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IFMA

IFMA is the world's largest, most widely recognized association for facility management professionals, supporting more than 20,000 members in 135 countries. Founded in 1980, IFMA's vision is to lead the future of the built environment to make the world a better place. A key contributor to the development of international FM standards, IFMA provides career resources, continuing education and three industry-respected credentials; maintains the largest repository of FM-related content on the web; and hosts year-round global events. Among the values that guide us, we believe in the benefit of global diversity, inclusion and social equity; and we recognize that sustainability, resilience and responsible environmental stewardship are paramount. For more information, visit ifma.org.

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Check out the online issue of FMJ for a special section that follows the end of the print magazine and includes additional articles not available in the print edition. Read the extra articles listed below for contributions from councils and communities, and other supplementary content.

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Editor's Note Bobby Vasquez

FMJ has chronicled each phase of the pandemic's effect on our industry. The past two years' issues provide a fascinating account of FM's journey from uncertainty to action, leadership to recognition, a focus on the now to a vision for the future.

From response, recovery and reentry efforts to sustainability and workplace experience initiatives, FM's increasingly crucial and strategic role as a catalyst for facility transformation, a leader of inter-disciplinary teams, and a protector of lives, business, communities and the planet has unfolded in the pages of FMJ.

On behalf of the FMJ team, I thank everyone who has contributed to this significant chapter in our industry's narrative. IFMA leaders, members, partners and renowned subject matter experts comprise our distinguished roster of FMJ authors, who have provided advice and inspiration throughout these troubled times. Whether sharing practical how-tos or future outlooks on FM's path forward, our contributors have kept us buoyed and resolute. The work of our authors is not only credible, but incredible.

As we begin a new year still under the cloud of COVID-19 and its variants, FM remains in the spotlight as the facilitator of wellness-minded environments. This issue of FMJ focuses on creating superior interiors in the spaces we manage — the layout, design, air quality, technology and protocols that shape experiences and behaviors that foster safety, productivity and engagement. Articles cover rebuilding office culture, combining physical and digital environments, leveraging data analytics to serve the changing needs of the building and its business, and a holistic approach to master planning and design.

For years, facility management has defined itself by societal and technological shifts: change in response to events on a local or global scale, or change triggered by advancements that lead to obsolescence. When those shifts are identified, and in some cases predicted, FM becomes better suited to serve its organizations and occupants.

During the reentry phase, societal and technological shifts have merged to define not just our industry, but the entire built environment. How space is used and improved has become a tool for competitive advantage, engagement, loyalty, diversity and well-being, as well as a launching pad for innovation and sustainable action.

Still cautiously, still responsibly, people are back inside the great indoors. As the way we live, work and play continues to evolve before our eyes, we are — after two years of concentrated focus — better prepared and better equipped to adapt our people, places and processes for superior interior experiences.

Interested in writing for FMJ?
Email **bobby.vasquez@ifma.org** article ideas to be considered for future issues of FMJ.

From the **Chair**

PETER ANKERSTJERNE

MBA, COP, IFMA FELLOW

Chair, Board of Directors

New digital solutions, new office design models and the evolving concept of workspace post COVID-19 are challenging the role of the facility manager, now and in the foreseeable future. The turn towards hybrid work has changed facility management — perhaps forever. Allowing for more flexibility, and with that more uncertainty, is not a trivial problem in an industry that has been late to adopt new technologies and where success has been defined by our ability to manage and reduce cost.

In a post-pandemic world, FM is the center of the workplace transformation to connect the workforce with that workplace. This brings opportunities to create new workspace environments which may change in size and form on a daily basis. A flexible workplace that caters to the needs of a hybrid workforce will be a challenge, but it also is a major opportunity for FMs to create an engaging workplace that attracts the right employees to the business.

Form follows function has been the guiding principle for designers for years. However, we still find ourselves in the ironic situation that 90 percent of all workplaces have not changed over the past decade, despite the technological and organizational advancements. The pandemic has offered FMs an unprecedented opportunity to take a leading role in discussing and reassessing the purpose of the workplace. It has become evident that form actually does follow function and is not just an adage preached by architects. As functions change so should forms, which must be analyzed and reassessed on a regular basis. With that axiom in mind, we need to build effective workplace solutions around employees — including home working — that enable them to do the very best they can in the roles they are in.

The threat of COVID-19 is not over, and we as FMs must remain vigilant and flexible in our approach to bringing people back to the workplace. But the pandemic spotlighted FMs as we have been front and center in the response, recovery and finally the reimagination phase of this crisis. As one of IFMA's World Workplace sessions questioned: Now that you have a seat at the table — what are you going to do with it? This is a key question all FMs should ask themselves to be able to continue influencing the C-suite, also after the pandemic is over.

In IFMA's Experts' Assessment, 249 subject matter experts identified the shift from purely operational to a more strategic position as the primary change in the role of FM. This change is not just a convenient side effect of working from home during COVID-19. It is directly tied to the hybrid work model and how we design — or actually redesign — the workplace to serve a different purpose, which will probably be more connected to collaboration, social and cultural cohesiveness, learning and hospitality — rather than solely focusing on productivity, efficiency and cost.

Along with the responsibility of working with a more flexible and unpredictable workforce, there is also an opportunity to benefit from the hybrid work model at a more principal level — the opportunity to manage a high degree of flexibility in contracts with suppliers and subcontractors.

To meet these challenges head on, FMs are required to maintain a close understanding of employee experience. This will inform service innovations, while simultaneously still creating more cost-effective and efficient ways of working with workplace strategy. By utilizing service design principles and tools, such as journey mapping and personas, FMs together with their HR teammates should be able to adapt swiftly to changes in employee experience and to develop more personalized interactions throughout the service delivery. This will command higher levels of confidence and trust, which in some instances will require a different approach to leadership.

IFMA can support you and your organization in your journey to becoming more strategic and more intentional about your workplace and service design — check out the many articles on this topic in both FMJ and in the Knowledge Library or join our Workplace Strategist program offered in collaboration with the WE community of practice.

There are plenty of opportunities to lead the way when you are part of IFMA!

From the **President**

DON GILPIN

President & CEO
IFMA

Despite the sustained pressure facility management has been under in managing shifts created by the pandemic, along with societal and economic challenges, as well as readying organizations for resilience against the effects of climate change, this is an extraordinary time for the profession. Over the last two years, our industry has gone from a back-office function to a strategic instrument to prioritize and implement organizational policy, provide safe and inclusive spaces, and create and support the conditions for people to live, learn, work or play at their best. Many important points and eye-opening projections on FM's expanding role were made during one of IFMA's 2021 panel discussions. I would like to share a few of those observations that we must keep in mind in the new year.

As our organizations transition into new workplace experiences, FM is, as always, evolving. Gone are the days of functioning solely as technical experts or vendor liaisons. FM now serves as a critical overseer of IT, human resources, security, strategy development and capital planning.

Technological advancements as well as political and societal changes have catapulted traditional FM to a customer-based profession. These changes have forced our stakeholders to take a hard look at who we are as professionals and how we facilitate safety, well-being, flexibility, productivity and experience within our facilities.

FM not only faces new challenges in administration, process and compliance; we also have an historic opportunity to enable advancement.

This requires a rethinking of physical space and leading positive workplace culture. Everything that defines the conditions for productive work — space, comfort, technology, tools, collaboration, engagement, balance, benefits and well-being — are no longer independent components. Each is built into the complete experience.

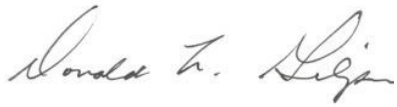
As a result, FM is in partnership with other departments to revolutionize the understanding of workplace behavior, cognizant of shifts within our spaces so that we can create a culture in which people have a sense of belonging and shared objectives. Design shapes that behavior.

While amenities are a great selling point for any organization, we must be mindful of space as a conduit for social wellness. With hybrid work, employees are in our facilities because they choose to be there, not because they are required to be there. We must take that human-centric notion to heart. Through the spaces we manage, we are supporting positive workplace culture, social connections and inclusion. Space — both how we use it and how it is perceived — matters.

FM is no longer an organization's best-kept secret. We are now the driving force, turning challenges into positives for our stakeholders.

We must ask not only what is working, but also why. How do our rank-and-file employees feel about the space they are in whether in the office or their off-site environment? How do their opinions align with those in management? Are we prepared to act on those opinions?

While change is inevitable, we must embrace the notion that the pandemic accelerated what was already happening — buildings were already becoming more digital, and people were eager for a better work/life balance. We have an opportunity to take advantage of what we've learned during this global experiment to improve and advance our workplaces, create cultures people want to be a part of and enhance the lives of our stakeholders.



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SURVEY RESULTS POINT TO SIGNIFICANT OPPORTUNITY FOR FM GROWTH IN AFRICA

Last June, the Africa Facilities Management Association (AFM) conducted a survey to identify gaps in skills and training within the existing and future African FM community. With support from international organizations including IFMA, RICS, EuroFM, SAFMA, The Nigeria FM Initiative, FMCE, the University of Capetown and the University of Lagos, the survey was sent in English, French, Portuguese and Arabic to active facility managers in industry and academia across regions of Africa.

The recently released report highlights the most important performance competencies adopted in survey respondents' FM scope of responsibilities. Occupancy and Human Factors ranked first, primarily due to the significance of the three dominant areas within this competency: Management of the Work Environment; Management of the Built or Natural Environment for Habitation; and Management of Occupant Services.

Also listing the top 10 FM sub-competencies, the report ranks Managing Individuals and Teams, and Lead and Influence Individuals and Teams as the most important factors under Leadership and Strategy, as well as the most important among all other sub-competencies.

Sixty-eight percent of survey participants have less than 10 years of experience, with 61 percent providing a hybrid FM service — a combination of in-house and outsourced services; and 39 percent providing either in-house or outsourced services. Eighty-one percent of respondents have a tertiary education, while 16 percent hold a diploma (or its equivalent) and 4 percent just graduated from secondary school.

Dedicated to growing the FM industry as a major contributor to the African economy through development of competent and qualified professionals, AFM considers the survey findings valuable in defining the nature, extent and curriculum content of any educational or professional development initiatives for the African FM community.

Report explores pandemic's impact on EU companies' workplace practices

Eurofound's report, "Business not as usual: How EU companies adapted to the COVID-19 pandemic" (Publications Office of the European Union, Luxembourg) investigates how EU establishments initially reacted to the COVID-19 outbreak, then adapted their workplace practices for resilience and occupant safety.

Telework was not the norm in most EU companies, but that changed completely in April 2020. According to the report, for many businesses, the shift to remote working arrangements marked their most radical change in work organization. Companies with no previous teleworking experience adapted quickly and saw it as an opportunity to make future work more flexible.

The report suggests that physical health and safety and mental well-being need to be addressed jointly in the workplace, and that resources such as employee assistance programs and counseling should be provided. Additionally, a business continuity plan may help increase a company's capacity to overcome future shocks and better support employees in challenging times.

With consistency and continuity in the operation of the built environment becoming increasingly important, IFMA EMEA contributed a section of the report on facility managers' role in ensuring a safe return to the workplace, emphasizing FM's essential function in facilitating standardized workplace planning and management, arrangements for remote work, facility cleaning and observation of social distancing rules.

Download the report at bit.ly/EUbizreport.

IFMA continues to expand training options for FMs worldwide

To help learners find IFMA-endorsed training in EMEA, APAC, Canada, South America and the U.S., IFMA recently made its list of Education Training Affiliates (ETAs) available at ifma.org. Established providers of adult learning in areas around the world, ETAs offer instructor-led courses directly to regional professionals. This comes on the heels of the enhanced FM Framework, a catalogue of specialized, multidisciplinary courses offered by trusted partners.

IFMA has also expanded language options, offering FMP courses and Essentials of FM in Simplified Chinese. Essentials of FM, Module 1: Introduction to FM is offered in Spanish-Latin America and Portuguese-Brazil. Learners have the convenience of toggling between the available languages while working in a course.

IFMA Foundation to provide career pathways for a green workforce

"This is not only a win for the foundation, but most importantly, the FM profession. Facility management is growing in recognition, especially among government agencies, as a good green job."

– IFMA Foundation Executive Director Diane Levine

In partnership with Denver Economic Development and Opportunity, the Office of Climate Action, Sustainability and Resiliency in Denver, Colorado, USA, recently awarded US$2.1 million in contracts through its taxpayer-supported Climate Protection fund. The IFMA Foundation is one of six recipients of funding issued to expand equitable access to jobs in the green economy through workforce development and employment opportunities for local residents.

The program aims to create opportunities for people from under-resourced communities by training and developing a workforce that will be first in line for increasingly high-demand jobs in clean energy. As a contract awardee, the foundation will provide outreach, education, upskilling, reskilling, pre-apprenticeships, apprenticeships and on-the-job training.

"We're delighted to be selected as a program participant. Helping to create career pathways in a growing clean-energy field aligns with the foundation's work in creating career pathways for qualified FM professionals," said IFMA Foundation Executive Director Diane Levine. "FMs already provide essential climate-action leadership by integrating energy efficiency, clean energy and carbon reduction into the operation of buildings. This program will open even more doors to regional FMs, in addition to promoting a sustainable future for Denver."

STATE OF REMOTE WORK REPORT REVEALS RETURN-TO-OFFICE REALITIES

In November 2021, Global Workplace Analytics and Owl Labs shared findings on employee productivity, stress, desire for flexibility and how office spaces are changing post-pandemic in their fifth annual State of Remote Work report. Of the more than 2,000 U.S. employees who were surveyed, 90 percent said they are equally or more productive when working remotely, and seven in 10 want a remote or hybrid option moving forward.

"What's different now is that employees feel more empowered to ask for and even demand it," said President of Global Workforce Analytics Kate Lister, who co-authored the study. This gives employers a unique opportunity to create a new world of work, said Lister — "one that is both physically and mentally rewarding for all of their people."

Lack of clarity around how they will be expected to work in the future is causing stress for four in 10 employees; but only one in 10 managers are concerned about employee burnout. Many employers have not yet invested in technology to address the unique challenges of hybrid work, and 39 percent of respondents said their employer wants them back in the office full time.

However, only a third of employees feel the office is the best place to do individual work, and 82 percent of employees believe the option to work remotely at least part time would improve their mental health. The report suggests that for hybrid work to be successful, organizations will need to revamp their work practices, work policies and even their workplaces. "Ultimately, autonomy over where and when they work will be key to reducing employee stress," said Lister.

Download the report at globalworkplaceanalytics.com/whitepapers.

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A Place to Call Home

Finding functioning space for FM teams

BY JEFF ROSS-BAIN
& DR. EUNHWA YANG

Facility management departments are tasked with providing workplaces that enhance worker performance, encourage collaboration, and promote health and well-being through innovative space use and planning, ergonomic design, the introduction of modern amenities and maintaining excellent indoor environmental quality, to name a few. Unfortunately, it is common for the FM staff to be squeezed into the backwaters of the building in spaces that meet very few, if any, of the features they work hard to provide others.

The work environment for FM staff is multifaceted. It is true that one of the most effective practices is to "manage by walking around," but FM teams still need a place to complete many, if not more, of the activities of the typical office worker: creating and accessing documents at a workstation, placing phone calls, logging data, meeting and research are fundamental to effective FM operations. In addition, FM staff requires adequate space for spreading out and reviewing building plans, document filing and suitable space to store various items, such as diagnostic instruments, tools, and commonly needed spare parts and equipment. Another consideration, with the prevalence of building management systems (BMS), is a large monitor for observing and adjusting myriad building functions — a command center. Workspace design features and amenities that optimize client productivity and wellness are equally beneficial to FM staff.

The physical locations of FM workplaces often appear to be afterthoughts and/or based on little understanding of what FMs actually need. Typical locations include rooms added to under- or aboveground parking garages, back-of-house rooms originally intended as storage or a woefully small building manager's office that quickly becomes stacked to the ceiling with stuff. In the case of some smaller facilities, the mechanical, electrical and plumbing (MEP) room is the office, or unfortunately, there is no dedicated room at all.

Reasons for inadequate FM space

The reasons that FM departments get inadequate space stem from many realities. Historically, FM has been viewed as a somewhat unwelcome compulsory expense rather than a key critical component of a healthy business. The mentality is that FM work is regarded as a repair-when-broken custodial function. In reality, it requires professional skills, technical expertise, adept communication and continuous training. Because of this outdated mindset, the FM space allocations are either overlooked or, by default, relegated to the least favorable location in the building.

As buildings and systems become more complicated, with performance reporting and scoring now being used to define building quality, and occupants become more sophisticated about healthy and sustainable building features, FMs are required to manage, report and react to an increasingly diverse set of matters. At the building design and/or renovation stages of a project, the designers do not always have key insights into the needs of an FM department, nor is there robust published design guidance on appropriate space requirements. However, exceptions are typically present in mission-critical facilities with heavy maintenance needs and/or critical systems, such as hospitals and other medical facilities, data centers and airport facilities, where the FM function is truly understood to be paramount to successful business production. These building types tend to include thoughtfully planned space for the FM function in the design stages.

Architectural design/space planning

A building's long-term operational considerations have historically not been a front-and-center aspect of architectural and engineering design. As a result, it is common to have heavy equipment shoehorned into sub-optimal locations, which compromises access to elements that require regular attention or introduces unnecessary system complexity (i.e., elaborate controls, uncommon systems) that exceed the capabilities of the FM staff or local providers. One example of a design not supporting building operation is the use of ships ladders for roof access, regardless of the amount of equipment on a roof. Adequate maintenance of rooftop equipment requires access for personnel, tools, test instruments and replacement components (i.e., filters) and demands relatively frequent attention. It is an obstacle course for a technician to navigate and climb up the ladder while ladened with parts, instruments, toolboxes and others, opening a roof hatch and carrying everything up. This seemingly innocuous feature is a recipe for deferred and poor maintenance, potential risk hazards and inefficient work process/condition.

FM offices do not need to be in the prime office locations of a building; however, they should also not be in the worst locations. The FM department can be an activity hub; the ideal location should be non-adjacent to office tenants and general public circulation areas. A centrally located FM department is best so that FM staff has unencumbered access to building systems and areas, while also accessible to building management areas and colleagues to participate in business planning and reporting activities. Additionally, the FM offices should be designed and located to maximize occupant comfort, health and productivity. Features, such as occupant control of lighting and HVAC systems, optimal air quality, ergonomics, break rooms, access to daylight and views, and acoustic comfort/noise control will not only support worker productivity and well-being but also send a message that the FM department is an important and valued part of the business model.

Space needs for the FM department

Although circumstances dictate actual space needs, some fundamental space needs would be common across all or most facility types. These would include individual workstations with a work surface, storage cabinet and computer system, a meeting area or conference room for internal and vendor meetings, break room and rest room access, good lighting and control, and a high level of indoor environmental quality. Some FM teams have many members as well as 24-hour operating shifts. When planning for large FM teams, the needs of all staff should be considered to ensure adequate space is available for all workers and shifts. Failure to meet appropriate space needs would impose unnecessary difficulties on the FM department to meet the client's mission.

Additional needs, depending on the specific facility type, would include a collaborative work area with a laydown area for looking over building drawings and plans, a library that allows for the efficient filing and access of the most current equipment manuals and product data, storage space for test instruments, commonly used spare parts and tools, and, ideally, changing and locker rooms with shower stalls. Although some FM functions and manual/product data have been more digitized, many existing facilities and their FM teams still heavily rely on printed drawings and documents. Also, a collaborative work area can be multifunctional as it can provide a space for a short work task meeting and have a large touch screen that displays drawings and plans when they are digitized.

Mission-critical, heavy manufacturing, remotely located and other specific-needs facilities may also have higher level space needs, such as extensive stores for replacement equipment, fully equipped shop areas for on-site repairs and maintenance, and laydown areas for delivery of supplies and equipment. These types of facilities will inherently be aware of the FM needs, and such specialty space allocations will be clearly identified as part of the fundamental building program.

Considerations for small-to medium-sized enterprises

Effective FM is just as critical for a small-to medium-sized enterprise (SME) as it is to a larger entity. Furthermore, the typical SME has some unique challenges when allocating resources to the FM function. Often, SMEs would not have adequate justification for a full-time FM; they have a staff member charged with managing the FM activities as a fraction of their other duties or have a part-time person keeping an eye on things. Some SMEs outsource all FM functions and rely completely on others to make critical, sometimes expensive decisions.

Regardless of the method of managing the facility, there remain specific space requirements for effectively ensuring that the facility operates efficiently, economically, and with minimal unwanted breakdowns and core business interruptions. Possibly foremost on this list would be the need for efficient management of building data, including maintenance records, libraries of equipment and product manuals, up-to-date design drawings and specifications, and current outsourced vendor contracts.

Conclusions and next steps

Ensuring that corporate business functions and performance are maintained is of fundamental importance to success regardless of the size of the organization. Human capital, talent acquisition and retention, employee well-being and supportive workplace design are critical to meeting these objectives. The FM department's contribution to maintaining these objectives cannot be limited by traditional perceptions of how FM departments operate.

The FM team's goal is to provide a supportive environment for maximizing business efficiency and collaboration by integrating people, place, process and technology — for others. However, it is not uncommon for FM staff to be underserved in terms of space allocations and basic amenities needed to effectively conduct their work. For example, being located in the least favorable space of a building, FM teams are often exposed to poor indoor air quality, continuous or excessive noise, and no daylight access.

Architects, interior designers and space planners should have sufficient resources to determine FM department needs and be encouraged to include these identified needs into their planning scope. One critical aspect of high-performance building design calls for an integrated design process, in which all stakeholders, including FM providers, users and operators, are at the table when determining space programming needs. This input is critical to ensuring that the building design has captured all aspects of the building's functional and operational needs for the life of the building. FMJ

Jeff Ross-Bain, *P.E., LEED Fellow, M.Sc., is a mechanical engineer and president of Ross-Bain Green Building, LLC. Since 2001, he has worked exclusively in the field of high-performance green buildings and has been involved with over 85 LEED projects, numerous energy audits, energy models, commissioning services and FM quality assessments. Ross-Bain has a master's of science degree in facility management from the Georgia Institute of Technology and is utilizing these skills to provide FM guidance to various types of businesses. He has served on several ASHRAE Standards committees and is a member of the ASHRAE Guideline 228p committee, which is establishing methods for measuring performance of net zero energy buildings. Ross-Bain has taught an undergraduate/graduate level course on high-performance green buildings at Georgia Tech and has delivered presentations on various topics around the world.*

Dr. Eunhwa Yang *is an assistant professor in the School of Building Construction at the Georgia Institute of Technology and received a Ph.D. in human behavior and design from Cornell University. Her scholarly passion lies in the area of sustainable building practices and the relationship between people and the built environment. Her research focuses on stakeholder engagement and energy efficiency in tenanted properties, smart operation and maintenance using data analytics, and healthy workplaces. The significance of her work is to redirect split incentives in leased properties, support data-driven decision-making during operation and maintenance of buildings, and understand how buildings can support human health and well-being. Yang's master's and doctoral students have been recognized in the field with IFMA Foundation scholarships and winning CoreNet Global Academic Challenges.*

The GOOD OLD DAYS

Blasts from the past that still work today

BY MARY GUITEAU

Everything old is new again. That adage rings true in today's built environment. While office space layouts have evolved over time, so have people's work styles. Much like unprecedented events in the past, the COVID-19 pandemic has influenced the way people work, leaving many companies to question their work strategies and use of space. The old saying of history repeating itself is also true. However, in today's environment, history is repeating itself with an eye to the future. Everything old is new again, but with a contemporary twist.

Evolution of Space Layouts

The office environment has certainly changed over time and has helped shape work styles over many decades. To understand this fully, facility managers and workplace design professionals must look at the history and evolution of the office layout concept (*see next page*).

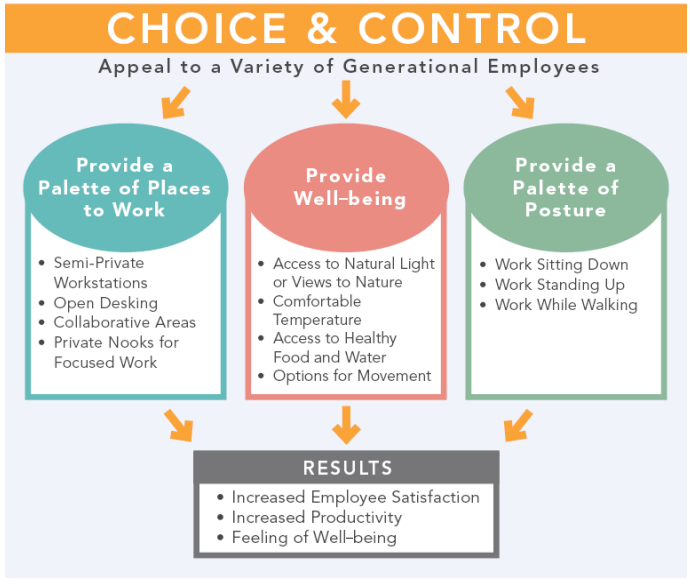
Evolution of Work Styles

The office layout concept has evolved over time, and that has a direct correlation to the evolution of work styles. Like the chicken and the egg, it is unclear which came first.

In the 21st century, technology is changing at record speed. The office space and its environment are required to adapt to ever-changing technology, as it has changed the way people work. This has put an emphasis on flexibility.

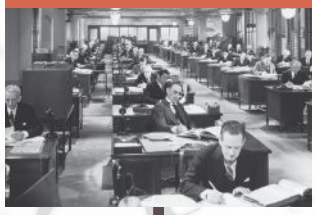
As the workforce and technology change, so have work styles. The challenge for office environments is to appeal to workers from multiple generations: Baby Boomers, Gen X, millennials and Gen Z. While Baby Boomers typically prefer more privacy, whether that be from private offices or workstations with tall panels, millennials typically prefer a more open, fluid workspace. Gen X workers have experienced both and typically tend to be more flexible with their work style preferences. Gen Z workers rely much more heavily on technology and prefer to work in different locations. So how does the modern office appeal to both generations?

The answer is choice and control...



HISTORY AND EVOLUTION OF THE OFFICE LAYOUT CONCEPT

EARLY 1900s



- Skyscrapers and large commercial buildings were developed
- Workplace was a mix of private offices and open/office areas known as bullpens, which placed numerous employees in a large, open space, with no division between each person
- Designed to increase productivity

LATE 1960s

- Variety of alternate work settings for staff, increased freedom of movement, and a greater degree of privacy when working
- Each individual's workstation became larger and more enclosed
- Led to less interaction as staff became less visible to each other

LATE 1980s

- Each employee had their own tall, three-sided vertical division that defined their space; this approach became known as the cubicle farm
- Enclosed offices were along the perimeter of the building
- Cubicle farm was located at the interior of the space

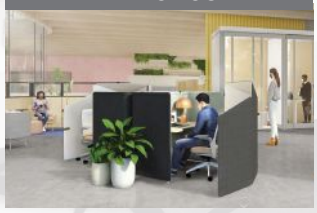
EARLY 2000s

- Shift toward providing more workers with natural light
- Private offices moved from exterior walls to the interior of the space
- Workstations moved to perimeter, providing more workers with natural light and exterior views

2010s

- As technology developed, workers became more mobile and could work from anywhere
- Tall panels from the previous period became shorter or went away altogether
- Office space became more open, more flexible and more fluid

2020s



- Many companies are going back to separation, with workers needing more individualized space
- This is being achieved with more flexible products such as acrylic screens or moveable panels (acoustical, writeable, tackable)
- Hybrid working means office spaces are less proprietary and more shared/scheduled

While the style of working has evolved over time, it has all still been within the parameters of the office building. The pandemic thrust the working world into a new unknown. Because of health concerns and social distancing requirements, most companies made the shift to remote work. This change had significant impact on how people work. However, as days turned into weeks and weeks turned into months, employees adjusted to their new environment. The use of technology made communicating easier by way of platforms like Zoom, Microsoft Teams and Webex. With safety measures and protocols in place, workers slowly started returning to the office. Now, companies are faced with the possibility of employees wanting to continue working remotely. Even though studies show that, when given the option, the majority of people prefer to work in the office with colleagues, there are still some who prefer to work from home. So, how do employers make the post-pandemic workspace attractive to employees? More importantly, how do employers make the post-pandemic workspace safe for employees? The answer is choice, control and flexibility.

Example of Choice, Control and Flexibility (Image provided by Steelcase)

Many companies have or will move to a hybrid work setup, in which some or all employees work in the office a portion of the time and work remotely the remainder of the time. This will reduce the quantity of people within a workspace on any given day, which will allow open office areas to be less dense. Instead of an open office housing 50 full-time workstations, it may now house 25 full-time workstations, a few hoteling workstations for flexibility, phone booths for privacy, Zoom rooms for virtual meetings, teaming spaces for in-person meetings or projects, and other informal spaces for collaboration areas.

Another area that may change with this evolution is the breakroom. Breakrooms could become larger, have more amenities and be more centrally located to promote collaboration among employees when they are in the office. Studies have shown that the one thing employees miss most about working from home is the lack of collaboration with their peers. If companies can provide better spaces that promote that collaboration, it could give employees another good reason to want to return to the office. When they do get back, they would have the choice of where to work, the control of how they work, and the flexibility to change their work style throughout the day, week, month or year. Choice, control and flexibility are the keys to creating workspaces to which employees will want to return.

An old concept reinterpreted in a new way: the phone booth (Images provided by Google and Hush Booth)

Conclusion

Albert Einstein said, "If you want to know the future, look at the past." As FMs and designers consider this guidance with office environments, going forward requires a response from their own understanding of what has been. Looking to the future, these experiences are invaluable in understanding how it fits with current work styles. Everything old is new again. Indeed, it is. FMJ

Mary Mowad Guiteau, *IFMA, IIDA, is the director of interior design at Holly & Smith Architects, APAC, with offices in New Orleans and Hammond, Louisiana, USA. A graduate of Louisiana State University, she has more than 22 years of commercial design experience, working with owners, facility managers, users, developers and real estate companies. She is a member of IFMA's Baton Rouge Chapter.*

Envoc at City Farm

When software development company Envoc decided to relocate its Baton Rouge, Louisiana, USA, office from the Perkins Rowe mixed-use development to City Farm office park, it enlisted its previously used architect to design the build-out of the 3,400 square foot shell space.

- The space was divided into zones of Think, Work, Play, which were color coded by use of finishes:
- The Think zone [purple] includes collaborative/ meeting spaces
- The Work zone [blue] includes offices
- The Play zone [green] includes the breakroom and lounge area

That concept, which was used in the previous office design, was carried over to the new space, but with a twist. Because the new building shell had a modern farmhouse aesthetic, the interior of the space needed to acknowledge that. The designers were tasked with combining Envoc's edgy, techy style with the building's modern farmhouse style, accomplished by use of materials. Various types of wood were used, to harken to an older farmhouse feel. The wood was used in unique applications to give the space a modern aesthetic. The flooring is vinyl planks with a wood-grain appearance. The wallcovering at the entry is wood veneer stained gray and assembled to create a geometric pattern. The wood slat ceiling element uses locally sourced cypress wood, and the company's logo is added by use of a charcoal wood stain. This is a prime example of using old material in new ways.

The layout of the space is also an example of using an old concept in a new way. In the original office design, the client initially asked for a fully open office, but quickly realized most of the staff is on

conference calls all day and needed more privacy. Additionally, the nature of software design requires a lot of heads down, focused work. The solution was a "cube" that is floating in the middle of the space. The "cube" is divided into pods, separated by walls, but faced with full glass fronts and sliding glass doors. When the doors are open, the space functions as an open office; but when the doors are closed, the space functions as enclosed offices. It gives the employees the flexibility to choose how they work. Every desk within the space can be raised to standing height, so everyone can choose their posture as they work. Other areas of choice include private nooks for relaxing or taking personal calls, a playful breakroom and a collaborative lounge/game area. At the end of the lounge area is an analog gaming space. A large wall-mounted Scrabble board and a paper tabletop provide an analog break for the tech-heavy staff members.

This new office space is an example of reinterpretation. It is an example of taking old materials and concepts, reenvisioning them and using them in a modern way.

The Future of [Work]space

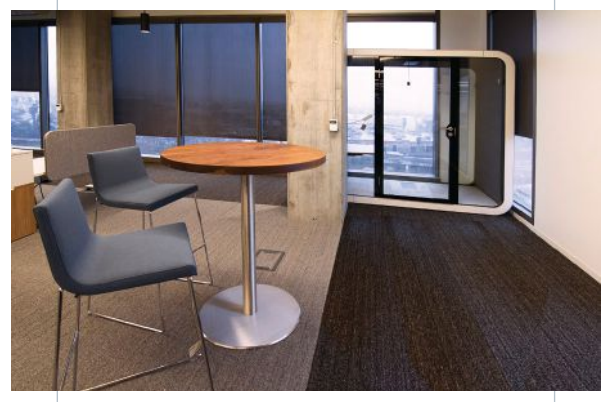
What comes next?

BY EARL GEERTGENS

The great COVID-19 disruption sent home workers, and forced organizations to rethink how jobs could be performed remotely. Countless offices were left empty and countless facility managers were left managing empty spaces. Fast forward 18 months and a (re)migration to the office is in full force. But how do organizations rebuild the office culture when so much has changed?

The (previous) trend of open concept seems counter-intuitive to the notions of social distancing, not to mention a sanitization nightmare, but the answer is in a holistic approach to retaining flexibility for workers, and more importantly for the building itself such that the space can adapt to a future that is still being shaped. Organizations are faced with a new set of priorities that include more than just annual productivity. The health and well-being of employees, a collaborative workplace, cost-effective growth, and a responsibility to the environment are rising trends that are shaping the workspace.

The open concept, for offices and similar building uses, stems from the early 2000s during the tech boom, when larger companies left behind the cubicles and private offices for an attempt at open collaboration. The result was a less secluded workforce, one in which the emerging technologies could be employed at and during work. The computer shifted from a desktop that confined a worker to a specific location with its large towers and connected monitors, to a laptop that allowed the worker to seek different desirable spaces to work throughout the day. Offices cleared out the cubicles and tore down walls to create barrier-free spaces in which breakout meetings, collaboration, culture and health became the focus of a workforce now well-educated in technology and demanding a different office than their parents.



The year 2020, once seen as the attainable future with electric cars and drone deliveries, was instead an almost lost year of isolation that witnessed the revelation of the home office and an uptick in screen time. The world has changed and the office, and work-life in general, should reflect this change. Companies are adopting hybrid workspaces that allow for social distancing but also for flexibility for employees as we all navigate an uncertain future. As it turns out, the open concept and its inherent flexibility results in a perfect platform for the evolving building and workforce.

If the open concept allowed for the flexibility of its workers, early renditions created nightmares for the logistics of how to design, build and maintain these (new) wide-open spaces. Open floor plans do look pretty in plan, as the lack of walls presents infinite opportunities for desk configurations and natural light. In contrast, the executive desks and high-back chairs of a private office have no place in an open setting; the structure of the building became undoubtedly more complicated as the removal of walls (and associated structural supports) meant larger spans and deeper beams; and, the lack of walls also posed an issue of where to run plumbing and electricity. While no walls meant more light deeper into the space, the glare on computer screens and the amplified noise presented another problem for the workers. In a practical sense, where did all of the storage go?

The lifespan of the open concept has seen answers and responses to these initial problematic results of knocking down barriers - both in the literal walls and in the metaphorical office hierarchy. Interior designers developed modular furniture that could be rearranged to host different functions and delineate different types of space by use. Moveable partitions allowed for the dichotomy of private and public spaces. Engineers devised structural systems that could withstand the large spans while accommodating other trades like mechanical, electrical and plumbing

systems in their midst. Architects used the necessary columns to divide space, and designed buildings with a core for vertical circulation of inhabitants and mechanical/electrical/plumbing systems, as well as for housing storage. Workspaces began to flow around the periphery with access to daylight and ventilation, now better controlled by updated glazing and shading systems. The open concept proved to be as functional as it was innovative.

In essence, the building responded to the needs of the user. The building adapted, but it was a process of learning by the designer and the owner. The ability for a building to truly adapt to the inhabitants extends beyond the day to day activities and requirements. The holistic approach considers not just the trending office culture, but also the future usage of the building and its materials. Thought of in two distinct fashions, the building can be simultaneously perceived as a living entity that will likely outlive its designers and builders, and also as a sum of parts that each play a role in its daily function and in its future. The owners and designers being receptive to the demands of the open concept allowed the building to adapt as a whole — it is now basically as open as it can be. But what of the parts of a building?

Mechanical engineers are devising mechanical systems that integrate with the local microclimate to provide heating and cooling on an as-need basis. New window systems (smart glass) respond to light wavelengths and heat to provide optimal lighting to a space based on activity without the unwanted heat gain (or loss). Within the building, raised floor systems (access floors) have changed the way open offices are both designed and maintained by allowing electrical wiring and HVAC systems to run under a modular floor system that can be accessed at any time.

In the end, there is no going back from the open concept. To convince an owner that less collaboration and more individual, private work is better would be a detriment to the possibilities afforded by a building. However, while the open concept solved many issues in comparison to its predecessor, it presented a unique challenge for designers, builders, owners, occupants and FMs in how to first create and then sustain a functioning building. New demands for flexibility are offering an up-and-coming sector of smart and reusable building products that are at the center of a holistic approach towards the future of space. The buildings of the future are already here, and they can be updated with new emerging products that will allow them to extend their lifespans.

What is the future of workspace? The question really becomes: what is the future of space? A building, a floor, a suite must actively adapt as a whole to the trends that are more and more about the health and wellness of its occupants. The functioning body of the building is also a conglomeration of parts that each play a crucial role in the overall function. Technological advances have allowed FMs to gain insight into the inner workings of a building by tracking its ebbs and flows. This technology is as much about helping the user as it is about helping the building prolong its lifespan through the automation of maintenance as well as prevention of future problems.

It is difficult to pinpoint the exact future of workspace, or predict the next trend, but it is likely a good guess that cyberspace will have something to do with it.

Offices in the future will undoubtedly have to manage employees being logged into other office spaces in far off locations and different time zones. Certain basic requirements like power, lighting and furniture are not likely to disappear anytime soon, so it is safe to bet that where there is need for a workspace, there will be a need for innovative products that allow for such flexibility.

The future of buildings is, then, one of adaptability and flexibility in which the kit of parts can be reconfigured or updated to ensure that the building itself can evolve with the changing needs of the user(s). The holistic approach grants organizations an opportunity for a transition into the future of space as a result of the pandemic, one in which collaboration, health and well-being, productivity, profitability, competition and sustainability are harmoniously achieved through a generally happier and healthier workforce and a more adaptable and flexible workspace. FMJ

Earl Geertgens *is president and CEO of FreeAxez LLC. For more than 30 years his leadership has produced adaptive cabling distribution systems, creating new trends in the built environment.*

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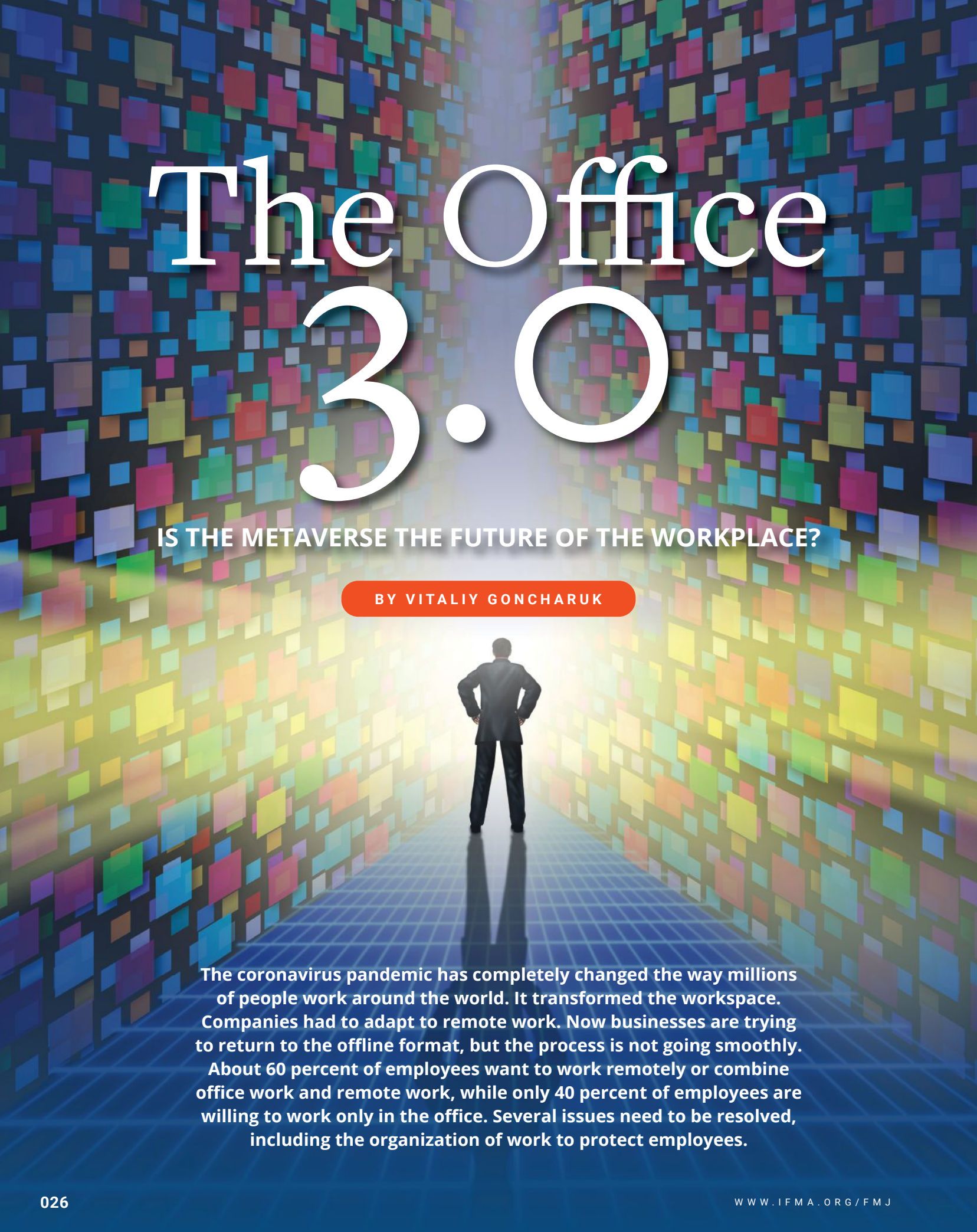
The Office 3.0

IS THE METAVERSE THE FUTURE OF THE WORKPLACE?

BY VITALIY GONCHARUK



The coronavirus pandemic has completely changed the way millions of people work around the world. It transformed the workspace. Companies had to adapt to remote work. Now businesses are trying to return to the offline format, but the process is not going smoothly. About 60 percent of employees want to work remotely or combine office work and remote work, while only 40 percent of employees are willing to work only in the office. Several issues need to be resolved, including the organization of work to protect employees.

Cutting-edge technologies will help create a new generation of workspace, combining physical and digital environments — in the metaverse, including XR, digital twin and indoor navigation. It will be Office 3.0, combining the advantages of the physical and digital workspace.

The new generation of office space

While lockdowns are dragging on in some countries (tech giants are still delaying returning to their offices), some companies are solving these problems by joining forces in the metaverse. In July, Mark Zuckerberg told journalists that Facebook will develop the metaverse. The employees of Supersocial, a virtual experience developer, already spend most of their work time in the metaverse. Therefore, it was logical for the company to build a virtual office in 2021.

Both fully remote and traditional in-office options have their pros and cons. No wonder there are two groups of employees and companies opposing remote and on-site ways of working. Moreover, neither option entirely meets the current needs of employees and businesses. The solution is even closer than once thought.

The adoption of the metaverse technology recently was boosted in a lot of industries. Workspace management is not an exception. For example, journalists at the esports news site Upcomer created a virtual employee lounge in the Minecraft video game after the company began working remotely in April.

The main idea of the metaverse is the integration of the digital and physical world — workspace in this case. It can help to combine advantages from both offline office and remote work.

How metaverse technologies transform the workspace

The growth of the metaverse as a workspace is changing the very concept of the worker. This is already happening in companies built for the metaverse and is likely to continue as virtual and physical space converge. Jobs are becoming more accessible, as well as professions and positions that were once not suitable due to geographic location, culture or age.

Working in the online world provides employees with a variety of places and ways to work; a normal cubicle will be a thing of the past. The workspace within the metaverse will be free from hazards, dangerous risks and pandemics.

Metaverse offices will be freed from the disadvantages inherent in traditional and remote offices:

- Distractions in the office space
- Hard-to-manage social distancing
- Meeting delays
- Long onboarding

The metaverse model in the workspace can function because of the following technologies.

XR (Extended reality)

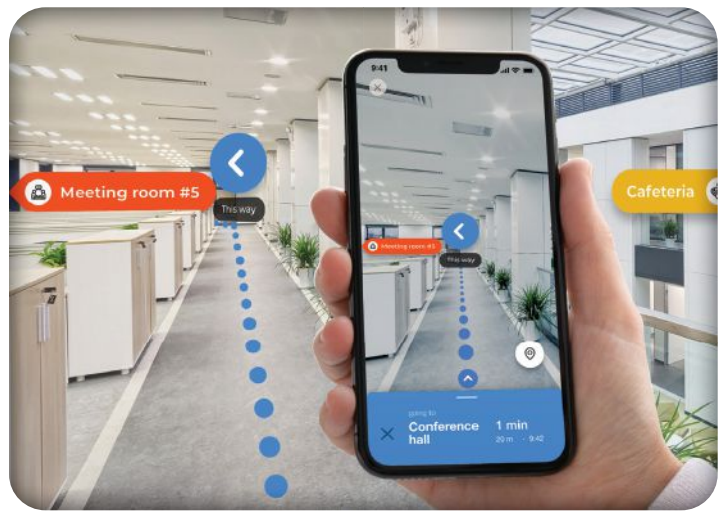
Extended reality is the entire completeness of technologies and solutions united by the previously established definitions of virtual reality (VR) and augmented reality (AR). Thus, the ability of these technologies to expand the boundaries of the physical world through the capabilities of digital tools for working with human perception is emphasized.

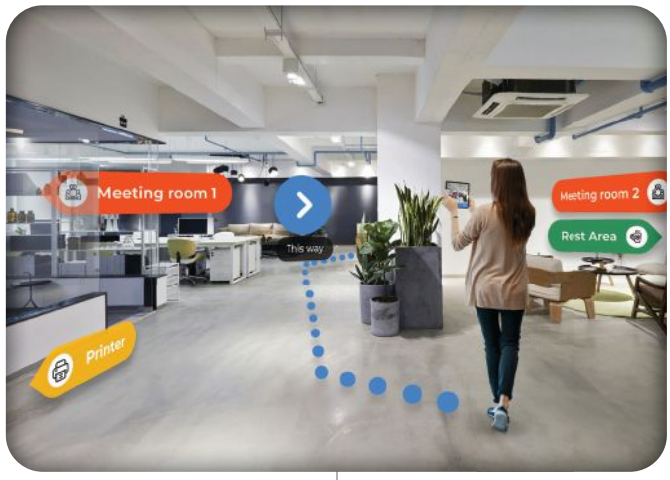
The XR plays the role of a means of transferring a person outside the place of actual location into artificially created worlds. The line between physical and digital worlds is narrowing — people are on the verge of a new era, in which a new kind of reality will be created, where the present and all future generations will have to live and work.

With augmented and virtual realities technologies companies can:

- extend working space (adds extra content and objects, such as AR content about equipment and how to use it, virtual prototype models, etc.)
- digitize wayfinding signs (in-app signs, transfer of offline pointers to the application, and opportunity to adapt and localize content)
- simplify onboarding process (new employees can interact with AR content instead of asking mentors)
- help to create virtual training sessions
- increase employees' engagement in meetings (high-level visualization — AR/VR demonstration of presentations, prototypes, connecting remote employees in a more interactive mode)
- engage on-site and remote team members

Now companies of different sizes and various industries are starting to use the metaverse as a virtual space organizing VR work events, including meetings and conferences.





Digital twins

The digital twin is a virtual analogue of a real object, a computer model that duplicates its key characteristics and can reproduce its states under different conditions. In the case of the workspace, it can provide a detailed interactive map of the office space.

Digital twin technology can enhance maintenance (the detailed plan of the building, control over the damage sites, risk management, etc.) and enable companies to integrate indoor navigation technologies and to place AR/VR content with high accuracy.

Integration of systems allows to exchange data and analyze the behavior of an object and the processes occurring in it in real-time — to monitor the dynamic change of the digital twin under the influence of various factors.

The synergy of all building systems gives the maintenance service full access to documentation for equipment, materials and technical solutions that were developed at the design stage and implemented at the facility. This provides a quick analysis of a particular situation that has arisen, facilitates the search for equipment associated with a malfunction, and speeds up the restoration of normal operation.

Indoor navigation

Competent indoor navigation in offices helps employees and visitors build optimal travel routes so that even at the first visit to the site, they can quickly get to the desired point. A high-quality search system helps to accurately navigate the building.

Indoor navigation minimizes distraction as employees won't need to ask for directions to offices, conference rooms, equipment, etc. It also supports social distancing efforts by minimizing unnecessary contact.

In a huge multi-level office and/or multi-building campus, it helps to find a way to the right meeting room easily and reduces tardiness. Indoor navigation technology can lessen office managers' daily tasks, as they do not need to direct contractors through the office or accompany new employees on an office tour.

Some companies completely recreate their office in digital format so that remote employees can walk, communicate and meet colleagues, albeit virtually. Internal navigation technology helps them avoid getting lost in the digital office.

Artificial intelligence analytics

Artificial intelligence (AI) plays a vital role in XR and indoor navigation. Augmented reality apps are becoming more powerful with AI that learns the context and understands what the user wants. In 2021, through new applications and developments, these technologies create a unique and immersive experience. For example, AI analytics improve the placement of wayfinding XR content.

It is impossible to imagine the existence of the metaverse without artificial intelligence. With the help of AI, analytics become deeper and more detailed. It tracks employees' routes and helps to analyze their performance; it identifies crowded areas and the intensity of human traffic in the office. For example, an extra coffeemaker or copy machine, or an additional breakroom or library can be added to minimize crowds in the office and improve the plan of each floor.

Conclusion

Imagine an employee who works from home but has a digital twin office. With the help of metaverse, he or she will be in the same space with colleagues, without leaving the house. The employee will be able to share documents by simply showing them on a common screen, and the number of these screens is not limited. In addition, remote work with metaverse technology is becoming a safer and more productive option for employees who work offline in the office.

COVID-19 completely changed the way people work. Workspace management is now focused on the core issue — the symbiosis of a digital and offline office, both convenient and pleasant for the employee to work, communicate with colleagues and deliver business results.

Despite some controversial and fantastic nature of this term, it is safe to say that metaverse is the future of the workspace. The nearest future, looking at its fast development. For companies returning to the office, embracing metaverse technologies would minimize stress and speed up the process. FMJ

Vitaliy Goncharuk *is the founder and CEO of Augmented Pixels Inc., with deep expertise in the metaverse, spatial localization, AR navigation and 3D map crowdsourcing. For more than a decade, he has developed and leveraged unique metaverse navigation technologies into facility management, construction, retail and other industries. Goncharuk is a founding member of Oper AR Cloud, and OGC (Open Geospatial Consortium), an official member of The Ad hoc Committee on Artificial Intelligence.*

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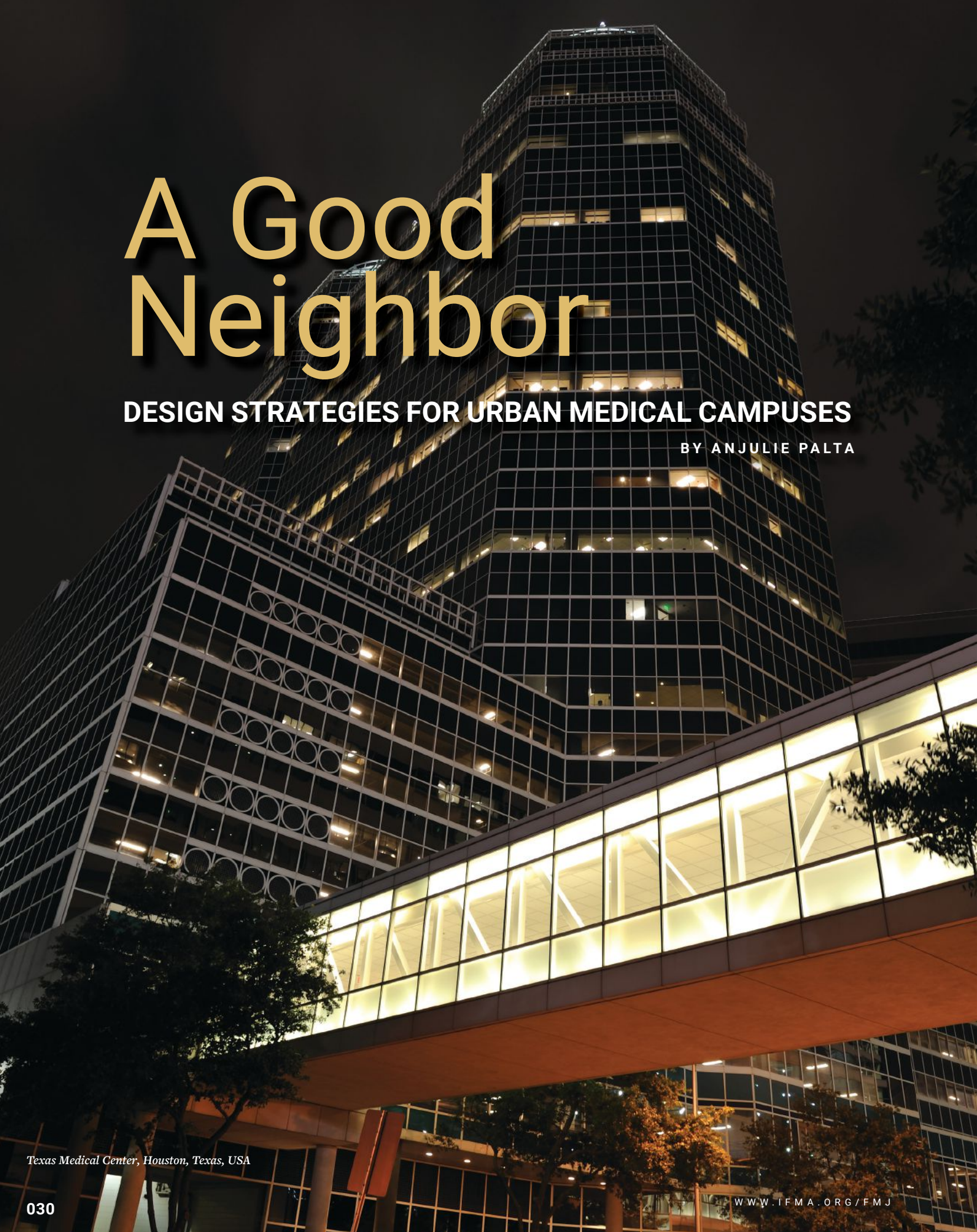
BY ANJULIE PALTA



Texas Medical Center, Houston, Texas, USA

Health care institutions are among the most valuable service providers in any urban center, with extensive resources for supporting public health and providing acute care. But how well does a hospital's physical campus actually support and strengthen this mission of community well-being — and how could these facilities do more? Facility managers, and the planning and design teams with which they collaborate, often face a number of key physical and design challenges in leveraging their facilities to promote public health and health equity.

Ranging from transit access and physical connections with an institution's surrounding communities to carbon emissions and storm resiliency, these challenges seem to present an impossibly broad set of stumbling blocks. And yet, a holistic approach to master planning and design can help overcome these hurdles, leveraging the urban context to improve the patient, family and visitor experience, while fulfilling their larger obligation to public health, health equity and environmental accountability. Here are three essential strategies that facility professionals can employ in order to achieve wide-ranging benefits for their campus users.

1. Mitigate environmental impacts through better energy efficiency and utility management planning.

Because of their large land area footprint and the high demand and intensive energy use inherent in their essential operations, medical institutions generate significant environmental impacts. The health care sector's climate impact is equivalent to 4.4 percent of global net carbon emissions, according to the international nongovernmental organization Health Care Without Harm. This is especially significant as the World Health Organization identifies clean air and safe drinking water as essential social and environmental determinants of health that are placed at risk by climate change.

It is therefore crucial for any large-scale facilities master planning initiative or capital project to account for these realities. What does this look like in concrete terms? It means that FM and design teams must push medical institutions to utilize forward-looking building systems and utility management practices. When possible, on-site renewable power generation and storage infrastructure should be explored as an alternative to traditional sources. Advances in photovoltaic panel technology, for instance, have led to efficiency increases that make this approach more suitable for urban hospitals with minimal roof area — at the very least, as a supplement to other power sources. As more governments push for building electrification to reduce local fossil fuel use, health care FM leaders should explore possibilities for both grid integration and independent microgrid solutions.

At the level of individual buildings, climate impacts can also be mitigated with the use of highly efficient fixtures and appliances. LED lighting, low-flow plumbing fixtures and efficient appliances (e.g., in-house laundry), are straightforward upgrades. It is also worth recognizing that the latest generations of even the most energy-intensive medical equipment — MRI machines, for instance — are designed for significant energy savings. The replacement and upgrading of such equipment should be considered a priority in capital projects; the upfront cost will be more than made up over time by energy savings and positive impact on institutional carbon footprints.

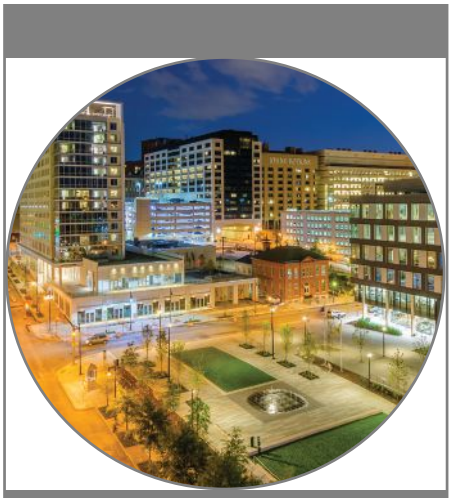
A forward-looking approach to mechanical, electrical and plumbing (MEP) systems can further minimize local emissions and reduce energy and resource use. For example, improvements in standards for greywater reuse systems — which treat used water with chlorine and ultraviolet light, then recycle it for flushing toilets and the like — make them safer and more effective in health care settings.

In addition to reduced carbon emissions, efficient and sustainable building systems contribute to important public health outcomes such as improved air quality, decreases in particulate matter and reduced noise pollution. Other benefits include a better experience in surrounding open and public spaces for patients and community members. This is doubly valuable in city neighborhoods with historically higher rates of chronic respiratory illness and related health concerns as a direct impact of poor air quality.

2. Address public health and accessibility challenges with urban design and mobility improvements.

A medical institution must be physically accessible to effectively serve its community and user groups. In urban settings, however, insufficient infrastructure and challenged public transit often create issues of access — especially for low-income patients, visitors and staff without private cars. These difficulties are compounded by high volumes of vehicular traffic, which create unsafe pedestrian environments that are lacking in clear wayfinding and circulation patterns for drop-off, parking and pick-up.

For FM leaders and design teams, planning and urban design strategies have a clear role in solving these accessibility challenges



Johns Hopkins Hospital, Baltimore, Maryland, USA

and promoting public health. As a first step, any planning or building initiative should consider ways to develop and expand safe and accessible routes from campus facilities to public transit options. Patient programming spaces and all primary entries should be located within a 10-minute walk of a transit hub or transit stop. Effective infrastructure upgrades include increasing the amount of available bike storage, widening sidewalks, installing additional mid-block pedestrian crossings and implementing smart signal systems. At the building level, new and renovated facilities should include, where possible, permeable and inviting ground-floor and street-front facades. This creates an active connection between the campus and the public right-of-way, emphasizing the campus' physical and psychological accessibility.

By creating these kinds of walkable environments around and within the medical campus, FM professionals can simplify access for all levels of in- and outpatient care, improve public health outcomes and reduce carbon emissions.

A more walkable campus creates natural incentives for transit use and reduces emissions from private vehicles, lowering the overall carbon footprint of activity associated with the institution. In addition, the employment of active design principles, such as using color and wayfinding cues to promote physical movement, can also foster healthy behaviors for patients and the broader community. This has long been a focus for hospitals at their inpatient and rehabilitative facilities, and in other health care settings in which patient engagement and activity is important.

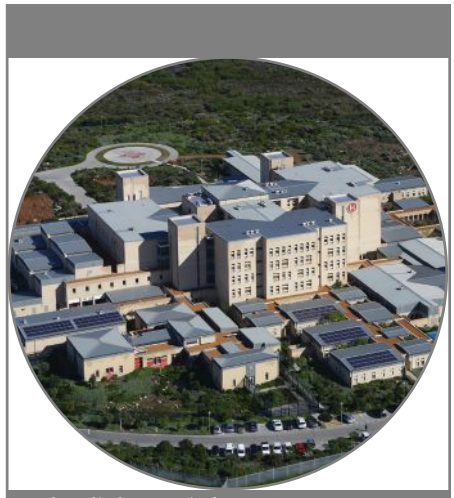
3. Plan for severe weather through resilient infrastructure design and stormwater management.

Every year brings more — and more severe — weather events, and the risks of flooding and stormwater are top of mind for FM professionals. Given the scale of many health care campuses, and the essential nature of their operations, a major flood event holds the potential for catastrophic impacts. But that same campus scale also presents a valuable opportunity for protecting institutions and even surrounding neighborhoods from climate-related water events.

An overall resiliency strategy will be shaped by factors including local climate, hydrogeology, existing building and site characteristics, as well as municipal policy and mandated utility management practices. As with any significant upgrades to institutional infrastructure, it is important for FM leaders to coordinate closely with municipal leaders — who may be able to use city resources to support the hospital's utility master plan. In cities such as Philadelphia, Pennsylvania, USA, for example, municipal public works departments offer grant funding and ongoing utility cost credits to hospitals and other institutions that build and install green infrastructure on their properties.

What might that green infrastructure look like in practice? In general, the first and most effective upgrades improve on-site water retention and detention through the creation of robust and resilient stormwater systems. The research campus for the Children's Hospital of Philadelphia (CHOP) offers a useful case study. Here, the design team proactively developed a solution for the public realm that addresses both current and future stormwater risks. Throughout the 8.55-acre riverfront campus, a combination of green roofs, rain gardens and underground cisterns are expressed as landscape design features that improve the public realm and enable the collection, conveyance and retention of 85 percent of the stormwater that hits the site.

Custom-designed wood benches provide extensive public seating while also holding



Khayelitsha Hospital, Western Cape, South Africa

planters that help to manage and direct water flow through the site, as well as extensive greenery and tree cover that improves shading and air quality. A similarly planted grand processional stair uses terraces to give form to the sloped campus, also creating an opportunity for ramps that improve wheelchair access.

As these examples demonstrate, there are clear benefits to facility planning and design initiatives that take a holistic approach to the medical campus. In the face of interrelated climate and public health crises, this approach is more crucial than ever. When designers and FM professionals recognize that smart planning can reduce carbon emissions, enhance public access, foster more active lifestyles and improve community health, manage stormwater and protect entire neighborhoods against flood events simultaneously the opportunities to effect positive change will feel irresistible. FMJ

Anjulie Palta *is an associate with Cooper Robertson, an architecture and urban design firm based in New York, New York, USA. In her role with the firm, she serves as a leader on large-scale institutional master planning efforts, including for major hospital systems.*

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IMPROVING HEALTH & SAFETY WITH ACCESS TECH

BY JEFF STANEK

Since the onset of the pandemic, commercial building owners and facility managers have invested significant time, energy and resources — largely focused on indoor air quality — to help reduce the spread of COVID-19 and to assist in creating a safer and healthier environment for employees, customers and other occupants. This is good progress on the journey to a healthier building experience, but there are other vulnerabilities that must be addressed to complete the vision. Recent innovations in access control and mobile credentialing technology have played an important role in fortifying building health and safety during the pandemic.

Mobile credentialing decreases the need for keypads, touchscreens, keycards and fobs by transferring access control capabilities to Bluetooth-enabled smartphones. This allows employees to move throughout the building without putting their hands on common touchpoints; thus reducing opportunities for transmission of surface-borne viruses and microorganisms. Facial biometric readers have evolved to now recognize users wearing masks. Occupancy management software can alert FMs when rooms are at capacity and even restrict access to those rooms to avoid overcrowding.

This technology has undoubtedly helped reduce the spread of COVID-19, but as the pandemic slowly wanes, FMs who made these investments — or those who may be skeptical of making such investments — may be thinking about the utility of these technologies in a post-COVID-19 world. Occupant health and wellness will not end with COVID-19. The pandemic has changed understanding and awareness of healthy environments in ways that will outlast this crisis, and it is the responsibility of businesses and organizations to maintain a lasting and comprehensive focus on occupant health and safety. Fortunately, these examples of access control and mobile credentialing solutions, along with other similar and connected technologies, can help FMs address many issues related to building health, safety and security and deliver a reliable return on investment.

OPENING THE DOOR TO A HEALTHIER OCCUPANT EXPERIENCE

Since the pandemic started, people developed a stronger awareness of the health and safety of indoor environments. Additionally, it became apparent that the precautions taken to reduce the spread of COVID-19 helped mitigate the spread of other illnesses. For example, during last year's flu season, the CDC reported about 2,038 positive flu cases in the U.S., down tremendously from the estimated 38 million likely cases from the year before. Researchers say this drop was largely driven by mask wearing and social distancing. Seeing the positive health benefits of taking these small actions should permanently change mindsets toward preventing sickness and help contribute to reducing illness-related lost productivity, which costs U.S. employers US$575 billion annually, according to the Integrated Benefits Institute. When people enter indoor spaces, they will be more likely to consider how the conditions within that building impact their health.

For FMs wondering how they can get hesitant employees and customers more comfortable with returning to commercial buildings, adopting these solutions shows occupants that the business is dedicated to health and safety. Hand sanitizer stations and laminated signs are not enough. Owners and FMs must demonstrate a thorough, lasting commitment to healthy building initiatives that instill a sense of health and security that is noticed by occupants.

Before office employees enter the front door, tools like mobile self-assessment surveys allow credentialed employees to evaluate their health symptoms and self-report their positive COVID-19 status. Based on the results, these tools can then automatically restrict building access for the employee for a predefined quarantine

period. The health surveys can provide employees with real-time anonymized notifications if they have recently come into contact with another user that self-assessed as being COVID-19 positive.

When occupants arrive, entry point control tools can restrict visitor access until they complete a self-assessment or check in at an approved entry point. This makes it easier for an organization to screen for masks and complete other daily wellness checks. Biometric tools can be used for contactless check-ins without the need to remove masks. These tools also help enforce mask mandates, which can make occupants feel at ease knowing these rules are being taken seriously. As occupants move throughout the building, incorporating digital signage that displays indoor air quality or the occupancy limits of a room tells those inside that the building's health environment is being monitored and adjusted in real time.

While coronavirus variants have been a tough reminder of the pandemic's peaks and valleys, some FMs are already thinking about how these technologies can add value in the eventual post-COVID world. That is because these technologies were becoming best practices even before the pandemic and their utility and application will continue to expand.

HEALTHY ALSO MEANS SAFE AND SECURE

Protecting occupants from illness is only one facet of what makes them feel happy, healthy and safe. When it comes to building health, it is just as important for FMs to incorporate solutions that help mitigate stress related to concerns over the occupants' physical safety. This is backed by reports that have examined the links between the effects of stress and immune systems, as well as Maslow's hierarchy of needs, which tells state that safety and security are among a person's most fundamental needs, second only to human physiological needs.

This good news for FMs is that many of the commercial building technologies purchased to help reduce the spread of COVID-19 also enhance building security and improve an occupant's sense of safety and well-being. Here are several examples.

- **Cardholder Self-Assessment:** As U.S. COVID-19 vaccination rates climb, there may be less use for health assessment surveys. However, this same survey technology can be adapted to screen contractors and other visitors and keep any unwanted personnel out of mission-critical areas. Also, companies can use mobile surveys to grant access based on whether a contractor's safety training is up to date or if they have signed a non-disclosure agreement.

It is time to accelerate implementation of building systems that get employees, customers, students and others back where they can contribute productively and safely.

- **Mobile Credentialing:** By granting building access through smartphones and Bluetooth technology, rather than keycards and fobs, mobile credentials provide numerous security benefits in the post-pandemic world. First, mobile phones add security with pin codes, fingerprint or face ID. Second, when the mobile credential is passed to the reader, an encryption layer secures its transmission. Aside from the added security, individuals are more protective of their smartphones than keycards or fobs, and therefore less likely to lose them or leave them at home. Once this technology is fully realized, users will be able to move freely throughout a building without needing to remove their phones from their bags or pockets.
- **Occupancy Management:** Access control technology such as entry point controls or maximum volume alerts in certain areas can greatly increase building security by limiting unauthorized access to buildings, hallways or rooms. Additionally, they allow FM personnel to manage entry and exit to certain areas in the event of an emergency.
- **Biometric Tools:** In addition to detecting masks, biometric tools can provide face, eye and fingerprint scanning and other forms of multifactor authentication to enhance the security of a building.

THE BENEFITS OF HEALTHIER BUILDINGS

Implementing technologies that assess occupants' daily health, control access to the building and specific locations within it, and reduce touchpoints not only improves employees' well-being; the commitment to a healthy building environment can save companies millions of dollars a year. According to that same Integrated Benefits Institute article, poor health costs U.S. employers upward of US$575 billion a year.

FMs that invest in technology designed to help reduce the chances of employees becoming ill by reducing touchpoints and maintaining safe distances can also expect to see a boost in overall productivity. This is supported by a recent study that claims healthy buildings can be tied to better overall cognitive function.

In addition to helping prevent losses related to illnesses like the flu by reducing touchpoints, access control technology increases overall building security, which can improve the mental health of its occupants by giving them a stronger sense of safety and peace of mind. This can help reduce stress-related health ailments and mitigate losses related to presenteeism and absenteeism.

For years, building innovation meant designing buildings to be greener or smarter, but since the pandemic, there is newfound focus on melding these initiatives into a cohesive healthy building experience for occupants. The investments made to date provide a solid foundation on this journey, but they are just that — the foundation. It is time to accelerate implementation of building systems that get employees, customers, students and others back where they can contribute productively and safely. FMJ

Jeff Stanek, *president, LenelS2, is an industry thought leader focused on advanced security systems and services. He has responsibility for the LenelS2 global product and business strategy and additionally serves as general manager, access solutions, Carrier.*

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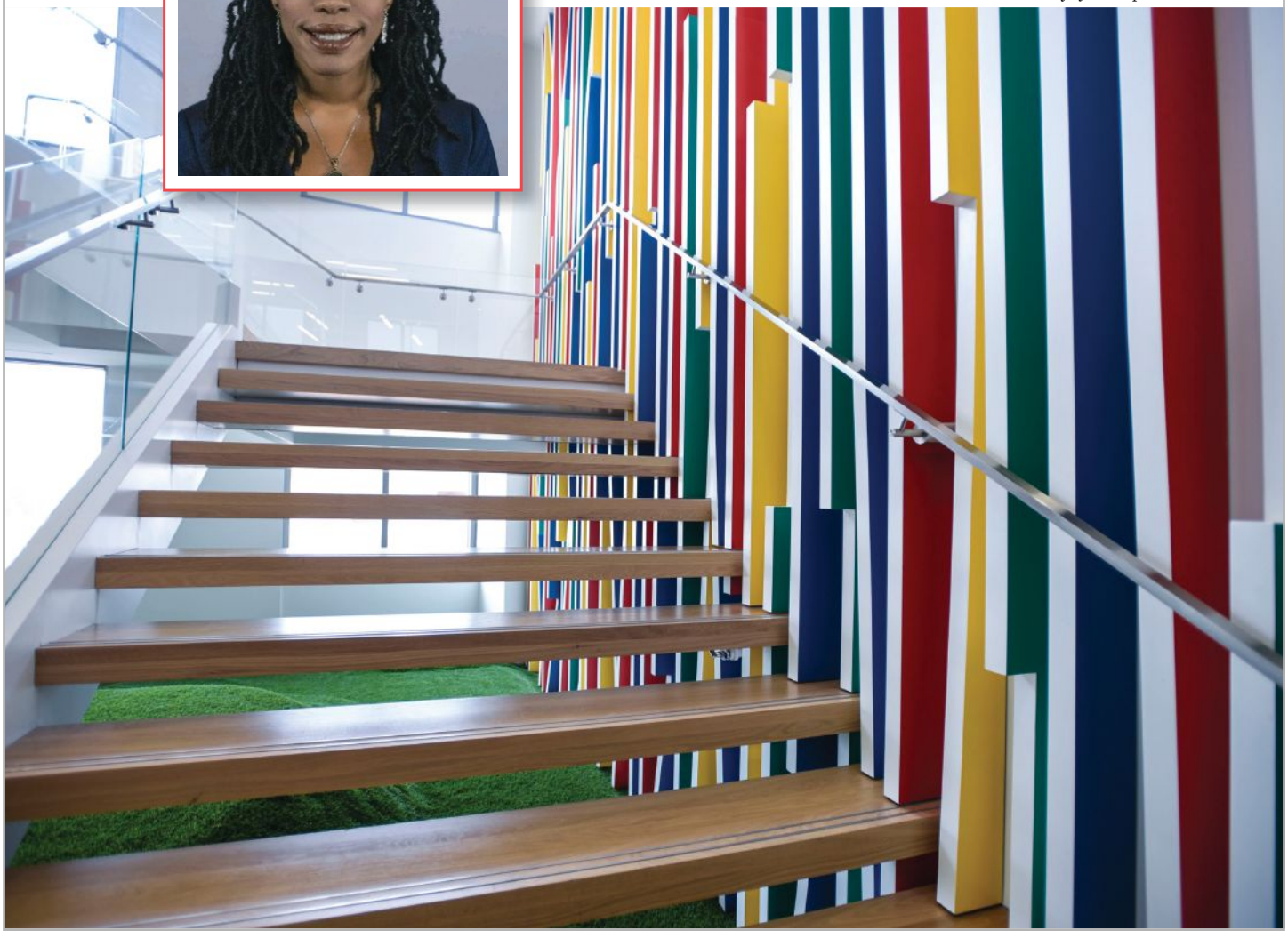
MY FACILITY

>>>>>>>>>>>>>> **SARAH SIMS**
Aspen Institute
Washington, D.C., USA

As the director of talent and employee experience at the Aspen Institute, Sarah Sims has a direct impact on what can make a workplace great. In her facility management experience, she has overseen operations at the Aspen Institute's Washington, D.C., headquarters and New York locations totaling more than 100,000 square feet of office space that hosts nearly 375 of its employees and thousands of meetings and events annually. An IFMA Forty Under 40 honoree, Sims is connecting diversity equity and inclusion in the built environment.

Photos Courtesy of The Aspen Institute



FMJ: Tell us about yourself and how you got into FM.

SIMS: My career began with some aspects of FM in the early 2000s in parallel with events management. Working in the nonprofit sector requires you to wear multiple hats, which was great because it afforded me the opportunity to learn how to manage a facility while hosting events. I became intrigued by the complexity of FM when our organization experienced exponential growth. I quickly went from an office manager to a project manager, leading renovations, relocations and corporate real estate. Having to frequently accommodate new employees with a tight timeline, limited space and resources was challenging and exciting work.

FMJ: What is day-to-day life like at your facility?

SIMS: Our headquarters (HQ) in Washington, D.C., USA, is nearly 100,000 square feet and accommodates workspace for 450 employees, multiple areas for collaboration, along with 7,000 square feet of meeting and event space. Aspen is a convening organization with nearly 60 programs, so we are likely hosting meetings every single day in our event space. You can step off the elevator and see hundreds of people in conversation during a breakout session, then the next day find two dozen seated at a roundtable in deep discussion behind closed doors. We spend a lot of time engaging with employees. Our FM team responsible for supporting events is managing the conference center calendars, room configuration, thermal control, organizing vendors and in constant communication with building management. The FM team managing our office operations is also assisting with large mailings for off-site events, troubleshooting issues reported to our help desk and working with multiple vendors.

FMJ: Why is your facility unique and what kind of unique challenges do you face managing the facility?

SIMS: The design of our HQ office built three years ago incorporates design features of our Aspen, Colorado, USA, campus. When you step off the elevator you immediately see beautiful views of Georgetown and Rock Creek Park. These views can be seen throughout the workspace. Vibrant primary colors are combined with earth tones; and meeting attendees can spread out over a cool replica of an earth mound for intimate conversations.

MY FACILITY

>>>>>>>>>>>>>> SARAH SIMS
Aspen Institute
Washington, D.C., USA

Our workspaces are primarily open concept with no offices along the window line to allow for natural light to flow throughout the workspace. Thermal comfort for more than 100 people in a central location is next to impossible so we are constantly managing the temperature. Open-concept design primarily uses furniture to create an individual workspace. This has required our FMs to specialize in proper assembly and use of multiple pieces of furniture to support its functionality and meet workers' unique ergonomic needs.

FMJ: Tell us about your FM team.

SIMS: Our small but mighty FM team of eight professionals supports the office operations, which includes reception, security and surveillance, mail and distribution, printing technology, furniture procurement, ergonomics, office reconfigurations, relocations, vendor management and event services. We also partner with human resources to organize a wellness program called Wellness in the Workplace, which is a combination of on-site and virtual educational activities and resources supporting mindfulness, fitness and nutrition.

FMJ: How are DE&I and FM connected?

SIMS: A facility speaks to and connects with people and their experience in the space. It can contribute to whether they feel welcomed, have their needs met and feel heard. When you look around at the various workspaces and who is seated inside of them, it can communicate who possesses authority, seniority, importance and access. We took into consideration how important communicating equity was when designing our HQ office. All our workspaces with a door are the exact same size, of the window line, and have similar furniture. It was important to keep offices away from the windows so all employees had exposure to natural light and outdoor views.

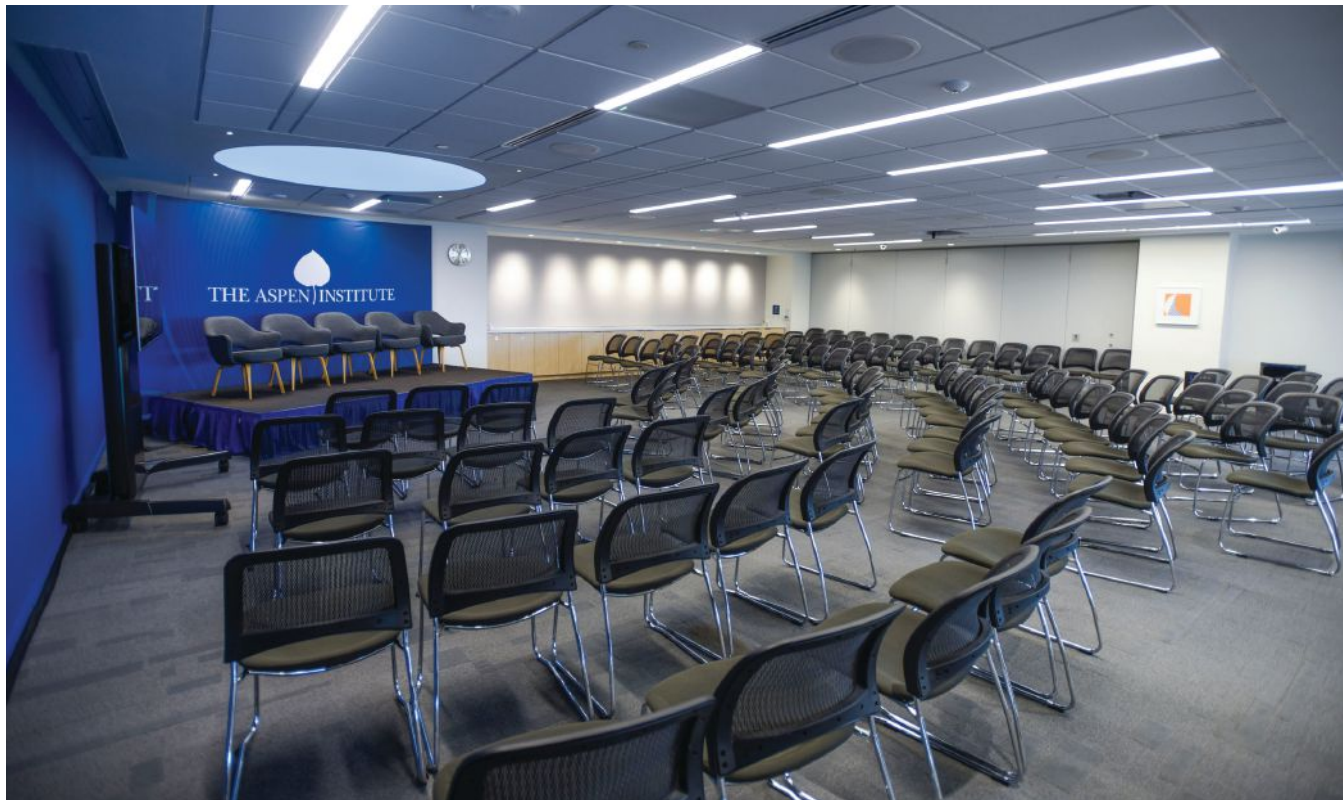
When we think about inclusion, facilities welcome people of all backgrounds who are going through different phases of their life journey. Understanding the needs of employees and guests and reflecting that in the facility speaks to the values of the organization and their commitment to diversity, equity, inclusion and access. It is the responsibility of the FM to make sure we are designing, maintaining and communicating that our facility supports the unique needs of our guests and employees. At Aspen we have areas called Wellness Rooms that can be reserved for individual use. The rooms are equipped with supplies and used to take a break, pray, meditate or for a lactating mother to pump. Signage for our single restrooms are gender neutral and the doors to our workspaces are equipped with automatic openers.

FMJ: How is FM shaping workplace culture?

SIMS: Organizations are using the design and operations of their facilities to reflect who they are and how they get work done. When people walk through the front door and move throughout the space, the facility displays the vision of the organization, its brand identity and how people engage. Much of the work at Aspen calls for the employees to be intellectually curious and constantly in conversation with their colleagues. We have dozens of spaces throughout the facility where groups of all sizes can gather for conversations such as our café where we have spectacular views of the nearby park, whiteboard walls, vibrant indoor plants, and a mini market stocked with healthy grab-and-go snacks.

FMJ: How does security shape the way you are able to perform your day-to-day duties?

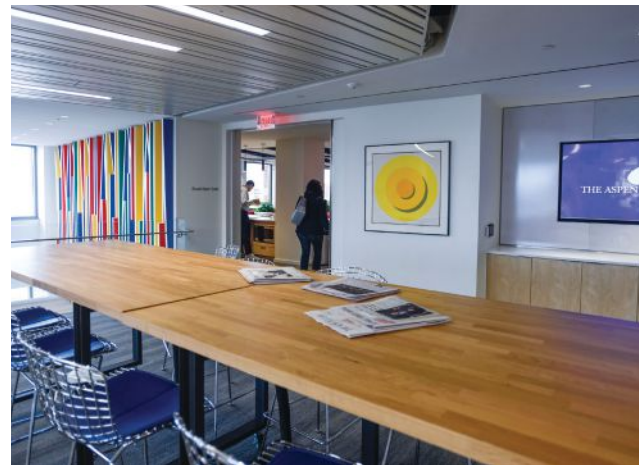
SIMS: With two of our locations being in high-risk security zones, we have multiple layers of security and protocols to protect our employees and guests. The FM team works closely with building management for physical security and our IT team for cybersecurity risks. We coordinate with meeting planners in advance of events to register guests and vendors with building management. With the pandemic, more steps to registration have been added such as health attestations and proof of vaccination or providing rapid tests for all visitors. Our floors and workspaces are only accessible with a security access card programmed by our FMs. These same cards have dual use providing access to copiers and printers ensuring only employees can reach our network. We also have surveillance cameras at each entry point and inside all our network and server rooms.

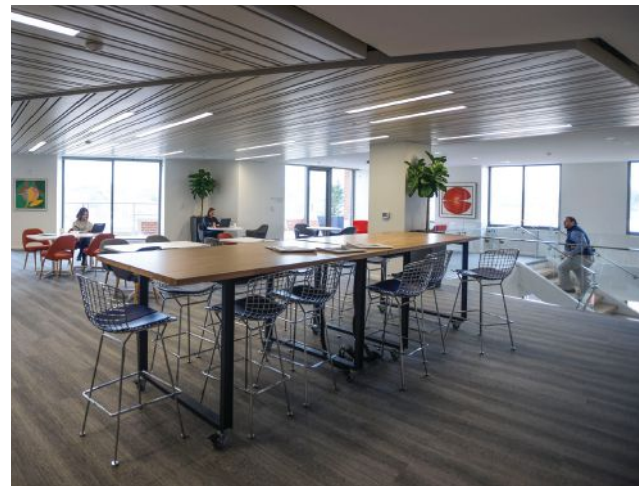


FMJ: What are some FM challenges you face at your venue that are common across the FM industry?

SIMS: One challenge I have faced is meeting the needs of the evolving modernized workplace and how technology is incorporated into every aspect of how people use the facility. The use of facility and real estate technology to manage the workplace experience requires an FM to be tech savvy. It is important for FMs to have basic level software and hardware training to identify scalable solutions.

Much of the FM technology we use is decentralized and lacks the ability to cohesively function. All our equipment and resources are tech enabled like copiers, printers, reservation and space management system, even the coffee machines. This means our employees must learn multiple platforms to meet their needs and the learning curve can be a challenge. If how to use the systems or equipment is difficult to grasp, employees will either avoid using it, or unknowingly damage the equipment. We try to address this by offering new employee training and micro video tutorials.





FMJ: What do you like best about what you do?

SIMS: There is so much I enjoy about my work in FM. I really enjoy how I get to nurture the human experience. All we do in FM contributes to how a person works, learns, explores and interacts with others. Successfully operating a facility also requires an FM to strengthen multiple skillsets such as communication, intuitiveness, leadership, project management, financial management, the list is endless. FMJ

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Addressing IAQ during COVID-19

BY ANU KÄTKÄ

The value of indoor air quality is more important than ever. Assuring a clean, healthy environment for those who work in and visit commercial and industrial buildings remains a top priority for facility managers — especially as people continue adjusting to life in a pandemic. And while energy efficiency has been the focal spot of advanced ventilation control, it is time — especially in light of COVID-19 — that the indoor air quality (IAQ) must be considered an equal priority.

The good news is that carbon dioxide (CO_2) is a proven indicator of IAQ. The level of CO_2 in rooms and other indoor spaces is commonly used as an input for demand-controlled ventilation as part of a building automation system. With good ventilation being extremely important to keep the air fresh and healthy in buildings, sufficiently low CO_2 levels tell us that the ventilation system is doing its job properly. As a result, CO_2 measurement is playing a vital role in understanding how effective a building ventilation system might be, which is fundamental to maintaining proper and healthy IAQ and a key component in decreasing risks people's health.

FOCUSING ON ENERGY EFFICIENCY & INDOOR AIR QUALITY

Heating, ventilating and air conditioning (HVAC) systems work to maintain good IAQ through adequate ventilation with filtration. However, these systems are among the largest consumers of energy in offices and other large buildings.

While green building initiatives encourage commercial building construction companies and building operators to reduce their environmental impact through increased energy efficiency, 30 percent of the energy used in commercial buildings, on average, is still wasted, according to the U.S. Environmental Protection Agency. Consequently, it is no surprise that energy efficiency has been the focus of advanced ventilation control in recent years. At the same time, IAQ in the workplace cannot be overlooked while FMs aim to reduce energy costs.

With countless studies showing that most people spend 90 percent of their time indoors, the potential impact of IAQ on human health is enormous. COVID-19 has put the issue of healthy indoor air into a brighter spotlight.

A recent survey ordered by Vaisala, a measurement technology company, reveals that people would feel safer with more data on IAQ. Conducted in the summer of 2021, the survey, which included more than 4,000 respondents in the U.S., France, Germany and Finland, found that more than one-third of the respondents are concerned about the IAQ in their place of work, and more than half said that concerns with IAQ impact their motivation to visit public spaces.

In the U.S. alone, the survey showed the following information:

- **36 percent** of respondents have concerns or are unsure of safely returning to their workplace.
- **56 percent** would feel safer with more information about IAQ in their workplace, and **66 percent** would feel safer with more information about IAQ in public spaces.
- **43 percent** are concerned about the IAQ in their workplace, with **65 percent** concerned about IAQ in public spaces.
- **69 percent** are extremely or somewhat concerned about IAQ having an impact on their motivation to travel.

While vaccination rates are high in the surveyed countries, the survey highlights the elevated levels of concern individuals have with air quality in indoor spaces. This is all the more reason that industry leaders are investing in good ventilation control using reliable CO_2 measurement as the best way to ensure the simultaneous achievement of both energy efficiency and employee well-being.

CARBON DIOXIDE AS A PROVEN INDICATOR OF IAQ

IAQ issues are created when a limited amount of fresh air is circulated throughout the work environment or polluted outside air is circulated into the workplace. From eye, nose and throat irritation, headaches, dizziness and fatigue to respiratory diseases, heart disease and even cancer, both immediate and long-term health concerns are, in many cases, directly linked to IAQ.

Poor IAQ can stem from myriad sources, including the use of chemicals in carpets and furniture, poor quality of outside air, organic compounds contained in electrical transformers, radiation from insulation, solvents in cleaners, the HVAC system itself and toxic gases. But one often-ignored cause of indoor air pollution is natural: humans exhaling CO_2.

Insufficient ventilation allows potentially hazardous high concentrations of CO_2 produced by human breathing to accumulate, thereby substantially decreasing employee health, well-being and productivity. While CO_2 itself is not toxic to humans, it does replace oxygen, meaning high concentrations can be lethal. According to research, even levels not lethal to humans can cause physical symptoms and impair brain function. High CO_2 levels are especially detrimental to higher mental functions like decision-making, strategic thinking, crisis response and learning.

The three cognitive abilities most significantly impacted by CO_2 concentration are crisis response, information usage and strategy, which are all critical in the workplace. The inability to effectively manage and respond to a crisis can lead to dangerous mistakes. A decreased ability to use information obviously has a negative impact on how employees learn and their rate of productivity. Bad strategy can lead to delayed or poor decision making, which can impact an organization's bottom line.

Studies from 2016 and 2017 found that breathing better air leads to significantly better decision-making performance among participants who were exposed to increased ventilation rates and lower levels of chemicals and carbon dioxide. These finding make it is easy to understand the importance of ensuring good IAQ over unnecessarily strict energy management.

However, until recently, symptoms related to high CO_2 levels were not seen as a powerful enough motivator to encourage FMs to focus on ensuring sufficient ventilation. This changed with COVID-19, altering perspective for good. Most people intuitively understand that the risk of infection is higher in indoor spaces where people are near one another and where ventilation is insufficient.

Because CO_2 is emitted in commercial and office buildings by humans breathing and not by many other sources, CO_2 measurement provides a solid indicator of ventilation effectiveness and the IAQ in buildings where the occupants and their activities are the primary source of pollution. The amount of CO_2 in the air is a good indicator of indoor air pollutants originating from people, and these pollutants can also include viruses such as the coronavirus.

DEMAND-CONTROLLED VENTILATION FOR HEALTHY INDOOR ENVIRONMENTS

Building safety is a critical demand, and building owners are increasingly investing in advanced HVAC equipment and technologies to improve in-building air quality. While there are several ways to measure IAQ, the most common parameters that HVAC experts look at are total volatile organic carbons, particulate matter, humidity and temperature, and carbon dioxide.

These parameters can be used automatically as an input to ventilation and building management systems so that IAQ can be optimized. However, there are challenges that come with classification and measurement, making it difficult to obtain a tight dataset from which decision-makers should base control decisions, especially those made in real time.

Enter demand-controlled ventilation (DCV). With this proven approach the ventilation intensity is typically adjusted to correspond with the true need to save energy — but the same principle can be applied to the health of indoor space. DCV has clear advantages especially when occupancy varies widely, such as in schools, office spaces, conference centers and auditoriums. The CO_2 level in a space indicates human presence and can be used to control ventilation. The efficiency of DCV can only be optimized by accurate CO_2 sensing.

By using CO_2 sensors FM professionals can rest easy knowing the measurements provided are not only accurate but can be traced to internationally recognized standards for maintaining proper, healthy IAQ. Monitoring CO_2 levels in indoor spaces empowers FMs to better understand where better ventilation is required, as well as when the risk of COVID-19 transmission is high.

Today, there is no real-time continuous IAQ measurement as reliable as CO_2 measurement. Even though CO_2 measurement will not reveal the presence of respi-

ratory droplets carrying the highly transmissible virus causing COVID-19, CO_2 is a trusted parameter for the evaluation of ventilation effectiveness, thereby making it a key contributor to maintaining safer, healthier and more productive work environments.

As the world of work inches closer to pre-pandemic levels of normalcy, FMs are making decisions that impact people's lives, their health and safety, and their comfort, as well as the energy their building uses. Because CO_2 measurement is a proven method to help inform the IAQ — and thus the safety of an indoor space — advanced CO_2 sensors can help facility decision-makers reach the safest possible conclusion to maintain a safe workplace. FMJ

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Credentialing Compliance

A new era of health care policies

BY DR. JENNIFER WILLIAMS

The health care compliance environment continues to change, and it has grown rapidly over the last year. As such, changes and more enforcement have become apparent in response to high-profile regulations, laws and even standards. One of the major themes has been the need to reevaluate and reinvest in the credentialing program, a specialized area of health care compliance.

The health care landscape has been impacted, eliciting more comprehensive programs recognized as imperative to provide safety and security. Health care executives are protecting their organizations as the health system is more vulnerable from harm due to this potential rise of risks, including COVID-19. They have expanded the scope of their credentialing program to include visitors and contractors. This shows a marked deviation from the historical standard, wherein only vendors and medical representatives required credentialing.

For example, in the U.S., health care's regulatory environment is increasingly challenging to navigate because of shifting regulations from various governing bodies. These factors have made a robust, technology-enabled credentialing and compliance program an absolute necessity. The health system continues in its search to protect patients and visitors and to admit contractors, vendors, representatives and suppliers to conduct necessary business. This, however, can only occur if these entities and individuals are properly credentialed.

Remaining compliant with health care regulations has always been costly. According to American Hospital Association (AHA) data from 2018, systems dedicated "approximately US$39 billion per year to comply with the administrative aspects of regulatory compliance" — or more than a quarter of annual hospital spending in the U.S. To contextualize this number, it costs health systems US$1,200 each time a patient was admitted to the hospital. The AHA data showed an average-sized community hospital spent nearly US$7.6 million annually to support compliance with evolving federal regulations. Credentialing has many positive aspects, such as helping ensure that payments are secured and made. Validation for sanctioned vendor entities by health systems helps ensure that these systems will receive their reimbursement from CMS or other insurance entities.

Many health care systems have struggled to remain compliant due to limited resources, insufficient investments and a lack of incentives for hospital employees. Because health care regulations frequently change, health care systems are also continuously and appropriately challenged to educate staff and manage day-to-day business operations across all facilities. In a 2020 survey, GHX data showed that 99 percent of health care systems can improve their existing credentialing compliance practices — and many health systems were not even aware that they were non-compliant. This has recently changed in the new era of the credentialing compliance program, where scorecards and metrics have provided more insightful guidance to assist the hospital system in closing compliance gaps. This is a new transition, and the use of DMAIC (define, measure, analyze, improve and control) has become a standard practice.

Building a credentialing compliance program

Five-part compliance framework for credentialing & badging

- System-level
- Vendor entity level
- Representative and visitor level
- Document and policy level
- Badging

As credentialing compliance evolves, the need to create a framework-based program is even more critical. By using a five-part framework, the performance and safety of the hospital system can be improved. The credentialing program is a component of the overall compliance program, but it contributes to the comprehensive program's quality and continuing success. The five-part framework establishes guidance, focuses on best practices and reinforces good practice through metrics. Also, it provides critical components of concentration for the credentialing program.

At the system level, health systems should ensure all facilities are covered from a vendor credentialing perspective and not simply primary acute care facilities. Examples of such facilities include ambulatory surgical centers, clinics and specialty centers, diagnostic centers and nursing facilities. GHX data showed more than half of systems do not enforce credentialing in non-acute facilities. The survey also indicated that ambulatory surgery centers and clinics were the least likely to have proper credentialing measures in place. Vendor credentialing across all facilities is becoming increasingly critical given the increased volume of procedures being handled outside the hospital. Additionally, GHX has found that most health systems have expensive, inefficient and parallel credentialling processes that make it challenging to remain compliant.

At the vendor entity level, health systems should require all vendors to be registered — not just those vendors comprising individuals who come on site or visit the OR, ICU or other clinical settings. This is an area for significant credentialing compliance gaps, especially in cases where vendors are not properly vetted and monitored. One example of routine monitoring is for sanctions against vendor entities and their representatives. A solution for this is to conduct a vendor analysis review. One way to run a quick litmus test is to compare a health system's accounts payable vendor list to the vendors tracked through the credentialing program. Often, only a fraction of paid vendors are registering with the credentialing program.

At the representative level, health systems must ensure that all representatives with whom they conduct business are appropriately credentialed — not just the medical/sales representatives. Unfortunately, many health systems have not required certain representatives, such as contractors and subcontractors, to register and complete credentialing in the past. GHX data showed that approximately 60 percent of vendor representatives that a health system should have registered and credentialed are, in fact, registered on credentialing platforms.

GHX found the highest levels of vendor compliance reside with on-site representatives who visit clinical settings (often pharmaceutical, sales and med-tech vendors). Conversely, lower compliance areas tend to include vendor representatives with access to non-clinical areas of the hospital (e.g., offices, cafeteria), and contractors. Importantly, with the increase in virtual and remote visits to the operating room or surgical suites, it's notable these representatives are still conducting business and therefore require credentialing.

It is no longer just the on-site physical presence of the representative or contractor that needs to be credentialed, but those who remotely do business with the health care facility. This is the new era of the credentialing compliance program; the aim is to provide safety and security throughout the health care system.

At the document and policy level, health care systems should require full compliance with their administrative rules, hospital policies and procedures. They should also require the completion of necessary documents and certifications. For instance, vendor information should include FEIN/tax ID numbers and monitor federal and multistate exclusion/sanction lists. In addition, criminal background attestation from the vendor representative's employer may be obtained to note that the representative has passed a criminal background check. These individuals should also have required acknowledgments on file, along with immunization/vaccination records and educational training.

Compliance standards and procedures are established to prevent and detect deviations and ensure compliance is adhered to. In other words, the policies must be an integral part of the credentialing compliance program.

At the badging level, all vendor representatives should obtain a badge to enter a facility. Any vendor representatives who do not meet credentialing requirements should be denied a badge. Perhaps the best requirement lies with the No badge, No entry rule. In response to heightened risk, including COVID-19, many health care executives are protecting their organization by expanding their focus to include visitor management. Health care systems should ensure all locations and departments require their representatives and visitors to check in and print a badge. This can be enabled by automating check-ins, including wellness checks and temperature scans. These check-in kiosks should be located in highly visible areas with the greatest expected foot traffic

Technology-enabled Compliance Platform

Fortunately, modern technology-enabled vendor credentialing compliance solutions have emerged to minimize the manual effort and costs associated with becoming and remaining compliant.

These solutions leverage a powerful combination of people, process, data reporting and technology to help health systems streamline the compliance effort.

Many health systems benefit from experienced credentialing experts to help plan the implementation of a credentialing and compliance program and undertake the work needed to properly credential representatives. Establishing appropriate vendor representative credentialing processes from the outset also makes it safe for them when visiting a hospital, as it ensures compliance with relevant regulations.

Providers have benefited from detailed reporting, which helps them simplify program management and prepare for accreditation audits. These reports (including representative requirement status, health system requirements, badge station activity log, non-compliant representative sign-in, representative risk profiles and vendor risk profiles) have also helped organizations identify gaps and issues that need to be addressed.

Lastly, technology has made it easier for providers to take control of their credentialing and compliance efforts. Hospital visitor dashboards have provided useful visualization to assist credentialing program owners in identifying areas of strength and weakness so that they may continue to improve and evolve compliance programs. Leveraging advanced technology kiosks and mobile applications has created a safer and easier check-in process for vendors, visitors and staff. Technology has not only helped to address constantly shifting infection control protocols; it has created a digital audit trail to help with contact tracing.

Seven Elements of a Compliance Program

1. Implementing written policies, procedures and standards of conduct.
2. Designating a compliance officer and compliance committee.
3. Conducting effective training and education.
4. Developing effective lines of communication.
5. Conducting internal monitoring and auditing.
6. Enforcing standards through well-publicized disciplinary guidelines.
7. Responding promptly to detected offenses and undertaking corrective action.

Follow the regulations: Never just once-and-done

Hospitals and health care systems must constantly improve and evolve their compliance processes to help address modern realities. Hospitals no longer have just a flu season during which they need to be vigilant. Instead, constant vigilance has become the new normal, particularly as regulations continue to shift.

It is vital for hospital systems to follow the Seven Fundamental Elements of an Effective Compliance Program outlined by the U.S. Office of the Inspector General (OIG), which oversees Health and Human Services. Health care facilities can use these seven elements to become and remain compliant. It is also vital for facilities to stress the importance of these elements from the top down to all hospital facility staff members.

Of those seven elements, adherence to standards — from OSHA to the Joint Commission, to OIG and beyond — is important as facilities develop the appropriate processes for access control. In the U.S., the Protecting Worker Health and Safety Executive Order, resulted in the creation of the Emergency Temporary Standard (ETS) on behalf of OSHA. Additionally, the Joint Commission has a standard in place that is centered solely on facilities creating a security management plan. For each of these standards, having a robust credentialing and compliance process in place is critical to adherence.

This is a new world and compliance efforts must keep pace. The COVID-19 pandemic has greatly increased the need for credentialing and compliance in hospitals and health systems across the country. Hospital policies are constantly shifting, and facilities must protect their patients, staff and vendors while avoiding the financial and reputational costs of non-compliance. FMJ

Dr. Jennifer Williams *began her career as a registered nurse, and holds two master's degrees, an MBA and master of management, and two doctorates, one in education and a Juris Doctorate. She is also decorated by process improvement achievements in Six Sigma. In addition to her leadership role with GHX, Williams is a member of several committees including a civil litigation reform work group and an FDA advocacy work group, which provides updates to North Carolina Sen. Richard Burr's staff regarding medical device user fee amendments. Her credits also include numerous healthcare-related lectures and several published peer-review articles on a variety of subjects.*

Academic Review Provided by Phillip Michael Abenojar RN, BSN, MS

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Excel Dryer | www.exceldryer.com
Square Care | www.squarecare.com
R-Zero | www.rzero.com
Tork, an Essity Brand | https://www.torkglobal.com

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WASTE MANAGEMENT
Republic Services | www.republicservices.com
Waste Harmonics | www.wasteharmonics.com

COMPANY NAME: Tork, an Essity brand
EXPERTISE: Sustainable Hygiene Management
CSP LEVEL: Silver
WEBSITE: torkusa.com

Who is Tork?

Tork is the Professional Hygiene brand from Essity, a leading global hygiene and health company. The Tork brand offers professional hygiene products and services to customers worldwide, ranging from restaurants and healthcare facilities to offices, schools, and industrial facilities. Our products include dispensers, paper towels, toilet tissue, soap, napkins, wipers, but beyond physical cleaning products, we offer software solutions for data-driven cleaning. Through expertise in hygiene, functional design, and sustainability, Tork has become a market leader that truly supports customers and inspires them to think ahead so that they are always ready for business. Tork is a global brand of Essity, and a committed partner to customers in over 110 countries. To keep up with the latest Tork news and innovations, please visit www.torkusa.com.

What does "Sustainable Hygiene Management" mean?

Tork defines sustainable hygiene management as the practice of fully integrating products and services into customer processes and procedures to achieve the hygiene standards appropriate for the given environment, or a person within that environment, in a sustainable way.

While there has been a heightened awareness of hygiene practices due to the global pandemic, sustainability also remains top of mind for employers and employees. Effective hygiene management and sustainability measures are frequently seen as separate necessities to meet rising visitor/employee expectations, but sustainable hygiene management can improve business performance within both areas in a seamless, efficient manner. Facility managers do not need to choose between addressing visitor/employee demands and meeting business needs — they can satisfy them both when partnering with Tork. Tork brings the expertise needed to improve business efficiency, workflows, staff well-being, and guest experience — all while supporting sustainability efforts. To learn more how Tork has implemented sustainability practices visit: www.torkusa.com/sustainability/world-leader/sustainability.

COMPANY NAME: Armstrong Ceiling Solutions
EXPERTISE: Ceiling and wall solutions
CSP LEVEL: Silver
WEBSITE: armstrongceilings.com/commercial

Tell us your "why" in the FM world.

Facility managers are looking for ways to improve offices, retail environments and other commercial buildings for occupant health, safety and productivity. Armstrong Ceiling Solutions, has been in business for over 160 years, and we believe a healthier space starts at the top — with the ceiling. The ceiling pulls together core elements of a healthy space — air quality and ventilation, lighting, acoustics, sustainability, and design. Building on our legacy of leading-edge product design and materials science, the Armstrong sustainable ceiling and wall portfolio includes solutions to enhance air quality, acoustics, natural light reflectance, all customizable in performance and design configuration.

What's on the horizon in your field/industry, and how is Armstrong meeting those challenges and opportunities?

With the renewed focus and importance placed on indoor environmental quality, Armstrong Ceiling Solutions is producing ceiling and wall solutions that "clean, contain and protect" by improving indoor air quality, acoustics, and natural and supplemental lighting. The Armstrong 24/7 Defend™ portfolio includes AirAssure™ ceilings and VidaShield UV24™ air purification systems to maintain and improve indoor air quality. The portfolio also features CleanAssure performance, Total Acoustics™ ceilings to provide the best combination of sound-absorbing and sound blocking properties, and ceilings from the Sustain® portfolio that meet the highest industry sustainability standards today.

Tell us about your corporate social responsibility and environmental, social and governance efforts or projects.

Armstrong was the first to institute a ceiling recycling program and was a founding member of the U.S. Green Building Council in 1993. Armstrong continues the commitment to sustainability and healthy buildings through a new partnership with 9 Foundations, Inc. consisting of leading scientific experts on the connections between human health and built environments, bringing unmatched technical knowledge and experience to the most critical public health challenges of our time. With this partnership, 9F will work with Armstrong in its continued focus on manufacturing ceiling and wall solutions based on the most advanced healthy building science and design.

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University of Texas at San Antonio

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Virginia Tech College of Architecture and Urban Studies

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ACCREDITED DEGREE PROGRAMS

SCHOOL NAME: Conestoga College Institute of Advanced Learning and Technology, Cambridge, ON, Canada

FM-RELATED DEGREES OFFERED:
Bachelor of Applied Technology (Honours) (BAT)

IFMA AFFILIATION: Since 2008

WHY AND WHEN WAS THE PROGRAM INSTITUTED?

The program was instituted by a scan of local industry needs who identified FM skills as greatly lacking and further supported by a review of a local public advisory committee. It was founded in 2003.

WHAT TYPES OF PRACTICAL APPLICATIONS DO YOUR STUDENTS LEARN?

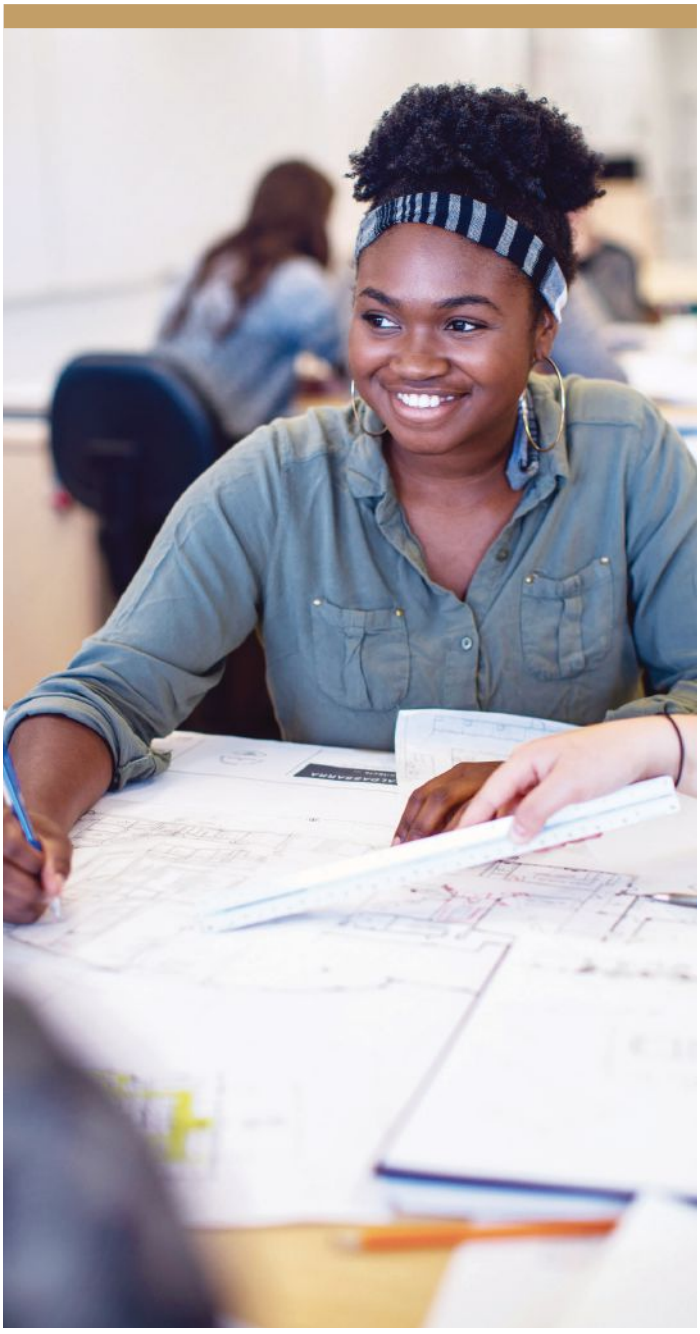
The program works 11 levels featuring eight studio projects, one for each academic semester plus three cooperative education terms. Each studio project utilizes contiguous course knowledge. Studios typically focus on a practical external project sponsored or supported by local industry. An example would be Studio 6, which is about corporate relocation — move and change management. In this studio the students work directly with a senior executive of a financial institution who sets initial project goals and reviews end of studio presentations. Direct two-way industry experience and communication.

TELL US ABOUT YOUR FORMER STUDENTS AND WHAT THEY HAVE GONE ON TO ACCOMPLISH.

Students have gone on to complete or are pursuing master programs in such topic areas as architecture, planning, environmental design, landscape design, project management and business administration.

Several have gone on to be CFM accredited, obtained a PMP, FMP and all current graduates are eligible for the IFMA Foundation GFM credentials.

- *Graduate Nick Heibein is recognized as one of IFMA's Forty Under 40 — a project spotlighting top young FMs.*
- *Graduates are involved with the local Toronto IFMA Chapter, which is a key supporter of the program.*
- *Graduates have earned their master's degree in architecture and are licensed architects, with several are working for architectural firms.*
- *Many have gone on to project management careers with general contractors.*
- *Many are working in the field of FM in areas such as hospitals, insurance companies, housing, municipalities, and a variety of departments in construction and consulting firms.*



CONESTOGA
Connect Life and Learning

WHAT COURSES ARE OFFERED?

COURSE CODE **COURSE TITLE AND DESCRIPTION**

1st year

Level 1 — FALL

ARCH71120 Construction Materials and Methods I
ARCH71140 Introduction to Architecture — Project and Facility Management
ARCH72010 Building Sciences
COMP71180 Computer Concepts I
DSGN71055 Studio I
ENGL71000 Academic Communications as of the fall 2020
FND71055 Foundation Module (Architecture)
SOC71500 Group Dynamics

Level 2 — WINTER

ARCH71010 Human Health, Ergonomics, Environment and Safety
ARCH71130 Construction Materials and Methods II (PreReq Construction Materials & Methods I)
ARCH71150 Code I
COMP71190 Computer Concepts II
DSGN71010 HVAC and Fire Protection
DSGN71060 Studio II (PreReq Studio 1)

SUMMER — off

2nd year

Level 3 — FALL

ARCH72110 Construction Cost Estimating
ARCH73010 Code II (PreReq Code I)
CEPR71050 Co-op and Career Preparation
DSGN72000 Structural Systems
DSGN72015 Building HVAC Equipment (PreReq HVAC & Fire Protection)
DSGN72110 Studio III (PreReq Studio II)
DSGN73010 Energy and Design (PreReq Academic Communications)

Level 4 — WINTER

ARCH72030 Building Performance
ARCH73140 Construction Specification Writing
DSGN72120 Studio IV (PreReq Studio III)
FIN72050 Business Economics
HIST74100 History of Advanced Structures

Electives: Interdisciplinary

3rd year

Level 5 — SUMMER

COOP72010 Co-op Work Term I (APFM)

Level 6 — FALL

ARCH73020 Property Management (PreReq Building Performance)
ARCH73120 Development Economics
ARCH73130 Construction Planning and Scheduling
DSGN72025 Building Plumbing, Lighting & Electrical Systems (PreReq HVAC and Fire Protection)
DSGN73110 Studio V (PreReq Studio IV)
RSCH73000 Understanding Research

Level 7 — WINTER

COOP73010 Co-op Work Term II (APFM)

Level 8 — SUMMER

ACCT74100 Financial and Managerial Accounting
ARCH73080 Project Leadership
ARCH74030 Utilities Management (PreReq Building Plumbing, Lighting & Electrical Systems)
ENGG74100 Value Engineering and Life Cycle Costing
DSGN74010 Studio VI (PreReq Studio V)
STAT73100 Applied Statistics (PreReq Understanding Research)

4th year

Level 9 — FALL

COOP73020 Co-op Work Term III (Architecture - Project and Facility Management)

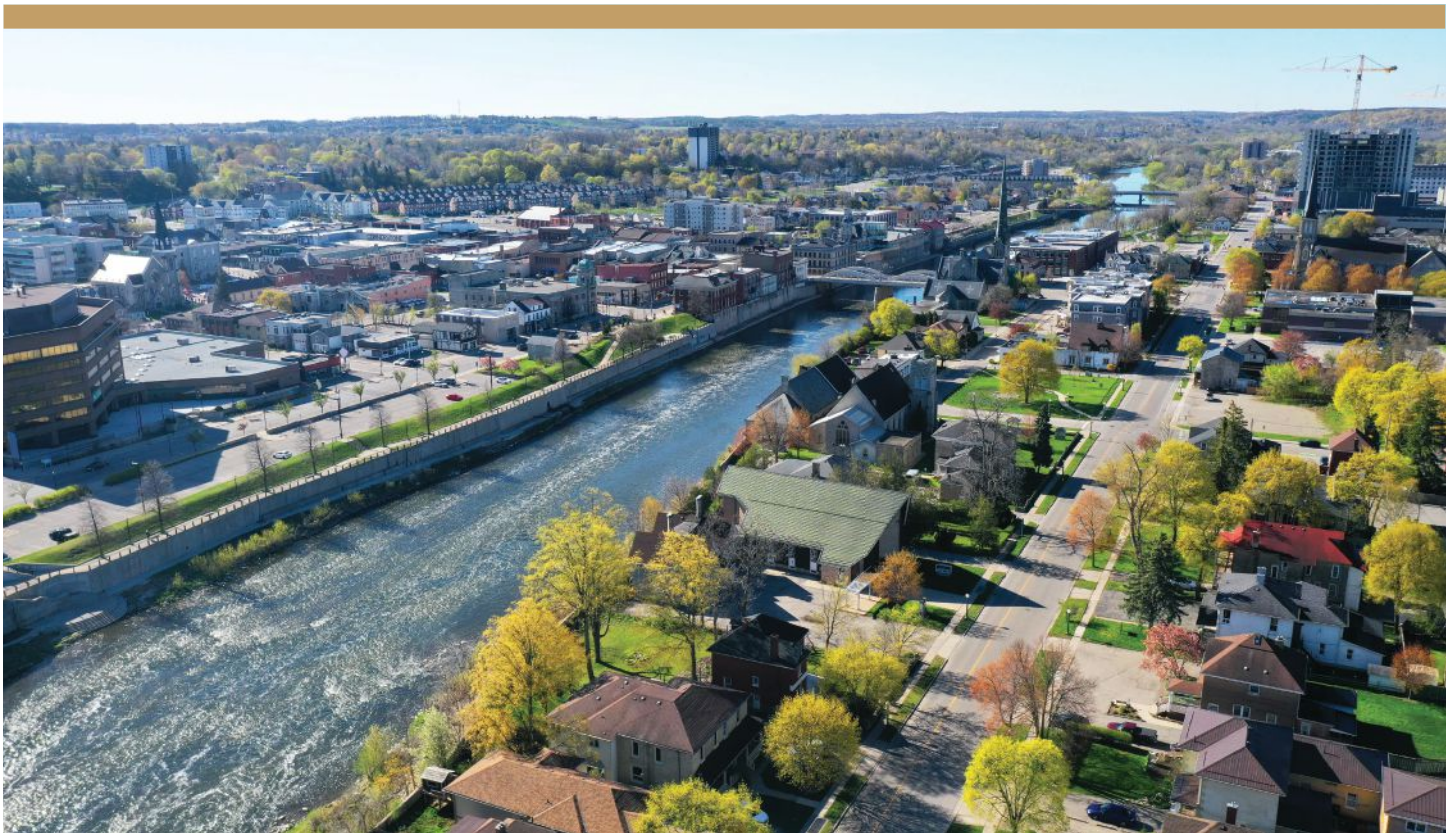
Level 10 — WINTER

ARCH74040 Facility Operations and Maintenance
ARCH74060 Advanced Building Performance and Automation
ARCH74110 Construction Quality Management
ARCH74120 Construction Risk Management
DSGN74020 Studio VII (PreReq Studio VI)
LAW74900 Law and Ethics

Level 11 — SUMMER

ARCH74020 Corporate Real Estate (PreReq Property Management)
ARCH74090 Contract Administration
CLTR74000 Heritage Conservation
DSGN74030 Studio VIII (PreReq Studio VII)
SOC74020 Urban and Community Planning

Electives: Interdisciplinary



WHAT KINDS OF RESEARCH IS YOUR DEPARTMENT CONDUCTING AND WHAT ARE YOU MOST EXCITED ABOUT?

Research by students is a key area of the program. Students participate in both an individual and team research project. Individual research topics must be within the scope of the program and students are often influenced by their co-op industry experiences when selecting their topic. This allows for a great variety of topics in the breadth of FM studies and is very consistent with industry knowledge needs. Sustainability, viewed from a variety of aspects, is often selected as an individual project.

The team effort is a capstone project which is built on research by student teams to develop a business case for student accommodation needs. The project is based on comparing current situations to the needs and demands of future students.

WHAT ARE THE ISSUES FACING THE NEXT GENERATION OF FMS AND HOW WILL THEY BE ADDRESSED?

There are two key issues regarding FM education. The first is gaining a student's attention to an industry which has a broad scope of skills needed in a variety of industries. It is sometimes difficult to explain to prospective students that they could be employed in numerous areas in many different business sectors.

The second is getting industry to recognize the breadth of skills these graduates bring to the workplace. Higher level FM education is still lacking recognition. We believe industry gains experience through co-op education or hiring program graduates. Students who come out of these programs are work-ready. Another issue facing the industry is that FM graduates are not staying in the FM industry. As they gained experience, these professionals also gained greater opportunities. This speaks directly to the demand for highly transferable FM skills to a variety of business sectors.

WHAT ARE THE ACCOLADES OF YOUR ACADEMIC STAFF?

Our faculty represents a variety of professional and experience backgrounds from architecture, project management, engineering and of course facility management.

HOW DO ARCHITECTURE, PROJECT AND FACILITY MANAGEMENT FIT TOGETHER IN YOUR PROGRAM?

Prospective students often ask questions of what they might achieve based on the components of the program's title. The key aspects to most descriptions of FM include references to people, place and process. Our program allows our students to explore those key components.

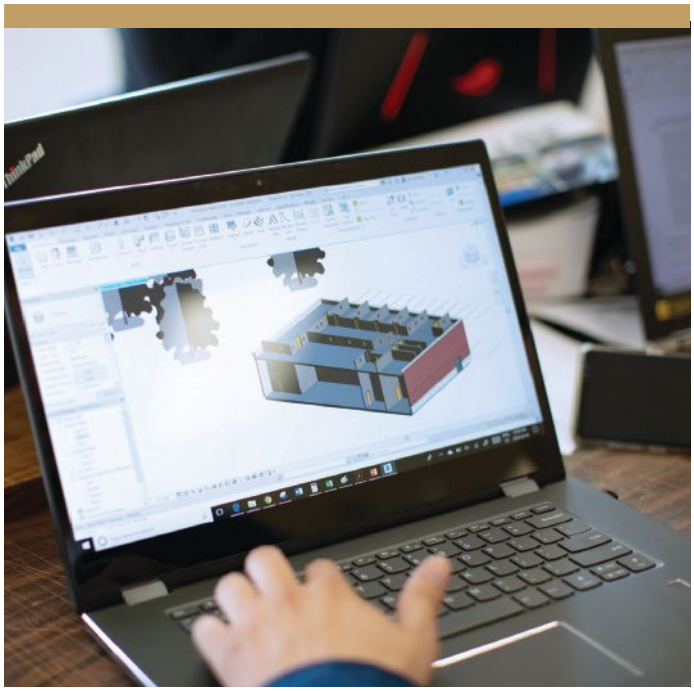
Place | ARCHITECTURE: the business needs of space, assembly of supporting details, and requirements of mechanical systems with a focus of operations and the sustainability of a facility.

Process | PROJECT MANAGEMENT: the how and processes of getting things done.

People | FACILITY MANAGEMENT: knowledge of the operational demands and needs of the users and the business.

The roles of architecture (place), project management (process) and facility management (people) are too often seen as separate functions. A successful FM practitioner must have a developed understanding of a building's design, be practiced in completing a project and have the knowledge of the how these activities support the operational core needs of the business.

FM has a broad scope of needed skills requiring knowledge of the present situation to support the organization's future demands. For architecture, project and facility management, this relationship is like a tripod with each leg contributing and balancing the needs of the other two to meet user wants and needs in support of a business' objectives. FMJ



It's in the Data

How to Better Understand Your Building

DR. BENJAMIN VANDERSLUIS

Expectations for facility managers are at an all-time high. Indoor air quality, comfort and energy consumption are in the spotlight, and should be. With the onset of the pandemic, environments shifted, which included more people working from home. With that, it was easy to become accustomed to constant comfort. In their own homes, if an individual were cold, he or she could just turn up the heat.

Buildings are welcoming back a steady workforce and occupancy is increasing. As people return, they expect to feel as comfortable as they did at home. They expect that the air they breathe is safe and clean.

Major factors in providing a safe, comfortable work environment are the functionality and sustainability of the systems that heat and cool facilities, as well as keeping the air clean and filtered. These systems directly impact how successfully a building performs. Is it possible to work smarter, not just harder, managing the requirements of occupants? Yes. But not without the right tools and support.

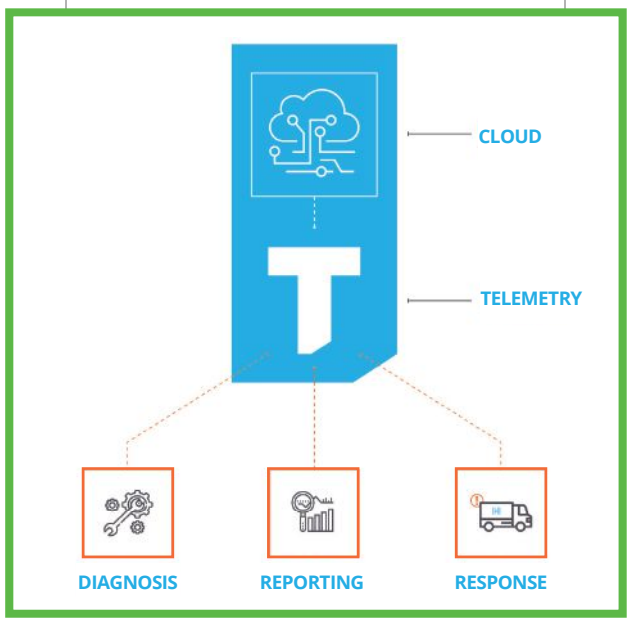
Thanks to improved technology, the way buildings are monitored and maintained has improved. That is great for FMs, if they are keeping up with the available improvements. With some minor enhancements, it is possible to utilize existing building equipment to gain real insight into how the building is performing.

With the right tools and analytics, it is possible to improve equipment performance, reduce energy costs and increase occupancy comfort.

A typical building generates millions of data points every day. This data offers incredibly useful information that can help FMs better understand their buildings. With facility analytics, data is collected from sensors on existing equipment systems to better diagnose malfunctions and faults and find potential opportunities for improvements, including energy savings.

Light hardware or software is installed to facilitate communication between an existing building automation system (BAS) and off-site cloud servers. Many BAS manufacturers now build their products on open protocols and standards to allow owners this kind of flexibility. Data from the building is transmitted to the cloud where it is compared against an ever-expanding set of algorithms to find mechanical failures, programming problems or energy saving opportunities.

With advanced programs, the results of the diagnostics are summarized into a simple set of easily interpretable scores for the building and its equipment so that long-term progress or degradation can be easily visualized and understood by key stakeholders. Meanwhile, individual faults and opportunities, interpreted by experts, are shared with FMs alongside potential remedies.



Facility analytics can be used to better diagnose malfunctions and faults and find potential opportunities for improvements, including energy savings.

Leveraging data analytics requires more than just software with an owner left to their own devices. To be most effective, specific expertise is required so that results can be deciphered and applied correctly. In the right hands, these tools allow a deeper understanding of a building's operation and how to maximize performance. Working with data scientists, a skilled service technician can become an FM's trusted partner who can utilize the innovation to deliver a higher quality of service, save clients money and headaches, and serve the changing needs of the building and its business.

When interpreted by BAS specialists and facility analytics engineers, data becomes information that can be used to develop a better operational plan for a building. It is about doing the things that a specific building requires to get to peak performance — not more, not less.

Traditionally, system maintenance plans fell into one of two categories. In one model, a new system is installed; when it breaks, service is called. Technicians may also change or clean a filter, but it is 100 percent reactive, and the onus is on the building occupants to notice any problems. A second approach is a more preventive plan, in which maintenance follows manufacturer guidelines, such as constantly changing filters, examining belts and cleaning coils at a certain time each year. A plan like this may include more labor and parts than a building needs, and effort may not be directed exactly where it is required.

Technology puts a total view of building performance in the hands of both FMs and their service partners, enabling a more proactive and efficient practice. By applying facility analytics, with no additional manpower, it is possible to see what is happening in every corner of a facility, 24 hours a day, seven days a week. A set of rules can then determine how well systems and components are performing. If certain patterns are known to lead to a component failure, that trend can be identified early, and action can be taken to prevent a more costly fix down the road.

With sophisticated programs, tracking reports are used that allow FMs to see firsthand what is happening in their facilities. For instance, simple graphs can be used to show what equipment in the building is performing well, and which may require some expert attention. Knowing where to look at a glance, and armed with more specific fault information, a technician can arrive on site ready to go directly to a problem area and fix it. This allows more time to address or search out other potential — and perhaps less obvious — problems or opportunities.

Looking at two extra things every visit to a job can really add up. Buildings do not break down all at once. Components fail one or two at a time over a long period. Performance degrades because FMs may not notice the many small problems that accumulate and weaken building performance. A facility partner with a total view of the building, who can fix a few additional problems each visit, turns the tide in favor of a more performant, more comfortable building.

If a centralized set of analytics is used, rules can be constantly added and enhanced and capabilities perpetually grow, which

means deeper insights can be delivered to customers. Traditional analytics approaches that run in a building's BAS are often rewritten from scratch for each building. This limits their complexity, drives up implementation costs, and is the reason these packages remain out of reach for much of the marketplace. With a centralized approach, implementation time can be spent making algorithms smarter, not reinventing the wheel each time, which can simultaneously benefit all current and future customers. The algorithms provide insights at scale.

How does this technology help? If an FM has 100 pieces of equipment in the ceilings of campus classrooms, how often do they check each one to ensure it is working properly in every mode? That can be costly, time intensive and sometimes difficult to lay eyes on. With today's technology, equipment can be watched 24/7 to make sure it is meeting its obligations, and when it is not, it will alert the FM team and technicians. Detailed fault information can quickly indicate the root cause.

Methods for monitoring and maintaining our buildings have changed and become better.

Constant surveillance of coil temperatures may reveal when equipment is not getting all the heat it needs from the hot water loop, and that the loop is working harder to maintain pressure. A technician or FM who knows the building well may realize immediately that the sediment filter needs to be cleaned out — ahead of schedule. In an instance like this, analytics removes much of the guesswork from the equation and acts as a force-multiplier on human skill and expertise. This pairing is essential. While advanced analytics will convey what the problem is and when it occurs, it takes experience and knowledge of a building's operation to understand the why, and how to correct the issue.

With the right team and data offering the ability to home in on a problem or opportunity, FM teams can better understand their buildings in no time. FMJ

Dr. Benjamin VanderSluis, *Ph.D., is the director of data driven solutions at Harris. He earned his doctorate in computer science from the University of Minnesota, where he conducted research using machine learning techniques to model and understand complex biological systems.*

GO with the FLOW

Choosing the right airflow valves

BY AURI ANIULIS

Facility managers play an integral role in a building's operational success. From overseeing security systems to tracking health and safety standards, FMs wear many hats. Of their responsibilities, the most demanding is maintaining what is often a building's largest and most expensive asset — the heating, ventilation and air conditioning (HVAC) infrastructure.

HVAC systems serve two main purposes:

1. Maintaining occupant comfort through temperature and humidity control.
2. Creating safe and therapeutic environments for occupants by dispersing and mitigating the flow of airborne pathogens, dangerous fumes and toxic dusts within critical spaces such as patient isolation rooms and laboratories. This is achieved through specific standards around air changes per hour, fresh air changes, negative or positively pressured rooms, and temperature, humidity and CO_2 management.

Managing large and complex HVAC systems can be especially challenging for facilities with various environments to supervise, as FMs must ensure compliance from regulatory bodies and balance control sequences with how people are utilizing the space in real time. However, it is easier to meet compliance, as well as achieve and maintain optimal HVAC performance, when using airflow control technology that is best suited for specific applications.

With so many valve options on the market, it can be difficult to determine the best fit for a facility. There are three common types of airflow control valves that keep general use spaces and critical environments safe and comfortable: variable air volume (VAV) valves, measured airflow valves and Venturi air valves.

GENERAL USE SPACES: ACHIEVING A COMFORTABLE TEMPERATURE

In noncritical environments such as offices, auditoriums, schools and shopping centers, VAV valves are recommended for both the general supply and exhaust. At the lowest price point, VAV valves have a simple blade-style damper, standard actuator speed, and control the volume of conditioned air to manage temperature, humidity and ventilation. The VAV valve is the most basic airflow valve on the market as its main purpose is to simply maintain a comfortable environment through general supply and exhaust.

However, throughout the COVID-19 pandemic, enhanced public health and safety within general use spaces became a top concern. As public health officials gained a better understanding of how

COVID-19 can be transmitted through airborne droplets, building owners and FMs looked to their HVAC system to help mitigate airborne transmission risks.

To create safer general use spaces, FM, architects and engineers borrowed airflow control concepts from stringent requirements usually reserved for critical environments, such as patient isolation rooms and laboratories. Techniques include:

- Increasing the outdoor air changes per hour to pump more fresh air into spaces to dilute and disperse aerosols
- Increasing the air change per hour (ach) rate from 2-3 to 6 ach
- Creating negative pressure zones
- Utilizing UV-C light fixtures
- Adding plug-in room HEPA filters
- Installing MERV-13 filters

HVAC professionals are also creating flexible spaces for health care buildings and other facilities that allow for a higher standard of care when hospital patient rooms are at capacity. The design of these flexible spaces includes installing Venturi air valves in general use spaces to be activated if needed. For example, a hospital might install Venturi air valves within an office space to have the option to create additional negative pressure patient rooms with greater airflow control.

PATIENT ROOMS: MAINTAINING PRECISE TEMPERATURE, PRESSURE AND HUMIDITY CONTROL

Health care settings demand agile and reliable control products to provide a safe and therapeutic environment for patients and staff. There are strict requirements for maintaining the proper temperature, air pressure, air changes and humidity for patient rooms. These parameters create healing and protective spaces, depending on the patient's needs. To produce these specialized environments, Venturi air valves or measured airflow valves should be installed for the general supply and exhaust. Set at a higher price point, both specialty valve types use speed and precision to provide airflow changes to real-time room fluctuations to continuously disperse and mitigate dangerous aerosols. However, both valves have their unique design elements.

Venturi air valves are pressure independent and are specifically designed to provide accurate and repeatable control. They have a high turndown ratio and utilize a cone and spring assembly to maintain desired airflow regardless of duct pressure changes. Venturi air valves also utilize fast-acting actuators that provide a rapid response to changing conditions. This rapid response ensures the airflow is constantly maintained at desired levels, which is essential in health care settings. Multiple Venturi air valves can also be used together to increase the supply or exhaust airflow.

Measured airflow valves provide an airflow sensing technology and are pressure dependent. They successfully operate with lower differential pressures compared to Venturi air valves. Measured airflow valves also have a high turndown ratio but sensor drift is a consideration to manage. They can be used in tandem with Venturi air valves to increase airflow management capabilities.

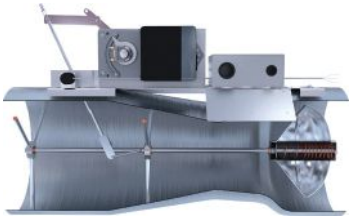
LABORATORIES: STABILIZING AIRFLOW VOLUME AND ENERGY CONSUMPTION

Similar to patient rooms, laboratories require more advanced HVAC controls over simple VAV valves to ensure dangerous aerosols do not travel throughout a space. Venturi air valves or measured airflow valves can both be used for the general supply and exhaust because of their speed and accuracy in maintaining airflow during dynamic room conditions.

Laboratories also often contain multiple fume hoods, which greatly affect the air balance of a space. Although both airflow valves can be used alone or in tandem for general supply and exhaust, corrosive-resistant coated Venturi air valves are best suited for fume hood exhaust ducts. This is because the valve has no sensors and FMs do not have to worry about chemical erosion or debris buildup to receive accurate airflow information from the fume hood controller. Venturi air valves are also available with thermal insulation to prevent heat loss and increase energy efficiency. Their faster speed of response over measured airflow valves and VAV valves is important for real-time airflow monitoring while someone is working in a fume hood.

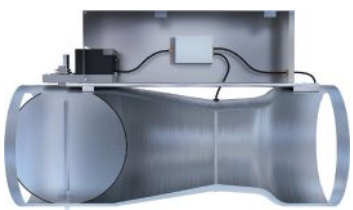
Proper laboratory ventilation and fume hood exhaust management is a vital part of ensuring occupant safety, quality research results and regulatory compliance.

Energy efficiency is also an important consideration when managing laboratory HVAC systems, as they are often the largest energy consumer within a campus or facility. Using outdated and inefficient equipment can cause unnecessary burdens on the infrastructure. Basic VAV valves cannot meet the stringent HVAC performance demands so it is best to avoid them within laboratory settings.

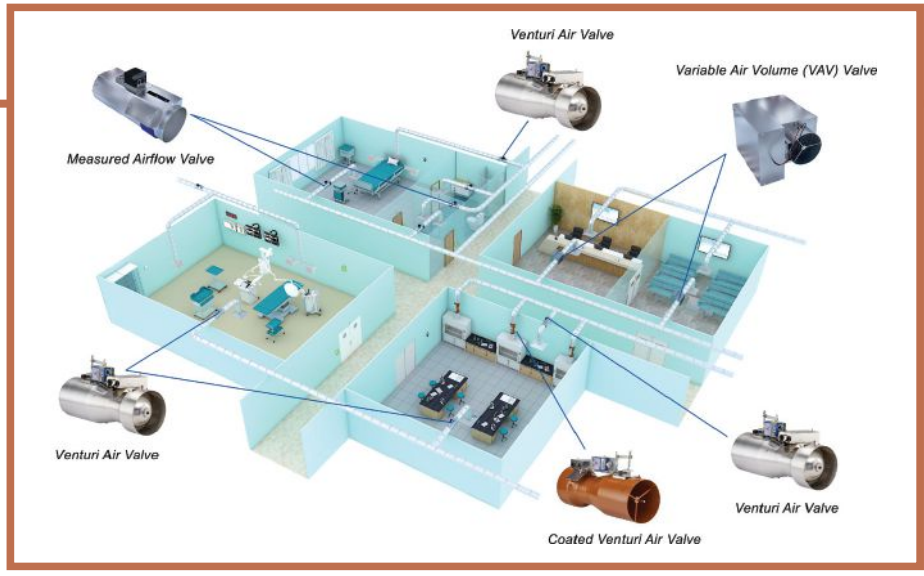


Venturi Air Valve

VAV Valve



Measured Airflow Valve



Example using all three valve technologies in a health care setting

Additional strategies to help minimize a facility's carbon footprint include:

- Minimizing fume hood exhaust with occupancy sensors and automatic sash closings
- Reducing room ventilation during unoccupied times with occupancy sensors

Effective airflow control is an essential component of a healthy building, providing clean air and a comfortable atmosphere. From general use spaces to patient rooms and laboratories, managing the HVAC infrastructure is easier when the right equipment for the application installed. FMJ

Auri Aniulis *is an engineer and product manager for Johnson Controls Critical Environments specializing in air valve technologies for room critical environments.*

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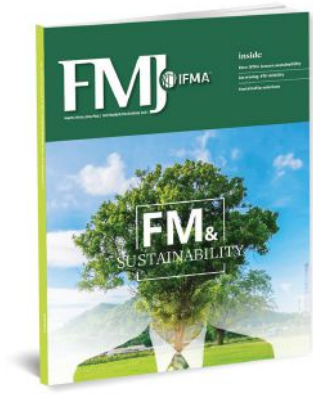

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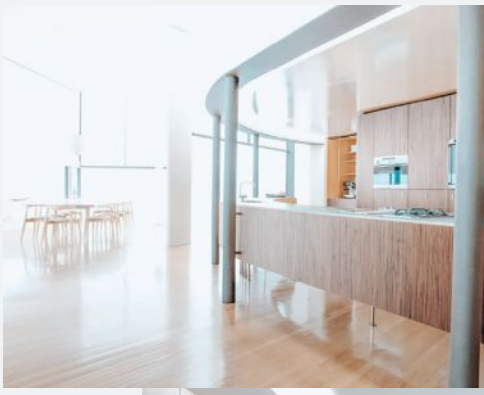

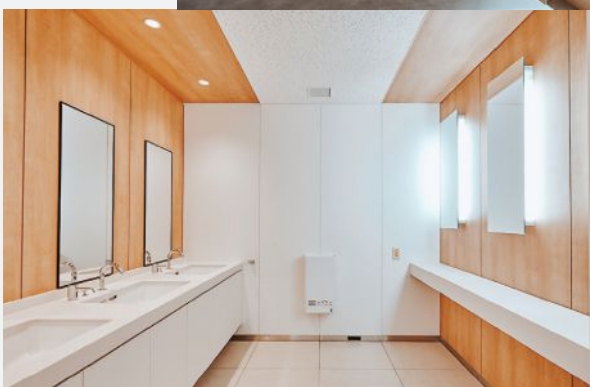

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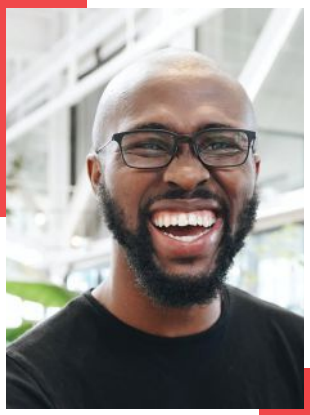

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INTERIORS

Ask the Experts

In each issue of FMJ, IFMA's Facility Management Consultants Council shares some commonly asked FM-related questions accompanied by advice from top FM consultants. The questions and answers presented in this section align with IFMA's core competencies following the themes outlined for the given edition of the magazine. While the following answers are intended to be helpful, these responses should not be deemed complete and are limited in context by the space allocated. Please contact the individual consultants directly for further explanation of the opinions expressed.

CONTRIBUTED BY

IFMA FM Consultants Council
International Facility Management Association

The Facility Management Consultants Council (FMCC) represents more than 300 FM consultants from various countries around the globe. Its mission states, "The FMCC is the resource and voice for facility management consultants worldwide to leverage our collective expertise to benefit IFMA members, and the facility management profession."

What is the benefit of a building loss factor analysis?

To begin with, what is a building loss factor?

A building loss factor is the percentage of usable area lost in a building due to architectural, mechanical, electrical and structural features. It is the part of the usable space occupied by columns and convection units or created by awkward corners or projections, which precludes the placement of furniture or the functional use of the usable floor area. It can be seen within the built environment, where plants mask awkward corners, or in oversized corridors that result due to an inefficient structural grid. Once the lost usable area is deducted from the floor usable area, the resulting space is considered functional area.

Facility managers learn which of their buildings is the most efficient, however it is possible and advisable to accurately quantify/calculate the exact efficiency (building loss factor) of each floor plate and building within your facility portfolio and the resulting functional area.

Every building has a fraction of its space which is lost. In some buildings it may only be 2 percent, while in other buildings it could be up to 20 percent. From an economic perspective this is something to be attentive to, whether you are:

- wishing to develop a highly efficient building
- assessing building attributes during an acquisition process
- assessing lease opportunities
- wanting to compare the area efficiencies of your portfolio of assets
- commencing an interior alteration project

Building area loss contributes to the true value of a real estate asset and should be understood for each new or existing building within your organization's portfolio. It is the direct comparison of space efficiency, available functional area, and the ratios of rentable to usable to functional area that can be calculated on a cost per square foot basis.

The reality is, no two buildings are created equal. The better FMs understand the attributes and functional area of their portfolio, the better and more effectively they can plan how best to use their real estate assets. Some of the building elements that are considered in the building loss analysis are:

- depth of perimeter convection unit
- window opening dimensions and position
- ceiling configurations, grid dimensions and level changes
- structural building grid dimension and regularity
- building core to the exterior wall dimensions
- column dimensions, spacing and location
- size and locations of vertical penetrations (i.e., elevators, shafts or rainwater leaders)
- size and locations of exit stairs
- size and configuration of common areas

The process of conducting a building loss analysis accounts for all of the above features through a series of calculations and assessments. It determines the percentage of lost area and the ultimate usable area that can be put to functional use.

The better you understand your buildings, the better you can manage them, and the more they can contribute to your organization's functional and financial performance.

An FM consultant, versed in building loss factor analysis, can help you gain a more thorough understanding of your assets. FMJ

Cindy Rodych *has been a consultant in the design and facility management industry for more than 35 years. She has a master's degree in facility management and is a professional interior designer along with LEAN Green Belt. Her focus is aligning her clients' strategic objectives with a forward-thinking and innovative facility solution. Rodych's strengths fall in the areas of functional programming, workplace strategies, LEAN planning, strategic facility planning and business/practice innovation.*

Trudy Blight, *CFM, FMP, SFP, BID, PIDIM, PMP, IFMA Fellow began her career as an interior design consultant, which included project delivery within a FM organization. She was the Asset Manager, Government of Canada with a large portfolio in Western Canada and the Arctic. She provided facility management and project management consulting services for several years with Stantec Architecture and is currently Manager of Architectural & Engineering Services within Facility Management at the University of Manitoba.*

Collaboration, INCLUSION & leadership

OPPORTUNITIES ABOUND IN THE FM INDUSTRY

BY JEFFREY SAUNDERS

Click the screenshot above to watch Jeffrey Saunders' interview with Pa Sinyan (left).

Pa Sinyan is the managing partner for Gallup Europe, Middle East and Africa (EMEA). He leads Gallup's teams in the EMEA region as they help organizations enact culture transformation projects and fix broken workplaces. Gallup's famous State of the Workplace study has analyzed and tracked employee engagement in the workplace for more than 20 years in more than 150 countries. He will speak at IFMA's World Workplace Europe, June 1-2, 2022.

He joined IFMA's Research Advisory Committee because he is passionate about collaboration and inclusion at the workplace.

> *"I want to create environments where people can bring their whole selves, bring the good, bad and ugly, and be who they are and be appreciated."*
>
> – Pa Sinyan

The pandemic's impact on collaboration and inclusion

Collaboration is obviously a broad topic. There is collaboration among individuals within teams; there is collaboration across teams, where organizations' most significant source of innovation occurs. Collaboration also extends across organizations and between public and private organizations.

The impacts of the pandemic have been multidimensional. There was collaboration in the early stages of the pandemic because there was a more profound need for each other. This need enabled greater collaboration, and there were deeper dependencies across organizations from supply chains to partnership models to get work done. "2020 was the year of 'everyone is in it together.' There was a moment of a deep need for each other, and we had to figure things out together. That created more collaboration in the short term, and we absolutely saw that. Moving into 2022, we will need to leverage partnerships and foster collaboration on so many fronts to find our way out of the crisis," said Sinyan.

EDITOR'S NOTE: *In 2021, IFMA announced the creation of its Research Advisory Committee, an international panel of world-leading, multidisciplinary subject matter experts keen on helping reshape the built environment to improve people's well-being and buildings' sustainability. As part of this initiative, IFMA is conducting a series of interviews with the members of the Research Advisory Committee. These interviews will introduce readers to this fantastic and inspiring group of thought leaders, their passions and how they see the facility management industry evolving during this period of tremendous societal transformation.*

Inclusion presents multiple opportunities and challenges. For opportunities, the increase in remote and hybrid work has allowed people who might not have been active members to step into the workforce. However, there are negative impacts on inclusion. Those who do not come to the office experience disadvantages. The data clearly shows the prevalence of proximity bias, and those employees who are visible to their leaders and managers are more likely to get a promotion or get on the exciting new project.

The pandemic has created opportunities for many to enter the workforce who might not otherwise have been able to join. There are new challenges for those coming in. How do FMs ensure they are treated fairly and given the same opportunities?

The shift toward remote and hybrid work reveals the failure of leadership and performance management

There have been extreme public reactions about the shift towards remote and hybrid work. There is an emphasis in the media on the reactions and not from where these are coming.

> *"I have encountered many leaders, and we hear from many leaders who feel pressured to accept hybrid working. When you talk to these leaders, there is some discomfort with remote work. It is not the issue of remote work; it is because remote work reveals one of the fundamental challenges that have existed in the workplace for a really long time. Namely, we have done a poor job of managing performance."*
>
> – Pa Sinyan

Performance management ensures that a set of activities, processes, outputs and outcomes meets an organization's goals effectively and efficiently. Ideally, organizations manage people's performance by setting clear expectations, holding people accountable, and giving them continuous feedback on getting better. According to Sinyan, "in the absence of being physically present, leaders and managers need to consciously and deliberately do this. It can't be something they do accidentally anymore, which is what many leaders have benefited from in the past."

Part of what drives the opponents of hybrid work is not just because they are "old school," he said.

"It is because they are meeting their limitations of not being great performance managers. They'd rather go back to having people being the room with them because it makes it easier to manage performance when you see people."

The impact of leadership and people management is the critical, neglected component in remote and hybrid working, which has led to unchanging employee engagement scores. Gallup defines employee engagement as the involvement and enthusiasm of employees in their work and workplace. Employee engagement helps leaders measure and manage employees' perspectives on the crucial elements of workplace culture.[1] Gallup analyses demonstrate organizations that rank in the highest quartile versus the lowest quartile had lower levels of:

- Absenteeism
- Employee turnover
- Theft
- Accidents
- Production defects

These organizations also had increased productivity and profitability.[2]

Overall, employee engagement is unchanged; within organizations, it is polarizing

According to Gallup's 2021 study, the pandemic has not impacted employees' workplace engagement, which is quite remarkable at first glance. The overall engagement has barely changed in Europe, the United States or elsewhere worldwide. Gallup's staff had two major competing hypotheses for their 2021 study: Either engagement scores would get much better due to increased flexibility and less time spent commuting, or they would get much worse. Due to the crisis, things are difficult and scary, and people could struggle to work from home.

But, "none of that happened. When looking at the data, we actually see the quality of leadership and day-to-day management that people experienced did not fundamentally change. As you think about it, you realize, well, why would it change? Just because the circumstances have changed, it does not mean leaders themselves have changed. Why would it?" asked Sinyan.

At first glance, this insight appears at odds with the bias toward presenteeism and the sheer number of organizations that did not ask how their employees were doing under the first wave of the pandemic in March and April 2020.[3] Gallup witnessed that the aggregate data over employee engagement from 150 countries has not changed due to increased working from home during the COVID-19 pandemic.

At the same time, there is a polarization in employee engagement occurring within organizations and among teams. There are significant differences between those teams led by good, conscientious leaders who understand the importance of coaching their employees to be better and who clearly articulate their expec-

tations and feedback and those who do not. These contentious managers were able to drive engagement among their teams working remotely. Those managers who did not understand why they needed to clearly articulate their expectations or did not enjoy their managerial role saw marked declines in their teams' engagement. The quality of the workplace experience, regardless of setting, depends upon the quality of people managers.

People's overall life stress, or lack thereof, surprised researchers

People's experiences with stress, or lack thereof in many cases, were some of the most surprising conclusions from Gallup's 2021 State of the Workplace study. Gallup saw two different pictures: Overall, life stress was unaffected, and more people reported that they were thriving, while work-related stress shot up.

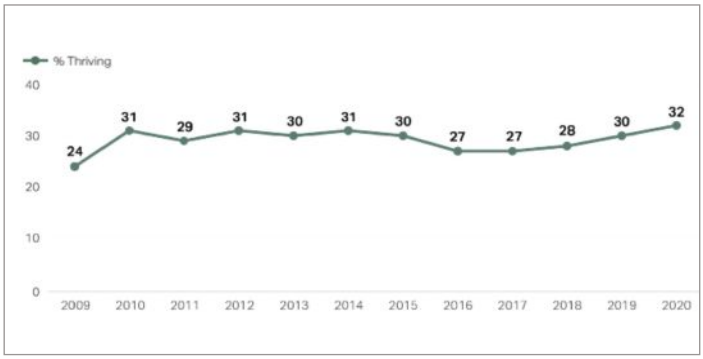


Figure 1 Life Evaluation, Among Employees (Source: Gallup, 2021)

When it comes to how people experienced stress in their life overall, people, on average, did not become more stressed during the pandemic. People in Europe, especially Western Europe, said they experienced less stress than before the pandemic. When people assess their work-related stress, it shot up dramatically, and that was surprising to researchers at Gallup.

"I would have expected that people's overall life stress and work-related stress to move in parallel, but they didn't," he said.

People differentiate the sources for their stress, and the pandemic has enabled some flexibility that has removed some sources of stress in many people's lives. That reduced stress is apparent in the data. But new ways of working and new business challenges have introduced new sources of work-related stress in people's lives. However, the most significant, single indicator for how much work-related stress impacts an individual is the quality of one's manager and how that individual leads. So, organizations must figure out they can empower and support leaders in the transition towards a greater reliance on remote work.

The Great Resignation and the war for talent

There is a lot of discussion about the Great Resignation, a global phenomenon among more mature economies where choices exist. While there have been record numbers to resign from their jobs in countries like the U.S. and Great Britain, FMs must recognize there are many nuances to the challenge.

"The Great Resignation is based on two things," said Sinyan "First, it is based on the intent to move. That number is at peak levels, but that number was a always high 46 percent of the workforce, and now, it is at 48 percent. Secondly and more importantly, it is based on the same issues we have been tracking for two decades: does my employer care about me as a person and do I experience a sense of purpose and development?" Even in these times of contemplation, only 30 percent of engaged employee are considering leaving their current job, while 74 percent of actively disengaged employees are looking for a way out.

While compensation and hygiene factors play a role (particularly in some industries), engagement is critical. It acts as the buffer between the annoying aspects of jobs and a desire to seek opportunities elsewhere.

"The more engaged we are, the more likely we are to be loyal and committed to our companies," he added.

FMs have an essential role to play

IFMA's Experts' Assessment shows that most industry experts expect FMs will play a much more significant role in developing and managing experiences across a range of work settings.[4] Such interventions could demonstrate that employees are appreciated by the organization and are needed. Also, FMs have an opportunity because what organizations have been doing for decades has not worked.

"Facility managers, in my experience, have a much more pragmatic approach to getting the work done. I think that bringing that sort of pragmatic thinking into the space of organizational culture development and change could be very helpful," said Sinyan.

"When I look at some of the best cases of culture change, they've been led by a more operational, tactical mindset. My advice to facility managers with a step into that space is one to maintain the very strengths that have made them good for organizations: be very pragmatic, outcome-oriented and data-driven — play to those strengths."

Greater sophistication, however, is needed to clearly articulate and showcase the overlap between the built environment and people's emotional needs at work: for example, if there's a need for friendships at work, how is the built environment designed to support the creation of friendships at work? Supporting friendships at work is not only a design challenge but a service challenge as well.

"Facility managers are among the best situated to it do it in most organizations," said Sinyan. "How we service and run the places can be conducive for collaboration and people coming together or not."

Key issues to watch in 2022

The future of hybrid work and how it impacts engagement. There has been a limited impact of COVID-19 and hybrid working on people's engagement so far. How long will this continue? Are organizations going to see shifts in people's expectations and leadership? People are already leaving their workplaces. Are there going to be new demands on leadership and management based on hybrid ways of working?

Diversity and inclusion. The last two years were inflection moments for diversity and inclusion, which were strongly driven by George Floyd and the Black Lives Matter movement. These conversations are difficult to lead and are not always as constructive as one wants them to be. These challenges are here to stay; it is vital to explore how COVID-19 impacts these issues. For example, more women in many countries are opting to stay at home rather than work.

"A key question to ask is, 'Are we able to maintain the gains we have made over the last 20 years?' A fear is that we could lose these gains due to the new working environments that could disadvantage those who chose flexible working arrangements."
– Pa Sinyan

Work with leadership — new pilot programs to improve leadership. Companies are testing pilot programs to improve leadership. Examples include systems and processes to ensure that people get enough face time with management, revamp performance management systems for greater transparency, and categorize better who is a top performer and who is not. Companies are not very good at measuring and communicating about performance. As fairness in the workplace becomes more critical, so will the focus on performance management and the approaches and metrics. Organizations must focus on leadership because the quality of their managers can explain 70 percent of the variance in engagement levels:

"Show me your boss, and I can pretty much tell what your engagement looks like," said Sinyan. "If you want to promote a cultural transformation, behavioral change, an innovation culture, and a culture that is more inclusive, the single most effective lever is to work directly with managers so that they can lead and facilitate that change in their teams."

Three questions about the future:

How invasive and to what degree the metaverse will be a part of our daily lives, and how will it look? This development would come with a new set of challenges, dynamics and interactions.

Will we change how we manage performance? We all know that this is an issue and that we need to change, but will organizations choose to tackle it?

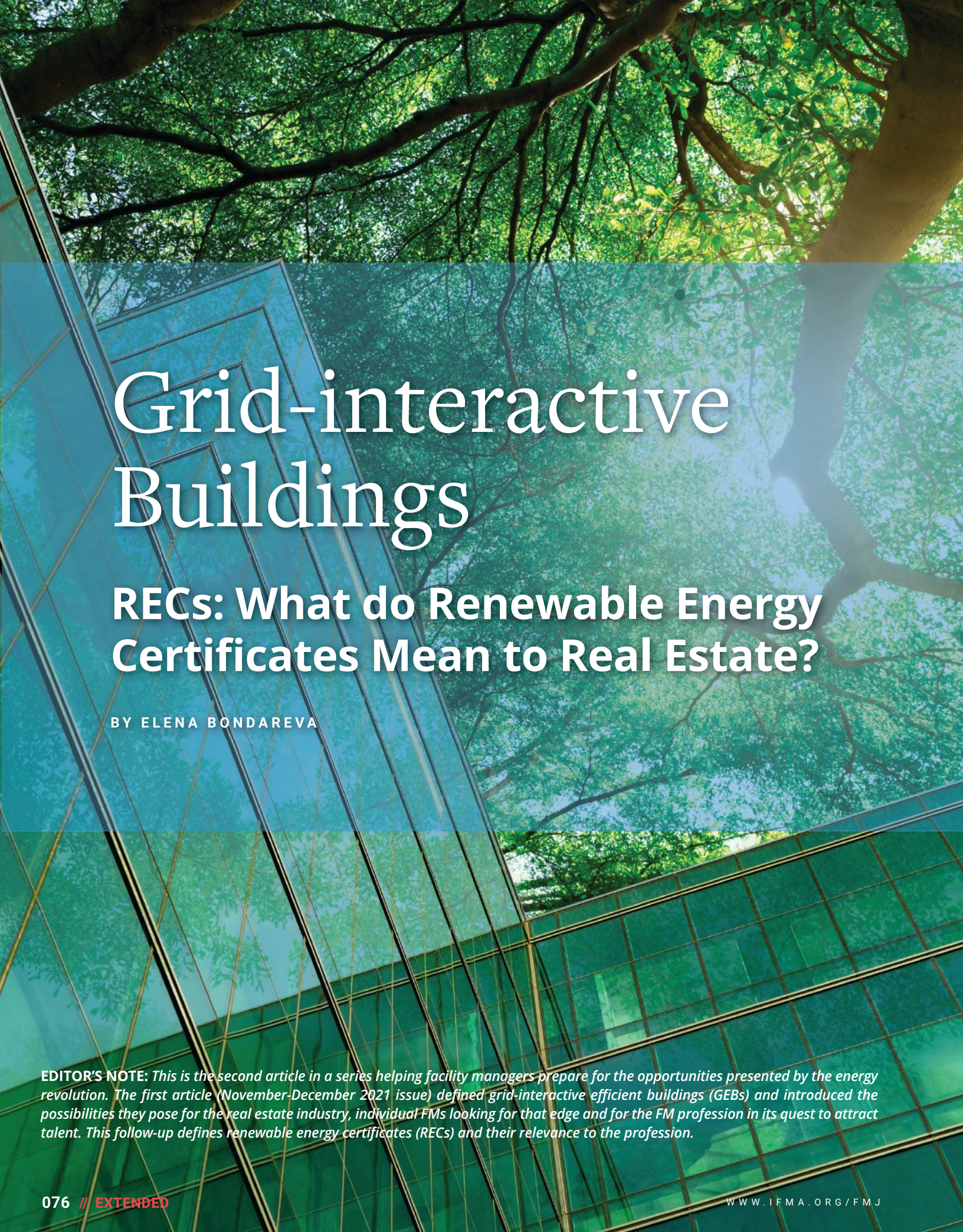
What percentage of the workforce 20 years from now will be working remotely?

This transformation requires that CEOs recognize that it is not about them, and organizations do not necessarily need a company policy on remote work. Organizations need every team to know what they need and for every team to determine how best they achieve outcomes. Some teams function well, only seeing each other once a month. The nature of work and interdependencies and the types of people on these teams means they will perform fine, rarely seeing each other.

Other teams, who meet in person twice a week in the office, find that it is still not enough. Organizations must focus on equipping and empowering team leaders and managers to develop solutions with their teams. They can use team charters, and organizations should train managers to have practical, positive and dynamic conversations about when and how a team should work together to perform at their best.

"What do we need for our individual and collective well-being and performance? Of course, it is more complicated because we are distributing the power to individual managers, but they accordingly need help and empowerment to do this right," Sinyan said. FMJ

Jeffrey Saunders *is an expert in strategic futures studies and foresight. He is CEO of Nordic Foresight. Saunders formerly served as Director, Copenhagen Institute for Futures Studies, Chief Consultant and Head of SIGNAL Arkitekters Workplace Analytics team.*



Grid-interactive Buildings

RECs: What do Renewable Energy Certificates Mean to Real Estate?

BY ELENA BONDAREVA

EDITOR'S NOTE: *This is the second article in a series helping facility managers prepare for the opportunities presented by the energy revolution. The first article (November-December 2021 issue) defined grid-interactive efficient buildings (GEBs) and introduced the possibilities they pose for the real estate industry, individual FMs looking for that edge and for the FM profession in its quest to attract talent. This follow-up defines renewable energy certificates (RECs) and their relevance to the profession.*

What are RECs? Each REC signifies a megawatt-hour (MWh) of electricity generated from a renewable energy source. What is important is that in referring to clean energy, a REC is the unit of "clean," not a unit of energy. Think of an orange (or green or black) cotton T-shirt. The dye has an identity separate to the cotton; an identity that can be defined by the type, origin and total volume of pigment. Now, imagine a world in which the dye had value distinct from the T-shirt it colored. In the world of energy, that is why RECs matter: the "cleanness" of energy is a property distinct from the energy itself, and it is valuable enough to be traded in its own right. In the world of dyed cotton, the T-shirt comes inseparable from its color and there is no separating the two — or having a reason to try. However, in the world of energy, RECs allow users to separate and value the unit of energy as distinct from its cleanness.

RECs allow users to transport clean energy virtually. In doing so, RECs, through accounting, help match the supply of clean, renewable energy with the demand for it.

RECs fall into two categories: compliance and voluntary. The FM industry is affected primarily by the voluntary RECs.

What is the difference between carbon neutral, 100 percent renewable energy and 24/7 carbon-free energy?

- **Carbon neutral —** Organizations counterbalance their emissions by purchasing carbon offsets intended to reduce or prevent future global emissions.
- **100 percent renewable energy —** Organizations purchase enough renewable energy to match their annual electricity use.
- **24/7 carbon-free energy —** Rather than emitting and compensating, organizations don't emit in the first place. Every kilowatt-hour of electricity consumption is met with carbon-free electricity sources in every hour, on every grid where electricity is consumed. It means carbon-free energy for all.

Source: gocarbonfree247.com

How are RECs relevant to real estate?

The solar array at a home, office, factory or store generates clean energy. The owner of that energy has several choices:

- Use the clean energy
- Sell the clean energy
- Use the energy but sell its cleanness

The last option is how RECs are generated. While the principle holds even for a single solar panel, most RECs are generated from assets such as commercial-scale solar, wind, hydro, geo-thermal or green hydrogen.

On the other side, somebody has an operation they would like to power with clean energy. Similarly, they have several options:

- Produce clean energy for own use
- Buy clean energy
- Buy energy cleanness (RECs)

RECs are handy even with on-site generation because some days, there is a shortfall that needs topping up and other days, there is a surplus that can be sold on the free market. This makes RECs a very useful tradable commodity.

RECs are a game-changer because they can turn any clean-energy asset into a source of instantaneously liquid funds. Cashflow poor? Market price improves the ROI into a PV array or a battery? Sell the RECs. Don't need to? They can beclaimed them toward an organization's own climate goals.

Once a REC is claimed, it is "retired" so that it cannot be double-counted.

LEED certification presents one practical application of RECs: One or two points are awarded for sourcing 50 percent or 100 percent, respectively, from "green power, RECs and/or offsets."

Why have RECs been problematic?

First, RECs have been clunky (time consuming and not always reliable) to validate and trade. Thankfully, new trading platforms (e.g., Powerledger) remove such friction from the system.

The deeper challenge lies in the perverse outcomes.

Building on the T-shirt metaphor, RECs have been treated as if every yellow — or green, blue or white — is the same. However, the McDonalds yellow or the FedEx purple are exceptionally specific colors. If an artist painted a sign with any grocery-store acrylic, they would be fired on the spot because the precise color has deep commercial value to that brand. While any yellow is better than, say, green, just any yellow will not do when it really matters.

Similarly, not all RECs are created equal.

Generic RECs can create unintended consequences as carbon offsets have been known to do. For example, if a corporate campus in Oakland, California, USA, tries to negate its carbon emissions via RECs generated in Australia, it does not shift demand away from local peaker plants that operate when energy is in high demand or channel investment into renewable energy generation, storage or resiliency of Oakland's local grid.

For maximum benefit, renewable energy should be used when and where it is generated; then, there is no need for storage or transmission infrastructure (with its associated upfront investment and carbon footprint) and no transmission losses. This is, of course, how a plant functions.

Guided by this principle, the benefit of buying RECs generated at a different time of day and halfway around the world is questionable. Yet that is what a lot of RECs trading (and offsets in general) has been. While that is likely better than not paying any attention to the cleanness of consumed energy, it does not actually meet most climate action goals any better than just-any-yellow satisfies the McDonald's brand requirements.

> ***"If we want to transition to a 100 percent renewable energy system, we need to adapt the way we are consuming energy, the way we are matching it between buyers and sellers."***
>
> **— Cristina Mata Yandiola**
> **Europe Representative at Powerledger**

What is best practice where it comes to RECs?

The best practice is matching hourly RECs to the hourly electricity consumption profile of the asset or company. In other words, if a retail store consumed electricity between 6 p.m. and 7 p.m. on a Friday night, it should buy RECs generated during that hour from renewable energy assets on its electricity grid. These spatially and temporally precise RECs are referred to as "hourly RECs" or "T-EACs" (time-based energy attribute certificates). Commitment to such matching is newly known as the 24/7 Carbon-free Energy Compact.

> ***"In response to the urgent need to drive rapid decarbonization across the global economy, a group of energy buyers, energy suppliers, governments, system operators, solutions providers, investors and other organizations has joined together to accelerate the decarbonization of electricity grids by adopting, enabling and advancing 24/7 carbon-free energy (CFE)."***
>
> **Source: gocarbonfree247.com**

As a market behavior, 24/7 CFE commitments help ensure that not only is the planet saving a few kilograms of CO_2 each day but that it does so by phasing out coal-fired power stations where they are no longer needed while expanding local clean-energy assets. Furthermore, this creates a financial incentive for rescheduling energy-intensive activities for when clean energy is more abundant and, in turn, more affordable. The reverse also holds true: the more RECs organizations generate at the most desirable times and locations, the more cash they stand to gain while helping advance the clean-energy future.

When used well, RECs make any clean-energy asset into a source of instantaneously liquid, interest-free funds. What better way to activate self-interest in pursuit of climate goals?

With the the 2021 United Nations Climate Change Conference (COP26) as the most significant COP in recent history, 24/7 CFE is rapidly changing expectations of carbon neutral because the genie is not going back into the bottle. Countless developing nations have spoken to the harm of offsets. Netting out carbon will no longer suffice. The carbon footprint must be negated when and where it is generated.

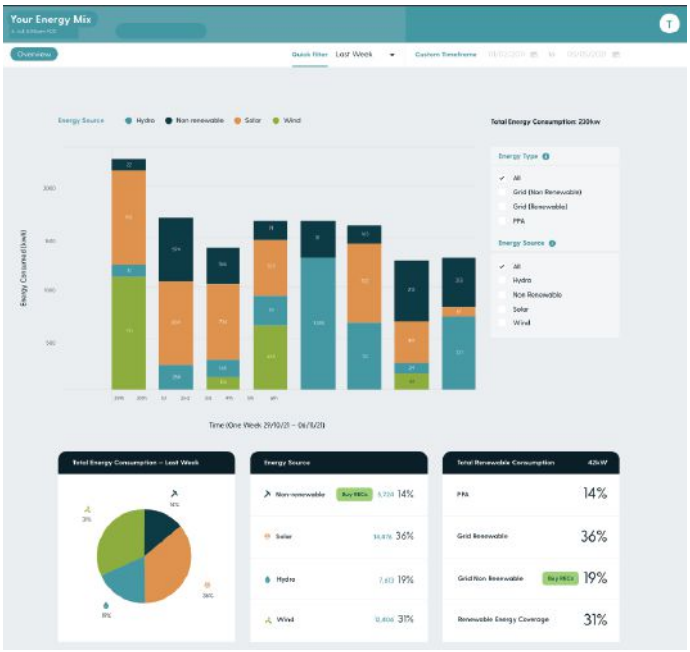
As of early November 2021, there were already 40 signatories as diverse as Google, the government of Iceland, Johnson Controls and Powerledger; a list that by the end of COP26 grew to 51.

Next steps for an FM

For most organizations, carbon footprint is inseparable from facilities so FMs have a big role to play.

If organizations own on-site generation, they should explore its potential:

- Map the generation profile throughout the day/week.
- Graph the generation against the demand to identify the delta. See the example below. *Source: Powerledger.*



- Quantify the revenue opportunity should your organization need to cash-in on hourly RECs.

If an organization buys RECs:

- Find out what criteria is currently used and if it is not 24/7 CFE, stand out by educating.
- Identify how facilities become part of the solution: Can they reduce the demand on the grid (e.g., by becoming a grid-interactive efficient building), thus also reducing the budget for RECs that may still need to be purchased? Can they generate clean energy on site? FMJ

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Resources:

The Rise of Renewable Energy Certificates. October, 2020. Dr. Jemma Green. Forbes. forbes.com/sites/jemmagreen/2020/10/07/the-rise-of-renewable-energy-certificates/#2afb899d3710

RECs trading: powerledger.io/platform-features/tracex

Registry of hourly RECs: MRETS.org

UN 24/7 Carbon-free Energy Compact: gocarbonfree247.com

New Opportunities

Leveraging workers from the gig economy

BY JEFFREY SMITH

No longer is the standard 40-hour Monday through Friday work week the desire or aspiration of most workers. Many have discovered the optimal work-life balance is more achievable by joining the growing number of gig workers, estimated at about one-third of the U.S. workforce and nearly 200 million worldwide, according to the International Labor Organization. Characterized by unique skills, or flexibility of assignment or schedule, workers are bringing their talents and energy to the market in ways they dictate and control. While millions are finding this new work style fits their needs, facility management teams are struggling to figure out how to benefit from opportunities presented by the changing workforce.

THE GIG ECONOMY RUNS ON SMARTPHONES

Gig workers are all about mobility and connectivity. Contacting available workers, confirming assignments, getting progress updates and processing payments for services rendered are done almost exclusively through mobile apps. Integrating operations with secure mobile apps is critical to accessing this potential workforce and fully leveraging the benefits.

To be a player, companies need to be connected. That means FM and physical plant operations not already mobile are starting at a disadvantage. The first order of business is to connect all field operations with the enterprise asset management (EAM) system through smartphones and other mobile devices. For more than a decade, FM operations of all sizes have benefitted from mobility, saving time, saving money and continuously finding opportunities for integrating new technologies and better equipping their workforces with what they need most: not data, but timely information.

Putting the high-value information in front of workers rather than making them find it has been a game-changer for physical plant operations and management communities. The best mobile work management solutions provide employees at all levels with real-time notifications and easy access to timely information. Fully integrating mobile asset and work management with other enterprise solutions including HR, finance, document management, BIM and others was the next step in the mobile evolution. Today, the challenge becomes how to connect and leverage all field service vendor partners, from corporate-sized to the individual gig worker.

START FROM BIG AND WORK BACK TO SMALL

While this approach may at first seem counterintuitive, it makes the most sense. The biggest gain in connecting gig workers and vendors will come from those with the highest volume of transactions. The largest vendors will also be where companies can exert the most control over compliance with site procedures, including critical health and safety protocols. Once businesses have worked through their compliance needs and protocols with larger vendors, those processes can be embedded into the mobile app, making it easier to extend those regimens to independent gig workers.

That now begs the question — where does one find gig workers? Depending on where the business is located, there are typically a variety of popular websites and/or mobile apps to find available gig workers. Those sites/apps make it easy to contact the worker and book their services, but unfortunately, most will have limited capabilities for capturing details on the work performed and any related documentation.

OPERATION DETAILS IN A SEPARATE SYSTEM IS LOW VALUE

Even if the third-party gig services app enabled the gig worker to enter job details, it is still a suboptimal solution because the critical work performance data is not getting into the EAM system without extra steps. This generates unwanted friction in the work processes by requiring more overhead to transcribe or enter critical work performance details into the system where they become most valuable to FM teams ... the EAM. The only sustainable strategy is to invest in a mobile solution tailored to the realities of working with outside vendors while ensuring all critical work performance data is pushed to the EAM without the need for manipulation, translation or secondary data entry. Importantly, any mobile solution for gig workers and vendors should always remain independent of the mobile work management solution used for employees — no one other than a company's own direct employees should ever have to access its data, networks or systems.

Among the goals of any FM team is to ensure all EAM asset and work order records are complete; no exceptions. That

means capturing the same level of detail, and supporting documentation, for all work assignments into the EAM, regardless of whether the work was performed by an internal employee, a field service vendor partner or a gig worker.

NARROW THE GAP BETWEEN INTERNAL EMPLOYEES, VENDORS AND GIG WORKERS

Most employers already using mobile solutions enjoy full awareness of their internal employee schedules, whereabouts and assignment performance. They know precisely who is on site, and what work they have been assigned. They also know when a technician starts an assignment, when the technician finishes and exactly what has been done (or what remains to be done) by having all of those critical details attached to the asset and location records in their EAM. Full knowledge and transparency of the internal workforce, all in real-time, has been enabled in the best mobile solutions.

In the past, the only way to achieve the same results with external partners (vendors and gig workers) has been to give them access to the company's mobile app, which means granting and maintaining access credentials for people outside the organization. IT security and risk management protocols strongly argue against that strategy.

In what has recently become achievable in the FM world, supervisors and management can now have the same real-time awareness of every person performing on-site work, regardless of whether they are internal employees or outside contractors. Everyone is working from a mobile device with information tailored to their role and relationship to the organization. All work performance information, including related photos, video, documents and reports flow back and forth with the EAM software in real-time, with no extra steps. Controls restricting cyber access are also fully incorporated, so that contractors and gig workers never access the organization's EAM or internal network resources. For too long, most FM organizations have used something much different. Typically, vendor work records are stored separately, either in paper or electronic file cabinets, or accessed online through a vendor-provided portal.

IMAGINE VENDORS IN THE FULLY MOBILE OPERATIONS FUTURE

What would it look like to have the same level of awareness and accountability for any member of the field service workforce, inclusive of internal staff, frequent vendor partners and gig service workers?

What would organizations need to do differently to make that happen?

Nail down vendors expectations

Many organizations still rely on email and phone calls to book vendors and gig workers and schedule related work assignments. The built-in inefficiencies of these methods lead to misaligned expectations and unnecessary friction. Using a mobile work management solution with employees sidesteps these problems.

What would it be like to enjoy the same level of confidence using mobile with vendors and gig workers as is done with internal employees?

Know vendor staff or gig worker whereabouts at all times

Mobile apps allow organizations to always know when internal field employees are on site, expected for the next shift, the next day, next week, etc. These tools are typically configured to provide real-time awareness whenever an assignment is started, ended or updated. Extending this full transparency to vendor staff and gig workers provides a huge benefit to supervisory management for staff deployment, scheduling and monitoring work execution cycles.

What would it be like to have better tools to manage performance expectations with vendors and gig workers?

Share the same scoreboard for performance

When managing vendor or gig worker performance, the missing element is typically an easily accessible measurement system that both parties agree to as part of the contract process. Team sports results are easy to follow because the scoreboard is always prominent and visible. Imagine how hard it would be if the teams and the fans were not exactly sure how they did before they left the field.

Often the relationship between operations teams and vendors is like an invisible scoreboard. Both parties lack reliable tools for tracking performance and related accountability. Having a company's team and its outside contractors/gig workers use a mobile solution that allows everyone to look at the same performance metrics at the same time, with established service-level agreement targets for optimizing results, would clarify expectations and dramatically improve accountability.

LEVERAGE EXISTING EAM INVESTMENT WITH MOBILE

Getting full value from the EAM requires a clear strategy built around mobility. The FM industry has been slow to adjust to these realities, with nearly half of all large-scale operations still deploying legacy work processes for many routine processes, including work order assignment and execution, operator tours, inspection and testing, lockout/tagout and confined space entry safety tracking, pre-job safety compliance, timecards, time-off requests, materials requisitions, stockroom and inventory management, and many others. FM teams not thinking through and planning a mobile strategy are missing large efficiency opportunities and falling behind in recruiting and retaining the next generation of field technicians and supervisors.

FIND A MOBILE TECHNOLOGY PARTNER WHO ALSO UNDERSTANDS YOUR BUSINESS

Regardless of where on the continuum of mobility an organization exists, improvement is always just ahead. Navigating the mobile solution landscape can be tricky. To take full advantage of the opportunities and avoid the pitfalls, find an experienced partner who understands the technology, as well as the continuous cycles of FM. The path forward is unique for every organization, but an experienced partner can offer valuable insights that help bring clarity to both the strategic technology choices as well as the implementation sequencing and deployment decisions.

Gig workers, independent contractors, and small- to large-scale vendors form a constellation of field service vendor options. They perform an increasing volume of work across the FM industry and offer employers a wide range of hiring options. Getting the most from these indispensable partnerships requires FM organizations to be on solid digital footing with a plan for mobility. The advancing mobile technology removes compromises associated with mixed workforce utilization. FM organizations should seek out the advice and partnership of experienced hands, so they can stride confidently into the new gig economy. FMJ

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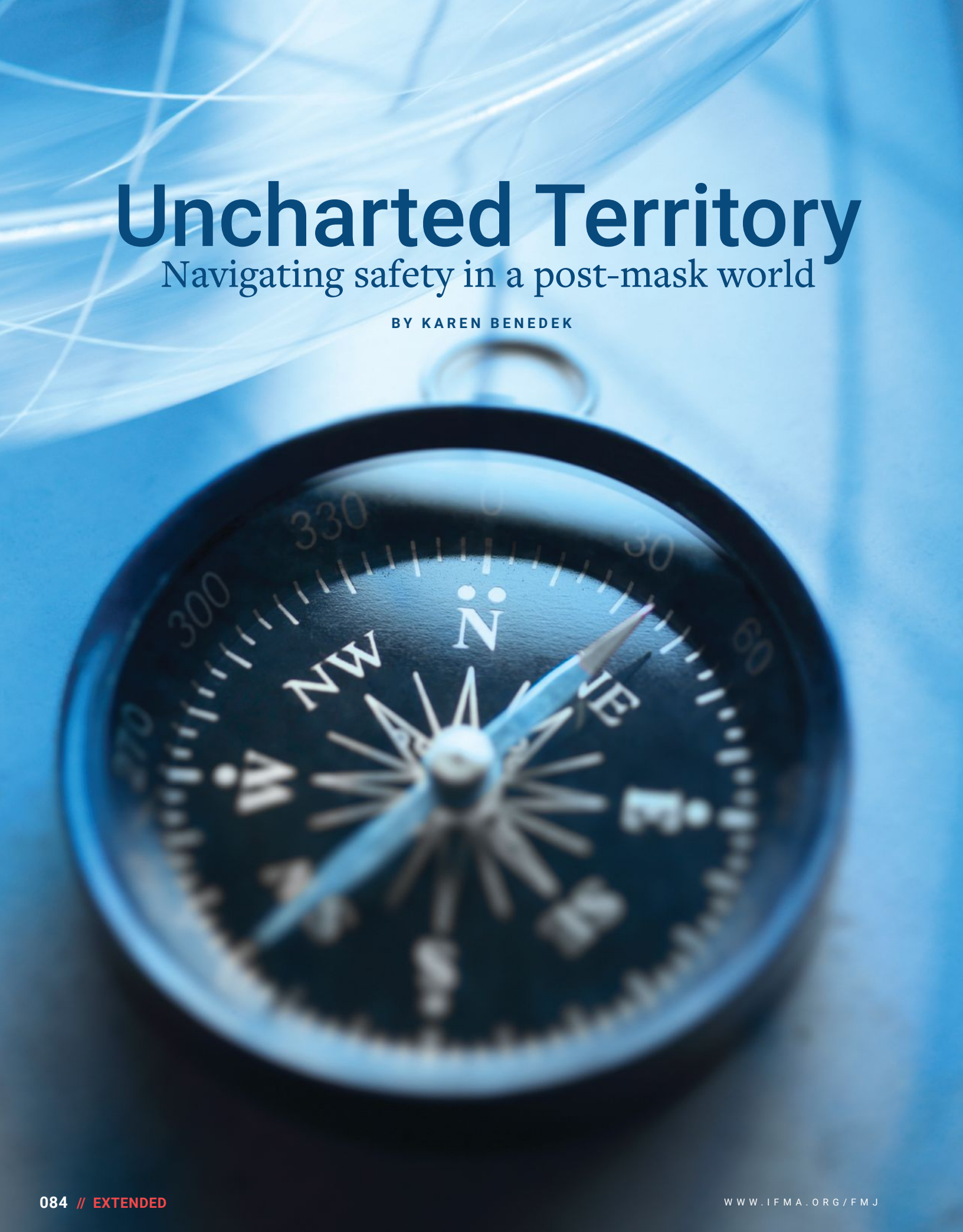
Uncharted Territory

Navigating safety in a post-mask world

BY KAREN BENEDEK



Since the onset of the COVID-19 pandemic, business owners and facility managers have done yeoman's work enabling public and private spaces to reopen and operate safely. This year, businesses have made important changes to operate safely within national and local protocols, including implementing cleaning procedures, capacity limitations and outdoor operations. That said, building occupants are responsible for a large portion of indoor safety precautions through mask wearing and vaccination. Many community members are tired of this status quo; they want less burdensome, more long-term solutions for indoor safety.

Thankfully, businesses have options to take greater control of their environments and offer safer, more comfortable spaces. A layered approach to safety is achievable with focus on ventilation and air cleaning as key elements of this transition. Installing technology that proactively kills viral aerosols rebalances the burden of safety from occupants protecting themselves to the building protecting its occupants. A century-old, gold standard technology for disinfection, germicidal UV light is being integrated into air cleaners that reduce risk of viral spread and boost the confidence of building stakeholders. Once a facility is armed to fight COVID-19, a freer, more lasting indoor environment is possible.

The science of the spread, simply stated

Many studies have shown, and the U.S. Centers for Disease Control (CDC) has clearly stated, that the coronavirus is transmitted through airborne viral aerosols.

The factors impacting the risk of contracting the virus are clear: the risk is higher in enclosed, crowded, under-ventilated spaces where people spend long periods of time.

According to the CDC, infectious exposures to respiratory fluids carrying the virus occur in three main ways:

1. inhalation of air carrying small droplets and aerosol particles that contain infectious virus;
2. deposition of virus carried in exhaled droplets and particles onto exposed mucous membranes; and
3. touching mucous membranes with hands soiled by exhaled respiratory fluids containing virus or from touching inanimate surfaces contaminated with the virus.

Inhalation of airborne aerosols and direct deposition of droplets are the two primary routes of the transmission of the coronavirus.

The risk of viral transmission is higher in under-ventilated indoor spaces where viral load can build to high levels. Exhaled viral aerosols can survive for hours in the air and can be subsequently inhaled by anyone sharing the space. Higher occupancy density and louder voices increase viral aerosol generation. Masks and lower occupancy density (social distancing) reduce the viral load added to the air. Masks can also reduce the viral load inhaled, which reduces the chance of becoming infected. Vaccines reduce the severity of the disease if someone becomes infected.

Masks offer protection, but are not a permanent solution

Masks, while effective, have their limits. For one, masks are not usable while eating and drinking. That is obvious in restaurants and bars but is also the case in cafeterias and breakrooms of schools and office buildings. Also, in many office spaces, employees do not wear masks when seated at their desks. Social distancing reduces the risk of direct impingement of droplets on a coworker's or classmate's face, but exhaled aerosols still add to the air from across the room.

For children in schools, masks are not a permanent solution; prominent public health officials are now pressing school officials to develop plans and schedules for removing masks. In many communities, disagreements over masking have turned into violent confrontations. It is very clear that businesses and schools need other options to reduce risk while offering their customers, students, employees and building occupants a comfortable, safe and enjoyable indoor experience.

How to bring people back while managing risk

For schools and businesses, bringing students and customers back to establishments has naturally been a priority. But the dramatic changes in employee availability, wages and responsibilities require similar management attention and creativity. Many workers, especially in the food service sector, feel unsafe in their jobs or have left their jobs altogether. A recent private survey revealed the following insights:

- Almost 20 percent of restaurant workers do not feel safe at their own restaurants.
- Restaurant workers identified airborne virus as causing the highest risk to them at work.
- 100 percent of restaurant staff respondents would be more likely to continue working at their current place of employment if high-performance air purifiers that inactivated the virus were present.

Preventing more staff from leaving is a high priority for a wide range of businesses. Air cleaning and control technologies offer options to attract and retain staff, allow them to work efficiently and offload duties that are otherwise a distraction. As the pandemic goes through its seemingly relentless waves, technology enhancements will offer safer working environments, more productive employees and confident customers.

The opportunity to decrease the risk of airborne viruses is clear: flush the space with clean air through a combination of outdoor air ventilation and air cleaning.

Stopping the spread: a deeper understanding of COVID-19

It made sense that an initial response of many facilities — schools, restaurants, houses of worship — was to offer outdoor seating. Gathering outside (not in enclosed tents) offered an environment of far lower viral aerosol density than gathering inside a room with limited ventilation. The question remains, however, how to quickly and cost effectively create indoor air quality that is similar to that of outdoor air? How do these facilities implement the shifts needed to take indoor air quality to the next level? The good news is that the technology exists to make these upgrades quickly and efficiently.

Air cleaning technologies

Cleaning the air in each room with properly designed and sized air cleaners offers risk reduction with no loss of comfort, no additional limitations of behavior and no personal effort whatsoever. Detailed models that predict viral load reduction show that the proper use of air cleaners can lead to the same risk reduction as having room occupants all use cloth masks.

There are numerous air cleaning technologies available on the market:

Filters

- In HVAC ductwork
- In self-contained air cleaners
- Germicidal ultraviolet (UV) light
- In HVAC ductwork
- In self-contained air cleaners
- In upper room fixtures

How do these options compare?

Filters are very common. Filters work by collecting particulate material in the air that passes through the filter. Dust particles and other pollutants accumulate on the filter and, over time, reduce the ability of air to flow through the filter. Therefore, filters must be changed regularly.

Not all filters are the same; they are rated for their efficiency in removal of small particles. Viral aerosols are very small particles. Typical filters in HVAC ducting capture less than 20 percent of particles 0.3 – 1 micron in diameter. The coronavirus is smaller than 0.1 microns. The filters recommended for use in HVAC ducting to address the coronavirus, called MERV 13 filters, will allow 25 percent of particles 0.3 – 1 micron to pass through it.

A different category of air treatment equipment generates either ions or oxidizing molecules and blows those molecules into the air in a room. It is claimed that these ions or oxidizing molecules will deactivate microbes in the air. Products that generate and introduce molecules into the air are labeled by the EPA as emerging technologies, meaning that little research is available that evaluates its effectiveness outside of lab conditions.

The EPA and other agencies are quite clear that ozone and other reactive species generators should never be used in occupied spaces.

Another air cleaning system for viral or other microbial aerosols is germicidal ultraviolet (UV) light. UV light inactivates viruses, bacteria or molds so they cannot reproduce. Inactivation means that the DNA or RNA used to replicate the microbe is damaged. In this way, the virus or bacteria is killed. Once killed, the microbes can do no harm. With many UV air cleaners, there are no filters to clog or replace. Germicidal UV air cleaners kill, rather than collect, viral aerosols.

Compared to other available technologies, germicidal UV air cleaners represent a gold standard for sanitizing the air. The Israeli Ministry of Health recently certified specific air cleaners to address the spread of COVID-19. All of the certified air cleaners used germicidal UV.

Germicidal UV air cleaning for safer facilities

Air cleaners using germicidal UV are products that can be designed to kill more than 99 percent of viruses, bacteria, mold and other contaminants in indoor spaces. The UV systems do not require a filter, and therefore do not experience a decrease in air flow rate over time (as happens with filters as they fill up with contaminants).

There are many reasons to kill virus with germicidal UV, rather than to collect and concentrate infectious aerosols in filters. Virions are very small and can pass through many grades of fine dust filters that are referred to in marketing material as HEPA. Buyers must be careful to determine if a filter called HEPA truly meets the HEPA filtration efficiency standard. Filters need frequent changing (every three months) because they fill with dust particles, causing the unit's air flow rate to decrease over time. Filter change-out requires contact with filter material that has been collecting bioaerosols for months; this process provides the opportunity to release the material back into the room. Portable air cleaners using filters can be noisy. Many people purchase filter-type air purifiers with high capacity and operate them on low speed because they are so noisy. Low flow rates offer lower cleaning rates. Finally, filters located in HVAC ducting clean the air when there is a call for heat or cooling. Depending on how the HVAC system is configured, the air may not be continuously circulated or filtered.

The kill-rate of germicidal UV is highest with small aerosols like COVID-19. Self-contained, stand-alone units run continuously while the facilities are occupied. Occupants in the room can see the units operating and feel reassured of their safety. This is an important feature that cannot be provided by in-duct systems. Operated as recommended, the UV air purifiers require maintenance only every two years. Germicidal units are self-sanitizing, so there is no risk of virus transmission while servicing a unit. Finally, some UV-C systems operating in their ceiling mounts or floor mount cabinetry are very quiet at high speed, allowing the air to be cleaned at the full capacity of the air cleaner without causing distraction or annoyance.

...germicidal UV air cleaners represent a gold standard for sanitizing the air.

How it Works:

- Air is pulled into the air cleaner; when ceiling mounted, the air is pulled up and away from occupants.
- Virus, mold and bacteria in the air are killed/inactivated using germicidal UV light.
- Purified air is returned to the space.
- No UV light is emitted into the room.

The Results:

- Viral load in the air is killed.
- Airborne transmission is significantly reduced.
- No requirements imposed on customer or employee behavior.

Conclusion

As FMs prepare for the future, in which COVID-19 infections will hopefully decrease but are unlikely to disappear entirely, it is crucial that they implement safety protocols that are both effective and livable. Indoor mask wearing will phase out, and new technological air cleaning solutions should be implemented. As always, a layered approach to safety is required. Installing stand-alone germicidal UV air cleaning in enclosed spaces improves the safety and comfort of indoor spaces, maintains employee satisfaction and protects buildings from future flu epidemics. It is a solid step in the direction of having buildings protect occupants, rather than the other way around. FMJ

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HOME *Away from* HOME

EVOLVING STUDENT HOUSING

BY MILES ORTH

Off-campus student housing goes beyond a building with some apartments — at its root, student housing must help nurture a supportive environment where students can learn, thrive, socialize and find respite. For many students, this will be the first home they have that is not with parents, guardians or chaperones (like dorm housing). They have reached a new level of independence, while still requiring a bit more of a helping hand than the average adult.

The emphasis on environment has only intensified since the onset of the pandemic. As COVID-19 shut down college classrooms and forced a hybrid learning model, students found themselves depending on their living spaces to provide a holistic environment conducive to productive learning and work, on top of a healthy home and social life. Even as universities reopen their doors to students, the expectations for what a living space must be able to provide has not reverted to its pre-pandemic state.

When it comes to the future of student housing, specifically over the next year, there are three major property features that owners should consider when creating the best possible environment for students, especially as COVID-19 continues to impact their lives: reassessing amenities, prioritizing space and ensuring top-tier property teams.

AMENITIES: FROM LUXURY TO NECESSITY

The environment a student housing property creates for its residents should extend beyond the walls of their individual units. By incorporating amenities that benefit students' physical and mental well-being, facility managers and property owners can facilitate a more holistic living experience for residents.

Developing properties within a close distance to their respective schools' campuses allows for easy commutes and limited stress for students. In addition, throughout the pandemic, pivoting to make cleaning services the top priority is a must, as is continuing to keep the same level of cleanliness to help combat nervousness and unease among young residents. These stakeholders must be able to trust the safety of the environment they live in. All of this helps create a living situation that is more supportive of mental well-being.

At one time, some amenities may have been seen as a luxury perk but are now often seen as necessities for many student renters, as well as their parents or guardians, across the country.

A place for physical activity

According to experts[1], regular exercise and spending time outside can help ease symptoms and feelings of depression and anxiety. With this in mind — and with mental health being at the forefront of overall well-being — it is critical to provide residents with access to a variety of options when it comes to physical activity. Students can become and stay active with access to gyms, specialty workout rooms (such as yoga studios and kickboxing rooms), as well as outdoor recreational areas like pools, a variety of sport courts, courtyards and gardens. Housing providers can even encourage movement and physical activity by offering amenities such as bike rooms, where residents can safely store their modes of transportation.

A pet-friendly atmosphere

It has been proven[2] that having furry companions can increase mental well-being. By offering pet-friendly living opportunities and enabling residents to share their space with beloved cats and dogs (and more), housing professionals can make home a happier space for students. Housing providers can also look to provide amenities for said furry friends such as dog runs and parks, and programming such as pet socials and play time.

An easily accessible location

By developing properties near campus, housing providers can allow for easy commutes and, therefore, limited stress for students. Also, providing access to transport shuttles to and from campus can help students safely get to and from school, and home again without parking concerns.

A proactive plan for cleaning services

Throughout the pandemic, awareness of the importance of heightened cleaning efforts has magnified. It is critical to continue enhanced upkeep, as it helps combat nervousness and unease among young residents.

Safety features

Students should feel safe in their living space. By incorporating state-of-the-art security systems (including locked front gates, secure parking options, FOB-accessible lobby doors, surveillance cameras and even on-location security personnel), property owners and FMs can create an environment that is not only safe, but also helps students feel safe at every checkpoint.

As the student housing market evolves and students' needs and concerns change, these amenities will be increasingly necessary and prevalent.

PERSONAL SPACE IS EVERYTHING.

Today's residents are asking for more open and accessible space, and it is more important than ever to answer their call swiftly and effectively. In recent years, student housing demands have been trending toward units in which each resident has their own room and, ideally, their own bathroom. This phenomenon has only increased in prominence since the pandemic. In the immediate aftermath of the COVID-19 outbreak, these living spaces became more than just where students slept — it was now their classroom, their study nook at the library, where they virtually met with their professors after class, their extracurricular club's virtual meeting space, their dining hall and their hangout space with friends. As a result, the time they spent in their unit increased drastically, and the importance of having the right ratio of shared to personal space, to do everything they needed (and wanted) to do, followed suit.

There are many properties that did not, and perhaps still do not, match these expectations. However, looking to the future, property owners and FMs should consider ways to renovate their existing properties to cater to a more even living ratio.

BRING THE "A" TEAM

A building is only as great as the team that runs it. The team that is on site at a property every day is the resident's first line of assistance for any issues and often the main source of information. They must carefully walk the line of being more supportive than an employee at an average apartment building, while allowing for a higher level of resident independence than a resident advisor at a dorm. In addition to that, there is often a second audience that needs to be addressed when it comes to renter relations: the parents or guardians supporting the student resident. A team member should be available 24/7 through state-of-the-art platforms — providing peace of mind to residents and guardians whether there is an incident at a property, or simply to share tips prior to holiday break on how to ensure the unit stays clean.

This type of hands-on and accessible support should begin before the move-in date. In a post-pandemic world, this includes virtual touring and leasing options being available to all who may be considering the property as a future home. Consider making investments into things like virtual leasing programs, as this is critical to creating the best, most time-efficient and safest leasing experience for employees, students and parents alike. In addition, by encouraging team members to be incredibly responsive and available through the web programs, potential leasers will not be missing out on the personalization of the renting experience.

In the aftermath of the pandemic, there is an opportunity for student housing to, like a phoenix, rise from the ashes of confusion and diminished well-being. Now is the time for student housing property owners and FMs to take a hard look at how they are supporting the overall well-being of those who live in their units. Not only are the basic expectations changing, but the level of support that can be provided to residents grows by the day as well. With more information about how to support well-being, as well as new technologies and opportunities that provide the space to do so, it is the FMs' and property owners' responsibility to up the game to the next — far more holistic — level.

There are a few ways to start. By accepting amenities that previously seemed luxurious as necessary, adapting properties to provide the space that a modern student needs, and reenforcing it with a high-quality team at every property, owners and FMs can create a living environment that promotes health and happiness for today's student renter. FMJ

Miles Orth *serves as principal, senior vice president and chief operating officer of Campus Apartments Inc. Orth is responsible for the company's overall business operations, which includes an extensive portfolio of purpose-built student housing and conventional multifamily properties, along with mixed-use developments. He has 15 years of experience in real estate development and management, including student housing, conventional apartments and commercial properties. Orth serves on the board of directors for the National Multi-Family Housing Council, is an advisory board member for the National Apartment Association's Student Housing Task Force and a member of the Urban Land Institute, International Council of Shopping Centers, the Pennsylvania Society and the World Affairs Council of Philadelphia. He is involved with Habitat for Humanity, Cares Food Network and World Vision.*

1. mayoclinic.org/diseases-conditions/depression/in-depth/depression-and-exercise/art-20046495

2. newsinhealth.nih.gov/2018/02/power-pets

A New Definition of Security

Complex challenges emerge in a new landscape

BY KOOS SCHOONBEEK

A top annual priority is understanding and addressing seasonal crime and security trends. While physical and cyber security threats remain high on the risk-mitigation radar, they have, in some cases, taken a backseat to security issues presented by the ongoing COVID-19 pandemic. FMs and their security partners should focus on adapting to the evolving contours of a risk landscape that looks very different than it did 18 months ago. Security considerations are now less seasonal and more structural, accounting for risks related to remote and hybrid work, indoor environments reconfigured for health and safety, and network vulnerability and privacy issues. Devising a risk-mitigation strategy with new post-pandemic realities in mind is no longer optional — it is essential.

THE NEW VIRTUAL OFFICE

Remote working environments and work-from-home models have been a necessity for many during the pandemic. With few traditional offices designed to maintain necessary social distance between employees, it is unlikely that remote or hybrid virtual office solutions will be going away any time soon. While having fewer people in physical office spaces may address one concern, it also presents several challenges.

The immediate focus for many companies is finding a new balance in the role the office plays in the lives of the employee and the employer. Disconnected team members working alone or at home have fewer opportunities to engage in the kind of organic, in-depth personal discussions that foster personal connections and professional inspiration.

Digital relationships do not always satisfy the human need for social interaction. Mental health issues are on the rise — employees are dealing with depression, anxiety and a general loss of motivation.

The potential loss of connection in the current environment poses very real risks. Employees can not only become less productive or less vigilant about information and data security, but may also feel less connected to core company objectives and values, raising the importance of creating a safe working environment for remote employees to address all risk-related elements. This encompasses not just IT security, but also mental health and wellness. Employees who are under stress or who have lost faith in their company are more likely to commit or facilitate (whether willingly or unwillingly) crimes. Consequently, securing the new virtual office needs to include specific steps from supervisor check-ins to virtual social events designed to give employees a sense of ownership and connection to their workspace and their fellow employees.

Given the context of a physically disconnected team operating partially or entirely off site, many decision-makers naturally raise the issue of employee monitoring. For many employers, implementing an employee monitoring solution feels like a logical next step, but that also comes with negative effects that must be considered.

In addition to privacy concerns, employees may feel as though Big Brother is constantly looking over their shoulders. At a time when company loyalty and team solidarity may already be compromised by remote solutions, the last thing employers want is to exacerbate those issues by clumsily implementing a monitoring system without considering employee perspectives. The reality is that, when implemented correctly, employee monitoring can be a positive, even unifying force. The benefits apply not just for employers, who can gain more insight into daily activities and correct issues before they escalate; but also for employees, who are less likely to be overburdened when employers can more strategically spread the workload. Monitoring allows hard-working employees to stand out, making it easier to share accolades and recognize strong performance. Much of the potential resistance to employee monitoring can be mitigated if new measures are introduced openly and honestly, in consultation with unions or employee organizations, and if good faith efforts are made to strike a reasonable balance between security and privacy.

CLICK AND MORTAR CHALLENGES

Going forward, more resources will be devoted to creating new office environments focused on meeting and experiencing, rather than production behind a computer in an individual office. Some businesses are expanding, reconfiguring or renovating to make their spaces safer and more aligned with the needs of a post-COVID-19 office environment.

But many companies have taken a serious financial hit during the pandemic, and, with capital budget cuts, management must be strategic and selective about making the right decisions on investments that need to happen now versus expenditures that can be deferred. Looking at these exercises from a risk management perspective is

crucial. In that context, a more integrated and comprehensive FM approach will be valuable.

While there are many new security concerns stemming from the growing reliance on virtual office models, there are also a number of new facility security concerns for brick-and-mortar buildings. From empty offices to less predictable hours and employee patterns, securing properties and structures can be a more complex proposition. Ironically, FM professionals may elect to turn to new digital tools to address their physical security challenges: remote cameras and monitoring, along with the increased use of smart, IoT, AI and connected devices in the workplace, can simplify some of that complexity and be an important new piece of the security puzzle.

The safety and stability of the workforce is obviously top of mind for facility management professionals, which makes implementing and enforcing new COVID-19 programs and protocols a clear priority. Vaccine mandates, documentation and immunity "passports" are a hot topic of discussion and debate — one with clear implications for how employees return to work, engage in business travel and perform other essential tasks.

From new mandates to health and wellness monitoring, FMs face questions about how to coordinate and implement new policies. Who will enforce those policies, what does enforcement look like, and what are the consequences for noncompliance? Determining whether mandates apply not just to workers, but to visitors, vendors, clients and professional partners is another consideration, as is who will bear the expense and logistical burden of monitoring building access limitations.

Whether designing or enforcing a new vaccine mandate or health and wellness policy, decision makers should adhere to best practices, including coordinating with key stakeholders, being transparent with all team members, documenting every step of the process, and consulting closely with security professionals, medical advisors, and legal and HR professionals to be certain that privacy and personal medical data concerns are addressed proactively and responsibly.

IT DOMINANCE

In general, IT will play a more dominant role going forward. With the dramatic rise in remote connectivity, there are significantly more points of system vulnerability and (formerly) secure networks.

FM and security professionals may take advantage of digital workplace services like office capacity calculators and a growing suite of available smart office apps and tools. Air quality monitoring tools are likely to grow in popularity, part of what is expected to be an exploding category of sensor and remote monitoring tech designed specifically for public spaces and facilities. The use of cloud-based data collection can provide an extraordinary and valuable new depth of information on how your building is used and how best to provide a safe, secure and healthy working environment. But those tools also come with elevated risk. Facilities that rely more heavily on technology are more vulnerable, with more data that needs to be secured. Security of the IT environment, always important, is only becoming more critical.

The cost of cybercrime is growing. By some estimates1 it will exceed US$10.5 trillion by 2025. Spoofing, phishing and ransomware attacks are on the rise, as businesses, schools and government institutions have been paralyzed by ransomware demands. With those eye-popping numbers in mind, thoughtful investments in IT security are not just smart, but essential.

TRAVEL COMPLICATIONS

Travel has become a difficult proposition. Aside from the risks of the actual process itself (being confined in public transportation for an extended period of time with a large group of strangers), different parts of the world can be in very different places with regard to COVID-19 caseloads and public health and safety measures. That variability, along with quarantine mandates and other country-to-country or region-to-region disparities, has made business-as-usual travel unpredictable, and in some cases, impractical or impossible.

For companies with facilities, employees, clients or professional partners overseas, questions about how best to protect property and people and secure the supply chain are obviously top of mind. FM and security professionals must be part of the conversation on how to enforce company policies in facilities overseas, as well as how to handle work travel and personal travel outside of work. Some companies are experimenting with apps that have automated health and travel checks. Others may decide to implement mandatory quarantine periods for any high-risk travel or behavior. The specific security measures surrounding travel are obviously dependent on travel patterns, frequency and a range of other factors, and will vary greatly from one company to the next.

THE LONGEST SEASON

In today's COVID-altered landscape, public health unknowns — future variants, vaccine efficacy, caseload surges — combined with planning ahead for a range of policy and operational scenarios – limited occupancy or fully open, vaccines mandates, on-site, remote or hybrid staff – have led to perhaps the single most important asset for facilities and security professionals alike: flexibility. The ability to pivot quickly to address short-term changes and long-term priorities will be one of the defining attributes for successful risk-mitigation strategies not just for this season, but for months, even years to come. FMJ

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The Art of the INVISIBLE

Customized HVAC technology to conserve masterpieces of Renaissance Art at the Vatican Museums

BY DIDIER GENOIS

CASE STUDY

Throughout the 1980s and 1990s, the Vatican Museums restored Michaelangelo's 500-year-old frescoes on the ceiling of the Sistine Chapel — removing centuries of debris that had accumulated and marred the original beauty of these iconic works of art. Once restored as close to their original glory as possible, the Vatican sought a partner to preserve and conserve Michaelangelo's masterpieces for generations to come.

In 1993, the Vatican Museums commissioned the design and installation of the Sistine Chapel's first-ever air-conditioning system, which accommodated a maximum load of 700 simultaneous visitors when it was completed. Fast forward to 2014: to accommodate daily foot traffic of approximately 20,000 people, the Vatican needed a masterpiece of technology to match the genius behind Michaelangelo's ceiling fresco. The solution came in the form of an innovative HVAC system, comprised of two variable-speed water-cooled liquid screw chillers, each with 580 kilowatts of capacity. The system was designed to be adaptable to the future and allow for up to 2,000 visitors to the Sistine Chapel at any one time, in nearly any weather condition.

The Vatican's technical teams collaborated with an engineering team at the global commercial HVAC manufacturer that invented modern air conditioning, to use leading-edge computer modeling and simulation techniques in order to meet the chapel's unique requirements: carefully managing the flow, humidity, quality and temperature of the air; maintaining sound at "church-quiet" levels; virtually invisible to visitors; and using pre-existing duct openings in a protected, historic landmark setting.

The Vatican Museums needed a similar solution for the Raphael Rooms, to create an innovative air-conditioning solution that would ensure optimal ventilation and comfort for visitors.

Adorned with frescoes painted between 1508 and 1524 by Renaissance artist Raphael and his workshop, the four Raphael Rooms are universally known as one of the greatest works of art ever created. The Stanze, as they are commonly called, were originally part of a suite of apartments for Pope Julius II, who commissioned the work.

The History of the Raphael Rooms

Raffaello Sanzio da Urbino (1483 – 1520), known as Raphael, was a renowned Italian Renaissance artist and architect. His work is admired for its clarity of form and ease of composition, and together with Michelangelo Buonarroti and Leonardo da Vinci, he completes the most famous trinity of great masters from the Renaissance period.

In 1508, Pope Julius II commissioned Raphael, then a relatively young artist from Urbino, and his studio to redecorate the existing interiors of the rooms entirely. It was possibly Julius' intent to outshine the apartments of his predecessor and rival Pope Alexander VI, as the Stanze are directly above Alexander's Borgia Apartment.

The rooms are the Sala di Costantino (Hall of Constantine), the Stanza di Eliodoro (Room of Heliodorus), the Stanza della Segnatura (Room of the Signatura), and the Stanza dell'Incendio del Borgo (The Room of the Fire in the Borgo). The Room of the

Segnatura houses Raphael's most famous frescoes, the "School of Athens," which represents philosophy.

In the 15th century, a tradition of decorating private libraries with portraits of great thinkers was common. Raphael took the idea to a new level with massive compositions that reflected philosophy, theology, literature and jurisprudence.

As a whole, they transmitted the intellect of the pope and would have sparked discussion between cultured minds that were fortunate enough to enter into the private space.

The Challenge

Today, the Raphael Rooms are a part of the Vatican Museums that welcome more than 30,000 visitors each day during peak season — which runs from March through October, when temperatures can soar as high as 104 F/40 C during the summer.

In addition to ensuring optimal ventilation and comfort for guests, the right solution for the space had to essentially reach inside the Raphael Rooms without touching anything. The Vatican Museums needed a customized system that could be installed:

- To preserve architectural heritage, without impacting any of the historic elements within the rooms;
- In rooms that were not conceived as a museum when built more than 500 years ago; as the rooms were created as a residence for Pope Julius II, they were not intended to host groups of visitors of any size;
- In areas where space available for equipment was significantly reduced;
- In a location unnoticeable to the more than 6 million visitors each year; and
- To maintain visitor access during installation.

The space available for a new air-conditioning system was in a place where a small heat exchanger had previously been installed. An engineering product development team created a customized piece of equipment that fit this specific geometry.

"Space available for equipment inside Raphael rooms was very reduced. At the beginning, we planned to use a full-air system with an air-handling unit, but it was impossible to find the space to install air ducts outside of the building without impacting building aesthetics," explained Michel Grabon, Director, Carrier AdvanTec/Building Solutions Group Europe. "We were limited to the existing setting, and we couldn't move or reshape a single stone that had been there since the beginning. So, we had to imagine and develop a new product solution to function in the reduced space — a small fan coil the size of 2.5 kW, but with 10 kW of capacity. Such a big density of energy in the equipment did not previously exist."

The Solution

Over the course of a three-year period working in lockstep with the Vatican Museum's technical teams, engineers developed a custom air-conditioning solution utilizing an entirely new system design that delivers heating and cooling in one-fourth of the traditional footprint — without altering any of the existing infrastructure of the four historic rooms.

The solution required exceptional detail to meet the unique requirements of the Raphael Rooms. Of upmost importance was to enhance the experience of the rooms for visitors, ensuring the technology was not noticeable by leveraging the existing small space for equipment.

With very limited space for equipment inside the Raphael Rooms, a thermo-model of the rooms was built taking into consideration all of the architecture and thermal characteristics of the walls. Once aware of size and capacity, the team concluded that no product existed that would function effectively for the rooms. The project required a new fan coil design and a custom cooling production system that would enhance the comfort of visitors, while not being visible. Engineers imagined and developed the prototype for a small 2.5 kW fan coil with 10 kW of capacity — a powerful piece of equipment. Performance testing verified that the fan coil could fit underneath the narrow space available – so in early 2020, the fan coils were installed in a way that would be invisible to visitors.

To meet cooling production needs and preserve the look of the rooms, eight energy-efficient inverter air-cooled liquid chillers and reversible air-to-water heat pumps were installed on the exterior roof of the Vatican Museums. As a system of control, a building automation system was added to help the HVAC systems to deliver a healthier, safer and more efficient indoor environment for visitors. The air distribution simulation, using computational fluid dynamics, was developed by an electrical contractor in Syracuse, New York, USA. The chillers' installation was commissioned in June 2020, in time for the 500th anniversary of Raphael's death, and it has been in operation since.

The Result

This state-of-the-art solution will continue to allow more than 6 million annual visitors to the Vatican Museums, while helping the museum accomplish its preservation mission. Performance highlights of the custom commercial HVAC system created for the Raphael Rooms include:

- **High efficiency:** Very high system level of efficiency due to hydronic variable speed technology and system level control.
- **Invisibility:** Fan coils as well as outdoor units are invisible to the public.
- **Power Density:** Four times greater power density than a standard system.
- **Noise Control:** Indoor fan speed is adjusted based on amount of people present inside the room. With a larger amount of people, background noise becomes more important – so fan noise is not perceived by visitors.
- **Innovation:** Innovative system architecture (eight outdoor units in a same hydronic loop with optimization routines), with optimization of air circulation and air diffusion especially developed and designed for specific room geometry.

Generations to come will have the opportunity to experience the exceptional art within The Raphael Rooms with the comfort of modern technology — nearly invisible for the average visitor. FMJ

Didier Genois *is vice president and general manager at Carrier HVAC Europe. In this role, he is responsible for leading the business with a specific focus on increasing investments in innovation and production equipment, accelerating digital innovation and business transformation, gaining segment share globally and ensuring customer satisfaction. Genois previously served as director of engineering at United Technologies and engineering director at Carrier Transicold. He is an alumnus of the prestigious ESSEC Business School and INSA Lyon.*

For the People

Redesigning the workspace

BY ALBERT DEPLAZAOLA

What happens when 10 years of office evolution are compressed into a year and a half? Organizations get a historic opportunity to shape a more human workplace — through reopening and beyond. That means mixing up the office experience in new ways, including infusing the office with spaces for bonding through non-hierarchical, playful activities.

COVID-19 stranded knowledge workers in the monotony of the home office — but it also eased people into more authentic interaction, albeit virtual. From pets, kids and partners skidding through the backgrounds, to colleagues admitting to wearing sweatpants at their desks, Zoom fatigue blasted down the door between business and personal life.

As months ticked by, people grew more comfortable with sharing the good, the bad and the downright messy of living through a mass work-from-home experiment. According to Microsoft's Work Trend Index, 39 percent of global employees say they are more likely to be their full, authentic selves at work than they were just a year ago.

The report also shines new light on the value of in-person collaboration: While people interacted more often with immediate teams, interactions with broader networks shrank during remote work. Working in silos may have been necessary during the pandemic, but in the long-term it will undermine the cross-pollination that is so vital to innovation.

What's more, 41 percent say they are likely to consider leaving their current employers within the next year. To win back and maintain employee loyalty, organizations must create a more human, authentic workplace — one that mashes up the best parts of work-from-home, with the best parts of a dynamic, in-person office.

The question now is how do organizations maintain this virtual humanism in a shared office environment? Perhaps the answer begins in Venice, California, USA.

Enter, play as a workplace paradigm

A Venice skate park attracts people of all ages, races, genders, nationalities and orientations to a common activity: play. The skate park subverts traditional hierarchy based on age or gender and replaces it with equity driven by access, curiosity, vulnerability and skill.

It is not a meritocracy, but by encouraging play the skate park opens channels to human emotion that were available during our remote work experience, yet rarely encouraged in a corporate environment. If translated well into workplace design, the act of playing can continue to give us access to those human emotions we cherished most in others during the pandemic.

The concept of integrating play and work is not new. The idea took root in the early 2000s when "design thinking" emerged as a more fashionable alternative to traditional corporate rubrics. Millennials with ironic T-shirts and clever tattoos were invited into the C-suite to conduct blue-sky workshops using Nerf guns as visioning props.

Play, or the art of play, emerged as a modality for business results by harnessing creativity and empathy to drive employee satisfaction, customer loyalty and coveted Net Promotor Score metrics. Brands became lifestyles. Even professional services firms took notice. And it worked ... until the 2008 global financial crisis hit. Organizations circled the wagons, made deep cuts and were, understandably, less inclined to pay people to play.

In a post-pandemic reality, play can be the behavioral anchor that keeps employees connected and reminds them everyone is still in this together.

To bring play into the work environment, workplace leaders must consider what play is and the conditions that make it possible. There is a cottage industry espousing the benefits of play at work, but according to Peter Gray of Boston College, some consistent characteristics emerge around what play is:

- **Self-chosen and self-directed:** play, first and foremost, is what one wants to do, as opposed to what one feels obliged to do.
- **Intrinsically motivated:** play is done for its own sake more than for some reward outside of the activity itself.
- **Guided by mental rules:** play is a freely chosen activity, but not freeform activity. Play always has structure, and that structure derives from rules in the players' minds. In social play, the rules must be shared, or at least partially shared, by all the players.
- **Imaginative:** play always involves some degree of mental removal of oneself from the immediately present real world — and can be the engine of cultural innovation.
- **Conducted in an active, alert, but relatively non-stressed frame of mind:** [when people play] they have to think actively about what they are doing ... but the person is relatively free from pressure or stress.

Design solutions will need to respond to both the physical and organizational domains of work. A skate park or playground inspired work environment is not an aesthetic, it is an enabler of behaviors and human emotions that transforms the traditional workplace into an organizational asset for its users.

Research and countless surveys strongly indicate that organizations and their employees want the post-pandemic work environment to promote more collaboration, community building and some space for single tasking. Play can be the strategy that integrates these requirements with intention and incentive.

The taxonomy of the workplace must shift if organizations want to encourage play, achieve results and incentivize employees to come back to the workplace. Leaders need to do away with the conventional open office models that try to optimize (or reconcile) occupancy efficiency with employee choice — a strategy that historically leaves all stakeholders slightly disappointed.

It is time to think beyond the traditional work modes of focus, collaborate, learn and socialize. These are now nearly irrelevant as COVID-19 forces organizations to redefine how and what kind of work takes place in or out of the office. A sea of workstations, a coffee station and oversized executive conference rooms will not have employees racing back to the office. If play, and all its organizational benefits, is the desired outcome, then new typology must emerge to get there.

How to translate the theory of play into functional space

If the intent is to inspire play and enjoy the emotional and professional benefits of colleagues and tightly woven teams, then organizations will need to reimagine the "kit of parts" of the post-COVID-19 workplace. Instead of organizing spaces around work modes, let spaces endow curiosity, autonomy, imagination and innovation.

There is no one roadmap to a more playful, authentic office, but including the following design elements can help light the way.

KINESTHETIC | TO TEST AND EXPERIMENT

These are spaces where employees can ideate around products and services. Not to be confused simply with tech maker spaces, these areas encourage the interaction between the tangible and the abstract. Providing tools and technology and the right environment enables staff to seamlessly toggle (and play) between the two.

- Open area
- 100 percent flexibility
- Maker type
- Robotics and 3D printing
- Rapid prototyping
- Multifunctional

VISUAL | TO EXHIBIT AND WATCH

An immersive space to communicate ideas with visual language. These are interactive spaces that connect individuals and teams either face to face or remotely, blurring the distinction. Not unlike playing multiplayer video games, this area can encourage participation or simply allow others to observe.

- Enclosed/semi-enclosed
- Immersive 360 experience
- Staging for recording/viewing
- Amphitheatre style
- Group coding labs
- VR - 3D drawing studio

AUDITORY | TO SHARE AND LISTEN

Forum spaces to share and listen. It may be a theater environment or simply an open space inviting informal or serendipitous run-ins without agendas.

- Direct/indirect sound
- Soundscaping stimulators
- International public forum
- Two-way sound options (click on off)
- Audio playback
- Music and theater

FLOW | FOR QUIET AND FOCUS

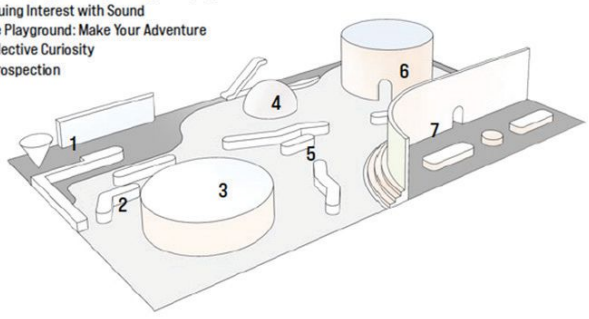
Play is not always a team or collaborative behavior. Play can be thinking, practicing and single tasking on something of personal interest. Introverts are often the most creative and imaginative, yet rarely have the forum to play. Flow spaces provide respite for the quiet mind.

- Isolation space
- Enclosed and quiet
- Non-disturb
- "Good Will Hunting" effect
- Lower collaboration

Design as a process shines when it translates the configuration of these areas into a human experience, one encouraging an inclusive journey for all.

CONCEPTUAL PROTOTYPE DESIGN BY DEAN RIKANOVIC

1. The Entry: Generate Excitement
2. Playing Through Doing
3. Encouraging Curiosity Through Imaging
4. Piquing Interest with Sound
5. The Playground: Make Your Adventure
6. Collective Curiosity
7. Introspection



Above is a conceptual prototype organizing all the parts into a spatial experience, using play as the overall organization modality. Leveraging it as a design principle reinforces the very best of what was learned during the pandemic, while eliminating the wasteful and unproductive aspects of the pre-pandemic work experience.

For an interactive view of the conceptual prototype design, click here.

Reinventing the workplace, one human, playful experience at a time

Obviously pursuing this sort of strategy involves some calculated risk. But then again, workplace transformation is by definition a bold endeavor. It is not to say organizations should recklessly pursue people or workplace strategies purely on speculation or fashion; doing so undermines the potential of the design process.

By moving beyond the safety of traditional thinking and the need to constantly benchmark decision making, organizations can take responsible risks that drive change and account for complexity and ambiguity through elegant and people-centric solutions.

Driving change is, after all, what this is all about. As organizations rethink the workplace, now is not the time to revert to the old ways of work, with old office designs intact. It is an unprecedented opportunity to reimagine the future of how things can and should be.

Employees have become more authentic in their work. Office design embracing this new reality will help organizations stay ahead in this dawning post-pandemic era of work. FMJ

Albert DePlazaola *is senior principal of strategy at Unispace, a strategy, design and construction delivery firm revolutionizing the creation of workplace. With nearly 15 years of experience in people-centered design and change management strategies for private and public institutions, he moves beyond the typical motivations to foster greater organizational responsiveness, adaptability and innovation. DePlazaola is recognized as a thought leader in the industry, contributing to various publications on design-thinking and leveraging user-centric approaches.*

This article includes excerpts from a chapter Albert DePlazaola co-wrote with Gensler's Arnold Levin for the IFMA Foundation publication "Work on the Move 3: Building Better Workplaces After the Pandemic."

The following product and service providers offer solutions for your everyday and specialized facility management needs.

ACOUSTICS/SOUND MASKING

LogiSon Acoustic Network

Greater openness and reduced absorption make today's interior designs even more dependent on sound masking for speech privacy and noise control. Now, more than ever, you need to know that your sound masking system is providing the right sound throughout your facility. The LogiSon Acoustic Network's award-winning technology is tuned using TARGET, an application that automatically and accurately adjusts each small zone to the specified spectrum, maximizing core benefits and occupant comfort.

logison.com
@logisonsoundmsk
linkedin.com/company/logison-acoustic-network

CEILINGS/CEILING CARE

Armstrong Ceiling & Wall Solutions

Armstrong World Industries, Inc. (AWI) is a leader in the design and manufacture of innovative commercial and residential ceiling, wall and suspension system solutions in the Americas. With $937 million in revenue in 2020, AWI has approximately 2,800 employees and a manufacturing network of 15 facilities, plus six facilities dedicated to its WAVE joint venture.

armstrongceilings.com/commercial

HVAC/IAQ

Bluezone Products, Inc.

Bluezone Products, Inc. engineers, manufactures, and sells air cleaning products that kill airborne viral and microbial aerosols using germicidal UV light. Our air cleaners for occupied spaces reduce the risk of spreading airborne viruses inside buildings. Our indoor air quality experts provide guidance for applications in schools, offices, restaurants, and entertainment facilities.

bluezonefresh.com
@bluezoneinc
linkedin.com/company/bluezone-products-inc/

Heraeus Noblelight America LLC

Heraeus Noblelight manufactures Soluva UVGI air purification devices that protect building occupants from illness due to infectious aerosols such as COVID-19 pathogens and seasonal flu. Heraeus UV disinfection experts advise facility managers, often performing simulations, to determine the most effective solution for their situation. Office buildings, schools, senior care centers and other facilities already use Soluva to improve indoor air quality and occupant wellbeing.

soluva.com
linkedin.com/company/heraeus-noblelight

ROOFING

Crazy Seal Products, Inc.

Crazy Seal offers custom-fit roofing systems shipped directly to your door! Our revolutionary and sustainable roofing system is designed to seal all types of flat roofing applications. Our liquid-applied system is seamless, permanent, and backed by a fifty year product warranty. Crazy Seal takes the complex world of roofing and simplifies it so that it can be installed by just about anyone for a fraction of the cost of other roofing types.

crazyseal.com

SECURITY

NGS Films and Graphics

NGS Films and Graphics is the nationwide leader in window films, graphics and signage for commercial, government, medical, retail, transit & hospitality buildings.

filmsandgraphics.com
@films_graphics
linkedin.com/company/national-glazing-solutions/

WATER MANAGEMENT SERVICES

AQUALIS

AQUALIS has been providing comprehensive water services for nearly 20 years. Serving the continental United States and Puerto Rico, AQUALIS assists your company in avoiding costly noncompliance fines, protects your multiple property investments and creates innovative sustainable management solutions. AQUALIS' expertise includes stormwater and lift station inspections, maintenance, repair, consultations, and emergency response, as well as vactor and jetting services, and CCTV pipe inspections.

aqualisco.com
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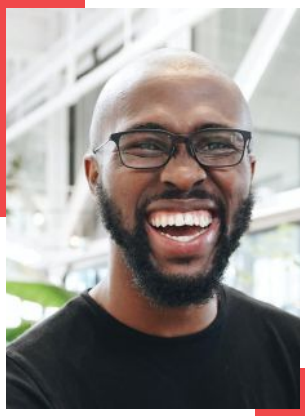

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Tim Salau
Mr. Future of Work & CEO of Guide

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