

THE

FALL 2020

CONSTRUCTION USER

ADVANCING UNION CONSTRUCTION MAINTENANCE

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THE CONSTRUCTION TECHNOLOGY ISSUE



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ADVANCING UNION CONSTRUCTION AND MAINTENANCE

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THE RIGHT EVENT AT THE RIGHT TIME



BY STEVE JOHNSON,
PRESIDENT, GEM, INC.

When TAUC held the very first Industrial Grade Innovation Conference and Expo (IGI) in Dearborn, Michigan, in 2018, it quickly became clear that we had tapped into something special. Those who attended the event probably remember the excitement and electricity in the air. Never before had our member contractors, building-trades executives and owner-clients been brought together to experience new technology firsthand and interact with the founders of dozens of innovative startups. Many attendees put on a pair of augmented-reality goggles or stepped into a robotic exoskeleton suit for the first time.

The timing was right, too. It had become clear that to thrive and compete in the 21st century, the union construction and maintenance industry needed to step up and embrace the incredible advances in technology, whether it be engineering software, "smart" tools or safety enhancements. The industry needed a place where we could all come together and get the information needed to make intelligent business decisions. IGI gave us that space and did so again in 2019, when we relocated to Cincinnati for our second annual conference.

In 2020, of course, things are much different thanks to COVID-19. But when we announced we would transition from a physical IGI event this year to a virtual one, it confirmed, in a weird way, what we had been saying for the past few years about the importance of innovation. The pandemic and subsequent lockdown have only served to emphasize how new approaches to technology can allow us to do what was considered impossible just a decade ago. Even though offices were shut down across the country and thousands of people started working out of their basements and spare bedrooms, we were able to keep huge projects moving on time and under budget thanks to Internet conferencing apps, BIM software (and similar programs) and sophisticated data-sharing sites. Once again, the timing was impeccable.

The same was true for Virtual IGI 2020, held Sept. 29 through Oct. 1: we didn't miss a step. The most important aspects of past in-person events — the trade-show floor, keynote speakers, breakout sessions and the ever popular Start-Up Battle — were seamlessly ported over and re-created in an online environment. "Attendees" could participate from the comfort of their office chairs and engage one-on-one with subject-matter experts across a huge range of construction tech topics. There were even a few fun nontech events, such as an online poker tournament and trivia contest.



In this issue, we've put together a comprehensive overview of Virtual IGI 2020. If you couldn't attend (or did, but need a quick refresher), you'll find a wealth of information about the hottest trends in construction technology and the latest insights from some of the most influential thought leaders in the country.



As an attendee myself, here are my quick takeaways from Virtual IGI 2020:

Technology is helping us find new paths to success.

On today's jobsite, for instance, contractors often find themselves having to do more work with fewer people because of coronavirus fears and a chronic shortage of qualified workers that began well before the pandemic. Luckily, advances in hardware and safety technology are leading to huge gains in worker efficiency and productivity. As I said earlier, we're still meeting — even beating — tough deadlines, something that would have been impossible just a few years ago. If you want an illustration of the overwhelming effect technology has had on our business, you're living through it right now.

The construction tech landscape is getting very, very crowded.

Startups and service providers are flooding into the industry. For every problem, there are dozens of potential solutions, and few of them are cheap. It's a gold rush. More pressure is being put on CEOs and senior-level executives to make the right tech investment. That means we need more information and analytical tools, along with old-fashioned discernment and a dash of wisdom (a little luck wouldn't hurt, either). We also need to think long and hard about our leadership teams and make sure we have the right people covering all the bases.

There is only one path forward.

It doesn't matter if you have five employees or 5,000. It doesn't matter if you report to a board of directors, a general president or the person you see in the bathroom mirror every morning. As I watched the various breakout discussions, I realized there is no way to succeed in our industry today without adopting advanced technology. You are part of the tech revolution whether you like it

or not. For some people, that's a scary thought, because it means rethinking the detailed business plans and goals they came up with 10 or 20 years ago. It might mean rebuilding your entire operation from the ground up. But it has to be done.

And that's why we created IGI in the first place. Regardless of whether it's virtual or physical, it's a place where you can come to get your questions answered and "figure out what you need to figure out." TAUC and our brand-new Innovation and Technology Committee, headed up by Timothy Hoch of APM, are here to help you learn how to leverage the incredible advances taking place in construction technology and use them to your advantage.

Let me end on a low-tech, high-value note. Innovation is great and necessary. But one of the most encouraging aspects of Virtual IGI 2020 was the emphasis on the human factor. Regardless of how high-tech our industry becomes, we will still fail — and fail spectacularly — if we lose sight of one another. One of the consistent themes I heard repeated across many presentations was the importance of treating our craftworkers and employees with respect and regard. We must ensure that the new tools we implement help to further and enhance their careers, rather than being viewed as a threat or replacement. We can embrace new technology without leaving behind the reason we are still here in the first place: our people.

Since this is my last column of the year, I'd like to wish everyone a very happy and safe holiday season. Here's to a healthy and innovative 2021! ■

We can embrace new technology without leaving behind the reason we are still here in the first place: our people.

Perspective

BY STEVE LINDAUER, TAUC CEO



Steve Lindauer is the CEO of The Association of Union Constructors and also serves as Impartial Secretary and CEO of the National Maintenance Agreements Policy Committee, Inc. (NMAPC).

This issue of *The Construction User* focuses on progress and innovation in the union construction and maintenance industry and showcases some of the amazing technology and thought leaders featured at our recent Virtual IGI 2020 online event. Some of you just starting out in your careers may find it a little amusing to see some of us old-timers get so excited about the technological advances unfolding in front of our eyes. For people in their 20s and 30s who have grown up with smartphones and computers and learned how to code in elementary school, our reactions may seem a little over the top. But if you'll indulge me, I'd like to use this column — the next to last one I will write before I retire early next year (see Page 12) — to give the next generation of contractors, craftworkers and engineers a little perspective on how far we've come and what it all means.

First off, to the new folks: congratulations. You couldn't have started your careers at a better time. Union construction and maintenance has never been more safety-conscious. The health and well-being of everyone on the jobsite, from apprentice to general foreman, is priority No. 1. Some of the biggest technological breakthroughs over the past few years have revolved around safety: the advent of wearable technology to monitor workers' vital signs and proximity to danger (Page 30), for instance, or the new robotic exoskeletons designed to drastically reduce wear and tear on your muscles and bones as you lift heavy objects (Page 26). Over the next few decades, you will work smarter and harder than my generation and retire in better physical shape, and it will be considered normal, even expected.

And there's something else. Because technology has made our work so much safer, you will leave one day with fewer regrets and fewer memories of accidents and injuries — and yes, fewer memories of friends and co-workers who lost their lives on the job. That's something baby boomers like myself would trade anything to have. If you don't believe me, just ask any seasoned journeyman, foreman or project manager with wrinkles and gray hair. They've been to the funerals. They've lived through the "bad old days" before the rise of today's new safety culture and zero-injury philosophy, when serious injuries and even fatalities on big projects were considered inevitable, just part of the job.

Now, for the first time in a long time, union construction and maintenance has a new story to tell.

As you move through your training and begin your careers, you will also have access to some of the most sophisticated hardware and software on the planet. If you're in a registered apprenticeship program, the building trades will actually pay you to learn how to use these incredible tools. From my perspective, it's kind of bittersweet. On the one hand, I've never felt more confident and optimistic about the future of union construction and maintenance. On the other hand, I look at all these advances in technology and think to myself, "Wow, I wish I were 25 years old again and just getting into construction." I feel a little sad that I'm not going to be around to see where all this leads and to have a hand in creating a new industry. I've heard the same thing from a lot of our older contractor members. They tell me, "Imagine what we could have done if we had had all of this back in the 1960s and 1970s. Imagine what we could have accomplished."

And that's the key word: **imagine**. Imagine the possibilities. For those of you reading who have more years ahead than behind you in this industry, please — don't waste this opportunity.

Timothy Hoch of APM, the chairman of TAUC's Innovation and Technology Committee, recently remarked that things are changing so rapidly, sometimes it feels as if we're still building the airplane after we've already left the ground. I'll phrase it another way: with this influx of new technology, we're rewriting our industry's story every day. We're working in construction and transforming it at the same time. And you have been given the privilege to participate in that transformation. Change isn't going to be dictated from on high as it was in the past. It's going to come from men and women like you.

When I was starting out, it was a really big deal to transition from things such as fax machines and mimeograph machines to desktop computers and dot-matrix printers. But even that took years to accomplish. Now, in the era of big data, we're completely changing how we plan and build projects almost overnight. The screen is constantly being refreshed. It's impressive — even a little scary. But the opportunity is so great that we must push past our fears.

Looking at it from the standpoint of a CEO, and someone who has hired and recruited new talent for many years, this technology revolution couldn't happen at a better time. All of you know that our industry has suffered from a worker shortage for many years. Baby boomers like me are retiring by the thousands, and the building trades and contractors are scrambling to replace them with young workers. And frankly, in the past, it was a hard sell. You know the reputation that construction work has always had. Guidance counselors, parents, teachers — they encouraged kids to go to college, get a degree, not sign up to be an apprentice. Construction work was viewed as low-tech, hard, grueling, with no chance for real advancement. It was old school.

Well, that old school has officially closed. The doors are locked, and the teachers are long gone. Now, for the first time in a long time, union construction and maintenance has a new story to tell. Young people want challenges, they want a chance to chart their own course — and they also want to work with cutting-edge technology. They want to be at the front of the pack, not following from behind.

And that's exactly what our joint labor-management registered apprenticeship programs offer them. Contractors and their building-trades partners have invested hundreds of millions of dollars in the latest construction technology. I referenced this earlier: walking into an apprentice training center today is like walking onto the set of a science fiction movie. Advanced robotics. Virtual reality. The list goes on. Young men and women receive hands-on training with the most sophisticated equipment in the world.

As we've said many times, this is not your father's union construction industry — not anymore. In the span of a single generation, we've flipped the script. Construction and maintenance is no longer the last resort for young people — it's the first choice for highly motivated workers who want a real career, not just a job. ■

The “Warm Body” Era Is Over (Again)

It's Time to Rethink Our Approach to Recruitment

BY MARK BRESLIN

After 20 years, my executive assistant is calling it a day. She calls it “retirement,” but anyone who has worked for me that long (with or without medication) has, to use an automotive analogy, exceeded the limits of their warranty and probably needs to park it before experiencing total engine failure.

In my frantic effort to not be exposed as a marginal CEO because of her consistent tending and guidance, I am in recruitment mode. Thus far, I have 320 resumes to choose from. My staff has screened all the candidates, and I have personally looked at the top 70. The top choices will then go through screening interviews with my assistant via Zoom, followed by a panel interview with three staff members of our association. Then, and only then, do they get to me. To date, I have personally seen only eight of the 300-plus candidates and haven’t made a single employment offer.

Does that seem excessive? Really, it’s not. Given the contours of the current job market, I don’t need to make a hasty decision. I can afford to wait and pick the perfect candidate because the talent pool is deep. The key is for me to be patient, disciplined, consistent and, most of all, uncompromising. And this is the same advice I have for our industry heading into 2021.

The economic contraction we are experiencing has a silver lining: the demand for labor is moderating and will likely continue to do so for at least the next several years. This means the desperate go-go era of “get me a warm body” to fill shortfalls during the economic boom is pretty much over. Now is the time to get rid of the bad hiring

habits we acquired during the past decade before they sink the union construction industry. We need to seriously reconsider recruitment and talent selection.

The key area for improvement is how we bring in apprentices. A huge effort is underway to get young people interested in our industry. Great. But I’m more interested in getting the right young people, because every new apprentice we accept will become a part of our union industry family for the next 25 to 30 years. We need to take selection much more seriously. To the extent we have standards for choosing apprenticeship candidates, they are often lax and informal.

The failure of unions and contractors to address this problem is a staggering head scratcher, especially when you consider the following:

1. In most cases, unions and employers will spend anywhere from \$40,000 to \$100,000 over the course of four or five years to train a single apprentice.
2. Anywhere from 10% to 40% of accepted apprentice candidates end up washing out. That amounts to tens of millions of dollars wasted on failing candidates every year.

Mark Breslin is a strategist and author of several books, including most recently, *The Five Minute Foreman: Mastering the People Side of Construction*. Visit his website at www.breslin.biz or contact him at 925-705-7662.



3. The threshold for acceptance into a fully paid apprenticeship program is low. There might be a math test or a short interview at some point, but that’s about it. In other words, we commit to spend several years (and six figures) training someone we know hardly anything about. Contrast this with how most colleges recruit students. Every candidate must take the SAT or ACT and submit a written essay explaining why they deserve the opportunity to attend the school — and if they’re accepted, they (or more likely, their parents) are on the hook for four years of tuition!
4. Contractors are usually not involved in selecting apprentices — the men and women they will end up hiring for the next 25 years. They sub out this crucial task to the unions. Really?!
5. Union construction projects typically cost 15% to 25% more than nonunion jobs. Given this sizable delta, doesn’t it make sense to select only “Top Gun” candidates for high-quality, cost-free apprenticeships by testing, evaluating, interviewing and screening them to the extreme?

Continued on page 34

The key is for me to be patient, disciplined, consistent and, most of all, uncompromising. And this is the same advice I have for our industry heading into 2021.



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Craftworkers and Safety: Making Their Voices Heard

BY RUSTY BROWN

Rusty Brown is Director of Corporate Safety Controls for Peter Kiewit Sons, Co. and Chair of the TAUC Environmental Health and Safety Committee.



Editor's Note: This is the second of a three-part series on safety innovations on the jobsite. To read the first installment, check out The Construction User Summer 2020, Page 11

Last issue, I discussed a number of safety innovations Kiewit has implemented on jobsites around the country. This time, I'd like to do a "deep dive" on one of those initiatives that has proved extremely successful: Kiewit's Craft Voice in Safety (CVIS) program.

Created in 2012, the CVIS program revolutionized how craftspeople on the jobsite view and approach the topic of safety. CVIS is a craft-only safety committee that interacts on a daily and weekly basis with management and their own peers to address safety on the project. It provides a platform to ensure all craftworkers have an equal voice, while developing relationships and empowering everyone to support safety through prevention, education and awareness.

CVIS members are visible in the field and openly communicate with management on behalf of their coworkers. They bring craft issues and concerns directly to project leadership to help create and maintain a "one team" environment.

Here's how it works. On every Kiewit project, a small group of craftworkers working on that job are selected to join the CVIS team. Each person is nominated by project management and serve anywhere from six months to a year. Teams vary in size based on the needs of the project, but ideally include a member from each discipline and shift, as well as from all major subcontractors on the project.

The CVIS team meets regularly (weekly or even daily) with management – including the project safety manager and the construction or project manager – to address safety on the jobsite. If there's a problem or concern, the CVIS team member can go directly to project leadership to address it right away.

Marc Monz, a project safety manager for Kiewit Power Constructors, joined CVIS in 2012. "It was the first Kiewit project I ever worked on," he recalled. "I wanted to get involved because, as a Boilermaker by trade, I've always been safety-focused. It was a good way to start looking at different career paths in safety, too. I had never seen anything like the CVIS program before, with actual craft being on the team."

Brian Kennedy, also a project safety manager for Kiewit Power, had a similar reaction when he first joined CVIS. "My general foreman asked me if I would be interested in being a CVIS team member for the Pipefitters. What really brought me into the program was seeing how Kiewit had the CVIS team sit down with upper management. We met weekly, and any safety concerns we brought up in the meeting, they got right on it and got those concerns addressed for us."

CVIS members work alongside their fellow craftworkers on the job every day. They wear special hardhats and safety vests designating them as the CVIS representative for that shift. Craftworkers know they can come to CVIS members with safety concerns and that they will be treated with respect and, when necessary, anonymity. There's a greater level of trust because they work together and often belong to the same local union.

"When you're a CVIS member, you're still a craftworker working with the tools and working with your fellow crafts," Kennedy explained. "Anytime someone brings a safety issue to you, you try to get it addressed as quickly as possible. You have to remember that you're not a safety cop out there to tell guys what they're doing wrong. You want to remember where you came from. You're there as a resource for them to get the safety issue corrected, not to watch what they're doing and try to get them into trouble or anything like that."

CVIS members tackle a wide range of safety issues and work with management to mitigate any potential risk. When workers see their concerns not only being taken seriously but being *taken care of* rapidly and respectfully, they are much more likely to alert the CVIS team to other problems.

"Having that direct line of communication with upper management – I can't stress how far that goes with all the craftworkers on the jobsite," Monz said. "They know that any issues they bring up to me are going to be brought to the table when I meet with upper management at our next meeting."

Overall, the CVIS program has had a huge impact on safety awareness on Kiewit projects. It has forged stronger bonds between management and craft, and among the workers and across trades. The end result is a jobsite environment where people actively care about one another, and it shows. For Kiewit, that's exactly what we want. ■

Nonstop Training in the Era of COVID—The UA Has It Covered

It didn't take long for the United Association to adjust to the new world of distance learning in a pandemic. Courses were quickly shifted to the online environment and thousands of UA apprentices and members rapidly made the switch to this new way of learning—even as they continued to build temporary hospitals, convert manufacturing facilities into PPE production lines, and much more.

This is the unique edge the UA has in the construction industry—the ability to adapt to even the most extreme circumstances. We put our existing technology to work for us, and where we needed to build a new online infrastructure, we did. Just like we have done across North America for more than 130 years.



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Steve Lindauer Announces Retirement; Dan Hogan to Lead TAUC, NMAPC



Steve Lindauer

"I feel blessed and honored to have had the opportunity to serve the union construction and maintenance industry, along with the affiliated organizations I have been involved in."

— Steve Lindauer

Stephen R. Lindauer, CEO of The Association of Union Constructors (TAUC) and Impartial Secretary/CEO of the National Maintenance Agreements Policy Committee, Inc. (NMAPC), has announced plans to retire from both organizations effective Feb. 26, 2021.

Lindauer's retirement ends a career in the construction and maintenance industry spanning 40 years, including more than 14 years as the leader of TAUC and NMAPC.

After jointly conducting a thorough search and completing a comprehensive succession-planning process, the TAUC Executive Committee and NMAPC Board of Directors offered the dual leadership position to Daniel M. Hogan, who currently serves as Senior Director of Industrial Relations for both TAUC and the NMAPC. Hogan accepted and will assume the role of CEO of TAUC and Impartial Secretary/CEO of the NMAPC on March 1, 2021.

A Legacy of Service

Lindauer, a native of Oneida, New York, began his career in labor relations and association management in 1982 after graduating from The American University Kogod School of Business in Washington, D.C., where he received his master of science degree in industrial relations and human resources. Lindauer received a bachelor of arts degree in political science, with a minor in economics, from Alfred University in Alfred, New York.

Under Lindauer's leadership, both organizations flourished, shepherding TAUC (formerly the National Erectors Association) through a rebirth in terms of membership, governance and mission. As Impartial Secretary/CEO of the NMAPC, Lindauer

focused on continually increasing the value of the NMAPC program for the thousands of signatory contractors, 14 international unions and the multitude of owner-clients who utilize the National Maintenance Agreements (NMA) across the country. Over its 50-year history, the NMA has amassed more than 2.7 billion work hours. Additionally, he facilitated the development of the most prestigious safety program in the union construction and maintenance industry, the NMAPC Zero Injury Safety Awards® (ZISA®).

Lindauer also served as a member of numerous industry organizations, including the Joint Administrative Committee to the Plan for the Settlement of Jurisdictional Disputes; the Board of Trustees for the Center for Military Recruitment, Assessment and Veterans Employment (CMRAVE); the Executive Committee for the Helmets to Hardhats Program, where he also served as Secretary; the Board of Directors of the Construction Labor Research Council (CLRC); the Board of Directors of the National Coordinating Committee for Multiemployer Pension Plans (NCCMP); and the Union Sportsmen's Alliance Conservation Advisory Committee. In addition, he maintained professional membership with the American Society of Association Executives (ASAE).

"I feel blessed and honored to have had the opportunity to serve the union construction and maintenance industry, along with the affiliated organizations I have been involved in," Lindauer said. "I have had the distinct pleasure of working with a great group of professional teammates who have a clear understanding of our consistent approach to mission on behalf of TAUC and the NMAPC. Our staff has

been laser-focused on facilitating lasting partnerships through a tripartite philosophy with our contractor members, union business partners and the owner-client community. This has paid dividends for both organizations through the inclusion of our Legacy Partnerships with outside organizations that are important stakeholders within our industry. Our goal has always been to create a level playing field for all those we work and collaborate with."

"Steve Lindauer has been a great advocate of union labor and labor-management cooperation," said Michael Pleasant, President of NMAPC and Labor Co-Chair of the NMAPC Labor-Management Committee. "Steve's time with the NMAPC has furthered the union movement and benefited greatly both labor and management, as well as the end users we all work for."

"I would like to thank Steve for the past 14 years of leadership and dedication to growing the NMAPC and TAUC," added Steve Johnson, President of TAUC. "Under Steve's leadership, both organizations have established themselves as leaders in the construction industry and are well-positioned to thrive in the future."

A New Chapter Begins

Originally from Western New York, Daniel Hogan has been with TAUC and the NMAPC since 2009. Hogan holds a bachelor of science degree in business management from The Canisius College of Buffalo and is bilingual in English and Spanish.

As Senior Director of Industrial Relations, Hogan's primary area of responsibility has consisted of executing many of the day-to-day activities associated with serving nearly 2,000 NMA signatory contractors and 14 participating International Unions. Hogan has also worked to develop and foster relationships between contractors, owner-clients, local building trades councils and their union crafts.

Before joining TAUC and the NMAPC, Hogan held positions at the Construction Industry Employers Association (CIEA) in Buffalo, New York. CIEA is local employer association representing management interests in collective bargaining agreements with multiple building trades. In his roles at CIEA, Hogan also served as the direct liaison for a number of other area contractor groups, including the Plumbing Mechanical Contractors Association (PMCA), the Construction Exchange of Buffalo and Western New York, SMACNA's Buffalo Chapter and the New York State Roofers and Sheet Metal Contractors Association.



Daniel Hogan

Hogan lives in the greater Washington, D.C., area with his wife, Laura, their son, Daniel, and daughter, Isabel.

"I personally want to thank Steve not only for his 40 years of dedicated service to the union construction and maintenance industry, but also for cultivating a team of experienced professionals that will continue the pursuit of excellence following his retirement," Hogan said.

"I am excited about the insight and ideas Dan will bring to both organizations as we navigate a new and challenging landscape in the construction industry," Johnson said. "Dan's knowledge of the industry, combined with his belief in continuous improvement and excellence, will be a guiding light to a bright future for both the NMAPC and TAUC."

"We are looking forward to Dan Hogan's innovative vision and aggressive attitude," Pleasant added. "Dan has served the NMAPC for years with fairness and integrity, and I'm also excited about the direction that he will take us in the future with a new perspective. He has a tough job ahead of him, and I know he will step up to the challenge." ■

*"I am excited about the insight and ideas
Dan will bring to both organizations
as we navigate a new and challenging
landscape in the construction industry."*

— Steve Johnson, TAUC President

Greg McCann Named 2020 TAUC Craftperson of the Year

BY DAVID ACORD, TAUC DIRECTOR OF COMMUNICATIONS

Greg McCann has been named the 2020 TAUC James J. Willis Craftperson of the Year.

The prestigious Willis award, which recognizes outstanding labor-management cooperation and quality craftsmanship, is usually presented in a special ceremony during TAUC's annual Leadership Conference. However, due to COVID-19, this year's conference in California was canceled, so we improvised: instead of having Greg travel west to receive the award, the award instead traveled to Greg. He was presented with the impressive Willis statue in Ohio, along with a large selection of tools courtesy of new TAUC Legacy Partner Milwaukee Tool.

Greg is a member of IBEW Local #8 in northwest Ohio. He was nominated by GEM, Inc. (part of the Rudolph Libbe Group) for his role in the construction of First Solar's 1.1 million-square-foot solar-panel manufacturing plant in Lake Township, Ohio. The entire plant was completed within budget and on an extremely aggressive 12-month schedule.

"It's a huge honor," Greg told TAUC of winning the Willis award. "Seeing the past winners, I'm very honored to even be mentioned along with those kinds of people."

He also acknowledged that the First Solar job was a big challenge for him because he was responsible for all the electrical work. For instance, the plant required 20 indoor 4,000-amp substations. "This was a larger project than we typically do," Greg said. "There were two 750-kilowatt generators on this job, and most buildings might have one half that size."

"There were tens of thousands of feet of cable tray that had to be laid out and installed," added Jason Bartley, GEM Project Manager. "Miles and miles of cable installed, along with 20 indoor 4,000-amp substations."

"Greg provided exceptional leadership in planning and execution," GEM Inc. said when nominating him for the award. "Milestone dates tied to liquidated damage clauses required detailed coordination with all trades, and Greg excelled at communicating and directing work. Due to the fast-paced 12-month construction schedule, this project required the implementation of vast amounts of technological tools to stay on time and within budget. Greg led the effort by relaying information created from his own CAD-produced layout drawings and BIM coordination to the field installers. This alleviated wasted time and costly mistakes in the field, allowing the craftsman to continually progress with the installation."

GEM continued, "Further complicating an already complex project were the hundreds of process tool owners contracted by First Solar originated from around the globe. German-, Japanese-, and Italian-speaking installers covered the process floor and created a huge challenge in the final electrical connection coordination. [As he has] so many times before, Greg spearheaded the effort, providing the direction needed for the electrical crews to finish their install."

"The electrical installation required more than 100,000 man-hours and astronomical amounts of conduit and cable tray was installed with complete satisfaction of



Greg McCann

the engineers and owners," GEM added. "This is a testament to the commitment of quality by Greg and his crew. Last and most important, this aggressive and complicated project requiring multiple shifts, was finished with zero major safety issues."

GEM concluded, "Maintaining his natural humble demeanor, Greg McCann has shown a mastery of each of these categories. He continues to prove himself as a terrific asset to the union construction industry, while simultaneously elevating the workers around him. He is a remarkable asset to our trade and is truly worthy of such an honorable award."

Honoring This Year's Willis Award Nominees

Choosing the Craftperson of the Year is a tough job because we receive so many incredible nominations from our contractors. TAUC would like to honor this year's runners-up for the prestigious award. We salute their hard work and dedication to safety and wish to thank the nominating contractors, their labor partners and the owner-clients for assisting in the nomination process.

About the Willis Award

The James J. Willis Craftperson of the Year Award honors outstanding labor-management cooperation and quality craftsmanship in the union construction and maintenance industries. It is given to building-trades members who have a gift for recognizing the vision of a project and can bring that vision to fruition in a professional manner.

The recognition program was originally created in 1989 as the Craftsman of the Year Award. TAUC changed the name in 2008 to memorialize James J. Willis Sr. He was a dear friend and supporter of TAUC and an authentic leader within the union construction industry for more than five decades. Jim started out as an apprentice ironworker in 1945 at the age of just 16 and eventually rose to the rank of First General Vice President within the international union. He also served as President and Labor Co-Chairman of the National Maintenance Agreements Policy Committee, Inc. (NMAPC) from 1988 to 2000.

Jim was hugely influential within the union construction industry, and his steadfast commitment to fairness and cooperation was legendary. It is fitting that the award bearing his name honors a union worker who demonstrates unparalleled leadership and professionalism, because Jim exhibited the same qualities throughout his life.

The James J. Willis Craftperson of the Year Award recognizes five categories of achievement: Safety and Health; Schedule and Budget Productivity; Cost Savings; Innovation; and Outstanding Craftsmanship. Projects must be completed in the calendar year of the award. Nominations are forwarded to our judges' panel to be evaluated and ranked in each category. This year, the members of the James J. Willis Award Task Force were: Jim Daley, J.J. White; John Stevens, Thermal Solutions; and Dave Daquelente, Master Builders' Association of Western Pennsylvania. ■



First Runner-Up

Steve Simkus, a member of Pipefitters Local 50, was also nominated by GEM Inc. for his work on the First Solar project as a general foreman. "Steve's regard for people is what earns him respect from his crew; he shows a focus on safety by leading safety talks and addressing his crew with any safety concerns that would jeopardize their well-being," GEM said. "Steve is a master of his trade, an exemplary leader, a pleasure to work with and is too humble to recognize the true value he brings to his trade and our company."



Honorable Mention (Tie)

Matt Moyski, a member of Ironworkers Local 25, was nominated by Midwest Steel for his work on a large project in Providence, Rhode Island, for Electric Boat/General Dynamics. "Matt exemplifies true craftsmanship," Midwest Steel said. "He is always on the forefront of health and safety by trying to

be one step ahead. Each morning he walks the sight to ensure his employees have no obstacles to overcome."



Dave Woolsey, a pipefitter with UA Local 533, was nominated by Enerfab for his work as a general foreman on Evergy's KCPL Iatan Hot Reheat Replacement project in Weston, Missouri. One million pounds of old seam welded pipe was removed and replaced. "It was a difficult project, and it was completed successfully by a great team," a representa-

tive for Evergy said. "Dave Woolsey was the quarterback of the team. His involvement came early, providing instrumental input on design and constructability and extended through the completion of the project."

DOJ Picking Up Steam on Bid-Rigging and Price-Fixing Cases

BY KATHARINE MEYER, ESQ., GKG LAW, P.C.

After a few slow years of antitrust enforcement, the Department of Justice (DOJ) is actively prosecuting several alleged bid-rigging and price-fixing conspiracies, including three cases in the construction industry. All these cases are ongoing, and every few months, the DOJ announces that a new individual or company has agreed to plead guilty to conspiring to commit fraud, bid-rigging and/or price fixing. These cases are interesting, not only because of their broad scope and severe penalties, but also because they provide a look at the new technologies criminals use to try to hide these conspiracies. Below are summaries of these new construction-related cases:

New England Insulation-Installation Bid-Rigging and Fraud Conspiracy

In April 2019, Gary DeVoe, a branch manager of BC Flynn Contracting Corp., was the first person to plead guilty for his role in schemes to rig bids and engage in fraud on insulation-installation contracts in Connecticut, Massachusetts and the New York area. A month after DeVoe's plea, Michael S. Flynn, the co-owner of DeVoe's employer, also agreed to plead guilty to his role in the conspiracy. Both were required to forfeit all interest in their seized personal bank accounts, pay six-figure amounts to settle pending forfeiture actions on their homes and pay restitution of at least \$4.5 million on a joint-and-several basis with their co-conspirators.

According to court documents, from October 2011 until at least March 2018, a group of insulation contractors discussed

prices and agreed on bids that inflated customer costs by at least 10%. In total, the conspiracy involved more than \$45 million in insulation jobs. To date, one other company, Langan Insulation, and two other individuals, Thomas Langan and Paul Camara, have also pleaded guilty to their part in this conspiracy.

It is interesting to note how these tech-savvy conspirators tried to hide their criminal activities. Not only did they use meetings, phone calls, emails and texts to further their conspiracy, but they also used the Confide messaging application. Confide uses end-to-end encryption to securely send messages that immediately disappear after being read. In addition, conspirators used "burner phones" to hide their involvement. However, even with these additional precautions, this conspiracy was uncovered.

Chicago-Area Commercial Flooring Conspiracy to Rig Bids

As of Aug. 31, three individuals and two businesses in Illinois have agreed to plead guilty to participating in a conspiracy to suppress and eliminate competition by rigging bids and fixing prices of commercial flooring services and products sold in the United States. The conspiracy began at least as early as 2009 and continued through at least June 22, 2017. Court documents state the conspirators created a scheme to submit complementary bids for projects to ensure that the designated company would win the bidding. This conspiracy affected at least \$9.41 million in sales. One company, Vortex Commercial

Katharine Meyer is a Principal at GKG Law, P.C. in Washington, DC. For the past 19 years, Katie has been a member of the firm's Association Practice Group, which provides legal advice to nonprofit organizations throughout the United States.



It is crucial for companies to have... comprehensive antitrust training for employees.

Flooring, Inc., agreed to plead guilty and has agreed to pay at least \$1.4 million in fines and restitution. Two co-owners of Vortex, Robert Patrey and Kenneth Smith, pleaded guilty earlier this year. The DOJ is requesting that the court impose a sentence requiring these individuals to each pay more than \$60,000 in fines and serve more than a year in prison. While the COVID-19 pandemic has delayed this case, it is expected that a third Vortex co-owner will also plead guilty.

Georgia Ready-Mix Concrete Conspiracy to Fix Prices, Rig Bids and Allocate Markets

On Sept. 2, a federal grand jury indicted Evans Concrete, LLC; James Clayton Pedrick; Gregory Hall Melton; John "David" Melton; and Timothy "Bo" Strickland on charges of conspiring to fix prices, rig bids and allocate markets for the sale of ready-mix concrete used in residential and commercial projects from 2007 until approximately 2015. Pedrick was also charged with making false statements, and Strickland was charged with making false statements and perjury.

Continued on page 34

A black and white photograph showing several construction workers on a large-scale steel framework. One worker is in the foreground on the left, another is higher up on the left, and a third is in the center-right working on a vertical column. The structure is complex with many beams and girders.

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All Things Start With Data

At Virtual IGI, Tech Experts Map Out an Exciting Future for Contractors

BY TODD MUSTARD

In the beginning, there was data. At first, it was a trickle, but now the information pours in from too many sources to mention on any given construction site. According to *Forbes*, humans create 2.5 quintillion bytes of data every day. The construction business is no different. Now we have to figure out how to collect, store, analyze and synthesize this data in a way that will benefit our customers and the industry as a whole.

Several of the breakout sessions at this year's Virtual Industrial Grade Innovation (IGI) 2020, held online Sept. 29 to Oct. 1, focused on different pieces of the construction-data puzzle. Solving that puzzle takes time and patience — but the rewards are exponential.

Data Standards

For data to truly be useful, it must be organized. Data standards would go a long way toward achieving this goal and helping ensure the functional exchange of data between different applications. Nathan Wood, with the Construction Progress Coalition, presented on the importance of creating project-data standards that would ultimately benefit all parties by allowing for true interoperability. Application-level container standards, project-level process and data standards, and industry-level exchange standards are ultimately what we need to get to what Wood called the "easy button" everyone wants.

New standards would also lead to massive efficiency gains. According to the National Institute of Standards and Technology, the current cost of interoperability waste in the U.S. capital facilities industry (construction) is \$15.8 billion per year. There is also an imbalance in the AEC sector between data suppliers and data consumers that standardization would help to eliminate. Ultimately, we must make it as easy as possible to supply data through voice recognition and other forms of advanced automation. Performance dashboards, predictive analytics, resource optimization and artificial intelligence (AI) are the beneficial result of true interoperability that can be achieved through data standards.



Industrial AI

Speaking of artificial intelligence, Eric Holzer and Kate Migon of Uptake presented on what their company is doing with AI in the industrial sector to use the vast amount of available data and generate real value for customers. Over the past six years, they've monitored more than 1.3 million industrial assets and more than 2.4 billion hours of industrial data. They've designed their AI products to help customers react and improve their operations quickly. Their platform is backed with 30 active patents and an additional 40 pending.

Interestingly, Holzer and Migon said that most companies already had the data necessary to power an industrial AI system; the problem is, the data is in too many separate locations. Once you find and connect that data and normalize it across channels, you can have a much better understanding of which assets are underperforming and which areas of the company are performing differently from others (and why). An AI system also allows you to analyze and identify suppliers based on their reliability; armed with that information, you can optimize your business even further. Predictive analytics powered by industrial AI could provide huge benefits to TAUC members, allowing contractors to provide just-in-time predictive maintenance to their customers by using data they already have.

Industrialized Construction

Josh Bone, Executive Director of Industry Innovation for the National Electrical Contractors Association, described how industrialized construction — a series of techniques and processes for manufacturing large mechanical components off-site,



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then transporting and assembling them at the actual build location — is dramatically changing our industry. Instead of eliminating jobs, it will actually create new employment opportunities for craftworkers with very specific skill sets. Luckily, the building trades are already training their members in these areas, so union craftworkers are uniquely well-positioned to take advantage of this major shift in how (and where) projects are completed. Bone said the key to industrialized construction is integrating existing data with the use of key performance indicators and sophisticated benchmarking processes. He argued that if contractors can learn how to maximize their data, they can actually shift from being viewed by owner-clients as a *commodity* — where their value is subjective and typically influenced by price and speed — to being more of a *consultant*, where they can provide insights that will lower project risk, provide more accurate budget estimates and highlight other opportunities in the building life cycle.

Laser Scanning

Ian Warner with Trimble discussed his company's efforts with laser scanning and three-dimensional point cloud processing. By combining these processes, Trimble can create heat maps and clash-detection tools to help contractors identify issues early in the build process and identify safety issues in close to real time, Warner said. In addition, these tools let contractors collect usable data quickly and effectively, creating actionable metrics that not only save time and money but also improve the health and well-being of workers.

Data-Driven Strategies

Matt Kram of Burns & McDonnell, a member of TAUC's Innovation and Technology Committee, took a 30,000-foot view of data-driven construction, discussing the fundamentals contractors need to put into place to succeed in this new era. He used his own company as an example. At Burns & McDonnell, executives focus on six core topics related to technology: (1) safety, (2) quality, (3) engineering and design, (4) progress measurement and schedule, (5) construction planning, and (6) project management. Having the right team in place, setting expectations that align with reality and scheduling the rollout as you implement technology are all critical to ensuring the right factors are in place

to allow your company to truly achieve data-driven construction, Kram said. Other important strategies include preparing a plan on the training component, developing a user guide and creating a continuous feedback loop that allows you to understand if there is a gap in the training provided (or if the software itself has a fundamental issue). Kram said that true business intelligence can only be achieved if you have the right tools in place, along with the necessary training for your people to use those tools. The result: powerful, proactive information that you can use to enhance your business.

It all begins with data. But your organization's future success truly depends on your ability to tap into that data and extract those needles hidden in the haystack that provide you with the competitive advantages to thrive now and in the future. ■

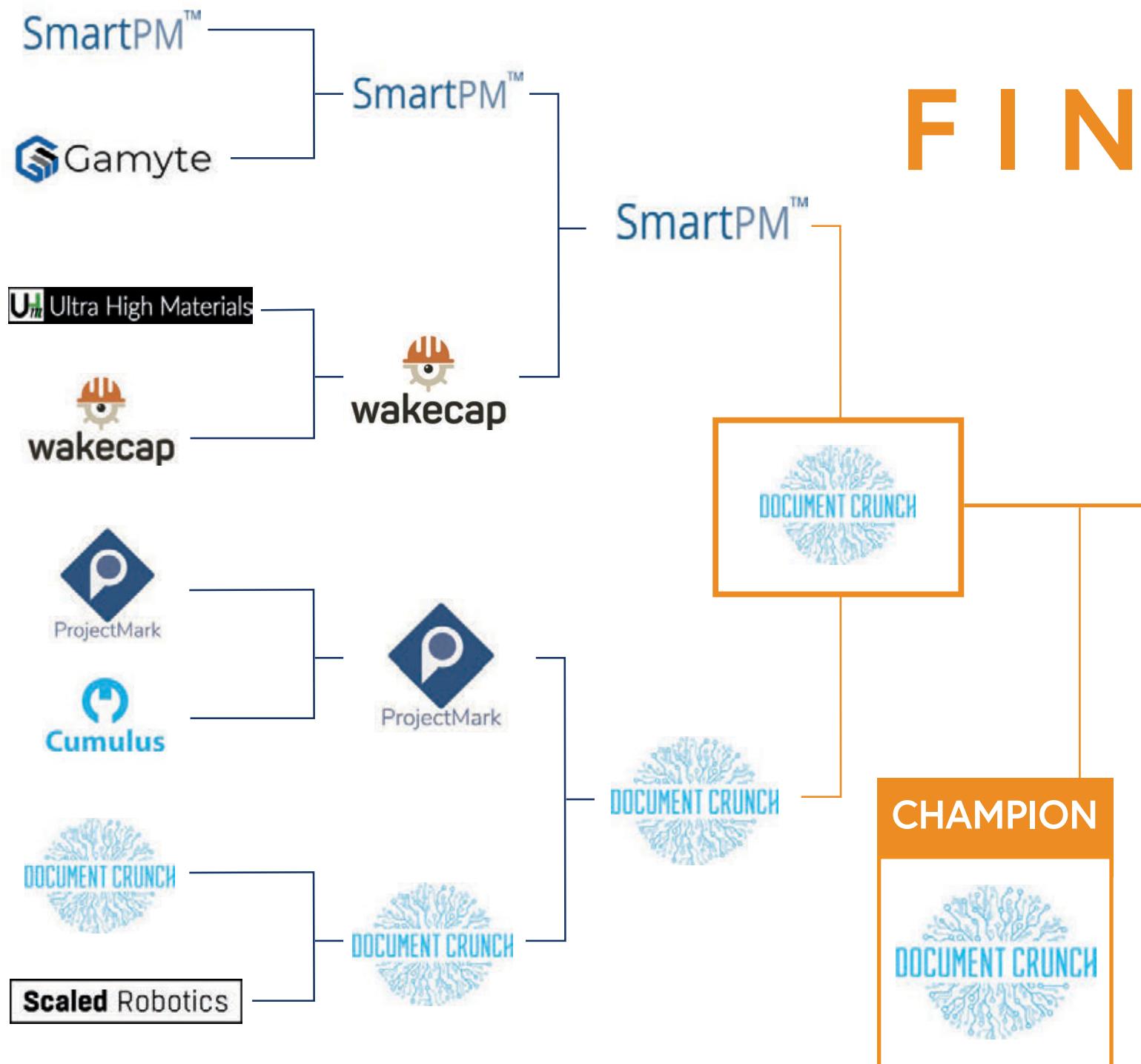
A promotional graphic for the TAUC Talks 2020 December Webinar Series. It features the TAUC logo, the text "December Webinar Series TAUC TALKS 2020", the website "WWW.TAUC.ORG/TALKS", and a portrait of Brian Beaulieu, ITR Economics. The text "Post-Election Economic Forecast" and "Brian Beaulieu, ITR Economics" are displayed, along with the date "DECEMBER 2, 2 – 3 PM EST". A descriptive paragraph about Brian Beaulieu's expertise and experience is included, followed by a call to action: "Ready for 2021? Register Now for the TAUC Webinars and Prepare for The New Year!" and the website "www.tauc.org/talks".



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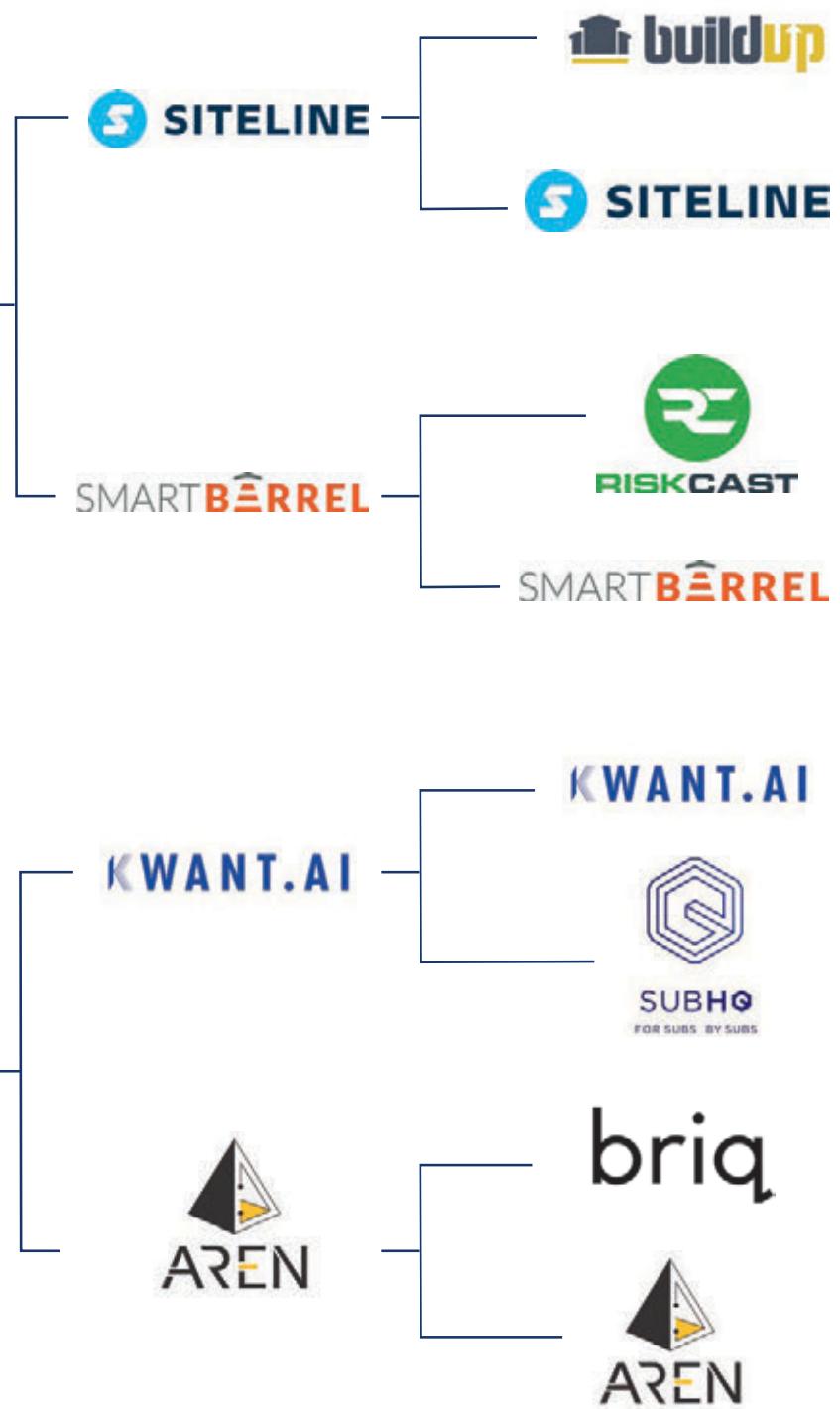
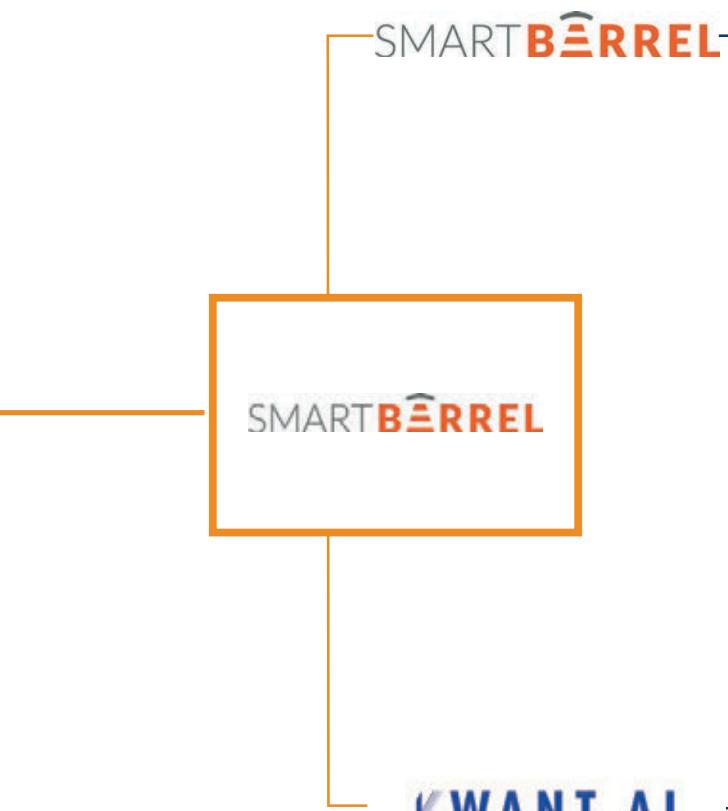


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Meet This Year's Start-Up Battle Contestants



Aren is a civil infrastructure-management platform for asset owners and engineering firms to minimize the risk of failure and optimize infrastructure spending. Aren's product is a B2B SaaS platform that uniquely combines artificial intelligence (AI) and civil engineering. The client provides as input raw data from different sources, such as cameras, laser scanners and other sensors. Aren's AI-powered software provides a detailed 3D visualization of the assets and their condition through time, as well as preventive-maintenance and capital-allocation plans across their portfolio. <https://aren.ai>



Briq is creating the technology to break down the data silos entrenched in construction. Briq uses machine learning, AI and automation to create better analytics and reporting for data in the built environment.

Briq breaks down silos by automating ingestion, curation, discovery, preparation and integration of your construction data. The company wants to solve the challenges around sustainability and waste during and after construction. Briq is also focused on empowering people across the entire built world to easily and securely manage their facilities, buildings and projects by providing an open user interface that anyone can connect to, regardless of the existing infrastructure or technical skills. www.briq.ai



Buildup is an extremely easy-to-use software for task management and punch lists that helps to substantially improve product quality upon completion, reduce costs and shorten the construction timeline. Used by owners/developers, general contractors and subcontractors, Buildup helps to communicate issues/tasks among everyone at both the jobsite and in the office to save time, minimize project delays and reduce cost overruns. <https://buildup.co>



Cumulus is building the Internet of Tools to eliminate accidents, unplanned downtime and rework caused by poor work quality in industrial maintenance and construction. Cumulus' software collects data from digitally enabled tools in the field to provide a single source of "truth" for real-time quality assurance, workflow management and progress tracking for mission-critical manual work. Cumulus' flagship application is the award-winning and patented Smart Torque System (STS). STS has managed more than 800,000 work completions, completely eliminating flange leaks on startup, reducing quality-control time up to 60% and eliminating hours of paperwork each day. www.cumulusds.com



Document Crunch is an easy-to-use artificial intelligence platform, trained by industry leaders and experts, ready to go to work for you now. It brings the power of AI to bear on one of the trickiest areas of the construction industry — risk provisions in contracts, insurance policies, plans/drawings and specifications. There are no upfront costs; pay as you go. The platform is already trained for many different use cases so you don't have to spend time and money creating a solution for your specific needs. (See story, Page 24.) www.documentcrunch.com



Gamyte's mission is to simplify bidding for commercial subcontractors so they can bid more and win more — for less. Gamyte customers forward the bid-request emails they received from their general contractors to Gamyte. The company then retrieves the relevant project files, extracts the trade-specific materials and quantities using AI and the latest estimation tool sets, prices the materials from the supplier or Gamyte's pricing database, prices the labor using Gamyte's Trade Specific Labor Pricing Expert System, and produces a bid. Gamyte's customers take minutes instead of days to produce and submit project-winning bids. No more estimation mistakes, estimator fatigue or missing out on great projects because there's not enough time. www.gamyte.com



Kwant.ai is the first company to use a proprietary, low-powered sensor network to automate construction site data collection to improve safety and productivity. Using artificial intelligence, Kwant.ai provides actionable analytics, such as schedule and cost risk and early-warning signals to optimize the workforce and predict and prevent safety incidents. Kwant.ai collects real-time location, time, identification and activity data of craftworkers and assets using minimal infrastructure not possible before and visualizes it in 3D heat maps. The company's platform empowers owners, real estate developers, builders and insurance companies to measure and mitigate risks. Its customers already include some of the largest builders, and its products are deployed in multiple projects, increasing productivity 11% and decreasing safety incidents 80%. www.kwant.ai



ProjectMark is a multifaceted, portfolio-driven network that allows companies, owners and professionals to build industry relationships, source project teams and highlight project accomplishments. ProjectMark's interactive member profiles are built to instantly engage your clients, future partners and employees, and the account dashboard allows you to easily manage your portfolio, generate custom qualification reports, collect other member profiles and favorite projects, and embed your live ProjectMap in other online platforms. www.projectmark.com



Riskcast is a productivity and forecasting tool for the construction industry that enables crews to capture work hours, equipment usage and production quantities and then give project managers valuable labor, material and equipment productivity information — all without the need to maintain multiple spreadsheets. Riskcast is a complete platform that integrates with payroll and back-office systems to give everyone real-time job-cost information, useful and timely data, approval notices, and reporting capabilities. Riskcast's mission is to enable the construction industry by unleashing the power of data to reduce risk in all areas of performance while putting project teams first in all that we do. Simply put, Riskcast is software for hard hats. www.riskcast.com

Scaled Robotics

Scaled Robotics uses robotics and artificial intelligence to provide very precise quality-control and progress information, allowing site managers to take control of their construction projects. The company's mission is to modernize construction with robotics and AI, creating a manufacturing process that is lean, efficient and cost-effective. Scaled Robotics was founded by a multidisciplinary team of experts in construction and robotics. The founders share a common vision to reduce the waste and inefficiency in the industry. www.scaledrobotics.com

SITELINE

Sitelinc, built for construction contractors of all sizes and trades, is the fastest way to compile and submit perfect payment applications. Cash flow is the lifeline of any contractor's business, yet getting paid is archaic and painfully slow. Sitelinc was started to empower contractors to expand their businesses while focusing on the jobs at hand. www.sitelinc.com

SMART BARREL

SmartBarrel is the virtual superintendent you've been looking for, the first real IoT connected construction device. SmartBarrel is more than a clocking device, it's a live connected device present on-site feeding live information. SmartBarrel connects managers and employees as never before. Since its conception, SmartBarrel has aided contractors and project managers in maximizing efficiency and effort in the field. www.smartbarrel.io

SmartPM™

SmartPM™ is a real-time automated analytics platform that translates construction-schedule data into objective, reliable and concise visuals all stakeholders can understand and use proactively to address critical project-risk issues. Automation allows for on-demand answers so better decisions can be made and the project can move forward. SmartPM was founded by construction industry professionals who saw the need to solve a chronic problem in the construction industry: too many projects suffer from delays and cost overruns caused by the misinterpretation of available project data. www.smartpmtech.com



SUBHQ
FOR SUBS BY SUBS

SubHQ is a field-friendly project-management software built for subcontractors by subcontractors with a commitment to empowering subs to better perform, compete in an increasingly technological world and effectively manage projects from bidding to completion. Streamlining processes and integrating natural workflows, SubHQ is a field-tested and field-approved solution for subcontractors. SubHQ's cloud-based solutions allow for custom project-specific setups, efficient change-management workflows, project-specific timecard entries, and integrated safety and quality compliance without making things more complicated than they need to be. www.subhq.app

Ultra High Materials

Ultra High Materials' advanced and sustainable cement and concrete formulations represent a breakthrough in providing environmentally friendly products that offer an 80% to 90% reduction in carbon footprint compared with ordinary portland cement (OPC) while meeting or exceeding the performance specifications of OPC-based concrete. UHM concrete was developed at the Vitreous State Laboratory, an internationally recognized research facility at the Catholic University of America in Washington, D.C. The inventors are materials scientists with decades of experience and numerous patents. With the exclusive right to license these materials, UHM can tailor recipes to meet a customer's specific needs and provide on-going technical support throughout development and production. www.ultrahighmaterials.com



WakeCap offers incredible visibility into what's actually happening with the labor force at all times during the life of a project, not just what you think is happening. Every day, WakeCap gives you key metrics about the actual (versus plan) productivity, time spent by crews in the areas they've been allocated, problem areas blocking the correct flow of people around the site, check-in and -out, and more. All of this is done using an ultralight device that replaces the hard hat ratchet knob, and with an on-site network that works whether or not there's cellular signal. With an 18-month battery life on the hard hat and zero worker training to use it, WakeCap has brought success to large projects around the world. www.wakecap.com

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**Fireside Chat with
NABTU President
Sean McGarvey**

Moderated by TAUC CEO
Steve Lindauer

DECEMBER 9, 2 – 3 PM EST



Join TAUC CEO Steve Lindauer as he conducts an exclusive interview with North America's Building Trades Unions President Sean McGarvey about the future of the union construction and maintenance industry. The two will discuss emerging industrial trends, legislative and political challenges on Capitol Hill, what owner-clients are telling him about their priorities for the New Year (and beyond) and potential opportunities for continued partnership between contractors and unions.

Ready for 2021? Register Now for the TAUC Webinars and Prepare for The New Year!

www.tauc.org/talks

Document Crunch Wins IGI 2020 Start-Up Battle

New Firm Uses Artificial Intelligence to Review Contracts and Insurance Policies

BY TIM SPENO, PRESIDENT & CEO, E2E SUMMIT

One of the highlights of Virtual Industrial Grade Innovation 2020 was our third annual Start-Up Battle. This year, 16 construction-technology startups competed in four rounds of head-to-head battles to see who would win the title of IGI Start-Up Battle Champion — not to mention the \$20,000 grand prize sponsored by Barton Malow and NMAPC. Each startup pitched its company to venture capitalists and online attendees, who all got a chance to vote.

When the dust settled and the buzzer sounded, the winner was Document Crunch, a fascinating new venture that brings the power of artificial intelligence (AI) to bear on one of the trickiest areas of the construction industry — risk provisions in contracts, insurance policies, plans/drawings and specifications. Here's a look inside its operation.

The Problem

Construction contract documents and insurance policies contain huge risks for contractors. They are often long and complex and can include hidden risk-shifting provisions and traps for the unwary. Those same critical risk provisions are sometimes hidden in voluminous technical specification books and in notes on drawings and plans.

Finding these risks — and understanding how to navigate and address them — is critical to ensuring that projects are completed successfully. Hiring lawyers to review all these documents is extremely expensive and time-consuming.

Enter Document Crunch co-founders, Josh Levy and Adam Handfinger. The two have been working as construction lawyers representing contractors as both in-house and outside counsel for more than 30 years combined. Josh was originally Adam's law

clerk and associate, until leaving to work in-house at an ENR Top 50 Contractor. Josh then became Adam's client, and the two continued to collaborate on these issues.

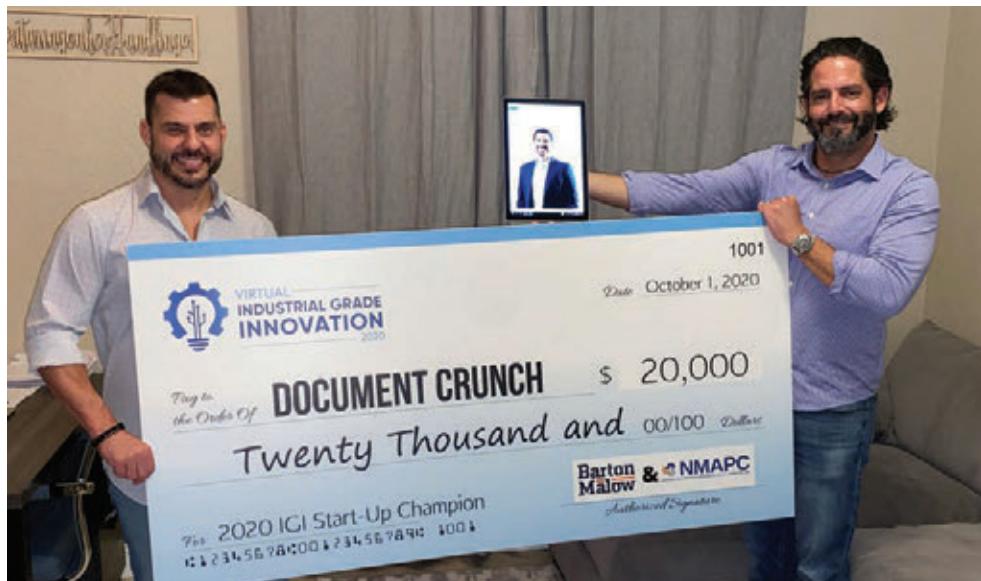
Josh and Adam have seen firsthand how a bad contract can torpedo a contractor and the pain points contractors feel trying to manage these risks and navigate toward success. About two years ago, after hearing about the significant advancements in natural language processing and data extraction, Josh and Adam went looking for a platform that could be immediately used to review these complex and voluminous documents. Nothing was available. Literally, no options.

So their mission changed. Josh and Adam formed Document Crunch to solve this problem specifically for the construction industry.

The Solution

Document Crunch allows contractors, owners and insurers to upload contracts, insurance policies, technical specifications and drawings to its AI platform. This platform quickly digests and deconstructs the documents and provides an intuitive, easy-to-use interface that helps users identify and review critical risk-shifting provisions and important business terms (see box, Page 25).

After processing the documents and identifying the relevant provisions, Document Crunch grants users access to an intuitive platform that allows them to quickly locate the provisions, conduct word searches, make notes for each provision and share the output (or what they call the "Crunch") with other users free of charge. Document



L-R: DocumentCrunch's Adam Nadler, Josh Levy and Adam Handfinger.



Crunch's construction industry curators — real live human beings! — also provide helpful tips and practice pointers for each provision, as well as suggested sample language that can be used via simple copy/paste. The format is easy to use and promotes fast and efficient navigation through the document.

Tech Specs

Document Crunch deploys best-in-class AI and natural language processing to identify provisions in documents. The platform was designed specifically to work with all forms of construction contracts, insurance policies, plans/drawings and specifications. It was "trained" by their curators, who specialize in managing these types of risks, to read and identify the provisions they typically look for when reviewing these documents. Document Crunch puts the power of their expertise and experience in its users' hands for a fraction of the time and cost of traditional methods (hiring lawyers, long review processes, etc.).

This is possible because the AI platform can "learn" how to automatically identify, tag and extract relevant items the same way a human reviewer would. The technology isn't perfect, but it provides an amazing tool for fast and efficient reviews. Document Crunch is a great way to conduct a "first pass" through a document for speed, as well as a "final pass" for accuracy, to confirm that nothing important was missed or changed before being executed. Document Crunch can also be used to conduct legacy/historical document reviews to identify the risks taken on by contractors over time (hello, underwriters!). Document Crunch is an extremely powerful tool to leverage the promise of big data and help inform future decision-making.

Learn more about this year's IGI Start-Up Battle winner at www.DocumentCrunch.com, and view its Start-Up Battle video at www.tauc.org/dc. ■

Crunching the Docs

Document Crunch's AI engine quickly identifies dozens of critical provisions in contracts and insurance policies. Here's a quick overview:

Construction Contracts

- Insurance Requirements
- Payment/Performance Bonds
- Consequential Damage Waivers
- Indemnity
- Hazardous Materials
 - Responsibility
- Subsurface Conditions
 - Responsibility
- Subrogation Waivers
- Termination Provisions
- Limits of Liability
- Warranty Obligations
- Right to Stop Work
- Order of Precedence
- Fiduciary Duties
- Pay If/When Paid
- Mandatory Subcontractor Flow-Down Requirements
- Notice: Requirements and How to Perfect

Insurance Policies

- Additional Insureds
- Residential Exclusions
- Declaration Pages
- Named/First Insureds
- Business Description/Form of Business
- Schedule of Forms and Endorsements
- Exclusions to Coverage
- Exceptions to the Exclusions
- Subrogation Rights
- Conditions Precedent to Coverage
- Duties of Insured After Loss
- Deductibles
- Self-Insured Retentions
- Primary, Excess and Non-Contributory Policies
- Cancellation of Policies
- Stated/Aggregate Limits of Coverage
- Policy Term

Plans/Drawings and Technical Specifications

It's hard to believe, but many risk-shifting provisions can be hidden in these technical documents. Document Crunch finds all the following risks:

- Design Responsibility
- Hazardous Materials
 - Responsibility
- Consequential Damage Waivers
- Warranty Obligations
- Confidentiality Requirements
- Completion Defined: Substantial and Final
- Designated Representatives
- Indemnification
- Subsurface Conditions
 - Responsibility
- Limits and Disclaimers of Liability
- Liquidated Damages
- Mandatory Subcontract Flow-Down Requirements
- Order of Precedence
- Fiduciary Duties

The Plus Factor

BY DAVID ACORD, TAUC
DIRECTOR OF COMMUNICATIONS

This issue's cover features Sarcos Robotics' new Guardian XO, an advanced exoskeleton suit that allows the wearer to "level up" their physical strength and complete arduous tasks on a construction site more easily and safely. We chose the picture not just because it looks cool (although it does), but also because it's symbolic of why TAUC created the Industrial Grade Innovation Conference and Expo, or IGI, in the first place. The image shows a craftworker using technology to their own advantage — and that of the contractor and owner-client as well. The suit enhances and improves her performance and contributes to the overall success of the project; it adds value rather than subtracts from it.

When we saw the Guardian XO in action, we knew we had to have the company's chairman and CEO, Ben Wolff, participate in Virtual IGI 2020. Wolff gave a fascinating keynote address, laying out Sarcos Robotics' vision for the future and delivering a strong argument for using technology to increase employment and open up new opportunities for union craftworkers. As he put it, the goal is to create "robotic systems that *augment* humans, instead of *replacing* them, for increased safety and productivity."

"One of the things that is clearly on everybody's minds these days is what's going on with our labor workforce," Wolff said. "The global industry is facing a double whammy. Number one, we've got fewer new workers that are coming into the industrial workspace, and those that are in it are aging. We've got lower birthrates in most of the industrialized world. We've got an aging workforce, and that creates a lot of challenges for us. And then the second part of the double whammy is that we have increasing economic and social costs associated with people getting injured on the

job. And when those two things collide, we wind up with a pretty significant set of factors that can negatively affect our industries going forward."

Wolff noted that by 2050, more than a third of the U.S. workforce will be 65 or older. This creates a huge dilemma for craftworkers with physically demanding jobs. As they grow older, they may not want to retire — and contractors certainly don't want to lose their decades of expertise. Thanks to technology like the Guardian XO, these journeymen have a chance to safely continue their careers and pass on their wisdom to a new generation.

Speaking of which, Wolff said advanced robotics could also help attract a new demographic to our industry. "Young people aren't interested in going into jobs that involve heavy lifting or other types of physical exertion in the manufacturing sector," he said. "Back in 2018, Deloitte estimated that manufacturing in this country alone would be short by 2.4 million workers by 2028. That's going to have a \$2.5 trillion negative impact on our economy. And that's just the manufacturing sector." By adopting innovations like the exoskeleton and other advanced hardware and software, our industry has a better shot at convincing tech-savvy young men and women that we provide more than just good-paying jobs; we offer enriching and satisfying careers.

Hidden Connections

The Guardian XO and similar augmentation technology can also play an important role in reducing jobsite injuries. "In one of the more recent studies that was done, it was estimated that across the country, 25.9 million workers lost an average of 7.2 days of work a year due to back pain," Wolff said. "As a country, that costs us \$100 billion a



Sarcos Robotics exoskeleton suit

year in both direct and indirect costs. So there are significant economic impacts associated with occupational back injuries, which are the second-leading reason why people don't come to work in this country, second only to the common cold."

And those back injuries can lead to an entirely different and even more dangerous problem: opioid addiction. According to the Bureau of Labor Statistics, each year, roughly a million U.S. workers suffer a musculoskeletal overexertion injury. Now consider that a full 60% of legal opioid use is due to chronic lower-back pain. "We can start seeing a clear cause-and-effect relationship between people getting injured on the job, the use of legally prescribed opioids and then what happens in the abuse of those medications when prescriptions run out and people still find themselves experiencing pain," he said. "So another huge social and economic impact associated with injuries on the job."

Wolff added that workers' compensation payouts were more than 70% higher in construction than in other business sectors

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Becoming an Algorithmic Leader

BY DAVID ACORD, TAUC DIRECTOR OF COMMUNICATIONS

Mike Walsh, noted futurist, speaker and bestselling author, captivated attendees at Virtual IGI 2020 with a deep-dive presentation on mastering the post-COVID-19 business landscape. A regular contributor to *Harvard Business Review*, Walsh helps Fortune 500 organizations answer the question, “Where do we go from here?” In this era of technological change, contractors, building-trades reps and owner-clients are asking that same question. Walsh also specializes in identifying what he calls “mind grenades” — provocative questions designed to challenge teams and stretch their thinking. His specialty is being able to straddle the two worlds of emerging technology and business leadership, translating cutting-edge innovation into practical and prescriptive advice about new ways of working.

“There is no such thing as digital disruption — just digital delivery,” Walsh told attendees. “We are all disruptors now. If we hadn’t figured out, in this day and age, how to engage our customers and clients on digital platforms, how to make Zoom and remote working function, we would probably no longer be in business. Being digital now has become nothing special. It’s just the process of staying alive.”

Redefining Work

Walsh said the pandemic had irreversibly changed how work gets done, with millions of people now working out of their homes and other nontraditional spaces. But he said we must be careful about how we view this fundamental shift. “There is no such thing as remote work — just work,” he explained. “We are in a new environment, and when things start to go back to normal, we’re likely to see very different workplaces and new blended working styles. But as many of us have already experienced, the real challenge here is not technology. Ultimately, if you want to

change, you have to realize that *culture* is your true operating system. When I say culture, I mean the way people collaborate — the way your best people get things done, the way they make decisions, the way they think outside the box.”

He added, “I don’t even like the phrase ‘remote work,’ because its very formulation suggests that somewhere, someplace, is an office where the real work actually gets done and anything else is some kind of adjunct to that. But it shouldn’t matter where you are, and what we’re going to see in the next few years is an acceleration of technologies that allow a more adaptive set of work styles. Now, this doesn’t mean the office is going to go away. It just means you don’t need to go to an office in order to get things done.”

In the end, Walsh argued, it’s really not *where* we work that’s changing, but *how*. The future lies in distributed work and distributed organizations that are much more flexible and adaptable. “We have to design offices that are not only smarter, but that are driven more by data, and are more responsive to people’s needs,” he said.

Becoming Algorithmic

To navigate the new business world, Walsh urged attendees to work on becoming what he calls “algorithmic leaders.” As he explained, “That doesn’t mean we need to learn how to program or code; it just means that to be an effective leader in the algorithmic age, we need two very different sets of skills. On one side, we need the ability to really understand the complexity of human behavior — how do you motivate people on your team? How do you know what a great client experience is? These are intrinsically analog human emotions. But we also need to take on some qualities of machines as well. So how do we leverage technology to drive automation? How do we get smarter using data to make more insightful decisions and judgments?”

“My advice would be that the best thing you can do is to constantly challenge your own assumptions about the future,” he said, adding, “We have to become better at being ‘learning organizations.’ What I mean by that is how you can learn from your interactions and data. In a way, this is what’s already happening today in e-commerce and retail. You’re seeing the world’s

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Mike Walsh addressing Virtual IGI 2020

The Notable Nine: Skills and Mindsets for Future Leaders

BY DAVID ACORD, TAUC DIRECTOR OF COMMUNICATIONS

Virtual IGI 2020 ended on a high note, with a dynamic presentation from keynote speaker, futurist and bestselling author Jacob Morgan. His latest book, *The Future Leader: 9 Skills and Mindsets to Succeed in the Next Decade* (Wiley), zeroes in on the necessary qualities to triumph in our increasingly tech-centric society. Morgan interviewed more than 140 top CEOs and Fortune 500 leaders and surveyed 14,000 employees from around the world through a partnership with LinkedIn. The result is what he calls the "Notable Nine" — four mindsets and five skills that leaders need to cultivate to succeed in the next decade (and beyond).

The Four Mindsets: How Future Leaders Need to Think

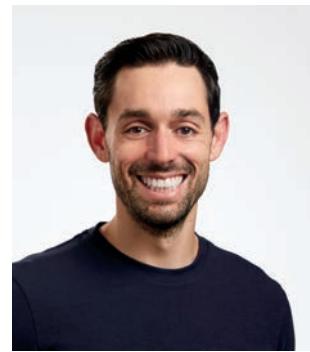
The Global Citizen. "The mindset of the Global Citizen means that you're able to think big picture and that you are able to surround yourself with people who have cultures, backgrounds, values, attitudes and expectations different from yours," Morgan explained to IGI attendees. "Think big picture. I like to use the analogy of chess. Don't just pay attention to where the action is going on the chessboard — look at all 64 squares. If you're in one aspect of the business, try to understand it as a whole. If you're in one geographic location, try to think beyond that geography ... the second part of this is, you have to surround yourself with people who are not like you. They don't think like you, behave like you or act like you, or even believe in the same things that you believe in."

The Servant. The servant mindset means that as a leader, you are here to serve. You serve your team, your customers,

your leaders and yourself. "When I say 'serve yourself,' people get a little confused, because this mindset also means that you need to have humility and vulnerability," Morgan said. "What I mean is ... if you want to be able to guide other people to success, then you need to make sure that you can show up to work each day and focus on your spiritual, mental, physical and emotional health. If you show up burned out, stressed out, disengaged, frustrated or whatever, you can't lead other people. So you actually need to take care of yourself."

The Chef. The chef is about balancing two crucial ingredients: humanity and technology. "If you put too much focus on one ingredient, things get off balance," Morgan advised. "If you only focus on technology, you'll be fast, productive and efficient, but you won't be able to attract and retain top talent. If you only focus on the human aspect of work, then you will be slow, inefficient and not as productive in your decision-making. Use as much technology as you want in your company, but not at the expense of your people; use technology in a way that augments your employees, not in a way that replaces them."

The Explorer. Having an explorer mindset means having a curiosity and growth mindset, Morgan continued, as well as "the agility and nimbleness as a leader." Adopting the explorer mindset means understanding that you can still learn, grow and become better; nothing is fixed. "In this rapidly changing world of work that we're all a part of, you can't have that attitude of, 'I've seen it, I've done it, I know what it's going to be like.' Nobody has seen it all; nobody has done it all. Nobody knows it all."



Jacob Morgan

The Five Skills: What Future Leaders Need to Know How to Do

The Coach. "A coach helps you become a better version of yourself," Morgan said. "A coach helps you become more successful — even more successful than the coach. Being a great coach means understanding your employees as human beings — their passions and fears, even how their families are doing. In the current pandemic environment, it's crucial for leaders to build these types of relationships," Morgan added.

"There's a lot of talk and debate around technology and automation and the role that it's going to play on the future of work," Morgan said. "I fundamentally believe that a lot of what leaders do can be broken up into two buckets. On the one hand, they tell everybody what to do, they make the decisions. And the second component of leadership is helping people move in the direction of that decision. Very broadly speaking, now what we're starting to see is that technology and automation is going to help augment a lot of that decision-making process from leaders. ... What that means is that if you're a bad leader, and all you do is make decisions and tell other people what to do, technology is going to be more effective at it than you. Then what is your value to your company as a leader? It's marginal at best and nonexistent at worst."

"If, on the other hand, you are a good leader, and you also practice these human components, then your value to the organization

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SOS: Avoiding the Pitfalls of “Shiny Object Syndrome”

How to Choose the Right Tech — and Ignore All the Hype

BY TODD MUSTARD, TAUC VICE PRESIDENT OF INDUSTRY INNOVATION & GOVERNMENT AFFAIRS

One of the main objectives of TAUC's Virtual Industrial Grade Innovation (IGI) 2020, held online Sept. 29 to Oct. 1, was to help our member contractors, their customers in the owner-client community and our partners in the building trades identify best practices for purchasing, implementing and training workforces on new innovation and technology solutions. We brought together a group of seasoned experts to share insights and offer frank, real-world advice on what to do — and what *not* to do.

A common trap many organizations fall into when adopting new tech is buying a product or system based on “bells and whistles.” It's called “shiny object syndrome” (SOS) — choosing what's cool or new or “the next big thing” instead of focusing on finding the best tool to meet your organization's specific needs. Getting caught up in SOS is a recipe for disaster and leaves a bad taste in everyone's mouth. Your team ends up wasting precious time, energy and financial resources, and the negative experience can make both the leadership team and those in the trenches you rely on to implement the new tech hesitant, or even hostile, to adopting it in the future.

So how do you avoid SOS and create a successful, real-world plan for adopting new technology? Here's what several of this year's presenters at Virtual IGI had to say.

Aaron Geiger of Alberici (a member of the TAUC Innovation and Technology Committee) discussed how his company rebounded from a bad case of SOS five years ago. Realizing that something had to change, executives who learned from their mistakes identified four best practices: (1) create your own internal ecosystem that helps cultivate a culture of innovation and

champions new innovative processes, (2) encourage grassroots support, (3) set standards that all new tech should follow, and (4) adopt a paid pilot approach that allows your company to test new innovation in the real world on a small scale, allowing the flexibility to fail at times to succeed in the long term. Today, Alberici has a system that allows employees to identify potential technology options, test their viability and collaborate with innovation labs and accelerators to drive value in the build process.

The panel titled “Start Here: Building Your Company's Tech Strategy” featured Frank Sarno of Adolfson & Peterson Construction, who suggested first identifying where you stand techwise as a company. What tech do you currently use? What are your current capabilities? These are helpful starting points to develop a road map to get where you want to be. Justin McFarland of McCarthy Holdings advised companies to start small and get incremental value from technology solutions rather than try to “hit it out of the park” and implement a big, top-to-bottom overhaul. Testing new tech on a project- or site-specific basis is a great way to limit your risk exposure and see if the hardware or software truly provides the promised value to your customer.

Owner-clients and contractors often struggle with the question of whether to buy an off-the-shelf technology option or build a homegrown custom-software solution. This “build versus buy” quandary is a difficult one. Custom-built solutions often have steep upfront costs and require upkeep and maintenance throughout their life cycle — something your company will be required to manage. This usually isn't a problem with off-the-shelf products; the service provider keeps their products updated and running



smoothly. However, these options don't always meet specific needs because they are built for a large and diverse customer base, and they can be difficult (or impossible) to customize.

Will Southerland of Williams Companies gave attendees an overview of how his company decided to build its own solution, why it made sense to go that way and how it went about it. In 2013, Williams Companies was looking for software to track progress on construction projects and provide real-time data collection. It also needed a usable offline interface and the ability to take and store pictures and summarize large amounts of data into user-friendly reports. At the time, off-the-shelf options were limited, so that made Williams' decision to build rather than buy much easier.

Brad Birck of Enerfab (also a member of the TAUC Innovation and Technology Committee) discussed the challenge of collecting, analyzing and distributing accurate information in an efficient and cost-effective way. His company set about developing a set of productivity and safety tools that integrates with its internal SAP system and provides timely info to its teams and customers. Its digital universal time sheet is the backbone to its suite of field productivity tools (including customer approval, work-order creation, supply chain management and an invoice portal). Adoption has been mixed from clients, but those who use it have seen significant efficiency gains. Communicating the benefits to all stakeholders is critical to

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IGI 2020 Explores Nexus of Innovation and Safety

BY ALEX KOPP

Alex Kopp is EHS Director for The Association of Union Constructors. He can be reached at akopp@tauc.org.



Rapid advances in technology are changing the construction industry's approach to jobsite safety. At TAUC's Virtual IGI 2020, held online Sept. 29 to Oct. 1 and available on demand at www.igiexpo.com, we explored several important aspects of the new tech-safety nexus, and the answers we received from experts were both informative and, at times, surprising.

The COVID-19 pandemic has prompted construction firms to look for new ways to keep workers healthy and productive on the job. John Jurewicz, Director of Innovation at Walbridge (and TAUC Innovation and Technology Committee member), provided an overview of the important role wearable technology ("wearables" for short) can play in this regard. As the name implies, wearables are small electronic devices that workers wear on the job. These devices can collect and transmit a wide variety of information about a person's health, physical location, activity level and even proximity to danger. They are also ideal in contact tracing, a method used to determine the source of a viral outbreak. Ensuring the safety of the workforce during this pandemic has amplified the advantages of wearables on many jobsites across the country.

Jurewicz explained that wearable tech has four levels, from the basic to the highly advanced, and that as the features increase, so do the price points. As with any product, you get what you pay for. When employing wearables on a jobsite, the first thing to determine is the type of information you need to collect, how long you need to store said information and how important anonymity is to your workforce.

The first level tracks basic social interactions among workers and is the simplest means of providing worker safety. This level

can be done without storing data. It will alert those wearing the devices if they are not properly socially distanced.

The second level of wearable tech gives you the ability to collect more detailed tracking data, which can then be stored for up to 14 days for later analysis. This can be accomplished through a tap-in/tap-out in a zone point or transmitting the data when you charge the device.

The third level of products enhances worker tracking even further, providing full contact tracing and the ability to pinpoint worker locations through the sophisticated triangulation of data. At this level, you can tell which workers were in contact with others in a specific area of the jobsite and for how long. Stand-alone Wi-Fi kiosks, mesh networks or other types of equipment are usually required for this level of tech to function adequately.

Finally, the fourth and most advanced level of wearable tech gives you all the features above as well as the ability to monitor workers' individual health and wellness. Wearables in this category can track a person's level of hydration, body temperature and respiration and send warnings when they overexert themselves.

Once you figure out the level of detail and accuracy you need from wearable tech, the next step is to figure out the best way to integrate it on the jobsite. The location of the job plays a big role. Is it in a remote area?

What kind of Wi-Fi capabilities are available? Could other structures in the area interfere with the Wi-Fi signal? Here are a few other variables to consider:

- What is the battery life of the wearable tech? How will you train your workers to keep them charged?
- What's the cost of maintaining the wearable tech after you've bought it? Who will be responsible for providing networked kiosks or other support mechanisms?
- What happens if the system goes down and/or you lose Internet connectivity? What is the backup plan?

Yes, there are a lot of questions to answer — and the ones above are just the tip of the iceberg. But as Jurewicz pointed out, the benefits of wearable tech can far outweigh the initial pain of figuring out a strategy for using it in a practical and efficient way. And aside from contact tracing, wearables can also aid in a variety of other safety areas, including prevention of "struck-by" and "caught in or between" injuries, locating material assets and missing equipment, and alerting workers to invisible dangers, such as elevated carbon monoxide, dangerous spills, etc.

The bottom line: take the time to make the right decision when it comes to wearable technology. Be sure to include your entire team (including safety leaders) in the process so that everyone is on the same page. By working together, you can effectively

Sometimes the best solutions don't have to be complex. Sometimes it can be as simple as ensuring everyone attends a safety meeting...

Innovation, Diversity and Inclusion

BY JENNIFER MCNALLY

Jennifer McNally is
Marketing Manager
for The Association of
Union Constructors.



The importance of diversity, inclusion and culture has become a hot topic in 2020, which is why TAUC invited two experts on the subject to participate in this year's Virtual IGI. I was lucky enough to moderate the breakout session titled "How Your Company's Culture and Diversity Can Impact Your Ability to Innovate" with Dr. Giovanna Brasfield (or Dr. G, as she is more commonly known), Flatiron Construction's Vice President of Diversity and Inclusion, and Sasha Reed, Director of Industry Advancement at Procore.

The conversation covered what their companies are doing as it relates to culture, inclusion and diversity and how those efforts can ultimately have a significant influence on a contractor's ability to innovate and continue to thrive in an increasingly high-tech market sector.

Culture Comes First

Reed noted that the pandemic is being felt across many industries. We are using technology to monitor construction activity as well as connect with colleagues in different ways. The rise of remote working has put a magnifying glass on how important a strong culture is not only for our businesses but also for our industry as a whole. Our teams have to work together — and stick together — even though they aren't physically together and sharing the same space like the old days. That's a huge challenge, and the stakes have never been higher.

In the 21st century, a company's culture is inextricably linked to its ability to recruit and retain the best and the brightest. If you don't have the right culture, you won't get the right workers. As Steve Zahm, Procore's President and Chief Culture Officer, put it, "Culture is a real business

strategy and a real business tool that you can use to outperform your competitors."

Procore recently launched Culture Academy, a three-day immersive experience designed to help its customers delve deep into how culture is created, defined, practiced and experienced across all projects and geographic areas. Reed said that general contractors, subcontractors and owner-clients who attend the academy all ask the same question: How do we recruit the best and brightest from the next generation?

"People are our most important assets," Flatiron's Dr. G agreed. "Culture, inclusion and diversity are so important. In 2013, we [at Flatiron] launched our Diversity Inclusion Growth group. But more recently, we've had to pivot. We are looking at how we recruit, retain and develop our talent. Our executives are really leading these conversations and want to know how we can have a sustainable program that will last."

The Innovation Code

Innovation, by definition, is the disruption of the status quo. In the construction industry, you could argue that the status quo is white and male. If you want to innovate and disrupt, you need honesty as well as disagreement. As Reed pointed out, one of the things she loved most when she worked for a specialty contractor earlier in her career was being on jobsites and experiencing the energy of conflict: "What went wrong, who was to blame and how are we fixing it?" Our industry is full of people who love to challenge authority, love to try to figure out complex problems, and that's great! Having people from diverse backgrounds who can view problems from different perspectives ultimately benefits the

If we want to attract a new generation of workers, we must begin by looking at our culture.

final product.

Reed noted that Procore had created a communications position that works exclusively on diversity and inclusion to spread the word outside its organization. As baby boomers begin to leave the workforce, the next generation is seeking jobs where workers can see themselves represented in the organization — both from a technology perspective and a people perspective. They are interested in seeing diverse faces when they go to work every day. In some ways, technology eliminates some of the inherent unconscious biases and allows us to identify issues using data and metrics that don't have a gender or color. The goal is to ensure that the next generation sees the construction industry as a long-term career, not just a short-term job.

The events of this year — from the effect the pandemic has had on our industry to renewed awareness of the need for social justice and diversity in our workplaces — have made recruiting and retaining talent an even greater priority for those of us building America's future. TAUC's members and leaders will spearhead these efforts to bring the next generation of builders into our industry, constructing a future that instills pride in all of us. ■

The Pandemic Pivot: How Contractors and Trades Are Adapting and Thriving

BY MIKE DORSEY

Mike Dorsey is Senior Director of Industrial Relations and Development for NMAPC & TAUC. He can be reached at mdorsey@tauc.org.



Welcome to 2020, when onboarding a new craftworker can often take place online instead of in a job trailer and when apprenticeship classes sometimes happen at kitchen tables instead of union training facilities. After lagging behind other business sectors for years, the union construction and maintenance industry has finally embraced the power and promise of innovation and technology to keep projects moving and companies running in the middle of an unprecedented global pandemic.

It was fitting, too, that TAUC's third annual Industrial Grade Innovation Conference and Expo (IGI) — which was created to help the industry learn about and adopt new technology — went 100% virtual this year. Besides a stellar set of keynote speakers, Virtual IGI 2020 showcased dozens of vendors and solution providers and held 18 breakout sessions, where attendees could listen to subject-matter experts and drill down on specific issues related to construction technology.

I was fortunate to host two of those breakout sessions. One highlighted the Barton Malow Company's (BMC) innovative approach to onboarding for new craft hires in the age of COVID-19, and the other was an inside look at how the Ironworkers International Union has used technology to keep its apprenticeship training programs running.

Regarding craft onboarding, BMC's Matt Hedke, Senior VDC Manager (and TAUC Innovation and Technology Committee Vice Chair), walked participants through the company's experience as it began to digitize and modernize the craftworker hiring process, something that had almost always taken place in person. But when the

pandemic hit in early March, BMC execs knew they needed to make a change. Their goal was to come up with a simple process that (a) could be integrated into their enterprise resource planning system, (b) would reduce or eliminate close contact between participants and allow for social distancing, and (c) would meet with the approval of the local unions. The result was a robust new system that allowed for most new-hire and post-hire onboarding tasks to be carried out electronically from one's own home; they also started work on a kiosk solution so many of those same tasks could be completed on a jobsite if necessary.

Hedke said that besides streamlining onboarding, the new process also produced several other advantages. It eliminated double entries into the system and drastically reduced the need for physical documents. He added that the next step for BMC is to solicit feedback and then develop a road map for rolling out the new hiring system across the entire company.

In the second session, Lee Worley, Executive Director of Apprenticeship and Training for the Ironworkers International Union, shared how the union is using technology to ensure apprentices receive the

necessary training during the pandemic. Citing his craft's willingness to incorporate distance learning into its apprenticeship curriculum as early as 2007, Worley noted that when COVID-19 hit, the Ironworkers quickly embraced the virtual classroom. Paired with the Ironworkers Learning Management System and materials that had already been converted into various electronic formats, the Ironworkers went about receiving approval from the Department of Labor and the Joint Apprenticeship and Training Committee to proceed with online training. After the approvals were in hand, staff went about implementing apprenticeship training classes through RingCentral and Zoom and have never looked back.

Both breakout sessions — which are available to view on demand at www.igi-expo.com through the end of November — illustrate the extent to which our industry is embracing technology during these tough times. In addition, our contractors, union reps and owner-clients are proving day in and day out that despite the old stereotypes, they are willing to think outside the box and embrace flexible solutions to get the job done. ■





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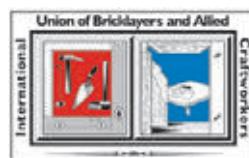
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The “Warm Body” Era Is Over (Again)

Continued from page 8

Before I give a few recommendations on how to improve recruitment, I would like to provide a case study in best practices. Here is a stark example of what it takes to succeed in today's high-stakes business world.

My daughter's fiancé is a nerd — a really, really smart one. He works for Glassdoor running teams in Kenya and other places. He wants to work for Google. His application process at Google (so far) has included 12 interviews and countless hard-ass problem-solving exercises. Now he has finally reached what they call the “hiring committee” stage, where Google execs grind through the “best of the best” to decide who gets hired. That's how it's done. That's the discipline and commitment required to be a world-class organization. Google owns the world's intellectual capital market, and it doesn't settle. Ever. And neither should we.

My suggestions are short and sweet. This temporary moment of industry contraction gives us a perfect opportunity to redesign recruitment from scratch. Let's start by doing the following:

1. Every candidate entering a union apprentice program should undergo extensive, fair and ranked testing and evaluation. If it's good enough for colleges in the U.S., it's good enough for us.
2. Our evaluation process should be similar to ones used by police and fire departments. Each candidate should be interviewed for at least half an hour by a team of professionals — including union contractors.
3. Apprentices who quit the program (not removed for cause) should be interviewed to find out what persuaded them to drop out. This information can be used to improve training and implement changes where necessary, ultimately saving hundreds of millions of dollars over the next decade.

The union construction industry can't afford average candidates to become our foundation of talent. Not everyone deserves the “free ride” treatment that our world-class training programs provide. We need to take a more proactive approach and get contractors much more involved in the evaluation process. In today's ultracompetitive marketplace, compromising on talent is flat-out unacceptable. It's up to all of us to commit to a new path forward. ■

DOJ Picking Up Steam on Bid-Rigging and Price-Fixing Cases

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This case has just recently started to move forward, so it is expected that several other businesses and individuals will be charged in the coming year.

These cases are a stark reminder that the DOJ is still actively enforcing antitrust laws in the construction industry. Individual Sherman Act violations carry a maximum penalty of 10 years in prison and a million-dollar criminal fine. Companies can be fined up to \$100 million. The fines for antitrust and fraud conspiracy charges can be increased to twice the gain derived from the crime or twice the loss suffered by the victim of the crime if either of those amounts is greater than the statutory maximum fine.

Therefore, it is crucial for companies to have clear and strong antitrust compliance policies, as well as comprehensive antitrust training for employees. We recommend that all TAUC members review the association's antitrust

compliance program at www.tauc.org/antitrust and that, if they have not already done so, they develop their own companywide compliance program. ■

The Plus Factor

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and that construction workers were six to seven times more likely to overdose on opioids. “All of that combined results in a \$1.6 trillion global impact on productivity in the construction industry,” he said. “So these are no small challenges to try and figure out a way to overcome.”

AI and the Real World

Although Wolff runs a tech company, he doesn't believe that automation and artificial intelligence are “silver bullets” that will magically solve all these problems — and they won't replace workers anytime soon, either. Even the most advanced AI systems and supercomputers are only able to process a fraction of the information the human brain can. “They simply can't compete with humans for complex tasks, like most of the tasks that are performed in this industry,” he said. In fact, surveys show that companies

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Post-Election Political Analysis and Forecast
Jim Vandehei, Axios

DECEMBER 16, 2 – 3 PM EST

As the co-founder and CEO of Axios media company and former co-founder and CEO of Politico, Jim Vandehei is plugged in to the Washington, DC power structure like few others. That makes him the perfect choice to take us on a tour of the post-election landscape. We don't know if we'll have a new president or which party will control the House and Senate, but regardless of what happens on November 3, Jim will provide razor-sharp analysis and an insider perspective on what is sure to be a wild and eventful 2021.

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that adopt automation end up either maintaining or increasing the size of their staffs.

"The key drivers of automation are increased productivity, decreased expense, increased profits and decreasing the impact of labor shortages," he added. "All of those are drivers in [the construction] industry ... our mission today is to save lives, reduce injuries and increase productivity with robotic systems designed for tasks that cannot be automated. We combine human intelligence, reflexes, instinct and judgment with robotic strength, endurance and precision."

The idea behind the exoskeleton was simple: create a machine that "could give humans superhuman strength and allow them to safely do a lot more than they could before," Wolff said. The full-body Guardian XO allows the wearer to lift up to 200 pounds and takes nearly 100% of the load off them. It has near-continuous operation and is powered by lithium-ion batteries. It takes about 30 seconds for someone to get in and out of the suit.

"This has the benefit of extending the useful life of workers that are aging so they can continue to work the way they did back when they were in their 20s," Wolff said. "It opens the aperture of those who are qualified to be able to do physically demanding work, whether they're young or old, big or small. You can do the same kind of work that might otherwise have to be done by somebody that's built like a football linebacker. And it's a force multiplier that allows one person to do more with the hours that they have in a day."

To learn more, go to www.sarcos.com. ■

Becoming an Algorithmic Leader

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biggest retailers spending a fortune redesigning smart warehouses and using advanced logistics. This is not ultimately just a race to cut costs or reduce labor. I believe something far more interesting is going on, which is that these organizations

realize that their success in the future will depend on their ability to turn data into customer insights."

Here are some questions, "mind grenades" and proactive steps Walsh encouraged attendees to try out:

- What can you learn from the youngest members of your team? How can you better incorporate their frame of reference into your ideas or strategic road map?
- What is the client behavior that you thought would have taken another five years to manifest, but that has actually been accelerated by the current pandemic environment?
- Are your teams empowered to act or do they need to first ask permission? "This has become very important in the current crisis, because suddenly people realize there was just no time, you know, to have centralization," Walsh said. "Decision-making authorities and teams need to be smaller. They need to be more empowered, and they need to be more agile."
- Create discussion channels (Slack, Webex, Microsoft Teams) where you and your team can share stories from clients or others in the industry, examples of people leveraging technology and data to create new ways of working or new business models. Get people excited and enthusiastic about making this kind of transformation.
- What is a long-held belief, orthodoxy or habit in your team or organization that you would love to change? What is a piece of data that you can start tracking that would help you build a case for that transformation?

"This new world we're moving to operates on very different rules, and it's going to require very different skills," Walsh concluded. "It's also going to require leaders like yourselves to make bold decisions, to drive differentiation and transform your organizations."

Learn more at www.mike-walsh.com. ■

The Notable Nine

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increases tenfold," Morgan continued. "This is why I believe that technology and automation are going to make it blatantly clear who the good leaders are and who the bad leaders are inside of our organizations."

The Futurist. "A lot of people believe that a futurist predicts the future," Morgan said. "But that's not what a futurist does. A futurist helps make sure that somebody is not surprised by what the future might bring. ... By the way, the No. 1 skill that the CEOs told me is crucial for a future leader is the skill of the futurist."

Morgan said that to think like a futurist, he advises asking yourself these four questions regularly: Why might something happen? What else might happen? What do I want to happen? What might affect why or why not something would happen?

Yoda. The iconic character from the *Star Wars* movies can also teach us some great lessons about emotional intelligence, Morgan told attendees. Specifically, by studying Yoda, we can become more empathetic and more self-aware. "Empathy is about putting yourself into somebody else's shoes, seeing things from someone else's perspective," he explained, "while self-awareness is how well you know yourself. ... Think of a time when you were in a similar situation, or when you felt a similar way to the other person. Understand how they're feeling. This is a crucial, crucial aspect. This is where trust comes from, and it will allow you to resolve conflict. You can serve your customers better, develop better products and services, when you practice empathy."

The Technology Teenager. When older adults have a problem with technology, they frequently turn to younger kids for help — teenagers who are "tech-savvy and digitally fluid," as Morgan put it. We need to strive for something similar — be curious and embrace technology as our kids do every day. "In today's world, every company is a technology company, which means every leader needs to be a technology-driven leader," he said. "Every leader needs to understand what's going on in the world of technology. ... I'm not asking you to learn to code or develop your

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own blockchain. But you do need to know what something like blockchain is. You need to know something about artificial intelligence and how might it impact your business or your industry."

The Translator. This last skill is all about listening and communication, which are changing a lot because of technology: Zoom, Slack, email, cell phones. "As a leader, can you get your message across regardless of the tool — the communication medium or platform that you have at your disposal? That is what it means to have the skill of the translator."

Morgan stressed that there was a big difference between hearing and *listening*. "Hearing is about the unconscious act of sound entering your ear; it requires no effort," he explained. "Listening, on the other hand, requires conscious effort, attention and focus. Think about how somebody on your team would feel if they came to you with a problem or something they need help with, and they can tell that you're *hearing* them, but you're not actually mentally *there*. You've checked out — or worse yet, you're staring at your phone or computer. It's going to crush their morale and their engagement, and they're not going to feel valued or appreciated."

"The greatest form of love and respect that you can show someone," Morgan continued, "is to *listen* to them. It means focusing on your body language. It means making eye contact. It means asking follow-up questions and making the conversation collaborative."

Learn more about Jacob Morgan and his work at www.thefutureorganization.com. ■

SOS: Avoiding the Pitfalls of "Shiny Object Syndrome"

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a timely adoption of any new solution.

Jason Thurner of Milwaukee Tool addressed the fear factor in determining what tech to adopt without getting "stuck with an albatross around your neck." If tech isn't adopted for the right reasons, it can damage the credibility of those responsible

for implementing it and make others hesitant to embrace adoption in the future. Leadership buy-in is incredibly important when implementing any new tech solution. Fostering a culture of innovation and change really begins at the top, Thurner said, but you also need individuals throughout your organization who are passionate about leveraging innovation to improve the overall business.

Kris Lengieza of Procore summed it up nicely: "An industry that has traditionally been underserved by technology has seen an explosion of different solutions that have come to market over the last several years. Now this is really valuable...but it can also be confusing. With more than 4,000 technology companies coming into our industry over the last several years, it can be difficult to understand what to choose and what to implement and how to get value out of it." Wading through this fragmented landscape can feel daunting and gives some companies a built-in excuse not to make a decision. "Selecting technology is a difficult task," Lengieza acknowledged. "It requires a lot of understanding of where you want to go with your company, and where you want to go with your strategy, but also understand what's out there."

We hope that those who attended TAUC's Virtual Industrial Grade Innovation 2020 walked away with a better understanding of what is out there and that we helped them avoid the lure of the dreaded SOS. ■

IGI 2020 Explores Nexus of Innovation and Safety

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combine safety and technology to protect workers and enhance productivity. Wearables are another example of how the current pandemic is pushing the industry forward in the adoption of certain types of technology.

What Tech Can (and Can't) Do

One of the more interesting and unexpected panel presentations at Virtual IGI

2020 centered on the limits of technology and the importance of strengthening the "human element" when it comes to safety. While new innovations can lead to amazing results, it's important to remember that they can never replace close, personal interactions with craftworkers in the field.

We asked Dave Knecht of BMWC Constructors (another TAUC Innovation and Technology Committee member) to put together a team of safety professionals to discuss "low-tech" or even "no-tech" ways to improve field safety. The panel included Joaquin Diaz of Skanska, Ryan Rohledder of Intel and Anthony Andrews of BMWC Constructors.

The consensus of the group was that sometimes the best solutions don't have to be complex. Sometimes it can be as simple as ensuring everyone attends a safety meeting, toolbox talk or job-hazard analysis meeting. Persuading supervisors and upper management to participate in these meetings can be an excellent way to show craft-level workers that safety is important and necessary and has high-level support. If they can go the extra mile and build relationships with the field workers, it can have a huge effect. Getting to know workers on a personal level, assisting with site audits and helping to quickly address problems let them know that the leadership is there as a real and valuable resource.

Rohledder challenged leaders to measure their own performance when it comes to safety. For instance, how often have they formally recognized workers for safety excellence? These types of actions, while small, are key indicators on how well the safety program is working, he added. Andrews later added on to the same idea. "How much engagement does safety have as far as walking the job?" he asked. "How many questions are being asked of safety?" This type of basic interaction requires no technology, and it helps leaders stay on top of workers' concerns.

While everyone on the panel was excited about the advances in safety technology, they all agreed that at the end of the day, if you want a safe and productive jobsite, it's really about communication and building relationships from the ground up. ■

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