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The Official Publication of Autodesk User Group International

December 2018

# Looking Ahead

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- **Six Questions You Don't Want to Hear from Your Boss**



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# Letter from the President



# AUGI



**A**s I write this, the 15th anniversary of my joining AUGI is just a few days away. Back then, I never dreamed that one day I'd be writing a monthly letter in a magazine that's distributed to hundreds of thousands of people. *(Note to self: The surest way of inducing writer's block is by reminding yourself of the size of your audience. Avoid that next time.)*

But I've done it for two years, and while some months there's been a bit of panic as the deadline approached, most of the time I've been pleasantly surprised by how much I enjoyed the opportunity to express myself on a variety of topics.

It's that "pleasant surprise" I want to write about today. It's always nice when things turn out better than we expected them to. I tend to be an optimist, but thoughts of "I can't" or "It's too hard" still creep in occasionally and need to be banished. I think it's easy to be scared of a big opportunity because it's new and different. Because we think we might not be able to handle it. Because it takes us out of our comfort zone.

But you know what? Most of the time, you're more capable than you think you are. Remember: You're a successful professional with skills and knowledge that you've acquired during your career. All you need is a nudge to get you started.

In my family, we sometimes call it "throwing your hat over the fence." Say you're on one side of the fence, and where you really want to be is on the other side. (Not because the grass is greener there... that's a different metaphor.) But you're not sure how to get over the obstacle in your way. So you throw your hat over the fence. Now you *have* to figure out how to cross the fence, or you'll never get your hat back!

So go for it. Apply for that job where you have some, but not all, of the listed qualifications. Volunteer for the assignment that you're not sure you have the skills for now, but that you know you want to acquire. Say yes when the boss asks you to give a presentation to your company or industry leadership.

Once you've got your maybe-scary-but-probably-great opportunity in hand, take a deep breath and remember you're not alone. You have a whole network of friends, colleagues, and—of course—your AUGI community that you can ask for advice and feedback.

Which brings me back to where I started... my place here at AUGI. It has changed several times over the years, and it's about to change again. As strange as it was to start writing these letters, it's almost as strange to stop! Yes, this will be my last letter to you as President. Kimberly Fuhrman will be taking over in January, and I'm confident that she'll be a great leader for this community in 2019 and beyond. Look for her first letter to you in this space in the new year!

Thank you all for making this such a helpful and welcoming community, both in 2003 and today. I may be leaving office, but I'm not going far. I hope to encounter many of you online or in person as we all continue to share our knowledge and advance our skills.

See you on the other side of the fence!

Kate Morrical  
AUGI President

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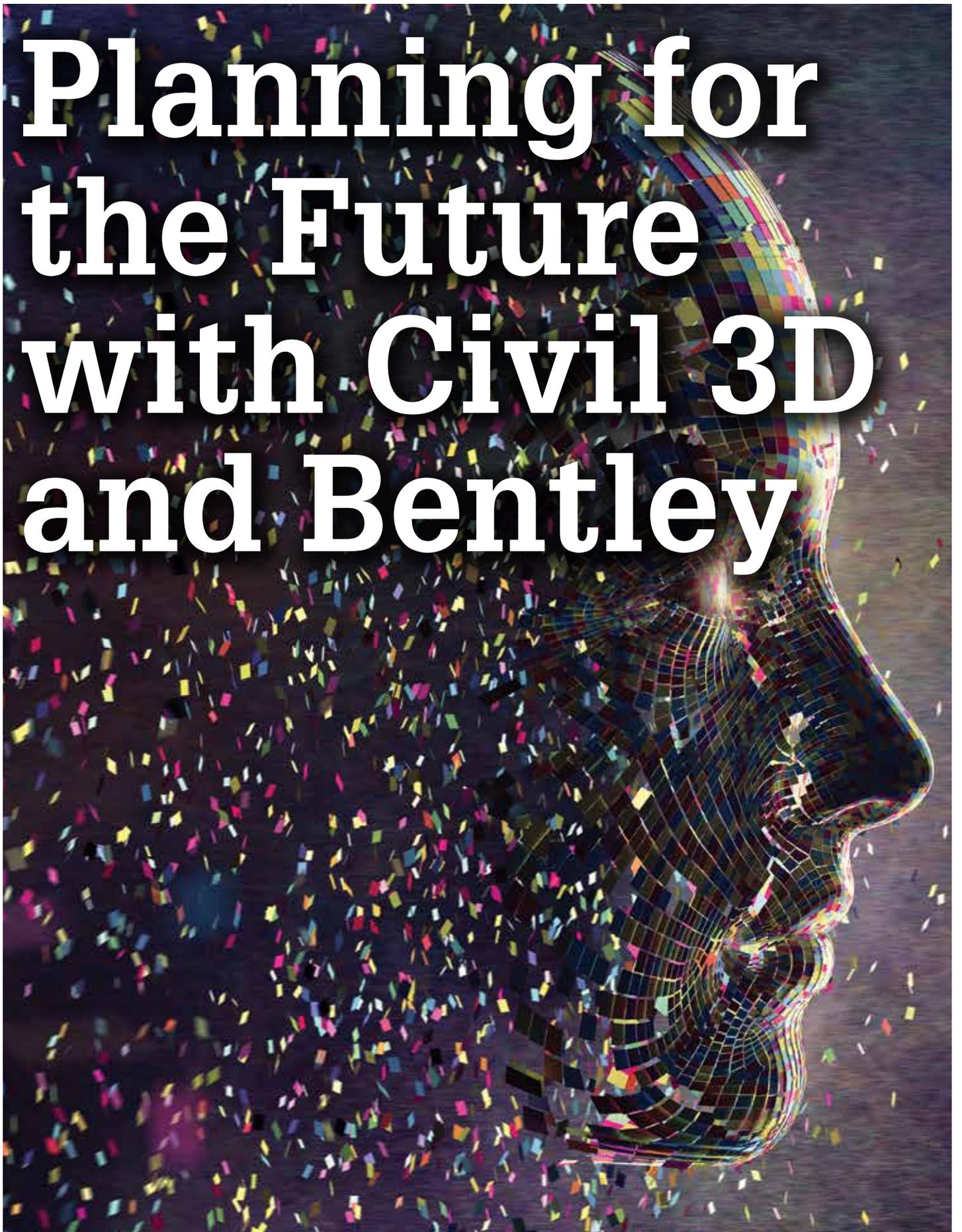
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# Planning for the Future with Civil 3D and Bentley



 One way I might describe the partnership between Autodesk and Bentley is a quote from Ryunosuke Satoro, a Japanese writer during the Taisho period (1912 to 1926): “Individually, we are one drop. Together, we are an ocean.” At this moment in time, Civil 3D® is the vessel we have to navigate this pending ocean.

There is immense potential as the two companies combine their talent and research. Autodesk and Bentley took very different approaches to solving many different problems, and both achieved a decent level of success. By combining their resources, they compile decades of knowledge from fielding support and assistance to users in public, military, private, and international sectors around the world.

Additionally, both companies had the foresight to develop API systems for private developers, CAD managers, and users to customize workflows. As their agreement aims to give us the ability to combine workflows using their different programs along with these API systems, we should be able to combine resources and complete complex tasks more quickly. All companies in the

AEC industry will be forced to consider the possibility of increased production as Autodesk and Bentley work together to provide file compatibility between their different programs. I imagine those working with shapefiles will be excited to treat shapefiles like dwg files (xrefing, freezing layers, etc.) or labeling entities just as we do pipes and structures.

“If one does not know which port one is sailing, no wind is favorable” – Seneca

To sail this ocean we’ll have to weather the storms we can’t avoid, and avoid the storms we can’t weather. If Civil 3D is to be our ship, then we must learn the tools we have today to understand the tools that will evolve tomorrow. So for this article, I’d like to present a few of the features available to us as Civil 3D users working with ESRI file formats today.

## MULTICLASS SHAPEFILES

The “mapexport” command allows us to export our files in a variety of formats useful with Bentley products such as ArcMap. Many users are familiar with it. Lesser known is the multiclass shapefile export option labeled number 1 (see Figure 1).

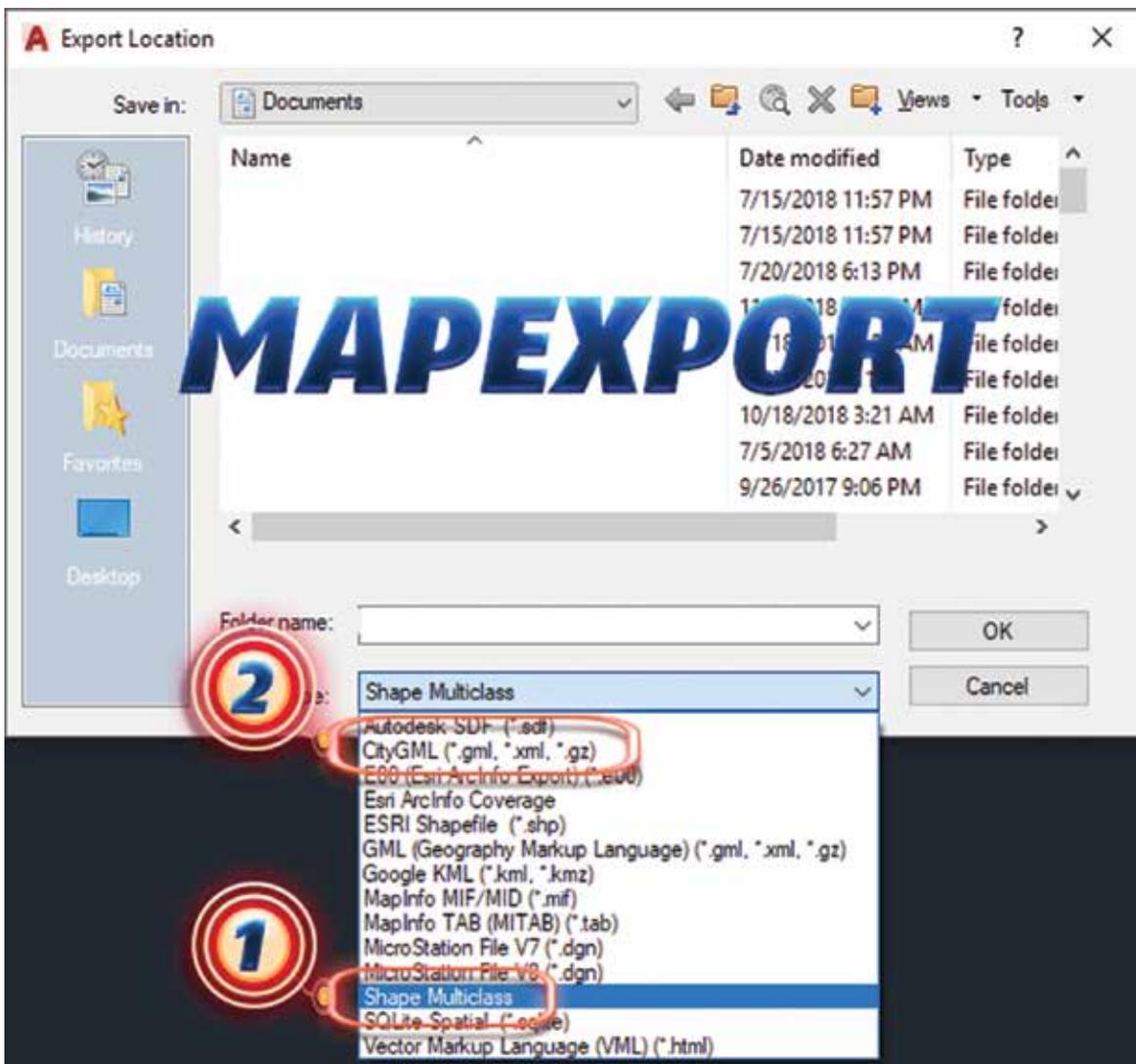


Figure 1: Mapexport

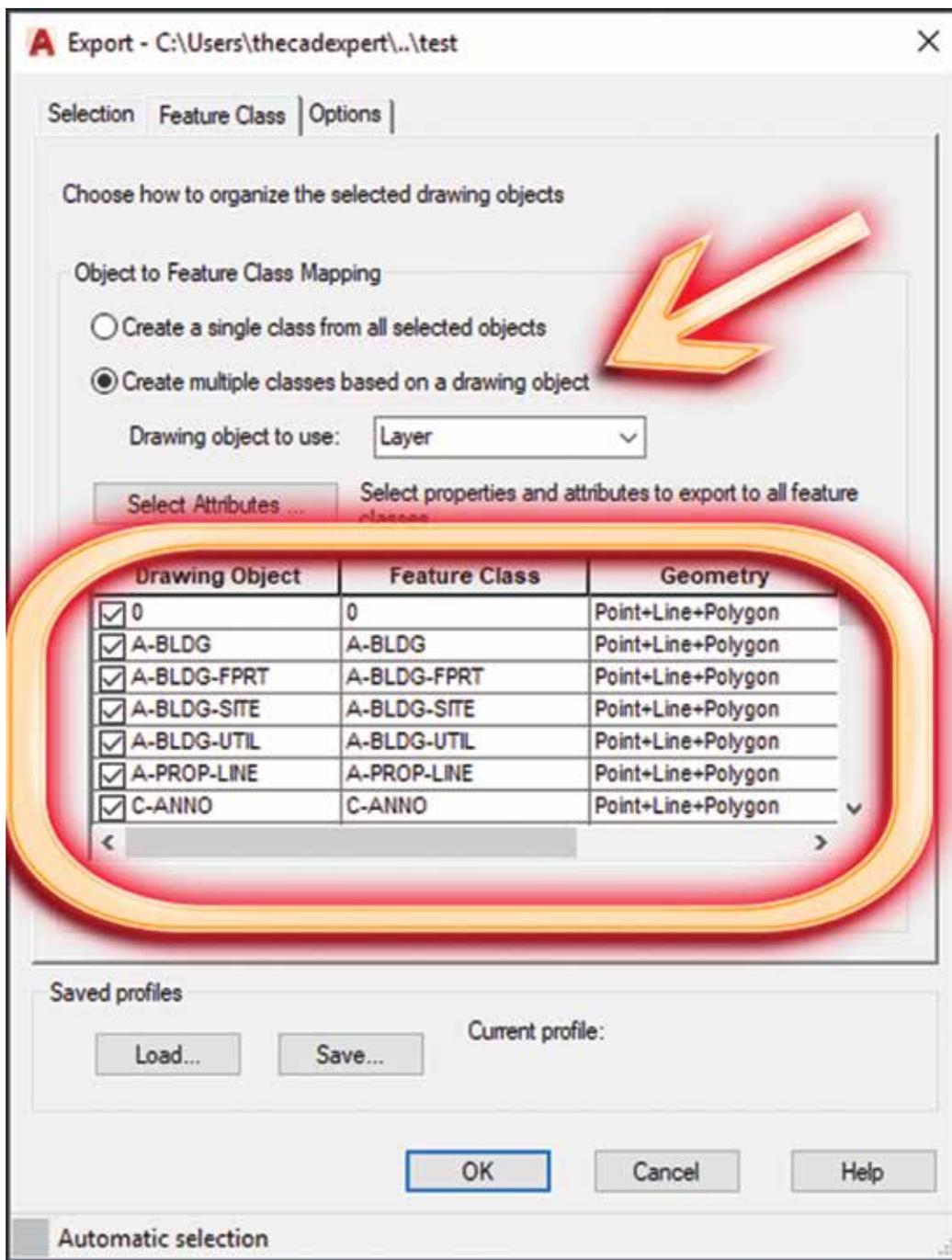


Figure 2: Export options

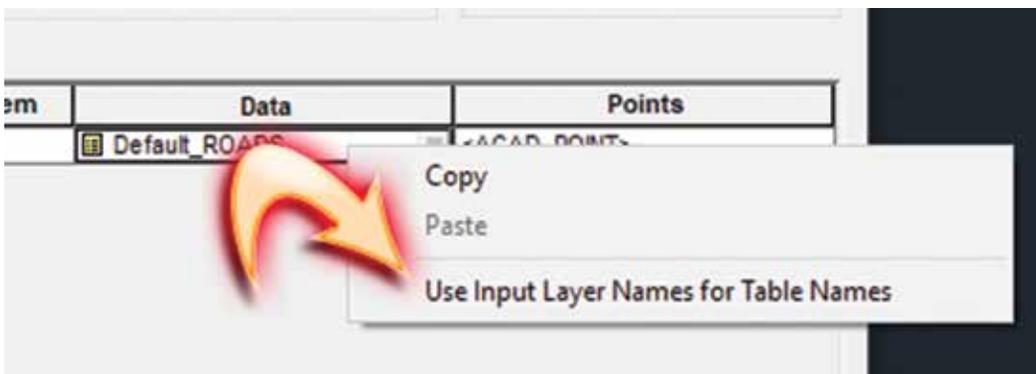


Figure 3: Input options

While typically restrained to exporting individual entities one at a time (such as polygons or text) with other file formats, the multiclass file format allows us to combine all our features into a single export. See Figure 2 for an example of some of the options available to us.

## LABELING IMPORTED SHAPEFILES

Users typically rely on the “mapimport” command to import ESRI shapefiles. Attached to these shapefiles is information stored in the database associated with it. For example, if we were to import the national highway system, then checked the properties of one of the lines representing the roadway, it would contain information such as the speed limit and road name. Populating our CAD files with labels containing this information requires a few extra steps, though.

First, when importing shapefiles using the “mapimport” command, right-click under the Data section displayed in Figure 3 and choose the “Use Input Layer Names for Table Names” option.

After that, we need to define a label template by switching Civil 3D to the Planning and Analysis workspace and navigating to the Annotate ribbon. On this ribbon, we find the “Define Template” command. This opens the “Define Annotation Template” dialog box, where we choose to create a new one as displayed in Figure 4.

This will take us into the block editor. Once in the block editor type the “mapanntext” command. This command allows us to create an attribute that will represent the data we wish to label. See Figure 5 for example.

Be sure to place the annotation text at or near the 0,0,0 coordinate. This will ensure that for whatever object you select to label, the text

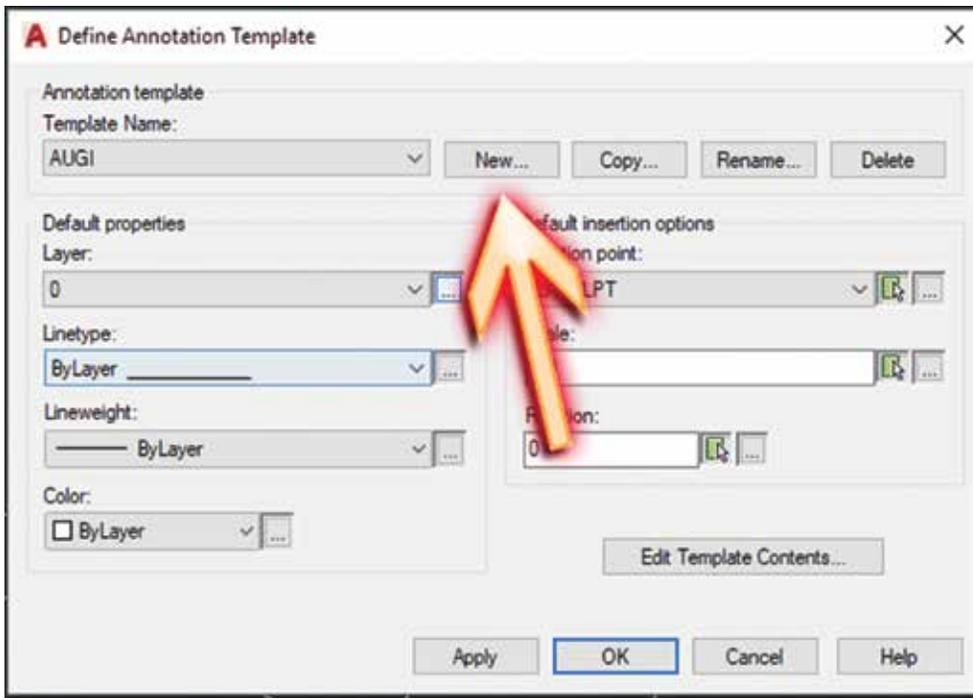


Figure 4: Define Annotation Template

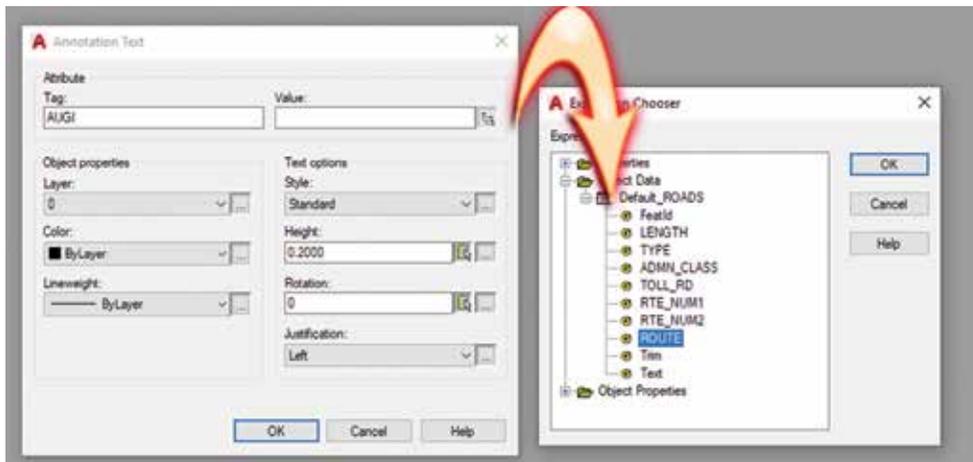


Figure 5: Annotation Text

will be centered exactly on that object (just like a block's insertion point when inserting a typical block). Once we've added the annotation text representing the data we want to label, we can close the block editor (select Yes to save edits). The last step is to simply label our objects by selecting the Annotate tab on our ribbon, the insert command, selecting the annotation template we created, and finally selecting our objects. See Figure 6 for clarification.

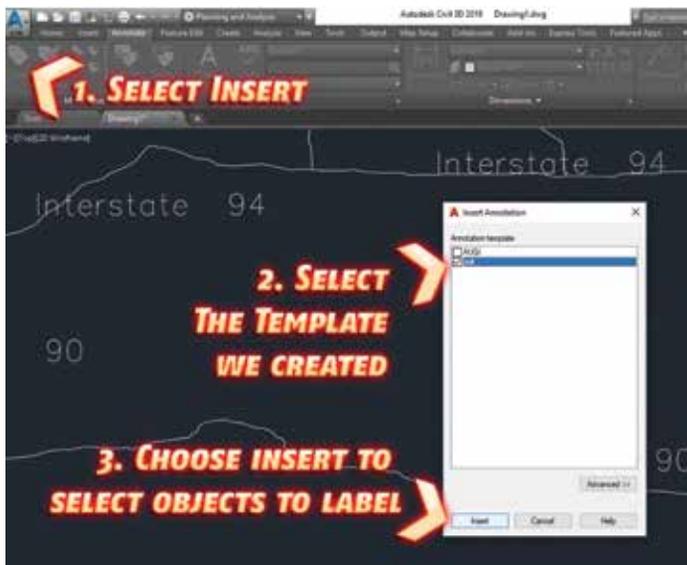
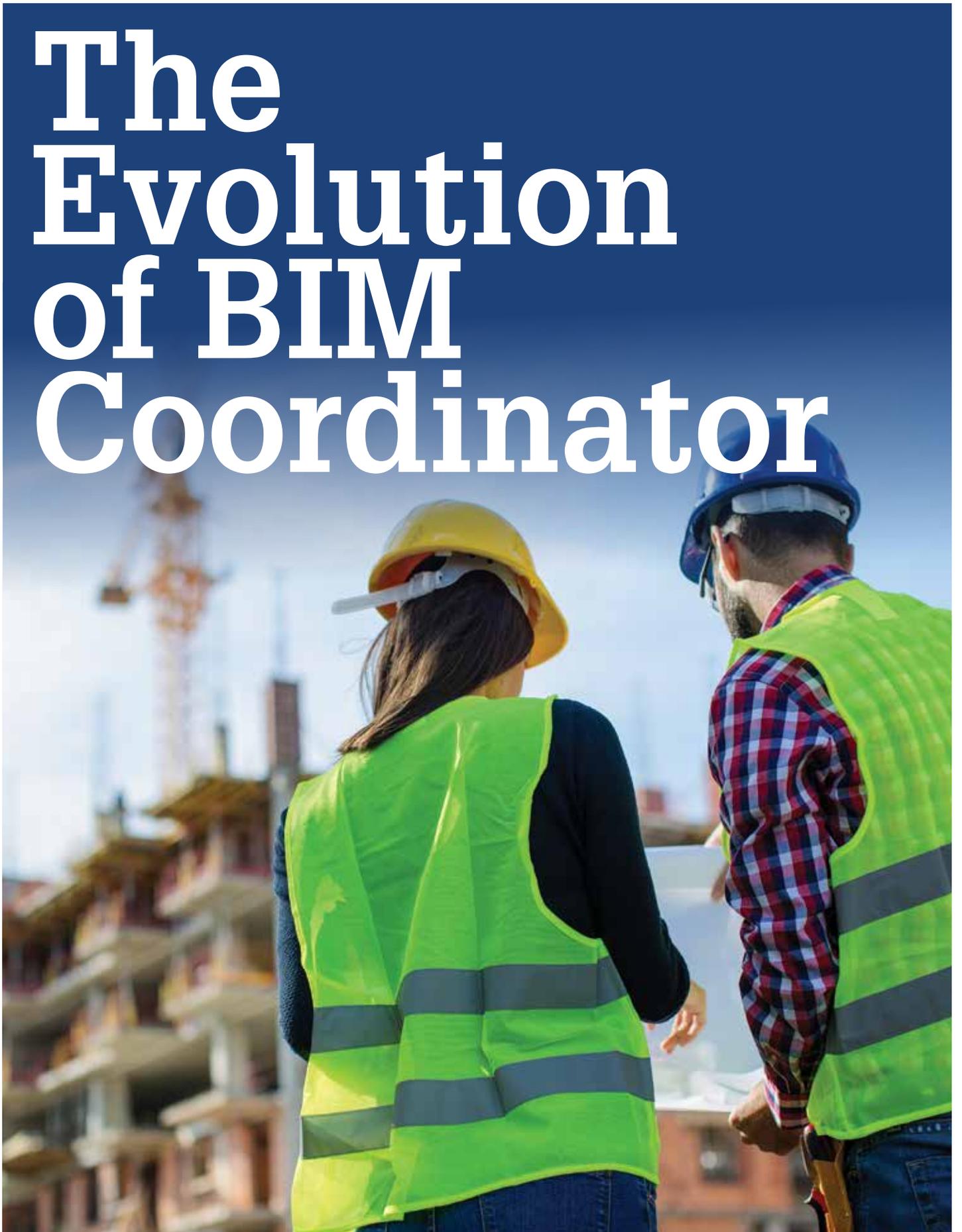


Figure 6: Insert Annotation



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# The Evolution of BIM Coordinator



I have been in this industry for more than 30 years and I have a real passion for standards, production staff, and efficiencies. I had the honor of teaching at Autodesk University this year on the topic of being a BIM Coordinator. This month's topic for *AUGIWorld* is industry insights and I thought, what a great opportunity to give some insight on the current and future position of the BIM Coordinator.

## WHAT DOES A BIM COORDINATOR DO?

This is a loaded question, is it not? If you work for a single discipline firm of 50 people or less, your role is probably more clearly defined than if you work for a 1,000-person multidisciplinary firm. We can list some of the basics, which include:

- Develop a BIM Execution Plan
- Project setup and develop workflows based on deliverable
- Manage the project data
- Communicate deliverables, Standard Operating Procedures (SOPs), and project standards
- Prepare project-specific training documents
- Provide technical support to the project team
- Develop project-related content
- Hold clash detection/coordination meetings
- Be part of the production team as needed

## FOCUS ON YOUR SKILLSET



Figure 1

A person who was once a CAD Manager does not necessarily make that person a good BIM Coordinator. The role is much more, and the future of this role will demand more. Even though a strong technical skillset is a must, there are other skills that are essential and cannot be overlooked. Some of these skills include:

- Communication
- Master presenter skills
- Sales skills
- Data analytical skills
- Job site skills
- VR/AR and mixed-reality knowledge

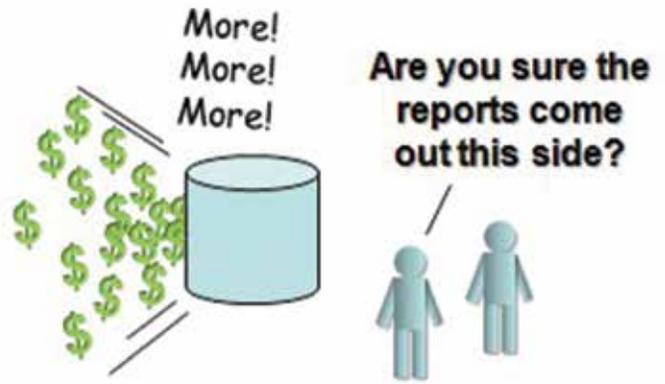


Figure 2

Future BIM Coordinators need to be well educated on how their firms' designs are executed in the field. If they are not, it will be obvious when they hold clash meetings or do AR field visits and presentations.

## TYPICAL ROADBLOCKS

The larger and more diverse your firm is the more roadblocks you will face. The key is to stay focused on your mission and end goal, be patient, and see it through to the end. What are some of these roadblocks that prevent forward progress?

- Project managers' understanding of the BIM Coordinator role
- Engineers/architects with varying opinions on the deliverables you are trying to manage
- Company leadership awareness and support
- Production staff skillset and adherence to standards

The key with any roadblock or setback is to see it as an opportunity. I always like to look at a project deliverable and then reverse engineer it to develop the most efficient project execution plan with the end in mind. The same is true with a roadblock or setback in your mission. Based on your end goal or outcome, take the steps and plant the seeds needed to get there. Let's look at some of these issues I listed above.

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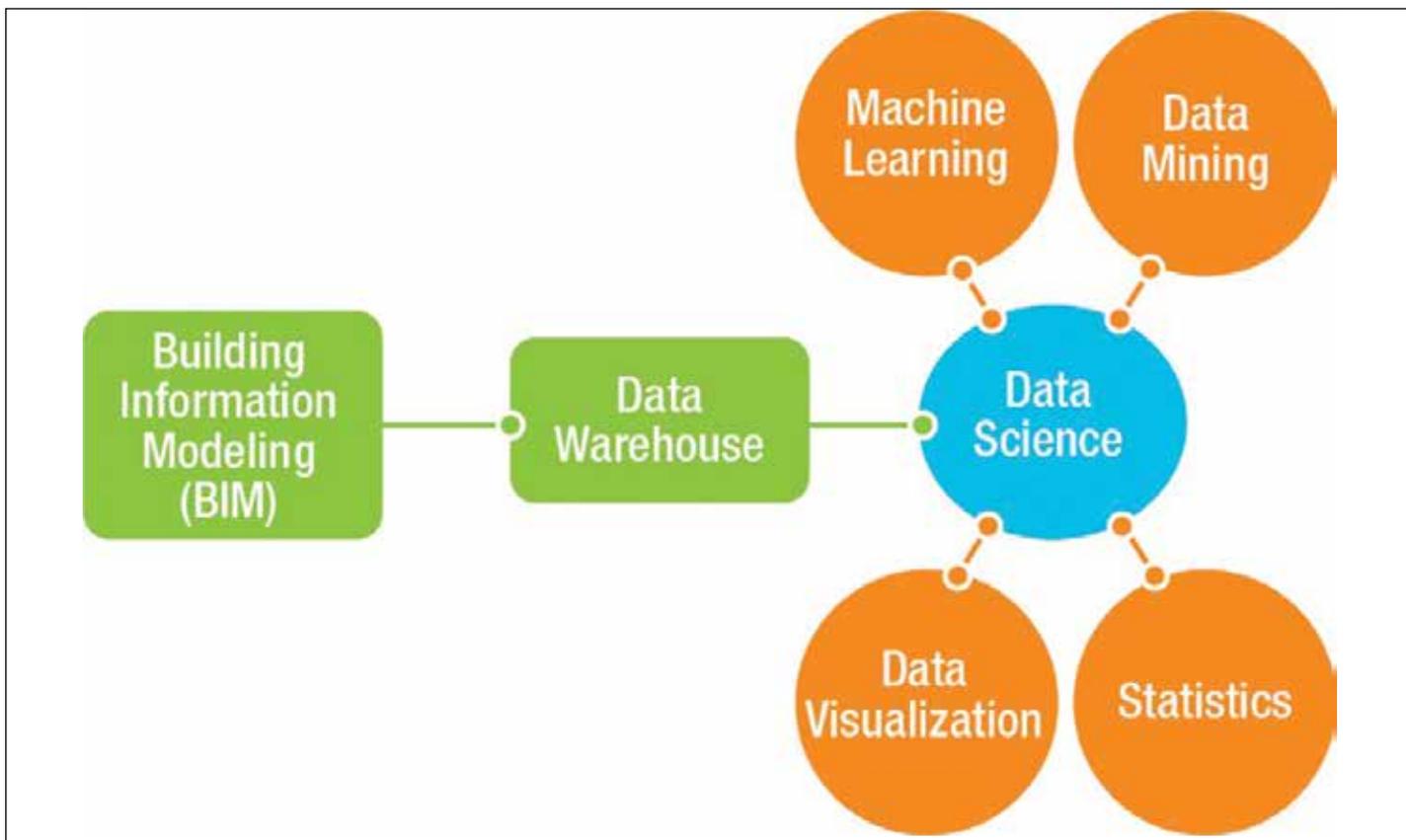


Figure 3: Budget mindset

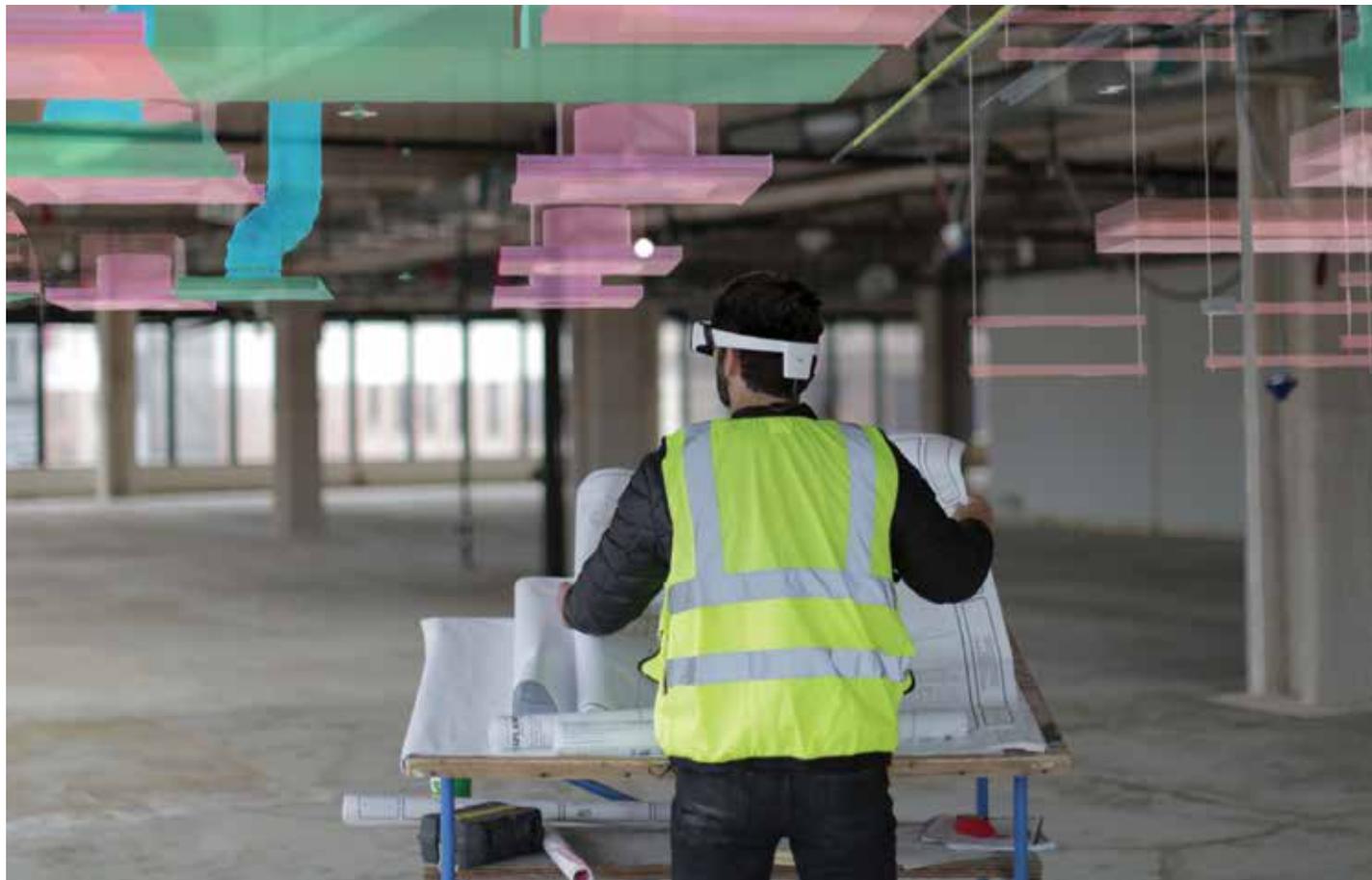


Figure 4: Data analytics for project predictability

**Project Managers' Understanding of the BIM Coordinator Role**

A project manager has an obligation to the firm to execute a job and remain profitable. The project managers in a firm are the primary people that need to understand everyone's role on a project so they can pull the right team together for project execution. However, sometimes project managers try to do too much, undersell a project not understanding the full scope of work, do not fully understand the effort needed, or see the role of a BIM Coordinator as overhead they cannot afford on their project.

As a BIM Coordinator it is your job to put on your salesperson hat and not only sell yourself, but also sell the necessity of your role. The easy part should be finding cases where having a full-time BIM Coordinator on a job would have prevented issues that happened. Schedule meetings with the PMs one on one and get their buy-in on the importance of your role. Never let up on these meetings—you need to make it a normal thought for a BIM Coordinator to be applied to projects.

**Engineers/Architects with Varying Opinions on the Deliverables You Are Trying to Manage**

This one could be a long-term effort on your part. Leadership of the firm must assign discipline-specific subject matter experts (SMEs). SMEs need to guide all the professionals in branding the deliverables from their point of view. For example: If you have four or five mechanical engineers in a firm, one of them needs to be trusted to guide the firm on how a set of mechanical engineering plans should look and what is to be included. This SME must also support your role on a project if you get pushback from production or the PMs when it conflicts with the office branding/standard they helped to establish.

**Production Staff Skillset and Adherence to Standards**

Production staff is often under pressure to meet deadlines, which will make them fall back into habits that are comfortable to them. Often you will never know if there are issues because the project looks good on paper. But when you do a deep dive on the QC side, you start to uncover issues.

As a BIM Coordinator, you should also develop office and project specific SOPs. Often, shortcuts are taken because of a lack of understanding with the software tools. As a BIM Coordinator it is your job to have SOPs available to the team—do lunch and learns on project-specific tasks, always trying to stay one step ahead on the project. Anticipate issues as early on as possible. For example, you know there will be point cloud data being used on the project. Where will it be stored? How will it be used? Do the users have any experience with point cloud data? And so on. Ask yourself these questions constantly so you are better prepared.

**THE FUTURE OF A BIM COORDINATOR**

The future projects will be more digital and less paper. The future projects could be delivered as live interactive websites in the cloud from design through operations and eventually to decommissioning. With AI, IOT, VR, AR, and mixed-reality technology rapidly being developed, the role of the BIM Coordinator will change. Job site knowledge, data analytics, and presentation

skills will need to be upgraded to remain relevant on a project or to your firm.

**DEVELOP AN INFRASTRUCTURE FOR SUCCESS**

- Have a system internally for continuing education of the production staff
- Have monthly meetings with the project managers to discuss your role and to get project feedback
- Schedule time in the field to understand your firm's project from a construction manager's point of view
- Have internal user groups and participate in group discussions outside of your firm
- Get sales and communication training
- Build relationships at all levels in your firm
- Understand data and the tools available to easily manipulate all project data
- Always hold "lessons learned" meetings on projects and develop your SOPs based on these meetings
- Data, data, data



*Philip Russo has 32 years of national experience with CAD and BIM implementations, training, and consulting. He began with AutoCAD version 2.5 in 1986. Through the years he has held positions in the CAD industry as CAD Draftsmen, CAD Manager, Sr. Applications Engineer, and he is a Certified Autodesk instructor. Recently, Philip's focus has been on the implementation of standard practices for the Revit platform. He Russo has been a national speaker at Autodesk University, BIM workshops and local user groups. Mr. Russo writes articles for AUGIWorld Magazine, also held the position of Revit Structure Content Manager, and was also elected to the board of directors for AUGI (Autodesk user Groups International). As the Corporate BIM Applications Manager with O'Brien & Gere, Philip is currently responsible for the delivery of technical solutions, workflow, support, and training for major complex and/or diverse projects. He is also responsible for providing project support, coordination, and workflow suggestions. He communicates with clients and specific project teams, and may also direct and instruct the technical staff during a project's progression. Philip can be reached at phil.russo@obg.com*



# Six Questions You Don't Want to Hear from Your Boss

**A**s a Tech Manager, you still report to someone else. The person you report to may be a Manager, Director, VP, or even the CEO. They have desires and expectations. They have due dates and projects. Like you, they do not want any headaches, more troubles, or disasters—especially from the people who report to them. Even if you are not a Tech Manager, you don't want to hear your boss asking these six questions.

**Boss asks: Did you know about this?**

**Boss is thinking: You are out of touch with what is happening.**

As a manager of people and technology, you should know what is happening with everything you oversee—staff, software, projects, everything. You need to be aware of the status and progress of everything that is going on. If you are caught off guard and unaware, it seems like you are out of touch. This is not good. Sometimes there will be things that your staff or project team members do not report on. They do not tell you everything. They may not have time (they are fighting the fire) or they may not have the desire (they are behind and they know it).

For things under your purview, you need to be keeping track of all you oversee at some level and be asking key questions, which include: What progress have we made? What is our target finish date? Is the project on track? Are we having troubles? Do you have everything you need to complete the work?

For things not under your management such as projects and tech use by other departments, you need to be aware of changes that might impact you. Let's take accounting as an example. They pay the bills, but they do not order the software. Are you reviewing the invoices that come in for technology? You may have seen the quote, worked with the vendor for installs, and more, but are you seeing the final invoice? You need to verify that your firm is paying for what you get and getting what you paid for. Monthly billings that are recurring also need to be monitored. If you subscribe to software, have accounting send you copies of the billing so that you can verify the subscription counts.

**Boss asks: Did you even talk to them?**

**Boss is thinking: You are not communicating on this and other things.**

Communication is key to staying in touch and up-to-date. When things happen, the first thing you should be doing is talking to others. Phone conversations are preferred, digital tools are acceptable. Your manager expects you to stay in touch and make connections. Keep the conversations flowing and tap into as many teams as you can. I have covered this many times in past articles.

**Boss asks: Why aren't we doing that?**

**Boss is thinking: We are falling behind and you are not keeping us up-to-date.**

Adopting new software and processes is a daunting task. Falling behind is always a concern. When your boss or your boss's boss hears about what other firms are doing, they get concerned. Your goal should be that other firms are trying to keep up with yours.

When the boss asks this question and you start squirming in your seat because you are now in the spotlight, keep it in perspective. No firm can be ahead in every category, but you can strive for that. You should ask some questions. When I hear of others making progress, I tend to ask direct questions: "Are they doing that on every project, every office, every client?" "What percentage of their projects are using XYZ every day?" Most of the time firms are putting their best foot forward and their cutting-edge efforts, but that is far from the day-to-day grind of real project work. You could ask your manager if others mentioned the advanced tech that you are doing. Did your manager tell them about your new software or project delivery method? This does two things: reminds your manager that you are ahead of the curve in many areas and it reminds your manager to brag about it.

But don't avoid the point. They want to stay ahead of the competition. Make sure you remind your manager of the areas where your firm leads the pack.

**Boss asks: What were you thinking?**

**Boss is thinking: You are not thinking or planning.**

If the boss thinks that you are not thinking, it is a red flag. They expect thoughtful planning. They expect you to ponder the outcome of your plans and have backup plans. This question usually comes after something has gone wrong with unexpected consequences. Your planning was not good enough to cover this contingency.

If the unexpected outcome was unavoidable, just say so. If your plans did not take into account this eventuality, just say so. Be straightforward, apologize, and take control of the clean-up efforts. Take ownership.

**Boss asks: Are you done yet?**

**Boss is thinking: You are not moving fast enough.**

Technology moves fast and so must tech managers. Some think that we are not moving fast enough. They may not understand all the issues surrounding software purchasing, configuration, licensing, deployment, and customization. We need to do our

homework and due diligence prior to rollouts. But these are our problems and not theirs. Bosses may have no clue concerning what it takes to make things happen, unless we tell them what needs to be done.

Explain the complicated issues that impact technology and project completion. You have plans and you are executing, but things take time. Make sure your manager knows what your timelines are and then accelerate them if you can. Let your manager know your other priorities that others are waiting for, also. Can you improve on your research speeds? Can you reduce configuration time? See what can be done to deliver sooner.

**Boss asks: Why does this keep happening?**

**Boss is thinking: Fix this, and make sure it does not break again.**

Repeat problems are really annoying. They bother me and I am sure they bother you. They bother your boss, too. When you have recurring issues that fall into the same bucket of troubles, you need to do some deeper thinking and proactively move toward repairs or replacement. You can explain that things are impacted by cost cutting, old hardware, etc., but do not stop there. You were hired to make things work, so knuckle down and see what can be done. Put in alerts and safeguards so you find out first if something breaks. Take the time to make it right. We all have hundreds of things on our To Do list, but recurring issues should jump to the top of the list.

## REHEARSE YOUR ANSWERS

When the boss comes to your office and asks any of these six questions, you need to be ready with an answer. Think over these questions and how you would respond. Are you planning your upgrades and deployments? Are you communicating well? Are you making advances that put your firm in the lead? Think hard on what to say to your boss. Be respectful and accountable. Then work hard so your boss won't be asking these questions at all.



*Mark Kiker has more than 25 years of hands-on experience with technology. He is fully versed in every area of management from deployment planning, installation, and configuration to training and strategic planning. As an internationally known speaker and writer, he is a returning speaker at Autodesk University since 1996. Mark is currently serving as Director of IT for SIATech, a non-profit public charter high school focused on dropout recovery. He maintains two blog sites, [www.caddmanager.com](http://www.caddmanager.com) and [www.bimmanager.com](http://www.bimmanager.com).*

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# Restructuring for BIM Success



*This article expands on concepts presented in the November 2018 issue of AUGIWorld—this time a more thorough offering in line with the needs of large firms, though it also applies to small and medium firms. Read it from a perspective of change—that doing “what we always*

*have done” is an untenable position. If you think (for instance) that recreating all your existing AutoCAD, Archicad, or whatever details in Revit is a time drain or waste, you are in need of a new perspective shift... the waste of time was not doing this earlier ;)*

*So share this with those who can affect positive change so we can actually collaborate with all stakeholders for a more profitable and efficient A/E/C.*

*The future is here, so either get on or “we drink your milkshake.” Jz*

**B**IM projects cannot and do not run like traditional CAD projects; that is simply a fact in A/E/C.

Overhauling the entire way we produce projects may not seem obvious at first, but working in BIM makes change necessary and a good strategy for process restructuring is also necessary to realize the efficiency and success we all desire. You know: The promise of BIM. Not to mention mitigate unnecessary frustration.

Managers and users alike will benefit from adopting new methods and practices to create better BIM projects into the future. We will explore restructuring practices, concepts, workflows, technologies, and useful examples of tools used... that can obviously be tailored to your firm’s specific needs.

Restructuring for BIM success is the basis of re-envisioning your firm, practice area, and team goals and outcomes. This class endeavors to help you create an effective transition to full BIM.

By clearly defining, setting, and managing expectations, responsibilities, input and output (for both internal and external team use), the true power of BIM and technology can be realized in A/E/C.

Creating an environment of empowerment and responsibility is fundamental in allowing every BIM goal to be met and then exceeded.

## **A/E/C FIRMS NEED TO LOOK BEYOND CAD PROCESSES AND DEFINE NEW BIM PROCESSES**

**Transitions: Assessment, planning, and communication are key.**

The transition into BIM is a foregone conclusion for A/E/C firms large and small. However, once the decision to implement BIM is made, firms are left with new software and old, outmoded processes. Creating and developing new BIM processes are fundamental for successful transition.

**CAD processes do not require Architectural practices be good. BIM processes do require that Architectural practices be good.**

Without teamwork, communication, and defined processes, firms cannot realize the full benefits of BIM. Ask this question: “Do we want to flounder and waste time and money allowing the lowest common denominator to drive our business model and project success? I thought not. But this is exactly what will happen if teams are given BIM authoring tools and no accompanying processes to follow.

When confronted, people will naturally revert to what is comfortable for them. Prior experiences with CAD (read as 2D or 3D drafting) will, I dare say, in every case, lead them down the wrong path to aforementioned waste and frustration, worse mistakes, and rework.

## PROCESS TRANSFORMATION

BIM Process Management strategies are required to transition from CAD based processes. The new BIM processes and strategies will benefit teams by providing them a clean, new future. We must do this to allow the inefficient past to remain the past.

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. This means that, for instance, reading (or re-reading) the *Architect’s Handbook of Professional Practice*<sup>1</sup> and the *AIA Best Practices*<sup>2</sup> is in order once again.

**In BIM, to be a success you must be proactive, not reactive.**

In an A/E/C team, each person has specific tasks and responsibilities. When everyone is performing their planned tasks, it is smooth sailing toward project completion. But if one team member fails to deliver—say, a designer doesn’t meet an important, agreed-upon deadline—then the team can expect (yes, expect) cascading, negative, and costly impacts. This is not necessarily a failing of that designer alone—these scenarios are ultimately a failing of management.

Allowing teams and team components to work in a vacuum or silo is a sure way to set BIM projects spinning out of control. CAD projects were easy places to hide these mismanagement scenarios, by allowing a bunch of users to be “thrown” at the project at the 11th hour. In BIM, to be a success you must be much more proactive than reactive. If we do not plan for success, we are inviting failure.

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

<sup>1</sup>[http://info.aia.org/knowledgebase/Using\\_AIA\\_Contract\\_Documents\\_in\\_architectural\\_practice.htm](http://info.aia.org/knowledgebase/Using_AIA_Contract_Documents_in_architectural_practice.htm)

<sup>2</sup><http://www.aia.org/practicing/bestpractices/index.htm>

**LEADERSHIP, AS WELL AS THE DESIGN/PRODUCTION STAFFS, MUST BE WILLING TO EMBRACE NEW WAYS OF PRODUCTION, COORDINATION, AND PRESENTATION.**

outside forces acting against our plans, so flexibility is necessary as well, but with effective communication, active management, and coordinated efforts, the promise of BIM can be achieved.

Many of the workflows typically employed for CAD are now known to be inefficient. One that masks its own inefficiency is the “throw-extra-staff-at-it” workflow, as mentioned above.

On BIM projects, inefficiency becomes a glaring indicator that effective management processes were not followed, or worse, that they don’t really exist.

Throwing extra staff at BIM production without the new team members understanding the project can be dicey (read as “a debacle”). The result can be an enormous amount of time spent fixing all-too-avoidable mistakes.

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 project schedules, time, and money. Rigorous processes can keep that problem in check.

If there are struggles or failures on BIM projects, these need to be captured and documented so they can be used to benefit future projects, not simply hidden away and ignored.

## TRANSITIONING TO BIM

**Q: How does a firm become successful at transforming its processes for BIM implementation?**

**A: Know what was, what is, and what will be.**

Transitioning to BIM must begin by being clear about what currently works and what does not in the organizational production practices. Leadership, as well as the design/production staffs, must be willing to embrace new ways of production, coordination, and presentation. The creation of project guidelines and related systems designed to help teams manage project objectives and overall firm goals is vital. What to focus on is important, but doing so at the proper time is equally important.

# Revit 2019 – Architecture

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, as well as better looking documents and visualizations.

## THE CAD ADDICTION

BIM can tell a better story than CAD, and after all, that is what A/E/C does: tells stories to one another to get a building constructed.

The shape of a tag never made a firm any more money, but chasing the perfect shape certainly has cost many a firm untold \$\$\$.

People will often say things like “You can’t do that in BIM.” While it is natural for humans to resist change, that mindset needs to be transformed, especially since it is fundamentally incorrect and misguided, if not purely ignorant. 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 and usually, if not always, better. Anyone who claims otherwise is simply unaware of how to do it or they are trying to stall the inevitable, or worse.

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, lack of leadership and oversight, and/or ignorance 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.

Nevertheless, where are all the hand drafters today? They are either using CAD or they are selling insurance (read as “in other lines of work”). CAD may be around in many industries for a long time to come, but in A/E/C, CAD is being replaced by BIM and for many firms, it already has been.

## RESTRUCTURING FOR BIM: THE ASSESSMENT

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.

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To assess personnel, create a 10-question interview that will be given to all staff and managers. Ask 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.

## RESTRUCTURING FOR BIM: THE STORYBOARD

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, 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 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 leadership experience on the kinds of projects your firm produces, then get some.

#### **Not knowing what you do not know can create failure.**

Therefore, it is vital to bring in staff or even consultants if necessary, to help you understand tried-and-true BIM processes.

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 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, because 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.

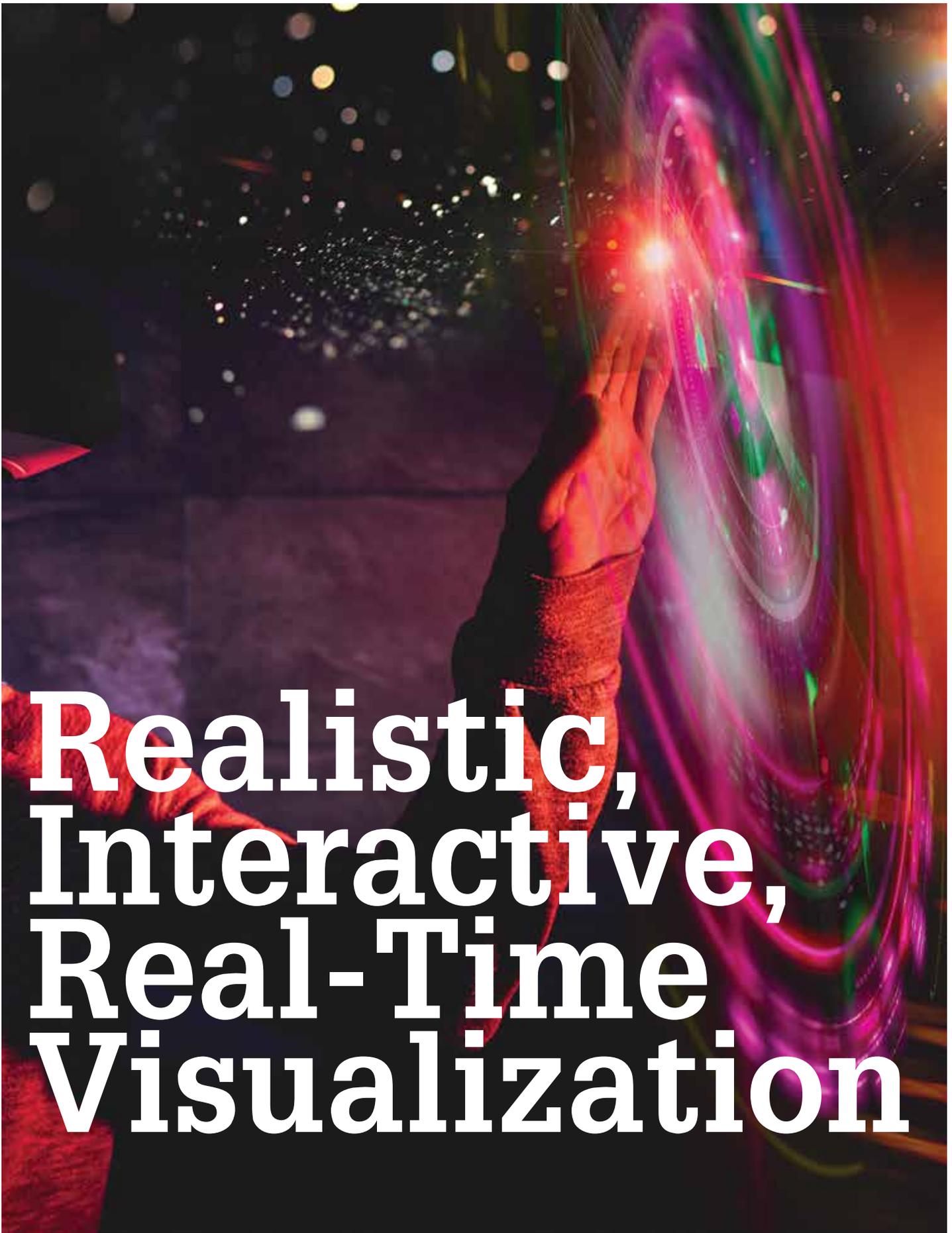
The AIA E202, G203, etc. Building Information Modeling Protocol Exhibits are some of the great starting points for helpful, if not necessary, documents that BIM teams use. Similar types of matrixes can be used to create overall project checklists as well as team-specific plans. Creating a team toolset 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.



#### *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).*



# Realistic, Interactive, Real-Time Visualization

For several years in the visualization industry, 3ds Max® artists were limited to only a few options to present interactive content for multimedia purposes. One of those options was Unreal Engine. Along with many other programs, artists reluctantly added another program they had to learn to present data the way they wanted. Users destroyed their beautifully created VRAY scenes, crushing materials down to standard, and struggled their way into the Unreal software piece by piece, unwrapping and resetting everything one pivot at a time. The process was painful, and costly, which is frankly why most visualization has never really been interactive at all, but images or short video clips instead. Today though, not only do we have the option of using 3ds Max Interactive to present interactive and virtual reality content quickly, but users who have spent years honing their skills with Unreal are receiving one ginormous gift that's sure to impact their bottom line: Datasmith.

For many studios, Datasmith cuts down a four-week function into a matter of hours. It supports more than 20 programs (including 3ds Max, Solidworks, and SketchUp), converting and importing

their data into Unreal Studio non-destructively. This means users can focus on generating interactive experiences without having to deal with reconstructing everything. For visualization experts, one of the most important features is its ability to convert Vray scenes. See Figure 1 for example.

To get started with Datasmith, users need to install the current version of Unreal Studio Beta software through the Epic Games installer as well as the 3ds Max plug-in to export objects to the Unreal Datasmith file format (see Figure 2).

The plug-in for the installer can be downloaded from Unreal Engine's website (SketchUp plug-in is currently available from the same location).

After the engine and plug-in are installed, the steps to export our 3ds Max scenes and import them into Unreal Engine is pretty simple. In 3ds Max, we follow the typical procedure by selecting the File Menu and then the Export option. With the plug-in installed, we see a new option under the Save as Type drop-down menu called Unreal Datasmith (Udatasmith). After selecting a



Figure 1: 3ds Max and Unreal scene

# 3ds Max 2019

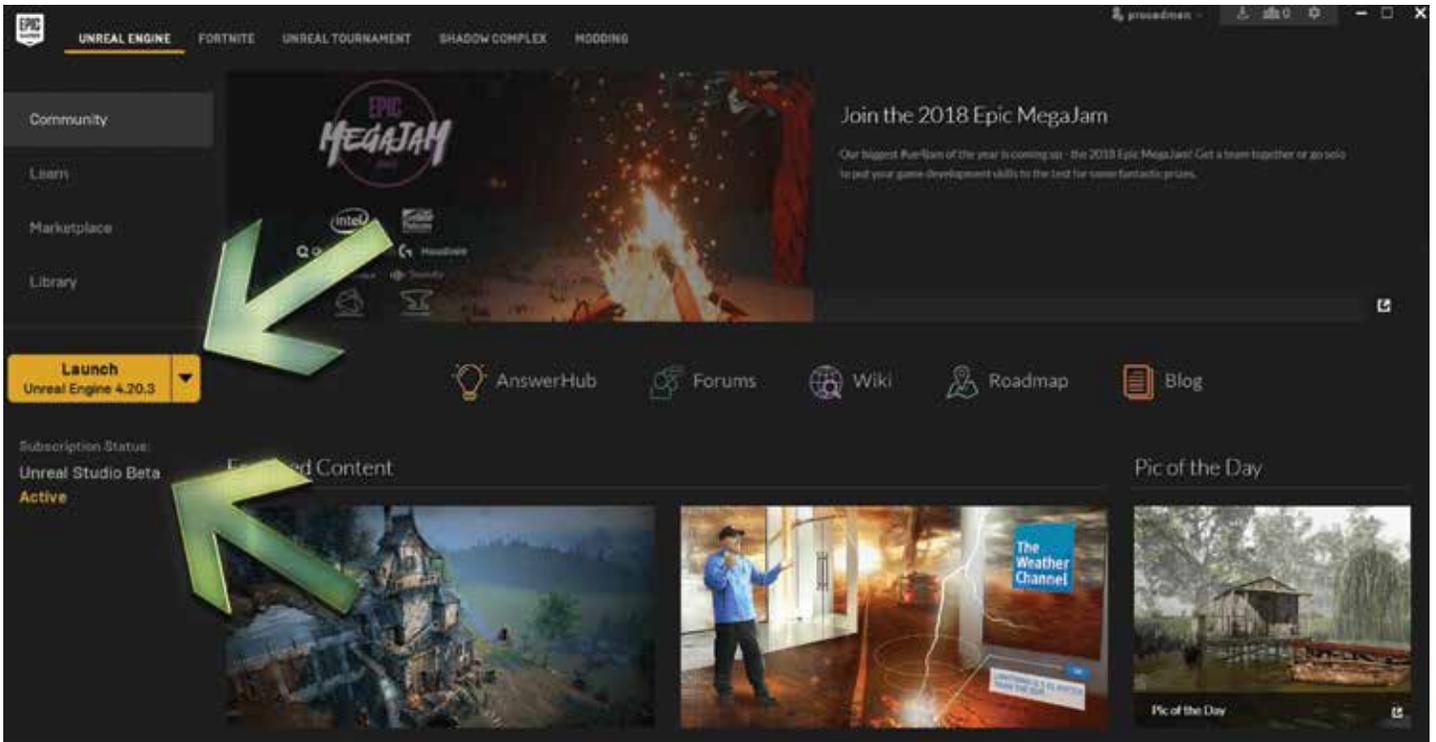


Figure 2: Unreal Engine install

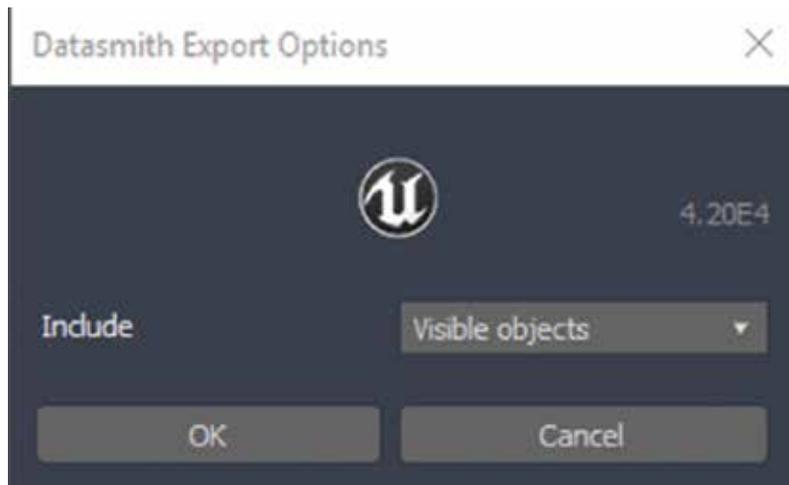


Figure 3: Export options

location to save, the options displayed in Figure 3 will appear to give us the ability to export an entire scene or only the items we have selected.

When the export is complete, close 3ds Max.

Next step is to import the file we created into the Unreal Studio software. Begin by creating a new project. When creating a new project in Unreal Studio, we have the advantage of choosing from Blueprints Unreal, made to assist game developers, or to select a blank slate. The Blueprint options provide preconstructed functions, reducing the work we have to do to accomplish tasks such as creating a virtual reality environment or allowing users to drive around a scene (see Figure 4).

The final step is simply to select the Import Datasmith button shown in Figure 5 and use the power of Unreal Studio to generate the multimedia and interactive experience we desire.



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Figure 4: Blueprints

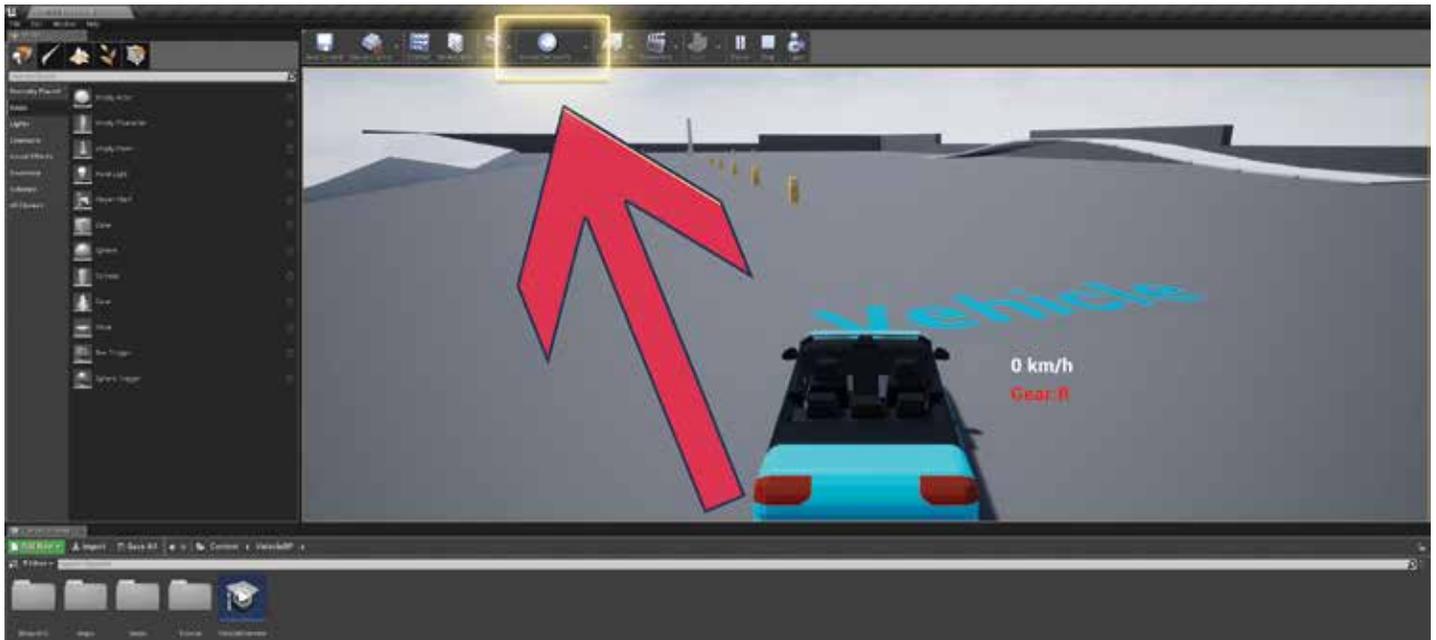
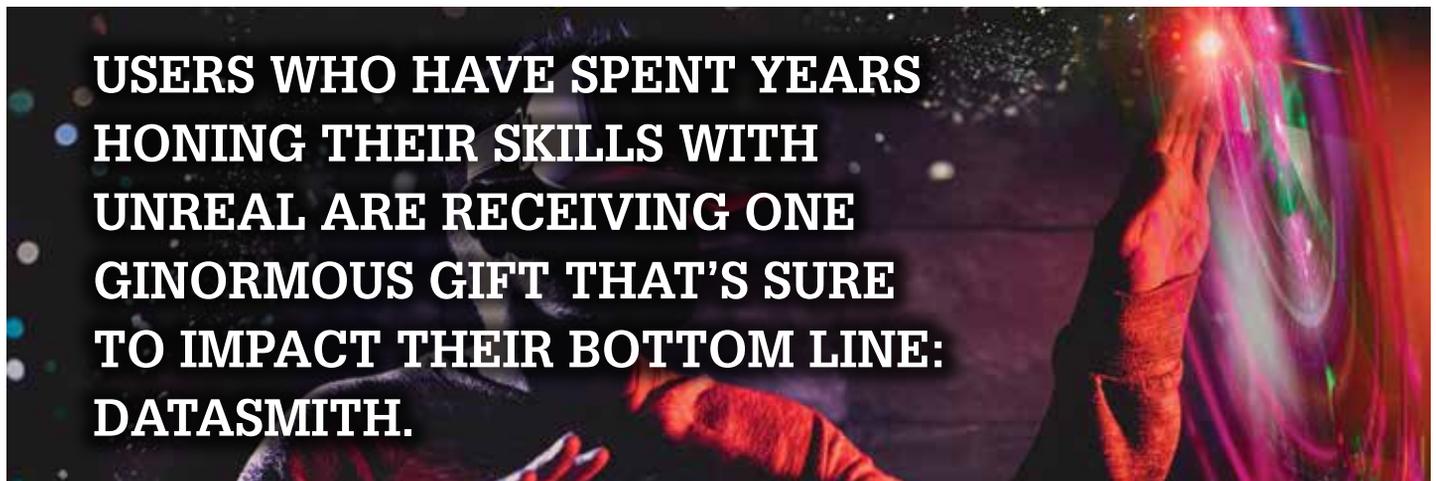
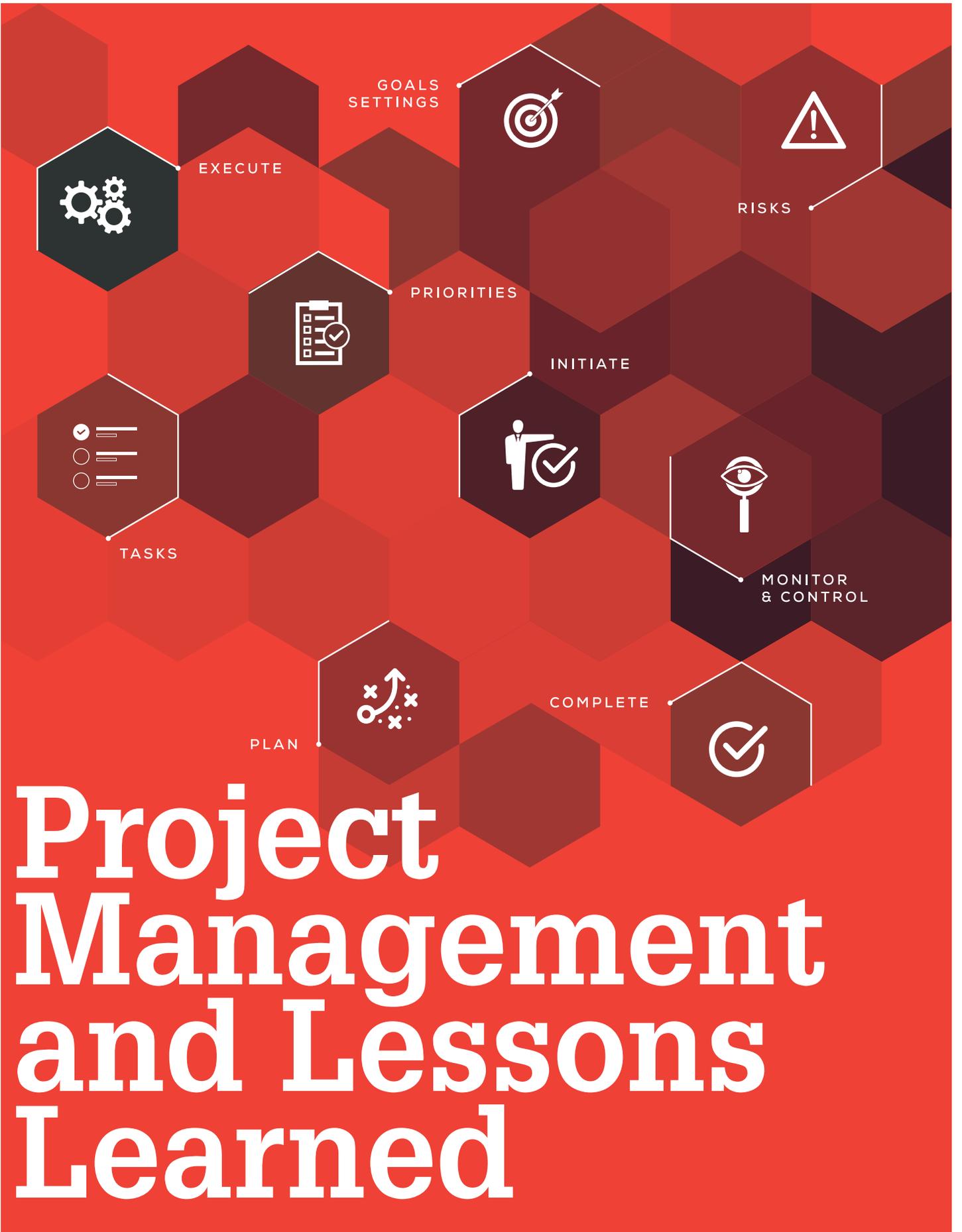


Figure 5: Datasmith file importer





# Project Management and Lessons Learned

**W**ith the new year nearly upon us, there is more to do and more to learn, but are we starting the new year off with the advantage of the knowledge that we gained over the last 11+ months? This year has flown by for many, and even if it hasn't flown by for all of us, it is about to end. So, what did we learn so far that we can apply to make next year even better?

By now, many have started thinking about their New Year's resolutions or at a minimum have outlined or established career and personal goals for what we plan to accomplish in the coming year. A great way to kick things off is to do some reflection on the good and the bad of the last year to determine the changes we need to make in the coming months.

the busy days we experience on a regular basis. Without a record, key points that could benefit us moving forward will likely be missed.

If there is not currently a formal method of tracking Lessons Learned, there are a few ways that this can be addressed for the benefit of our future projects. Figure 1 shows a simple Excel example of a Lessons Learned record database. This is something you can save to your drive or network to reference or share with teammates.

Although this is an Excel sample, many companies have databases on their intranets or SharePoint sites that track the same type of records and are easily searchable.

Project #	When	Issue/Description	Recommendation
12345	DESIGN	Scope of work was not verified with all proper Customer Energy parties, resulting in change orders from the General Contractor.	Make sure all involved parties have reviewed and verified the scope of work for the project before it is taken out to bid.
12346	DESIGN	Plan Review needs to be structured so that deadlines are met in a timely manner and stakeholder sign-offs are received.	Due to unstructured deadlines during the Plan Review which impacts the schedule, the PM should provide a detailed schedule to Plan Review, and stakeholders should be identified prior to plan review. Develop stakeholder sign-off sheet to create accountability.
12346	DESIGN	PEMB building Design time and shipping days are longer than estimated.	To prevent possible schedule/cost impacts, provide more conservative deliverable times.
12348	DESIGN	FM was not involved in proposed equipment room layouts to ensure sufficient clearances for access, maintenance and potential equipment replacement and avoid need for ladders	Involve FM in review of proposed equipment layouts
24567	DESIGN	Design team did not have clear expectations and deliverables during each design phase	Use a completion checklist to identify expected deliverables at the completion of each design phase (Project Definition/Programming, Schematic Design, Design Development, Construction Documents)
24567	DESIGN	BAS contractor did not participate in project meetings, conference calls, or otherwise communicate with the project team. Poor coordination of the BAS contractor's efforts resulted in late and incomplete work.	Involve the BAS/Mon & Ctl contractor during the design phase and require routine participation at project meetings, the submittal process, scheduling, and commissioning.

Figure 1

Even though this a great starting point for improvement, for project managers it does not take a new year to make our projects better. Making future and even current projects better can come at any time by using what has been learned to date to improve our skills or processes as we move forward.

In the last article (*AUGIWorld*, November 2018), I talked about managing communication. This article is about addressing ways we can use the lessons learned from both prior communications and experience to make our next project more successful.

“Lessons Learned” are both records and examples of how to make things more successful for the PM and the client as we roll into future projects.

In many companies, a Lessons Learned database is a requirement, but for others where it is not a formal requirement, it could be used as a way to make a significant impact on how future projects are approached. Think about all the things that were learned though frustration and experience and the knowledge gained from the pros and cons of the projects recently completed. In our mind, we believe that we will remember the struggles we went through and will have a mental plan to make sure we address them on our future projects. Are these thoughts being recorded or tracked somehow? Good intentions are easily wiped out by

If the above paragraphs have not convinced you or at least piqued your interest about the value of tracking Lessons Learned, how about we look at some examples of how such lessons can benefit us?

**“LESSONS LEARNED”  
ARE BOTH RECORDS AND  
EXAMPLES OF HOW TO  
MAKE THINGS MORE  
SUCCESSFUL FOR THE  
PM AND THE CLIENT AS  
WE ROLL INTO FUTURE  
PROJECTS.**

# Project Management

**Project Checklist for:** \_\_\_\_\_ **Job #:** \_\_\_\_\_

**Initial ISP check:**

\_\_\_\_\_ **Does this project have AV?** (Projectors/Digital Displays/Conference Rooms & Enclaves)  
 Contact: Bob Smith - 813-123-4567 / Bob.Smith@internal-ISP.com

\_\_\_\_\_ **Does this Project Require Security?** (Card Readers/Cameras/Gates)  
 Contact: Jim Jones - 813-123-4567 / Jim.Jones@internal-ISP.com

\_\_\_\_\_ **Does this project require IT/Telecom?** (Network Cabling/Phones/Low voltage wiring/Fiber)  
 Contact: Mary Smith - 813-123-4567 / Mary.Smith@internal-ISP.com

\_\_\_\_\_ **Does this project require Local IT?** (Moving users or adding users or hardware: (Printers/PCs/Laptops)  
 Contact: Bob Smith - 813-123-4567 / bob.smith@internal-ISP.com

\_\_\_\_\_ **Does this project require xxx?**  
 Contact: ??

Figure 2

**Generator:**

---

\_\_\_\_\_ CORP-STDS: Has the DESIGN TEAM/contractor reviewed and vetted ALL CORP-STDS requirements?

\_\_\_\_\_ CORP-STDS: Verify Level of backup per CORP-STDS and Customer need - May be different.

\_\_\_\_\_ CORP-STDS: Weatherproof enclosure if outdoors

\_\_\_\_\_ CORP-STDS: Steel double-wall tank w/secondary containment

\_\_\_\_\_ CORP-STDS: Level 2 sound enclosure for most cases - check local ordinances

\_\_\_\_\_ CORP-STDS: Require Shop Drawings for AM to review

\_\_\_\_\_ FAC-MAN: Telemetry included in DESIGN TEAM and installation?

\_\_\_\_\_ FAC-MAN: Hard Surface around the Generator

\_\_\_\_\_ FAC-MAN: Is the exhaust far enough away from fresh air intakes? (15ft minimum)

\_\_\_\_\_ FAC-MAN: Is the exhaust far enough away from the building? (15ft minimum) (5ft per NFPA 37)

\_\_\_\_\_ DESIGN TEAM: Does Generator have Vibration Isolators?

\_\_\_\_\_ DESIGN TEAM: Is the Emergency Generator Remote Annunciator panel located on the plan and called out on the riser?

\_\_\_\_\_ DESIGN TEAM: EPO shown on the plan and Riser? (Emergency shunt trip switch)

\_\_\_\_\_ COMMUNICATIONS:

\_\_\_\_\_ COMMUNICATIONS:

Figure 3

In any project, we will encounter issues and discover items that we never considered; but if all goes well, we will also learn to address them so they do not have a negative impact on our future projects. Not all Lessons Learned are negative; however, many are successes that allowed the project to achieve something that we did not know it could.

If keeping an Excel database/list of issues and resolutions is not your thing, you could try another method by creating a checklist. As I have learned with my team, checklists are not the most popular item—primarily due to the number of checklists that are already required in our work. BUT checklists can be a powerful way to keep you on track and provide a fail-safe method to make sure all (or most) issues are dealt with as you start, execute, monitor, and close a project.

A simple way to track what you have learned on previous projects and carry it forward is to create a checklist of things to account for and issues to avoid. For example, are there items that came up in your previous project that you or someone on your team missed? Could you track that by compiling a list of those items as well as key contacts that you can then turn into a “questions list” on future projects? Absolutely! This can be the beginning of your master project checklist (see Figure 2).

As you start new projects, you can go down through your list of items that were previously missed or not considered—if one is not applicable, move on to the next one. If it is applicable, make sure that someone is addressing it. With a checklist, you are more likely to make sure that these items are considered and addressed. As your checklist develops, you can bring it up early in projects and ask the appropriate questions. This shows you are aware of potential risks and shows your customers and consultants that you are an experienced PM. I will go more into the topic of risk in a future article, but know that checklists can be a major advantage to you and your project.

Whether you do tracking through a checklist or a formal Lessons Learned database, understand that this is a key tool to a project’s success.

Still not convinced on the importance of the Lessons Learned concept? Let’s give a couple more details of its use and advantages.

All projects—as was discussed in the November 2018 article on communication—involve stakeholders. Stakeholders run the gamut from vendors and contractors, service providers (internal and external), to customers and end users. Each of these stakeholders have requirements, expectations, and needs. The bigger the project, the larger the list of stakeholders.

As a project manager, you will need to balance and address all the individual parties and their expectations. You will also be pulled in many directions, and it is how you address the expectations that will determine your success on not only the project, but on your career as well. There are many skills required of a good project manager, and how you master them will help you mature and become an even better PM.

People skills are important, as are organizational, financial, and scheduling skills. Depending on what industry you fall in, each skill may have a larger bearing on your success. With so many areas to work on, how can you minimize your frustration and learning curve? The trick is to learn your true strengths and find a way to address the areas you need to improve on. One way to do this is to create a way to avoid surprises that can deter you from your success.

Although some surprises can be cool and invigorating, some can be costly and detrimental to a project’s success. Surprises in projects typically come from unknowns, and unknowns are often the result of poor planning. Good planning comes from knowledge and experience. For a project manager who may frequently deal with

**THERE ARE MANY SKILLS  
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new projects where experience is limited, a resource of previous project experiences would be welcomed. This previous experience will typically come from others and the records they provided; hence, the concept of Lessons Learned.

Think of the benefit you can derive from having a database of previous issues that came up and how they were handled. If you work in a team environment, wouldn’t it be nice to help others and yourself on future projects by having this resource available? By tracking what you learned on your projects, you are creating a future resource for all project management players to pull from—yourself included.

I encourage you to start tracking issues and their resolutions through a database or checklist as you complete your current projects and start your new ones.



*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](mailto:walt@functionsense.com)*

# THANK YOU!

AUGI wishes to thank the following *AUGIWorld* authors and volunteers for their contributions to AUGI in 2018. The growth and success of our organization would not be possible without the dedication of these talented individuals who share their knowledge with their fellow AUGI members.

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Sam Lucido

Melanie Stone

Jim Fisher

Jason Lush

Tim Varnau

Jeff Frye

Mark Mendez

Matt Wunch

Kimberly Fuhrman

Kate Morrical

Jay B. Zallan

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

## CopyFamilySharedParam



<https://bit.ly/2PSTe16>

Do you regularly utilize Autodesk® Revit® families but find you need to add your own office standard shared parameters? On the other hand, do you simply need to copy multiple shared parameters from one family to another? If so, this solution will save you hours of work and turn the mundane into a pleasure.

This application allows you to copy multiple shared parameters from one family to another with as few as two mouse clicks.

You also can amend the binding Type/Instance as well as the group under which the shared parameters are displayed.

## AUGmentecture



<http://www.augmentecture.com/>

AUGmentecture is a service that helps you view complex 3D models on a mobile device in an Augmented Reality format.

With the help of the AUGmentecture plug-in, you can seamlessly and securely upload your 3D models and floor plans directly from Autodesk® Revit® to your AUG account to view them later with your mobile device. You just need to select the model in 3D view and optionally select the floor plan and you will be able to see the model on your mobile device mapped on your floor plan.

AUGmentecture's goal is to make augmented reality a day-to-day design communication and collaboration tool for architects, designers, and artists.

## NoGestures



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

This app disables gestures so you can use your right mouse button (RMB) to pan and orbit the viewport.

This app is for you if you:

- are not a big fan of gestures (like me); or
- you don't have a middle mouse button; or
- you don't like to press and hold it.

Your RMB will work as normal.

## CLEAN & FIX

<https://www.finalcad.com/software>

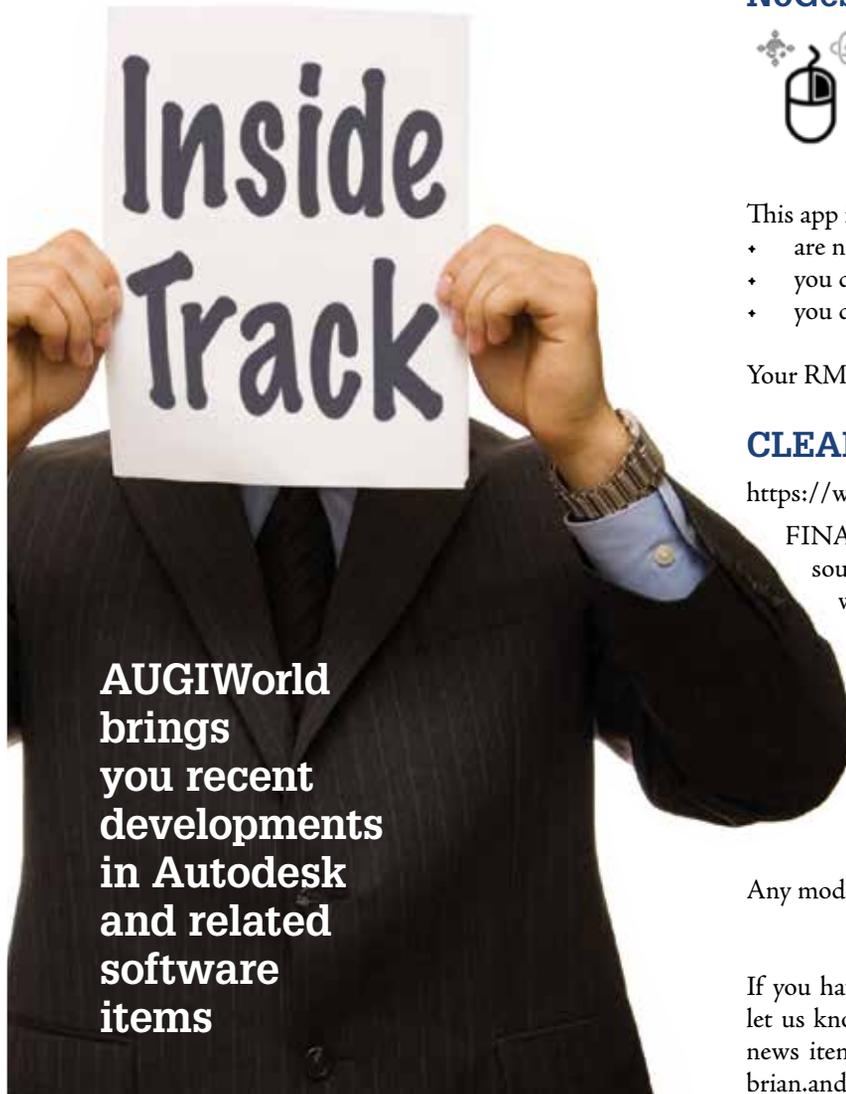
FINALCAD provides free of charge and as open source software, the "Clean & Fix" plug-in, which allows the cleaning and readability enhancements for any kind of AutoCAD® blueprint.

FINALCAD Clean & Fix will allow a user to work with an external drawing in the quickest way.

Sources of this plug-in can be found on github: <https://github.com/FinalCAD/FINALCAD-CleanAndFix>

Any modification can be sent with a github pull request.

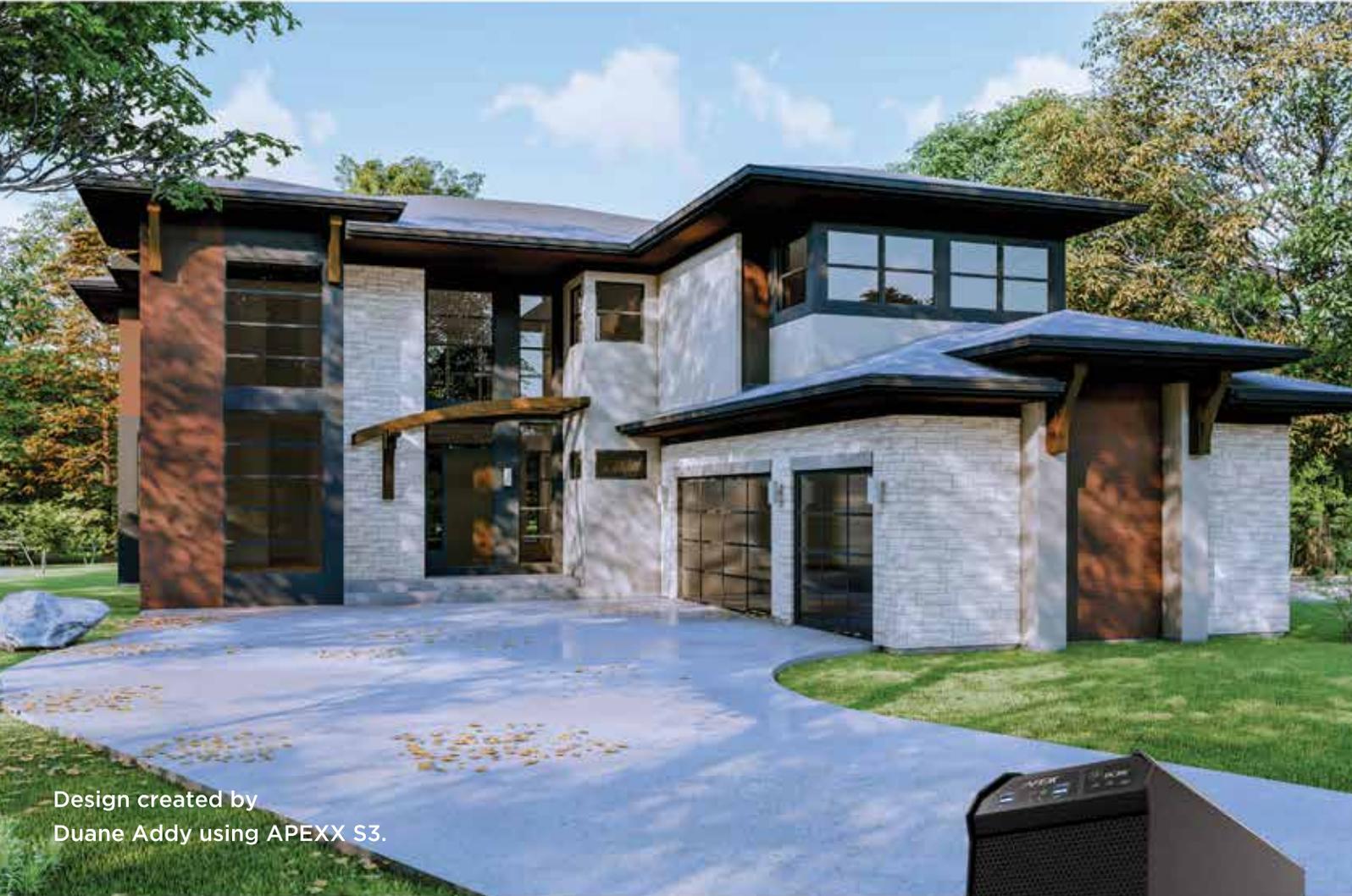
If you have some news to share with us for future issues, please let us know. Likewise, if you are a user of a featured product or news item and would like to write a review, we want to know: [brian.andresen@augi.com](mailto:brian.andresen@augi.com)



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