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Generations at Work

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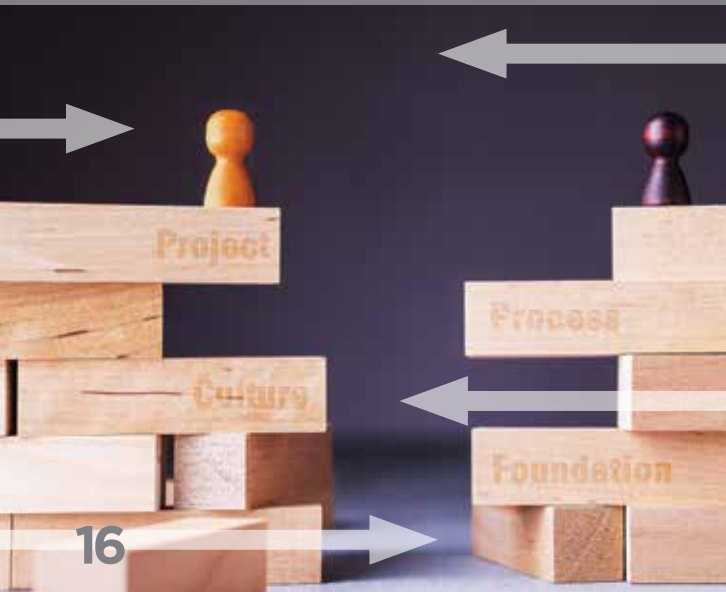*Getting to*
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Is the BOK Necessary?

That is the question of 16 APPA members and staff who met on December 3-4, 2019 to discuss the content, delivery, and purpose of APPA's Body of Knowledge (BOK). Facilitated by APPA Fellow Bill Daigneau, the group discussed the current use and visibility of the BOK; conducted a deep-dive analysis of its strengths, weaknesses, and audiences; and developed helpful recommendations that the Information and Communications Committee and APPA staff will review and determine how best to implement.

Participants were unanimous that the BOK is necessary. As one participant put it: "The BOK is everything—certification, everything." However, as another participant said, "The BOK as it exists is not necessary, but the content is."

WHY?

The most salient reasons for continuing the BOK are that the BOK...

- In its 62 key topics establishes a foundational network for educational facilities management
- Identifies key items
- Serves as a basis of continuing education
- Connects silos
- Connects the workforce to organizational and academic mission
- Is a repository of facts and trusted source within the context of educational facilities
- There must be a BOK upon which to base certification questions/requirements.

Among the objectives/roles the BOK should meet are:

- Meet needs of different audiences, but especially help those entering the profession of educational FM, including those transitioning into it
- Support APPA's CEFP (Certified Educational Facilities Professional) credential in some form or fashion
- Support the Institute for Facilities Management (although each instructor adds art to the science)
- Be the trusted sources, accurate, relevant, contemporary
- Provide information in a variety of ways (e.g., webinars, *Facilities Manager* articles)
- Meet needs of different audiences
- Provide *credibility* to what professionals propose
- Be a repository of knowledge of the many, not the just the few [authors]
- Help a person on a career path
- Serve as a reference source for an entire career.

As these objectives/roles were being discussed, the issue of core v. new technology was brought up, specifically the question of when something new becomes core.

CONCLUSIONS

Participants at the APPA BOK Summit concluded that the BOK is indeed a valuable asset and is a diverse, structured, and well-organized resource. Members value the BOK highly, but do not use it frequently. A significant (perhaps the primary) target should be learning for the emerging/transitioning FMer, and recognizing that new FMers learn in different ways.

The BOK can be—needs to be—a differentiator, something that sets APPA apart. To that end, remember that much of the value of the APPA BOK is that it speaks to educational facilities management. If we do nothing with the BOK, APPA will suffer severe consequences. For example, we may lose members, lose dollars, and damage our brand.

We are already acting upon the recommendations of the BOK Summit participants and will update members on our progress as we review, revamp, and improve the APPA Body of Knowledge.

By Anita Dosik

APPA Introduces "Pathway to Professionalism" Onsite Training Program

In response to a constantly evolving educational facilities profession, APPA has launched a new program called "Pathway to Professionalism" (P2P) to help educational facilities organizations and their institutions keep pace with the accelerating rate of change, while providing continuous learning opportunities for their staffs and schools.

P2P is a 90-day program using APPA's Customized Interactive Learning (CIL) platform and four onsite presentations on the core areas of the Body of Knowledge from APPA facilitators. Following the 90-day training course, qualified participants may elect to take APPA's Certified Educational Facilities Professional (CEFP) certification exam at no additional cost.

To learn more about how P2P can help you provide relevant, cost-effective training, please visit us at *www.appa.org/p2p.*

SAVE THE DATE!
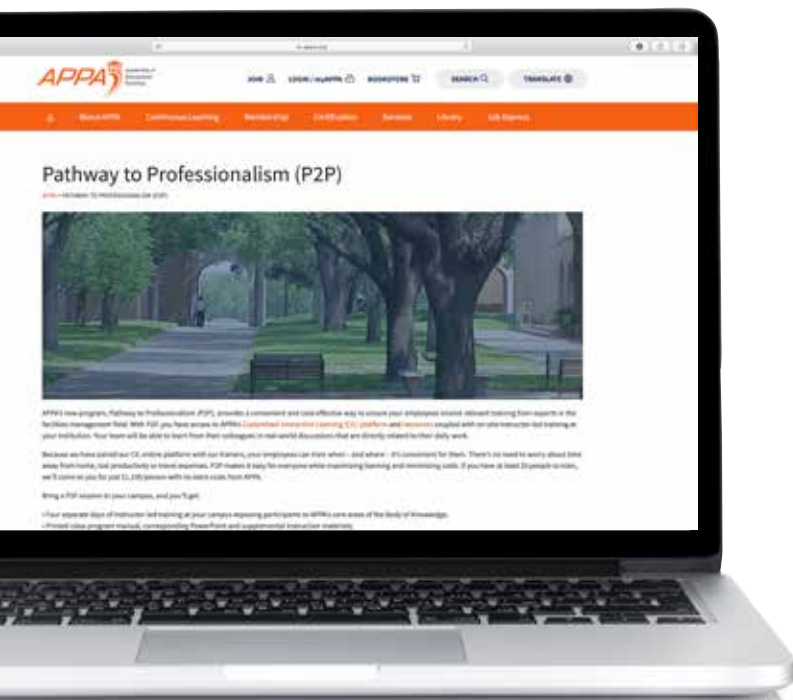
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Boston, Massachusetts
August 1-3, 2020

Mark your calendar to attend next year's meeting and exposition to be held in Boston! You won't want to miss this exciting gathering of fellow facilities professionals and exceptional speakers.

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Show the world you are part of the educational facilities world's top professional organization. At the APPA Land's End store, you can purchase high-quality apparel and other gear of your choice and have it personalized with the APPA logo. All personalized products are backed 100 percent by the Land's End product guarantee. Visit *https://business.landsend.com/store/appa* today to fulfill your APPA gear needs—and those of your staff—at the APPA Land's End store.

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The FMEP is not a cookie-cutter process. Each FMEP is customized and tailored to the specific institution for which it is conducted. The evaluation team is handpicked so that each institution is evaluated by a select group of peers from campuses sharing similar educational, financial, and physical characteristics.

If you are interested in:
- Achieving continuous quality improvement,
- Improving your understanding of facilities issues,
- Exceeding customer expectations, and
- Changing your organization's responsiveness to the demands it faces… Consider the APPA FMEP!

For more information, visit *www.appa.org/fmep* or contact Holly Judd at *holly@appa.org*.

Keep Your Contact from APPA to Your Specifications

Please help APPA get you the most relevant industry information by confirming that we have your most current contact information—-and communication preferences—up to date. To do this, go to myAPPA and click on myAPPA Profile. Should you need assistance, contact *membership@appa.org* or 703-542-3823.

APPA's Next Institute and Academy — February 2020 in San Diego

Institute: February 2-6, 2020
Leadership Academy: February 4-6, 2020
Sheraton San Diego Hotel & Marina
San Diego, CA

By offering both APPA's highly regarded **Institute for Facilities Management** and **Leadership Academy**, APPA delivers quality professional training in an environment that encourages professional networking and collaboration with other education facilities professionals—in one location. This approach allows for less travel, easier registration, greater sharing of information, and an excellent opportunity for Institute and Academy attendees to network with each other throughout the week. Both the Institute and Academy are four-track programs held twice every year. ***See you in San Diego!***

Don't Miss APPA's Continuous Learning Series in San Diego!

1—Leading Your Facilities Organization through an Age of Transformational Change

February 3, 2020
8:00am – 4:30pm
Sheraton San Diego Hotel & Marina
Tuition: $395

Participants will be offered breakfast, morning refreshment break, lunch, and afternoon refreshment break.
NOTE: This program session will earn participants 5 AIA Units.

Higher Education facilities organizations are facing changes and challenges at a pace unlike those experienced in previous generations. Entrenched and established views in the profession are being overturned by accelerating changes in funding models, technology advances, shifting workforce demographics, and strategic stewardship and master planning. This workshop will prepare facilities professional to effectively lead their facilities management organizations in this age of accelerations. Attendees of this day-long highly interactive session will identify and discuss their views of the future and the corresponding changes that need to be embraced in order to thrive in this Age of Accelerations.

2—Practical Application of APPA 1000™ – Total Cost of Ownership – Parts 1 & 2

February 5, 2020
1:00pm – 5:00pm
Sheraton San Diego Hotel & Marina
Tuition: Complimentary

NOTE: This program session will earn participants 3.5 AIA Units.

Assets can be a piece of equipment to a system, to an entire facility or infrastructure project. Register today as APPA explores the critical importance of the Total Cost of Ownership. This program is recommended for all levels of the facilities organization allowing everyone to be 'on the same page' with a common basic understanding of the goals and benefits. The course will introduce participants to the specifics of the APPA 1000™ Total Cost of Ownership principles and how APPA TCO is scalable and applicable to all institutional assets, from a single asset to the entire portfolio. Participation in this 4-hour session will provide participants the tools understand the mandatory aspects of APPA TCO while allowing participants to determine the scope of institutional implementation based on resources available.

3—Supervisor's Toolkit

February 3, 2020—February 5, 2020
8:00am – 4:30pm
Sheraton San Diego Hotel & Marina
Tuition: $995

Participants will be offered breakfast, morning refreshment break, lunch, and afternoon refreshment break.
Supervisor's Toolkit has been specifically designed to meet the needs of the facilities management professional. It is a structured, open-ended, and pragmatic approach to developing supervisors. It is not so much a teach program as a development process, designed to help supervisors realize both personal and professional growth. The program has been newly designed as a full three days of training.

APPA'S CEFP Recipients—November-December 2019

We are delighted to congratulate recipients of the CEFP designation for the period November-December 2019.

Jason Anderson, *Pennsylvania State University*

Gabriel Bernal, *University of Illinois at Chicago*

James Brice, *SUNY at Binghamton*

Mark Cates, *Idaho State University*

Edward Cook, *Elgin Community College*

Jessica DeWitt, *Stephen F. Austin State University*

John Duncan, *Pennsylvania State University*

Alison Dougherty, *Pennsylvania State University*

Ali Fadl, *Montgomery College*

Joe Fellone, *Stonehill College*

Catherine Firth, *The Catlin Gabel School*

Tim Godissart, *Pennsylvania State University*

Harley Grimes, *Elizabeth City State University*

Christa Hart, *Bloomsburg University of Pennsylvania*

Glen Hughes, *Salisbury University*

Dan Jensen, *University of Calgary*

Jeremy Johnston, *Cleveland State University*

Bob Kief, *University of Puget Sound*

Ryan Labrozzi, *University of Pittsburgh at Bradford*

Greg Leeming, *Oklahoma State University*

Robert O'Malley, *University of Pittsburgh*

Timothy Pratt, *Bates College*

Neil Kennovin, *Salisbury University*

Kristen Millward, *Pennsylvania State University*

Matthew Norris, *Pennsylvania State University*

Richard O'Donald, *Pennsylvania State University*

David Parmelee, *Pennsylvania State University*

Julie Patrick, *Pennsylvania State University*

Mark Patton, *Sodexo Education Facilities*

Matt Proctor, *University of Idaho*

Monica Reed, *Pennsylvania State University*

Maria Schryer, *University of Kansas Medical Center*

Paul Siemens, *University of Calgary*

Jason Smith, *Pennsylvania State University*

Matthew Smith, *Michigan State University*

Timothy Smith, *Arizona State University*

Ashley Spears, *Edinboro University of Pennsylvania*

Darren St. Hilaire, *University of Alberta*

Danielle Steele, *Pennsylvania State University*

Brandon Stefaniak, *Pennsylvania State University*

Kevin Swisher, *Pennsylvania State University*

Wes Walling, *Creighton University*

Rebecca Walton, *University of Massachusetts*

Kyle Williams, *Brigham Young University-Idaho*

Rosalita Wilson, *Sodexo Education Facilities*

Kristin Wirtanen, *University of Connecticut*

Ting Zhou, *Pennsylvania State University*

Brooks Baker III retires as APPA Standards & Codes Council Chair

On January 20, 2020, Brooks Baker officially retired as chair of the APPA Standards & Codes Council (ASCC) after 16 years of leadership. In addition to his leadership as ASCC chair, he was APPA President in 2003, and also served as the 1998-2000 President of the Southeastern Region of APPA (SRAPPA).

Baker was Associate Vice President at the University of Alabama Birmingham from January 1, 1979 until his retirement on March 13, 2013. He leaves a long legacy of accomplishments at APPA. For more information on Brooks Baker see the profile article in the September/October 2003 *Facilities Manager* entitled "Choosing to Stay Hungry."

Kevin Folsom, director of campus operations at Trinity Christian Academy in Addison Texas, will take over the chair position from Brooks.

Brooks will now focus on his career as a southern gentleman cattle rancher in Warrior, Alabama.

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Photos by Mike Dosik

Hundreds of Campus Projects Launching throughout the United States

By Mary Scott Nabers

Student enrollment in colleges and universities throughout the United States continues to grow. Data tells us that no matter what the economy does, young men and women realize the importance of getting a degree. Statistics from the Institute of Education Services point to the fact that even during the Great Recession from 2007-09, student enrollments maintained a constant level as young people entered or reentered institutions of higher education.

Because of the high demand, thousands of options await new students, and university leaders compete aggressively for them. To be successful, it is extremely important for educational institutions to offer attractive facilities, appealing campuses, enticing living quarters, quality food choices, and access to entertainment. There is no hard-and-fast statistic that denotes what students prioritize first, but it is obvious that most want state-of-the art facilities. That fact is resulting in thousands of new opportunities for contractors of all types.

TEXAS

Officials at the University of North Texas' Frisco campus recently announced that talks are underway to launch several significant campus renovations designed to catch the attention of prospective students. In conjunction with private sector partners and investors, the university is attempting to connect the campus to the adjacent Fields development, which will be home to the Professional Golfers' Association of America as well as a new city park now in the planning stages. Other campus upgrades are outlined in the campus master plan, including a new student housing facility, additional parking, and more. Officials hope to have some components of the plan finalized and ready for use by 2023.

The University of Texas at San Antonio (UTSA) will seek funding partners for new projects on its Downtown Campus expansion. The College of Business is the centerpiece and first phase of the university's 10-year expansion plan. Although UTSA was unsuccessful in obtaining state funding, officials believe alternative funding of $126 million is possible and will seek a public-private partnership

engagement. Additional funding may come through philanthropic support.

University regents for the University of Houston System have approved $78 million in funding for a new $90 million law school. The college plans to raise an additional $12 million from other sources. The new five-story building will feature an event space, courtroom, state-of-the-art classrooms, a library encompassing two floors, and a pro bono legal services area.

SOUTH DAKOTA

Dakota State University is about to launch a new $42 million sports complex project. The university recently received a $10 million donation that allows phase one of the project to begin. The three-phase project will feature an events center, an indoor training facility, an outdoor sports complex, and a shared two-level building concourse that will become one consolidated complex. The outdoor area will have fields for football, soccer, track, softball, and baseball. Also included in the project are renovations of the fieldhouse and additional parking. There is no doubt that the new complex will be an enticement to prospective students.

SOUTH CAROLINA

The College of Charleston will soon undergo a $50 million renovation to its Albert Simons Center for the Arts, home to the School of the Arts. The project's launch, scheduled for 2020, will include a new 80,000-sq.-ft. facility, new classrooms, restrooms, a black box theater, and upgraded HVAC and power stations. Plans also call for the rebuilding of 15,000 sq. ft., the addition of another 10,000 sq. ft., and the renovation of 65,000 sq. ft. This too will be an attractive draw to prospective students.

CALIFORNIA

Mt. San Antonio College in Walnut, California, has announced plans to begin the design phase of a new four-story Technology and Health Building. The $120 million project is part of an overall $750 million bond package that passed in November 2018. The new facility will include classrooms, a laboratory, numerous offices, a library, and student study spaces. Support services, which are now spread out across six locations, will be moved into the new facility.

MINNESOTA

North Hennepin Community College and Metropolitan State University have announced a partnership with the city of Brooklyn Park, Minnesota, to build an $85 million Center for Innovation and the Arts. The new facility will be an 83,130-sq.-ft. building that will accommodate the named partners as well as local schools in the area. The building will include an art studio, a black box theater, classrooms, dance studio space, a public plaza, and surface-level parking. The state college system will provide bond funding for its portion of the project.

GEORGIA

The Georgia Institute of Technology announced in August 2019 that it would soon launch the third phase of development of its Tech Square in midtown Atlanta. Phase III will include two new high-rise facilities for the Ernest Scheller Jr. College of Business and the H. Milton Stewart School of Industrial and Systems Engineering. Other components of the project include construction of a pedestrian plaza and the development of street-level retail. Project costs have been estimated at $200 million. Planning and design will begin shortly, and construction could start in early 2020. Officials have announced that the planned opening of the towers is slated for 2022.

IDAHO

The University of Idaho has announced plans to build the largest research dairy in the United States. Approximately 640 acres have been selected for the project, which will also include a demonstration farm and an agro-tourism center. The Idaho Center for Agriculture, Food, and the Environment (CAFE) is currently being designed, and the project will be split into three phases. Projected costs are estimated at $45 million, and officials hope to have everything operational by 2023.

As the above listing of projects illustrates, opportunities for construction firms are in abundance, with huge needs for engineering, technology, landscaping, and professional services firms. Contracting firms interested in diverse opportunities should not overlook colleges and universities. ⑨

Mary Scott Nabers is president and CEO of Strategic Partnerships, Inc. in Austin, TX. She can be reached at *mnabers@spartnerships.com*. This is her first article for *Facilities Manager.*

Ready to Join the Conversation? Click into the APPA Community

By Kimberly Case-Nichols

Do you remember what it feels like to freely propose ideas, break routines, and think outside of the box? Brainstorming ideas for projects, solving problems, and reinvigorating your creativity is one of the major benefits of being part of the APPA Community. You can bring up an idea and let others build on it, until it snowballs into a completely different idea or solution that you may not have come up with on your own. As an APPA member, you owe it to yourself to remove your creative blocks and allow yourself to connect, think divergently, and open up to new conversations online with like-minded, supportive facilities professionals.

As APPA continues to evolve with the facilities industry, so does our need to engage and communicate quickly and efficiently. One of the biggest successes of our APPA Member + Community Engagement Committee's efforts is implementing the APPA Community, an online community open to APPA members only. If you participate in Facebook, LinkedIn, bulletin boards, blogs, Twitter, or any other social media application, then using APPA Community online is a no brainer! There is no doubt that having a forum and messaging tools enhances the way we seek and share information. When we engage online in common subjects of interest, we form bonds, influence each other, and enrich our own experiences. The APPA Community is committed to providing a welcoming environment that is moderated and intended to provide a go-to place to network with active APPA members.

It is true that networking emails sent out to the broad membership often go unanswered—not because people are ignoring emails—but because the email inbox has become too cumbersome to manage on a daily basis. This is even more prevalent for facilities professionals who spend a good part of their day in the field with customers, contractors, and students, responding to urgent tasks on a daily basis. The APPA Community replaces the APPAinfo listserv and becomes a more efficient way to communicate. Whether you are a millennial, a member of Generation X, or a baby boomer, you are online in some capacity as a facilities professional. So get started and tailor your online experience to your needs. Here are a few suggestions to help you get introduced to the APPA Community:

1. **YOUR PROFILE**—If you have an online myAPPA account, then you already have a profile set up in the APPA Community. Update your profile and let members know as much or as little about yourself as you want. How's that for easy breezy?

2. **JOIN A GROUP**—Join a host of groups including regions, chapters, topic-specific groups, and affinity groups. The hardest part is wanting to join them all!

3. **DEVELOP YOURSELF**—Create a discussion topic. Start a conversation. Ask a question. The best part is discovering relevant content, brainstorming, and collaborating. Isn't this why you became an APPA member?

4. **KNOWLEDGE CENTER**—Use the knowledge center to find a discussion topic or document. APPA is your industry resource hub.

5. **INCLUSION**—When we're online, connections are created between cultures that might not otherwise happen in person. Online networking allows for equity of all members at every level, regardless of age, race, religion, or gender. APPA is all about bringing our diverse members together.

6. **SOCIALLY ACCEPTABLE**—Motivate, reciprocate, and support one another. Online social networking has become the norm in building a sense of connection and finding support groups.

Get on board with the APPA Community and be one of the cool kids!

7. **NETWORKING**—Build collaborative support and inspire others. This is the key to the success of our profession. Networking is one of the top reasons APPA members are here. You no longer have to wait for the next conference, and you can continue conversations that started face-to-face—at your last chapter meeting, Supervisor's Toolkit, or Leadership Academy, for example. You can do this online 24 hours a day, seven days a week.

The APPA Community offers many benefits to members, including flexibility to access online anywhere, anytime with an Internet connection. The community is respectful and allows for people who may not otherwise speak up to do so without interruption. Conversations are documented and can be revisited and reflected on. This allows members to think carefully before responding to an issue. Conversations and comments are selective, allowing members to choose between a quick comment or

question, or a long and detailed blog-like discussion. Over time, the APPA Community will stimulate the user experience and ideally become a primary place for members to network all year long.

APPA has heard our members' voices and continues to cultivate a community of growth and learning. So what are you waiting for? The APPA Community is there for you to contribute rich content and exchange innovative ideas. If you need any assistance with getting your profile set up, starting a discussion, or answering any other questions about navigating the APPA Community, reach out to myself or your regional Member + Community Engagement Committee chairperson. You can also check out this video to see how to get started: *https://www.youtube.com/watch?v=skzFsjcw90Q*. See you online and in the conversations! ✍

Kim Case-Nichols is executive director of space and facilities management at the University of Nevada, Las Vegas School of Medicine in Las Vegas, NV. She can be reached at kim.case@unlv.edu.

By John D'Angelo and Kerry Galbraith

Closing the Gap

Using APPA Tools to Integrate Facilities Verticals

One of the best tools that APPA provides to our industry is the opportunity for higher education facilities executives to share best practices. When groups of our peers get together, we spend time sharing initiatives and lessons learned across a wide range of topics. This transparent approach is unique to higher education institutions, as many professions are more guarded with their knowledge and operating process. One challenge that is commonly discussed among peers and seems to have plagued higher education for decades is how to close the gap between planning, design, construction, and operations and maintenance (O&M).

Like most higher education institutions, the University of Chicago (UChicago) Facilities Services department is constantly working to improve the way we operate and function. Our environment is rapidly evolving and as institutional facility managers, we need to be dynamic in our approach. To gauge our success in this pursuit, we survey our clients—the students, faculty, and staff—for their comment or response to the services we provide. Their responses indicate that they see us as one department regardless of what we are doing—whether it is delivering capital projects or operating and maintaining their built environment—and that they rate our success in supporting their needs as one department. In understanding both our successes and challenges, we look to identify opportunities for improving the way we do our work; we use this assessment as a process to identify mechanisms of change by assigning responsibility, gauging performance, and implementing our lessons learned.

BUILD THE FOUNDATION: USE THE DATA YOU ALREADY HAVE

Capital project delivery success is traditionally evaluated by cost, schedule, quality, and ultimately how the completed project meets the end user's needs. O&M delivery success is traditionally evaluated by prevention of business continuity disruptions, portfolio safety, appearance and cleanliness, and responsiveness. The respective teams collect and use volumes of data to manage processes, apply controls, and lead teammates to successful outcomes. Because our respective definitions of success are defined differently, the data we collect is different and leads to different processes with different drivers. Each team has become proficient at optimizing their process drivers to deliver team success within their respective vertical.

Because the capital projects and O&M teams don't share the same definition of success, the data and root cause analysis of process drivers and failures tend to be focused internally by each team. As a result, decisions are made by each team that can adversely affect the overall facility's performance. While the capital projects team may be focused on delivering a project within the established budget, they might implement elements in the building that have higher operational or life-cycle costs. For example, state-of-the-art façade systems or new HVAC technology may be appealing during the project design/delivery phase, but these elements might not yield operational savings or create a low-maintenance environment.

If we look at each vertical independently, we should not be surprised that each vertical develops independent solutions. When the verticals share data, processes, and the goal of service delivery, our success as a single facilities department becomes interdependent. Sharing data creates opportunities for win-wins; putting the capital projects schedules, O&M schedules, and campus events on the same calendar enables teams to find and prevent conflicts that would otherwise cause rework or unnecessary disruption to the campus community.

Using maintenance history to evaluate design strategies and product standards yields a better total cost of ownership and less disruption risk. Engaging maintenance teams in the design process to have input into the selection of systems and materials can reduce downstream O&M costs. Using the data that institutions already have builds the foundation for integrated service delivery; making it part of the process ensures implementation and success.

BUILD THE CULTURE: ACCOUNTABILITY IS THE HIGHEST COMPLIMENT

Imagine a scenario where an academic unit is complaining to a maintenance technician about the number of times they have to create a service call to fix the same new system. Facilities leadership can quickly assess their culture if that technician states, "I know—the people in capital project delivery always do this to us, and I wish they had to maintain the garbage they build." Imagine the scenario where a researcher is complaining to a project manager about high construction costs. Facilities leadership can quickly assess their culture if that project manager states, "Operations makes us install everything with double and triple redundancy, even though they know it costs too much and doesn't add any value."

The APPA Leadership Academy includes four modules that range from building individual and team effectiveness to positively influencing the organizational culture. Starting with the premise that the vast majority of us want to do the best job we can and want to be proud of our contributions leads to the question of whether the scenario behaviors described above are really

the result of the people on the team or whether they result from the way we define the team's success. If each vertical has defined "success" independently, drivers need to be corrected before the culture can be impacted.

Once success is defined interdependently as the success of the entire facilities department, leadership's actions will need to change to match the new focus. The whole department has to share accountability for achievements, and the whole department has to share accountability for missed expectations. We are judged on the successes and challenges of all, and we must support each other in our pursuit of excellence.

Does your institution always invite the maintenance technicians who contributed to a capital project's success to the ribbon cutting? Does your institution always ensure that project managers participate in emergency management committees? Do you have an organizational process structure that brings the verticals together on a regular basis to foster daily communications? The hurdle that needs to be overcome in achieving a truly integrated structure is often one of human nature. Those historical negative interactions between verticals can form and embed negative perceptions; if not addressed, these perceptions will continue to inhibit organizational performance.

Once success is defined as an interdependent goal, behavioral expectations that support that definition need to be defined, communicated, and taught by leadership. Processes and tools need to be implemented to achieve success. It is leadership's duty to uphold those expectations both in their own interactions and in ensuring that teammate departures from those expectations are corrected. Accountability of teammates to the team is the highest compliment achievable and provides the highest probability of successfully meeting client expectations.

BUILD THE PROCESS: DESIGN INTERDEPENDENT EXPECTATIONS TO ACHIEVE INTERDEPENDENT OUTCOMES

As stated above, it is important to create an organizational process structure that brings the verticals together on a regular basis to foster daily communications. Having design standards, inviting maintenance technicians to participate in design reviews, and having a formalized turnover process between capital projects and O&M are fairly common practices. Combining these standard existing practices with data utilization and accountability (steps one and two above) can dramatically improve their effectiveness.

Maintenance technicians are busy and do not generally spend enough time reading plans and specifications to become proficient in the systems they operate. Design schedules often do not leave enough time for review, and designed systems can change dramatically from concept through construction docu-

ments. Likewise, design standards often devolve into a "what we like and what we don't like" list that is rigidly applied regardless of individual project goals. Using maintenance data to evaluate systems by type of building use in order to inform preapproved specifications, rather than design standards, ensures an integrated approach. When the maintenance technicians are participating in design reviews, they are reviewing for compliance with a preapproved specification that they had a hand in shaping. This approach promotes a culture of interdependent team success instead of creating a friction point in the form of an approval gate.

Inviting maintenance technicians to participate in the project rather than just being present for major milestones such as groundbreakings and ribbon-cuttings ensures a sense of ownership and accountability. Providing project managers with regular buildings and plant tours or having them participate in "walk in my boots for a day" programs with maintenance technicians not only gives project managers better insight into the campus infrastructure, but allows them to see the challenges that maintenance technicians face daily. This creates an environment where the project and verticals become fully integrated into the campus.

Every institution has examples of project fences coming down when everything that had been inside the fence is bright, shiny, and new, and everything that had been outside the fence doesn't match—new sod next to bare patches, new light posts next to rusted ones, and new sidewalks next to cracked and broken paths. When the verticals are truly interdependent, no one will ever be able to tell where the project fence was after it is removed. The maintenance team can continue putting down the new sod up to some natural point, paint or replace the adjacent rusted light poles, and replace adjacent sidewalks. Although the ribbon-cutting guests are looking at the new building's front entrance, the ceremony participants have their backs to the entrance and are facing the area that used to be outside of the project fence.

Each institution should have a turnover process that fits their culture, but there should be some level of formality. Even though the institution constitutes a single, interdependent team, the team lead should change from capital delivery to O&M. Whatever the point of turnover is, it should be celebrated with a formal ceremony or sign-off so that there is no doubt. A checklist or letter that documents all major systems, manuals, warranties, and unresolved punch list items should be signed by capital delivery and O&M team members.

Finally, the capital delivery team and project manager should continue to be involved in O&M conversations as team members, as this helps increase their understanding of O&M's needs for the next project they build and allows them to contribute a different perspective. Establishing interdependent expectations creates a common team goal.

BUILD THE PROJECT: REAL-WORLD EXAMPLES

Two of our extremely important and highly visible projects at UChicago are great examples of employing these concepts, then taking them to the next level. The David M. Rubenstein Forum is new construction of a state-of-the-art conference and event center, and the Student Wellness Center is a combination of new and renovated space enabling the university to provide wellness programming and integrated care for students in a single campus location.

UChicago uses the APPA best practice of establishing service level agreements (SLAs) with each user to set clear outcome expectations and to ensure a common understanding of the total cost of ownership. The SLA for the Rubenstein Forum was initiated during concept design, so that building systems and finish selections incorporated perspectives from the capital project team on constructability, and from the O&M team on maintainability. At eight months from project completion, the SLA was signed and included funding for additional O&M staffing to be brought on board for the last six months of construction and to remain with the building once it is open.

The Student Wellness Center's SLA is also fully costed and vetted, and in the process of being signed 12 months before the project's completion. The O&M staff that will be assigned to support the space is part of the project manager's delivery team and has conducted enough site visits to lead a VIP tour of the project if requested. The capital delivery project manager is likewise contributing to the O&M mission by looking outside of her project fence.

Success in closing the gap requires a commitment from the organization from top to bottom, and is achieved when team members understand and value each other's perspectives, and when they work interdependently rather than alone. Ⓢ

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GENERATIONS

GENERATION Z

GENERATION X

GENERATION X

MILLENNIAL

BABY BOOMER

MILLENNIAL

GENERATION Z

at Work

By Jamie Gayer

GENERATION X

MILLENNIAL

Have you ever just stopped and looked around your work environment to truly see who is around you? Do you see a boomer mentoring a kid so young you don't know what generation she's from? A Gen Xer diligently presenting a project while the millennial supports the technology for it?

Right now there are at least four different generations showing up each day who are creating a strong and versatile workplace. Each of these groups has a different way of working, thinking, and measuring success. However, unless managed appropriately, ageism and stereotypes can derail the positive contributions that each generation can offer to organizational culture. It is critical to operational success that managers understand each generation and how to manage each appropriately.

GENERATIONAL VALUES

A generation is defined as a group of people living within the same period, typically a time frame of roughly 20 years. This number can be slightly more or less depending on the era and the societal trends for each generation having children of their own, which in turn starts a new generation.

According to author/trainer/consultant Morris Massey, differences in what each generation values are based upon how their values were developed or programmed. People within the same age range tend to develop similar characteristics and values, given that they are often influenced by the same political, social, and economic factors. He determined that values are generally programmed by the early teenage years (10-13) and tend to influence decisions for a lifetime.

In the next sections, you will see a snapshot of what values defined each generation as well as the attributes that made them successful, the challenges inherent in each, and the critical takeaways for each as well.

BABY BOOMERS

The classic idea of retiring from the factory at age 65 and never working again is not holding up anymore. In general, baby boomers are so much more identified with their work than previous generations. Work is not something that boomers are yearning to give up (Steve Slon, *QuoteHD.com*).

The boomers grew up in an era of civil unrest and heightened concern regarding international affairs and the dramatic social changes taking place in the United States. They witnessed all this change and uncertainty while typically being raised in structured and well-disciplined households. This contradiction led the boomers to push toward self-actualization, shifting away from the values of conformity and loyalty typified by the previous generation to focus more on self-expression and self-realization.

Boomers are seen as the generation of achievement, for whom individual aspirations were valued more highly than the organization's; they generally put loyalty to career first, and their employer second. This behavior led to the view that they were mainly concerned with building fortunes and finding ways to achieve status, prestige, and power by working long hours and rarely taking vacations. In reality, boomers find worth in education, in their work ethic, and in producing high-quality work products, although they tend to rebel against convention and are willing to challenge the status quo, a trait that may be supported by their ability to handle crisis.

Critical Takeaways: Before they do anything, boomers need to know why it matters, how it fits into the big picture, and what impact it will have on whom. They want to hear that their ideas matter, as their work is very important to them. They often value face-to-face interactions and need to know important details in advance so that they have time to research and prepare for meetings.

GENERATION X

Generation Xers have come of age in a depressed economy, restricted job market, with more crime on the streets, and growing environmental concerns, which partially accounts for why Xers view the world differently than did their predecessors. Yet they are also the first generation to grow up in a time of relative peace and economic prosperity, with access to technology both at home and school (Vann Wesson, *Generation X: Field Guide and Lexicon*, San Diego, CA: Orion Media, 1997).

Many Gen Xers raised themselves, as the majority of this generation grew up in dual-income households. They tend to prize self-sufficiency and independence. Because they came of age during a time when the United States was losing its status as the world's most powerful and prosperous nation, they became skeptical of authority figures, politicians, and institutions. They value education, knowledge, and personal accountability.

The Gen Xers grew up watching their boomer parents focus on work, only to be laid off just prior to retirement. They learned that blind dedication to an organization is not a guarantee for survival, so they tend to fall into the attitude of "It's just a job," while focusing on working smarter and maintaining a clear balance between work and home. They see superiors more as colleagues who are there to support their careers and remove barriers between them and the decision-makers they want to collaborate with. This generation is motivated to do good work when presented with flexibility, technology, feedback, and evenly disseminated recognition.

Critical Takeaways: Gen Xers expect to have challenging work opportunities and to be rewarded appropriately for performance. They want autonomy in the workplace and to be respected for their ability to complete their work. They value having fun and getting access to the latest technology.

TABLE 1: Generational Attributes and Challenges

	ATTRIBUTES	CHALLENGES
Baby Boomers	Ambitious, Driven, Optimistic, Responsible, Socially Aware	Typically take a top-down approach to leadership, similar to the chain of command in military hierarchy.
Generation X	Adaptable, Confident, Independent, Pragmatic, Self-Sufficient	Do not automatically respect authority or individuals in roles of authority; expect individuals to prove they are worthy of respect before giving it.
Millennials/ Generation Y	Collaborative, Inclusive, Open-Minded, Persistent, Tech-Savvy	Require attention and continuous feedback, although supervisors must be careful to balance constructive feedback with compliments. Tend to respond poorly to those who act in an authoritarian manner and expect to be respected for their rank alone.
Generation Z	Collaborative, Digital Native, Entrepreneurial, Optimistic, Pragmatic	Need help building interpersonal relationship and interpersonal communication skills.

FIGURE 1: Five Generations Timeline
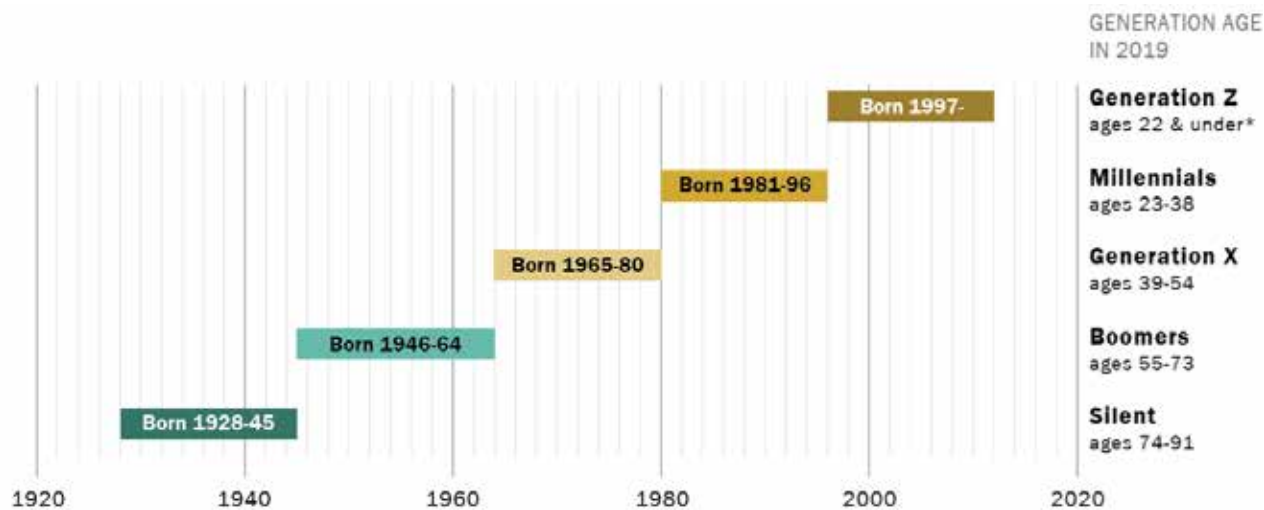
* No chronological endpoint has been set for this group. Generation Z rages vary by analysis.
PEW RESEARCH CENTER
Source: *https://www.pewreserach.org/topics/generations-and-age.*

GENERATION Y/MILLENNIALS

Instead of complaining about adapting for millennials, it's imperative for leaders and managers to acknowledge the role of millennial behavior as an indication of the needs of the modern workplace to attract, leverage and retain modern talent (Crystal Kadakia, *QuoteStats.com*).

Millennials were generally raised by parents who focused intently on them and scheduled every part of their developing years. The impact of this is felt in the workplace, as this generation needs to be engaged in a variety of different tasks while continuously receiving positive feedback for their contributions. This has ultimately led many millennials to be uncomfortable with ambiguity in work assignments; however, they excel when given clear expectations and guidance on what is required to advance. Millennials grew up respecting the role of management in the workplace, yet they expect the same level of respect in turn.

This is a paradoxical generation that expects management to get to know them as individuals, listen attentively to them, and ask what they need, while still expecting independence in their work. It is critical that millennials know their managers care about them and are willing to provide them with training and development opportunities that can increase their skills.

Critical Takeaways: Millennials were raised to feel valued and very positive about themselves. They will balk at doing tasks simply because "this is the way it has always been done." It is important that millennials be given the opportunity to ask questions and to be heard so that they understand the rationale for the task and the value behind it. They esteem a personalized and interactive work environment where management openly shares information.

GENERATION Z

Gen Z will move faster and with even fewer ties to the way things were in the past because they simply do not remember a time before blazing-fast Internet speed, an African-American president, and being able to have anything you could possibly want delivered to your door with a single click (or not even having to click—just ask Alexa) ("The State of Gen Z 2017" White Paper, the Center for Generational Kinetics, 2017, p. 25).

Gen Z are digital natives, having grown up with a handheld device as a part of educational and childhood entertainment experiences. They need to know that their work has an impact on their organization and that sustainability is of value to the organization. Generation Z is so diverse that it only notices diversity in its absence.

The work environment for Gen Zers needs to serve as a refuge that supports their development yet allows them to have a personalized functional workspace. There is a need for immediate access to information and training materials that can be viewed at the individual's convenience. They tend to work best in small teams with open collaboration and guidance from a strong team leader. Gen Z values a flexible workspace that

Having staff who were born between the 1940s and the 2000s working together creates the potential for creativity and innovation, but also for conflict and misunderstanding. Leaders can avoid costly mistakes and ensure inclusivity by learning about generational differences and adapting their communication styles appropriately. They should avoid using stereotypes and find ways to be respectful to each generation's preferences in order to shape a work environment that allows for success. By actively understanding the individual needs of each team member, leadership can create strong and versatile teams that are highly engaged. 🖐

enables them to work in a multitude of environments, including office, home, airports, stores, and more.

Critical Takeaways: Gen Z is looking for management to take the time to become involved with them and build a personal relationship. They thrive on being provided with a variety of different growth opportunities and incentives. They value flexible work scheduling and will work hard when given this chance.

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Now Available in the APPA Bookstore!

APPA 1000-2 Total Cost of Ownership Standard for Facilities

This new ANSI approved standard is available in the APPA Bookstore, and lays out the steps and defines the implementation and supporting data elements fundamental to the successful implementation of APPA's Total Cost of Ownership (TCO). Building on APPA 1000 Part 1: Key Principles, Part 2 establishes a common framework for owners of facilities assets to identify and more effectively track and manage costs of a facility, building, or supporting infrastructure their full life cycle.

A777 - TCO Part 1:
Member: $150
Non-Member: $300

A782 - TCO Part 2:
Member: $200
Non-Member: $400

A783 - TCO Full Standard (Parts 1 and 2):
Member: $280
Non-Member: $580
20% Discount

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ANSI Accredited Standards Developer

APPATCO
TOTAL COST OF OWNERSHIP

APPA TCO FULL STANDARD
Total Cost of Ownership for
Facilities Asset Management (TCO)

APPA 1000-1
Part 1: Key Principles

APPA 1000-2
Part 2: Implementation and Data Elements

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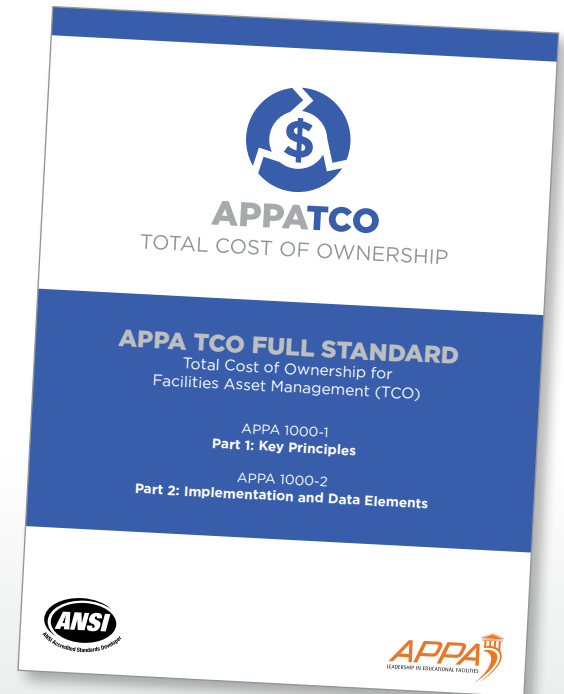
appa.org/bookstore

APPA's TCO brings a new strategy that allows financial administrators to have full knowledge of an investment: how the investment is operating, how the investment is performing, how much additional financial commitment will be needed throughout the life cycle of the investment, and when to best recapitalize the investment in the asset. The impacts of consistent or occasional noninvestment can also be analyzed for long-term overall impact.

APPATCO
TOTAL COST OF OWNERSHIP

TOOLS FOR ENGAGEMENT
Member Involvement Improves Workforce

By Sarah B. Ely, MSW

At any given conference, a distinguished speaker addresses the entire assembly. Q&A follows, then time is up. Breakout sessions come next, and members move on. Out the banquet hall doors go individual perspectives about what the speaker just said and what mattered most, if anything, to the participants and their work. Sound familiar?

Conference traditions were subtly tweaked—with impactful results—on the opening morning of Michigan APPA's (MiAPPA) 2019 Summer Meeting. Scheduled plenary time was increased to keep the entire assembly together throughout the keynote address and for 90 minutes afterwards. The conference planning committee had decided it was time for new methods to actively engage and involve everyone—simultaneously and immediately—about what they had just heard that morning from APPA Executive Vice President E. Lander Medlin. Here's why:

Strategically on tap was a powerful keynote about the relentless acceleration of change and challenges facing educational facilities management. Lander's message was loaded with the latest facts and figures about critical impacts to the educational facilities industry. Based on the belief that Lander could inspire MiAPPA attendees to think more about these challenges and help them shift their mindset to professionally grow through them, the host committee introduced its first "follow-on session" to establish conditions for just that. Here's how:

Two large, concurrent sessions were held for maintenance/operations and planning/construction in two separate conference halls. Equipped with a handful of new group-engagement techniques, two MiAPPA members and two business partners cofacilitated. With a 90-minute plan carefully designed to *engage everyone in making sense of the profound challenges ahead of them*, these facilitators were fueled with identical agendas, precise timing guidelines, and duplicate slides to steer their respective groups through three activities. Each activity was drawn from a single resource called "Liberating Structures," a set of over 30 contemporary group techniques for stimulating collaboration, problem-solving, creativity, and innovation.

We used the following three comprehensive questions to knit the 90 minutes together for optimal momentum and flow:
1. What? *What stood out in the keynote? What was most important to you?*
2. So What? *What might this mean to you, to your workforce at home, and to your physical campus?*
3. Now What? *Continuing along the theme of critical uncertainty, what is a challenge you face? And what can you begin to do now to be proactive about it—without needing any additional authority or resources. What can you do?*

Here's a window into how each of these segments unfolded:

1. What?

Our first goal was to gain the immediate engagement of everyone in the room and capture fresh reactions to the keynote. What stood out? What was most important? During the first six minutes, we used a technique that resembles speed networking, with people standing up and moving around the room. In our case, it was Liberating Structure's "Impromptu Networking" framework, which guided our participants seamlessly through rapid, successive cycles of one-on-one reflection with random peers. This method is an adaptive and lively opener that establishes a single shared focus and also sets a collaborative tone right from the start.

2. So What?

Our next 25 minutes involved small groups (4-6) working in three stages. Their first collective task was to quickly name and record all the critical uncertainties faced in educational facilities management. Within minutes, over 100 items were logged on flip charts and placed between the two venues where maintenance/operations and planning/construction met.

The second task was to filter their small group list into categories and agree on which three categories rose to the top as the biggest challenges facing educational facilities management, regardless of current or future state. Closing the 25-minute segment was a time for each small group to introduce their "biggest three challenge" categories to the rest of the room.

The final 60 seconds provided space for everyone to step back and notice any overlap that surfaced between peers. Murmurs of amazement were overheard about the repetition of themes from group to group. Little did anyone know that at the same time down the hall, the same themes were also surfacing. In analysis performed later that day, maintenance/operations and planning/construction colleagues independently distilled five highly similar categories as the "biggest challenges" facing educational facilities maintenance:

i. Breakneck advancements and changes in technology.
ii. Workforce challenges (aging workforce, acquiring and retaining new talent, developing new knowledge and skills for optimal performance and for succession planning).
iii. Collaboration (breaking barriers, working together seamlessly in service to customers and physical assets, timely communication for shared understanding and intended results).
iv. Climate change impacts (without additional dollars).
v. Budget shrink and budget efficiency.

You might wonder how small groups accomplished so much in as little as 25 minutes. This robust collaboration was made possible by using the Liberating Structures "Critical Uncertainties" format in a highly interactive, compressed time frame. Now that the table was set with small group results about the biggest challenges to be faced in our industry, we moved on to the final and most lengthy segment, personalizing it.

3. Now What?

We included some problem-solving questions for our last Liberating Structures activity of the morning, giving participants a focus question and asking them to take 15 quiet minutes to reflect on their own and make personal notes. Their focus: Name one critical and uncertain challenge you face. Their task: Write down your thoughts and ideas about what can you do about this challenge soon, without requiring any additional resources or authority.

For the remainder of the session, members continued this activity in trios. One by one, each person succinctly presented their challenge and possible action steps, closing with an invitation for feedback from their trio partners. The prescribed role of each partner was to respond in support, seek clarification, give feedback, and generate ideas for success on behalf of the member who spoke. This Liberating Structure is termed "Troika Consulting," a powerful tool to help organize time and space for personal reflection and for seeking the wisdom of others.

When the time was up, it was clear that a sensory shift had taken place in the room. Few people hurried out the doors; many remained to talk at length in their trio. A handful approached facilitators to offer glowing comments about this experience, including "Thank you for the chance to discover and actually prove how much we have in common" and "Our small group formed an official partnership. We have scheduled a phone call to keep our conversation going and we plan to stay connected."

It seems that we all want our meetings and forums to be more purposeful, productive, and innovative. Our time is precious. People want meetings that ultimately make a difference.

The challenge is *how*? How can we engage everyone *and* deliver innovative results when we bring people together? Furthermore, when we develop better skills as facilitators and integrate more contemporary group techniques into our

"LEADERS AT EVERY LEVEL CAN ACHIEVE GREATER FACILITATION PROWESS AND ESTABLISH PROMISING CONDITIONS FOR COLLABORATION, INNOVATION, TESTING, AND REFINEMENT WHEN NEW TOOLS FOR ENGAGEMENT ARE PART OF THEIR PROFESSIONAL DEVELOPMENT."

repertoire, does it have a positive impact on our professional development? Is the result something that can benefit us as part of the workforce and benefit the institutions we work for?

It was certainly this line of thinking that prompted conference host leader Steven Gilsdorf (Western Michigan University) to tap emeritus MiAPPA colleague Sarah Ely for a follow-on session design that would enable peer facilitators to guide the group work. Steve's strategy had two objectives: 1) organize a highly productive event, and 2) use tools that members could prepare and use back at home with their own people.

Steve's goals are practical ones, since the resources of Liberating Structures are freely available online via Creative Commons licensing. With over 30 tools available for a variety of purposes, such as general engagement, problem-solving, collaboration, and innovation, Liberating Structures includes a matrix from which users can select activities that align with their objectives. Beginning facilitators will find that they can easily prepare and use one or two Liberating Structures formats, while most activities take further practice to progressively increase facilitation skills.

Higher education institutions in the United States, Europe, and Australia/New Zealand have begun to take note of Liberating Structures over the last decade. Prior to this, the early adopters were solely in corporations and some local government entities. Today, the system is found on some campuses in senior executive retreats, boardrooms, classrooms, and faculty/staff engagement events, for example. Perhaps one or more individuals on your campus are using Liberating Structures and are available to help you leverage their experience to get you started in your own educational facilities management work. What a powerful and audacious collaboration that would be!

Traditional group methods will always serve a purpose and are here to stay. Open discussion (hand-raising), guided discussion (such as roundtable), presentations, brainstorming, and report-outs are necessary and fruitful. One concern is that traditional methods usually fall short of including everyone and unleashing creative problem-solving and innovation, especially in efficient time frames.

Changes in the mode and manner of work along with an acceleration of these changes call for more creative methods. Leaders at every level can achieve greater facilitation prowess and establish promising conditions for collaboration, innovation, testing, and refinement when new tools for engagement are part of their professional development. After all, good facilitation fosters the development of others. People learn to make things better by working with others—through collaboration, problem-solving, and other forms of interactive involvement.

REAL-WORLD EXAMPLES

Looking for other examples of the use of novel group work, we can turn to APPA's Midwest Region (MAPPA). For instance, the MAPPA 2016 Education Conference drew over 30 constituents for an all-day, preconference session on the general topic of training and development. The session opened with a traditional presentation about APPA's Continuous Learning Series and quickly went to work using Liberating Structures, as members explored strategy to move training and development forward in an age of higher workload pressures and fewer available dollars in educational facilities management. At the time, six MAPPA members from Illinois, Iowa, Minnesota, and Wisconsin took turns cofacilitating the session and honed skills they could use back home.

A second example is found at the University of Michigan, where the author used Liberating Structures designs to propel facilities department cross-functional project teams, customer focus groups, lessons-learned sessions, and program development initiatives, all with dependable and successful results. Campus applications are found elsewhere in facilities departments at Grand Valley State University, Michigan State University, and Northern Michigan University. Unintentionally, some Michigan campus facilities departments are likely absent from this list. Additional resources on the topics of engagement, collaboration, and innovation are available via APPA Continuous Learning opportunities.

CONTINUOUS LEARNING AND DEVELOPMENT IS IMPERATIVE FOR A CHANGING INDUSTRY

For an added resource, I would encourage members to read APPA's Strategic Plan, *Preparing for Every Future*, in *Facilities Manager* (September/October 2018, Volume 34, Number 5, pp. 19-23) or on the APPA website (*https://www.appa.org/board-of-directors/strategic-plan*). Its content and leading remarks tie in closely to the opening morning keynote address and our described follow-on session during MiAPPA's 2019 Summer Conference. 🖉

Sarah Ely is an APPA Emeritus Member and former associate director, training, for University of Michigan Facilities and Operations. She can be reached at *sarahely@umich.edu*. This is her first article for *Facilities Manager*.

APPRECIATION AND KUDOS TO MIAPPA SUMMER 2019 COFACILITATORS:

Jeff Marcinkowski, maintenance supervisor, *Grand Valley State University*

Amy Baumer, vice president, marketing and business development, *The Christman Company*

Kaleena Kowalkowski, regional business development manager, *The Christman Company*

Liberating Structures resources—including activities, a selection guide, and other resources—are freely available online at *liberatingstructures.com* and in the comprehensive practice book by **Keith McCandless** and **Henri Lipmanowicz**, *The Surprising Power of Liberating Structures: Simple Rules to Unleash a Culture of Innovation*.

A3 problem-solving is a tool developed first in the automobile manufacturing arena and applied widely in many sectors. It is a component of Lean practices.

APPA's Monthly Free Webinars

APPA's free monthly webinar series keeps our members informed and connected in the world of facilities. To date, APPA has issued over 2,000 continuing education certificates to attendees, and keeps a library of past webinars for you to view at your leisure.

APPA is also an AIA Provider, and when appropriate, Continuing Learning Units (CLUs) for AIA credentialing programs are given.

Upcoming Webinars – Sign up Soon!

- **February 27, 2020 –** Trends in Classroom Configuration & Technology

- **March 12, 2020 –** Developing Mold Literacy: Lessons Learned from the Mold Crisis on Campus

- **April 2, 2020 –** Build Better for Education

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- **May 7, 2020 –** Making BIM Work For You

- **June 18, 2020 –** How to design a Smart, Connected Campus with STEM to Business Ecosystem Model

Questions regarding certificates, or other past webinar sessions, should be directed to Billie Zidek Standards & Codes Administrator at **billie@appa.org**.

2019
REGIONAL
REPORTS

Eastern Region

By Jessica Abbott
ERAPPA President
University of Hartford

ERAPPA President
Jessica Abbott

A total of 478 attendees, with 210 of those participants representing 92 educational institutions, attended the 2019 ERAPPA Annual Meeting, themed "Chart Your Course" in Erie, Pennsylvania. This year's annual conference was hosted by the Keystone Chapter of APPA (KAPPA) under the leadership of Beth Clark (Penn State University) and Pete Buchheit (University of Pittsburgh Bradford). Delegates enjoyed a thought-provoking and inspiring educational program that included keynote speaker Adam Kreek, a two-time Olympian, who spoke on failure and finding your next gold medal moment, and plenary speaker Jack Uldrich, a global futurist who educated the conference delegates on constructively thinking about the future through AHA—Awareness, Humility, and Action. On Monday morning, conference attendees had the opportunity to join Adam Kreek for an Olympic pre-breakfast workout— only 13 people were brave enough! The Monday night networking event took place at the Erie Maritime Museum, where delegates got to enjoy food, entertainment, and tours of the U.S. Brig Niagara.

Outgoing President Arthur Walsh presided over a robust awards banquet, while outgoing Past President Kevin Mann emceed and entertained the crowd. APPA Vice President for Professional Development Beth Clark was in attendance; she recognized ERAPPA members who received APPA awards and also installed the 2019-2020 ERAPPA Board.

Photos courtesy of ERAPPA

Above: 2019 First-Time Attendees Reception

Left: 2019 Norman H. Bedell Award Recipient, Norman B. Young

APPA AWARDS
- *Pacesetter Award:* Kevin Mann (Salisbury University) and Connie Simmons (Phillips Exeter)
- *Unsung Hero Award:* Phillip Melnick (Penn State University) and Amy Baker (DIGroupArchitecture)

ERAPPA AWARDS
- *Rising Star Award:* Billy Gagnon (Phillips Exeter) and Marina Theriault (Dalhousie University)
- *Chapter Champion Award:* Sheri Vucci (Smithsonian Institution), Pat Whitney (Framingham State University), Amy Baker (DIGroupArchitecture), Bruce MacNeil (University of New Brunswick Fredericton), Kari Miller (DLA+ Architecture & Interior Design), and Anita Bailey (Phillips Exeter)
- *President's Award:* Billy Gagnon (Phillips Exeter), George Stooks (St. John Fisher College), and Patty Smith (College of New Jersey)
- *Norman H. Bedell Award:* Norman Young (University of Hartford)
- *Emeritus Status:* Dana Peterson (Retired, University of New Hampshire) and Holly Mussatti (Retired, American University)
- *Outgoing:* Chapter Presidents, Committee Members, 2019 Host

Committee Members, Liaisons to APPA Committees, and Board Members were recognized and thanked for this significant service and contribution.

THE 2019-2020 ERAPPA OFFICERS
President/Junior Representative—
   Jessica Abbott, University of Hartford
President-Elect—**Sheri Vucci**,
   Smithsonian Institution
Past President/Senior Representative—
   Arthur Walsh, Dalhousie University
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To view ERAPPA's website and find a complete listing of the board of directors, please go to *https://www.erappa.org/board/boardmembers.*

2020 CONFERENCE: September 27-30 · Saint John, New Brunswick, Canada

Southeastern Region

SRAPPA

By Katie McFarland
SRAPPA VP for Communications
College of Charleston

Northern Kentucky University (NKU) served as host for the 68th annual SRAPPA Conference in the historic city of Covington, Kentucky. Located along the Ohio River across from Cincinnati, Covington provided the 318 attendees stunning views and unique tours. Twenty-seven breakout sessions focused on the four main areas of sustainability, technology, leadership and communication, and facilities planning and construction.

This year's conference theme was "Riding on Strengths and Jumping Barriers." Attendees visited the beautiful NKU campus and facilities, participated in the golf tournament at the Highland Country Club, toured the New Riff Distillery, Rumpke Recycling, and Ark Encounter. Spouses and guests of the attendees were treated to a special tour of the Cathedral Basilica of the Assumption.

SRAPPA welcomed 120 business partners and enjoyed 51 booths in the Northern Kentucky Convention Center. The region is grateful for each of our business partners. Without the help of our business partners, these conferences would not be possible.

The highlight of this year's conference was a riverboat cruise aboard the River Queen. Guests enjoyed spectacular panoramic views along the Ohio River of downtown Cincinnati and northern Kentucky.

The conference was capped off Tuesday evening with the annual Awards Banquet and Board Installation ceremony. Guests were treated to the entertainment of comedian and professional pickpocket Bob Arno, who taught the audience the "Art of the Steal!" Outgoing SRAPPA President Tom Jones spoke about the

2019-2020 SRAPPA President Bill Moulton

Photos courtesy of SRAPPA

Top: An overview of the SRAPPA Expo in the Northern Kentucky Convention Center

Left: Conference attendees speak with one of SRAPPA's business partners

success the region has experienced in 2019 and its vision moving forward. He presented the Service Appreciation award to outgoing Senior APPA Representative Dave Maharrey for his dedicated service to the Board. VP for Education Andy Maddox received the President's Award.

Ruthann Manlet, APPA President, installed the new 2019-2020 SRAPPA Board.

Back by popular demand, motivational and leadership speaker Richard Flint spoke during the closing session Wednesday morning. President Bill Moulton and his team put on an informative and excellent conference and will continue to move the region forward in the coming year. We look forward seeing you at the 2020 conference in Tampa, Florida, September 24-29.

THE 2019-2020 SRAPPA OFFICERS

President—**Bill Moulton**, Northern Kentucky University
President Elect—**Mike Steger**, Berkeley Preparatory School
Treasurer—**Becky Griffith**, Embry-Riddle Aeronautical University
VP of Communications/Secretary—**Katie McFarland**, College of Charleston
APPA Senior Representative—**Dan Wooten**, Discipleship Ministries
APPA Junior Representative—**David Smith**, University of North Carolina Charlotte
APPA Liaison—**Steve Glazner**

To view SRAPPA's website and find a complete listing of the board of directors, please go to *http://srappa.org.*

2020 CONFERENCE: September 24-29 · Tampa, Florida

Midwest Region

MAPPA

By Jim Bogan
MAPPA Senior Representative
University of Wisconsin Madison

MAPPA 2019-2020 Board of Directors

The 2019 MAPPA annual conference welcomed over 300 attendees to the Radisson Blu Hotel at the Mall of America in Bloomington, Minnesota, from October 16-18. The host committee this year was an innovative team comprising Business Partner representatives with support from last year's host committee chair Brandon Dugan and many local facilities professionals from a variety of institutions in the Minneapolis area. Their participation made a very positive impact on the overall interaction between attendees of all kinds.

Business Partners showcased a range of essential services over 70 booths in the exhibitor hall. APPA's Supervisor's Toolkit and Leadership Academy Level One, offered at the conference, were both well attended. Twenty-eight breakout sessions offered individuals a variety of interesting and informative topics to expand their knowledge base. Another innovation was a social afternoon/evening event inviting all attendees, including Business Partners, to attend Topgolf, a sports amusement venue. This was a big hit in place of a traditional and formal gathering.

Instead of a traditional awards dinner, the meeting featured dinner on your own each night to enable personal choice for connecting with colleagues and business partners. The awards were presented at various points throughout the meeting, culminating with a performance by The Essentials, a music group comprising facilities professionals from Hamline University. They use classic hits to provide messages on topics such as work orders, snow removal, restroom cleaning, and pest control.

Steve Gilsdorf, 2018-2019 MAPPA President, presented awards and thanked outgoing Board members Tim Thim-mesch, Grand Valley State University; and Jamie Tran, Belfor Property Restoration. He recognized Brandon Dugan, Cleveland State University; Jamie Tran, Belfor Property Restoration; and Ruthann Manlet, University of Minnesota, with President's Awards. Steve congratulated the incoming president, George Hakim, University of Michigan Flint. New members taking a seat on the MAPPA Board for the upcoming year include Jeremy Johnston, Cleveland State University; and Miriam Weaver, University of Chicago.

The MAPPA Board continues to support educational opportunities for the region, awarding approximately $19,000 in scholarships this year. The region also continues to sponsor various offerings of the Supervisor's Toolkit and the Academy on Campus. Plan to join us next year at the MAPPA conference in Grand Rapids, Michigan, October 26-28, 2020 (Supervisor's Toolkit October 25-28). Hope to see you there!

Attendees enjoying Topgolf: Lynn Pond, Ron, Pond, Brandon Dugan, Becky Barnes, {need two names - don't know}
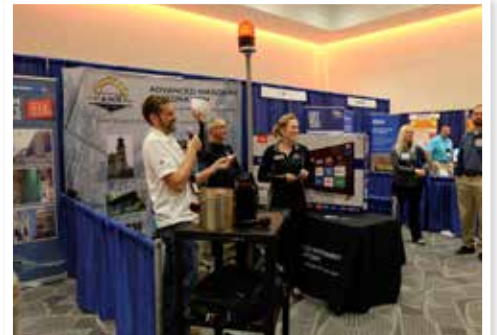
Mobile raffle cart being employed for group engagement with the business partner displays

2019-2020 MAPPA OFFICERS:
President—**George Hakim**, University of Michigan
President-Elect—**Doug Laditka**, Albion College
Secretary—**Nicole Corll**, Kent State Univesity
Treasurer—**Art Chonko**, Denison University
Senior Representative—**Jim Bogan**, University of Wisconsin Madison
Junior Representative—**Steve Gilsdorf**, Western Michigan University
APPA Liaison—**Suzanne Healy**

To view MAPPA's website and find a complete listing of the board of directors, please go to *http://mappa.appa.org*.

2020 CONFERENCE: October 26-28 · Grand Rapids, Michigan (Supervisor's Toolkit October 25-28)

Photos courtesy of MAPPA

Central Region

CAPPA

By Barry Mielke
CAPPA President
South Dakota State University

The 2019 CAPPA Annual Conference drew 129 attendees to Winnipeg, Manitoba, Canada from September 29-October 1. Our theme for 2019 was "Centered on Progress for Facilities Management." There were 18 educational sessions covering a gamut of facilities management topics.

This year's conference began with Committee and Executive Board meetings on Saturday. Sunday included a tour of the Canadian Museum for Human Rights, the first museum solely dedicated to human rights, and the Manitoba Legislative Building Hermetic Code tour with Dr. Frank Albo.

A new format for the first-timers attendee reception included testimonials from past and present CAPPA Board members. The Exhibit Hall opened to attendees and the evening wrapped up with a Manitoba Social and football watch party hosted by the IMEG Corporation.

The Exhibit Hall featured 48 Business Partners representing 26 businesses. Our Business Partners sponsored many of our special activities and shared pertinent information for the benefit of our CAPPA Region facilities administrators.

CAPPA President Barry Mielke welcomed attendees to the conference Monday morning and introduced APPA Immediate Past President Don Guckert as our keynote speaker. Monday night concluded with a progressive dinner at the Manitoba Museum.

Tuesday morning began with the CAPPA business meeting and a round robin campus tour of the University of Winnipeg Biomass Plant–Solar Array and the Red River College Skilled Trades and Technology Centre.

The conference closed with the Awards Banquet and the installation of new officers by APPA President-Elect Jim

CAPPA President
Barry Mielke

Above: Group photo

Left: CAPPA Officers

Photos courtesy of CAPPA.

Jackson, and followed with entertainment by comedian Matt Falk.

THE 2019 ANNUAL BANQUET AWARDS

- *APPA Unsung Hero Award:* Randy Culver, Black Hills State University
- *APPA Pacesetter Award:* Ian Hadden, University of Arkansas at Little Rock
- *APPA Meritorious Service Award:* David Handwork, Arkansas State University
- *APPA Sustainability Innovation Award:* University of Texas at Dallas
- *APPA Award for Excellence:* University of Kansas Medical Center
- *CAPPA Meritorious Service Award:* Armand Harpin, IMEG Corporation
- *CAPPA Distinguished Member Award:* Art Jones, Black Hills State University
- *CAPPA President's Award:* Scott Turley, University of Arkansas Fayetteville

THE 2019-2020 CAPPA OFFICERS

President—**Barry Mielke**, South Dakota State University

First Vice President—**Markus Hogue**, University of Texas at Austin

Secretary—**Virginia Smith**, University of Texas at Dallas

Treasurer—**Jennifer Kindt**, South Dakota State University

APPA Senior Representative—**Angela Meyer**, Southeast Missouri State University

APPA Junior Representative—**Barry Mielke**, South Dakota State University

APPA Liaison—**Christina Hills**

To view CAPPA's website and find a complete listing of the board of directors, please go to *https://www.cappaedu.org.*

2020 CONFERENCE: October 4-6 · Tulsa, Oklahoma

Rocky Mountain Region

RMA

By Kent Andersen
RMA President
Sheridan College

RMA President Kent Andersen

Banff hiking

The 2019 Rocky Mountain APPA conference was held September 16-18 in Banff, Alberta, in Banff National Park, Canada's first national park, with the majestic Rocky Mountains as a backdrop. The University of Calgary, led by Michael Love, director of caretaking, hosted the conference, with a record attendance of over 430 RMA members along with Business Partners and spouses, including more than 130 first-time attendees.

The RMA conference was a phenomenal success, with the first day full of networking opportunities ranging from fly fishing on the Bow River south of Calgary, to golf at the Canmore Golf & Curling Club and three spectacular hikes in the Alberta Rockies. The conference kicked off with Calgary's own "Jungle Jim" Hunter as a keynote speaker. Hunter is the original "Crazy Canuck," and was a member of the 1979 Canadian Olympic Men's Alpine Ski Team; he was the first Canadian man to win a medal in downhill skiing. He inspired RMA members with his life lesson on "One Kind Thing" we can do for others, a lesson that is very applicable in today's conversation around employee engagement. The final keynote speaker was Caroline Hedin, Bison Public Outreach and Education Officer at Banff National Park. Hedin enthused RMA members with her presentation on the Canadian National Park system, the history of Banff National Park, and her personal experiences with the reintroduction of bison to the park for the first time in 140 years.

The RMA educational sessions were supported with 79 speakers from RMA institutions and Business Partners, presenting on topics ranging from leadership to best management practices in education. APPA President Ruthann Manlet offered insights into APPA's plans for the upcoming year and inducted the new RMA board.

The University of Calgary Host Committee capped off the conference with some superb events, including the meet and greet featuring Elder John Snow, who gave an indigenous blessing, and the Wild Mint Arts Dancers, who performed a celebration of powwow dance styles and Métis Nation jigging. The Western-themed dinner was hosted at the Mount View BBQ, featuring two Royal Canadian Mounted Police in full-dress uniform, 15 synchronous fiddlers, a fantastic hip-of-beef buffet, a DJ, and entertainment provided by RMA members trying their feet at line dancing.

The Awards Banquet was a great success. Wayne Clark, outgoing President, presented honors to the following for their outstanding support to RMA:

- *H. Val Petersen Award:* presented to Clint Lords
- *Elevating the Leadership and Influence of Facilities Professionals:* Presented to Chris Kopach
- *President's Award:* Presented to Lisa Potter and Marie Wells
- *Lee Newman Award:* Presented to WAXIE
- *Acknowledging Work by Host Committee:* presented to University of Calgary

Banff conference center

The gavel was then passed to Kent Andersen, incoming 2019-2020 RMA President.

THE 2019-2020 RMA OFFICERS

President—**Kent Andersen**, Sheridan College
President-Elect—**Timothy Dobson**, New Mexico State University
Secretary—**Wim Chalmet**, University of Lethbridge
Treasurer—**Marie Wells**, BYU Idaho
APPA Senior Representative— **Luis Rocha**, University of Arizona
APPA Junior Representative—**Wayne Clark**, BYU Idaho
APPA Liaison—**Kristin Witters**

To view RMA's website and find a complete listing of the board of directors, please go to *http://rma.appa.org.*

2020 CONFERENCE: September 21-23 · Salt Lake City, Utah

Pacific Coast Region

PCAPPA
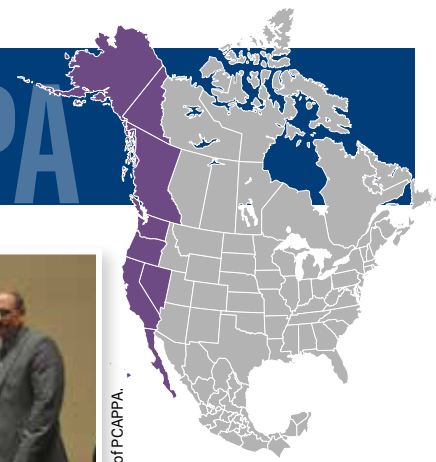
Eric Johnson
PCAPPA President
University of Southern California

2019-2020 PCAPPA Board

Opening keynote speaker—communicating vision

The 2019 PCAPPA Annual Conference was held in Las Vegas, Nevada, from September 29-October 1. This year's host institute was University of Nevada, Las Vegas (UNLV). Special thanks to Kim Case-Nichols, executive director of space and facilities management, and her team at UNLV, for hosting this event. The conference brought together over 246 participants and 97 Business Partners; over half of the attendees were first-timers. The conference theme, "Sharpen Your Tools," showcased diversity, leadership, creativity, and knowledge as tools to address key challenges in facilities management.

The opening keynote speaker was Patti Dobrowolski whose high-energy presentation was titled "Boost Your Organizational Genius!" Dobrowolski captivated and inspired the PCAPPA audience using the business leadership tool of the future: Drawing Solutions. This was an innovative exercise designed to inspire creative leadership through clearly identifying and communicating what's changing in your business. Patti's "Snapshot of the Big Picture" process showed PCAPPA members a transformational method for getting leaders to learn to communicate their vision of the future, using a simple, effective visual. This simple technique helps you set goals, create positive change, enhance your culture, and accelerate your team performance for a better bottom line.

Our closing speaker was Avish Parashar, who weaved together humorous stories, jokes, audience interaction, and improv into a routine that engaged the conference audience. He imparted a key lesson: "Planning is Important, but Improvising is Essential!" No matter how well you plan, things will go wrong, surprises will arise, and the universe will throw you a curveball. Avish gave PCAPPA members essential tools to help them deal with all that life can bring. He encouraged them to start using the phrase "yes, and!" instead of "yes, but!" Changing that one word, he said, can change our interactions.

Conference activities included a tour of UNLV, speed networking with Business Partners, and a football-themed welcome reception, which also included Business Partners. The conference included various educational sessions on diversity and leadership, a Hall of Resources, networking opportunities with Business Partners, and the Awards Banquet.

Some notable award recipients included Tony Ichsan, honored with PCAPPA's President's Exemplary Leadership Award; and Alvaro De Sousa and Steve Yeadon, presented with the 2018-2019 PCAPPA Champion Award. Special "Thank You" awards were given to Nicole Sanderson and Kristin Witters for exemplary support of PCAPPA. Allison Bustos, UNLV, received the 2018-2019 San Joaquin Chemicals, Inc. scholarship.

THE 2017-2018 PCAPPA OFFICERS

President—**Eric Johnson**, University of Southern California
President-Elect—**Victor Pesiri**, Brentwood School
Treasurer—**Alvaro De Sousa**, California State University Stanislaus
Junior Representative/Secretary— **Winnie Kwofie**, California State University East Bay
Senior Representative—**Robert Andrews**, California State University East Bay
APPA Liaison—**Kristin Witters**

To view PCAPPA's website and find a complete listing of the board of directors, please go to *http://www.pcappa.org.*

2020 CONFERENCE: October 11-13 · Portland, Oregon

Changes to 2019 Editions of the ICC IEBC and IECC

By Dana Glenn Peterson, AIA, and David Handwork, PE

By the time this issue is published, the International Code Council (ICC) will have finalized proposed changes to the numerous Group B category model codes that they maintain and update on a regular basis. Two of the Group B model codes are codes that a significant portion of APPA members report having to comply with for work upon their campuses. They are the International Existing Building Code (IEBC) and the International Energy Conservation Code (IECC). These two codes are closely monitored by the APPA Standards and Codes Council (ASCC) through the efforts of its ICC Work Group. The ICC Work Group comprises one or more volunteers from APPA member institutions representing diverse sizes and types of education-focused facilities. The 2018-19 Group B Work Group consisted of members from the following schools:

- Cleveland State University
- University of Michigan
- University of Rochester
- Middlesex County College
- Brigham Young University
- Penn State University
- Virginia Community College System
- University of Washington
- Georgia Southern University
- California State University Stanislaus
- University of Texas at Austin
- Rutgers University

The ICC Work Group is chaired by ASCC member Dana Glenn Peterson, AIA, Associate University Architect (retired) at the University of New Hampshire.

The Work Group began its efforts for the 2019 editions back in November 2018 by canvassing the APPA membership for any applicable code change suggestions they would like to see. With no suggestions offered, the group turned its attention to considering the scores of change proposals that were submitted by a variety of other groups ranging from individuals, code enforcement officers, and first responders, to manufacturer lobbyists and special interest groups.

PICKING AND CHOOSING

It is important to note that the Work Group did not review the changes to every Group B code, due to the fact that some ICC model codes have limited or insignificant applicability to the typical academic institution. For example, the International Residence Code (IRC) is a Group B code, but the Work Group did not review changes to it because of its limited impact on APPA members. The ICC IEBC is used by many jurisdictions to govern periodic building inspections and minor alterations to existing buildings. The ICC IECC is widely used across the country to set minimum requirements for state and local energy codes and construction aspects that affect the use of energy.

Likewise, it is not feasible for the Work Group to review every proposed change, even to applicable codes. On average, the ICC receives many hundreds of individual change proposals for each of its many model codes, and only allows less than 60 days between their public release and their adoption for continued consideration (or rejection) at their Technical Action Hearings, where a panel of experts take testimony for and against the measure and vote to approve or disapprove it. For these reasons the Work Group uses a code-consulting firm to screen the proposals to a more manageable number, to include those that would have the greatest impact on educational institutions.

Based on that process, the list of hundreds of potential changes proposed for the 2019 editions was reduced a list of 48 red-flagged potential changes to the IEBC and IECC model codes. In a series of weekly conference calls occurring from mid-March to mid-April 2019, the Work Group had a chance to discuss

the possible impacts of each identified proposal. Each institution was then allowed to cast a vote on whether they (be it an individual representative, or the consensus of an institutional group or committee) supported the change, opposed it, or had no opinion on it.

In total, the Work Group recommended support for 12 proposals, opposed 13, and had no opinion on 23. The Work Group submitted its report and recommendations to the ASCC Council, which considered and approved them in late April 2019.

PROPOSALS AND POSITIONS

Following the Committee Action Hearings (CAH), the Work Group considered the outcome of the hearings and whether or not to recommend that APPA should submit a public comment on any of the 11 unsuccessful positions taken (for or against) during the designated public comment period, which extended through July 2019. After that discussion, the group decided that none of the unsuccessful positions were significant enough to warrant making a challenge to the Technical Committee votes, and so adjourned its work on the 2019 Group B codes. Click here to view the results of the CAH and Public Comment Hearings (PCH).
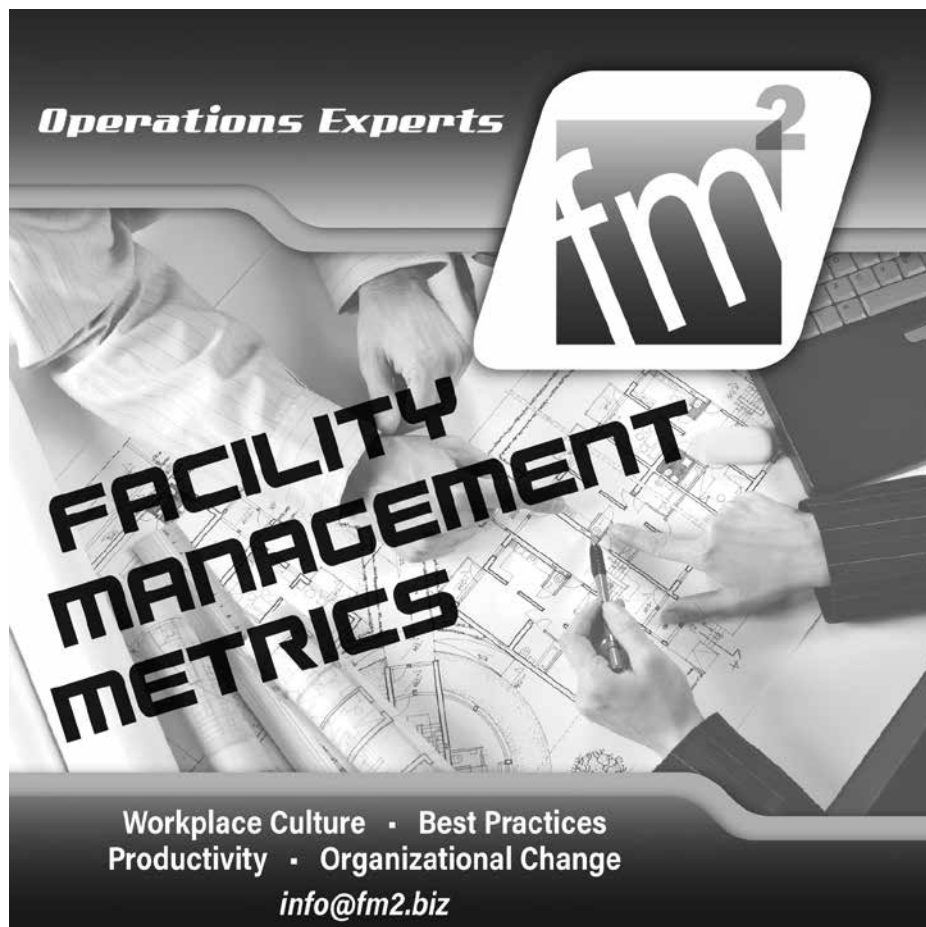
All of the positions taken by the CAH regarding the original 48 red-flagged proposals were sustained by the voting membership, with the following exceptions: CE44-19 was overridden from "Disapproved" to "Approved as Modified," CE55-19 was overridden from "Approved" to "Disapproved," and CE150-19 was changed from "Approved" to "Approved as Modified." One proposal, EB54-19, was designated as a "Consent Agenda" item, meaning that the Final Action Consent Agenda for each code or segment of code changes will be placed before the assembly with a single motion for final action. There was no action taken during the PCH in Las Vegas, Nevada.

The proposed new editions are currently undergoing an online ratification vote, after which they will be published and promoted to the various state and local jurisdiction committees to be adopted formally into law, and an enforcement date set. Further changes are unlikely; however, it is up to the state and local enforcement agencies to adopt the latest edition or not. These jurisdictions

also have the power to make amendments as they see fit, but after adoption, local jurisdictions can only enforce terms that are stricter than the adopted terms.

Until recently, there was an ICC Group C family of codes, but because the only significant code in that group—the International Green Construction Code (IGCC)—has been largely delegated to the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE), the ICC Work Group will be idle until resuming work in late 2020, when the Group A code cycle is up for consideration again. ⑤

Dana Peterson is retired from the University of New Hampshire in Durham, NH, and a member of the ASCC. He can be reached at *danaspeterson@unh.edu*. David Handwork is assistant vice chancellor of facilities management at Arkansas State University in Jonesboro, AR, and chair/vice president of the APPA Information and Communications Committee. He can be reached at *dhandwork@astate.edu.*

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5×5: Five Emerging Technologies that will Reshape the Campus in Five Years

By Craig Park, AIA, and John Cook

"The future ain't what it used to be."—Yogi Berra
"Don't look back. Something might be gaining on you."—Satchel Paige

As two of baseball's preeminent philosophers once noted, change is inevitable, and sometimes a little scary. However, adapting to change is always strategic, and never more so than when planning for emerging technologies. As 2020 begins, we examine five technologies that are changing the perspectives of campus technology designers and will likely be routine practices on your campus within five years.

5G & WIFI 6: INCREASED BANDWIDTH, FASTER EVERYTHING—RIGHT NOW

Within the next 12 months, virtually all phone/data service providers will offer 5G, the next generation of cellular service. And many WiFi vendors are already offering WiFi6, the next generation of wireless networking.

Both technologies will offer significantly improved service and performance over their existing counterparts,

spurring development of a new wave of applications and services. For example, the new systems will support connecting "everything to everything" (X2X), enabling a massive deployment of Internet of Things (IoT)-based self-monitoring, self-reporting, and self-responding systems, and guiding the efforts of staff tasked with maintaining and managing your campus.

5G and WiFi6 will rock the campus in several areas. And of course, all students, faculty, and staff will expect to get full benefit from them as soon as possible, so you can expect very little patience from campus end users.

AVOIP: DISTRIBUTING AUDIO/VIDEO OVER THE CAMPUS NETWORK

Historically, audiovisual (AV) systems have used specialized cabling proprietary to AV. Until recently, AV systems were an island, lacking connectivity with other systems and not leveraging the strengths of the campus network or the developments of the IT industry.

With AVoIP (AV over IP [Internet Protocol]) networks, audiovisual systems use the campus network to distribute signals. For example, a faculty member's demonstration of a procedure in a small specialty lab can be broadcast to a lecture hall in the same building or across campus, using the campus network.

Advantages of AVoIP include:
- **More flexibility in signal routing and distribution**
- **Improved management and scalability**
- **Costs savings in many applications**
- **Provides leverage for the campus investment in networking**

LIFI: LIGHT-BASED WIRELESS NETWORKING

LiFi (short for "light fidelity") is wireless communication technology that is poised to replace or supplement traditional WiFi by utilizing modulated light from LED lamps to transmit data. This approach gives LiFi several advantages over traditional WiFi, including wider bandwidth, more functionality in areas with high electromagnetic interference (such as research labs), and higher transmission speeds than comparable WiFi systems. It can also be integrated into the existing lighting infrastructure.

The key benefits are:
- **High peak data rates**
- **Improved location-based services**
- **Improved performance of IoT sensors**
- **Enhanced secure wireless communication**
- **Enhanced energy-efficiency**

As with most of these emerging technologies, acceptance and implementation of LiFi versus WiFi will likely take several years, as the older "proven" technology gives way to the new and improved, "but-we've-never-done-that-before" technology.

BUILDING IOT: SMARTER BUILDINGS = SMARTER PEOPLE

The now popular (but little understood phrase) "Internet of Things" refers to networks of sensors and other electronic devices that can communicate with one another. The underlying principle behind building IoT is that through continuously monitoring the various components that make up building systems (e.g., building management systems [BMS] or energy management systems [EMS]), and rapidly analyzing that data, it is possible to 1) gain deep insight into the behavior of those systems, insights that can then be used to optimize results (e.g., energy efficiency); and 2) adjust system performance and operational parameters real-time to react to changes in user needs, requirements, and behaviors.

Building IoT systems provide building managers and staff with relevant real-time information about the operation and performance of building systems, such as when a system is trending toward an out-of-variance condition.

While the primary benefit of building IoT is reduced energy consumption, the automation, monitoring, and control it offers extends to other building systems, such as lighting, access/ingress, audiovisual systems, signage, room scheduling, and so on. This may lead to improved occupant health and productivity through IoT feedback-driven optimization of interior environmental conditions, optimized resource use and management, improved building security and safety, reduced water consumption, and other benefits.

AI: MACHINE LEARNING IN THE CLOUD

Artificial intelligence (AI) is the term for describing a machine that mimics humanistic functions (e.g., problem-solving, pattern recognition, and learning). Machine learning—a subset of AI—uses statistical techniques to enable computer systems to "learn" from data without being explicitly programmed. A machine becomes better at "understanding" and providing insights as it is exposed to more data.

Intelligent buildings have the potential to benefit from AI applications through increased operational efficiency, improved occupant experience, and optimized space and asset use. To increase operational efficiency in a meaningful way, AI

systems can monitor and optimize all aspects of facilities management, including:

- **Water**: Sensors and smart meters manage water use and flow
- **Fire**: Automated functionality checks and smart detectors protect buildings from fire
- **Energy**: Smart meters and demand response sensors prevent waste and drive down costs
- **Elevators**: Operational and fault-detection sensors remotely monitor performance and automatically schedule maintenance
- **HVAC**: Automated fans, air availability, and variable-air-volume units respond to occupancy data
- **Parking**: Sensors monitor available spaces and enable 24/7 parking-lot utilization
- **Access and Security**: Connected cameras, instrumented perimeter doors, and floor occupancy data help keep building secure

Once information is collected, it can be cross-referenced with benchmark data and analyzed to identify operational improvements. When sensor data from the building itself is combined with external data sources, the potential for increased efficiency grows even more.

NOT 2020 VISION, BUT 2025 VISION: ADAPTING TO THE NEW NEW THING

The future of technology-enhanced cognitive buildings is all about creating positive experiences for the people who use them. Looking forward to the mid-2020s, these five technologies (which have been maturing for the last decade) will have real-world applications and provide new features and benefits, with a positive impact on student, faculty, staff, and visitor experiences.

Institutional planning teams will likely find the ROI for all these new technologies is worth exploring for both new and renovation projects that have program goals for improving communication, connection, and collaboration. Most importantly, as we head into 2020, let's do so with 2025 vision. ⑤

Craig Park is a principal at Sextant Group | NV5 Engineering & Technology, and can be reached at *cpark@thesextantgroup.com*. This is his first article for *Facilities Manager*. John Cook is the editor of this column, and vice president at Sextant Group | NV5 Engineering & Technology. He can be reached at *cook@ thesextantgroup.com.*

Reclaiming Valuable Research Laboratory Space: Measuring the Cost of Renewal

By Michael Blayney, Ph.D., Breanna Browder, Dieter Isheim, Ph.D., Steven Matz, RA, LEED AP, and David Seidman, Ph.D.

L aboratory space is expensive to design, build, and maintain in research-performing universities. The National Science Foundation (NSF) conducts a biennial survey of research space and publishes this information in terms of net assignable square feet (NASF). For the most current reporting period, NSF reported that science and engineering space in the United States totaled 220 million NASF (NSF 2019). Over the past decade, most of this growth was in the biological and biomedical sciences.

The cost of new research space varies by type, purpose, geographic location, and other variables (e.g., utilities, ventilation, security, and complex controls). At Northwestern, $700 per square foot is the planning estimate used by our Facilities Management team.

Poorly utilized space may cost the institution more than it realizes in lost indirect cost recovery associated with sponsored research. In turn, this creates a greater need for research space and disadvantages those faculty who are successful. Successful faculty and their labs often face serious space compression as more scientists look to join their labs. The need for more space creates greater demand on capital budgets. All of this may, in turn, increase borrowing and debit service to build new facilities or renovate out-of-date labs. This undesirable cycle creates more lab space to finance, power, and maintain—further burdening operational budgets.

The real culprit in poorly utilized space is junk. Abandoned, obsolete, or broken equipment (junk) without a viable use takes up essential space. Universities and research institutions benefit when they develop effective management and operational approaches to preventing "stranded" space and making it as easy as possible to remove equipment that is no longer useful.

Junk represents an unbooked financial liability that inhibits new, productive science. Seeing this as an opportunity and challenge at Northwestern University, its Research Safety program designed and carried out a proof of concept project that resoundingly demonstrated how laboratory space filled with unused equipment could be renewed and made ready for new science. As it turned out, this also be could be done with dramatic savings.

Working with the principal investigator and staff, we were able to renew nearly 750 sq. ft. of laboratory space and approximately 200 sq. ft. of shelf space for just a fraction of the cost of new construction by the university.

OBJECTIVES IN THE NORTHWESTERN PROOF OF CONCEPT PROJECT
1. Identify a successful lab with a vision of "what comes next" in their work.
2. Partner with qualified vendors who could ensure safe, proper disposal of surplus equipment, scrap metal, and regulated wastes (hazardous and universal).
3. Determine the necessary enabling work (grounding, discharge, disassembly, fluids, and segregation) required by the lab to disconnect and make ready for the disposal of complex equipment.
4. Establish criteria for success and metrics.
5. Develop a project plan that encompassed the work from start to finish.
6. Decide how to report on the project.

From left to right: Specialized scientific equipment requiring disassembly by the lab; Extruder machine (extremely heavy); Valuable shelf space occupied by out of date power supplies.

ABOUT THE LABORATORY

David Seidman is the Walter P. Murphy Professor of Materials Science and Engineering at Northwestern University and the founding director of the Northwestern University Center for Atom-Probe Tomography. A distinguished scientist, Professor Seidman found that a portion of his research space eventually filled up with heavy, complex, and outmoded equipment that represented his work a generation earlier (Photos 1-3).

Since then, Professor Seidman's research activities had moved into adjacent space so he could use instrumentation with current technology. Like scientists in a similar predicament, he needed support to make room for what would become the next phase of research in his field. Professor Seidman's lab was an ideal candidate for our proof of concept project, as he was already developing a proposal for the next generation of his research and equip-

ment—both of which required new (or renewed) space.

METHODS

Working in partnership with Heritage Environmental Services, appropriate recycling and disposal outlets were identified for the equipment. The work plan called for the lifting, movement, containerization, and transport of the material in the shortest period of time. To accomplish this project, 30 percent of the nearest loading-dock space would be needed for nearly three days. The project was estimated to cost approximately $9,000. It was known at the outset that labor would be the largest expense.

RESULTS

All equipment in the Seidman lab was inspected to ensure that it would conform to the recycling waste streams ("waste stream" refers to the life cycle of waste from source to final destination). This included removing any liquids or polychlorinated biphenyl (PCB)-containing devices from the equipment. Hydraulic oil was drained from an old compressor and the compressor was decontaminated. Numerous PCB capacitors were removed. Some of the equipment was grossly contaminated and required additional cleaning.

The equipment was sorted into three different recycling waste streams: 1) scrap metal, 2) stainless steel, and 3) electronics. The scrap metal filled a 30-yd. roll-off box consisting of various metal tables, metal slabs, motors, shelving, large pieces of equipment, and some of the laboratory's

FUGURE 1: Project cost in dollars
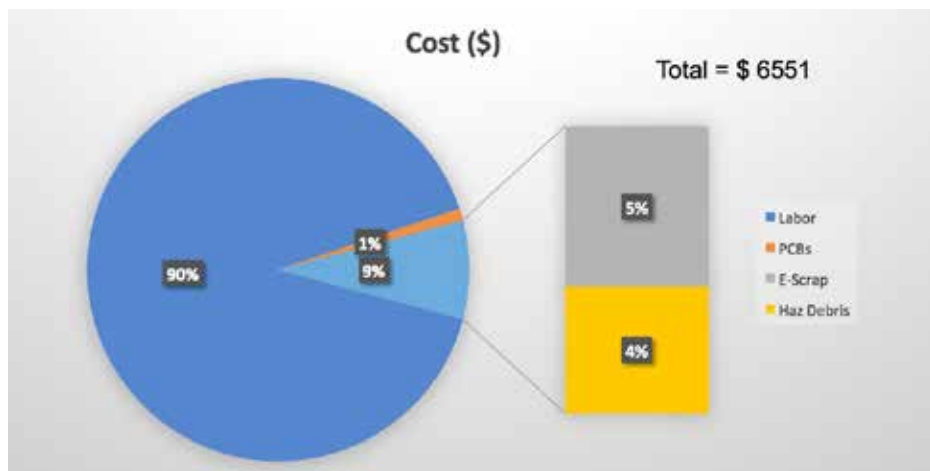
older electronic equipment. The stainless steel was separated, allowing for a significant rebate. One pallet of electronic scrap was generated, which contained items such as radios, televisions, and computers.

There was also some nonrecyclable waste generated from this project that included a 1-gal. pail of PCB capacitors (for incineration). The hydraulic oil was sent for fuel blending. Any contaminated lab debris was sent for incineration. Lastly, any garbage items, such as plastic and uncontaminated debris, were disposed of as general trash.

The final cost of the project was $6,551. Ninety percent (90%) of the total cost was labor (Figure 1). Thirty-two percent (32%) of the total weight (4.5 tons) was stainless steel (Figure 2). The significant amount of stainless steel helped offset and lower the anticipated bill by nearly one-third. We recognize the benefit of this unique windfall.

Photographs 4 and 5 are the "before and after" floor stripping and waxing done just a day or two after the equipment removal. The results are obvious; not so obvious was the immediate positive feeling that followed from having clean space for science.
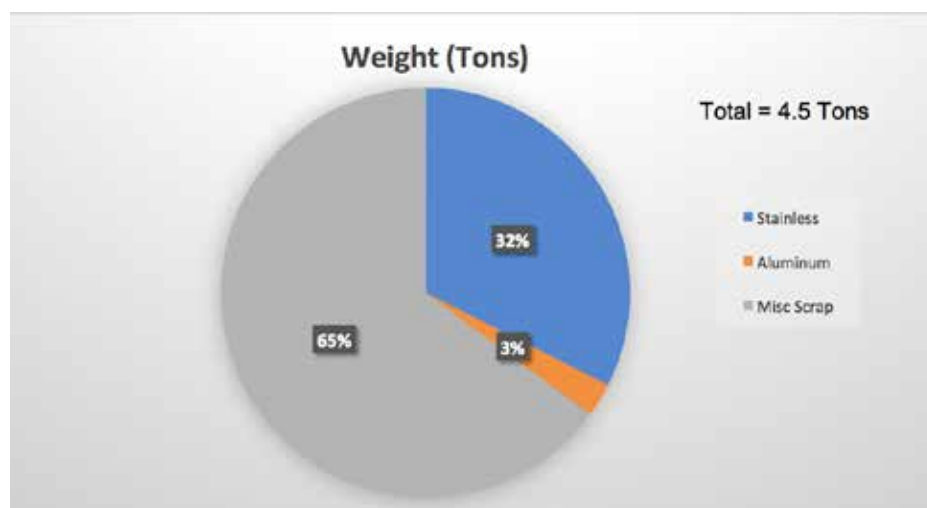
DISCUSSION/CONCLUSION

Laboratory space is expensive to design, build, and maintain. Existing laboratory space may become nonproductive as it fills with equipment that is no longer in routine use. Given the significant expense to build (or renovate) laboratory space, the development of an effective means to help identify and carry out "renewal" makes sense. 🖋

REFERENCES

National Science Foundation (2019). "University Research Space Increased by 5.5 Million Square Feet between FY 2015 and FY 2017." InfoBrief NSF 19-313, National Center for Science and Engineering Statistics.

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FUGURE 2: Material weight in tons

From left to right: Immediately after equipment removal; Floors freshly cleaned and waxed

Book Review Editor: Theodore J. Weidner, Ph.D., P.E., AIA, CEFP, DBIA

Business is still business; the game is just played a little differently now. The two books reviewed this month address what is required to succeed and how to do it from different perspectives. They present behaviors or styles that are needed to meet either personal or organizational goals. Reading either or both of these volumes could be a nice way to start the new year and help achieve some resolutions.

THE INFINITE GAME

Simon Sinek, Portfolio/Penguin, New York, 2019, 272 pp., hardcover ($28), ebook ($14.99), and audiobook ($23.97).

The goal of many organizations is to be around for more than just one or even several business cycles; but as Simon Sinek discusses in *The Infinite Game*, business behavior is often different. That is, many organizations are focused on a reporting quarter or year to validate their overall value to stakeholders (shareholders) despite having an overall goal of being around for a long time (decades or centuries). This is an area of criticism in the business/investment community.

Educational institutions have been around a long time, so the foundational rationale Sinek presents should not be foreign. However, as with any industry, it is possible for us to slip into a short-term mindset about what it takes to make an organization successful or recognized over peers and competitors.

In *The Infinite Game*, Sinek focuses on the things that make an organization successful repeatedly, not in the short term or focused on a single metric such as lowest cost, best value, or highest profit margin. It's a tough level for an organization to perform at, because it means continuous improvement, constant innovation, great customer service, and strong customer loyalty. Sinek knocks down some traditional business mantras, identifying why many organizations are not focused on an *infinite* quest but on a short-term goal.

While Sinek bashes some leaders who have focused on the finite game instead of the infinite game, he spends more time identifying the value and benefits of thinking beyond a short-term goal. He includes adoption of a society-wide stakeholder mindset, similar to recent announcements by some business leaders. He argues that this "new way of thinking" will improve long-term business success despite the potential for short-term losses. In an industry where we like to think of ourselves as being better the older our organization is, it certainly makes sense to follow Sinek's recommendations and change our perspective of how to be successful.
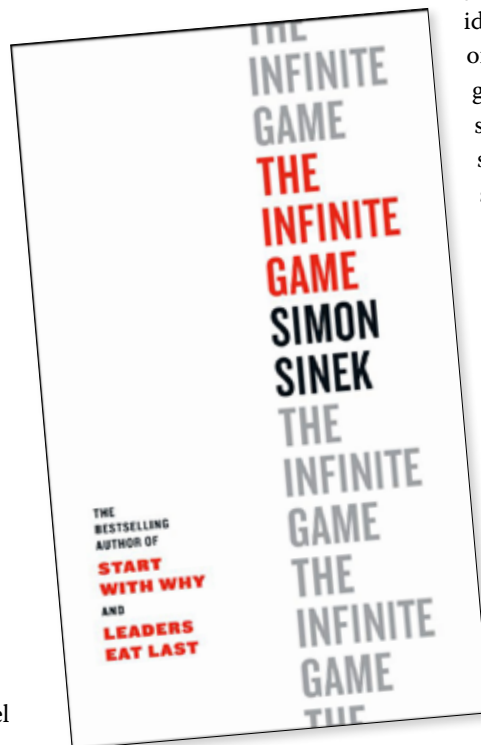
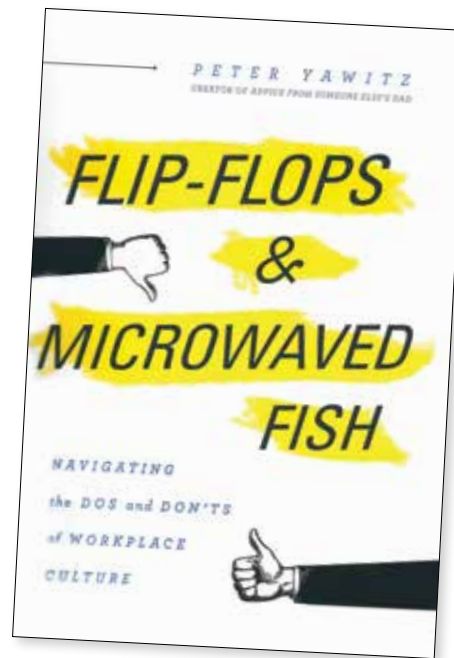## FLIP-FLOPS & MICROWAVED FISH: NAVIGATING THE DOS AND DON'TS OF WORKPLACE CULTURE

Peter Yawitz, Greenleaf Book Group, Austin, TX, 2020, softcover ($24.95).

Several generations ago, the way etiquette should affect our lives was defined in publications by Emily Post, Amy Vanderbilt, and Miss Manners. The recommendations they proffered defined how polite society should interact with each other, including situations involving differences of age, attitude, opinion, politics, and size. Etiquette was an interface between different people; it was the way to preserve one's position while working with others who held different positions.

In the 1960s, this kind of advice started to be seen by many as antiquated and elitist. They claimed etiquette was simply a tool of the wealthy to separate themselves from those less fortunate. The use of these publications declined, although it is still possible to acquire them.

However, as the business and social environment evolved, differences between people interacting with each other grew more frequent. Some large companies, to ensure employees did not offend potential customers (and each other), employed trainers who essentially taught etiquette to their employees. While the white or blue shirts worn by IBM employees devolved to other colors, manners and behavioral norms were maintained, at least for a little while.

Now, we see CEOs wearing hoodies in lieu of a three-piece suit; some businesses permit even more casual dress. The norms of your parents or grandparents have disappeared, but the need for etiquette to avoid unnecessary clashes in the workplace has not. *Flip-Flops & Microwaved Fish* provides advice on business standards in a fluid workplace where members of different nationalities, backgrounds, and experiences interact. The advice extends beyond what to wear and behave, identifying differences in national norms and how to bridge them. It also provides advice on how to communicate with peers, subordinates, or superiors in order to achieve one's goals.

The need for a system or some form of rules for interacting with others remains, whether it is based on old standards or new ones. *Flip-Flops & Microwaved Fish,* while not the same as Miss Manners, is a good substitute and a handy reference. ⑤

Ted Weidner is an associate professor at Purdue University and consults on facilities management issues primarily for educational organizations. He can be reached at *tjweidne@purdue.edu.* If you would like to write a book review, please contact Ted directly.

new products

MILWAUKEE TOOL continues to expand its line of outdoor power equipment solutions with the versatile QUIK-LOK Attachment System. The new system is made up of multiple attachments, including a string trimmer, edger, pole saw, and hedge trimmer. For the versatility to complete a wide range of applications, users can swap between attachments for use on the M18 FUEL Power Head. Powered by M18 FUEL, the QUIK-LOK Attachment System utilizes the most advanced cordless technology to deliver best-in-class power and run-time for landscaping and trade professionals. The system also achieves instantaneous throttle response while being up to 2 lbs. lighter than the other options on the market. For additional detailed information on Milwaukee Tool visit *www.milwaukeetool.com.*

CAS DataLoggers announces that they are now an authorized stocking distributor of Continental Control Systems products, including the WattNode family of power and electrical energy meters. The WattNode meters are available in several styles, from simple devices that measure kWh with a pulse output, to multifunction device meters with a Modbus remote terminal unit (RTU) interface that measure more than 90 parameters. They work with single- or three-phase service from 100-600 VAC. When coupled with a dataTaker or Delphin data logger/data acquisition system, they provide the base for a comprehensive monitoring system that can capture electrical parameters like AC voltage, current, power, and energy and power factor, along with other data such as temperature, pressure, and flow. For more information about CAS DataLoggers visit *www.DataLoggerInc.com.*

SOLO KLEINMOTOREN GmbH in Germany has been producing sprayers, mist blowers and 2-stroke engines since 1948. Their extensive knowledge and innovative technology has been transferred to the field of cleaning and disinfecting with our Solo CLEANLine Sprayers. Solo CLEANLine Sprayers are equipped with Viton seals for acidic chemical solutions (A models) and EPDM seals for alkaline chemicals solutions (B models). Heavy duty HDPE tanks, resistant against chemicals and UV-ray impact, are built in the most popular fill capacities, ranging from 42 oz. to 4 gal. The pump systems are sealed to prevent aggressive liquids from causing any mechanical damage, contributing to a long service life. For additional information go to Solo Kleinmotoren online at *https://us.solo.global.*

OASIS INTERNATIONAL knows purification at the final point of dispense has been the holy grail of drinking water dispensing, but it has proved to be expensive and elusive—until now. New from OASIS International, QUASAR bottle fillers harness the germ-obliterating power of short-wavelength (UVC) light in an energy-efficient, ecologically smart LED. QUASAR bottle filters achieve 99.99 percent reduction of common waterborne pathogens lingering in a facility's pipes, including Legionella, Giardia, Listeria, Cryptosporidium, Shigella, and E. coli, among others— literally taking aim at these disease-causing pipe dwellers as the water flows from the dispense point and before the guest enjoys the newly purified water. For more information on OASIS International visit *www.oasiscoolers.com.*

MASTER LOCK, an industry security leader for more than 95 years, has expanded its Bluetooth-enabled product family to include the all-new Bluetooth Door Controller, which offers security professionals and their customers cost-effective, keyless access control from the convenience of their smartphone. Available now, the Bluetooth Door Controller wires into electric strikes or magnetic locks and operates with the convenient Master Lock Vault Enterprise smartphone app and web interface. The integrated door-access solution provides efficient, effective administration of security management and user access across a facility or business of any size. With no keys to lose, no combinations to forget, and no unauthorized key duplication, the Bluetooth Door Controller offers the simplicity and savings of keyless security with the added benefit of being able to control, monitor, and track access via the Master Lock Vault Enterprise platform. For more information, please visit Master Lock at *www.masterlock.com*.

SC JOHNSON PROFESSIONAL's Refresh foam soap line contains formulations designed to elevate the handwashing experience. Available in a range of new signature fragrances and fragrance-free options, just one pump removes over 99 percent of dirt and germs when used properly. Developed based on input from facility owners, cleaning professionals, fragrance experts, and users, SC Johnson Professional's Refresh foam soaps contain signature fragrances formulated with one of the mildest preservatives and added skin conditioners, making them pleasant for the hands and suitable for all ages. Available in varying cartridge sizes, the pump bottles for Refresh Azure and Refresh AntiBac have also been reconfigured into new, attractive pump bottles perfect for use in front-of-house washrooms. For more information about SC Johnson Professional's Refres foam soap range, visit *www.scjp.com/refresh*.

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