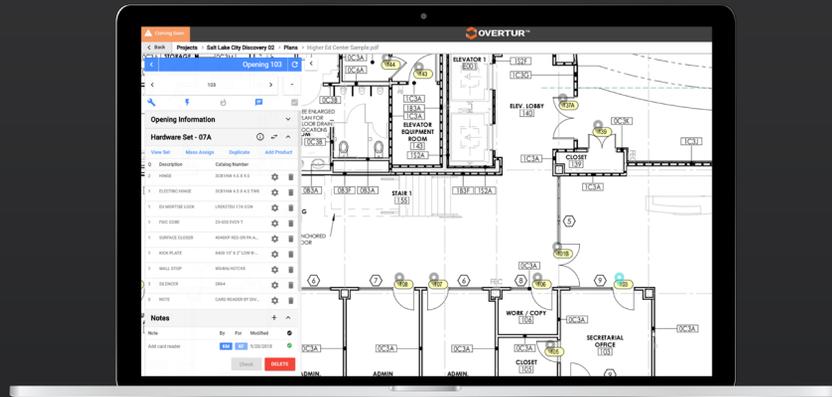
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c: cloud collaboration platform for the design, specification and coordination of door hardware



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How Do YOU Learn?



As some of you might already know, I am an online author and instructor for LinkedIn Learning, previously known as Lynda.com. I provide online titles around AutoCAD®, some Revit®, and a bit of Certification preparation. When I create this content, I always think about HOW someone might learn from it and become better at what they do and be empowered in their current role.

Learning starts as soon as we are born. We learn to talk, we learn to walk, we learn to drive our parents crazy by putting jam and toast in the VCR (as my kids did... they're 21 and 17 now!). But there is no doubt that we all learn, often in different ways and in different locations. LinkedIn Learning is simply one of those locations, whether it be real-world or virtual. Another learning location for me is my office studio at home, where I am still learning the vagaries of becoming a semi-decent guitarist!

CLASSROOM

I am pretty sure all of you reading this have done at least one classroom, instructor-led training (ILT) course in your lifetime. You cannot get away from it. People learn from people, it really is that simple. I STILL teach the three-day AutoCAD Essentials course and I still get a kick from teaching face-to-face. All Autodesk instruction is normally done via an Autodesk Authorized Training Centre (ATC) and the world-class instructors in those ATCs need to be Autodesk Certified Instructors (ACIs). An ACI must go through certain training hoops too, to maintain ACI accreditation.

Also, when learning via the classroom, you are exposed to the expertise of your instructor. Not all of us are cut out to be great instructors. There is a certain breed—not technical, not academic, but who have the demeanour to express the content in a meaningful way so it is absorbed by the trainees. This often comes down to personality. When you find a good instructor, you will learn all you need to learn!

You can find ATCs all over the world on the Autodesk website, using the following link.
<https://www.autodesk.com/partners/locate-a-reseller>.

Change the search criteria to **Training Center**, and you will find what you need.

Autodesk Authorized Partners

Find a local partner that understands your unique business and industry needs. Use the Autodesk Partner Locator to find resellers, partner-developed solutions, implementation or support services, and more.

Contact for most African countries. | View [list of countries](#).

Contact for Afghanistan, Iraq, Jordan, Lebanon, Palestine, Pakistan.

Figure 1: The Autodesk Partner Locator, highlighting Training Center as the search criteria

PEER-TO-PEER

Learning in a peer-to-peer environment is still one of the best ways to learn. In all CAD offices worldwide, there is a huge wealth of CAD knowledge. You have the seasoned, experienced CAD superusers, all the way down to the newbies, who have just signed up for a life of CAD, right? Just sitting in the office with your colleagues is an excellent way to learn. Here's a tip, though. When you do sit down with one of your seasoned AutoCAD superusers, take a notepad. Write down what you learn and any further actions you may need to take to further that learning.

I have numerous CAD journals on a bookshelf in my office that have taken me through many years of learning AutoCAD. I now use them to create classroom training.

Peer-to-peer learning is sometimes referred to as "on the job" training, and that's exactly what it is. You are learning as you work. Most of what I know has been developed over my 31 years of using AutoCAD (yep, you read that right, 31 years) and a lot of that was acquired by creating drawings on many projects over the years and being a CAD manager during that period as well. It doesn't matter what level you are. You will always learn new things from others. People learn from people. Always.



Figure 2: The ultimate cheesy peer-to-peer graphic

ONLINE (SUBSCRIPTION)

The Internet is a wonderful thing. You can Google “AutoCAD keyboard shortcuts.” You can search for an Autodesk ATC. You can now even subscribe to AutoCAD online. Subscriptions are becoming the norm, albeit a contentious issue to some. Internet subscription is also making learning easier, too. I mentioned earlier that I create AutoCAD online learning content for LinkedIn Learning. You can subscribe to LinkedIn Learning and learn all you need to learn about AutoCAD in bite-sized pieces, video by video.

The Internet is an incredible learning medium. You have it all at your fingertips, 24/7, and you can log in and learn at any time. There are many online providers to learn from nowadays too, and they all provide a subscription medium: CADLearning, Global eTraining, and many others. You basically pay your money and take your choice. We all have differing needs and requirements. If you are looking for a corporate subscription-based solution, my recommendation is to search the marketplace and find the one that suits you and your organisation.



Figure 3: The LinkedIn Learning website banner

ONLINE (CLASSROOM)

I am still a big fan of the traditional classroom. Being in a room with an instructor who knows the subject matter is (for me) the best way to learn. However, the increasing bandwidth available on the Internet is allowing classrooms to be virtual. I’m pretty sure we have all attended a conference call or meeting via GoToMeeting. Well, those GoToMeeting people also offer GoToTraining, which has class registration, the ability to record the training class, and many other valuable features such as delegate interaction and easy classroom document sharing. You can find it here: www.gotomeeting.com/training

Just type the above in to your browser and you’ll find it.



Figure 4: Some typical screenshots from GoToTraining (Credit: www.gotomeeting.com)

There are many other similar online classroom packages out there, not just GoToTraining. Again, like with online learning subscription, you find the package that suits your needs and gives you the best method of online classroom delivery.

CONFERENCES AND EVENTS

I’m a veteran Autodesk University (AU) speaker. I have been speaking at AU in Las Vegas in the USA since 2006 and I have spoken at the last two AU London events as well. AU is the primary Autodesk learning event in the world. When you sign up to attend, you get a week of full-on learning from 8:00 am through 5:30 pm, plus all the networking and social events you can handle. On top of that you get keynote addresses from all the high-level corporate staff at Autodesk, including Andrew Anagnost, Autodesk’s President and CEO. There are AUs all over the world in key cities, so you should be able to find one that suits your location. Check out <http://au.autodesk.com>.



Figure 5: The Autodesk University 2018 banner for AU Las Vegas 2018

Another great event is USA-based Midwest University. Hosted by CTC Design Software Solutions, an Autodesk Platinum Partner, Midwest University follows a format similar to Autodesk University, with keynotes and classes to attend. These classes are taught by world-class instructors from all over the world, to empower the delegates and give them deeper knowledge and understanding of the Autodesk products they use in their day-to-day roles.

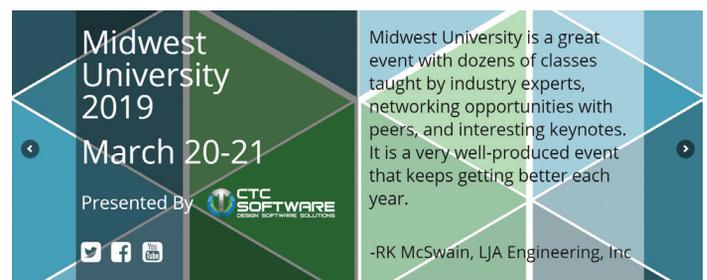


Figure 6: The Midwest University 2019 banner for its March 2019 event

AutoCAD

Events such as these are incredible environments for learning and networking with your peers. You learn NEW stuff, not your regular classroom syllabus stuff, and get to meet with other like-minded users. The world-class instructors know their subject matter intimately and can deliver incredible classes that give a deeper dive into Autodesk products, empowering you with even more knowledge (and contacts) to take back to the office!

BOOKS

Books can take many forms nowadays. I'm a bit of a traditionalist and still love to train from a good old-fashioned book made of paper, but there are many book mediums you can use. In an AutoCAD classroom, I often use an app called Bookshelf by VitalSource. This is the preferred medium for eBooks by ASCENT, which provides a lot of Autodesk training courseware. Bookshelf is a great tool that can be viewed on your computer as an app, via a browser, or even on your tablet or phone. There are numerous eBook readers out there, such as iBooks (Apple) and Kindle (Amazon) for the novel readers amongst you, but I still like a training manual made of paper where I can write notes in the margin. Saying that though, Bookshelf even has that function as well as a highlighter function with different highlighter colors, so you can save the rain forests that way, too!

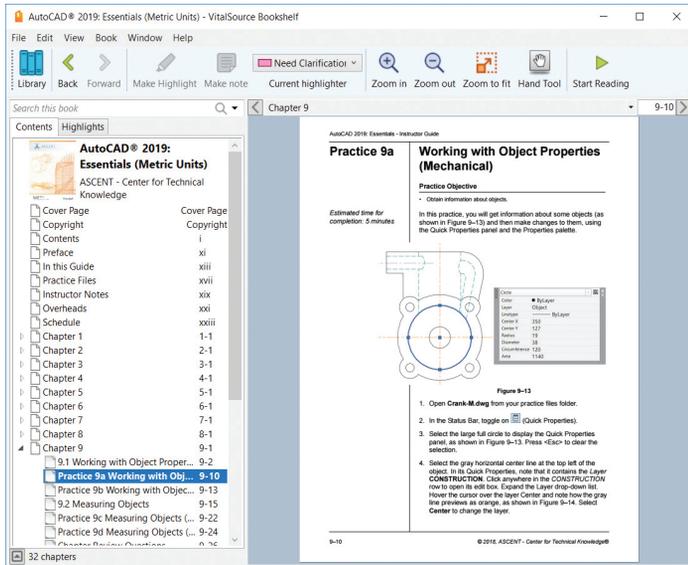


Figure 7: A screenshot of the PC-based Bookshelf app

Overall, as I have listed, there are numerous mediums and methods to learning and education around Autodesk products: classroom, peer-to-peer, online (subscription), online (classroom), conferences and events, and books (both hardcopy and electronic). All these methods provide YOU (the learning interface with your brain) with the information and knowledge to take you further and build on what you already know. As I mentioned at the beginning, we are programmed from birth to learn, and the interface to that knowledge is you.

I will be teaching more about this in a class at Autodesk University 2018 in Las Vegas, called "How Do YOU Learn?" If you get the chance to attend my class, you will see this slide (Figure 8), which describes what you have just read in a simple infographic.

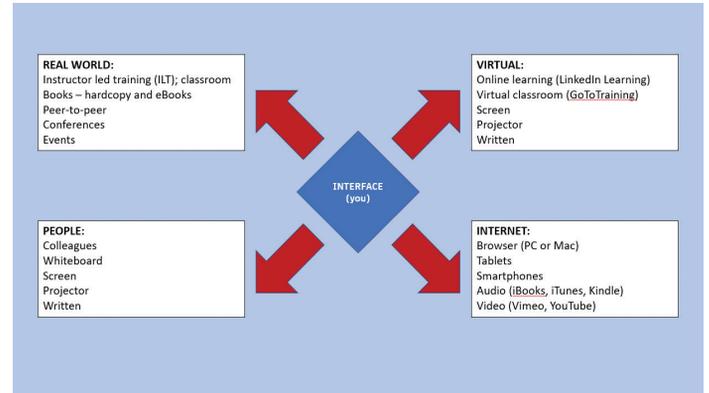


Figure 8: How Do YOU Learn?

Everything we do in our daily lives has been learned over time. Muscle memory when driving a car or playing a G major chord on a guitar. Remembering to look both ways when crossing the road. Some of these pieces of knowledge save our lives every day and some simply enhance them, but what I do know is that learning something new is ALWAYS worthwhile.



Shaun Bryant is an Autodesk Certified Instructor in both AutoCAD and Revit Architecture with sales, support, and technical expertise, CAD managerial skills, with more than 30 years of industry experience. Shaun has worked as a consultant, trainer, manager, and user, all of which helped him develop a diverse skillset. His career has included 18 years as a CAD, BIM and facilities management consultant and trainer; with the earlier years of his CAD career in sales, pre-sales, and business development; and industry experience as a CAD manager/user. Shaun has been a director on the board of Autodesk User Group International (AUGI) and he is also the author of the reputable CAD blog, Not Just Cad! He is a seasoned Autodesk University (AU) speaker and was the AutoCAD expert at the inaugural Autodesk University London in June 2017. He is also an Autodesk University Speaker Mentor, AutoCAD Influencer, and a member of the Autodesk Expert Elite program. Shaun lives in Norwich in the UK and is the owner and director of CADFMconsultants Limited, and when not doing the CAD thing, you'll find him writing and recording with his guitars.

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Identify Your Training Needs

There are no magic formulas to training or educating your workforce. It is not always easy to see what training each person needs to undertake to do their job. Each person could potentially have different requirements. For example, look at some of your staff members. Some will have headed off to college or university to study a course in a certain field while others may have come straight into employment and are learning on the job. Some could also be studying part-time.

Regardless of the direction we take, education and training are key aspects to our own personal development.

The first stage of the training process is to determine whether training will indeed be needed and will it address the problem(s) which may have been identified. In addition, you need to determine if the training needs to be focused on the industry, the overall job, or specific tasks.

TRAINING REQUIREMENTS

It is a good idea to set up an organization-wide training requirement schedule and then one for each individual. If your company doesn't have a schedule, then create one of your own and request the company help you fulfill it. Identify the company's training needs and those of each team and employee.

Consider the skill levels of the employees, as you don't really need to have everyone skilled in everything. Develop a user skill set. For example, not everyone is going to need to undertake RC detailing, so train a small group who can undertake all necessary RC detailing.

Consider setting out objectives for employees and areas to work on within a reasonable timeframe. Also find out what areas they wish to focus on, as this could be completely different than what you expect.

Bear in mind that people learn in different ways and at different paces. Be prepared for some who don't wish to be highly skilled and are happy just undertaking their normal tasks. Don't push them into doing something they might struggle with.



Figure 1: University

INDUSTRY-RELATED TRAINING

With industry-related training, which could include studying at university for a specific degree such as civil or structural engineer-

ing, you are likely to learn about design, detailing, and construction of structures such as buildings and bridges. It is likely when you graduate you may have some basic skills in using software such as Autodesk® Revit®, AutoCAD®, or other software such as Robot Structural Analysis.

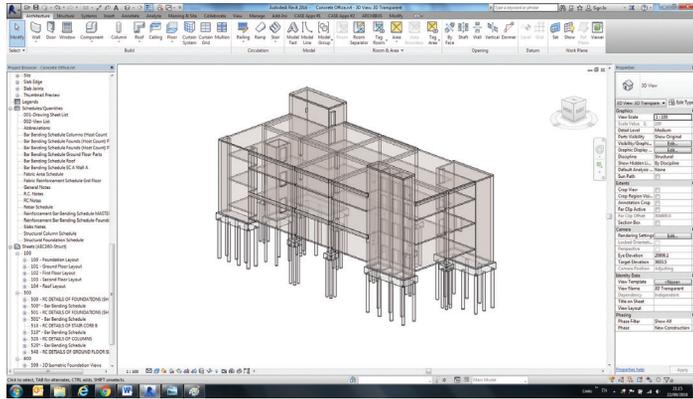


Figure 2: Autodesk Revit

Industry-related training could also include attending a professional institute’s training course on a new code or standard. At the end of the day you will come away more knowledgeable than before.

JOB-RELATED TRAINING

Job-related training is related to a particular part of your job. Say you need to learn how to design and detail post-tensioned beams or slabs. Your training will focus on how this can be drawn or modeled using the software you currently use or are in the process of purchasing. This type of training is also useful when the company standard or a process or procedure has been introduced or updated.

TASK-SPECIFIC TRAINING

Say you have a large project in the office and your colleagues have started creating reinforced concrete models which now have all the rebar detailed in the 3D model and not exported into 2D drawings to detail. Task-specific training will focus on helping you understand how to detail reinforced concrete in Revit.

TRAINING FORMAT

Eventually you’ll have to investigate where you can obtain the training you’ve determined you need. Fortunately, there are multiple sources of training today such as the following:

Certified Autodesk Training Centre – This is generally a traditional classroom format in a formal training course with a Certified Autodesk Training Instructor at one of the many Autodesk Training Centers across the globe. (<https://www.autodesk.com/>

training-and-certification/authorized-training-centers). These can be costly if you’re paying for it yourself, but if your employer is sending a number of staff members, cost can be reasonable. The trainers are generally users of the software and experts in the field in which they are training you.

I have personal experience with this. I was self-taught in Autodesk Revit, but then went on to be a trainer for five years, training hundreds of users in various Autodesk products. Is it worth the money? I feel it is, as it allows you to ask questions directly to the person training you. If something goes wrong, they are there to help you.

Training Manuals – Another option is self-paced learning by book. Although this a good learning tool, it does not allow you to ask any questions and there is nobody to ask if you get stuck. But it is a less expensive option.

Online Learning – Alternatively you could consider using online learning tools such as CADlearning, Global eTraining, or LinkedIn Learning, to name a few. These are generally cheaper than attending a training center and can be undertaken anytime and anywhere. These services also offer support if you need help.

Free Open Source Training – A word of caution about this type of training, which might include viewing videos created by users on YouTube: you cannot always rely that what they are showing is correct. Other types of training in this category includes reading through some of the bloggers’ how-to guides. A great free tool I recommend to everyone is Autodesk University online learning pages (<http://au.autodesk.com/au-online/overview>). There are hundreds if not thousands of classes covering every discipline and Autodesk product.

In-House Training – Some organizations are now training certain staff members to be their trainers, ensuring uniform training across the organization. Another option in this category is peer-to-peer learning (i.e., training buddies). The in-house employee-turned-trainer will be knowledgeable in a certain area and then can train others. This can help with team building, personal and professional development, and is usually quick and easy to organize.

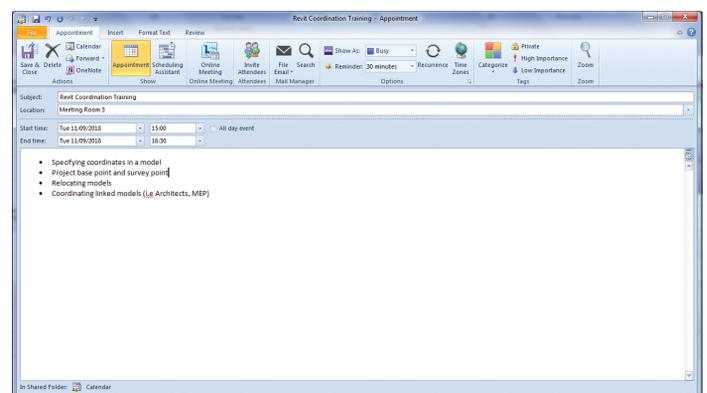


Figure 3: Training schedule

Revit Structure

I must admit some of the best things I have learned over the years came from others working in the Architecture, Engineering and Construction industry. Autodesk University is one place where you can sit in a class or lab to listen and learn from others from around the world about how they undertake their daily jobs. This often reveals how you can use the software tools in a different way. You, too, can share your skills and knowledge to help educate others.

Don't forget: it is not always about your own education or training. It can be about making sure your team or other members of your organization have the skills and knowledge they need to perform their jobs and collaborate with other teams or organizations.

Never stop learning — consider undertaking some refresher training in areas or tools you don't use every day. Refresher training can identify and address those skills that need to remain current.

SKILLS ASSESSMENT

If you wish to check that training has been useful, then consider undertaking a regular skills assessment with your staff, and maybe an annual software assessment. These can identify areas staff members need to work on and point out areas where they are excelling. Skills assessments don't need to take place every week, but should be regular enough so you will know when and where you need to upskill, if required. Don't forget to gather feedback from your users on how the training has gone. Tools such as KnowledgeSmart (<https://www.knowledgesmart.net/>) have online tests to help with this.

And don't forget about your current (and future) employees' professional qualifications and designations such as Autodesk Certified Professional status. This recognizes their proven skills level in that application. To find out more, check out the following link. (<https://www.autodesk.com/training-and-certification/certification>).



Figure 4: Autodesk Certified

CONCLUSION

Ensure that all your staff members have some form of training and their skills are to the level they need to do their jobs. Remember that it is better to have skilled, trained staff who may leave your company than staff who are not skilled and untrained. This can hurt your business more than doing nothing at all.

But leaving it up to employees to “learn as they go,” gaining knowledge only on live projects can be a potential cost to the business, not to mention the time it can take employees to figure out how to do things. You risk missing key deadlines or issuing bad or incorrect information because the staff members don't really know how to use the software or don't have any idea what they are doing.

Consider that one user might be a great modeler in Revit, but doesn't understand how to detail in reinforced concrete. This is where task-based training can help.

Software is evolving all the time and you need to keep yourself and all your users up to date with these solutions. If not, you risk falling behind the industry and ultimately losing business. But remember: spend wisely. Don't buy software just because everyone else is. Investing in training will give you good returns on investment (ROI) if done in the right way.

One final thought to consider: It is not about the tool, but about the time and effort you put into it. Making sure you get your training right is best in the long run.



Figure 5: ROI



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

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The "Not So" Easy Button

How do you sequentially number +5,000 cables in an Autodesk® Revit® project? It's not that easy, as it turns out. Obviously, you could do it manually, but that is a lot of manual data entry, a lot of time, and a lot of room for error. Let me qualify that same question: how do you easily sequentially number +5,000 cables in a Revit project?

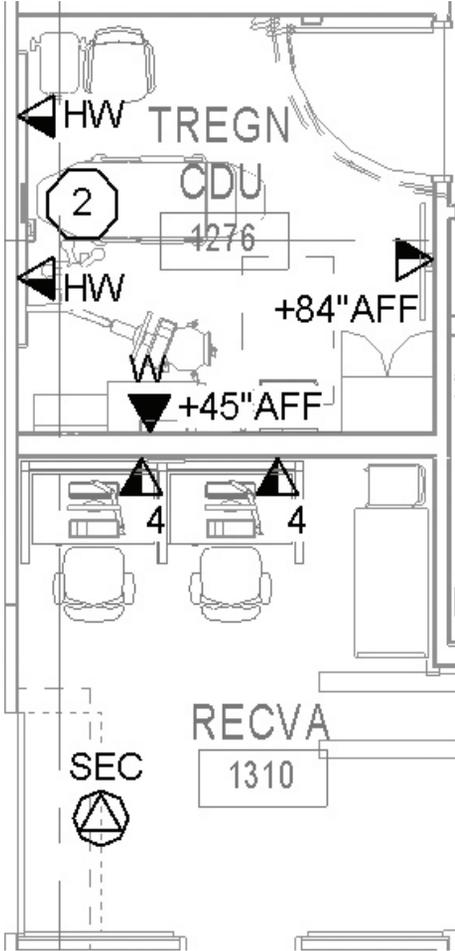


Figure 1
numbered sequentially. In a world of machine learning and artificial intelligence that can defeat humans in games like Jeopardy, Chess, and Go, this problem seems so trivial comparatively. But time and budget constraints such as they are, a seemingly mundane task like this can prove to be a major obstacle.

Let's begin by first defining the task. The project was a ground-up, mid-size, three-level healthcare building. Telecom design was within our scope of work. For design purposes we were calculating cable counts per termination room (Figure 1). Typical industry standard is to use symbols on plan indicating cable requirements. The power of Revit schedules are then very helpful in calculating and showing these totals in the model.

The extra step was to not only calculate cable totals per termination room, per level, and a grand total for the whole building, but also to provide these cable counts

Here is another twist. Let's also change some of the symbols. Not such a big deal, normally, except we had already issued construction documents (CD). A change after construction documents are issued usually requires the change(s) to be clouded and reissued, not to mention the potential confusion this would cause to the project documents. The change mostly consisted of switching the symbols for a single data and a single phone, or making the symbol of a filled triangle empty and an empty triangle filled (Figure 2). This was the case for nearly 300 devices.

So now our task can be defined in two parts: 1) Sequentially number +5,000 cables; and 2) change symbols without affecting the construction document set. What could go wrong? The number of cables a device requires, which represents the number of cables being served by a termination room, isn't technically tracked by Revit. I say technically because there isn't functionality built into Revit to assist in such a calculation, like load calculations for electrical power or air flow calculations for ductwork. Typically, cable requirements per device are indicated by the symbol and/or a number subscript. This number subscript can be entered into a parameter, which is then easily tracked and totaled in a schedule in Revit.

However, sequentially numbering multiple parameters is much more difficult. In order to sequentially number all proposed cables, there are two basic options. First, an element must exist in the model for every cable to be counted (one cable per family instance). The second option is to add multiple "cable numbering" parameters to the devices.

Going with option one would require duplicate devices in the same locations, causing potential visibility management issues. It would also mean that each cable number and the number subscript typically used to indicate data requirements were independent. This would exponentially increase the number of devices in the model just for cable numbering purposes while not actually being used to indicate cable counts per device on plan. We did not choose this method, hopefully for obvious reasons.

The second option is to add multiple individual parameters to each data device element. The shortcoming here is that these cable numbering parameters are not easily incremented (not that incrementing a single parameter on the "one device = one cable" method would be much better). By "not easily incremented" I mean it is a completely manual and tedious process. Not having much of a choice, this was the option we chose for numbering the cables.

Returning to the issue of changing symbols, it was decided to detach the model, creating a separate model for this sole purpose—mostly because again, at the time, no better alternative could be conceived. However, the problem now would be having to maintain identical information in two models.

A somewhat natural reaction to this dilemma might be to copy and paste. We can copy and paste in all kinds of programs. We can also copy and paste in Revit. In theory, one could edit the families to change the

DEVICE AND WIRING LEGEND		
SYMBOL	DESCRIPTION	WIRING
⊙*SEC	CEILING SECURITY OUTLET	(1) CAT 6A CABLE
▽#	DATA OUTLET, WALL MOUNTED	(1) CAT 6A CABLE
▽#	DATA/PHONE OUTLET WALL MOUNTED; # DENOTES CABLE QUANTITY; IF NONE SHOWN, 2 CABLES	(2) CAT 6A CABLES
▽W	DATA OUTLET, WALL PHONE MOUNTED AT 45" AFF UNO	(1) CAT 6A CABLE
▽HW	HEADWALL DATA/PHONE OUTLET WALL MOUNTED; # DENOTES CABLE QUANTITY; IF NONE SHOWN, 2 CABLES	(2) CAT 6A CABLES

Figure 2

symbols in the newly created model. This way, when information needs to be updated to match the CD set, it could be copy and pasted. However, it isn't quite that simple. In this case we are doing more than just copying and pasting symbols or text. Past experience casts doubt on this option, considering most of our families were face-based, it was a multi-level project, and all the data devices were circuited as data systems. For these reasons copy and paste was not a viable option.

Once the models were separated, the required changes to the symbols in the data device families were easily made. Now the process of sequentially numbering all the cables could begin. The number of cables per device varied from one all the way up to eight (Figure 3). For this reason, eight "CableID" parameters were created as project parameters and applied to the data device category. Not really knowing what to expect, we simply began manually numbering these parameters in a logical sequence per room or area from left to right throughout the building.

Electrical	
CableID5	
CableID6	
CableID7	
CableID8	
GP_RoomOrder	TR1.1-0317
CableID1	0707
CableID2	0708
CableID3	0709
CableID4	0710

Figure 3

There are several numbering add-ins for Revit, some free and some paid, to assist in numbering elements. All add-ins that I am aware of handle renumbering of a single parameter by various methods like selection, direction of a line, mark value, etc. Remember, for the task at hand, we had to sequentially number multiple individual parameters for a single element. I am not sure that an add-in meeting these specific criteria even exists.

For simple device numbering (a single parameter), I am happy to recommend an add-in called Element Renumber by JO Tools (Juan Osborne). It is a great add-in, not restricted to architectural or structural elements, that allows for human selection as it increments. Freely available in the Autodesk App Store, we have used it extensively to number devices. We also began with it on this project to try assisting in numbering cable counts. Configure as desired and begin selecting elements to have it increment the parameter of your choosing.

The problem with this approach is that for many of the data devices multiple pa-

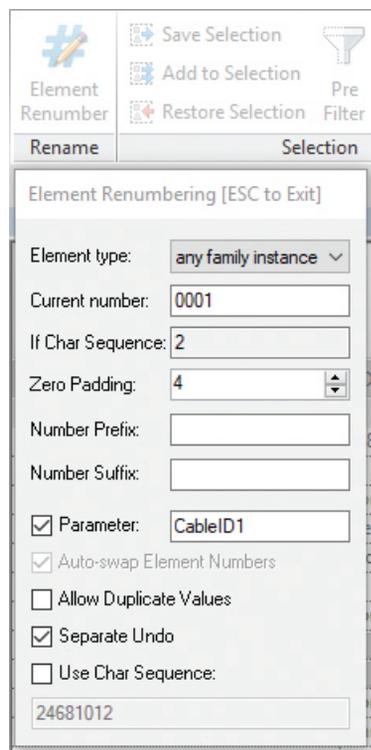


Figure 4

rameters needed to be incremented. This meant manually tracking the cable count per device and then changing the parameter to be incremented (CableID1, CableID2, etc.). See Figure 4. This was barely better than completely manually entering in the cable number and still insufficient for the amount of work that needed to be completed.

It quickly became evident that we needed to find a better solution. The next step of progress was the thought that if the order of numbering got completed using the Element Renumbering add-in, then maybe the actual cable numbering parameters could be exported out of the model, manipulated in Excel, and then reimported. The Element Renumbering add-in could then at least help us do the heavy lifting, getting the numbering sequence input (Figure 5).

The general workflow was to create a working view where changes could be made that would allow for work but not af-

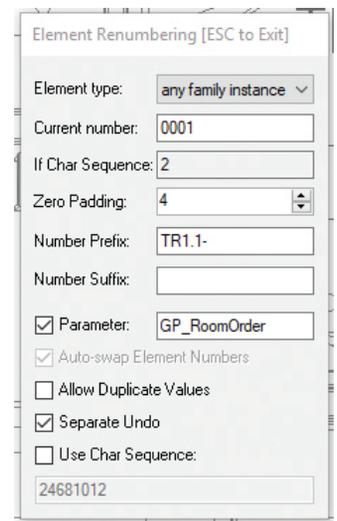


Figure 5

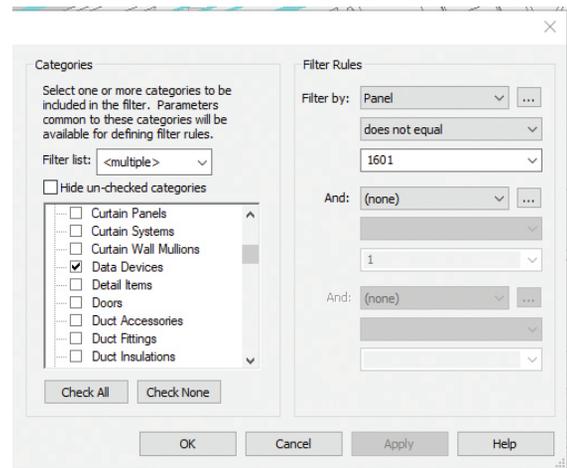


Figure 6

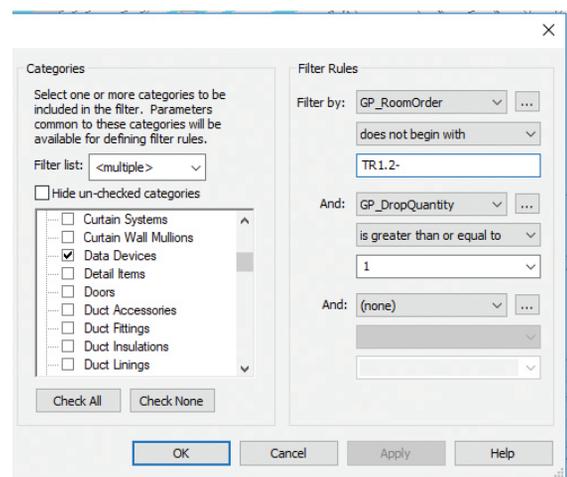


Figure 7

Revit MEP

fect views on sheets. Then a filter was created for elements not requiring a cable number. These would be turned off (Figure 6). Then, starting with an empty “room order” parameter, we created another filter to change the color of the elements so that as the parameter was incremented the element color would change back to default, acting as a visual aid to differentiate between elements that have and have not been numbered.

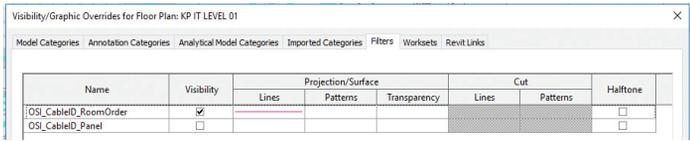


Figure 8

Once the order for the cable numbering was established and completed, the cable numbering could begin. Until a better solution was found, the process was to export the information to Excel and sort by the “room order parameter.” By simply using drag to autofill we would fill in the cable number parameters, manually referring to the device’s cable quantity value/parameter to determine how much to increment across and down. This was tedious to say the least, taking one person more than a day to complete just one portion of the building.

While in Excel, to check our work the device cable quantity column could be totaled and compared to the last cable number value. A feeling of despair quickly set in. With totals sometimes reaching 1,000, if these two values didn’t match, finding the discrepancy was like looking for a needle in a haystack. Even more, if the error was found, someone would have to manually renumber all subsequent cable parameters, a very demoralizing prospect.

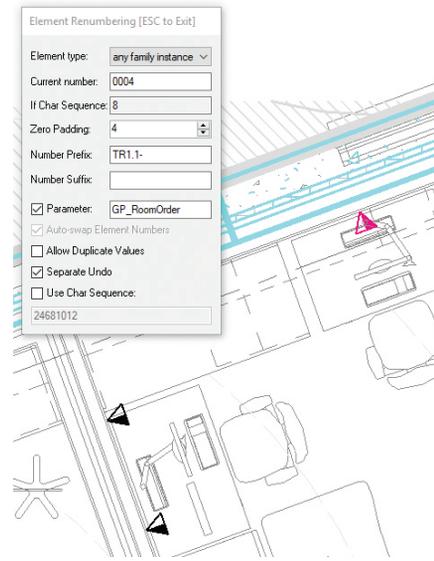


Figure 9

a formula was quickly provided by a user on the Excel forum: Auto-increment-across-rows-and-columns.

The formula is quite literally like magic for this process! Reading the value in the cable quantity column, the formula increments the CableID parameters as appropriate across columns and down the rows. Simply

Re: Auto-increment across rows and columns

Sorry just realized you wanted CODES, not NUMBERS. Paste this in D3, copy across and down:

```
=TEXT(IF(COLUMNS($C3:C3)<=$C3,SUM($C$2:$C2)+COLUMNS($C3:C3),""),"0000")
```

Row\Col	C	D	E	F	G	H	I	J	K
1	GP_DropQuantity	CableID1	CableID2	CableID3	CableID4	CableID5	CableID6	CableID7	CableID8
2	GP_DropQuantity	CableID1	CableID2	CableID3	CableID4	CableID5	CableID6	CableID7	CableID8
3		1	0001						
4		6	0002	0003	0004	0005	0006	0007	
5		4	0008	0009	0010	0011			
6		2	0012	0013					
7		6	0014	0015	0016	0017	0018	0019	
8		2	0020	0021					

Figure 10

copy (autofill) all the way across and then down to the last element (Figure 10). Then import into Revit to make the changes to the elements.

A note on the formula: the number format in Excel needs to be set to General if the Revit parameters in use are using “Text” as the “Type of Parameter.” If numbers or integers are used, a different Excel formula is needed, also provided at the link above.

case sensitive) to Export/Import. Create additional columns/parameter names as needed. Writing stops on first column that does not contain a parameter

GP_RoomOrder	GP_DropQuantity	CableID1	CableID2	CableID3	CableID4
TR1.2-0307	4	0720	0721		
TR1.2-0308	1	0722			
TR1.2-0309	1	0716			
TR1.2-0310	4	0717	0718	0719	0720
TR1.2-0311	2	0721	0722		
TR1.2-0312	1	0723			
TR1.2-0313	2	0724	0725		
TR1.2-0314	4	0726	0727	0728	0729
TR1.2-0315	4	0730	0731	0732	0733
TR1.2-0316	1	0734			
TR1.2-0317	2	0735	0736		
TR1.2-0318	2	0737	0738		
TR1.2-0319	1	0739			
TR1.2-0320	4	0740	0741	0742	0743
TR1.2-0321	4	0744	0745	0746	0747
TR1.2-0322	1	0748			
TR1.2-0323	2	0749	0750		
TR1.2-0324	1	0751			

Figure 11

Once the information was back in Revit, the devices could be tagged to display the information, ultimately completing the original task. If a device is removed or a device’s cable quantity is changed, then export, make the changes, and re-import. If a device is added, use the same “room order” information from the previous device in the sequence. Add an arbitrary character to the room order parameter and export. Once in Excel, sort by the room parameter again. This whole column can then be quickly renumbered by using autofill down. The process to number +5,000 cables could now be counted in days, not weeks.

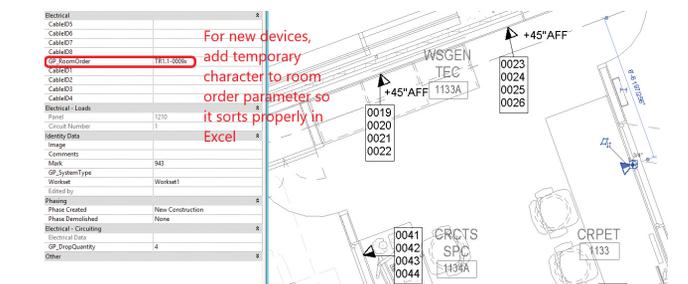


Figure 12

Over the course of a year, changes were made to the original CD set. For about six months the two models were manually kept coordinated. Changes to the CD drove the same changes to be made in the cable num-

bering set. Predictably but unavoidably, as more time passed and multiple people touched the project, the information between the two models became incongruent. Then the time came to update the cable numbers.

Attempting to coordinate the information between the two models proved more difficult than expected. Cable quantity totals were not matching. Manual comparison was laborious and inefficient. Looking back, I wish I had known then what I know now.

The breakthrough came with discovering that families can have user-created image parameters in addition to the instance and type image parameters natively provided with Revit. Because we use images in schedules for our legends (see the *AUGIWorld* September 2018 issue), this would allow the same family to be used to display multiple symbols and/or images.

Armed with this information I could now turn to devising a method to control the symbol(s) of the families in question, more specifically their nested generic annotations. These were families where we were making use of the <Family Types...> type of parameter to set and control the generic annotation to be used by the family type. To allow for the generic annotation to be driven by a parameter, I had to create two additional <Family Types...> parameters. Then using two additional yes/no parameters as controls, as well as formulas, the symbol could more or less be changed on the fly in the project by the user. Remember that in order for a family parameter to be available in a schedule it must be a shared parameter (Figure 13).



Figure 13

Once completed and loaded into the project, symbols for the family types in question could now be toggled. To help set this yes/no parameter on multiple families at once, I created a schedule in the project. The critical parameter is the yes/no parameter needed to change it to the symbol for the cable number set (Figure 14).

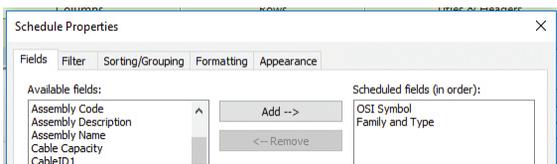


Figure 14

Under the filter tab I set it to only schedule those families that had this parameter (Figure 15).

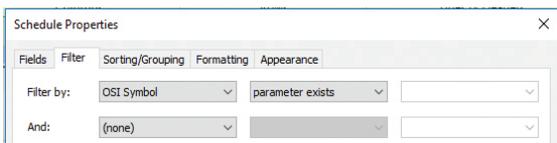


Figure 15

Then under Sorting/Grouping, I set it to sort by that same yes/no parameter. Another critical step is to deselect "Itemize every instance." This collapses the schedule based on the sorting/grouping criteria. In this way one change can be made to all the families meeting the filter and sorting/grouping rules of this schedule (Figure 16).

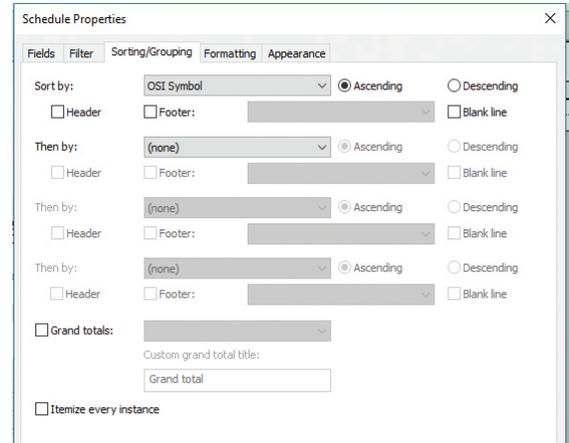


Figure 16

The end result is a schedule where a checkbox can be toggled to change the symbols. Congratulations! You have just created an "easy button"!

The success of these two combined approaches is twofold. First, all the information can remain in one model. Coordinating information changes in two different models is no longer needed. Second, the symbols can be changed quite easily as needed. Nearly the reverse of how we started, the symbols are now the flexible component, allowing the information to be the priority.

Truthfully, an "easy button" does not exist in any software. Functionality that performs a task "at the touch of a button" took immense time, planning, and resources. In this case, it took a long and arduous process just to reach these two solutions. How do you sequentially number +5,000 cables in a Revit project? The same way most challenges are solved—over time, through determination, and by learning as you go.



Nathan Mulder has more than 10 years of experience in the AEC industry. He is currently the BIM and CAD Manager for Guidepost Solutions, a global leader in investigations, compliance, and security consulting, offering design services for security, telecom, and technology systems. A Revit MEP Electrical Certified Professional, Nathan is always looking for ways to fully leverage software to improve the project design and management process. Contact him at mulder.nathan@gmail.com or on [LinkedIn](#).



Not Your Typical Education and Training

Figure 1: AEC Visualization

3ds Max® gives us the technical ability to present anything we imagine, but it's important to understand that our imaginations can trick us. To demonstrate this, someone once asked me if I closed my eyes could I describe how they looked as they stood in front of me. After a moment of looking at them, I was confident I could. When I closed my eyes, they asked a simple question: "What color are my eyes?" I couldn't believe that as confident as I was, as sure of myself as I was that I could describe this person, I couldn't answer that simple question.

This concept bears enormous weight on every aspect of design, especially for those of us who use 3ds Max. We must work to support our confidence with a solid understanding of the foundations and details related to our work, which requires education and training. So for this article, I'll present some non-traditional resources we can use to learn these principles while also presenting resources available to utilize 3ds Max to its fullest potential once we do.

AEC/BIM VISUALIZATION

Exciting advancements in visualization for architectural, engineering, construction and BIM (building information modeling) have occurred in the last few years. Work is transitioning from merely marketing material to integration into heterogeneous models used in a holistic approach to help solve complicated, region-wide problems. These include everything from flood studies to solar research and viewpoint simulations. It's essential to understand the critical elements that make up work related to the relevant industry to accommodate the future and provide the highest quality of content. A few steps we can take to accomplish this are:

- ✦ Trade/technical schools. These schools are often far less expensive than universities, but offer a stepping stone into the industry, focusing on both drawing fundamentals and the technology used today.

- ✦ Work for an architect. I can't say enough about learning a craft from experienced professionals. All the books and videos in the world can't replace the knowledge these men and woman gain through their work. If you have the opportunity to take advantage of it, I recommend it.
- ✦ OpenCourseWare. Mostly this pertains to university materials and information made available to anyone who wants access.
- ✦ EdX. Free courses available to users from universities including Harvard and MIT.

Concerning 3ds Max, the most relevant training I've found for a realistic approach generating world-class content comes from LearnVray.com. Available for a small fee and through a series of 40+ videos, the course walks users through photographic principles utilizing steps in 3ds Max and Vray for Framing, Light Balance, Materials, Renders, and Post-production. In the end, the course offers 5SRW Certification to ensure students understand the principles of the process. Additionally, it offers a small friendly community led by passionate instructors where users can share, review, and comment on content.

MEDIA AND ENTERTAINMENT

There's a large number of subcategories that fall underneath media and entertainment, giving students several paths to choose. These include the following:

Creatures/Characters. Creating these requires understanding of anatomy and body mechanics, from the skeleton to muscle and skin. Understanding how these relate impacts every step in the process, from the initial concept to the final composition and texture and rendering.

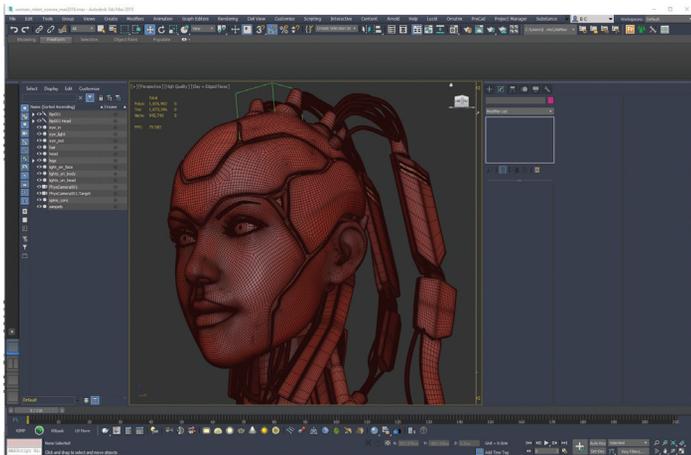


Figure 2: Character Design

- ✦ Environments. Building worlds matching required and vastly different styles can be difficult. Environmental designers work with their teams to develop everything from individual assets like benches and plants to creating the mood and tone of their particular scenes.
- ✦ Product development. Designers in this industry work with companies to produce video and renderings for videos for marketing on television and the Internet.



Figure 3: Environmental Art

- ✦ Visual Effects. This category covers a wide range of activities related to effects for everything from environmental impacts from character movements to smoke, fire, and even effects for menu and interface design.

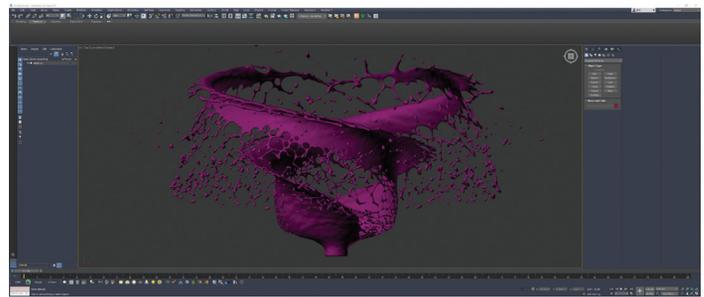
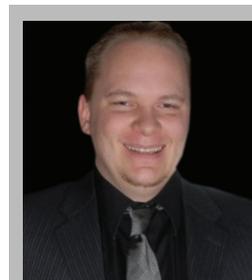


Figure 4: Effects

There are many more, but each path requires years for people to master, so the best advice I have is to select your favorite early and work hard toward your goal. A popular approach to learning principles related to these various categories is through online workshops presented by others who have worked in those industries for the last few decades. These include The Gnomon and CGSociety.

Additionally, a powerful method of learning related to these industries come from professionals who offer mentorship for monthly or yearly fees. Through these programs, they offer discord/team link connections with other professionals, direct email review, and even weekly or monthly calls. Watch for them as they don't come around very often.

Finally, it's important to know that 3ds Max is just a tool—think of it an artist's brushes or pencils. There are vast differences between artists who have studied their craft and those who haven't.



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In the real estate world, an agent's mantra is "Location, location, location." This is because with all things being equal, location is the one key factor that can and will determine ultimate success in a real estate venture—whether commercial or residential. In the project management world, it is all about "Communication, communication, communication" and, as in the real estate world, with all other things being equal, the project with the best communication will come out on top.

What does this mean and why is it so? I would bet that most experienced people would not argue on either the location or communication aspects of each respective industry, but how do we make sure that we follow the respective mantras? I am not a real estate person and although I have many friends that are, I can speak little to their industry. Project management, on the other hand, is what I do and have done for many years, so for this I have some insight.

To get things started, I am going to cover the various forms of communication, then dive into the ways that each method can be used on a project to help make it successful.

Communication happens through various methods, with each having levels of success depending on how they are implemented. As we know it, communication most commonly happens via one of three ways; verbal, written, and visual. Each of these has multiple subsets and often a combination of one or more is used to communicate an idea, concept, or concern.

One of the most common (and one of the oldest) forms of communication is verbal. Verbal communication is often done through face-to-face interactions, telephone or video calls, or thorough voice messages. Verbal communication happens in meetings, presentations, video and voice recordings, and basic one-on-one conversations. Long before the current world of technology tools, verbal communication was the best way to convey a point, concern, or idea.

Written communication is the best way to share very detailed information, as having someone go on and on about legal or statistical information can and will often be mind-numbing. Written communication is the most common way to archive and record information that requires a historical record, while providing the ability to share and review a communication at a time that is more convenient to the audience.

Visual communication can be done as a stand-alone product or included or added to one of the previous two methods to successfully get a point across or share information. Visual communication is often done through pictures, diagrams, or videos. In our modern world, visual communication has taken on a much more prominent role. As an example, consider the more common everyday tasks of portraying emotions or thoughts to friends, family, and even business associates using emoticons. Simple symbols can convey emotions or opinions that most people will associate with a communication of ideas or feelings. When thinking visual, think of the common phrase "A picture is worth a thousand words."

"A picture is worth a thousand words" is an English language-idiom. It refers to the notion that a complex idea can be conveyed with just a single picture, this picture conveys its meaning or essence more effectively than a description does.
— Wikipedia

A successful project manager will use all the above communication methods at various stages of the project to share data, convey importance, and keep the project team up to date. Verbal communications will be used in individual phone calls, conference calls, and one-on-one conversations. Written communications will be used to convey contract requirements, specifications, and documenting historical data. Visual communications will be used to clearly define objectives, and show historical information through graphs, charts, and photographs.

As a project manager, how do you use the various methods of communication available to you to make your project successful? The important thing here is to know your audience. All projects have various parties involved that you need to communicate with, and knowing the needs of your audience will help determine your communication method.

Projects have varying levels of complexity and with that comes varying levels of communication requirements. In a more formal project management structure, there are methods to track what certain people need to know, when they need to know it, and how information will be conveyed to them. In my world of multi-

Project Management

acceptance before you move ahead. If timing is critical, follow-up with a phone call. This is commonly referred to as a “CYA.”

When having verbal communications, a key skill is “active listening.” Conversations are meant to be a two-way street—otherwise, it would just be you talking and hoping that the other party or parties are truly engaged and understand what has been communicated. I recommend that you Google the term “active listening” and learn more about what it means. A few key points are listed below.

Avoid Evaluative Listening:

- Hold off forming opinions until the speaker’s message is complete.
- Don’t obsess with or focus on emotional words or phrases.
- Concentrate on the speaker, not on your intended rebuttal.

Steps to Ensure Active Listening:

- Truly listen by providing the speaker with your undivided attention.
- Reduce or eliminate noise or other distractions.
- Organize the message you hear.
- Check your understanding of what has been said by repeating it back in your own words.

Written communication is a great tool, too, as in the example above. It can be used to validate understanding from a verbal communication. When it comes to conveying very detailed information or requirements, written communication is typically the best way to do so. Written communication can be shared with many stakeholders at once, it can be used as a historical means of tracking conversations, and it can be used to spell out levels of detail that are not easy to do with verbal conversation alone.

Examples of written communication in the realm of project management include daily correspondence through emails, meeting minutes, status updates, questionnaires, specifications, process steps, task lists, and others. Written communications can also involve tweets and texts, although these are not typically used for business communication.

Once again, knowing your audience helps in how to format and share your written communications. Because written communication has such a broad range of possibilities, you need to consider the points that need to be made and how succinct or detailed you need to make them.

When spelling out specifications or project requirements, detail is important, but when providing status updates, brevity is the way to go. For specifications and specific requirements, you want to make the communication as detailed as possible, which could involve pages of information to make sure all objectives are covered. When sharing status updates, you need to make sure that key points are communicated and excess information is not included that could cause distractions or confusion for your audience. This is where an executive summary provides your best level of detail.

An executive summary is a short document or paragraph that is typically provided for, as the statement indicates, executives. In the business world, executives are extremely busy and their time is limited. You need to communicate your idea or update in a manner that gets your points across in a brief yet clear way. The readers need to be able

to quickly become acquainted with the facts about something that may be pulled from a much larger body of material without them having to read it all. This summary will often include key project information such as the status of schedule milestones and budget adherence. To do this successfully, you may need to combine your written summary with the last form of communication—visual.

Visual communication can provide a lot of detail in the form of graphs, diagrams, charts, and pictures. Visual representations of a schedule, a budget snapshot via a screenshot from accounting software, and photos of the current progress of an ongoing project are all very common and useful methods to communicate ideas and status. In the modern world of communication, PowerPoint is a common way of presenting data to audiences of all sizes. Figuring out how to best present the data through PowerPoint or another similar tool is a skill. Be creative and, as always, keep your audience in mind. PowerPoint is a visual communication tool—don’t just fill it with slides full of text.

Over the course of a project, a project manager needs to keep all stakeholders up to date with myriad information. This information will include schedule, budget, risks, resources, and lessons learned. In future articles I will cover these items in more detail. To keep your project moving ahead and get the approvals and buy-in you need to make it successful, you need to know the various forms of communications that are at your disposal and how to best use them. To master the three forms of communication, I encourage you to study, read, and follow examples of other successful project managers so you can master your trade and ultimately be an example to others.

If you would like to learn more about communication methods and the associated skill sets, consider doing some research on the topic. Although Google searches can provide some great information, a few books I have read may provide a good starting point on this topic.

Crucial Conversations: Tools for Talking When Stakes Are High – Kerry Patterson, Joseph Greeny, Tron McMillan, Al Switzler and Laura Rope

We Need to Talk: How to Have Conversations That Matter – Celeste Headlee

A Guide to the Project Management Body of Knowledge (PMBOK Guide)–Sixth Edition – Project Management Institute

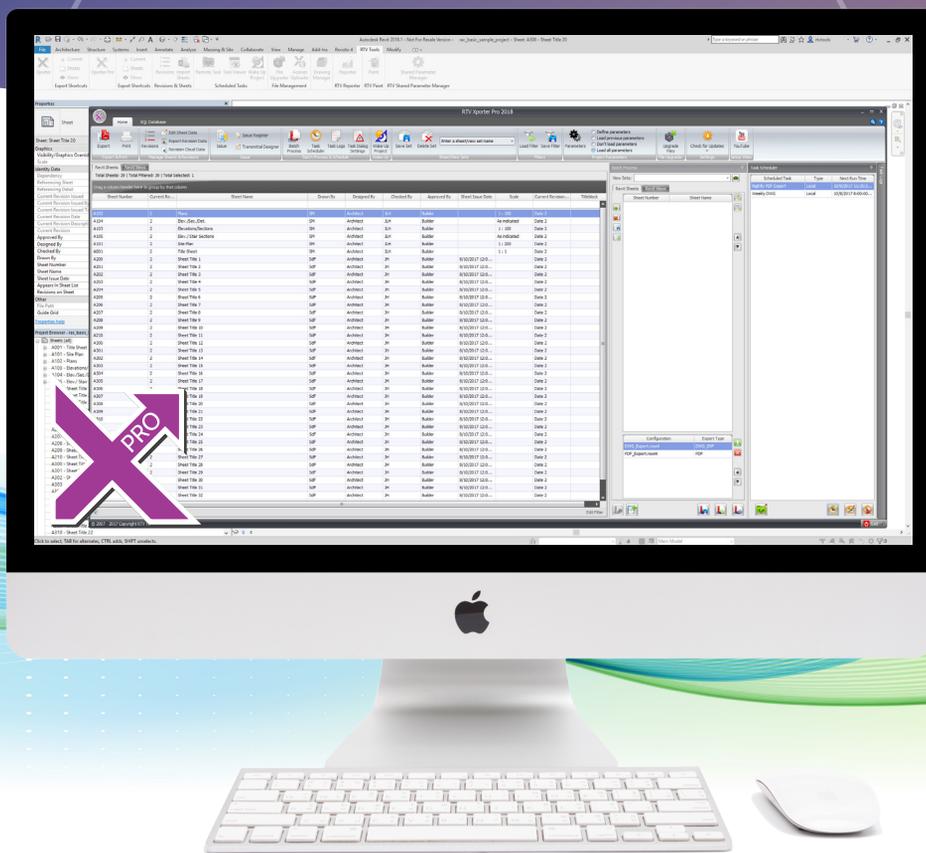
Do you have questions about this or other project management topics, or would you like to see more detail on a specific area? If so, please send an email to thepm@waltsparling.com with your questions or comments.



Walt Sparling has spent the last 30 years in the design and project management side of the industry until recently switching to a Senior Project Management role on the construction side. Walt can be reached for questions and comments via email at: walt@functionsense.com

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Time really is money on large BIM projects

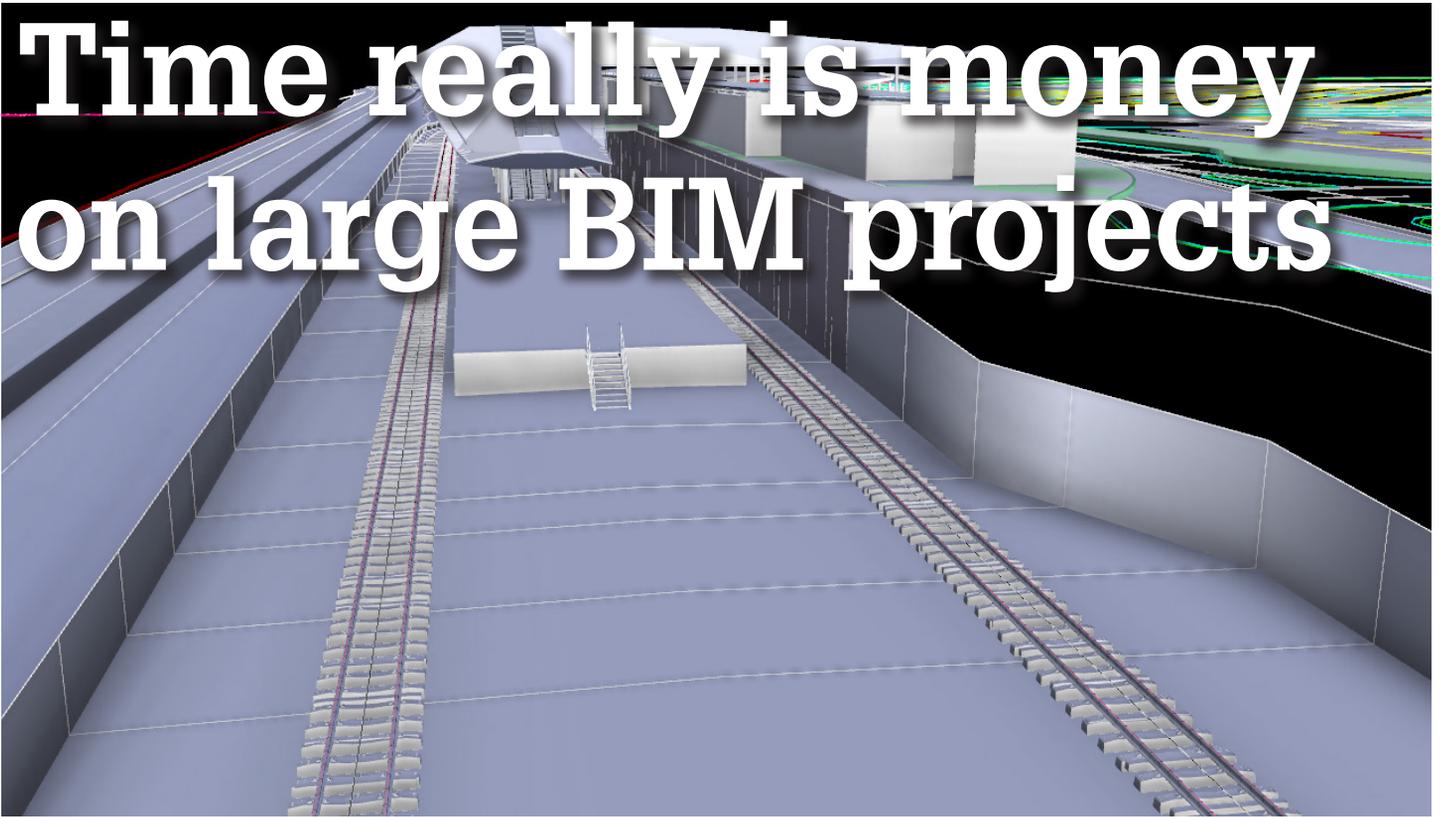


Image supplied by GHD

Expectations are high on GHD's latest project in Western Australia with the client requesting a LOD500 operations and maintenance model as part of the project BIM deliverables. With such a major undertaking ahead of them, the team had to find ways to be more efficient with time says Western Australian BIM Lead Belinda Thompson.

The \$2 billion project is an 8 kilometre long stretch of underground tunnel and rail including three stations, ancillary buildings, cross passages, and egress shafts all being designed and modelled using both Autodesk and Bentley platforms.

"This is definitely the most complex BIM project GHD's Perth office has undertaken with 90% of it being modelled in Revit. Revit works great for straight up and down buildings but does not lend itself well to linear projects, especially 8km ones."

One of the most time consuming parts of the project was creating weekly exports from the model.

"The lead for each discipline across the project had to export hundreds of Navisworks files and PDFs on a weekly basis. Each file takes 8 minutes to convert to Navisworks. Naturally, sometimes they would fall behind, and so often we didn't have the files when we needed them."

“We’re saving 26 hours every week, that’s \$87,150.00 over a year.”

"We would also get various quirks in the final product as each team member would have minor differences in their settings for export options.

"We are now half way into building the model and have re-visited how we set files up for exporting to Navisworks so that we have fewer files to export."

RTV Tools' Xporter PRO is an add-on for Revit that automates documentation processes allowing users to schedule automatic exports of prints and digital files such as DWG, DWF, PDF, IFC and Navisworks, all unattended.

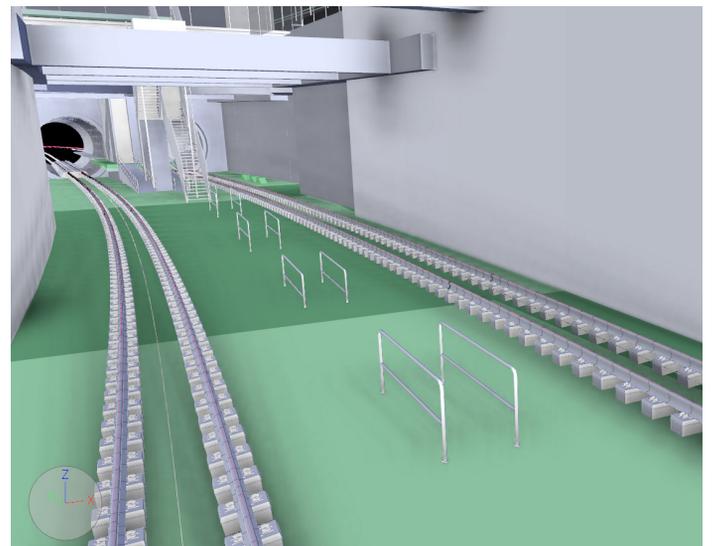


Image supplied by GHD

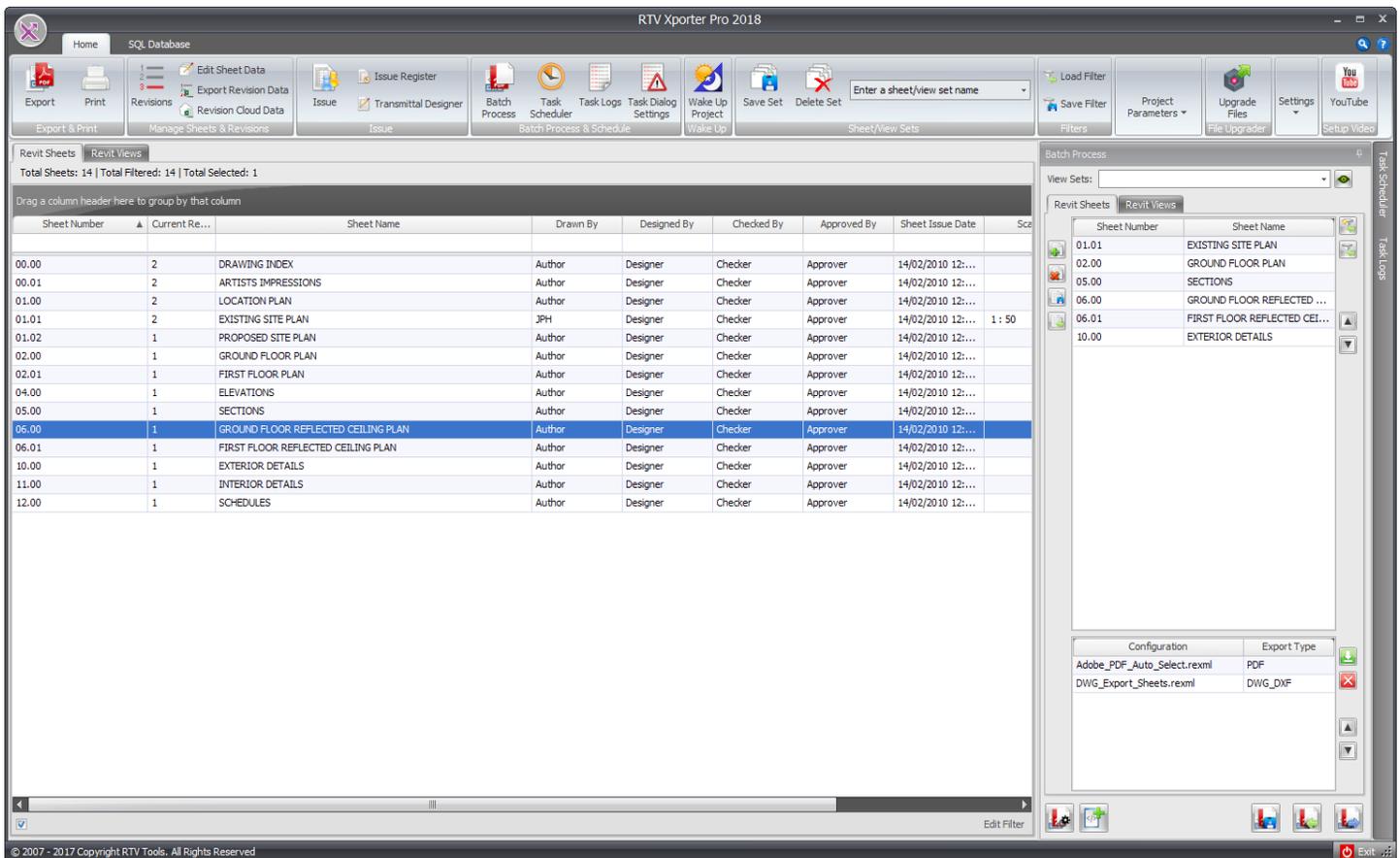


Figure 1: RTV Xporter PRO main application interface

“We had been using RTV Xporter to export PDFs, DWGs and NWCs on our Architectural and Building Services projects in Perth but it wasn’t until we faced the thought of exporting 300 models that we looked into the schedule function of the Pro edition of the software. Instead of each discipline lead doing weekly exports we gave the software to one person who got it up and running – and now the process is completely automated.”

“Yes it is saving us a lot of time, and management is happy because of the impact it has had on the project’s bottom line.”

“ with projects increasingly growing in scale the industry needs tools to automate BIM processes. ”

“For our Navisworks exports we’re currently saving 8 minutes, multiplied by 96 Revit files bi-weekly, equaling 26 hours every week. Over the course of our two-year design phase that is approximately 2,490 hours saved. In just one year we are looking at saving AUD\$87,150. That is a brilliant return on investment for software that costs under USD\$50,” says Belinda.

“The output is also standardised because no one is changing the export settings. Now every file in the federated model is showing the same information.”

With projects increasingly growing in scale, the industry needs tools to automate BIM processes in order to meet realistic time frames and allow the project team to focus on the final BIM deliverables.

“There is much more to BIM than just developing design drawings using a 3D software package.”

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AUTODESK UNIVERSITY Las Vegas 2018 \ 13-15 November **EXHIBITOR** Speak to us in the Exhibit Hall Booth A254

Can We Talk? Being Interactive



Executive Summary: Go Talk to People (but first read the rest of this article)

Interactive is an adjective and is defined by the Oxford Dictionary in two ways. One way is “Allowing a two-way flow of information between a computer and a computer-user; responding to a user’s input.” The other way is “(two people or things) influencing each other.” We all want interactive computer interfaces and programs. We want our systems and software to be interactive. We input commands and the system reacts to them by performing a function, returning a value, then waiting for the next command. Non-interactive systems are where humans are not needed. They just run on their own.

Turning to the second definition, human interaction, allows us to go beyond the computerized input and response mechanics to the nuances of conversation and influence. That is what I want to discuss in this article. You—interacting with others. If you are reading this at Autodesk University, then it can be useful in the next few hours or days. If you are reading this at work or home or online, then you can interact with my words by taking them to heart and seeing how you might improve your effectiveness at your next opportunity.

BEING INTERACTIVE AT AN EVENT

Autodesk University is a massive event. It brings together thousands of individuals focused on learning, networking, selling, im-

proving and expanding the industry. It is great... and it is even better the more you interact. Don't just be an observer. I have been there—I get so much more out of events where I talk to my peers and others.

Vendors – they want to talk to you. The whole reason vendors attend events is to tell you about their products. They are dying to talk to you. So go talk to them. If you have hesitations, start by watching a demo. Then just sidle up next to another person who is talking to the vendor and listen. Then ask a question. Then ask more. Then go to the next booth and just walk right up to a rep and ask a question. “So what does your product do?” and then let them talk. Listen well and respond. You will gather new insight and knowledge about their specific tools and maybe apply it to your area of oversight.

Industry Leaders – they need to talk to you. They go to these events to talk to you. Don't be skittish about just walking up to them and asking a question. They want to know what you think about products, features, and upgrades. Be polite and let them know what you wish for, dream of, or want to avoid. The bad and the good. Go talk to them.

AUGI – easiest interactivity ever. AUGI is a group of people just like you. Go to the AUGI booth (wait... if you have a hard copy of this magazine, you did that). Hang around. Stop and talk. They are all using the same programs you use. They are frustrated, just like you. They are dying to hear the next great tip or trick, so share. Get involved. Volunteer.

Younger/Older – move outside of your peer age group. Young folks need to talk to older folks. Mature workers need to pass on knowledge to early career staffers. Advanced career people need a fresh perspective gained from a new user. Look for someone “out of your comfort zone” and start a conversation. Sit at a table where you do not know anyone. Introduce yourself and ask where they work, or live, or what software they use, or favorite sports team or whatever... just talk.

Across Industries – Don't just talk to the people who do the same thing you do. You might even want to take a class in another industry or sector. Hearing from those who are not serving the same clientele you are can uncover some great ideas. I have taken ideas and processes from other industries and pressed them into my workflow with great success.

THIS PERSON NEEDS NO INTRODUCTION

This may be true for celebrities and sports stars, but not for the rest of us. When you are attending an event, ask someone you know to introduce you to others you have not met yet. They can start the conversation and you can join in. It is tough to go to an event where you know few people. It may help if others are there to assist with introductions. And when you attend an event where you do know most of the people, ask those who are new who they might want to

meet, then go introduce them. For newcomers, this takes the edge off of meeting new people. A quick introduction and then it is up to them to take it to the next step, whatever that might be.

AN INTERACTIVE WORKPLACE

Becoming more interactive at work is key to your impact and growth. Go talk to people on the projects you serve. Talk to managers, VPs, even the CEO (if you can get some time). Talk to accounting staff. Find out what they do and where all the money is hiding (you could use a little more in your budget). Talk to HR and see what technology they may need. Talk to marketing. Listen to what they are selling. What is the product your firm leads with? Design, Process, Quality? You need to know so that you can reinforce that message. Go talk to people.

AN INTERACTIVE HOME

Don't leave out the family. When you get home from work, actually tell your spouse how your day went—before they ask. Tell your kids what you do at work. Share a funny story. Let them know that you enjoy working. Talk about your work ethic. Tell them why it is important to do a good job. Let them know why you love your job.

INTERACTING IS GOOD

Interacting with others is why we were built. Conversation is a great teacher and refiner. The exchange of ideas and perspectives, lessons learned, successes and failures is all good. It helps us validate assumptions, verify facts, and postulate new ideas. It is sharing those conversations that enriches our lives and careers. So if you are reading this at an event, get out there and talk to people. If it tires you out, then take a break... but after that, go talk to more people.



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.

Dearest Small & Medium AEC Firms: Restructuring for BIM Success (Now) Applies to You

To find success with BIM, firms need to look beyond the CAD processes that are comfortable to staff. Assessment, planning, and communication are key, but transformation is a do-or-die proposition for the long term

 **T**he transition into BIM is a foregone conclusion for A/E/C firms large and small. But once they make the decision to implement BIM, firms are left with new software and old processes; therefore, creating BIM processes is fundamental for successful transition.

CAD processes don't require that architectural practices be good, but BIM processes do because without teamwork, communication, and defined processes, firms cannot realize the full benefits of BIM.

Firms that have found success using BIM have done so in large part by creating and following clearly defined, rigorous, and robust processes. BIM project success requires much more than simply excelling at software. Getting the right work done at the right time with BIM requires a highly organized practice.

In an architectural team, each person has specific tasks and responsibilities. When everyone is performing their tasks, it's smooth sailing toward project completion, but if one team member fails to deliver—say a designer doesn't meet an im-

portant deadline—then the team can expect cascading negative and costly impacts.

A winning environment is created when thorough process plans are in place for each aspect of the team and timelines and responsibilities are clearly defined and followed. There are always outside forces acting against our plans, so flexibility is necessary, too, but with effective communication, active management, and coordinated efforts, the promise of BIM can be achieved.

Many of the workflows that have typically been employed for CAD are now considered inefficient. One that masks its own inefficiency is the throw-extra-staff-at-it workflow. That's not a production failure; it's a management failure. And if that approach is used on BIM projects, the inefficiency becomes a glaring indicator that effective management processes weren't followed. Throwing extra staff at BIM production without the new team members understanding the project can be dicey; the result can be an enormous amount of time spent fixing avoidable mistakes. If there are struggles or failures on BIM projects, they need to be captured and used to benefit future projects, not simply hidden away and ignored.

There are potential pitfalls in BIM processes, as well. Modeling can be a hypnotic endeavor. Teams can find themselves meandering back and forth in the model, losing sight of the bigger picture such as schedules, time, and money. Rigorous processes can keep that problem in check.

TRANSITIONING TO BIM

How does a firm become successful at transforming its processes for BIM implementation? It must begin by being clear about what currently works and what doesn't in the organization. Its leadership must be willing to embrace new ways of production, coordination, and presentation. The creation of project guidelines and systems that will help teams manage project objectives and overall firm goals is also necessary.

What to focus on is important, but doing so at the proper time is equally so. Change can come in many ways, such as allowing existing processes to evolve. For example, chasing CAD symbologies is not always recommended; rather, allowing an evolution of symbology in BIM is more desirable, especially since tags, keynotes, and such can be associated to actual building elements. This gives the project better data with less need for QA/QC compared to CAD. BIM output is another evolution that, while it can be distinct from the look of CAD in many ways, it can also be extraordinarily better, providing more informational and coordinational value. BIM can tell a better story than CAD. (The shape of a tag never made a firm any more money, but chasing the perfect shape certainly has cost many a firm.)

People will often say things like "You can't do that in BIM." While it is natural for humans to resist change, it's a mindset that needs to be eradicated. Such roadblocks are simply excuses for people to remain on an inefficient yet comfortable path. The truth is that anything done in CAD can be done in BIM. Anyone who claims otherwise is simply unaware of how to do it or they are trying to stall the inevitable. Firms may need to learn new approaches for BIM, but that is what will enable growth of our industries and allow better projects to be built. BIM authoring tools work just fine. It's mainly inexperience that creates problems and confusion.

The addiction to CAD is perhaps the single most difficult obstacle that BIM adopters will encounter when transitioning. If a full BIM transformation is to take place, then CAD addiction needs to be acknowledged and mitigated. The same kind of transition was necessary when firms and individuals hesitated to adopt CAD at the expense of hand drafting. But where are all the hand drafters today? They are either using CAD or they're in other lines of work.

CAD may be around in many industries for a long time to come, but in A/E/C, CAD will be replaced by BIM. For many firms, it already has been.

RESTRUCTURING FOR BIM

We cannot effectively create a better future if we don't understand the past and present. Assessment will give insight into what is necessary to change or refine during the transition and restructuring process. Assess the staff, existing systems, and infrastructure, as well as project procedures. These assessments will be used as a baseline of the state of the firm, its capacity to absorb change, fiscal impacts, and staff mindset.

To assess personnel, create a 10-question interview that will be given to all staff and managers. Ask them what works in the current process, what doesn't, who they think are the best teammates, how they like the infrastructure, who they feel may hold the process back, etc. Make the interview setting safe and confidential. The goal is to get honest input on the state of affairs, not to interrogate. These assessments will help you identify potential champions as well as gatekeepers by connecting actions to issues.

Since the goal is to restructure A/E/C processes for BIM, the next step is to assess and define objectives. This is the point to review current processes and map them out visually so the current approaches can be used to influence BIM approaches.

Providing an interactive, live assessment can be done in several ways. Digital tools such as traditional process maps or mind-mapping software can be used, although I suggest starting off by using index cards posted on a wall. Digital process maps can be created later on, but the storyboard approach adds benefits such as immediate collaboration that allows people to add all variety of documents, notes, and drawings. Include the entire staff in divining the process maps so expertise at all levels is included and every possible measure is addressed.

Set up the storyboards and refine the map until it addresses the entirety of the firm's current processes. After each process is fully vetted, input it into a digital process map for use in later phases of restructuring and documenting.

Process maps will include all the steps taken to complete an A/E/C project in your firm, practice area, or team structure. Provide time to review these and color-code them for prioritization, distinguishing what works and where the pain points are.

The BIM process map can be started by using copies of some of the items from the current process map: colored strings can define critical paths, connections, etc., and those paths can be translated to the digital copies.

The BIM process plans will require different input than the CAD processes did. People who have extensive knowledge of both BIM production and project execution will be included, for example. The team that creates the new processes should incorporate all levels of project execution, including technical and managerial. If there is no one on staff with BIM leader-

Revit Architecture

ship experience on the kinds of projects your firm produces, then get some. Not knowing what you do not know can create failure, so bring in staff or consultants if necessary to help you understand BIM processes.

TRANSFORMATION

A key to transformation is determining the goals then creating plans intended to accomplish those goals and completing the necessary actions in the plans.

Restructuring a practice to incorporate new processes requires many levels of buy-in and transformation. People will have varying degrees of willingness to change, and that needs to be figured into the restructuring plans. If staff members openly agree that they want to be part of the firm's success and the leadership publicly states that they want to better the firm by refining its processes for BIM, then it becomes natural for the staff to do what it takes to accomplish that goal—namely, following the plans that are being created. If there is no implicit, open, and public agreement between leadership and staff, then the restructuring itself may not be efficient and may speak to how future projects will run.

The public nature of these agreements can provide an environment of empowerment and self-oversight. Conversely, if people say they accept the plan yet don't follow through on their agreement, then there is a need and an opportunity to deal with whatever issues are lingering.

If it comes to pass that there are any parts to the plan that have not been as scheduled, then these objectives need to be completed or, if found to be unnecessary, dropped from the plan. Either way, there is a mechanism for responsible and managed follow through.

A structured plan is necessary for success in anything, and BIM is no exception. An implementation plan is used to provide on-demand insight into where the project is at any moment and can be developed into a recipe for project performance. This plan should run the gamut of necessities from an overall strategic plan down to task lists. The plan should include infrastructure, staffing, training, implementation timelines, and fiscal plans—all of the whats, whens, and whos.

Successful BIM projects have team members with intimate knowledge of the design, production, and documentation processes used. By documenting the project execution tasks, the management can predict staffing needs and budget impacts proactively with more predictable results. Unplanned up-staffing can throw unnecessary trouble into the mix and should be avoided.

With the completed assessments directing an understanding of what to plan, a host of documentation can be created to explain what needs to be done, when, and by whom, as well as to provide management with tools to keep items from falling through the cracks. Good planning documents will enable prioritized workflows, tighter timelines, and overall project health since knowing what still needs to be done at any one time is critical.

BIM and IPD projects benefit from process maps and demand that granular plans be generated throughout the project lifecycle from preliminary submissions onward. The better we get at planning, the better our potential for success will be.

The AIA E203 and AIA E202 Building Information Modeling Protocol Exhibit are some of the great starting points for helpful, if not necessary, documents that BIM teams use. Similar types of matrixes can be used to create overall project checklists as well as team-specific plans. Creating a team toolset that uses task lists interlinked with project schedules offers even greater opportunities to manage projects and teams and to keep everything running smoothly.

Once the plan is in place, it is time to do. Implement the plan, making everything necessary for staff to understand what the goals are, then validate the plan for future repetition, and you're on your way to restructuring from old processes to new. Built on good planning, teamwork, management, communication, and follow-through, a BIM process can realize successes for the entire A/E/C team.



Learn. Always. Push. Change. Inspire.

Art - Architecture - Technology - Creativity

With over 20 years of Architectural experience Jay B. Zallan enjoys a varied and diverse portfolio spanning high-end custom residential design, large mixed-use developments, major transportation and infrastructure projects through most every large-scale project type. President of LARUG (Los Angeles Revit Users Group) and an Autodesk Implementation Certified Expert (ICE), Jay combines unique insights into the creative and business process of AECO with proven management, creativity, and project generating strategies. Enabling, empowering, and inspiring teams to realize their own dreams and potentials beyond limitations (whether real or perceived).

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BIM TRACK™ (FEATURE UPDATE)

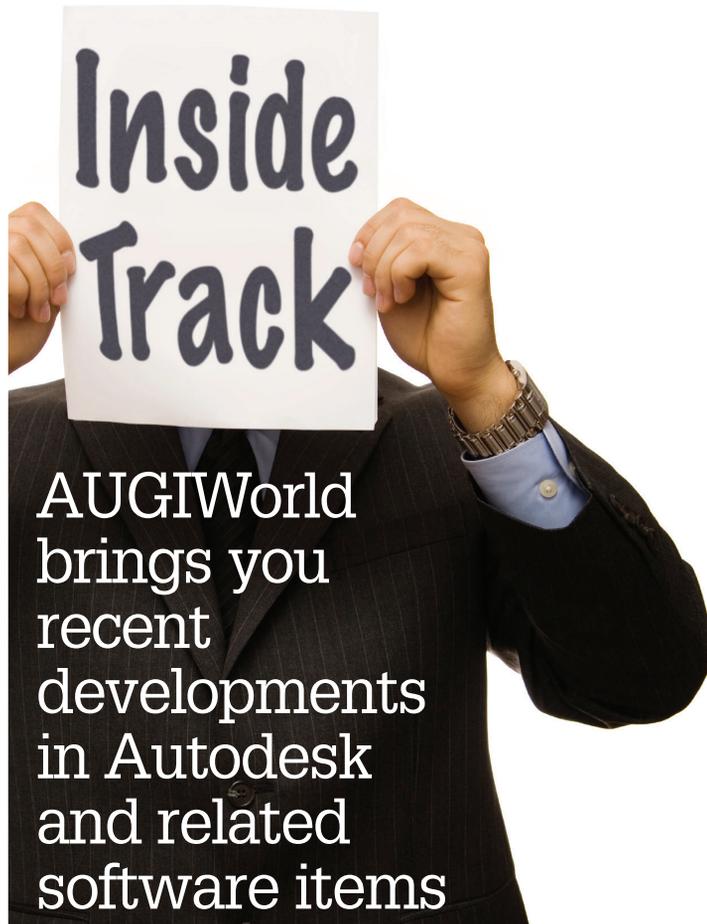
<https://bimtrack.co/>

We featured this product previously, but this month the developer has announced new features that make this product worth revisiting.

BIM Track is the issue tracking platform that empowers teams with improved coordination communication. It can be accessed using a browser, or directly in Revit®, Navisworks®, Tekla Structures, and more using openBIM workflows. Charts and graphics help you understand data and manage your performance through precise metrics at both a project and user level. BIM Track is developed by BIM One Inc.

The two new features include:

- Revit models can now be published directly from the Revit add-in to BIM Track's web viewer, complete with revision management. Models can be pushed manually or by a scheduled automatic publication.
- Coordination reports are automatically emailed to the appropriate parties on the frequency chosen. Project coordinators can create unlimited templates for different types of routine reporting.



Hypermodeling – Rather than simply allowing you to switch between 2D and 3D views, BIM Track's hypermodeling means that 2D documentation is now positioned correctly within the federated 3D model to capitalize on all available information. While building information models are information-rich with regard to data and geometry, important details are often only available on the 2D drawings. Merging traditional outputs like PDF plans and BIM provides full project context. The hypermodel makes it easier for project teams not working in BIM to be comfortable navigating in BIM Track's web viewer, as well as raising and resolving issues in BIM Track.

The latest video showcasing these updates can be found here: <https://bimtrack.co/resources/download-center/webinars/new-features-coordination-automation-hypermodeling>

CLOUDSFER

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



Cloudsfer is a cloud-based migration service supporting more than 20 cloud storage providers such as Autodesk® BIM 360®, Google, Dropbox, Box, SharePoint, Office 365, Aliyun, Azure, Amazon S3, Amazon Cloud Drive, and many more.

Migrate and transfer your data from/to BIM 360. Cloudsfer is designed to seamlessly migrate data, requires no installation, no hardware, and no bandwidth during the migration process. Companies and users can migrate their data in a fast and secure manner while continuing to work on their source systems.

Highlights:

- Cloud Service – Let us handle the migration for you. Transfer your data quickly with our fully hosted SaaS environment.
- Recurring Delta Migration – Transfer your newest data into the target storage system at the press of a button. Schedule a recurring daily, weekly, or monthly migration according to your needs.
- Analyze your data and monitor/download reports regarding every step of the migration process.

SKETCH CHECKER

<https://apps.autodesk.com/FUSION/en/Detail/Index?id=8050506996211430178&appLang=en&os=Mac>



Sometimes it can be difficult to identify at which point the sketch is not properly closed, and so it cannot be used as a profile for solid creation, e.g., extrude.

The Sketch Checker add-in helps with that problem by identifying curves that do not connect to other curves, leaving the loop open.

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

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