

FMJ



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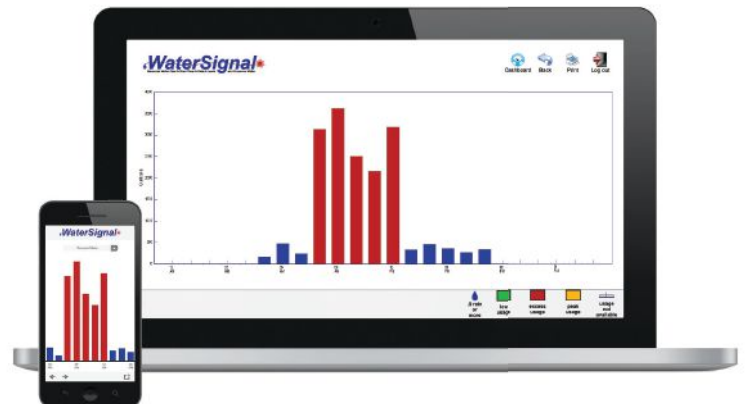
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ABOUT IFMA IFMA is the world's largest and most widely recognized international association for facility management professionals, supporting 23,000 members in more than 100 countries. This diverse membership participates in focused component groups equipped to address their unique situations by region (142 chapters), industry (16 councils) and areas of interest (six communities). Together they manage more than 78 billion square feet of property and annually purchase more than US\$526 billion in products and services. Formed in 1980, IFMA certifies professionals in facility management, conducts research, provides educational programs and produces World Workplace, the world's largest series of facility management conferences and expositions. For more information, visit www.ifma.org.

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Editor's Note Bobby Vasquez

The new year traditionally brings new hope and a sense of renewal. We reflect on the previous year as if it's a distant memory, and are rejuvenated with optimism about what's to come.

While last year was anything but traditional, it's okay to walk into 2021 with those same hopes. Sometimes, hope is all we have; and when those hopes become realities, it's time to celebrate. Where there is celebration, there is happiness. For 2021, there is a hope that vaccines will be deployed and successful in guarding mankind from this horrible pandemic that has taken so much from us. There's hope that some form of life as we knew it will return.

In many ways, the FM industry is at the center of that hope. For almost a year, FM has lit the path for safe reentry. The world is watching this industry and what actions it takes to safely and effectively reenter the places where people live, work and play. FM is setting the standards for almost every protocol within a facility: access, vertical transportation, deskung, air quality and ventilation, disinfecting and cleaning, space usage and reservation, ingress and egress, distancing and more.

The job is not done, but the industry can celebrate that the world realizes the importance of quality FM.

There is also much to celebrate within the industry. Thumbing through the pages of your FMJ, happiness abounds. For example, the professionals who set a goal of earning IFMA credentials and followed through (pages 30-31). Not only have these individuals worked hard toward an accomplishment, but they have also added value to their careers and organizations.

In December, IFMA held its World Workplace event in a virtual platform, the first time it has done so. Not only did FMs log on to share ideas to navigate the next phase of the global pandemic, they celebrated the industry and its people. IFMA's Awards of Excellence showcased the many professionals who have made tremendous strides to advance the industry and the association.

This issue of the FMJ focuses on The Guts of Your Facility. From building a better inside to allocating space for distancing protocols, FM authors are offering best practices to keep occupants and visitors safe during reentry and beyond. They also discuss how private and social areas will change in the workspace and how the abundance of caution is reshaping virtually everything within the building envelope.

We're in a new year. Celebrate the wins and hope for the best. It's okay to hope for the best because it just might happen.

Cheers!

Interested in writing for FMJ?

Email bobby.vasquez@ifma.org article ideas to be considered for future issues of FMJ.

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From the Chair

PETER
ANKERSTJERNE

MBA, COP, FRICS,
IFMA FELLOW

*Chair,
Board of Directors*

“Only a crisis – actual or perceived – produces real change.” Nobel Prize winner Milton Friedman’s words ring especially true for facility managers, because we see this saying borne out daily in buildings, whether we’re actively solving an HVAC issue or strengthening preventive maintenance programs. Now, however, the larger-scale COVID-19 crisis is sparking broader workplace transformation. It’s time for us to pivot toward a new purpose.

Most facility managers are already laser-focused on the guts of the building – it’s in our DNA to scrutinize the many moving parts that make up an efficient, high-functioning facility. But looking ahead to a post-pandemic world, FM leaders see a need to jump into an even greater role that intentionally drives employee engagement and experience on-site, creating spaces that are not just cost effective, but also collaborative, social and safe.

According to The Expert Assessment: The Workplace Post-COVID-19, IFMA’s recently released, first-of-its-kind survey, most respondents expect a significant increase in the number of remote workers – a long-term shift that will have profound ripple effects on the value of the in-person workplace. A full 81% of survey respondents expect that at least one-in-four employees will work remotely more than half the time after the pandemic.

Yet a flourishing, masterfully managed workplace environment will be more important than ever, serving as a community center and a place to enhance employee well-being, belonging and pride. This human experience element is a crucial piece of the puzzle, considering the IFMA survey found that while two-thirds of remote workers are successful working remotely, they’re also experiencing stress and mental health issues made worse by social and professional isolation.

Overall, the trend toward a more dispersed workforce will have several implications for facility managers, who must consider all-new ways of supporting work across different settings, delivering on well-being challenges, and helping ensure a healthy, innovative and productive workforce.

The journey to facility transformation

Every FM’s road map through and beyond the pandemic will be different, but many of us have already encountered shared obstacles. First, there was the collective shock and denial forged by the early days of the

pandemic. Amidst the confusion, we took the mantle by advancing adaptation and mitigation efforts to help make our workplaces safe to reopen. For many, this phase is ongoing and changing daily

But there’s a parallel path we must take too, one that helps us move our organizations toward a more resilient and adaptive future. We are approaching an inflection point where we can either settle into the adaptive processes we’re enacting now, and try to turn the tide back to “business as usual” – or we can seize this moment to build competitive advantage, and ultimately ensure “the next normal” in facility management doesn’t just perform well by operational standards – it surpasses human-experience standards, too.

Fortunately, facility managers have a wealth of tools and experience to draw on as we collectively reimagine the future of work. We can:

- » Leverage existing and emerging technology and data-driven operations to bridge the gap between in-person and remote work with seamless and fully integrated digital ecosystems.
- » Use physical space to support the human experience and well-being at the office, incorporating the five senses as we deliver spaces to work, connect, learn, and socialize.
- » Engage in long-term re-entry planning to help create healthy, sustainable space beyond the pandemic.
- » Be bold, set high standards, and embrace new mindsets that help reinvent the future of work.

To help determine your organization’s best use of these tools and to develop new ones in the proverbial toolbox, it’s important to explore some foundational questions. For example, how can we support community and connectivity in person and virtually? How do we respect and prioritize a whole-person approach to health and well-being? How do we create meaningful, safe and engaging experiences? How can our future facility strategy better enable agility, flexibility, and resiliency?

Change may be inevitable in the face of a global pandemic, but how we move through it is up to us. Now is a chance for all of us at IFMA to embrace new mindsets and set new standards, ultimately helping reimagine the future workplace, for the collective better.



From the **President**

DON GILPIN

*President & COO
IFMA*

In times of hardship, we have to look a little harder for the bright spots, embrace them a little stronger when we find them and carry them with us a little longer as a source of inspiration.

Last month's World Workplace Virtual Experience was a shining light for both IFMA and the FM profession. Reuniting as a community of colleagues and friends to listen, discuss, collaborate and celebrate helped us refocus, priming us for forthcoming expectations. It was an opportunity to cast aside doubt about the measures we took throughout the year and how best to proceed moving forward.

With every story and case study we heard, every chat comment we read, every discussion we engaged in regarding our 2020 experiences, we increasingly appreciated FM's value as an essential industry. We recognized our own worth as skilled professionals. We did our job last year; and even though there's more work to do, other challenges to tackle, further changes to adapt to, I sense we're reinvigorated and ready to face, even lead, whatever lies ahead for our facilities, organizations and people.


FM will continue to be pushed to the limit as the world looks to our industry to lead the way back inside buildings. Supporting remote work, ensuring safe spaces through social distancing and touchless offices, maintaining systems in unoccupied or limited-occupancy facilities, overseeing cleaning practices and establishing safety protocols will continue to be the norm for the foreseeable future. Even though COVID-19 vaccines are being deployed worldwide, there are no immediate guarantees of an uncompromised facility. We must remain vigilant – confident in our own expertise, while also exchanging knowledge within and outside the industry.

In his opening keynote address, World Workplace speaker Shawn Kanungo said, "Innovation is about collisions, energy and momentum – people and ideas coming together." This resonated strongly with me, as I have always trusted in the power of partnerships and the necessity of teamwork.

The mix of technology, heightened health and safety protocols, employee experience, climate change and business resilience is creating a more complex built environment – one in which no single industry can manage alone. Kanungo advised that "the idea of innovation is a holistic approach." To truly reinvent the workplace, we need to work in partnership with every individual, team, industry, association and company that has a hand in workplace strategy.

Set for April 21-22 as a virtual event, IFMA's Facility Fusion Conference and Expo will be an exciting and vital fusion of ideas and industries. Leaders from FM, HR, IT, construction, anthropology, architecture and interior design will come together to discuss the future of the workplace, workforce and work itself. FM is at the center of the post-COVID-19 conversation; but our tactics and strategies are influenced by all industries involved in supporting the built environment and the people who use it. I invite you to join us for what promises to be another important step in building the future of FM.

One thing last year taught me is that we cannot predict what's around the corner; but we can muster the resolve to confront it. We are adaptable, we are inventive, we are always on the lookout for that bright spot. Stay positive, stay confident, stay alert and stay safe. We're looking forward to bringing you even more leading-edge resources in 2021.



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2020 CLASS OF IFMA FELLOWS HONORED AS PART OF IFMA'S WORLD WORKPLACE® VIRTUAL EXPERIENCE

"Ensuring that our flagship conference included essential recognition of stand-out achievers required creativity, initiative and the cooperation of our distinguished honorees and their nominators."

- Chair of IFMA's Global Board of Directors Peter Ankerstjerne

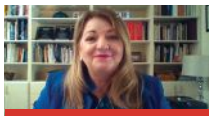
Bestowed with the association's highest honor, **Diane Coles Levine, Geoff Williams, Kenneth Foo Yew Hoong** and **Valerian Moraes** have been inducted as the 28th Class of IFMA Fellows.

The induction of each year's Fellows is traditionally presented live at IFMA's World Workplace Conference and Expo; however, with World Workplace held virtually this year, honorees were celebrated in a pre-recorded video, featuring introductions by each Fellow's nominator, followed by Fellows' remarks.

Established in 1992 to recognize IFMA members who have distinguished themselves by achievement in and around IFMA and the field of facility management, IFMA's Fellows Program honors respected leaders whose cumulative impact on the association and the industry is immeasurable. Nominations for IFMA Fellows are submitted annually to a Jury of Fellows, which consists of three Fellows, IFMA's board chair and president/COO. The 2020 inductees include:

DIANE COLES LEVINE, MCR, IFMA FELLOW

Nominated by Michael Schley, IFMA Fellow



An active champion for increased FM education and career opportunities, Levine has worked to expand FM educational infrastructure in local communities and make FM a career of choice. As IFMA Foundation chair, she and her team created the Global Workforce Initiative (GWI) program; and as IFMA Foundation Executive Director, she directs and grows GWI and Accredited Degree programs, FM scholarships and student competitions. A trailblazer in workplace strategy, her groundbreaking project in agile workspace was recognized with IFMA's 2009 George Graves FM Achievement award and was the impetus for the award-winning "Work on the Move" book series, IFMA's Workplace Evolutionaries Community, the foundation's Workplace Strategy Summits, and a workplace strategy course at the Vienna University of Technology Master's Program.

GEOFF WILLIAMS, CFM, FMP, SFP, IFMA FELLOW

Nominated by Stephen Ballesty, FRICS, FAIQS, CFM, CQS, IFMA Fellow



A mentor for both young and experienced professionals, an IFMA leader, a developer of learning platforms and textbooks, an educator on a global stage and a well-known industry speaker, Williams has served as president of IFMA's Toronto Chapter and Information Technology Council; as a committee member and chair of IFMA's Young Professionals Task Force and Knowledge Strategy Committee, leading the team that developed a vision for IFMA's Knowledge Library; on IFMA's board of directors; and as Regional Board Liaison for Canada, speaking on behalf of Canadian membership. His contributions as a writer and editor include the 425-page "Facility Manager's Guide to Information Technology," and the 635-page second edition of the Guide, for which he received IFMA's 2019 Distinguished Author Award of Excellence.

KENNETH FOO YEW HOONG, BENG(HONS), GDIPM, IFMA FELLOW

Nominated by Jeffrey Budimulia, CFM, IFMA Fellow



Dedicated to enhancing recognition of FM in Asia, Kenneth Foo has worked with business leaders and local authorities to help them understand the value of FM in an ever-changing business climate. His efforts as founding member and president of the IFMA Singapore chapter led to the acceptance of IFMA courses into Singapore's universities and polytechnics. As a result of his advocacy as president of IFMA's Hong Kong Chapter, IFMA was recognized by the Hong Kong government as a professional body and IFMA's Certified Facility Manager® credential was recognized as one of the prerequisites for FMs to practice in Hong Kong. He was awarded IFMA's 2019 Asia-Pacific Certificate of Excellence in Environmental Stewardship and IFMA's 2018 Asia-Pacific Award for Best Occupational Health & Safety.

VALERIAN MORAES, CFM, MBA, ASSOC. RICS, IFMA FELLOW

Nominated by Alex Lam, MRAIC, IFMA Fellow



Moraes' 40 years of diverse facilities experience provided him with the background to introduce, establish and advance the FM profession in New Zealand as one of the four founding fathers and past chair of the FM association in New Zealand (FMANZ). He has contributed significantly to IFMA's Asia-Pacific region, serving as a board member of IFMA's Asia-Pacific Advisory Board and as Global Liaison for the Asia-Pacific Region for IFMA's FM Consultants Council. Moraes was awarded the 2001 Energy Manager Award from New Zealand's Minister of Energy. He has been a mentor for FMs at Air New Zealand and Westfield and Apex Air and carries out in-house training and mentoring programs for his team of facility managers in Auckland.

"IFMA's workforce has been the driving force behind 40 years of progress." – IFMA Chair Peter Ankerstjerne

IFMA's professional staff presented with 2020 board chair citation

IFMA's chair citation is awarded annually to one or more individuals in recognition of outstanding contributions, often times behind-the-scenes, to the association and the FM profession. Included in the 2020 Class of IFMA Fellows video shown during IFMA's World Workplace Virtual Experience, IFMA Chair Peter Ankerstjerne presented this year's citation to IFMA's professional staff. President and COO Don Gilpin accepted the citation on behalf of all 60 staff members.

Ankerstjerne praised IFMA employees for their adaptability, resilience, initiative and professionalism amid the unprecedented challenges presented by the COVID-19 pandemic. Sustaining the association with their resourcefulness and talents, staff members acclimated seamlessly to full-time remote work, continuing to develop and deliver exceptional resources for the FM industry; and accepted an interim salary cut, which helped IFMA remain stable going into the next fiscal year.



"In this disconcerting year, many of us have been pushed to the limit; yet, we carried on. One such group of exceptional women and men reached far beyond what could have reasonably been expected, bringing both the industry and the association through multiple crises, while also strengthening us for years to come," said Ankerstjerne.



IFMA publishes annual report for fiscal year 2019–2020

"From a financial and organizational standpoint, we survived the initial impacts of COVID-19 as a united front. We asked for the support of our community in order to be here for our community, and you came through."

– IFMA President and COO Don Gilpin

In December 2020, IFMA released its annual report for fiscal year 2020 (July 1, 2019-June 30, 2020). The digital report is available for download at ifma.org/about/about-ifma/year-in-review-annual-reports.

Following one of the most profitable years in IFMA's history, the association entered 2020 with an eye toward building on the momentum of its achievements. As risks presented by the COVID-19 pandemic heightened, IFMA quickly positioned itself to support the facility management community through an ever-changing environment and remained stable going into the 2020-21 fiscal year.

In his opening message in the report, John Carrillo, CFM, IFMA Fellow, 2019-20 chair of IFMA's global board of directors wrote, "A strong strategic plan combined with deliberate cost-cutting measures and the overwhelming support of our members and volunteer leaders have kept the association secure."

Between January and July 2020, IFMA focused its efforts on providing valuable online resources, creating beneficial ways to keep members informed and connected, including:

- » A comprehensive online COVID-19 Resource Center, featuring curated articles, checklists, guidelines, tools and links to the latest discussions on Engage;
- » A series of weekly FM + COVID-19 webinars and hosted two virtual events;
- » Live virtual courses were added to the self-study options for the Facility Management Professional™ (FMP®) program;

- » IFMA's COVID-19 Rapid Response Team published a Strategic Framework with a project plan template for facility re-entry;
- » IFMA's BETA community sponsored a series of prospective technology solutions for a socially distanced world;
- » Discounted pricing on IFMA credential programs and Knowledge Library subscriptions and an extended grace period for membership renewals;
- » Publication of a Pandemic Manual and a climate change report, both free of charge.

Additional highlights contained in the FY20 report:

- » Senior staff member Don Gilpin was promoted to President and COO in March 2020;
- » In June, IFMA joined in peaceful protest against reprehensible acts of racial discrimination and injustice in the U.S.;
- » IFMA's CFM® program joined IFMA's FMP® and SFP® credential programs in achieving ANSI accreditation;
- » IFMA welcomed 6,706 new members, a 4 percent increase over FY19.

Wrote Carrillo, "What lies ahead in a post-pandemic world will change the FM conversation even more so. IFMA is positioned to guide and support the FM industry through this, as well as the next phase of change."

Industry News

Submit your news to be considered for inclusion in the Industry News section of the next issue of FMJ. Send us an email at communications@ifma.org

IFMA EUROPE REPORT

Smart Readiness Indicator: FM in the spotlight



In a recent report on the Smart Readiness Indicator (SRI), the European Commission finds that facility managers are “SRI’s ideal audience,” as they operate a building’s smart systems and influence investment decisions.

According to the Publications Office of the European Union, one of the focus areas of the Energy Performance of Buildings Directive is to “better tap this potential of smart technologies in the building sector.” As part of this focus, the SRI was developed to measure the “smart,” or digital readiness of a building in nine technical domains. The more digital a

building becomes, the higher the SRI rating.

IFMA has been closely involved in SRI legislation. Attending last year’s EU Commission workshops, IFMA also organized bilateral meetings with Commission officials to share its thoughts on how the SRI should be used and what it should achieve. With IFMA’s input, the Commission understands that FM is SRI’s target audience since FM operates and manages all technical domains that enter into consideration.

The SRI is a voluntary scheme for now; however, starting in January 2021,

governments will be able to apply the SRI in national legislation. In the majority of cases, each nation’s Ministry for Energy can apply the tool to measure digital readiness.

The “Final Report on the Technical Support to the Development of a Smart Readiness Indicator for Buildings” presents information on the SRI’s calculation method, its main components and the suggested implementation of the tool. Download the report at op.europa.eu/en/publication-detail/-/publication/bed75757-fbb4-11ea-b44f-01aa75ed71a1/language-en/format-PDF/source-178203467

Renovation Wave Strategy: EU Commission wants all buildings energy efficient and smarter

In October 2020, the European Commission released its much-awaited Renovation Wave Strategy, which outlines the regulatory and funding actions needed to accelerate the renovation rate of the EU’s existing buildings. The goal of the strategy is that buildings’ greenhouse gas emissions are reduced 60 percent by 2030 compared to 2015 levels.

The Commission aspires to:

- » **Expand minimum energy performance requirements to existing buildings.**

This requirement should incentivize renovations. IFMA welcomes this requirement, provided FM is formally consulted in the renovation’s design phase.

- » **Establish by 2023 a roadmap for reducing whole life cycle carbon emissions in buildings by 2050.**

As most emissions savings are achieved during the in-use phase of the building, IFMA supports this requirement.

- » **Promote comprehensive and integrated renovation interventions for smart buildings.**

IFMA supports the integration of building automation technologies as a pathway toward smart buildings yet underlines the importance of optimized operational management of these technologies by a skilled workforce.

- » **Support Member States in updating their national roadmaps for the training of the built environment/construction workforce through the Build Up Skills Initiative.**

IFMA applauds this initiative, as it calls for more (financial) support for training, especially for building professionals.

IFMA is preparing a response to the Commission initiative. It is important for IFMA chapters to understand that this strategy is a to-do list of legislative announcements. After adoption by Parliament and Council, respective Member States will have to put the new legislation into practice, a process can take up to 2-3 years. Access the Renovation Wave Strategy Communication at ec.europa.eu/energy/sites/ener/files/eu_renovation_wave_strategy.pdf.



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IFMA is a true asset for FMs worldwide. I find value in the networking and plethora of resources that help me find solutions to the FM challenges I face. It's comforting to know that the FM professionals I meet through IFMA are international peers and help me find solutions, improve processes, decrease operational expenses, improve health and safety and overall maximize your facilities' potentials. I find IFMA to be a "must" for any FM out there.

Carlos Rodríguez

Santo Domingo, Dominican Republic
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ISO 41000 FM Standards Series: We've Only Just Begun

BY LAVERNE DECKERT

In November 2020, the ISO¹ technical committee for Facility Management, ISO/TC 267, held its 13th plenary meeting via a virtual platform. Regardless of the superstition surrounding 13, it was not unlucky, but a time of reflection and celebration.

At the end of 2020, TC 267's first chair, Stan Mitchell of Key FM, stepped down from the role after nine years. The technical committee unanimously approved a resolution to acknowledge and thank him for his vision, leadership and commitment to the FM profession. The committee also celebrated five published documents (four standards and a technical report) and welcomed new members.

The journey of a thousand miles



begins with a single step...

~Lao Tzu

THE EARLY DAYS

In his closing remarks at November's meeting, Mitchell celebrated 10 years of hard work by dedicated, like-minded professionals with a shared vision of elevating the professional discipline through standardization.

He explained that the journey began with four objectives:

- Build on the “Partners in FM Excellence” collaboration between the British Institute of Facilities Management (now Institute of Workplace and Facilities Management), IFMA and FMA Australia;
- Build on the FM Standards, EN 15221 (Parts 1–7), published by CEN TC 348² in Europe, and raise the bar to a global level;
- Raise the awareness, understanding and credibility of FM as a strategic professional discipline; and
- Create an international platform to develop FM benchmark standards that demonstrate the professionalism and credibility of the industry.

The ISO technical committee for FM was established in 2012. The beginning was not without its challenges, including the need to convince the ISO technical management board that facility management is fundamentally different from asset management, a discipline that had an established technical committee, TC 251. Because of the difference, FM deserved its own technical committee and unique standards. ISO/TC 267 began with 29 member countries (20 participating members and nine observing members).

The first standards were published in 2017. With its foundation in the CEN standards, EN 15221-1 and EN 15221-2, the first FM global standards were published (ISO 41011, ISO 41012, ISO/TR 41013) and, with

them, the first consensus-based definition of FM. At this point, TC 267 had grown to 41 member countries (26 participating, 15 observing).

With the publication of ISO 41001 in 2018, the industry received the first specific FM management system to address its own opportunities and challenges. This standard provides FMs a systematic framework for designing, managing and improving FM programs to better support the demand organizations they serve.

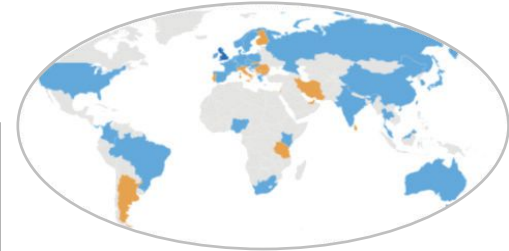
*Demand organization:
entity which has a
need and the authority
to incur costs to have
requirements met.*

[source: ISO 41011 Facility Management – Vocabulary]

Rising to the challenges presented by COVID-19, TC 267/WG4³ completed ISO 41014 ahead of schedule. This document was published in September 2020.

Considering this timeline, it seems the standards development process is too slow and bureaucratic. The five-year gap between establishing TC 267 and the first publications (2012–2017) might support that belief. Rome was not built in a day, and FM organizations or the standards that support them will not be either.

The first steps in this journey were necessary and deliberate. While the consensus-based process might appear slow and even frustrating to some, the outcome is a document that supports and promotes a shared understanding of FM practices and processes between functional areas within organizations, between practitioners and suppliers, and even between countries and cultures.



■ 32 P members ■ 16 O members

TODAY

Because of the vision and dedication of FM professionals like Stan Mitchell and the other TC members, the past nine years laid the foundation for work to continue. TC 267 is comprised of 48 member countries, has overcome its growing pains and work progresses at an accelerated pace.

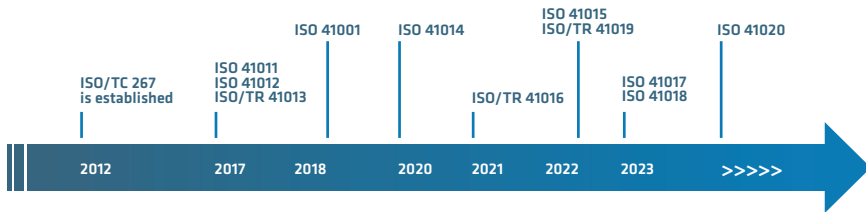
The FM management system standard, ISO 41001, is not just a strategic tool for FM professionals. The strategy behind the development of new projects is based on this framework as well.

What that means for the industry is the development of a body of work that:

- Demonstrates FM's value and the opportunities for outcomes that positively impact “the built environment with the purpose of improving the quality of life of people and the productivity of the core business.” [ISO 41011]
- Guides the development of highly effective FM functions that are aligned to the strategic objectives of the demand organization and demonstrates leadership in influencing culture.
- Supports a robust planning framework and the implementation of FM functions and services.
- Supports consistent and comprehensive operations of the FM organization.
- Provides a framework for measuring, monitoring and improving the FM function.

THE JOURNEY CONTINUES

While TC 267's membership continues growing, the reality is that the pipeline of work is almost outpacing the capacity, but work is certainly not slowing down. As momentum builds, the road ahead is becoming clearer, and the steps in the journey are rapidly unfolding.



ISO 41011	Facility management	Vocabulary
ISO 41012	Facility management	Guidance on strategic sourcing and the development of agreements
ISO/TR 41013	Facility management	Scope, key concepts and benefits
ISO 41001	Facility management	Management system – Requirements with guidance for use
ISO 41014	Facility management	Development of a facility management strategy
ISO 41015	Facility management	Influencing organizational behaviors for improved facility outcomes and user experience
ISO/TR 41016	Technology in facility management	Scope, key concepts and benefits
ISO 41017	Facility management	Guidance on emergency management of epidemic prevention in the workplace
ISO 41018	Facility management	Development of a facility management policy
ISO/TR 41019	Facility management	The role of FM in sustainability and resilience
ISO 41020	Facility management	Performance measurement and management for improved facility outcomes

WHAT'S IN IT FOR YOU

I was recently asked about the value of becoming involved in developing standards. My first impulse was to reiterate all of the typical reasons — elevate the profession, develop a common language and global understanding of practices and processes, streamline processes, optimize resource use, foster confidence in service delivery and improve transparency. All of these are true. However, my answer has three parts.

1. Someone is going to standardize FM. It can be done for you, or you can do it.

Someone does not necessarily mean TC 267. Many FM-related organizations are developing standards that impact the profession. Consider that, within the family of ISO management system standards alone, there are at least seven requirement standards related to FM functions. There is a technical committee behind each of these standards responsible for standardization in their domain.

- ISO 9001, Quality
- ISO 14001, Environmental management
- ISO 22301, Business continuity
- ISO 45001, Health and Safety
- ISO 46001, Water efficiency
- ISO 50001, Energy management
- ISO 55001, Asset management



Without a close collaboration with the FM industry during the development process (preferably a seat at the table), FM concerns, needs and requirements to effectively manage the built environment will be overlooked.

2. Standards can jumpstart Knowledge Management (KM) Strategy. In the May/June 2019 issue of IFMA's FMJ, I wrote about the risk of not having a KM strategy for your organization and the FM industry. Sixty-six percent of projects suffer from delays of one week in length (and 12 percent of a month or more) because of unshared knowledge⁴. Adopting FM standards for processes and FM functions, establishes common ground with staff, the organization and external stakeholders.

3. This will be my 10th year working with ISO/TC 267. In no other professional experience have I found the saying, “the whole is greater than the sum of its parts,” to be more true. Throughout this journey, I have formed a network of incredible, intelligent, genuine colleagues spanning the globe. They are ready and willing to help, to share their knowledge, their time and their talent. They celebrate professional and personal achievements and to support me through challenges. But most importantly, they are the true embodiment of FM's definition: “an organizational function which integrates people, place and process within the built environment with the purpose of improving the quality of life of people and the productivity of the core business”¹. [ISO 41011] FMJ

1. International Organization for Standardization
2. The European Committee for Standardization's (CEN) technical committee for Facilities Management
3. Working Group for TC 267, Strategy and Planning
4. Milton, Nick. (2018, July 23). Cost of Lost Knowledge Could Be \$47 Million per year. Knoco Stories. Retrieved from: nickmilton.com/2018/07/cost-of-lost-knowledge-could-be-47.html#ixzz5i5SHHq3S



Laverne Deckert is an independent consultant, working with organizations to creatively respond to their challenges. She has led research, educational programs, standards and community development initiatives in the corporate real estate and FM industries. Her primary goal is to bring value to every interaction. Deckert serves as administrator for the U.S. Technical Advisory Group on behalf of the American National Standards Institute (ANSI) for ISO/TC 267 and as the convenor for ISO/TC 267/AG 1 – Roadmap Advisory Group.



IFMA’s annual flagship event brings FMs worldwide together virtually

IFMA’s World Workplace 2020 Virtual Experience was the culmination of a year-long effort to help FMs confront and conquer unanticipated obstacles, with the support and expertise of their association, colleagues and built environment partners.

Held live Dec. 9-10, 2020, the Virtual Experience included a number of firsts:

- It was the first World Workplace held completely online.
- IFMA’s first-ever virtual House of Delegates required adjusting the association bylaws to accommodate the meeting.
- IFMA presented its first Forty Under 40 finalists.
- It was the first time that IFMA Fellows and Awards of Excellence recipients had the opportunity to make acceptance speeches.
- It was the first time IFMA’s entire professional staff was awarded with the annual chair citation.

“With the enormous support of our sponsors, exhibitors and speakers, and with the enthusiastic encouragement of our professional community, we’re here, together, from every corner of the world, for our annual conference in IFMA’s anniversary year.”

– IFMA Chair Peter Ankerstjerne

World Workplace commenced on Wednesday, Dec. 9 with technical difficulties; but attendees like 2004-05 IFMA Chair Matt Dawson empathized, commenting in one of the session chats, “Tech gremlins happen to all of us every day.” Once the live stream got rolling, disruption strategist Shawn Kanungo opened his keynote address by acknowledging, “We got off to a late start, but that’s what disruption is all about!” Kanungo’s high-energy presentation on the future of work included real-time polls and questions submitted by attendees.

“The opportunity in front of us is to reimagine this new world. The FM professional is at the center of work — we need to reinvent organizations.”

– Shawn Kanungo

DAY ONE featured dedicated virtual expo hours, nine breakout sessions and five members-only roundtable discussions facilitated by IFMA Corporate Sustaining Partners. Merri Anne Pfeffer, Facility and Operations Manager, Troutman Sanders LLP commented, “Just completed my first breakout on Women in FM. It was one of the best I’ve attended through World Workplace.”

IFMA’s 40-year Anniversary Celebration opened with inspiring stories from IFMA luminaries Mary Gauer, Sheila Sheridan, Meredith Thatcher, Dave Wilson, Tyrel Melville and Stewart Livsie. Attendees were then transported to IFMA’s Houston Service Center of Excellence for cocktail demonstrations, trivia games and in-home-or-office scavenger hunts. Several players won complimentary registration to Facility Fusion 2021. The event concluded with an anniversary toast by IFMA President and COO Don Gilpin.

DAY TWO opened with a mind-blowing keynote address by Céline and Fabien Cousteau on the interconnectedness of our planet and the necessity of better managing our footprint. “Protecting our ecosystems is about protecting us,” said Céline Cousteau. The stories, statistics and statements shared by these amazing explorers should make all of us endeavor to protect our planet.

“Our planet is the only reason we exist.”

– Fabien Cousteau

Attendees participated in 14 educational sessions, five more roundtables and the virtual expo hall. Peter Ankerstjerne’s “Future of FM” presentation was featured in the final session timeslot and generated some thought-provoking discussions in the attendee chat box: “Do we really want to take responsibility for home work environments? Sounds like a level of liability that would be extremely hard to manage.” “We can’t ignore the home office. A card table and folding chair is not an appropriate long-term solution.”

The event concluded with IFMA component happy hours. Registered attendees had until Dec. 31, 2020 to view the entire program on the virtual platform.

“I always enjoy the live events; but you did a great job bringing us together virtually. We all appreciate IFMA’s continued leadership and support.”

– Robert Rush, Senior Asset Manager, Dakota REIT Management LLC

IFMA's 2020 Awards of Excellence

"Bringing World Workplace to a virtual platform inspired us to find inventive ways to present time-honored portions of our annual program. Adding videos of our distinguished award winners allowed us to spotlight the incredible achievements of our members and partners, providing a global stage for applauding the exceptional contributions of all 2020 honorees."

– IFMA Chair Peter Ankerstjerne

IFMA's awards program was established in 1983 to recognize significant contributions to the association and the facility management field. This year's winning submissions include the achievements of individual IFMA members, authors, educators, IFMA chapters, corporate partners and FM teams in 14 award categories.

Recipients were notified of their winning submissions in September 2020 and were asked to record video acceptance speeches. IFMA's annual awards are traditionally presented live at IFMA's World Workplace Conference and Expo; but with World Workplace held as a virtual event, all 2020 Awards of Excellence winners were celebrated in a compilation video.

"On behalf of IFMA's Awards of Excellence team, I congratulate all of our nominees and winners. We were thrilled to offer this year's award recipients the opportunity to express their excitement and appreciation on video," said IFMA Membership Specialist Andremarie Jean.

IFMA's 2020 Awards of Excellence recipients include:

Distinguished Author, Book



Dr. Steven B. Goldman for "Pandemic Manual: Planning and Responding to a Global Health Crisis for Facility Management Professionals." Published in May 2020 by the IFMA Foundation, the extensive, easy-to-use reference for COVID-19 and future pandemic preparedness and response was downloaded more than 4,000 times within the first four weeks of its release.

Distinguished Author, Research Paper



Peter S. Kimmel, IFMA Fellow for "A Facility Manager's Guide to Reopening and Occupying Buildings Safely." Published on FMLink in May 2020 and viewed by people from 161 countries in its first week of release, the e-book presents an overall strategy for reoccupying buildings with safety as a paramount objective.

Distinguished Author, Social Media

Sonya Verna, MCR of IFMA's New York City Chapter for founding the FM Spotlight series of online articles that recognize and celebrate real estate and FM professionals in the city.

Distinguished Educator



Audrey L. Schultz, Ph.D. for her ongoing work at Pratt University, developing curriculum for its Master of Science in FM program, supervising student research theses, conducting her own research and serving on the Academic Senate as the Department Senator for Construction Management, Facilities Management and Real Estate Practice Program.

Sheila Sheridan Award for Sustainable Facility Operations and Management



Green Team, United States Army, Hale Koa Hotel for proving that a sustainability program

could integrate into operations with existing resources and provide value to the overall business mission, resulting in enhanced employee/guest comfort, improved productivity, reduced expenses and elevated community relations and reputation.

George Graves Award for Facility Management Achievement

Eurest Services Communications Team, Compass Group for their innovative employee engagement app, which has resulted in multiple business-significant results, positively impacting the entire organization and helping the team gather qualitative and quantitative feedback in real time, driving immediate action.

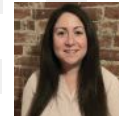
Chapter Award of Excellence in Web Communications

Charlotte Chapter of IFMA for successfully utilizing web-based technologies to add membership value, including the introduction of a new online platform and a mobile application tied directly to the website.

Chapter Award of Excellence in Professional Development

IFMA Toronto & South Central Ontario Chapter for its robust educational programming, active engagement with local colleges and universities and its personal approach to member support.

Emerging Professional Award



Elizabeth Vasek for playing a pivotal role in growing IFMA's New York City Chapter's ranks of emerging leaders, investing in the next generation of FMs with participation in the chapter's mentorship program and developing impactful programming as co-chair of its Sustainability Committee.

Associate Member Award

Anthony Koscielecki for graciously serving in many capacities throughout IFMA's Orlando Chapter, contributing time, talent and leadership for the overall success of the chapter.

Facility Management Innovation Award



Sodexo Corporate Services for developing the COVID-19 Business Management & Operations Digital App in response to the immediate need for data in nearly real-time across all global facility sites to make timely decisions affecting the health, well-being and future operations of multiple businesses and employees.

Distinguished Member Award



Darin Rose, CFM, SFP, GGP, CRFP for serving in multiple leadership roles association-wide, including IFMA's Americas Advisory Board, leading IFMA's Denver Chapter's Job and Mentorship Resource Platform to prepare members for reentry into the job market and for connecting with students and industry leaders to effect change.

Student Chapter of the Year Award

Brigham Young University Student Chapter of IFMA for leveraging BYU's vast alumni network to bring industry experts to chapter meetings and connect students with valuable internship opportunities, helping to prepare FM students to enter the industry confident and capable.

Chapter of the Year Award

Denver Chapter of IFMA for fulfilling its vision to "serve as THE resource and representative for FM in the greater Denver Metropolitan area and beyond," creating an engaging community experience that resulted in the highest membership numbers in chapter history and record numbers of member involvement.

IFMA Foundation 2020 Awards

Each year, the IFMA Foundation recognizes individuals, teams, corporate partners and community programs that answer the call to make a difference. "We all have the power to light the way for future FM leaders," said Joe Archie, IFMA Foundation Chair. "These individuals and groups are passionate about sustaining the FM profession and making FM a career of choice. They are shining examples of innovation and collaboration in support of the aims of the Foundation."

Global Workforce Initiative Industry Partner Award

ABM Industries, Accepted by Tony Piucci, ABM Senior Vice President

More organizations are coming to the realization that there is a serious labor shortage on the horizon within the facility management industry. Without decisive action, this shortage will have serious ramifications for the future of their organizations and the economy. As a leader in providing FM services, ABM is making a critical investment in its own future, the future of productive workplaces and the future of those who run them. ABM has been instrumental in their unwavering support of the Global Workforce Initiative (GWI), providing internships, funding and marketing of IFMA Foundation programs to cultivate the next generation of FMs. ABM is the major sponsor of the award-winning Pandemic Manual.

Global Workforce Initiative Industry Partner Team Collaboration Award

Lynn Baez, CFM, FMP, SFP, Google; Belinda Leung, Cushman & Wakefield; Elise Goetzl, Cushman & Wakefield; Kristyn Kerr, Cushman & Wakefield; Jonathan Bissell, San Mateo County Community College District Corporate Training Solutions

The IFMA Foundation's GWI is providing jobs for new entrants and incumbent workers. Working with Google, Cushman and Wakefield and the IFMA Foundation, the San Mateo County Community College District Corporate Training Solutions (CCCE) created a customized education program that resulted in staff promotions and increased productivity in the facility department. A win-win for all involved, the Facility Management Contract Education program at Google and Cushman & Wakefield is an example of how leading companies can support FM skills development internally to provide career pathways for employees.

Facility Management Talent Development Pipeline Program Industry Partner Award

Liz Mulei, Denver Economic Development and Opportunity; Marcus Johnson, Denver Economic Development and Opportunity; Carolyn McGary, CFM, IFMA Denver Chapter; Dean Stanberry, CFM, LEED AP/FM, IFMA Denver Chapter, IFMA Board of Directors

Focused on raising incomes and workforce preparedness in Denver, Colorado, USA, the Facility Management Talent Development Pipeline (TDP) was recently introduced by the IFMA Foundation, the Denver Economic Development and Opportunity (DEDO) and IFMA's Denver Chapter to students interested in an exciting career opportunity. With more than 1,300 FM openings in the Denver Metropolitan area, these organizations collaborated on a solution to fill the looming FM talent gap. Students enrolled in this groundbreaking program represent 100 percent minority, 50 percent women and 50 percent military veterans. Students earn a globally recognized certificate of completion in IFMA's Essentials of Facility Management and participate in an IgniteFM! Student Challenge.

Chairman's Award

Regina Ford Cahill

The Chairman's Award is presented to an individual who embodies the mission and values of the Foundation and provides exemplary volunteer services improving programs through innovation. Regina Ford Cahill steered the transition of the FM Accreditation program to the Accreditation Board of Engineering and Technology (ABET). Leading the Facility Management Accreditation Commission, she revised standards and worked with ABET on a smooth transition. Her innovative work in developing a new accreditation program for academic certificates in FM known as the Registered Degree Program (RDP) will ensure standards for academic education meet criteria for properly trained facility managers entering the workforce.

IgniteFM! Student Challenge Team Award

Cailyn Poschner, Conestoga College; DeMarcus Means, Florida A&M University; Emma Leary, Ferris State University; Paul Schmitter, Liverpool John Moores University

IFMA Foundation scholarship recipients participate annually in the IgniteFM! Student Challenge, sponsored and led by FM:Systems. Students are placed into teams with peers from other schools and given four hours to solve an FM problem. Teams then present their solutions to a judging panel and an audience of facility managers. Also in the audience are GWI Advisors' talent acquisition teams, who observe the students' presentations and subsequently set up job interviews.





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Privacy vs. Social

COMPARING SETTINGS IN THE WORKPLACE

BY MARY GUTEAU



The corporate workplace must be many things to many people. To be functional, it must provide a variety of work settings to facilitate various people's work styles. The design of the facility can significantly influence the workspace, positively or negatively. Throw in a global pandemic and the corporate workplace is forced to evolve further, even if it is temporary. It is important to consider all these factors when discussing privacy versus social settings in the workplace.

As the workplace has evolved over time, so has the way people work within that environment. With more baby boomers working later in life, today's workplace could include people of various ages ranging from 21 - 71, all within the same space. Research has shown that different generations work differently. Baby boomers may prefer to work in more private settings, Generation Xers may prefer to work in more open settings, while millennials may choose to work in more flexible settings, but with less interaction with those around them. How do FMs design a facility to accommodate such a wide range of work styles? This is the challenge of today's designers, FMs and building owners. The good news is that it can be done. With thoughtful design and use of space, there can be something for everyone.

DIFFERENT WORK SETTINGS

Providing a variety of work settings is key to making the 21st century workplace functional and flexible. Employees want choice and control when it comes to where they work. Even if they work in an open office workstation all day, having the option to move around is very important to employees. That could mean taking a personal

phone call in a private phone room, having an impromptu collaboration session with co-workers in a collaboration hub, or taking a break in a lounge area. Offering a palette of places to work can go a long way for morale and improving productivity. When people feel that they have a choice, they tend to be happier. Happier employees are more productive employees.

Examples of the range of Privacy, In-between, and Social work settings are:



PRIVACY

- » Enclosed offices
- » Workstations with panels taller than 6 feet

IN-BETWEEN

- » Collaboration hubs
- » Conference/meeting rooms
- » Open office spaces with workstations with panels lower than 6 feet

SOCIAL

- » Open office spaces with tables and no panel separation at all
- » Break rooms/cafeterias
- » Lounge areas

DIFFERENT WAYS PEOPLE WORK

Many of the different ways people work can be attributed to generational behavior. Baby boomers tend to prefer working privately, as most began working in the age of the private office. Generation Xers tend to prefer working more socially, as most began working in the age of the open office. Millennials tend

to prefer working with more flexibility, in open or remote spaces, although most prefer to work individually. That's a phenomenon that's referred to as "alone together." Providing workspaces that can accommodate a variety of ways people work can benefit a company's culture and increase employee productivity.

Examples of the range of Privacy, In-between, and Social ways people work are:



PRIVACY

- » Focused work
- » Heads down, individualized work with no collaboration
- » More stagnant workflow

IN-BETWEEN

- » Collaborative work
- » Working in a team
- » More fluid workflow

SOCIAL

- » Short work breaks
- » Small pockets of time during the day
- » Lunchtime

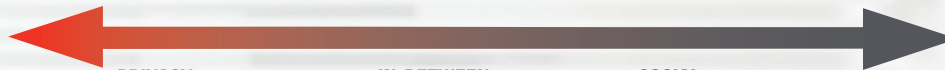
HOW THE DESIGN OF THE FACILITY CAN INFLUENCE THE WAY PEOPLE WORK

The design of a facility can significantly impact the workspace and how the people within that workspace function. Acoustical and visual privacy are two key factors that can influence the way people work within a space. In the past, acoustical and visual privacy were necessary for nearly all executives, while support staff members were relegated to open office areas. With the evolution of technology, the workplace evolved into a much more open setting, with little to no acoustical or visual privacy. Designers and employers are realizing that a happy medium between these two extremes is the best solution. Open offices can exist, but sound masking helps make those spaces more functional. Transparency is a big factor, but instead of using clear glass everywhere, companies realize the benefit of providing opaque glass in areas to provide a level of visual privacy. That happy medium is the sweet spot that

can truly influence the current workspace.

A well-designed workplace will provide a variety of work settings for the different ways people work, which can inform the facility's design. Providing a variety of spaces with a range of privacy, in-between and social characteristics can be key to a successfully designed facility. Understanding the ways people work, and providing space to accommodate those differences, can lead to a flexible, functional workplace. A flexible, functional workplace can lead to happy, productive employees. Most people spend a third of their lives at work. This means the workplace is a crucial part of people's lives. Providing a workplace environment that promotes employee engagement and increases company morale is paramount. Happy and productive employees lead to successful companies. That's a very important bottom line.

Examples of the range of Privacy, In-between, and Social ways a facility can influence the workspace are:



PRIVACY

- » Acoustical: Complete acoustical control
- » Acoustical: Adequate insulation
- » Visual: Full-height walls
- » Visual: Other opaque finishes

IN-BETWEEN

- » Acoustical: White noise/ Sound masking
- » Visual: Screens/Panels
- » Visual: Semi-transparent glass

SOCIAL

- » Acoustical: Acoustical control not needed
- » Visual: Open spaces encouraged
- » Visual: Glass used for visual transparency

CASE STUDY: REILY FOODS CO. CORPORATE OFFICE



The Reily Foods Co. interior tenant build-out in New Orleans was a substantial move for the company that had previously been housed in the same historic building for more than 100 years. That historic building included mostly private offices with a few shared office spaces that were filled with workstations with high panels. Every employee mainly worked in private spaces. Reily Foods Co. wanted to implement a progressive design approach for the new workspace that encouraged collaboration while being sensitive to its employees' work habits and while bringing the 100-year-old company into the 21st century. This interior tenant build-out used a mostly open office concept, but one that was sensitive to the change each employee would experience with the shift from mostly private to mostly open workspaces. Critical features that made the concept a success were access to natural light and city views, breaking up open office workstations into smaller groups by department, providing private areas that could be used if needed and providing more social areas that encouraged employee interaction and collaboration.

The layout of the space features continuous offices along the north and south perim-

eter walls with continuous glazing which allows natural daylight and city views into the main office space. So, while the executives are housed in private offices, the use of glazing offers a level of transparency that makes the private offices seem more cohesive with the open office spaces. The open office environment is separated by departments with workstations that have lower-height partitions with glass panels above to provide a sense of privacy, but still allow natural light to fill the space.

Because of the low ceiling height, the structure was left exposed with no acoustical ceiling materials being used. With no acoustical ceiling, the space incorporated a sound masking system that provides continuous white noise to buffer sound transmission within the space. The open office workstations are pulled away from the perimeter of the high-rise office building to allow for collaboration space along the east and west walls. This also allows the main spine of circulation to run along the exterior window wall, allowing everyone a view of the beautiful city skyline. The collaboration areas also have ample seating and writable surfaces to encourage interaction between the different departments. These in-between spaces are

highly used by employees and allow them choice and control when choosing where they work.

Additional spaces include a large conference room that can be separated by an operable partition, smaller conference rooms, individual phone rooms, a large break room that promotes socializing and team building and a reception/lounge area. Large, panelized graphics of the company's brands are incorporated throughout the space and delineate separation between the corridor and the open workstations. The large conference room features two murals that were recreated from a painting that was set to be demolished from the company's original office building.

The use of social, in-between and private work settings contributed to the success of this project. Although each employee is assigned to an office or a workstation, offering them a palette of places and allowing them to choose how and where they work throughout the day has proven to be beneficial. The company was initially concerned with how employees would react to moving from a mostly private workspace to a mostly open workspace but having multiple work settings for multiple work styles has made that transition seamless. **FMJ**



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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 Baton Rouge chapter.



A SENSIBLE APPROACH

Using sensor tech as a tool for safe reopening

BY ALLISON BALLARD

/ operation 129 227

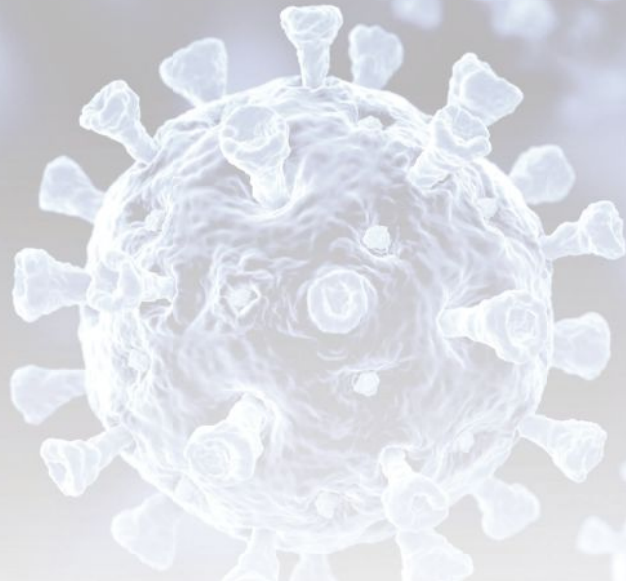
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Businesses, their employees and other office occupants are seeking out a return-to-work playbook they can trust — one that will keep them safe and healthy now and well into the future. However, every office environment — and every group of employees — is unique. FMs play a critical role in the future of returning to work as they must adapt quickly to create a tailored solution that meets their evolving workspace needs and mitigates specific safety concerns in their facility.

Sensor technology is a much-needed extra set of eyes guiding the FM as he or she implements new policies to reassure occupants and their workforces that it is safe to return to work. These devices offer the best way to understand how the workforce will use the space in the months and years to come — and how the workplace will evolve, even post-pandemic.

Data gathered from sensor technologies provides unbiased information about space utilization in real-time, enabling managers to define the new normal at their facility. From the moment office doors reopen, sensors provide FMs with actionable insights on how employees are interacting with their workspaces, removing the guesswork and creating a safer, more productive environment.

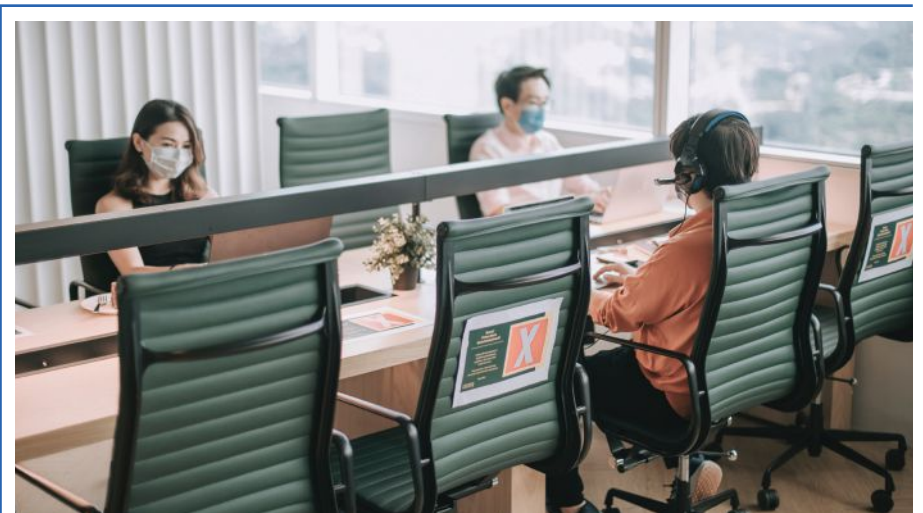
Sensor Technology and the Initial Reopening

In its “Guidance for Businesses and Employers Responding to COVID-19,” the Center for Disease Control and Prevention recommends conducting “...a thorough hazard assessment to determine if workplace hazards are present,

or are likely to be present.” The guidance also recommends using the hierarchy of controls to limit the spread of the virus. However, to truly maintain a safe workspace, FMs must conduct regular assessments, especially as more employees and visitors enter the building over time.

FMs must know if the people inside their workspaces are following density guidelines and physically distancing themselves. For example, are they sitting next to each other or leaving every other chair open in collaborative spaces? Are they keeping socially distanced when walking around the office, and is there sufficient traffic space to do so? Managers should also keep abreast of the temporary local laws and guidelines regarding building occupancy.

While FMs should certainly take on this additional responsibility during this time, it is important to remember that it is only one small part of their growing to-do list. Because they do not have time to physically monitor their occupants on a daily basis, sensor technologies provide a welcome and viable solution. By placing sensors on desks, in doorways and in specific rooms, they can review daily, comprehensive reports to identify which areas may need further modifications to ensure physical distancing requirements are being met. These reports also enable managers to





address problems in real-time instead of waiting until a consistent problem arises, such as a consistently overcrowded conference room.

Equipped with accurate, relevant data, FMs can gain clarity to inform almost every decision around workplace design. Beyond physical distancing, sensors can inform the placement of items like sanitizing stations and informational health signs or help determine the best options for one-way traffic flows through hallways and staircases to minimize person-to-person contact.

How Sensor Technology Data is Helping the Workplace Evolve

In addition to helping FMs navigate the initial phases of reopening, sensor technology also plays a role in establishing the future of the industry.

Adding to the pressure, occupants know more than they ever did about the way that germs spread. In addition to COVID-19, they are now more concerned about the flu, colds and other communicable diseases. Keeping buildings clean and disinfected will remain a top priority for maintaining safety and employee peace of mind, even in a post-COVID-19 world.

Sensor data also provides a better understanding of how occupants use the workspace each day. A manager may find that a particular meeting room is not used for weeks at a time, while another is occupied four or five times per week. From a health

or financial standpoint, it does not make sense to waste time and resources deep cleaning both of those spaces at the end of each workday. Using this data FMs can direct their janitorial staff to focus on the areas that require the most attention. If shift-work is part of the return-to-work plan, they can also use the data to ensure that each workspace is sanitized between shifts.

Beyond workstations, high-touch areas such as light switches, doorknobs and faucets are a concern. According to the *New England Journal of Medicine*, COVID-19 can live on certain surfaces for up to 72 hours. Johns Hopkins University's School of Medicine recommends following the CDC's guidelines, including regularly disinfecting these high-touch surfaces. In time, sensor data may indicate that these surfaces are touched so frequently that it makes sense to invest in smart technology like no-touch lights that turn on when a person enters a room.

Adapting to Shifting Employee Schedules

For many businesses, a plan to return to the office as it existed before March 2020 is not a reality right now — and some changes will become permanent. In place of a full work week, employees may work in shifts or on a hybrid schedule that combines working from home and working from the office on certain days of the week. FMs must accommodate these schedules by being flexible and transparent about how they are managing risk for returning employees. Using sensor data reports, employees can book their preferred cubicles, desks, offices and meeting spaces while maintaining physical distance from other employees and minimizing person-to-person contact.

No one can predict the future. A year or two ago, this unprecedented level of disruption at work was unimaginable. But one thing is certain: many of these changes are here to stay. Office occupiers are already using sensor data to understand how the workforce interacts with their workspaces. Companies may forgo collaborative room meetings in favor of virtual rooms or private offices. There may also be

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fewer people in the office at any given time, as many remote employees are more productive at home.


By using sensor data, FMs no longer need to rely on instinct when making big decisions about space utilization. Over time, reports will show managers the types of spaces a business still needs in order to operate successfully and which spaces are underutilized. This is beneficial for all parties involved, and it plays a key role to inform decisions about space optimization, lease renewal and maximizing the bottom line in the days to come.

What Data Can Do for FMs

When it comes to protecting the health and safety of occupants, data is king. Sensor data can provide a clear roadmap for FMs, whether deciding where to place a hand sanitizing station or determining how to incorporate more private offices into a defined workspace.

What if an occupant tests positive for COVID-19? What if they come down with symptoms while they are at work? Without sensors, FMs would have to shut down and disinfect the entire building, disrupting business operations for everyone involved. With sensors, the manager would know which desk the impacted individual sat on that day and focus disinfecting those areas that were impacted. Sensors provide visibility into who may have been exposed based on proximity. The data can be made available for other employees to use for contact tracing purposes.

Before sensor technology existed, FMs could only rely on their senses. This not only left room for error and inconsistency, but it took up valuable time. Sensor technology enables FMs to effortlessly monitor almost every inch of a building, flagging potential problems in a user-friendly format so they can devise solutions as quickly as possible and focus on the countless other tasks at hand.

Even when the pandemic eventually slows down, with sensors installed FMs will have the tools they need to evolve with the rest of the business world and effectively adapt to the future of the workplace. 

Even when the pandemic eventually slows down, with sensors installed FMs will have the tools they need to evolve with the rest of the business world and effectively adapt to the future of the workplace.



Allison Ballard is the executive director of 4SITE by CORT, A Berkshire Hathaway Company. She has been working with landlords and office occupiers, helping them get the most out of the workplace, for more than 25 years. Ballard has responsibility for overall management, product development and sales of the 4SITE user analytics platform.

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Together, apart:

It was a challenging year for the facility management sector and for each employee who had to get used to a new way of working during the COVID-19 pandemic crisis. The world has navigated uncertain seas since governments introduced social distancing measures and restrictions on people's day-to-day lives. Although vaccines are being deployed, it does not mean 2021 will be smooth sailing.

Opinions have been mixed on the pandemic's effect on the commercial office sector. Some organizations have used the pandemic as an opportunity to innovate. Others have clung to the old normal in the hope that one day it will return. The latter have now realized that while life can be put on pause, the business world cannot enjoy the same luxury. It must march on.

In this battle, there are winners and losers. The winners are the firms that have been reactive in their response; they're the ones that have demonstrated flexibility and resilience as the landscape changes daily. Technology-led FM teams and service providers who provide high quality and ef-

ficient services while planning ahead have gained market share. They are ready for what tomorrow may bring.

Despite some of the gloomy macroeconomic and societal predictions — tighter budgets, shifting guidelines, changing legislation, stricter compliance, fragile mental health, business uncertainty and recession — there are several silver linings and opportunities for the FM sector moving forward. For one, FM is higher up on the corporate agenda because social distancing will transform the workplace.

FM has often been overlooked or relegated to a "commodity service." However, the FM industry should be proud that it has played such a critical role in the

fight against the outbreak. Since March 2020, the industry's profile has grown due to its increased presence in the news. This new-found appreciation has presented a unique opportunity to further demonstrate FM's value. There is now greater recognition that COVID-19 demands a more sophisticated approach when it comes to cleaning and hygiene regimes and the employee experience, not to mention safeguarding health and wellbeing.

Despite the challenges ahead, FM leaders will be called upon to design social distancing plans and back-to-work models to keep people safe and aid business continuity. HR and FM teams must work together to put employee fears aside while ensur-

SMOOTH SAILING BACK TO WORK

BY RAJ KRISHNAMURTHY

ing building occupants adhere to social distancing guidelines. A combination of behavioral change and new systems, processes, policies and ways of working will be vital in achieving a safe return to work.

It is a critical time, but it is also an opportunity to shine. FMs must look at three ways to execute their plans to keep their tenants safe as they reenter their facilities.

1. Master the art of working together, apart

Working from home is now widely commonplace. Some love it; others hate it. Savvy employers are actively addressing people's concerns about returning to the workplace. The latest in a string of recent international surveys suggested that the U.K. and U.S., in particular, lag behind the rest of the world in worker attitudes to returning to the office, with a fear of further waves compounding low levels of confidence about the cleanliness and safety of their commute and time in their workplace.

In addition to tuning into the fears, needs and wants of employees as part of a talent retention program, employers must also understand what the business needs before

deciding on a workplace strategy. For some, this may involve an en masse return to work. Others may adopt an ongoing work-from-home policy. It seems the majority of orga-

nizations will turn to a hybrid working model to reduce the spread of the virus and accommodate employee and business needs. To this end, two strategies are proving popular:



The "split group" strategy involves separating employees into different weekly groups to support business continuity in the event that one group becomes infected.

The "split desk" strategy enables the alternating usage of desks between days, creating maximum usage of the space overall and more time for cleaning teams to react to the demand.

Strategies like these require live data to be effective. Programs that monitor occupancy rates will play a central role in enabling the most appropriate measures to be put in place at any one time. Organizations must understand their occupancy threshold for safe practice and to keep track of when that threshold is neared.

Regular cleaning can help alleviate any workplace hygiene anxiety. However, this will place a strain on cleaning resources, potentially leading to less efficient practices and costing more in time and cleaning products. Cleaning must be tailored so high-contact surfaces such as desks, door handles and communal surfaces are cleaned regularly and after use. Other shared areas such as meeting rooms and phone booths will either need to be closed or, if in use, signage will need to determine capacity while directing people to safe areas. These spaces will require thorough cleaning after every use via an occupancy-based cleaning program. It is key to understand which are the areas that will require greater attention rather than increasing cleaning indiscriminately. Real-time occupancy data is vital in this pursuit.

Real-time data can be used to alert cleaning teams as soon as an area has been vacated for immediate cleaning. Cleaning staff should be equipped with devices that receive data from sensors in the area. Push notifications can alert the cleaner to areas that have been vacated and require cleaning before the next occupant. The area can then be recorded as having been cleaned, releasing it back into the availability pool and alerting others that it is safe for use. This simple process is a highly effective way of ensuring the safety of all areas and reassuring staff they are not at any unnecessary risk. This technology can also utilize occupancy data to inform staff how regularly cleaning takes place on any particular day, offering reassurance in the process. Finally, existing floorplans combined with occupancy data can be used to create clear visual diagrams signalling which areas are due to be cleaned or are at higher risk due to high usage.

2. Keep calm and communicate

Communicating effectively with employees is another element of the workplace that must be more efficient and effective. New practices such as one-way traffic flow systems should be clearly signposted to make returning to the office as hassle- and stress-free as possible. Practices such as social distancing, washing hands more regularly and allowing time for cleaning certain areas between use may take time to adjust and employees might need an extra nudge to make sure they remember. The precautions may change daily or hourly due to occupancy and behavior, so it is important to be as agile as possible.

Digital signage is a growing part of this communication process, enabling easy navigation in an environment which, for many, has suddenly become stressful. Clear signage will be vital in communicating what policies are in place and the behaviors required of staff, as well as which areas are safe and open for use and which are closed. Research by Intel shows that digital signage captures 400 percent more views than static signage. This is not limited to messages reminding employees to wash their hands and avoid touching their face. Displaying live data regarding socially distanced spaces to use, cleaned space availability and the cleaning regime will reassure staff and make staying safe as easy as possible.

Whatever strategy an organization implements, it will need to clearly communicate these measures to staff and explain the behaviors required of them. Digital messages both via signage and through smartphone notifications will streamline this process.

Booking apps can help employees plan their work day by enabling reservations for a clean, socially distanced desk or meeting room, manage communications and answer questions to ensure employee wellbeing. Furthermore, the apps can allow users to coordinate their visits into work with an inner circle of colleagues ensuring they are there together on the same days and easily find safe spaces in the vicinity of each other. The app, which integrates with smart tags on the desks, also becomes a key tool in office-based contact tracing.



3. Offer comfort in a crisis

While it is important to manage the behavior of employees and ensure they are taking all required safety precautions, anxiety will play a part and employers must take on the role of guardian. According to a recent survey by WkSpace, more than half of employees are concerned about job security. Sadly, these concerns are valid as unemployment figures are rising. If that wasn't enough, many fear for their health and the health of their loved ones. Returning to the workplace can bring many back to a familiar and comforting sense of routine that has been sorely missing. At the same time, more change may further unnerve already fragile mindsets.

To ensure the return-to-work plan is more reassuring than stressful, communication from management will be imperative.


Cleaning, once a behind-the-scenes profession often relegated to non-working hours, will be a reassuring presence in the workplace. Seeing the precautions taken will be an important element of the post-COVID office. In addition to signage around the workplace, smartphones are a useful way to keep staff up to date, allowing them to plan when they will be in the office without exceeding safe occupancy and quickly notifying everyone of changes. Regular updates and clear signs can reassure employees that everything possible is being done to manage risk and so they can work without unnecessary worry or distraction.

Smooth sailing

There is now a battle for employee hearts and minds, only winnable with deeds and actions. It is not enough to publish social distancing guidelines and tell people to simply get back to work. These people may have lost friends and loved ones to an indiscriminate pandemic that has devastated communities and turned the world upside down in immeasurable ways.

Employers are under a legal obligation to maintain health and safety provisions while governments have released guidance on how best to ensure employee safety. This includes carrying out risk assessments, reinforcing cleaning practices, maintaining social distancing and managing transmission risk where distancing is not possible. It is undeniable that technology will play a key role in the development and successful implementation of these new practices. Over the last 10 months, data insights have been central to the governmental response and in educating the public. Workplace leaders have been integrating these processes into their daily functions for many years, leading to the development of smart buildings. These innovations will now be more important than ever, finding newly central roles in FM and efficient targeting of cleaning practices.

The return to the office may initially seem like a huge challenge — and it is. But it is also an opportunity to transform the workplace world for the better, whether offering a hybrid model that enables people to balance their home and work lives, or celebrating what an office offers — a place to meet others, share ideas and collaborate — and boosting the overall employee experience in the process.

The prerogative must be to ensure workplaces are as safe as they can be. COVID-19 has already demonstrated the ingenuity of workplace design and management. The new year will not be smooth sailing, but there is no denying there is a brighter horizon. 



Raj Krishnamurthy is a co-founding partner and CEO of Freespace. He is experienced in delivering solutions for the workplace with previous roles as innovations director for a \$1B FM company and GM of a \$100 million global service organization. He is a graduate of the Indian Institute of Technology, Bombay and earned his master of science in nuclear engineering at Purdue University and an MBA from Santa Clara University.

~~NEW~~ NORMAL

BY BILL CONLEY



As businesses resume operations with staff in office, as the COVID-19 ebbs and flows, the term “new normal” is used to describe the new ways people live, work and play. A new normal is a state to which an economy, business, society, or the like, settles following a crisis, when this differs from the situation that prevailed prior to the start of the event. Such proclamations are fraught with trepidation and fright, an alarmist mentality concerned that life as it is known is over.

For FMs, it is just another day in the life. While it is true there will be changes in the way work is performed, what it means to the general public and how it will affect the FM profession may differ in the overall acceptance of change.

If the new normal is no longer classified as normal, that may make it abnormal. If the projected state of the workplace is out of the ordinary or no longer typical, it might fit that definition. However, most FMs have probably encountered work requests that were certainly not based in reality. Requests to stop clouds from passing over skylights because lighting sensors kept turning off and on during a major meeting, or keeping landscaping healthy without paying for water, or gauging the half-life of a budget while being asked to do more with less, year after year are customary. Yet they have coped. Nothing is abnormal in an FM's life.

For FMs, the new normal is always just around the corner. They have dealt with catastrophes, real or projected, all their professional lives and through them, they have realized consistent changes for the better. Whether temporary or long term, it will be just another adjustment to how FMs manage the workplace. Normal is the usual, average, or typical state or condition: conforming to a standard; usual, typical, or expected. FMs have the ability to take any situation and relegate it back to normal, different as it may be. To FMs, normal is the state of things at any given time. The notion of the "good old days" changes with time as well. Someday, an FM will look back at their current facility operations and reminisce as what they are experiencing now as the "good old days."

Understanding what can be controlled and what is left to circumstance is a valuable lesson that FMs learn, sometimes through trial and error. Once that realization is integrated into day-to-day practice, it has been found that if an FM takes care of their business, they can help the rest of the business take care of itself.

FMs are known for many things, especially their resiliency and flexibility. These are virtues cultivated over time. FMs must have the capacity to recover from setbacks and difficulties and take things in stride. They must be responsive to change and be willing and able to adapt quickly. Part of their roles deal with reorganization and integrating new, necessary functions within the existing workplace activities. FMs should bend easily without

breaking, accommodating needs as they arise and adjust practices to comply with demand. Most FMs are generalists who know a little about a lot of things. This versatility serves them well as the workplace evolves.

JUST YESTERDAY

FMs endured change after change during their storied history as a profession, adjustments that always seemed to come with silver linings. One major shift in the workplace came with the introduction of personal computers. The Information Age began in the mid-20th century, characterized by the significant shift from work done with pen and paper in the office to the need for new equip-

ment, running data lines and adding more power to the workstations. Desk configurations changed, as did the need for lighting and a fully functional data center. It not only helped to reconfigure the office areas in the local businesses, it led to globalization, which altered an FMs roles and responsibilities from local practices to worldwide ones. The Information Age was formed by increasingly advanced technological discoveries leading to streamlined data capture and availability. Modernized information and communication processes became the driving force of workplace and social evolution. Technology is an invaluable asset to FMs.

The COVID-19 pandemic is not the first time FMs have had to respond to a new normal. The turn of the century was a major cause for consternation. The Y2K scare was a phenomenon where computer users and programmers feared computers would stop working when the calendar changed from 1999 to 2000. It was a problem in the coding of computerized systems that was projected to create havoc in computers and computer networks around the world. After more than a year of international alarm, feverish preparations, and programming corrections, few major failures occurred in the transition from Dec. 31, 1999, to Jan. 1, 2000. It ended up being much ado about little, but it did cause FMs to develop emergency preparedness and business continuity plans.

The open office experiment caused a bit of a kerfuffle in the world of FM. This workplace configuration consisted of situating staff and equipment of all the departments in a single room.

*For FMs,
the new normal
is always just
around the
corner.*



Different departments were allotted a specific space under the same roof. Cubicles were opened up, office walls came down, areas were redesigned, refurbished, and refurnished. Separate spaces were delineated by counter high filing cabinets or shelves. The intent was to create more visibility, inter-employee creativity and eliminate departmental silos. It was supposed to level hierarchies and encourage the sort of barrier-less collaboration and communication required by the 21st-century economy. This solution wasn't for everyone. Privacy issues, confidentiality and proprietary meetings were compromised and the concept was not widely embraced for long. Silos and walls are integral components of corporate culture. The adaptation to desktop computers introduced a pronounced increase in musculoskeletal disorders in the workforce. Repeated occurrences of hand and arm problems like carpal tunnel syndrome and tendinitis due to constant work at a keyboard were reported. This, turned attention toward ergonomics an applied science concerned with designing and arranging tools employees use so tools and equipment interact most efficiently and safely. Ergonomics

For FMs, the mission of keeping employees safe, comfortable, healthy and productive stays the same.

uses anthropometrical data to determine the optimum seating, spacing and comfort of the office worker. In many cases, the FM was tasked with workspace assessments, instructing users on posture and seating and performing any desk or cubicle alterations that were needed to ensure health and safety.

Telecommuting has been around since the 1970s to assist in work-related telecommunications and connections for travelers. It refers to a solution for working off-site. Because of the pandemic, it has become prominent again. For seasoned FMs, this is nothing new. Remote offices, hoteling and other alternate workspaces has been part of FM responsibilities for decades. FMs have always worked on the premise that if personnel cannot

relocate for work, work will relocate for them. As businesses wrestle with keeping their companies productive with employees away from the office, this is a way of fulfilling their goals. The scope of remote work may have broadened during this time, but facility processes and procedures for telecommuting have been in place for a long time.

One of the major departures from busi-

ness as usual — normal — in the FM world was the introduction of sustainability into the profession. Aimed at resource conservation, environmental protection and improved quality of life, sustainable operations also led to significant cost savings.

Guided by programs such as Building Research Establishment Environmental Assessment Method (BREEAM), Leadership in Energy & Environmental Design (LEED) and Green Globes and aided by developments in technological tools, FMs implemented activities that supported the triple bottom line (people, planet and profits). FM teams learned to save energy usage and costs, conserve water, minimize trash going to landfill through recycling efforts and provide healthy workplaces through green cleaning efforts and concentration on indoor environmental quality. They understood the value of life cycle assessment in tracking products from cradle to grave. What was dismissed early on as a passing fancy, sustainability has now become standard operating procedure.

TOMORROW

Having been out of the workplace for almost a year has altered employees' perspectives toward work and the workplace. Many have changed as individuals. Their habits, priorities and needs may have shifted and the things that mattered six months ago can seem very different to what is important today. For FMs, the mission of keeping employees safe, comfortable, healthy and productive stays the same.

In the short-term, this recent pandemic has created an urgent need for more efficient workplaces, more remote working and contactless, digital solutions. FMs have helped their clients to achieve these changes for years. The reality is that the pandemic has not shifted the entire direction of the workplace. It has simply accelerated the path along the trend lines that were already in place.

Given the challenges of attempting to predict future changes, FMs must always focus their energy on anticipating directions. Everything that FMs have experienced and the resultant continuous improvements would suggest that the changes ahead are the ones they have all been preparing for this whole time. As facility leaders plan to reopen for work,

adaptations on how employees work to meet the new and different demands of office work. FMs should not be satisfied with hurried adjustments for the short-term, but with an eye toward what tomorrow may hold. They can affect far-reaching changes as every crisis provides an opportunity to enable a better working world, encompassing five critical dimensions: better health, connectivity, relationships, ingenuity and accountability. Those are all achievable as FMs ply their trade in coping with adversity and planning for the future.


To FMs, “new” normal is just normal. One of the constants in FM is change. They could be large changes brought about by external influences or internal changes in corporate culture and practices, but they do occur.

Organizations have always been transformed by crisis-induced shifts. It may not seem a crisis to FMs, but the demand organization can be ... well ... demanding. All an FM can do is go with the flow and do their job.

The learning curve in the previously uncharted territory brought on by the pandemic has businesses and professionals interested in the future of the workplace. One of the biggest challenges is understanding whether the “new” normal is a temporary change or a permanent revamping of what life and work looks like. This is the type of insight that makes informed, impactful decisions possible, and FM are well-suited to fulfill this role. For them, it’s just another normal day in the office. **FMJ**



Bill Conley, CFM, SFP, FMP, LEED AP, IFMA Fellow, is a facility manager at Yamaha Motor Corp. in Cypress, California, USA. Prior to that, he served as owner and chief sustainability officer of CFM2, a facility management company. Conley has more than 40 years of experience in the facility management profession and has been a proponent of sustainable operations for more than 20 years. Conley has served on the IFMA board of directors, is a recipient of IFMA’s distinguished member of the year award and has received the association’s distinguished author award three times. He has been a regular contributor to FMJ for more than 20 years and has authored more than 70 FMJ articles.



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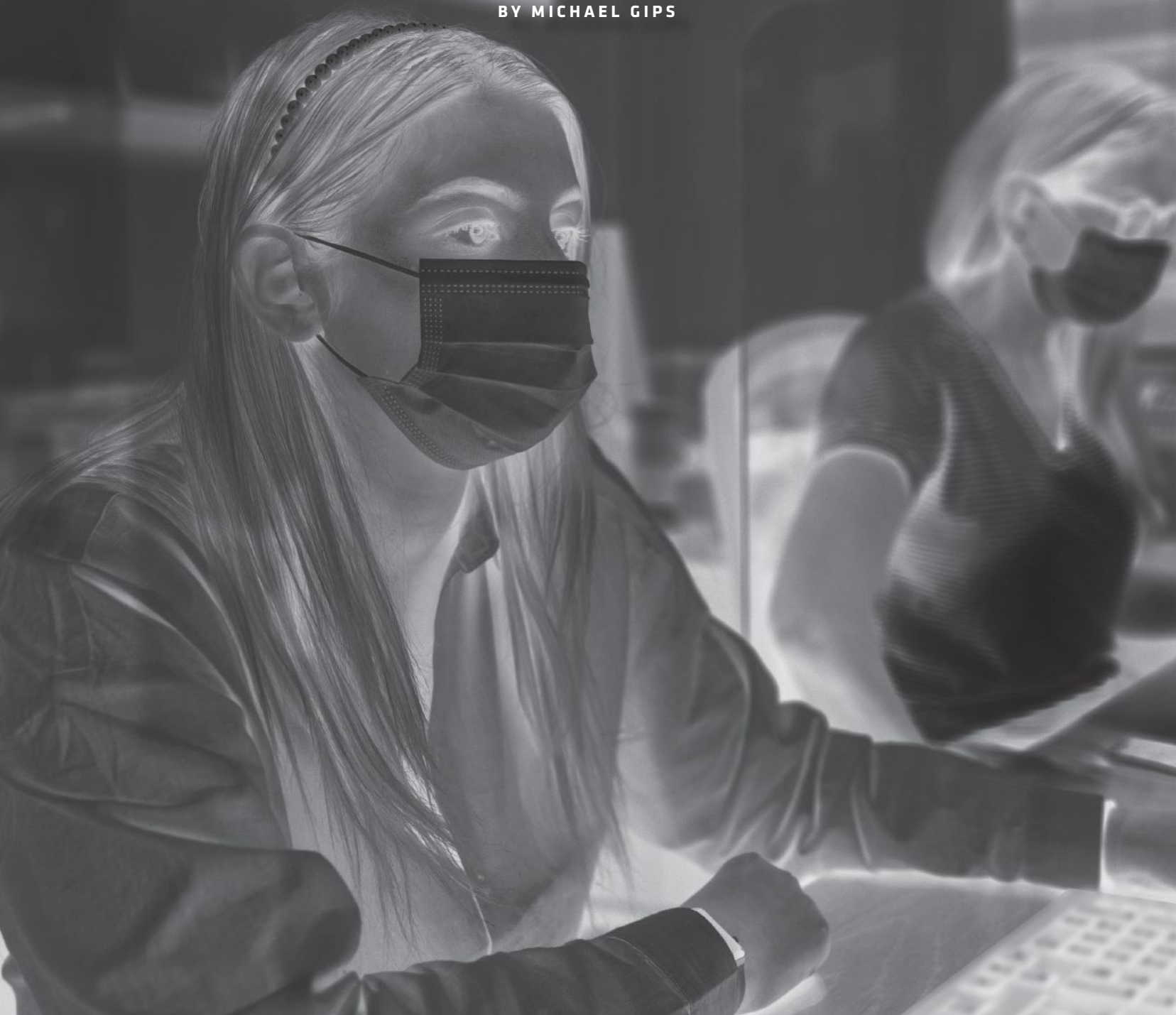
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FACING FEARS

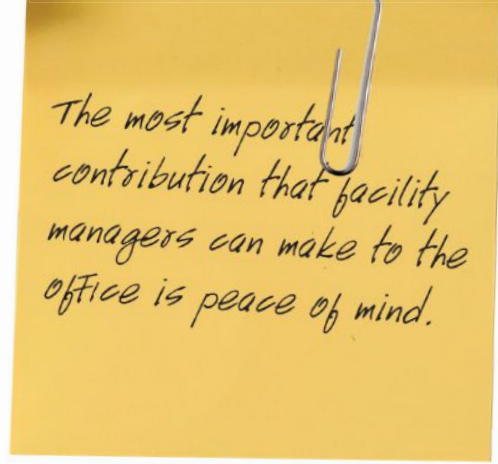
Using touchless access control &
VMS to safely reopen a facility

BY MICHAEL GIPS



In the movies *Psycho* and *The Shining*, hotels literally housed humans' deepest fears. The forest fulfilled the same role in *The Blair Witch Project* and *The Cabin in the Woods*. The protagonists in *Alien* and *Gravity* faced their preternatural terrors in outer space.

But reality is stranger than fiction. Not even Hollywood could come up with a scenario in which people fear returning to the humble office, an environment containing less-than-spooky accoutrements such as Post-It notes, copy machines and paper clips.



COVID-19 has done just that. Workers have been cloistered at their home offices for months and are now being summoned into an environment they cannot control, where any interaction with a colleague, touch of an elevator button, or visit to the kitchen arouses fears of contamination.

The most important contribution that facility managers can make to the office is peace of mind. Many are doing so by installing systems and components, specifically access control and visitor management systems, that replace uncertainty with confidence.

VISITOR MANAGEMENT SYSTEMS

FMs at small- to medium-sized organizations sometimes say that only large corporations with hundreds of daily guests need visitor management systems (VMS). Often times, smaller companies assume manual sign-ins will suffice.

Issues with Logbooks

That attitude has become untenable in the age of big data and during a global pandemic. Logbooks and analog sign-in processes are pro forma. They capture only name, date, time and person visited — and that is assuming that the visitor is being honest and complete. Onsite movements cannot be tracked, location is unidentified in an emergency and departure cannot be electronically verified.

Worse yet, logbooks require visitors to use the same pen. They also give visitors a glimpse of the guest list, which could constitute a privacy violation under laws such as the General Data Protection Regulation or the U.S. Health Insurance Portability and Accountability Act. A 2018 survey of U.S. and U.K. office workers indicated that 62 percent look to see who signed in before them. Logbook maintenance, storage and destruction also implicate these same laws.

Electronic VMS fall under the same compliance requirements as logbooks. However, VMS data can be encrypted, password protected and otherwise rendered secure.

Key components of VMS

Preregistration VMS goes to work long before someone arrives on site. For a busi-

ness to operate, clients and potential clients, contractors, job applicants, service providers, partners, consultants and others sometimes need to visit the office. By using a preregistration system, companies can both vet the guest beforehand, have them provide up-front materials or documentation such as photos or proposals and reduce waiting time in the reception area on the day of the visit.

Information flows the other way, too. Organizations can apprise visitors beforehand of hours of operation, rules on hygiene such as mask use and social distancing and other health requirements.

Staff can also preregister expected guests for specific dates and times. Repeat visitors would then have a streamlined check-in process.

Intercoms

Most everyone is familiar with the basic intercom systems for office buildings: a device typically placed at an exterior door that allows a guest to communicate with a receptionist, security officer, or other staff member inside. The staff member then decides whether to allow the visitor to enter the premises.

Video supercharges the experience — staff receive far more information to help them decide on whether to allow access. With audio only, a guest could disguise their voice, intentionally mumble or lie about their identity. Video allows staff to confirm identity — such as by matching





the person to a photograph — and read visual cues such as gestures and facial expressions, determine whether the visitor's bearing and garb are appropriate for an office environment and see whether the person is carrying or attempting to conceal a weapon.

Touchless Check-in

With COVID-19 cases spiking, guests still do not want to unnecessarily touch anything. Touchless check-in systems demonstrate respect for the health and wellbeing of office visitors. Apps or scannable QR codes can be used so visitors can check in with their own phone rather than touch a possibly dirty screen. Touchless systems also eliminate lines, making check in quicker. With the elimination of lines or an elevator queue, it is easier to comply with appropriate social distancing to mitigate the risk of disease spread.

Badge printing

Badges should include the date, time period and names of the person and the host, so staff knows whether and when a person unknown to them is allowed on site. Badges should automatically print and dispense to the guest, ensuring only they touch them.

CONTACTLESS ACCESS CONTROL

Ideally, VMS will integrate with the organization's access control system. Companies are increasingly looking at touchless and frictionless systems to support health, hygiene and goodwill.

Plastic key cards dominated access control for decades. They allow organizations to allocate access based on staff role, level, time of day and other factors. FM teams or security staff can audit door use to determine occupancy levels, identify pedestrian flow and conduct investigations.

Hygiene

The hegemony of the card may be nearing its end as touchless systems are making strides. Biometric systems such as contactless fingerprint scanners, facial recognition and mobile phone credentials offer a more hygienic experience.

Cost and convenience

These systems hold additional appeal because they eliminate the cost, time and inconvenience of lost, forgotten or stolen cards and printing and delivering their replacements. On a cloud-based access control system — in which the database sits not on a server in the office but in a data center managed by service providers — receptionists, FM staff, security or others can remotely and instantly grant, modify or revoke access. When used for both physical and network access control, immediate remote revocation can prevent information theft, data destruction or other mischief by recently terminated workers.

For more sensitive security applications, many systems offer multi-factor authentication. For example, an employee might gain access to a server room only by being recognized and matched by a face recognition system and holding his or her mobile phone credential to a reader.

INTEGRATED VISITOR MANAGEMENT AND ACCESS CONTROL

Combining VMS and access control creates powerful applications for security, occupancy monitoring, contact tracing and space planning.

Security

Organizations can set, such as by geofencing, permissible areas for guests to travel, as well as areas that will trigger an alarm. By being able to track the movements of everyone on the premises, some systems can identify when a visitor tailgates behind someone with legitimate access rights or can determine whether occupants are violating social distancing rules.

In addition, security can use access data to create watchlists for banned or dangerous individuals. Having photos and descriptions of violent spouses, angry customers or wayward contractors

on hand can help staff prevent incidents, bar visitors or quickly marshal resources.

Occupancy monitoring

Integrated visitor management and access control systems combine to provide thorough people counting and location identification. In case of an active assailant, bomb threat, fire alarm, natural disaster, or other emergency the organization will know who is where.

Contact tracing

Those same features facilitate contact tracing. If someone who was on premises tests positive for COVID-19, the company can audit that person's movements and identify anyone who may have to be quarantined or tested. Components such as video surveillance and intercoms improve that process.

Space management

Organizations can leverage their visitor management and access control systems to crunch key data, such as high-traffic times and areas, recurring guests, traffic flow and time spent in specific areas. Not only can the organization tailor its resources accordingly — such as posting security officers — it can enhance the visitor experience through concierge services.

BUILDING A BETTER FACILITY

Building security starts at the front door. Thus, the entrance to any facility should be armed with the best defense that recent technology innovation and advancement offer. COVID-19 has exacerbated the outdated nature of current efforts to keep buildings as safe and secure as possible. The pandemic has been an opportunity for property owners and FMs to build a better facility. Looking into the future, the front entrance of any building will be more than a welcoming threshold. It will be the first defense against any security or health threat. FMs that prioritize modern solutions that build a better facility will, in doing so, build a facility that is resilient and able to withstand unforeseen adversity.

In films from *Men in Black* to *The Mummy* to *Prometheus*, a cinematic trope shows the dire consequences of someone touch



ing something they shouldn't. Chaos is released. A doomsday clock is triggered. The unknown is stirred. After months at home watching movies and TV, returning employees and visitors may see their offices as a horror movie of their own: a den of contagion. But good policies, procedures, communication and engineering — to include smart access control and visitor management — can go a long way toward allaying those fears and returning a productive and comfortable workforce. **FMI**



Michael Gips, JD, CPP, CSyP, CAE has written almost 1,000 articles and columns on virtually every topic in security.

As a contributing writer at Swiftlane, he develops content surrounding the future of access control as well as specific topics around touchless, hands-free entry solutions. He is the principal of Global Insights in Professional Security, LLC, a firm that helps security providers develop cutting-edge content, assert thought leadership, and heighten brand awareness in a crowded marketplace.

A large graphic for the IFMA's FACILITY FUSION 2021 Conference & Expo Virtual Edition. The background is dark blue with a network of white lines and nodes. On the left is a stylized globe logo with blue, red, and green segments. To the right of the logo, the text reads: "IFMA's FACILITY FUSION Conference & Expo". Below this, there are two blue boxes: the first contains "2021" in white, and the second contains "April 21-22 Virtual Edition" in white.

MY FACILITY



DAVE WILKE

T-Mobile Park
Seattle, Washington

In the heart of Seattle, Washington in the U.S. Pacific Northwest, lies one of the most pristine baseball parks in Major League Baseball. Opened in July of 1999, T-Mobile Park, home to the Seattle Mariners, is known as one of the most sustainable parks in the league. IFMA member Dave Wilke and his FM staff are in charge of ensuring all parts of the ballpark, from the field to its retractable canopy, are operational and ready for the Mariners to play ball.



Photos Courtesy of T-Mobile Park



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

WILKE: For my first official FM job, I was fortunate to land the job as the facilities director for a local school district. For 10 years, I oversaw three schools totalling 385,000 square feet, 100 acres of connected campuses, US\$160 million in capital projects and construction and an entire island of deeply invested stakeholders. I had spent the previous 12 years working at churches and camps, which was after seven years as an electrician. Trade work gave me experience in all phases and scale of commercial and industrial projects, and in the process, cultivated a deep appreciation for the physical structure and operational bones of a building. Once that mindset of system-based operations and knowing, or wanting to know, how something works or is assembled, it was impossible for that not to be part of every role I have had since. I spent three years as the director of facilities at the Woodland Park Zoo which was a broader role with a larger purview. I have been with the Seattle Mariners at T-Mobile Park for a little over a year as the director of facilities. This still fairly new role has been a balance of managing engineering and maintenance (E&M) as well as deep involvement with construction, planning and development.

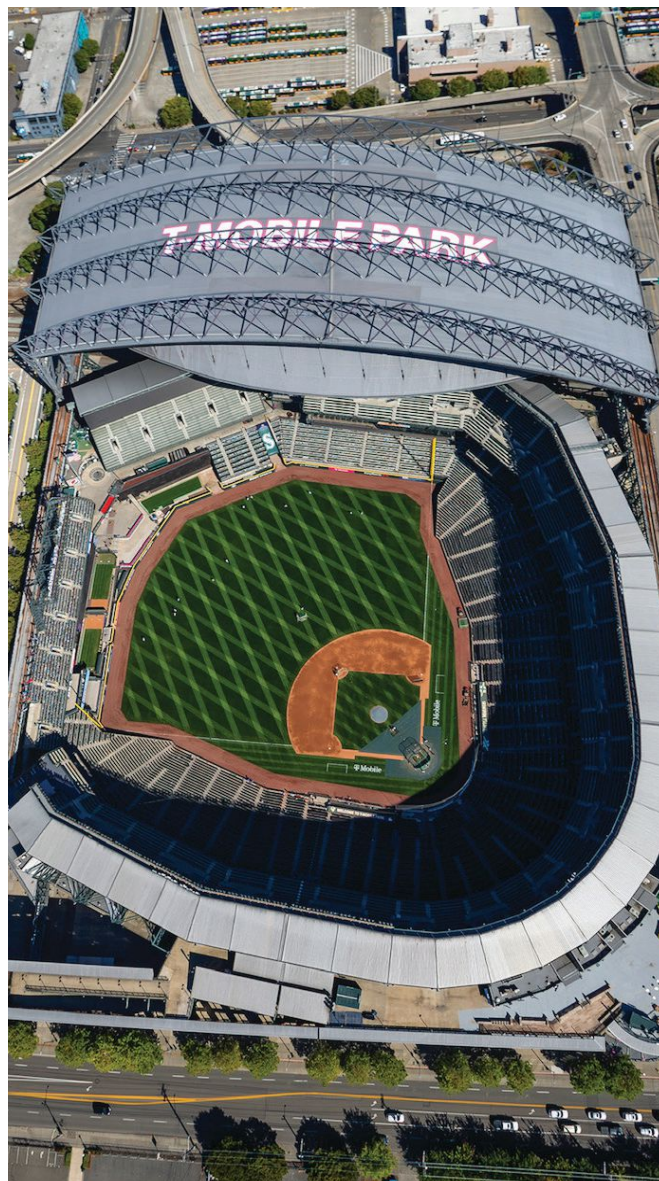
FMJ: *What is day-to-day life like at T-Mobile Park?*

WILKE: It's been a changing landscape since the day I started in late October of 2019. Generally speaking, we have about 300 people in the ballpark a day, but those numbers have been anything but consistent since March. We have a lot of external events that cover a huge portion of the park, but that has been nonexistent since March and like most we don't anticipate a significant return to normal activity until who knows when.

Busy days have followed the same trend as everything else since March. This season, a busy day would include a double header (two baseball games played the same day, back-to-back) and a 400-person private corporate event. Some of the busiest days wind up being the best. It's pretty nice when a day is so busy that when you turn around it's seven hours later, you've solved multiple issues, and are prepped for the next wave of craziness. That makes for a tiring but very rewarding day.

FMJ: *Why is T-Mobile Park unique and what kind of unique challenges do you face managing the facility?*

WILKE: This is my first role in a place like this, and it's quite different from the campuses I've overseen with dozens of buildings on them. There's a convenience in having everything under one huge rolling roof, but it also means all those things are big and their management can get big and quite expensive with lots of moving parts. That said, I have always appreciated



FMJ: *How has COVID-19 changed the way you and your team operate your T-Mobile Park?*

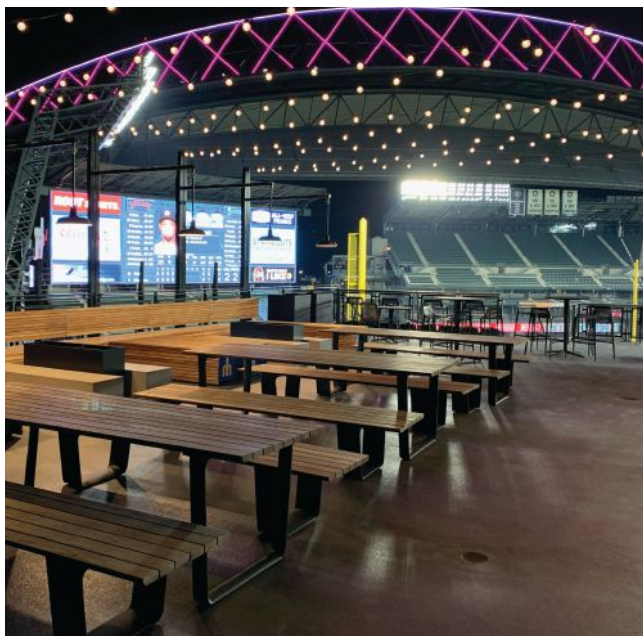
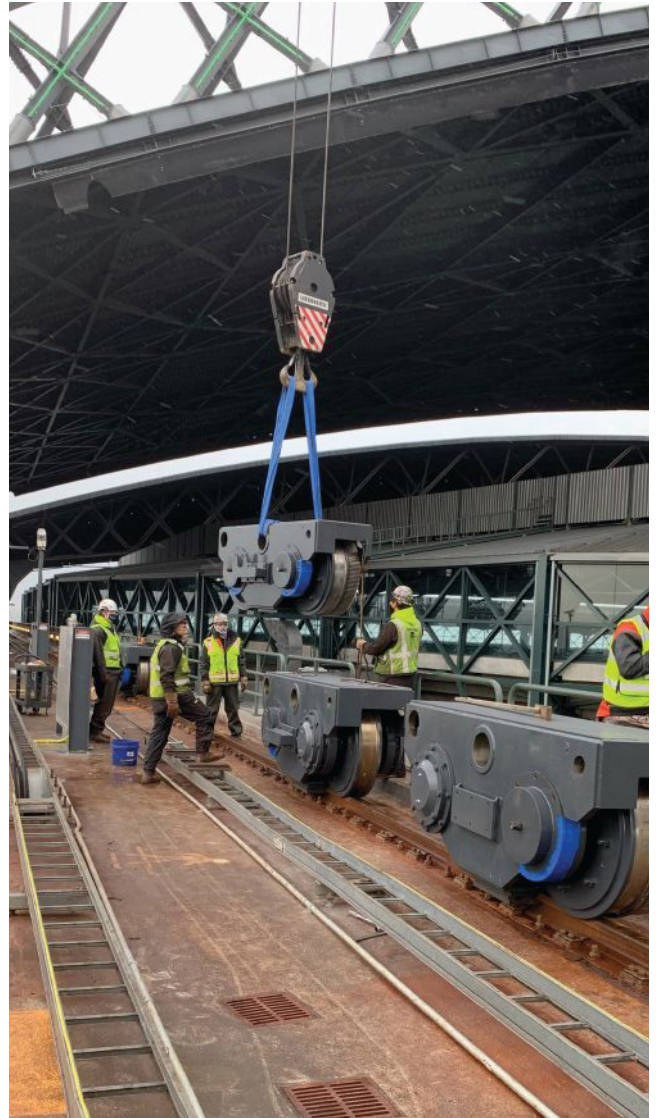
WILKE: In short, it's changed everything, and what seems normal is still a long way from what it used to be. We have had the opportunity to make some really good plans and implement building access controls and measures that have made life better than it has been and will sustain into the return to normal.

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

WILKE: We still have the same pressing issues that every facility has, again it's just scale. We get clogged toilets and air handlers that lockup just like smaller facilities, but we do benefit from a depth of staff and expertise where there's nothing much that we can't face and solve.

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

I do dearly love when things work the way plans and strategy foresees, and for the most part, we tend to operate in that space at the ballpark. To be fair, I also like when there are a hundred things going on, all generally within plan but also a little on the edge. It can be pretty fun when you're managing a lot of stuff and it's all flowing mostly smoothly. There is also a lot of satisfaction in solving issues as they arise, and knowing there's a team of highly experienced and extremely capable to solve any problem.



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FM SOFTWARE

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 IBM | www.ibm.com/us-en/
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 Planon | www.planonsoftware.com
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CORT | www.cort.com
 Davies Office Inc. | www.daviesoffice.com
 Kimball Office | www.kimballoffice.com
 Sunline Office, LLC | www.arnoldsofficefurniture.com
 Vari | www.varidesk.com
 Versteel | www.versteel.com

HVAC

Shaqurri International Private Limited | www.shaqurri.com.pk

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 United Facilities Management | www.ufm.com.kw

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WATER & FIRE RESTORATION

COIT Cleaning & Restoration Services | www.coit.com

WASTE MANAGEMENT

Republic Services | www.republicservices.com



Behind the Brand

COMPANY NAME ABM
EXPERTISE FM Consultants/Services/Providers
CSP LEVEL Silver
CSP SINCE 1994
WEBSITE abm.com



As a leading facility management provider, ABM's 140,000 team members help service over 4 billion square feet of facility space worldwide. With operations at that scale, FMs might be surprised to learn how dedicated the 111-year-old company is to community engagement. See how ABM takes a top-down approach to charitable causes.

FMJ How can large, global companies promote community engagement without being impersonal?

ABM We promote individual action by providing our team members with the power, resources and time to give to causes that they find meaningful. Our involvement program, ABMCares, rewards action by matching charitable donations and by providing team members with paid time off to volunteer. Plus, ABM will donate to the charity of their choice for every 10 hours of team member volunteer work. ABM's team member and matching donations contributed more than \$160,000 last year alone.

FMJ How important is leadership when it comes to community engagement?

ABM: We believe it is crucial that our leaders demonstrate the same thoughtfulness that is encouraged among each of our team members. The visibility of our leaders' community engagement and values creates a positive ripple effect in mindset and a positive contribution to our company culture. ABM's CEO, Scott Salmirs, engages in several charities and non-profits in the metro New York, USA area. Outreach Project, Partnership for New York and LiveOnNY all call him a board member.

FMJ During 2020's challenges, how has ABM stayed committed to the communities that they serve?

ABM At ABM, we strive to "Make a Difference, Every Person, Every Day." That mission has only deepened during the ongoing pandemic. Our team members consistently go the extra mile, making small gestures that add up to big differences in the facilities that we service. Sometimes that means recovering valuable items, calling for aid, or providing a warm greeting to the guests in our buildings. These days, it means ensuring the spaces we serve are exceptionally clean, safe and welcoming.

By developing and promoting our internal programs, we're not only improving our communities, but also improving the culture and strengthening the core values of ABM.

COMPANY NAME Coastwide Professional
EXPERTISE Facility Management
CSP LEVEL Silver
CSP SINCE 2020
WEBSITE coastwideprofessional.com



FMJ What does Coastwide Professional do?

CP Coastwide Professional offers industrial-grade products and a unique approach that make day-to-day cleaning easier for facility managers and custodial staff. The brand uniquely offers a comprehensive, cross-category line of products and equipment, that are reliable and always built with the user in mind. This allows you to keep your facility clean and well-stocked so your custodial staff can save time, costs and operate more efficiently.

FMJ What research or product innovation is your company currently working on that will help facility managers be more successful in their roles?

CP Since the COVID-19 pandemic, we anticipate organizations rethinking their restroom needs and looking for more touchless paper solutions for sanitary reasons. We also believe customers may look to install hand sanitizing devices in workplace areas such as large meeting rooms or reception areas.

Coastwide Professional™ J-Series automatic dispensers provide a full assortment of touchless features. They are intuitive for your guests, easy maintenance for custodial staff and designed to modernize any restroom. The full line of dispensers recently debuted and features a hardwound towel and bath tissue unit, and the recently launched hand sanitizer dispenser.

FMJ Please describe your Systems Thinking approach and how it makes cleaning more efficient and eliminates redundancies.

CP For the chooser, Coastwide Professional products and solutions provide clear communication and functional cues that support safe and efficient work. They use consistent, visually-graphic architecture for carrying, unboxing and dispensing activities that highlight the product benefits and usages not only on exterior packaging but also on product labeling itself to drive home overarching brand language. For the user, the brand uses color as a wayfinding tool to visually communicate product use, specifically designating interaction zones with bold colors such as green, orange or blue. This visual brand language makes it easier for FMs and their custodial staffs to train new employees around potential language barriers as everyone can identify using the same color-coded janitorial cart, cleaning solution and mop to simplify the time spent choosing products and more time cleaning. Using functional color design cues also has other intuitive benefits. It can prevent cross-contamination and accidental chemical mixing that could be hazardous to health or surfaces. It also can prevent the migration of tools moving across departments or different zones of your facility and disorganizing your janitorial closet.

As IFMA celebrates 40 years of service to the facility management industry, we recognize the IFMA Corporate Sustaining Partners (CSPs) who have worked with us to bring quality content to our members. Their contributions of knowledge and resources are especially important in these days of workplace and facility disruption.

Who are CSPs and how do they help you succeed?

Much of the change we see in our facilities is driven by the cutting-edge products and services that make our facilities smarter, more efficient, healthier and safer. To be prepared for what's next, we have to know what's coming. Who better to provide insight into the tools that transform and support our spaces than the companies developing them?

As leaders in their respective industries, IFMA CSPs are constantly innovating. They share our desire to build and maintain a better built environment.

CSPs are dedicated to the goals and work of the association, supporting every resource IFMA offers. These best-in-class organizations make a substantial investment in the facility management community with no guarantee of a tangible return. As advisers, topic experts and change leaders, they are committed to the success of the professionals they support.

Support the companies that support you. Look for CSPs when browsing content in the Knowledge Library, walking the expo floor at IFMA events, reading the latest industry news in FMJ, and deciding on products or services for your facilities.

To help us make informed decisions about our facilities, CSPs:

- share survey and research results;
- share information on new methods and groundbreaking products;
- contribute industry white papers and case studies to IFMA's Knowledge Library;
- contribute articles to FMJ magazine;
- partner with IFMA to fund research, benchmarking and educational projects.

CSPs depend on information from IFMA members. Tapping into our insights on present and future needs and hands-on knowledge of workplace strategies, CSPs create better, more sustainable and resourceful solutions to managing our people, places, processes and technologies.

With the generous support of our CSPs, we have the means to deliver the quality, cutting-edge information that you've come to expect from your association. A company bearing the CSP logo has made an investment in the continued advancement of the FM profession — they have made an investment in you.

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Contribute your expert industry knowledge for the benefit of FMs worldwide through a sustainable partnership with IFMA. As a CSP, you'll gain the trust of potential customers by providing impactful opportunities to make their jobs easier. Along with gaining direct access to FMs who rely on us to help shape their strategies and operations, our CSPs can:

- ▶ Visibly partner with the most trusted association of FMs in the world to shape industry standards
- ▶ Build trust with and strengthen the global FM community by sharing expertise
- ▶ Leverage branding and promotional opportunities customized to their needs by a dedicated CSP concierge

Contact our CSP concierge today to discover the value of connection.

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MEETING THE CHALLENGE

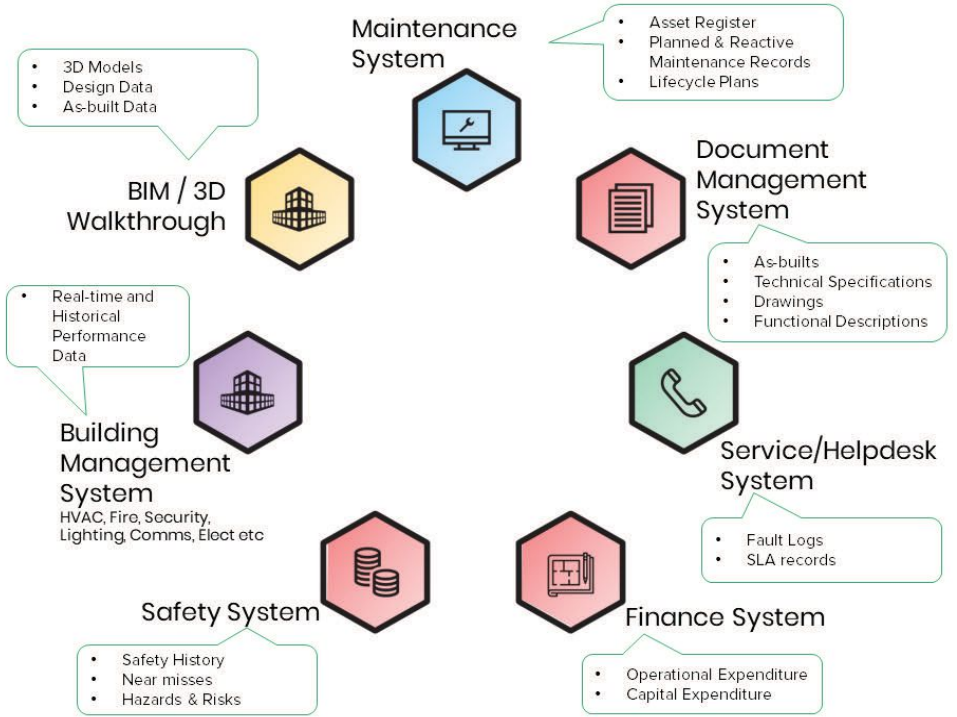
How VBIS opens new access in Australia

BY HESHAN SAMARAWICKRAMA

Building owners and managers rely on accurate information for planning and keeping assets running effectively. The information is accumulated throughout the asset lifecycle. The rise in digital engineering and FM technology has led to an increase in the amount of digital information accumulated but equally the number of systems that hold data. This presents challenges in managing the potentially disparate information sets to enable opportunities to better use the information to achieve facility objectives.

Virtual Buildings Information System (VBIS) was developed to provide a solution for these challenges and to realize the opportunities. The development was sponsored in part by an Australian government grant program supporting innovative development in key industry sectors. The objectives of the development were to:

- Provide an open standard that is system agnostic, allowing it to work with all commercially software applications.
- Promote consistency in asset information needed for facility and asset management.
- Facilitate ease of information handover in activities such as procurement or construction to operations transitioning.
- Support better use of BIM in FM.
- Enable improved access to existing disparate information to achieve facility outcomes.



A snapshot of asset information across the typical stored locations/software applications

Typical Asset Data Locations	BIM	3D Models Design Data As-Built Data			
	Building Management Systems	Commissioning Data User Interfaces Control Systems		Real-time Performance Data Historical Performance Data Event History	
	Maintenance and Asset Management Systems	Asset Data & Management Plans Warranty Information Planned Maintenance Requirements		Planned Maintenance History Reactive Maintenance Records Audit & Inspection Records	
	Document Management Systems	Asset Requirements Design Documents Cost / Benefit Analysis	Technical Specifications Drawings Functional Descriptions	Service Reports O&M Revisions Technical Advice	Decommissioning Reports & Plans Performance Reports Refurbishment or New design requirements
	Finance Systems	Budget Purchase Orders Quotes	Acquisition Costs Contracts Warranty and Maintenance Allocations	Capex Spend Opex Spend Contract Performance	Capex Spend Opex Spend Accounting Closeout
	Helpdesk Systems			Fault Logs Customer Satisfaction SLAs	
	Risk & Safety Systems	Risks & Hazards Near Misses LTIs			
	Plan	Acquire	Manage	Retire	
	Asset Lifecycle Stages				

A snapshot of asset information across the lifecycle stages

Digital building data systems

The as-built and design information from new construction projects include BIM models, digital documentation and drawings, various database files and communication records. Many existing buildings are on a pathway to digitize existing as-built records. This information is typically lacking the granularity of the asset inventory (as known in Australia) definitions required for key activities in the operations phase.

Operational systems include lifecycle planning, maintenance planning, performance recording and benchmarking and contract management. All these operational systems also generate and store valuable digital building data.

The other key digital information source is management systems, which include financial systems, statutory safety records and business risk mitigation. The challenge for management systems is to keep pace with the ever-changing asset lists through the churn of a building life cycle.

Consistency needed to realize digital insights.

Analytics provide the ability to define software-based workflows that allow automating finding operational issues or opportunities for improvement through the consistent and continuous monitoring of gathered information. The software-based workflows are normally set up to detect equipment specific unusual behavior including faulty equipment, unusual performance or even predicting an upcoming failure and highlight scenarios that require human intervention or remediation. The situations can target improvements in energy, performance, longevity and protection of assets but also greater building objectives such as occupant safety and business continuity.

The accuracy of digital insights is dependent on the ability to align all the information systems with the asset. Importantly, the asset inventory must be defined to the right granularity needed for operational activities.

The alignment is achieved through consistent references to data or metadata enabling the analytics platform to access the information. With the full spectrum of information available, complex scenarios can be defined in the analytics platforms. Typical examples of insights:

- **Short term:** Comparison of maintenance activity impact on real-time performance and occupant comfort to analyze and make improvements to maintenance programs.
- **Long term:** Analysis of reactive breakdown records against planned maintenance, real-time performance and the lifecycle plan to ensure operational tweaks are identified to ensure the longevity of asset life and maximize performance.

Application of analytics without consideration of the quality and consistency of the baseline information can lead to false triggers due to bad information. These false triggers can increase the effort of the operations team to rule them out, instead of the technology providing time efficiencies. When analytics rules are deployed to carry out automated fault detection across building air systems, it is important to understand the specific configuration of the various air handler and terminal unit systems. If this is not considered, the rules will attempt to detect anomalies and poor performance conditions not applicable to the equipment it is monitoring.

A simple example is analytics detecting poor heating coil performance in a variable air volume terminal unit that is not equipped with zone reheats.

Consistency supporting operations

Beyond analytics, other benefits include:

- Fast access to information needed to run the facility and keep asset inventory and information updated by all stakeholders.
- Access to “whole-of-life” view of asset performance for operational and capital planning.
- Enable data consistency needed for successfully deploying technology roadmaps and system integrations.

Introducing the VBIS Standard

VBIS is an open standard and not a software application. It standardizes how assets and asset information are classified and facilitates a standardized means for commercial applications to communicate. This allows users to easily locate information on assets that are in various applications.

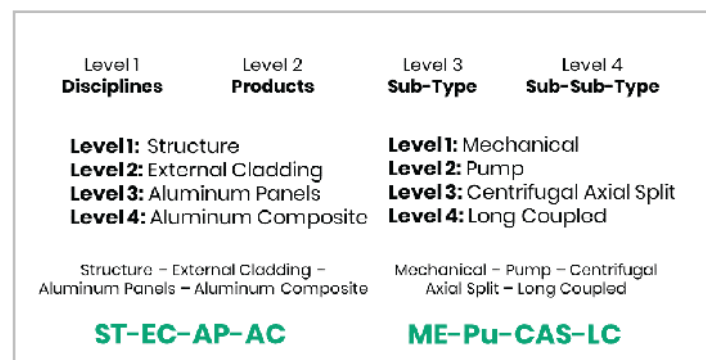
VBIS consists of two key components.

1. An asset classification structure with tagging (VBIS Tag)

A unique identifier called a VBIS Tag is provided based on a four-level asset classification structure detailing the disciplines, products and product-specific sub types of assets located within facilities.

The VBIS Tag can be allocated to various data components as a metatag to associate the data with the asset. This enables FMs to identify all scattered data associated with specific assets to bring together a whole-of-life view of an asset. This can be compared to an allocation of a universally recognized ID to specific asset types to then allow the asset to stamp ownership on its data scatters across various applications.

VBIS classification structures and tags have been developed for all common asset types that make up the built environment ranging from structural, services, fittings and furniture.

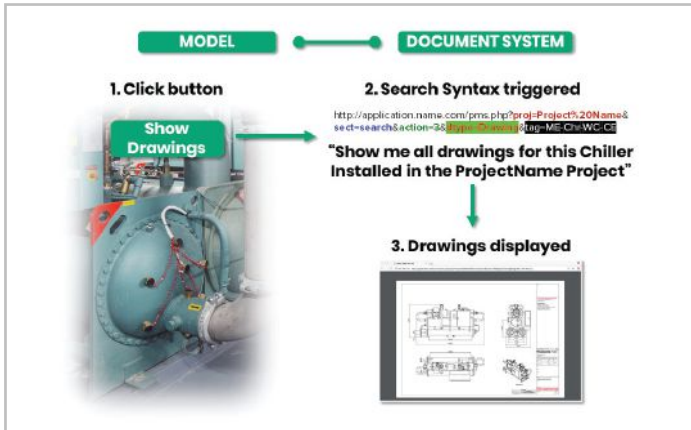


Examples of the four-level classification structure and the VBIS Tag

2. A mechanism to locate the tagged data scattered across applications (VBIS Search Syntax)

This consists of a standardized format to pass the VBIS Tag and other search parameters between applications using a dynamic URL format. The search parameters and the format of the request are defined as part of the VBIS standard. This can be compared to adopting a common language by different applications to com-

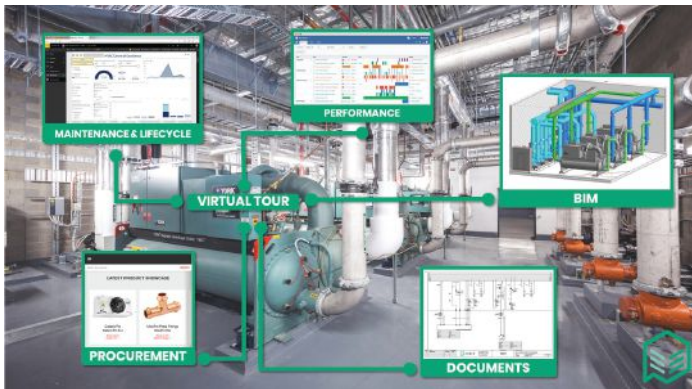
municate and retrieve information tagged with the VBIS Tag. This enables an FM to locate scattered information by clicking on a button in the application that triggers this request to other locations or applications.



An example of a VBIS Search Syntax information request

The VBIS Enabled Application Ecosystem

The VBIS standard applied to commercially available applications facilitates an ecosystem approach to storing and making use of information. The FM now has the freedom to select best-in-class function specific applications for the different types of information, with the information clearly identified and able to be discovered as required. The search syntax provides the common interoperability language that allows easy integration if the application is changed; it becomes as easy as pointing to the new domain of the new application.



The journey to date

The development was supported by funding from the Victorian (Australia) state government in support of innovation for the construction technologies sector. VBIS has been endorsed, and included, in the Victorian Government's Digital Asset Strategy Framework and the Queensland state government's Data and Information Guideline. VBIS has received testimonials from organizations such as the Australasian BIM Advisory Board and is in discussions with multiple industry bodies to ensure alignment.

A partnership has also begun with Brick where both initiatives have the aligned goal of promoting a consistent standardized approach to structuring data to gain better insights but with differing focus areas. Brick, through collaboration with Project Haystack

and ASHRAE, defines an extensive dictionary of I/O points and relationships between assets and points. With the VBIS classifications mapped, this provides a comprehensive model that assists with deploying technologies such as analytics and asset management activities. Commercial software vendors have started becoming VBIS-enabled by adopting the standard, providing benefits to both the vendor and asset operators. This begins the journey to a standardized communication approach between commercial applications to enhance interoperability and allow the end user easy access to all information.

Equipment suppliers such have commenced VBIS tagging their product catalogue. A major Australian equipment supplier tagged 26,000 products to date and can be searched by VBIS tag on their website.

A number of VBIS enabled application ecosystems have been deployed to date where asset owners and operators can take advantage of the ease of access to various information to make well informed decisions about their portfolio. Adoption has taken place at different stages of the asset lifecycle from design, construction and through to operation, which has highlighted the flexibility. VBIS received the Australian Business Awards 2020 award in Building Technology and is also a finalist in the FMA FM Industry Awards for Excellence 2020.

A way forward

While all these challenges are highlighted separately, the good news is that they all stem back to the same root cause and as such can be resolved through a holistic approach.

1. Define organizational information requirements.
2. Align asset information requirements.
3. Connect asset information model & asset information architecture.
4. Detail technology requirements.
5. Implement technology roadmap. FMJ

Additional resources

vbis.com.au/holmesglen-demo

vbis.com.au/s/VBIS-Commercial-Highrise-Melbourne.pdf



Heshan Samarawickrama's experience spans across new offerings development, business transformation, business management, project management and engineering. He spent the early part of his career engineering and delivering building projects and later moving to business management. He has led technology-based business transformation projects for Fortune 500 and large Australian companies. Most recently he is involved in asset management in delivering services and managing VBIS.

IFMA's COVID-19 Resource Center Provides the **Answers FMs Need Now**

Find resources to help you and your facility develop strategies to manage the COVID-19 crisis during the various stages of the pandemic. www.ifma.org/coronavirus

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CREATING MORE RESILIENT HEALTHCARE FACILITIES

Steps to take today to more rapidly prepare
for a winter COVID surge

BY BRIAN BAKER & BRYAN CONNORS



THE WINTER SURGE OF THE COVID-19 PANDEMIC IS HERE. THIS TIME THERE IS NO EPICENTER; THE SPREAD OF THE VIRUS HAS ACCELERATED. SOME HEALTHCARE SYSTEMS THIS SUMMER WERE ABLE TO TRANSITION FROM COVID-DEDICATED SPACES BACK TO GENERAL PATIENT CARE AREAS. NOW THEY ARE FACED WITH CONVERTING BACK AGAIN TO RESPOND TO RISING HOSPITALIZATIONS.

As healthcare facility managers navigate these changes, many are focused on building stronger levels of flexibility and resiliency to more rapidly navigate the COVID-19 crisis to ensure the safety of patients and staff. There are several key considerations to address today to successfully achieve this level of flexibility tomorrow.

INITIAL OPTIONS

At the onset of the pandemic, hospitals focused solely on surge capacity. FMs were tasked with converting inpatient, outpatient and other units into areas dedicated to serving COVID-19 patients. The goal for most facilities was to create dedicated floors or wings for COVID patients, and HVAC systems played a key role in containing the infection within these dedicated areas.

Although the U.S. Centers for Disease Control and Prevention (CDC) has required negative pressure rooms only for

aerosol-generating procedures, many, if not most, healthcare facilities developed temporary negative pressure rooms to manage COVID-19 patients. In some cases, this was done through converting HVAC systems, in other cases using portable negative air machines.

Those HVAC conversions took several forms. Some facilities successfully adjusted the dampers within the air handling unit supplying patient rooms, converting the original mixed air, recirculating design to a 100 percent outdoor air system. Others supplemented the air handling unit adjustments with air balancing at the room level. To create an isolation room type-space, a testing and balancing contractor was brought in to adjust the air handling unit dampers and the room exhaust airflow to ensure that these spaces were maintaining negative pressure conditions. For an experienced professional team that included a control contractor and air balancing contractor, these conversions may take one to two days.

LIMITATIONS AND CONSIDERATIONS

There are serious limitations to address in converting air handling systems entirely into 100 percent outdoor air systems. During the initial phases of the coronavirus pandemic, February and March 2020, these conversions were possible given the cooler outdoor air temperatures at those times and locations. During periods when outdoor air temperatures are more extreme (significantly warmer or colder), most air handling systems would be unable to adequately condition the incoming outdoor air. Implementing this solution deep into the summer or winter season in most regions would not be possible and may require FMs to rely most on high-efficiency filtration at the air handling unit and through portable HEPA filtered air units exhausting to outdoors from individual rooms.

For healthcare facilities that may rely solely on portable HEPA filtered air units to convert these spaces to negative pressure, it is important to recognize that many

portable HEPA filtered air machines are used on construction sites for construction containment purposes. These units are often used to capture potentially contaminated air within the construction site work environment, thus preventing it from transferring to occupied areas. It is important that these units are appropriately cleaned prior to being used in healthcare spaces occupied by patients or staff. It is also important to operate “right sized” HEPA filtered air units within the areas as operating oversized units can lead to excessive negative pressure conditions which may cause safety issues with doors and suspended ceilings.

In addition to the above limitations, FMs should be aware that operating large areas of the building under negative pressure conditions for too long can have a negative impact on the indoor environment, especially in areas that experience high outdoor air dew point temperatures. Operating at negative pressure conditions increases the infiltration of unconditioned and unfiltered outdoor air and, in humid environments, this infiltration can lead to surface condensation and damage building materials. For areas with high occupancy rates, recirculating HEPA filtered air units can also be an option. For this option, the HEPA filtered air units can circulate the air which will result in a significant increase in the clean air ventilation rate. Based on the backlog for HEPA filtered air units that occurred in recent months, the largest challenge may be ensuring a sufficient inventory of these units.

IDENTIFYING THE RIGHT SOLUTION

Having discovered some of the system limitations in initial the pandemic surge, healthcare facilities are creating safer and more efficient strategies for separating COVID-19 patients from non-infected patients. While some hospitals are examining a redesign of their HVAC system or enhancing HVAC system controls to be able to switch from patient room to negative pressure space at the touch of a button, the cost of implementing these changes may be prohibitive. In comparison, it is generally cost-effective to configure air handling units and spaces for negative pressure operation provided the right partners are brought together in advance.

FMs who have longstanding relationships with HVAC control contractors and testing and balancing contractors may find these conversions can happen rather quickly, especially when contractors are familiar with the building and HVAC equipment. An experienced contractor can help right-size appropriate negative air machines or identify simple maintenance solutions that can help a facility achieve desired goals.

VERIFY SYSTEM PERFORMANCE AND COMPLETE PREVENTIVE MAINTENANCE NOW

Verifying that HVAC systems are performing as intended and completing preventive maintenance activities will expedite modifications when preparing for the surge. In some cases, contractors found that the existing controls and dampers were either not functioning, or not operating in accordance with the design sequence, turning a simple damper adjustment into repairing and replacing



“... some hospitals are examining a redesign of their HVAC system or enhancing HVAC system controls ...”

dampers, valves or other components. Taking time to inspect systems for problems today will give FM staff time to acquire materials or equipment on hand in advance of a potential supply chain disruption.

The Centers for Medicare and Medicaid Services (CMS) released an updated list of COVID-19 Emergency Declaration Blanket Waivers for Health Care Providers. The updated list includes a waiver allowing flexibility for many inspections, testing and maintenance (ITM) activities as well as other tasks for Life Safety & Environment of Care during this public health emergency. FMs must think about resuming these tasks after the completion of the public health emergency, and ensuring that the systems are properly working if certain ITM tasks cannot be completed on time.

PUTTING A PLAN IN PLACE

As many hospital staffs are learning, changing spaces to negative pressure and back again requires careful planning. The best strategy to ensure an effective switch is to develop a Standard Operating Procedure (SOP) for regulating this process. This SOP might include:

- Assessing which spaces will be used to manage testing and surge capacity. The American Society of Health Care Engineering does not recommend converting operating rooms, which operate at positive pressure, to negative pressure spaces.
- Identifying triggers for converting spaces to negative pressure.
- Clearly identify steps to modify dampers, adjust fans settings and perform balancing.
- Set requirements for commissioning the system after the switch to verify acceptable negative pressure levels.
- Create steps of functional performance testing to verify the system is performing as expected.
- Perform maintenance activities in support of negative pressure needs. This includes cleaning external components of negative pressure units between patients and changing filters based on the manufacturer's recommendations (filters do not need to be changed between each patient).
- When converting negative pressure spaces back to their original design, have the contractor test air exchange rates and flow measurements to ensure they meet Facilities Guidelines Institute (FGI) requirements.

Developing this plan will also require open communication with members of the clinical team when prioritizing the location of negative pressure rooms.




KEEP COMMUNICATING

Ultimately, close collaboration with the right partners and open communication channels with the entire FM team will make for a smoother, more rapid conversion to COVID-19 surge spaces.

There are several areas where it is important to establish open communication channels today:

- Talk to the HVAC contractor. By working with an experienced partner who knows a system and facility's needs, meeting surge needs becomes a far simpler and more effective process.
- Seek third-party engineering and industrial hygiene support. Some solutions are complicated and require expert advice. Be sure to seek advice and support for issues that arise outside of your team's expertise. The cost of being wrong with these issues can directly impact employee and patient safety.
- Connect with the clinical team. It's of paramount importance that the clinical team, particularly an infection control practitioner, be involved in assessing surge space and ensuring effectiveness of isolation engineering controls and SOP planning.
- Train FM staff and address their concerns. FM staff may be just as concerned about working in a COVID-19 environment as the clinical staff in these rooms. Continuing education staff can keep them safe, including when and how to use personal protective equipment, and address concerns as they arise. Adopt strategies to clearly communicate infection risks. Clear communication will be critical in gaining staff's trust and confidence in the importance of routine maintenance tasks in keeping patients safe.

NAVIGATING THE CHALLENGES AHEAD

Experience has been a tough teacher for FMs who navigated the 2020 COVID-19 surge. Fortunately, there are lessons learned to make a solid plan for navigating the challenges that lie ahead. A close inspection of the lessons learned will only help speed and streamline processes needed to prepare for what is to come. 

[CDC.GOV/CORONAVIRUS/2019-NCOV/HCP/FAQ.HTML](https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html)



Bryan Connors, M.S., C.I.H., HEM directs EH&E's healthcare practice team, providing guidance and technical support in the areas of environmental health and safety program management, industrial hygiene, hazardous materials management, and regulatory compliance with U.S. Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency and Joint Commission requirements.



Brian Baker, P.E. has significant experience in engineering and building science. He has participated in hundreds of indoor environmental quality (IEQ) investigations and has conducted numerous building assessments in large and small office buildings, schools, hospitals, industrial sites and residences. His technical experience includes conducting forensic engineering investigations relative to building performance, potential pollutant sources and the impact that these have on the indoor environment.

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WHY AND WHEN WAS THE PROGRAM INSTITUTED?

Around 1970, a group of employees in the BYU maintenance department approached the chairman of the school's industrial technology degree program asking if it was possible to develop a degree related to the work they were doing. BYU created a four-year bachelor of science degree in Physical Plant Administration (PPA) that appeared in the course catalog for the academic year 1972-73.

WHAT TYPES OF PRACTICAL APPLICATIONS DO YOUR STUDENTS LEARN?

They learn everything from wiring three- and four-way electrical switches, to framing, OSHA incident tracking, estimating, planning a project, doing a building inspection, creating an operating budget and an asset register. Because the students take a technical internship with the university FM group on campus, they learn a lot of the things that they'll be managing later.

BYU teaches students both management principles and the fundamentals of the building systems they'll be managing. They study scheduling and cost control, project management, safety, sustainability, company operations and management, real estate development, property management, estimating, construction modeling with BIM, mechanical/electrical/plumbing systems, construction contracts and law, operations and maintenance, critical infrastructure management, HR management, statistics and accounting. Many students take extra business courses from the business school to earn a business minor. Students are required to do two internships, one technical and one capstone.

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

Many of our students have successful careers and are in senior management of all the FM outsourcing companies. About 30 work for the U.S. State Department as overseas FMs at embassies. Several manage the regional or global FM portfolios of large corporations. Some turned into entrepreneurs and developers. Many have gone into property management (both commercial and residential), and some of them have developed their own portfolios to manage. Some work in healthcare. One is even associate vice president for

facilities at the Julliard School of Music. Our students have gone into a wide variety of fields.

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

We do research on a wide range of topics that are relevant to FM practitioners, including use of drones for inspections, safety considerations at large institutions (for example, semi-automatic doors for wheelchair users), O&M costs across industry, assistance animals in residential and public buildings, overseas bribery in our industry and so on. We enjoy working on research ideas that have immediate relevance to those out working in the industry.

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

Obviously the coronavirus situation is likely to remain a challenge for the next generation of FMs. Before that, the main challenge was getting enough people trained to replace the current generation of FMs retiring in the next few years. Succession is a real problem, and one that has been highlighted for about a decade in research done for IFMA. Beyond that, the focus on the workplace itself (as opposed to the building) will end up being a challenge for the next generation as they try to balance what the tenant wants with the need to actually keep the building running efficiently.

WHAT ARE THE ACCOLADES OF YOUR ACADEMIC STAFF?





WHAT COURSES ARE OFFERED?

Requirement 1 Complete 16 Courses:

- ACC 200 Principles of Accounting 3.0
- CCE 101 Introduction to Civil and Construction Engineering 1.0
- CFM 105 Fundamentals of Construction and Facilities Management 3.0
- CCE 113 Construction Modeling 3.0
- CFM 120 Light Structural Systems 3.0
- CCE 170 Computer Methods 3.0
- CCE 201 Sustainable Infrastructure 2.0
- CFM 241 Electrical Systems in Construction 2.0
- CFM 311 Estimating Processes 3.0
- CFM 320 Mechanical Systems 3.0
- CFM 345 Construction Safety Management 3.0
- CFM 485 Construction Contracts and Law 3.0
- CFM 412 Construction Scheduling and Cost Control 3.0
- CFM 415 Construction Project Management and Control 3.0
- CFM 426 Real Estate Principles and Development 3.0
- CFM 445 Construction Company Operations and Management 3.0

Requirement 2 Complete 1 course:

- CCE 231 Foundations of Global Leadership 3.0

Requirement 3 Complete 1 course:

- WRTG 316 Technical Communication 3.0

Requirement 4 Complete 2.5 hours from the following course(s):

Complete five enrollments of the following (cannot be taken the same semester as CFM 491):

- CFM 291R Undergraduate Seminar 0.5
You may take the course up to 5 times.

Requirement 5 Complete 1 course:

- CFM 491R Senior Seminar 0.5
Student must complete 300 hours of pre-approved construction/facilities-related work after declaring the major and must submit a report during the CFM 491 class.

Requirement 6 Complete 8 courses:

EMPHASIS COURSES:

- Math 111 Trigonometry 2.0
- CFM 110 Fundamentals of Facility and Property Management 3.0
- STAT 121 Principles of Statistics 3.0
- CFM 330 Advanced Mechanical, Electrical, and Plumbing Systems 3.0
- CFM 340 Operations and Maintenance 3.0
- CFM 400 Managing High Performance Buildings 4.0
- CFM 420 Commercial Real Estate Management 4.0
- HRM 402 Human Resource Management 3.0

Requirement 7 Complete 2 courses from the following:

Note: If CFM 494R is chosen, at least 3.0 credit hours must be taken.

- CCE 214 Geomatics 3.0
- CFM 411 Pre-Construction Services 3.0
- CFM 450 Virtual Design and Construction 3.0
- CFM 494R Special Problems in Construction and Facilities Management 3.0
- FIN 201 Principles of Finance 3.0
- HRM 300 Organizational Behavior 3.0
- MKTG 201 Marketing Management 3.0

Requirement 8 Complete 1.0 hours from the following:

- CFM 199R Technical Internship 1.0

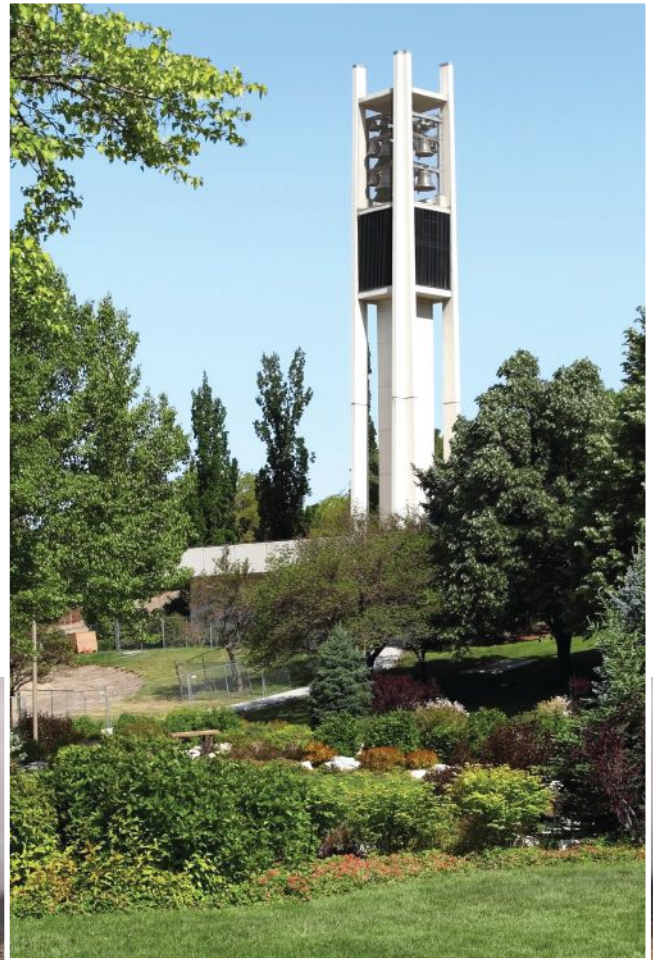
Requirement 9 Complete 1.0 hours from the following:

- CFM 399R Capstone Internship 1.0

Most of our faculty have many years of hands-on management experience in the industry, including the global outsourcing industry. Some have run their own companies before coming to the university. The faculty has a pronounced pragmatic view of educating our students.

HOW SUCCESSFUL ARE YOUR STUDENTS IN FINDING INTERNSHIPS AND JOBS AFTER GRADUATION?

All students find internships easily, and our placement rate upon graduation is as close to 100 percent as it can be. There are always a few students who take a bit longer to find the right situation or decide to continue their schooling by going on to grad school, but essentially all students get placed after graduation. Many of our students even have more than one offer before they graduate. We have a close connection to a number of companies in our industry that are always eager to hire our students — whether for internships or permanent jobs. Internships often lead to job offers for our students. FMJ





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How to Reduce Re-Opening Risk in Your Water Systems Following COVID-19 Shutdowns and Low Occupancy



BY BRIAN PAWLIK
MARKETING MANAGER,
NALCO WATER

Today, your building or facility is likely among the thousands operating at anywhere from zero to low occupancy due to

COVID-19. As occupancy rises through phased business operations and returns to normal, critical measures are needed to address the safety of everyone entering your facility.

In their re-opening and re-occupancy plans, Facility Management and Corporate Real Estate leaders must consider both how to mitigate the risk of COVID-19 exposure and transmission on-site, and how to keep up with guidance from the CDC and other organizations. Both factors are key to protecting occupants, maintaining healthy business operations and delivering a healthy work environment.

With such a strong focus on COVID-19, it's easy to overlook another risk of prolonged low occupancy: the increased potential for *Legionella* outbreaks via domestic water systems. Low occupancy can reduce the flow and usage of domestic water by as much as 80-90% across all building water systems, resulting in a dangerous combination of declining levels of treatment plus elevated levels of waterborne bacteria, including *Legionella*.

Legionnaires' disease is a serious lung infection caused by inhaling water mist or droplets containing *Legionella*. Based on data from the CDC, 1 out of 10 people who contract Legionnaires' disease will die. This is a very serious issue for facilities that must be addressed; the World Health Organization estimates the

average cost of a *Legionella* outbreak at \$2.6 million, with an added brand reputation impact of up to \$8 million.

Nalco Water highly recommends that all facility managers and building owners review the CDC guidelines and implement water management plans for all at-risk water systems. The best approach to manage water safety risk is to:

- Implement best practices of water systems
- Implement a water management plan
- Test and validate

Prior to re-occupying a facility, water systems should be tested for *Legionella* in addition to conducting risk profiling. Proper flushing of water systems is recommended, but testing will confirm and validate the condition of the water preceding re-occupancy. A contingency response plan should also be defined, which may include hyperchlorination to ensure your building water systems are safe for returning occupants, and ready for you to continue working toward normal or phased business operations.

No company is immune to elevated *Legionella* risk, even if you've never had an issue in the past. Recently, the CDC had to close several of its own buildings in Atlanta due to positive *Legionella* tests in their water systems following the prolonged shutdown.

If it can happen at the CDC, it can happen anywhere. Ensuring you are taking all the right steps to manage your water systems is critical for the health and safety of your building occupants. Regular *Legionella* testing enables you to not only confirm the condition of your water systems, it can also validate the efficacy of your water management plan and help you plan for remediation if necessary.

Addressing *Legionella* risk should be part of every company's corporate re-occupancy plans. Whether you currently outsource your Facility Management or self-perform these activities, water safety should be top of mind as you prepare for re-occupancy. Failure to execute best practices for water management and re-occupancy due to COVID-19 shutdowns can lead to serious consequences.

“WE DO NOT WANT TO TRADE A COVID-19 SITUATION WITH A LEGIONELLA EVENT WHEN WE OPEN UP”

- Vice President of Engineering,
Nalco Water Customer

Nalco Water can provide support on a mitigation strategy that includes *Legionella* testing, risk profiling your facilities prior to re-opening, and developing long-term water management strategies. For more than 25 years, Nalco Water has been the global leader in water safety. We've developed more than 15,000 water management programs worldwide, customized to the unique needs of each customer. Nalco Water is the only company that uses in-house certified professionals to deliver all components of a water safety program to help you manage the risk associated with waterborne pathogens and help you safely re-open your facility to normal occupancy.

For more information regarding water management in your facility, visit us online at ECOLAB.COM

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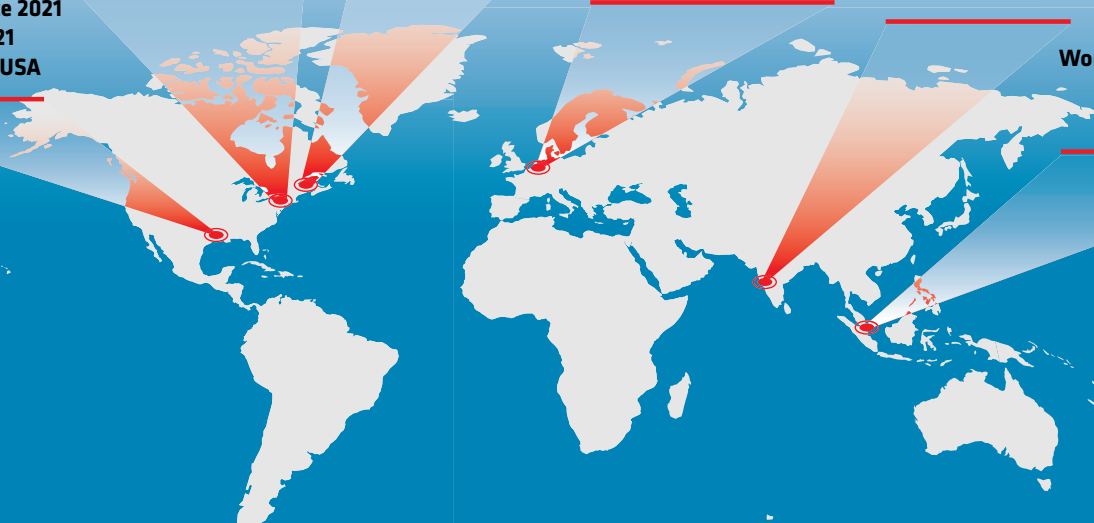
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SAFE SPACE

A large, jagged iceberg floats in the middle of a calm, blue ocean. The sky is a pale, overcast blue. The water's surface is slightly rippled, and the iceberg's reflection is clearly visible in the water below. The overall mood is serene but also carries a sense of hidden danger, as the submerged part of the iceberg is much larger than the visible part.

**Why the office might be
a healthier and safer place than home**

BY ELENA BONDAREVA, DR. VYT GARNYS & DAVID HEMMING

Facility managers, corporations and property owners are facing a rising existential challenge from remote working enabled by technological advances. This trend is not new but it is accelerating by the sudden work from home (WFH) requirement brought on by the COVID-19 pandemic. This has significantly impacted facility and real estate managers, corporate managers, property owners and dependent associated businesses. How has this changed personal and corporate risks profiles?

There have been many thought pieces proclaiming the death of the workplace as it was pre-pandemic. However, similar to Mark Twain, the report of the death of the workplace is “an exaggeration.” It is too early to draw that conclusion as greater consideration must be given to second and third order effects, and a more robust defense of the workplace, should be put forward based on the health benefits created for its occupants.

A balanced argument must be made of the impact on employees and corporations from this trend. The benefits for staff and corporations seem obvious: less travel, the comforts of home, less formality, improved work-life balance, less office space, lower overheads, fewer FMs. There are many advantages if corporations are designed to be run by a dispersed population working in an unstructured environment (home, café, park, shared workspace) without corporate social interaction.

The key problem for FMs is the perceived lowered need and use for corporate office and workspace. Many corporations are seizing this opportunity to reduce their floor space and buildings without full consideration of the impact on productivity and corporate culture.

However, there are many arguments against this opportunistic reaction. Will the drive to save money on perceived unnecessary office space create secondary issues from an increase of chronic disease through lack of exercise and poorly designed home working spaces and a mental health epidemic caused by isolation and lack of aesthetic stimulus? Will WFH change corporate culture, cohesion and loyalty? Corporate culture has been described as an iceberg, with most elements under the surface. Many of them is inculcated subconsciously and cannot be learned/absorbed through a video or teleconference.

In contrast to offices, most homes do not have spaces that are professionally designed to carry out the work required by the organizations. Organizations spend 40 to 50 percent of the value of the building on professionally designed interiors with optimized indoor environment quality (IEQ) and wellness (lighting, noise,

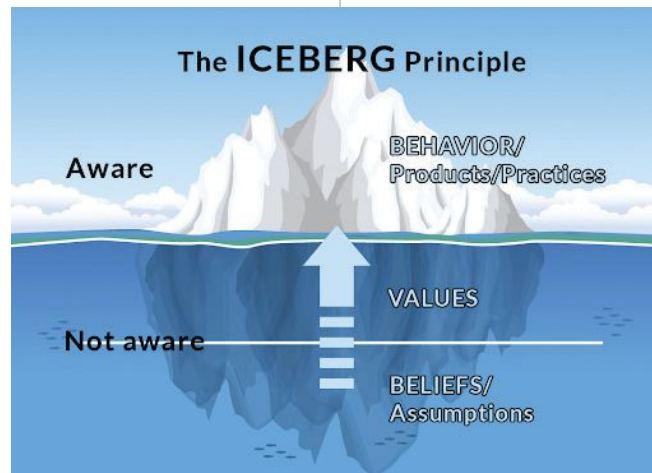
air quality, comfort, water quality). Town planning has ensured zoning is carried out to create business districts with symbiotic amenities not common in residential areas.

In most countries there are explicit legal obligations placed on landlords, employers and maintainers of non-dwelling buildings to manage the health and safety of employees. Risk assessment and management controls are put in place to manage chronic and infectious disease. Contemporary building standards consider the different modes of disease transmission, including indirect contact with airborne pathogens and contaminated objects, direct person-to-person contact and droplet spread. For example, in the

case of airborne viruses, such as influenza or COVID-19, engineering control methods include the careful design of building ventilation systems (both natural and mechanical) to ensure sufficient air changes move pathogens away from the occupants. The same controls are rare in residential properties. One of the key examples of this comes from the first SARS outbreak in 2003, where a high number of cases within the Amoy Gardens residential complex in Hong Kong was traced back to airborne transmission through the soil stacks which

connected the residential units. Well maintained commercial properties should not suffer from the same problem.

The Royal Academy of Engineering in the U.K. provided a much-quoted ratio of 1:5:200 in its “Long Term Cost of Owning and Using Buildings” paper. It indicated for every one pound spent on construction cost, five are spent on maintenance and building operating costs and 200 on staffing and business operating costs. In the U.S., 3:30:300 is the often quoted ratio for costs of energy:operations:labor in buildings. While the quantities can be debated, the principle is clear, investment decision around staff will have the greatest effect. Human-centered design is not a new concept. Its adoption can increase the productivity of building occupants and the operational efficiency of organizations, while improving user experience and accessibility, and reducing discomfort, stress and anxiety.



As to the psychological benefits of the workplace on its occupant, these can be linked to motivational theory and the intrinsic and extrinsic motivators. Buildings and the jobs they support provide extrinsic motivators or physical needs such as shelter, security, employment and health as explained in Maslow's Hierarchy of Needs and the later iterations of this research. The need for space and ventilation are minimal criteria for control of COVID-19. However, these are recognized to have a diminishing return as motivators for people. They are commonly described as deficiency needs; their absence is more keenly felt than a high quantity of their presence. It is the intrinsic motivators or growth needs that have greater impact on people, and they come from within an individual. The use of office buildings can overcome any inequalities present across the workforce. They can provide consistent physiological and psychological needs through verifiable healthy indoor environments, a recognized belonging through a cultural identity and behaviors, the promotion of friendship and connection with friends and colleagues, status, recognition, aesthetic inspiration and self-actualization. This suggests that there may be negative impact of the emerging WFH culture due to the absence of elements of both these intrinsic and extrinsic motivators.

While corporate culture and psychological needs may seem intangible concepts to some, what is very tangible and immediate is the pandemic's economic worldwide impact. There will be an overwhelming corporate need to recover and improve productivity. In broad terms, productivity describes how well an organizational unit uses its resources to achieve a goal. The Organization for Economic Co-operation and Development's (OECD) Compendium of Productivity Indicators (OECD, 2015) states:

"Productivity is commonly defined as a ratio between the fiscal volume of output and the volume of inputs. In other words, it measures how efficiently production inputs, such as labor and capital, are being used in an economy to produce a given level of output. Productivity is considered a key source of economic growth and competitiveness and, as such, internationally comparable indicators of productivity are central for assessing economic performance."

In contrast, efficiency is the ratio of non-fiscal parameters such as task speed, sick leave rate and cognitive ability. The British Council for Offices' (BCO) report Defining and Measuring Productivity in Offices (2017) concluded that:

"a healthy workplace is not necessarily a productive workplace. However, to be productive office users need to be well. Therefore, a healthy workplace is essential but insufficient for sustained productivity in offices."

The BCO report estimated the potential value of productivity gains to typical occupiers as a percentage of annual office rental costs — ranging between 30 percent in central London to 75 percent outside of the capital. Those productivity gains can only be fully realized by safeguarding the health and promoting the well-being of employees.

OECD also provides an international benchmark for Better Life and Wellness, and separately for labor and capital productivity. It makes clear that great consideration must be given to inequalities even in the developed world and a one-size-fits-all approach is not appropriate where well-being is concerned. (oecd.org/statistics/better-life-initiative.htm).

Improved IEQ had a projected net impact on labor productivity of 1 to 5 percent that correlated with better and poorer buildings. The significantly larger gains of \$AUD100 to \$AUD200 per square meter from labor productivity were compared with the energy gains of \$AUD15 to \$AUD20 per square meter.

A mid-sized city, such as Melbourne, Australia, had a 5 percent increase in labor productivity, equating to an annual benefit of approximately AUD\$2.1 billion yearly, to the local economy. Proportional gains apply for portfolios. An improvement of 5 percent in productivity is achievable through targeted and benchmarked retrofits of the indoor environment with rapid ROIs. Targeted improvements to IEQ, be they lighting, acoustics, thermal comfort or contaminants, have significant benefits beyond just productivity, including increasing staff retention, improving occupant satisfaction and even reducing absenteeism. For owners, demonstrable productivity improvements can lead to better building rental yields.

How can landlords and FMs encourage people and organizations to return to the workplace even if it is reimaged with a

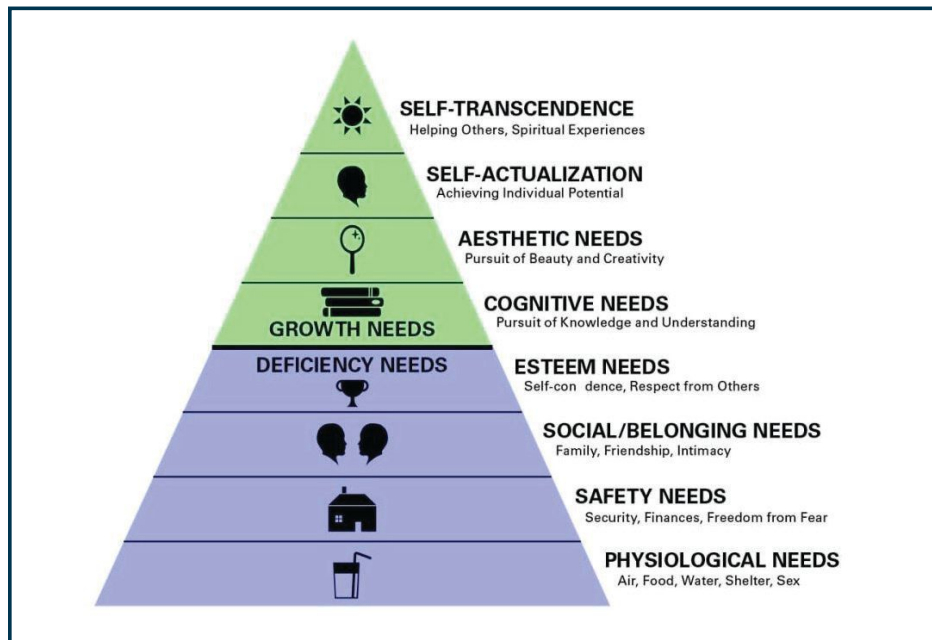
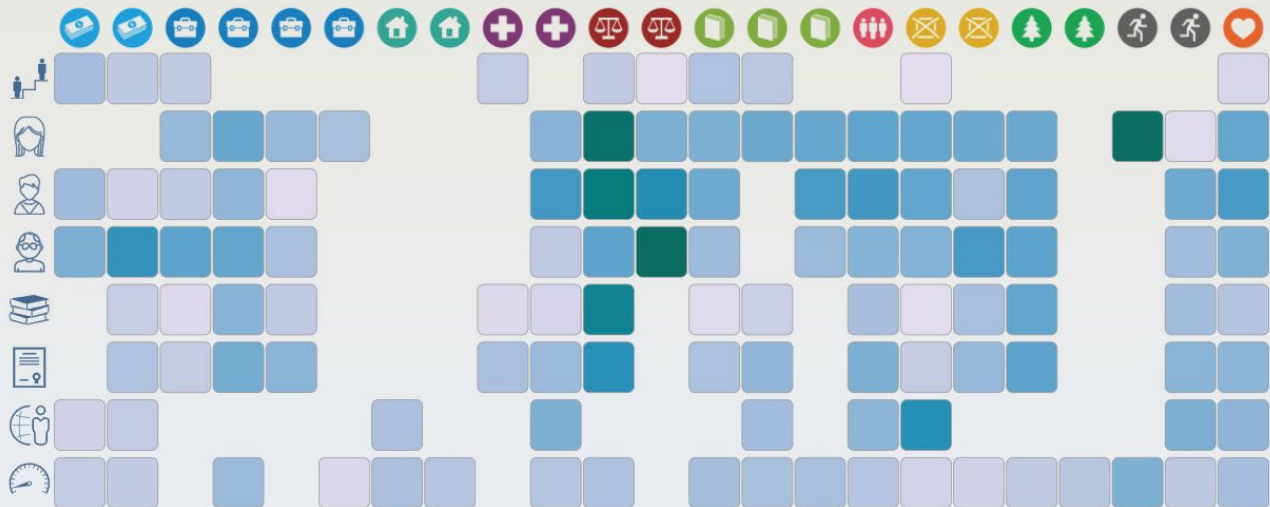


Figure 1. Based upon Human-Centered Design: An Emergent Conceptual Model by Ting Zhang and Hua Dong.

The chart below shows some of the various types of inequality existing in the 11 dimensions of well-being explored in [How's Life?](#).

OECD - Inequalities across well-being indicators



Grey areas indicate that data or inequality measures are not available

Perform worse

Equality in well-being

Perform better

	Vertical inequalities
	Gender inequalities
	Youth inequalities
	Elderly inequalities
	Inequalities by education level - Primary
	Inequalities by education level - Secondary
	Migrant inequalities
	Deprivation Level

Key dimensions			
	Income and Wealth		Subjective Well-being
	Work and Job Quality		Safety
	Housing		Work-life Balance
	Health		Social Connections
	Knowledge and Skills		Civil Engagement
	Environment Quality		

more hybrid approach to WFH? Fundamentally it requires them to trust that their employers or property owners are going to protect their health at the very least. However, trust in this current era can be a very scarce commodity. What is needed is evidence-based risk assessment and recognizable benchmarking by which this assessment can be judged.

Governments are providing very broad risk guidance rather than benchmark standards for safe reentry of workplaces. There are significant factors concerning infection control that a health and safety generalist will not understand. ISO 31000 — Risk Management states risk assessments

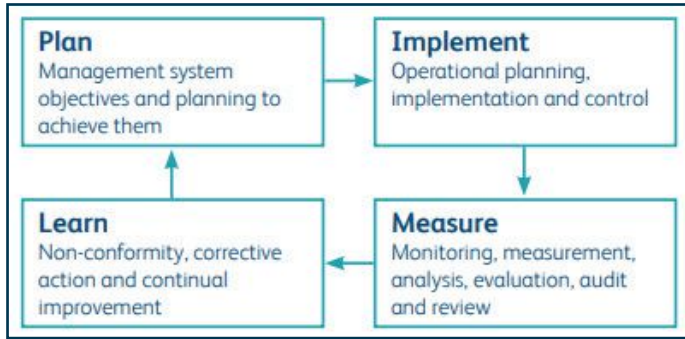
needing to be:

- Customized
- Inclusive
- Structured and comprehensive
- Integrated, and
- Dynamic

Therefore, it may be beneficial to have risk assessments independently and professionally produced and verified to provide a recognized measurable level of assurance to staff that all risks have been addressed. It is recommended that if employers follow this course of action, they look for a partner with experience in their sector, who has a track record with creating bespoke risk management strategies and action plans that addresses the specific needs of their property portfolios.

A benchmarking approach that acts as a control measure for health and safety, and has been shown to link to productivity, is the adoption of rating schemes such as WELL, Fitwell and NABERS that focus on reducing sickness and promoting health which will help build occupant confidence.

To succeed in retaining safe building occupancy, the following actions have been found to be important:



1. PLAN

- a. Establish the risk appetite of both employer and employee. This may already exist in an organization’s risk management framework, but may need to be reviewed considering the external factors impacting on the risk management principles
- b. Ensure a risk assessment is conducted by competent individuals
- c. Engage with a complete stakeholder team as communication and consultation are key

2. IMPLEMENT

- a. Trial model facilities or areas

3. MEASURE

- a. Measure key indicators before, after and regularly, including full IEQ and occupant satisfaction
- b. Professionally review and audit cleaning materials and protocols

4. LEARN

- a. Validate that the residual risk is lower and within acceptable risk tolerance
- b. Identify corrective actions to the plan and imbed them in the revised management system

5. PLAN

- a. Create simple risk indicator communication protocols and performance motivators
- b. Develop corporate performance indicators, including health, productivity and satisfaction based on quantitative data FMJ

Figure 3: Principles, framework and risk management process from ISO 31000

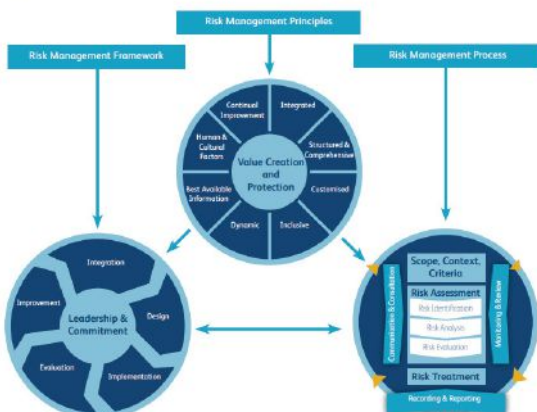


Figure 2. Reproduced from the IRM Standard Deviations A Risk Practitioners Guide to ISO 31000 - 2018



David Hemming is a chartered civil engineer with more than 30 years of experience managing major campuses, delivering annual budgets in excess of £350M for major universities, the U.K., military and the U.K. government. In his roles, he has been responsible for operations, FM and capital projects in fast-paced, technically complex and operationally demanding environments on time, to cost and to the right quality. Hemming is the CEO: Northern Hemisphere for the CETEC Foray Group, an independent scientific advisory specializing in occupant health, well-being and performance.



Dr. Vyt Garnys has more than 40 years of experience in scientific consulting and championed the indoor environment’s power over people’s health, well being and productivity since before the term “sick building syndrome” was coined. A founding member of ISIAQ, not only has he developed diagnostic, verification and productivity assessment methodologies and contributed to the global leadership of rating tools, but he has also helped equip two generations of facility owners, designers, managers and users to leverage the indoor environment to its potential. Dr. Garnys is the founder and managing director of CETEC Foray Group.



Elena Bondareva has an international track record of transformative innovation around persistent problems. She has held public, private, teaching and board roles in Australia, New Zealand, Russia, South Africa, India, and the U.S.; delivered CPD training to thousands of professionals; participated in globally significant events such as COP17 and G20, helped establish four Green Building Councils and the Living Future Institute of Australia and served on the Advisory Board for the Global Health & Wellness Summit (Greenbuild) and the COVID-19 Taskforce of the International WELL Building Institute (IWBI). Bondareva is vice president at CETEC.



THE SPEED OF EVOLUTION

Flex space changing to fit organizational needs

BY PEGGY MOORE

Flexible office space inventory makes up less than 5 percent of the office inventory in the United States. That number is projected to continue its growth trajectory towards 30 percent by 2030, according to research from JLL. That growth is well earned, as flex space is an ideal option for companies needing flexible solutions that mirror their shorter-term need for space.



What exactly constitutes that space is a definition that has been shifting for several years now. Although the flex office space concept was already changing before COVID-19, it is now experiencing a forced evolution and is poised for significant growth as businesses begin planning and executing their post-pandemic returns to the physical office.

At first blush, many confuse flex space with coworking, largely because the definition has shifted so quickly in the last couple of years. Truthfully, flex space used to be something quite different than what it is now.

Just a year and a half ago, there was coworking — and it was called coworking. It wasn't until the downfall of WeWork that there was a sudden rebranding of coworking under the umbrella of flex space, which the media was largely responsible for executing quickly. That is a large part of what makes flex space so interesting, because it used to be something else and now it includes coworking.

To understand what modern flex space is, it is essential to realize that it is so much more than just coworking space. Businesses will dictate what flex space will become based on the variety of short-term needs they will have.

Flex spaces provide companies with short-term flexibility, whether it is coworking or flex space that is managed by landlords. Flex space is set to play a strong

role in the future office space landscape as tenants may be hesitant to commit to long-term leases. After all, most businesses are not sure of what their needs might be right now. That is why the definition will continue to shift, with flex space coming into its own within the next three to five years.

FLEX OFFICE SPACE IS EVOLVING

The first generation of flex space was industrial space made of offices and connected warehouse space. The next iteration was born from landlord responses to tenant demands for shorter-term leases. This movement was sparked by coworking, but also represents a natural progression in the need for businesses to be nimble and able to quickly respond to changes in the market.

Businesses decentralizing was once a factor in the growth of flex space. Now because of COVID-19, businesses are conceptualizing how their real estate will be utilized going forward. It is going to definitely change.

In years past, coworking seemed to dominate the headlines. The collapse of WeWork and the subsequent rebranding of coworking was a seismic shift in the pre-COVID-19 flex space world, which was forced to absorb coworking as one of its subsets.

Before COVID-19, coworking was growing exponentially in many large U.S. markets as Hollywood began utilizing coworking spaces for its digital content, freelancers and production talent. Denver replaced parking lots and industrial areas with coworking spaces, and metropolitan areas like Seattle and Northern Virginia experienced tech growth that fueled the use of more coworking spaces.

Post-pandemic, coworking has taken a substantial hit that will force some big changes. The compound annual growth rate (CAGR) is expected to decrease by 12.9 percent from 2019 to the end of 2020, but eventually rebound by 2023, according to Business Wire.

The flex space is about so much more than coworking, though. Today, flex could



be anything from coworking to on-demand space, space for a single remote worker to a complete business unit. There's no hard and fast definition. It includes coworking, on-demand space, executive suites and private offices.

Essentially, everything that does not fall under the traditional long-term office lease could be deemed flex. Flex office space also includes short-term leases of three to five years and even shorter-term leases of two years or less.

These office spaces are ideal for businesses of all sizes. Flex office spaces are increasingly being used by large enterprises for swing space, temporary offices and complete business units.

While it was already evolving before COVID-19, the pandemic is forcing a faster evolution of flex space. Going forward, the demand for increased variety of flex space is expected, driven by the needs of the occupier.

Those occupying flex spaces are as varied as the spaces themselves. Occupants could be anyone from single remote workers to large corporations. The needs of a gig worker employed by a Fortune 100 company who wants an office environment differs from those of a small or large business using the space as a swing space, for example. However, in any case, those occupying flex space crave the ability to quickly respond to the changing climate.

The industry will continue evolving as many providers look to accommodate the needs of occupiers going forward. Businesses will absolutely need flex space. Commercial real estate (CRE) companies and landlords will undoubtedly be evaluating their offerings to determine how they can be more flexible with their space to provide tenants with what they need to fill the space. That is the question that everyone with office space will be looking to answer because it is either flex or be empty.

How that flexibility manifests itself will be exciting. For example, the coworking companies that remain will have to reinvent themselves. They will not be able to pack in as many people as they did before, which changes the profit model and footprint.

Coworking companies are not the only ones reinventing them-

selves. As flex continues its evolution, the physical office space and CRE landscape are also reinvented along with it to best respond to the needs of those utilizing those spaces.

Agility could not be more critical than it is right now. Businesses need flexibility with so many unknowns, and they need the ability to expand and contract in their space utilization to move them from their current circumstances to whatever the future might bring.

COVID-19 AND THE IMPACT ON FLEX SPACE

Agile solutions are paramount in this post-COVID-19 world, and that is exactly what flex space brings. As offices everywhere closed their doors and businesses pivoted to prioritizing the health and well-being of their employees in the wake of COVID-19, the demand for flex office space changed. For example, coworking spaces have taken a substantial hit as the workers who would traditionally leverage those spaces shifted to work from home.

One of the largest ways that COVID-19 has impacted flex space is the acceleration of existing trends and the introduction of new ones. Short term challenges include offices remaining empty and employers struggling to create a plan for return to work based on all the known and unknown variables.

FMs are evaluating their needs post-COVID-19. Part of the challenge lies in trying to do projections based on a tremendous number of unknowns, including how many people will return to the physical space short-term, long-term and what structure will be needed to accommodate these workers in both instances.

Businesses and FM really do not know when workers are returning to physical office space or how many will be coming back. Many businesses and FMs are trying to make decisions based on snippets of information that come trickling in. In some cases, they must change their course of action entirely as new information emerges. For example, at one point, many businesses expected that they would be able to bring employees back in late summer. Now many of those dates have largely been pushed to 2021.

The impact of COVID-19 and the continuing changes that businesses must make in their plans create a ripple effect that not only includes employers, but also all the businesses that support them. While employers figure out their return to physical space plans, product and service providers are also assessing what the demand on them might be.

Businesses that provide products and services to occupiers are also trying to outthink what might be asked of them. For example, CRE companies do not know how much of their portfolios might remain vacant. These questions — and any plan alterations — cascade throughout the supply chain.

Additionally, there will be new work patterns, with real estate decisions emerging from these new work patterns. In the past, these decisions always started with real estate and then fit the people into the space. Now, it will start with the people and trickle out from there to drive real estate decisions and determine what flex space needs to be.

WORKING SAFELY IN THE OFFICE: TODAY AND INTO THE FUTURE

Businesses will continue working under pressure for quite some time. They have important decisions as COVID-19 forces a phased return to work. People will either continue working from home or return to the physical office incrementally either several days a week or in staggered shifts.

As things shift from responding to the pandemic to slowly recovering, a new way forward will emerge. It will likely differ from business to business. Tenants' real estate needs will continue to evolve such as choices available in short- and long-term leases, healthy work environments, and agile workspaces that adjust for the work that will be performed that day, reconfigurable for tomorrow.

For many businesses, they may need to change their real estate footprint over time or branch out to other locations to make it easier to space people out. Most importantly, the behaviors on both sides — employers and employees — will need to change too. Employees want the ability to choose whether they work from home or return to the workplace. They want to be able to choose where they sit so that they feel comfortable and confident in the health of the environment.

Flex space is projected to be more important than ever, but the key to getting back to work in any office space is good data. There are so many considerations that need to be addressed to bring employees safely back into the physical office, whether that is today, tomorrow or a future date. Certainly, there are major decisions looming ahead not only about square footage, but also surrounding sanitization, air purification, barriers, distancing and capacity.

Being able to rely on data to make major decisions as businesses move forward is essential. Technology can facilitate that in new


and innovative ways. The use of sensors and user analytics gives businesses an automated way of knowing where people sit and movement patterns around the office. This empowers them to do their own in-house contact tracing with user analytics and the user-friendly dashboard.

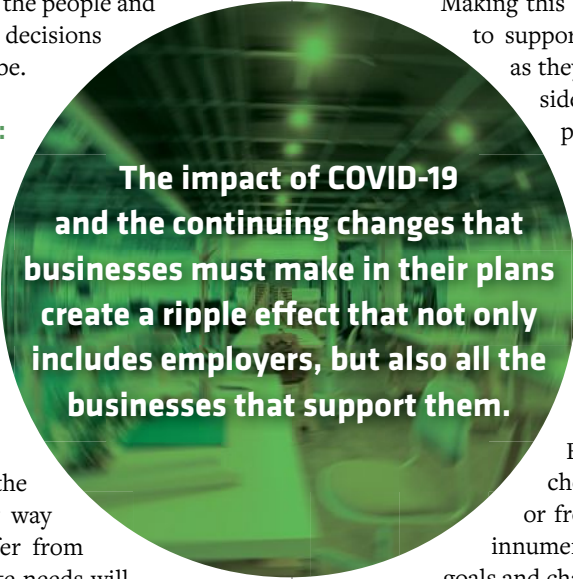
It also enables decision-makers to clearly see how space is being used, which provides insight into everything from the amount of square footage that is really needed to how frequently spaces need sanitization. There is tremendous power in leveraging automated data, something more businesses will want to utilize in the coming days and in the future.

How the space is being used and what space is being used will determine how much real estate they need going forward. That decision and that knowledge is more important than ever before.

Making this decision based on good data is essential to supporting long-term goals for the businesses as they reevaluate their existing footprint, consider their flex space needs and map their path forward. It puts the power of knowing when to say “when” into the hands of FM, business owners and decision-makers, giving them clarity and actionable data to scale their footprint based on new, post-pandemic usage patterns.

What is an available solution to accommodate those needs? Flex space. Moving forward, there is little choice but to embrace and develop flex space. Businesses and their employees need choices beyond just working from home or from the office. Flex space provides those innumerable in-between solutions based on the goals and challenges of each business.

The pandemic may have forced the evolution of flex to speed up, but that's a definite bonus. Flex space will support the economy of the future. 



The impact of COVID-19 and the continuing changes that businesses must make in their plans create a ripple effect that not only includes employers, but also all the businesses that support them.



Peggy Moore is senior vice president of corporate sales for CORT Business Services. She has worked with landlords and occupiers, across all verticals and areas of the country, since 1991 to determine how they can best maximize office space to accommodate the needs of the end-user. Various positions held include responsibilities in general management, strategic business development, national accounts, federal government and national B2B corporate sales.



BITING BACK

New York City's ambitious energy standard

BY LENNART ANDERSSON



Climate change's effects were more evident than ever in 2020 with raging wildfires across California and an Atlantic hurricane season for which the National Oceanic and Atmospheric Administration used the Greek alphabet after running out of traditional storm names. This illustrates that it is more important than ever to find ways of reducing the emissions of greenhouse gases.

In New York, New York, USA, about 70 percent of CO₂ emissions come from the built environment; a number much higher than most cities. This is mostly due to a high building density and many of those buildings need upgrades to their HVAC systems and the exterior envelopes. Often times, the tenants pay the energy bill which does not incentivize the property owner to perform potential costly energy upgrades, which adds to the problem.

To curb climate change, it is essential to address the problem's biggest contributors and devise a system to drive energy retrofits. In 2019, the New York city government passed the Climate Mobilization Act, the most ambitious carbon emission reduction plan passed by any city in the world. The centerpiece is Local Law 97, which calls for a strict cap of carbon emissions of all buildings more than 25,000 square feet by 2024. This includes approximately 50,000 of the city's 1 million buildings. Those facilities account for about 60 percent of the city's total floor area. These buildings must subsequently comply with even stricter 40 percent caps on emissions by 2030 compared to a 2005 baseline. By 2050 there must be an 80 percent CO₂ reduction.

The law includes a flexible scheme of energy credits and emission offsets. The city is scheduled to release a report on the potential inclusion of carbon trading by early 2021. The program is relying on both carrots and sticks. It offers a low-interest loan program for financing retrofits and educational programs for building owners. It is also launching a retrofit accelerator program to connect owners with retrofit specialists to help fast track the projects. Starting in 2024 any annual energy consumption above the established limits will result in financial penalties.

The buildings are assessed by examining its function, size and HVAC system and then measured against the energy bills. In

December 2019, a climate advisory board was formed, which created eight working groups to develop more detailed rules from the law and methodologies for calculating and verifying individual buildings' greenhouse gas emissions.

The program is designed to address the 20 percent worst emitters by 2024 and then the next 75 percent by 2030. Statistically, the average building will pass the 2024 deadline but will have to perform some sort of retrofit by 2030. As designing and executing retrofits take years, the function of the law gives FMs enough time to meet the deadlines. The energy trading program will provide financial rewards for energy efficient buildings via credits. This financial benefit will compound over the years.

Innovative solutions

In June 2020, the Urban Green Council published a report titled "Trading: A New Climate Solution for Buildings," detailing how non-compliant buildings can purchase energy credits from buildings that consume below the maximum levels. Purchasing local renewable energy credits can offset up to 100 percent of annual emissions. There are also deductions for greenhouse gas offsets and peak energy storage.

Proptech innovations will also play a role in measuring and controlling the microclimate in buildings to lower total energy use without compromising the occupants' environment. There are numerous startups focusing on how building occupancy feedback loops can be used to further understand how buildings are used and develop innovative energy saving solutions.

Product innovations such as compact geothermal heat pumps and façade integrated photovoltaics are becoming viable retrofit options.



How is the emissions limit estimated?

The U.S. Environmental Protection Agency’s free Energy Star Portfolio Manager is a good reference for energy compliance. Every building in New York City with more than 25,000 square feet should be included and benchmarked per the 2019 deadline. This system can convert energy data into carbon emission information which will then determine whether the building is compliant. Although the method used in Portfolio Manager is slightly different than the method required in Local law 97, it is a good starting point to see how close the building is to compliance.

Based on Local Law 97, occupancy classification will determine the allowable amount of building emissions based on kilograms of CO₂ emitted per square foot each year. Below are a few examples of building typology limits measured in annual kilogram of CO₂ per square foot for 2024 followed by the stricter 2030 deadline.

OCCUPANCY TYPES	2024 limit (kg CO ₂ /sf)	2030 limit (kg CO ₂ /sf)
RESIDENTIAL APARTMENTS	6.75	4.07
OFFICE BUILDINGS	8.46	4.53
HOTELS	9.87	5.26

To prove compliance, building owners must submit an annual emissions intensity report that is certified by a registered design professional beginning in 2025 or risk paying substantial fines. There are additional fines for submitting false reports.

Failure to comply with the carbon caps can incur a penalty of US\$268 per metric ton of CO₂ in excess of their allowed annual carbon footprint.

What can FMs do to reduce building emissions?

Besides potential retrofits of HVAC and exterior envelopes there are numerous ways of reducing a building’s energy usage. IFMA offers a series of sustainability courses through the Sustainability Facility Professional® (SFP®) program. It helps facility managers make data-driven decisions and utilize assessment based tools to understand sustainable best practices. The credential equips FMs

with methods on how to take a systematic approach to operate a building and evaluate the building performance. It also provides tools of cost/benefit analysis in order to prioritize the best outcome. There is an estimated 5 percent average potential savings by just optimizing the building operations.

Retrofits

The proposed law is considered the biggest disruption of the NYC real estate industry. In the less than four years remaining until the implementation of the law, it is estimated to cost about US\$2.2 billion to bring the majority of buildings into compliance. Between 2024 to 2030, an additional US\$18 billion will be needed for all buildings to be brought up to acceptable levels. It is estimated that there will be about 140,000 new jobs created in the retrofit market by 2030.

Incentives

To support building owners in financing retrofits, the Property Assessed Clean Energy (PACE) program was created. This can provide owners up to 100 percent funding for energy efficiency and renewable energy projects. It is designed with little to no upfront cost, has low interest rates and long-term loans to minimize the financial burden on building owners. PACE was made available in early 2020 and will help unlock an estimated US\$20 billion needed for retrofits. The available financial support per property is assessed based on the building’s property tax bill.


The impact of COVID-19

As the COVID-19 crisis has financially hit the city hard, some industry voices are stating that the virus is making it harder to meet the energy goals. Some buildings have installed hospital-grade filters and increased air circulation, increasing HVAC loads and energy use. Other criticism is that sustainable credits are only good for energy generated within New York City’s five boroughs, where there is limited space to install solar, wind or other sustainable energy sources. Although many buildings have been mostly empty, energy use has only dropped by about 30 percent.

“There is a lot of phantom use that is going on when buildings are empty, which is a tremendous learning moment. The one thing we know for sure is that climate change is not going to put itself on pause for coronavirus, so we have to find a way to manage both simultaneously,” said John Mandyck, CEO of the Urban Green Council. FMJ



Lennart Andersson teaches at Pratt Institute in New York, where he is leading an advanced collaborative BIM studio between architects, construction managers and FM graduate students. He is a founding partner with FormD, and formerly director of Virtual Design, Construction & Operations (VDCO) at LiRo. He is an architect and has an engineering degree. With 20 years of experience applying Building Information Model (BIM) methodologies on a wide variety of projects and spearheaded the firm-wide adoption of VDCO at LiRo. Andersson serves on the IFMA Environmental Stewardship, Utilities &

A close-up photograph of a hand holding a white, rounded rectangular sign. The sign has a black oval in the center with orange, pixelated text. The background is a blurred indoor setting with blue and yellow elements.

IMPROVING IAQ FOR EMPLOYEES & VISITORS

More than two millennia ago, the ancient Greek philosopher Heraclitus said,

“Everything changes and nothing stands still.”

FMs certainly know this to be true. Yet it is unlikely many FMs have experienced this level of upheaval previously in their careers, and it is still unclear how — and how much — the events of 2020 will change the future of FM.

One thing is certain: there is now a nonnegotiable need to create healthier buildings — not just for safety purposes, but also to reassure tenants and their employees. The U.S. Centers for Disease Control highlighted the increased stress levels many people are experiencing right now. While a variety of factors contribute to pandemic-related stress, simply being indoors can be anxiety-inducing due to growing awareness that viruses can potentially be transmitted in indoor environments. Employees and visitors will want to feel confident an indoor space is safe.

To ease these anxieties, building management must move from a back-office concern to part of the occupant experience. A five-pronged approach can help FMs meet these new expectations and provide tenants with increased visibility into how they are making buildings safer:

- **Prepare.** Validate the building to be ready to return to partial or full occupancy and meet the latest ASHRAE standards and any organization- or region-specific safety policies.
- **Monitor.** Examine the building hygiene, occupant safety and space usage in real-time.
- **Reduce.** Reduce potential sources of contamination by enhancing standards for facilities and cleaning staff, and enforcing social distancing measures.
- **Respond.** React rapidly to alerts and trends in building air quality and social tracing or space cleaning incidents.
- **Reassure.** Improve employee and visitor confidence and minimize risk.

Each of these components requires FMs to design and execute new tactics, procedures, communication processes, training and technologies into a holistic strategy. Just as there is no single thing a human can do to stay completely healthy, there is no one-size-fits-all solution that can achieve these goals. While communication processes, procedures and training will vary from building to building, one commonality for all facilities will be having the right cleaning and safety technologies in place, particularly in the categories of indoor air quality (IAQ), and safety and monitoring.

DETERMINING THE RIGHT IAQ TECHNOLOGIES

The backbone of building systems — ventilation, air quality, moisture, pressure and safety — is also the starting point for a healthier building. While every building has these functions, they may not be in keeping with the latest recommendations or have the ability to meet the new needs of employees and visitors.

The first step FMs must take is to conduct a building audit to ensure installed systems are operating properly and the building is meeting ASHRAE standards for a healthier environment based on the type of building.

ASHRAE's updated guidance for inhibiting the spread of viruses includes:

- Increasing outdoor air ventilation (use caution in highly polluted areas)
- Disabling demand-controlled ventilation (DCV)
- Opening minimum outdoor air dampers — as much as 100 percent — to eliminate recirculation
- Considering portable room air cleaners with HEPA filters
- Considering UVGI (ultraviolet germicidal irradiation) to protect occupants from radiation, particularly in high-risk spaces (e.g., waiting rooms or lobbies open to the public)
- Considering altering equipment operating schedules to flush buildings with fresh air for two hours before and after occupancy

Following the audit, FMs should assess any places they can implement better IAQ technology. Options include:

- **Electronic air cleaners (EACs):** An electrostatic precipitator, also called electrostatic air cleaner or electronic air cleaner, uses an electric charge to remove impurities — either solid particles or liquid droplets — from the air without impeding air flow. EACs can help remove and clean airborne particles before they circulate throughout a facility, reducing potential spread of pathogens, bacteria and contaminants. They are installed at the point of air intake in an HVAC system. Maintenance of commercial electronic air cleaners is often tool-free and relatively simple, due to components like removable grills for prefilter and electronic cell cleaning and replacement.
- **Ventilation controls:** Proper air exchange can dispel odors, chemicals and CO₂, while balancing energy use and reducing disease transmission. Building control products like actuators and economizers can bring in the right amount of fresh air based on environmental conditions, as well as meet building regulations. Newer economizers offer onboard fault detection and diagnostics to reduce service and commissioning time.
- **Humidity sensors:** High humidity can promote bacteria and mold growth as well as conditions for dust mites, while low humidity can cause dry, itchy skin and upper respiratory irritations. Humidity sensors are an automated way to keep humidity at the right levels within a building, not only boosting occupant comfort, but also potentially reducing the transmission of certain airborne infectious organisms. ASHRAE research shows keeping relative humidity in the 40 to 60 percent range can decrease occupant exposure to infectious particles and reduce virus transmission.
- **Pressurization controls:** Maintaining proper pressurization in critical spaces, including restrooms, can help reduce pathogens,

bacteria, viruses and other microorganisms that can be present in indoor air. Pressurization can also be used to contain air in a quarantined space or isolate and protect clean spaces; it creates precise, one-way airflow for more effective exchange and filtration, removing stagnant air where pathogens could linger. Pressure sensors provide low-maintenance measurement and control, while venturi valves help maintain consistent room pressure and directional air flow.

- **UV systems:** UV systems use ultraviolet light to damage the DNA structure of certain microbes at the cellular level and inactivate various viral, bacterial and fungal organisms, making them less likely to replicate and potentially cause disease. The systems can be installed at HVAC coils or with an EAC to deactivate biological contaminants growing on cooling coils, helping prevent pathogens from spreading to building occupants.

A LOOK AT MONITORING & OCCUPANT SAFETY TECHNOLOGIES

Building systems now must include digital technologies that can control access and occupancy levels and monitor air quality levels and other health and safety factors in real time. Tenants, employees and visitors will want to know the building is monitoring health factors like IAQ and enforcing social distancing — and that FMs and staff have the means to avert, identify and respond to issues — with measures and devices they can see in action.

According to research from global consultant McKinsey & Company, “Practically overnight, physical distancing and the lockdown of physical spaces have magnified the importance of digitization, particularly by measures such as tenant and customer experience ... As more users adopt these digital-first products and services, users’ expectations will be raised ... These digital offerings will pay dividends in the form of superior loyalty and the ability to create brand new revenue streams while better meeting the needs of tenants and end-users.”

This requires supporting new procedures — limiting conference room partic-

ipants and/or elevator passengers — with technology. With real-time data and analysis on what is happening in the building, FMs and staff can take immediate action.


Some technologies FMs can use to support monitoring and safety include:

- **Occupancy sensors:** Sensors integrated into security systems can count people entering and leaving a building, room or elevator to keep occupancy numbers to acceptable levels, supporting social distancing guidelines and minimizing risk. Occupancy sensors can sense when people have left a room and send alerts to building management systems, so staff can safely enter to clean and disinfect.
- **Frictionless access control:** Frictionless controls can be based on factors like mobile credentials, zero-contact biometrics and facial recognition software. Employees and visitors can access buildings in a more hygienic way by eliminating contact with some high-touch surfaces like badge readers or doorknobs; FMs gain an automated way to manage people flow based on privilege or occupancy levels while also knowing who is in the building of at all times (which can support contact tracing, if needed).
- **Building management system monitoring:** Analytics systems can be integrated into building management systems, allowing FMs to monitor factors like IAQ, humidity, pressure and even occupant behavior through real-time data on dashboards. Staff can see and quickly address issues if a system malfunctions and requires maintenance, or if too many people are gathered in a certain area.
- **Video analytics:** Initial temperature screening via thermal cameras tied into security systems can identify people with elevated body temperatures and limit access to a building. Intelligent video analytics systems can track for social distancing or screen for face mask compliance, in buildings that require masks, as well as provide accurate occupancy levels, with daily resets and trends reporting for compliance with regulations.

FOCUS ON THE FUTURE

Questions remain on how the commercial real estate industry will evolve, and even the experts say things could go either way. A contributor to real estate publication RISMedia said, “Companies will be looking to keep some office space, but perhaps reduce the size as they allow for more remote and flexible working ... Firms may look for buildings where they can better control the environment and ensure the well-being of their workforce — in some cases expanding space to allow for greater social distancing within the office.”

As employees have learned to be flexible with learning and working from home, FMs must also be flexible as health conditions and policies evolve, and as more people return to workplaces, to keep facilities relevant and meet the new needs of their tenants. According to a Lexology article from financial services law firm Cadwalader Wickersham & Taft: “In the short term, office owners will need to adapt their properties to consider health and safety concerns of office employees arising from the virus and make changes to their physical spaces and floor plans to comply with the current social distancing and health guidelines.”

By strategizing how to prepare, monitor, reduce, respond and reassure occupants through new processes and technologies, FMs can make buildings safer for all who work in them and minimize their own risks, while also helping to ease employee and visitor anxiety about being indoors. 



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TWINNING

The Emergence of the

DIGITAL TWIN

for Facility Operations and Management^[1]

BY DR. ANDREW ARNOLD & DR. PAUL TEICHOLZ

INTRODUCTION

A Gartner study of the use of digital twin data models indicates the concept is a trending technology that is being adopted across numerous industries, including manufacturing, aviation, automotive, civil infrastructure and health care. For the commercial facility operations and management community, however, the concept is relatively new. FMs are tasked with running safe, sustainable and efficient buildings. They face tight budgets, limited resources, constant regulatory monitoring and many teams are unfamiliar with advanced technologies. Using a digital twin can be a critical and strategic step in the right direction for these teams but often, they just do not know where to start.

DEFINITION AND KEY BENEFITS

In 2002, Michael Grieves coined the term “digital twin” in the context of the manufacturing industries (Grieves, 2019). The concept initially consisted of encapsulating information about a physical product in a digital representation of it, the digital twin, and connections between the physical product and its twin to provide operating data for diagnostic analysis and performance simulation in support of product life-cycle management. In recent years, the concept has expanded to include the idea that the digital twin model can control and optimize the performance of the physical product in (nearly) real time autonomously using machine learning and artificial intelligence technologies.

Professionals in architecture, engineering, construction and facilities operations and management (AECO) often think of a digital twin as a 3D model that digitally represents the spaces, assets and systems of a facility. That is a great point of departure; however, a digital twin should also integrate historical data from a work order system about asset repair history, real-time performance data from internet enabled sensors on assets and more.

A recent report (Arup, 2019) describes the digital twin with a five-level framework, spanning from 3D visualization to autonomous operation and control. Building operators and managers who are using a digital twin typically work within Level 1 - 3. In AECO, the expanded practices of incorporating data from external sources, autonomous operation and control (Level 4 - 5) are where there is opportunity to deliver even more value.

LEVEL 1:

Inventory and visualize the products that comprise building systems and the spaces they serve to enable FM teams to virtually investigate problems quickly, walk down a problem in a room to the control equipment that controls services to the room and understand the impacts of a shut down on building occupants.

LEVEL 2:

Collect and track historical data, represented in work orders, for analyses that deliver improvements to the system and mitigate risk. This ability enables teams to develop insight about equipment that requires frequent repair or has sub-optimal performance, inform fix or replace decisions and improve operational reliability and facility uptime.

LEVEL 3:

Collect real-time data from the constituent products of the system via internet-enabled sensors to detect performance issues, compare real time data with baseline data, and make changes to optimize building systems.

LEVEL 4:

Access data from external sources, for example, local weather, and incorporate into system analysis to enhance the ability to optimize equipment performance.

LEVEL 5:

The ability for the system to self-optimize performance through autonomous reasoning. One might believe that level 5 is aspirational! However, the application of machine learning systems and AI is emerging in building management systems (BMS) and has been achieved for some manufacturing applications (Forbes, 2018). It will be possible to train a digital twin to recognize the cause of issues in building performance and autonomously control and correct equipment operation.

THE UCSF HEALTH CASE STUDY

The University of California, San Francisco Health is internationally acknowledged for providing highly specialized and innovative care. It has six medical and laboratory facilities in the San Francisco Bay area and is part of UC San Francisco, one of the top universities in the U.S. for health sciences research and higher education.



Located on a 15-acre site, UCSF Medical Center at Mission Bay is an 878,000-square-foot, 289-bed complex opened in 2015. The center includes an integrated hospital, outpatient building, a 200,000-square-foot medical office building, a 46,000-square-foot energy center and a helipad. It also contains a six-story, 170,000-square foot Precision Cancer Medicine Building (PCMB) for adult outpatient cancer care.

The original complex and PCMB addition were integrated project delivery (IPD) projects.



THE DIGITAL TWIN JOURNEY

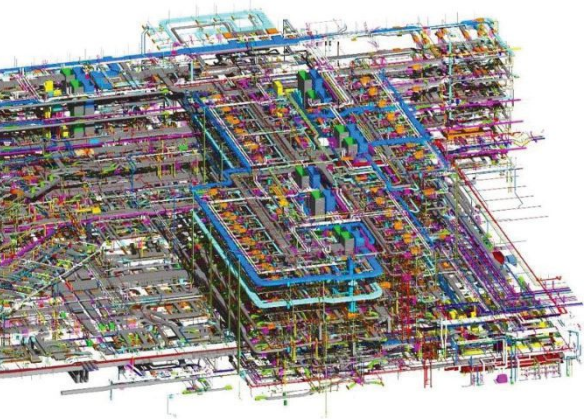
UCSF Health's digital twin journey began in 2012, toward the end of construction on Mission Bay. The IPD team created a fully coordinated and clash-free multi-disciplinary building information model (BIM) for construction and at roughly the same time, the facility engineering group committed to deploy a new computerized maintenance management system (CMMS) IBM Maximo™. Recognizing the opportunity to accelerate the CMMS data load, UCSF senior management for capital projects sponsored a study on what data would be needed by the engineering group. The analysis was constrained primarily to Level 1 digital twin data. This led to the transfer of more than 40,000 assets into Maximo and a proof-of-concept Maximo BIM viewer implementation developed by the engineering team, with support from external consultants.



This late engagement led to key learning that was subsequently implemented on the PCMB project, where it exploited the opportunity to include FM data requirements and data collection process in project requirements.

“The building engineering group overcame reluctance on the part of the capital project management when they realized that they needed only 10 percent of design and construction information. This made it possible to move forward and implement the requirements with no cost or schedule impacts on the project.”

said Fred Whitney, PCMB project manager.



Under the leadership of Bruce Mace, UCSF Health executive director of facilities and support services, the team:

- specified the 10 percent list in the form of a data dictionary.
- broke down the information requirements by discipline, such as architecture, mechanical, plumbing, electrical and by project milestone to phase information collection and reduce a big data collection challenge into small batches, on which they could verify data quality and completeness.
- Created a building applications team (BAT), as an offshoot of the Maximo implementation effort, that was accountable for definition of the data requirements and oversight of implementation by the project team. The BAT included:
 - ~ FM data manager,
 - ~ Maximo admin,
 - ~ Technical guidance from a software application architect, and
 - ~ Support by an external consultant to assist with data specification, data collection and verification processes, and provider of software for BIM FM Maximo integration.

IS BIM NECESSARY?

Setting up a digital twin starts with a clear need for digital representation of the electrical, plumbing, and mechanical system(s) and the architectural spaces/locations they serve. FM teams must easily locate and identify products of a system in terms of the building locations, such as building levels, zones and rooms.

Technically, BIM is not necessary for setting up this data; however, it provides benefits that eliminate barriers to specifying building equipment, the relationships between the equipment and building systems of which they are a part and the building locations they serve which are the foundational elements of an AECO digital twin.

Already a part of nearly every major construction project, BIM provides an early starting point because it exists before the physical building and digitally represents the foundational elements of a digital twin. BIM represents the equipment well. Some BIM authoring systems can also define and represent building systems; in other cases, owners can collect the system data using software tools that define and group the members of a system.

Once teams have identified, located and inventoried the installed equipment, they can build out the information needed as construction progresses by collecting and organizing data from project submittals, test and balance reports, product manufacturer's recommended operation and maintenance procedures and warranties.

To get started, UCSF reviewed the assets in their CMMS and specified the 10 percent list in a data dictionary. It served as a hub for providing requirements to the general contractor and project trades, the criteria for automated equipment data verification using software developed in-house and mapping the data from the source BIM authoring system to the target CMMS. The data dictionary specified:

- Equipment naming conventions
- Equipment classification
- The list of attribute sets/attributes that describe each kind of equipment
- Acceptance criteria for equipment nomenclature and attribute values
- Entity mappings of from source CAD and BIM to IBM Maximo

Further, they committed to weekly engagement and planning with the project team over an 18-month period to work through:

- Thirteen FM data milestones to support incremental data development, verification and delivery. They were coordinated with the construction project delivery plan and specifically the dates by which the trade-contractors would have the right data
- The specific data sets for each milestone
- Early identification and sharing of the model(s) of record for turnover to UCSF, which permitted the BAT to test viewer integration in Maximo
- Uniquely tagged equipment instances for unique identification
- Qualifiers for data extraction from CAD/BIM into Maximo

"Breaking down the requirements to small data sets for each trade, filtered further by the data required for each project milestone, transformed a large problem to small problems," said Mace.

It helped the trades plan and execute data collection as part of existing tasks, the BAT to verify data iteratively in small batches and catch problems early, and the entire team to manage changes that occurred as the project progressed.

DATA TRANSFER

The BAT transferred data from CAD/BIM to Maximo using COBie, (Construction Operations Building Information Exchange), a part of the United States National Building Information Model Standard (NBIMS-US V3). The standard supports the exchange of equipment data effectively and represents a step forward in the transition from paper to digital workflows; however, on a large complex project such as PCMB with multiple data delivery milestones, the project team encountered issues getting the trade contractors to configure COBie tools reliably for output from BIM and input to Maximo across milestones. Additionally, they learned that they needed verification control for each data record rather than at the COBie file level. These issues led to re-work and post processing of COBie files before loading them into Maximo. This learning led to advances in BIM FM requirements.

VISUALIZATION

Visualization helps FM's and engineers identify and locate equipment to understand how it can be accessed. Given the system connection information, it is possible to quickly walk back from a problem in a room to the control equipment and understand the impacts of shutdowns during regular maintenance and incident response.

For PCMB, the BIM requirements included transfer of an as-built BIM synchronized with data imported via COBie into Maximo, and the coordination of the visualization of asset data in a BIM viewer with the data in Maximo (see Figure 4).

The benefits of this early project engagement resulted in verified and trustable data flowing into Maximo a year before the authority having jurisdiction issued the temporary certificate of occupancy (TCO). During commissioning and startup, the building engineering team could focus on learning to operate and manage the building rather than collecting data about it. Maximo for PCMB was up and running before UCSF began treating patients rather than the typical lag of six months to two years for large and complex projects.

“Building a digital twin is a big endeavor, the digitalization journey it entails, puts us on the path toward eliminating outdated and wasteful turnover processes,” said Mace. “But with the right team, process and enabling technology and platform, you can empower FM teams with information to prevent downtime, save money and take advantage of rich Building Information Modeling.”

WHAT'S NEXT?

UCSF Health is working to achieve the UC system's goals of net zero carbon emission by 2025 and for new acute care facilities to meet energy efficiency benchmarks based on industry standards. They have several projects to achieve the objectives and take the organization the third level of digital twin. These projects include:

- Conversion of pneumatic building controls to digital, to obtain data about equipment that can be acted upon by software, and
- Transition to an open building management platform that stores performance data from any BMS in a data repository accessible through standard application programming interfaces. The goal is to save more than \$500,000 annually on energy costs and achieve a compelling ROI within four years.

Initially, the BMS will generate work orders that flow into Maximo. Ultimately, UCSF seeks to integrate the Digital Twin Level 2 and 3 data, including associate the performance data with building location, equipment and system data obtained from capital projects and maintenance history data, so they can analyze real time performance feedback against historical benchmarks. The open BMS takes advantage of an open source initiative called Project Haystack to standardize the data models and web services for the Internet of Things. Integration will require an effort to harmonize and map across the BIM FM and BMS data models and web services.

KEY MANAGEMENT ISSUES FACED BY UCSF

Breaking down silos

The models and data that comprise the PCMB digital twin are used by UCSF capital projects to support facility changes and by the engineering team to operate and manage the facility. These organizations also share goals to manage data changes and digitize information regarding more than 100 existing buildings in the UCSF Health and campus portfolios. Such goals

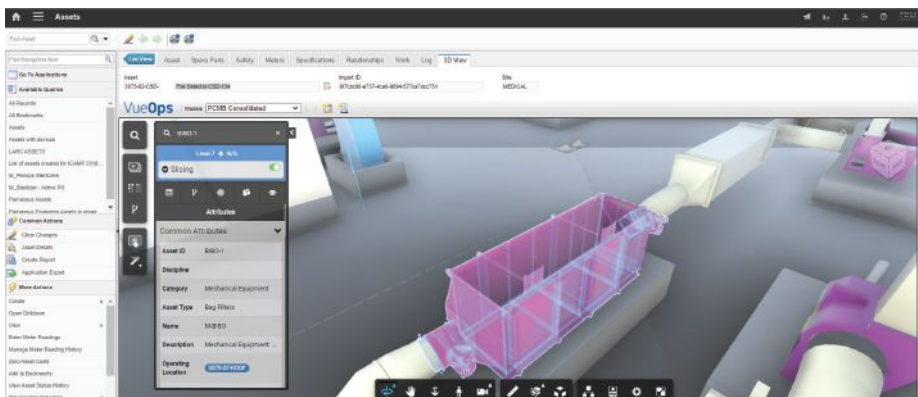


Figure 4

require a strong strategic and long-term management commitment.

Recognizing the synergies, Mace leveraged the PCMB effort to educate UCSF management starting with the top level about new capabilities and successful implementation. Subsequently, UCSF is taking steps to break down traditional silos between CAPex and OPex, including:

- allocation of CAPex budget for BIM FM budget on new projects,
- early engagement of the building engineering team on new capital projects, including leadership to define BIM FM requirements and business processes for data standards, extraction, verification and load into UCSF systems,
- definition of change management workflows, identification of shared responsibilities, and allocation of shared resources across the business divisions to manage changes.

NEW ROLES

These activities require new roles and skills to be successful and a high level of cooperation across business groups.

The UCSF BAT is a permanent group that collaborates regularly with staff from the capital projects division who are responsible for maintenance/updates of architectural BIM. Notably the BAT includes two roles not found in most building engineering organizations, the FM data manager and software application architect. The FM data manager is responsible for managing ongoing data changes, whether initiated from the BIM or the CMMS. The application architect is responsible for designing the technical platform that will allow UCSF Health to integrate the various levels of the digital twin across applications/systems. Although the conceptually of a digital twin is thought of as one system, it is comprised of several integrated systems, including the document management system where BIM models and other facility documents are stored, the CMMS, computer aided facility management (CAFM), and the BMS (eventually). Though technology providers are working on integration frameworks, ded-

icated effort is still required to stitch the systems together, as noted in the discussion about the open BMS, CMMS and BIM FM environments.

DIGITIZING THE EXISTING BUILDING PORTFOLIO

Though capital projects provide opportunities to leverage digital information from design and construction, owner-operators must also consider how to digitize information about their existing facility portfolio. There are several approaches.

One option is to take a 2D approach that takes advantage of existing 2D plans, often represented in PDF format. One can identify equipment on the plans that represent assets the owner seeks to manage and index the 2D symbolic elements to a database of assets and systems. This approach permits owner-operators to access data associated with existing plans.

There are also image generation technologies, for example laser scanning and 3D photogrammetry. Presently these technologies are limited to line-of-sight. They do not capture equipment in walls or above ceilings, and the costs of transforming of the image data to BIM is high, involving manual steps. Promising research, for example, (Iro Armeni, 2016), points toward a future where the transformation step will be automated using ML/AI.

MAXIMIZE VALUE

The UCSF Health story demonstrates it is possible to create value as measured in acceleration of the data load into Maximo and improve mean time to resolution for planned maintenance and incident response through use of asset and system data and visualization in facility operations and management. They have been able to achieve Level 1 and 2 Digital Twin at no increased cost to capital projects, though management leadership and commitment to early engagement. Additionally, as UCSF moves to digitize its BMS, they project significant annual energy savings through improved facility sustainability.

These initial steps are grounded in demonstrating value. They are steppingstones to achievement of higher levels of

the Digital Twin, which will entail significant investment and the potential of higher efficiencies. FMJ

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**TECHNICALLY
SPEAKING**

**THE IMPACT
OF TECHNOLOGY
ON OUTSOURCED FM**

BY YAHYA ALHATTALI,
DR. NORASEKIN BT AB RASHID
& DR. NORHAYAH BINTI ZULKIFLI

Facility management is a broad field providing services such as the maintenance of a building, devices or organizational materials, security, health and overall work environment.

FM deals with offering an efficient environment and optimal functionality of a facility by using and integrating emerging technologies, people and processes. Outsourcing FM services offers benefits such as cost reduction, increased strategic focus, better accessibility to FM technology, improved operational flexibility and performance. However, several risks can be encountered in outsourcing, such as a lack of visibility on the services provided by the contractors, loss of project/workflow control or disputes with the contractors, that invalidate its benefits.

OUTSOURCING FACILITY MANAGEMENT BUSINESS

Outsourcing FM services provides a cost-efficient path to managing business activities. Enterprises can enable external parties to carry out certain processes or business activities for them. Outsourcing FM services results in lower costs as it allows an organization and its employees to concentrate on internal projects. It is an option that can optimize business costs and further enhance the organization's quality of services. As outsourcing is a cost-effective solution, companies prefer to adopt outsourcing for soft and hard FM service (Atkin & Bildsten, 2017; Redlein & Zobl, 2014).

An outsourcing life cycle includes strategic assessment and business case development comprising of cost analysis, selecting outsourcer, contract development, and service delivery and management. At each stage of the outsourcing process, risks are encountered by both the organization and outside parties.

OUTSOURCING FM RISKS

Risks associated with outsourcing in FM can include poor service quality, incorrect assumptions, lack of security, poor relationships between service provider and organization, lack of clarity in responsibility, conflict of interest, inadequate planning, poor contractual definition and scope and others. While some may argue that taking risks is essential for the growth of the company, it is understandable that if the risks are not managed appropriately, they may pose serious threats to business operations and profits.

The worldwide FM market is still in the infancy phase but is growing. The FM market is fragmented into several sectors such as real estate, construction, hospitality, shopping malls and others. As FM is significantly growing in most countries, governments are developing FM business, tourism and manufacturing to reduce their country's dependency on oil. However, the

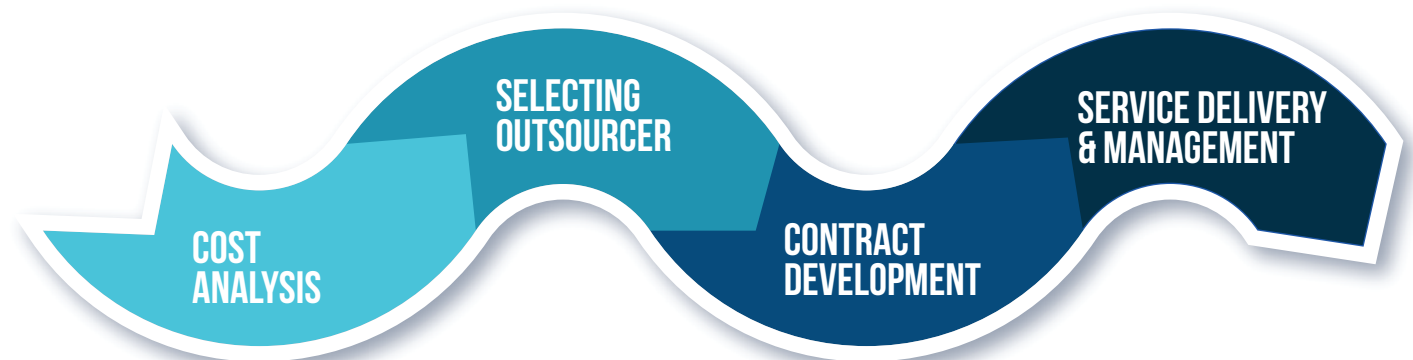
FM market encounters challenges including low awareness regarding outsourcing and high price sensitivity. The FM sector relies on individual solutions and high dependency on manpower. Technology's role to overcome manpower issues is rising.

TECHNOLOGY'S ROLE

Introducing the latest technology has significantly improved FM services. There are various applications and websites that can monitor, control and maintain FM services making assessments and maintenance priorities more reliable. Using drones to investigate building issues (especially high-rise buildings) has made the job safer and easier.

FM has been influenced by innovations such as Internet of Things (IoT), remote monitoring, advanced control systems, robotics and mobile applications to ensure smooth operations. Organizations that successfully adopt and master technology are more likely to develop efficiency and effectiveness. For businesses that choose not to implement modern technology, there could be risks of an increasingly unbridgeable gap leading to rapidly outdated business processes and the prospect of cavernous re-engineering tasks.

Innovations in information technology (IT) can enhance FM service delivery. Outsourced service providers can leverage modern technology to ensure efficient processing and delivery of services (Pankowska, 2019).



OUTSOURCING FM WITH IT SUPPORT

Organizations opt for outsourcing business operations to acquire high quality services at a lower cost to the company. Several studies showed that outsourcing services led to higher business performance as it reduces operational and investment costs in technology, offers expertise in using current technology and provides better delivery of services.

However, organizations can also have their innovation capacity reduced, and with differences in working culture and environment, employee productivity, performance, motivation and creativity can drop. Several researchers found that outsourcing primary activities including manufacturing, supply chains, and supporting activities including IT, have a positive effect on the performance and profitability of the companies. The companies invested in using FM technologies has resulted in cost effectiveness, safe working environment, better staff knowledge, robust information mandates, ease of communication with their clients, transparent relationships and an advanced work culture.

Organizations that do not make technology investments can face several challenges, such as data storage, slow services, poor communication with client, poor information accuracy, as well as a possible unsafe work environment and difficulty retrieving information.

EXAMPLES

Health facilities

Health care organizations increased the use of third-party FM, which resulted in focusing on improving health care strategies and services. However, a recent study found hospitals that outsource FM services such as cleaning and security receive low satisfaction, thereby signifying the low quality of service offered by service providers with limited usage of IT. In this case there are many applications and methods that can improve FM and can help obtain client feedback.

In Taiwan, a school's FM department enhanced maintenance management performance using a 3D CAD-based environment. This allowed the FM team to handle maintenance easily and effectively. Furthermore, the FM department hopes to develop the 3D CAD-based FM system to support facil-

ity-related information sharing among the team and staff. Therefore, the contractor announced that all engineers would be encouraged to begin to use the building information management (BIM) FM system integrated to apply maintenance management to manage facility-related data and information effectively in the 3D visual environment.

Considering the role and advent of FM technology, a study by Araszkievicz (2017) revealed that digitalization and use of improved information and communication systems have enabled the FM sector to gain optimization in management of operations. Smart FM with innovative digital technology is a new means of supporting information modelling and decision-making that improvises the maintenance and delivery of services. In alignment with this, another study by Ebbesen, Bonke, Jensen, & Karlshøj (2016) observed that IT has proved to be efficient for an integrated facility management that is cost-efficient. Use of IoT, automation, analytics and augmented reality, where the devices can collect real-time data to be analyzed for identifying the faults and thereby assisting in maintenance of the facilities (Markowitz, 2018). The use of such technologies, their limitations and strengths are however, not widely explored in literature.

CONCLUSION

The study reached this conclusion by adopting a survey design and collecting financial secondary data for evaluating company performance. It was also determined from this study that while outsourcing offers a better cost-saving strategy, more focus is required on effective monitoring and communication.

FM is an exciting profession that embraces many essential areas of the built environment. Over the last two decades, there has been significant growth in the profession to the extent that clarity is needed in its roles both in the industry and organization. The BIMFM system provides insight into factors impacting FM activities, which in turn assists FM teams in managing interface events to improve performance. The BIM-FM system allows FM staff and managers to track and manage the most recent maintenance-related information, events, problem descriptions and solutions in the 3D CAD-based models. The 3D CAD-based models

illustrate facility events, problem descriptions, and solutions in 3D representations. Notably, BIM is a highly promising means of enhancing FM and identifying facility information relevant to both basic information and maintenance. FMJ

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MAKING IT WORK

Using employee behavior to create effective space

BY J.L. TIMMER



Employees have lost the workplace that physically connected them to their organization. The online way-of-working caused them to miss out on small-talk, gossip, chemistry and empathy, which are essential to sustain the social bond between colleagues¹.

Nevertheless, recent surveys have shown that employees and managers are quite positive about the effectiveness of remote working. BCG reported a 15-40 percent increase in productivity², another poll showed 65 percent of employees believed remote working was more effective³. However, there are also many signs of employees struggling with their well-being.

Their (improvised) home offices have led to many distractions and complaints with ergonomics. Remote workers feel unable to unplug from work because the borders between work and life have become blurred. Many employees experience difficulties dividing their attention between family and their work. Meanwhile, single employees experience a sense of loneliness and a general lack of purpose⁴.

Going back to the office

It seems that based on these remote experiences, several employees want, and/or their managers want their employees, to return to the office. They miss effectively collaborating and being connected to their employees, even though individual remote work seemed to be quite effective. Nevertheless, several organizations have touted remote working is here to stay. A survey across business leaders found 82 percent plan to maintain a partial work-from-home structure even after COVID-19 is no longer a threat⁵. Employees won't go back to the office full time, but the question remains what will the division be between office and remote working? It is likely that employees will come to the office to connect and collaborate with their colleagues while doing most of their individual work from home. The number of days employees will spend at the office will have a huge effect on the occupancy of space while the activities on these days will have a huge impact on the need for specific spaces. Effectively managing the space in size and function, can improve productivity through addressing the needs of employees and save money through closing spaces when possible.

Activities at the office

Because employees desire to be at the office to collaborate, the number of days they will come to the office depends on the number of meetings they have. Measurement's research data using real-time experience sampling (with 4,661 samples) showed employees only spend 15 percent of the time on collaboration work (10 percent planned and 5 percent unplanned) and 5 percent on break at the office. This means that if all the meetings are effectively planned, employees will only need to spend one day at the office (20 percent of their time) to cover all their meetings. However, the number of meetings differs largely between organizations, ranging from 16 to 31 percent between employees.

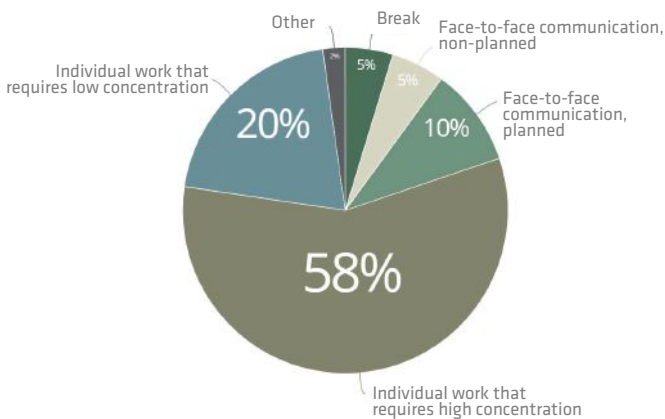


Figure 1. Activity distribution of employees at the office

It's difficult and undesirable if each employee comes to the office on one particular day of the week, and fully spends this day in meetings. Scheduling-and effort-wise, meetings will be spread out across the week to some extent. Although employees might want to spend their time in meetings while at the office, they will

have some time between appointments. Some employees might want to spend this time to catch-up with other coworkers and a cup of coffee, and others might want to use a desk and do some individual work. However, even when employees have re-entered, online meetings are still possible and may be desirable in many cases. With the reduced capacity in meeting spaces it might be useful that with larger groups, some employees remotely attend.

The remote-period also showed many cases of employees who disliked remote working including younger employees who had no proper workspace at home, or parents who were constantly distracted by their children and spouses in their home environment. Measurement's Habital Remote data with 1,499 real-time samples showed that distractions (25 percent) and ergonomics (19 percent) were the most occurring problems with low-performance during remote working.

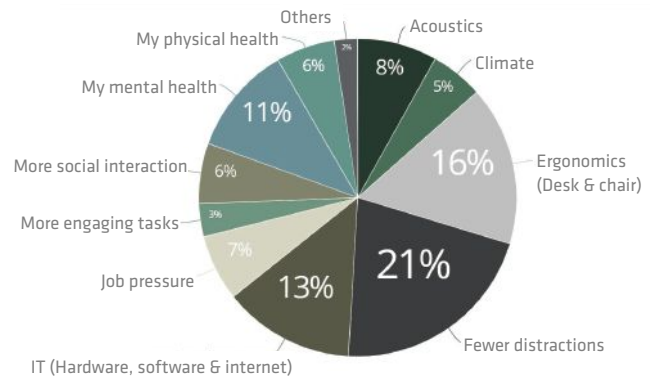


Figure 2. The distribution of "factors that could be improved" when performing low while working remotely.

Adding value to the office

Offices have proper desks and equipment that offer proper ergonomics while the spaces are often designed to limit distractions and propel the work mindset. For these reasons, it is likely that several employees and managers want to return to the office mainly for individual work as well. There might also be a small percentage of employees who prefer their home environment over their office and will still try to have every meeting online. The Morning Consult surveyed 1,066 employees found that 32 percent wanted to remain working every day from home even when COVID-19 was under control⁶. Not seeing non-team co-workers, not lunching together and missing micro-communication is a general loss of connection between colleagues threatening the company culture. Therefore, offices should add extra value to employees. Facilities should facilitate collaboration, connection and fun while providing good ergonomics and space for focused, individual work.

Large rooms that foster teamwork and boost creativity through appealing design will tempt teams to host them offline, although proper IT facilities might allow coworkers to remotely join if necessary. Bars, break- and relax rooms offer opportunities to connect with each other and meet coworkers from other teams to better connect employees with each other and company culture. Places for individual work should clearly outperform the remote offices with proper

chairs and areas to work comfortably with limited distractions.

With 20 percent of meetings, 7 percent of break time, and some individual work spread across the days, this might lead employees to spend two-four days at the office on average. The better the facilities, the better the experiences, and the more days employees will spend at the office. This number might dramatically differ between organizations, departments and employees.

Having employees voluntarily come to the office because it offers them social or work benefits, increases productivity and company culture. Forcing employees back to the office while they are enjoying remote working might be detrimental for their spirit. Many employees love the lack of commute and some actually perceive to work better from home⁷.

If employees spend 2-4 days at the office, the amount of needed space can be reduced by 20 to 60 percent. However, this calculation assumes that there are no regulations that limit capacity. Considering the dynamics of COVID-19, it is likely that these regulations will last at least until the summer of 2021. Therefore, selling or sub-renting a part of an office space directly might be a risk.

Managing the occupation of meeting spaces

Regarding office configurations, space can be adapted to facilitate more collaborative work and connections. At the office, employees will spend more time on meetings, increasing the demands of meeting spaces. Using Measurement's Workplace Occupancy Studies-Benchmark that contained 246 projects in 2019, the data showed that 71.4 percent of meeting spaces were unoccupied during the day. Examining occupancy percentages across the day, this can explain low numbers of occupancy. Namely, there are peaks in occupancy rates between 11 a.m. – noon and 3 – 4 p.m., but very low occupancy rates from noon – 2 p.m. before 10 a.m. and after 4 p.m.

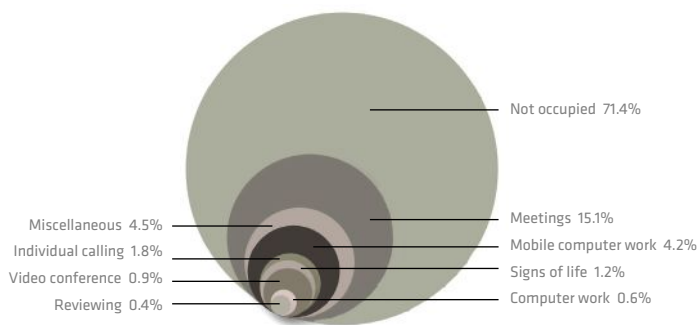


Figure 3. The occupancy and activities of in meeting spaces.

This shows that for most organizations, meeting spaces can be more effectively occupied. The graph shows employees tend to do other activities than have meetings in meeting spaces, like mobile computer work or individual calling. Stricter regulations for meeting spaces can optimize their use.

Making meeting spaces more attractive

Where the same benchmark is split across different types of meeting spaces, there is a clear difference between their popularity.

When splitting the types of meeting spaces on their occurrence, meeting rooms, break-out areas, and consulting tables are the most common types of meeting spaces across organizations. Nevertheless, the occupancy rate of meeting areas in open space (18.1 percent) and consulting tables (14 percent) is quite low. However, the occupancy is much higher for conference rooms (36.5 percent) and meeting rooms (42.7 percent). This indicates that for meetings, employees don't like to sit in the open and prefer enclosed spaces. A lack of privacy and tools might be reasons for these differences in occupancy. Non-formal meetings might fit better with these open meeting spaces but were in low-demand in 2019. However, one might argue that when returning to the office in 2021, these spaces might become more popular because employees miss non-formal times with their colleagues as well. However, non-formal meetings might often also warrant some sense of privacy when gossiping or talking about private struggles. Therefore, installing dividers around these spaces might serve double purposes: accommodate privacy and limit the potential spread of COVID-19.

Conclusions

Space can be efficiently used to save money and improve the well-being of employees. It seems office spaces have become not just a space to collaborate and connect with each other. But when considering employee activity patterns, employees spend about one day per week in meetings. Together, this will probably lead to an average of about two to four days at the office if the spaces benefit employees, which can lead to higher engagement and company culture.

This has the potential to cut down the use of space, but considering the dynamic physical distancing regulations, it might be early for many organizations to sell or sub-rent spaces. When it comes to office configuration, there is a lot of potential to be gained in improving the occupancy of meeting spaces through effective scheduling across the weeks and by making open meeting spaces more attractive to occupy. However, activity patterns and needs differ widely between organizations and departments. Therefore, it is important for FMs to investigate the activity patterns and needs of the employees before making big decisions. FMJ



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Timmer has a master's degree in human movement sciences and is a Ph.D. student at the University of Groningen, where he is studying the synchronization of behavioral patterns within humans when interacting with tools and peers.

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A minimalist, high-quality photograph of three white darts. The darts are positioned vertically, with their barrels pointing downwards and their flights pointing upwards. They are all striking the center bullseye of a target, which is visible as a series of concentric circles on a light-colored surface. The background is a soft, neutral gradient, creating a clean and professional aesthetic.

Research Insights for FMs

IFMA's Research & Benchmarking Institute

BY NICKOLAS ROCHA

In 2016, IFMA's Research and Benchmarking Institute (RBI) was established to centralize all research and benchmarking resources for IFMA and the IFMA Foundation. The goal of RBI is to become the premier knowledge translation research and benchmarking provider for FMs and built environment professionals. RBI develops quality products supported by frontline FM practitioners, researchers and consultants. RBI's proven model has served the industry well and will continue evolving. One of RBI's key areas of focus is to simplify complex information, making it useful and easier to understand for the industry. IFMA/RBI has been selective in the products it produces — pursuing topics of benefit to the masses as opposed to a select few. RBI is overseen by a governing board that is independent from IFMA.

Effective research helps FMs save money and use best practices

FM is an incredibly dynamic industry, characterized by professionals who are intensely aware of their customers' needs. Effective research practices and data provide the skillful FM with innovative ways to save money, enhance maintenance staffing profiles, streamline operations and maintenance practices, and strengthen their executive business case. Effective research allows FM professionals to see their operation in a new light and can provide that "ah-ha!" moment when trying to solve what seems to be an impossible problem. It is this kind of applied, direct-to-practice research that IFMA RBI strives to offer facility professionals around the world.

Business value proposition

As a non-profit partner organization affiliated with IFMA, RBI provides a wealth of thought leadership insight, products (benchmarking and research reports), webinars, virtual conferences, think tank participation opportunities and data.

Benefits of RBI:

- RBI webinars are complimentary for IFMA members.
- Discounted pricing is available for members for research and benchmark reports.
- Member pricing is also available for RBI research/benchmarking track presentations at IFMA World Workplace events.
- RBI is the go-to-resource for IFMA member questions on all things in FM research: data, O&M, staffing, technology, cost benchmarks, space planning, salaries, flexible workspace and more.

RBI provides some of the most economical prices for members including free copies of published reports to survey participants.

RBI strives to develop products that are informative and forward thinking, providing the data needed for FMs to justify their staffing and financial resource needs. The upcoming North America Operations and Maintenance benchmark report update is an example, which will be replicated in other regions.

Having current information is a critical component of benchmark and research products, which are used to support strategic decision-making efforts.

The information is developed with insight from current frontline FM, consultants and researchers. RBI could produce more products each year, but there are significant limitations to the final outcomes given the time needed for product validation. Over the next three years, RBI will develop expanded global benchmarks for regions including Asia, Europe and the Middle East. One new benefit IFMA members will receive is a free executive summary document for each upcoming RBI product.

One of RBI's key goals is to provide global benchmarks for FM and the wider built environment. Through a well-documented and refined process, IFMA/RBI have harnessed the distinct involvement of subject matter experts in this formula for success. While members and nonmembers will be able to purchase report modules in addition to full static reports via the platform, static reports will still be available for traditional purchase.

Product line


- **Benchmark reports** — RBI is streamlining efforts to conduct all benchmarking reports in a specific year, including an annual index metric for aggregate janitorial, maintenance and utility costs. The innovative approach will provide timely data on a regular basis. The new interactive Resource Advantage Platform (RAP) will provide a one-stop shop for all global benchmarking reports, giving users the ability to produce customized reports specific to their unique needs. Data can be analyzed globally or regionally, and by facility use, industry sector, size and age. RBI continues to add new benchmarks, while refining

existing data based on market needs and subject matter expert (SME) guidance.

- **Research reports** — RBI will also produce reports in a variety of other relevant FM topics, including: global trends, salaries and compensation, outsourcing best practices, agile workplaces, Internet of Things (IoT), smart cities/grids, commercial real estate and future FM skillsets. Potentially, some research efforts could focus more on regional impact versus global impact when appropriate. Thirty-five industries participate on average in any given study. RBI is eager to grow industry participation and improve upon existing industry involvement.
- **Research Innovation Webinars** — RBI produces nearly 30 webinars each year on a variety of new research topics, based on common trends found in the IFMA Engage platform discussions, IFMA/RBI membership surveys, IFMA Communities discussion topics, and third-party data. RBI webinars cover a wide range of topics, industries and regions.
- **Resource Advantage Platform** — This product is the culmination of multiple efforts throughout the years to create what might be the best tool for accessing benchmarking information. One of the key lessons learned from years past was the need for IFMA members/nonmembers to be able to upload their information into the system — this option was removed entirely to decrease human error. IFMA has quality control measures in place, which support this phase when importing data submissions. The platform was built with a long-term vision, allowing the platform to evolve throughout the years. The initial goal was to build a global benchmark tool to access O&M benchmarks from other regions. Although RBI has identified North America, European Union, Asia, and the Middle East as initial regions, there are other regions planned for benchmark. These future regions include the Caribbean, Central and South America, and Africa. Other tools will be added to the platform in the coming year, which should make life for FM and the wider built environment much easier.
- **Virtual Events** — RBI plans to develop online conferences in association with other organizations or by themselves. These online conferences will be multiple half-days, with specific days focusing on a single theme such as COVID-19, IoT, benchmarking or outsourcing. Each day would comprise of four to six hours of content, with sessions lasting 30 to 45 minutes each, featuring two types of speakers: TEDx format presentations or traditional academic research. Another planned event is an annual virtual think tank. This event would have up to 35 professionals attending to discuss the future of FM and the wider built environment from specific industry sectors.

- **RBI conference tracks** — RBI tracks at IFMA World Workplace and Facility Fusion events will be developed. RBI presenters will bring new insight to current situations or discuss new RBI products coming to market. The goal is to have presenters share new knowledge with conference attendees. Presenters will be reflective of multiple, global regions.
- **Graduate student presentation program** — This program will provide graduate students (master's and Ph.D. level) with the opportunity to present new, cutting-edge thesis or dissertation research. IFMA members will receive an executive summary of presentations selected. These summaries will be stored in IFMA's Knowledge Library for future access by IFMA members. When possible, a link will be included to the full thesis or dissertation.
- **Current/past partnerships** — Since its inception, RBI has sought targeted partnerships in creating economical products that resonate with IFMA members, the FM industry and the wider built environment. These partnerships comprise of SMEs, data, sponsorships¹ and long-term contracts for services. Just recently, RBI was contacted by a key consulting company to become their long-term provider of benchmarking products.

Since launching multiple studies globally, RBI recognizes that differences between regions are critical, yet not highlighted among peer publications. RBI seeks to change this mindset and bring attention to the possibility of thematically leveling FM benchmarking globally.

The 11-member RBI board serves in a non-paid capacity, and has been supportive of these ongoing efforts. Board members serve two, one-year terms with an optional one-year continuation for up to three years total. The RBI board vice chair role is filled by the outgoing IFMA global chair once his/her term is completed. The vice chair takes on the role of chair after a year. There are two permanent seats: IFMA COO and IFMA Foundation executive director. The board supports 11 members. One goal is to have an international cross section of industries represented on the board. 



Nickolas Rocha, MPA, is the director of research and operations for IFMA's Research & Benchmarking Institute.

OFFICE SPACE



USING SOFTWARE TO RETURN TO THE WORKPLACE

DR. MEHDI KHALVATI

After almost a year of shutdowns caused by the COVID-19 pandemic, economies are slowly reopening. This means companies must brainstorm how to safely transition their workforce back to the office after having them work remotely for a considerable amount of time. There is no precedent for in-office work during a pandemic in the 21st century. As such, this will be no simple task.

In a perfect scenario, companies could acquire ample space and spread employees out as needed. But it is nearly impossible to find and pay for the amount of space that would be required to do this. The alternative option is having fewer employees in the workspace at one time. Many workstations and conference rooms would have to be closed off or set to limited capacity, and different waves of employees would have to cycle through the office at different times.

So, how does an employer pull this off? They will have to become creative and resourceful. Essentially, they must re-imagine a future workplace that considers the demands of the pandemic environment – demands that center around the evolution of the physical workplace into a more agile and dynamic concept.

THE EVOLUTION OF THE WORKPLACE

The unique demands of the pandemic on the workplace throw permanently assigned seating out of the window for the time being, and companies are forced to consider alternatives. One such alternative is desk hoteling in which workers schedule their use of different workspaces in shifts instead of reporting to the same work area each day.

An agile workplace system such as desk hoteling can only be implemented successfully as long as several key infrastructural features are set in place. The company must have a smart reservation system that allows employees to quickly and easily book workspaces from their mobile devices. Further, employees need access to dynamic floorplans that provide wayfinding and employee search capabilities so that new spaces and shifting employees can be easily located.

Considering that a sizable portion of the workforce will remain working from home in different shifts, assets removed from the office for at-home use will need to be tracked and maintained in an efficient manner. With the ever-existing threat of virus outbreaks comes the need for responsive cleaning services based on real-time space usage as well as data-based contact tracing abilities.

THE AID OF SPACE MANAGEMENT SOFTWARE

How can facility managers effectively execute all of these strategies in a streamlined manner without interfering with their original business objectives? For many, the answer has been implementing space management software.

Space management software is a cloud-based platform that provides a diverse but interconnected array of services related to space planning, execution and optimization. With a solid space management software in place, it becomes easy to book desks and rooms, implement individual and group moves, create interactive floor plans, use wayfinding and contract tracing features, automate facility operations and track occupancy. Thanks to these streamlined services offered through space management software, companies can execute a fool-proof and flexible plan for transitioning employees back to the office.

Below are six specific ways space management software helps FMs bring their employees back to the workplace:

1.

Dynamic floor plans and wayfinding

Space management software offers a simple and flexible way to update floor plans so that offices can adapt to a desk-hoteling plan, and employees can stay oriented in an ever-changing workspace. Floor plans can be uploaded to the system and modified so that the office layout follows social distancing guidelines. One specific example would be adjusting the office floor plan so that only desks that are six feet apart can be reserved and used. Desks in between can be blocked off directly on the floor plan as unreservable.

Also, different layers can be added to floor plans to provide more information that will help keep employees stay safe in the office. These layers include real-time occupancy, directional arrows for suggested traffic flow, maximum capacity for each room, fire escape routes and more.

Space management software also offers wayfinding features that will help orient employees as they begin to navigate the workspace without the presence of permanent seating arrangements. With digital floor plan search abilities, employees can easily look up where their reserved seats are located and where other employees are working for the day.

2.

Desk booking and room reservations

To bring employees back to the office during a pandemic, it is essential that each worker can reserve desks, conference rooms and equipment before they come into the office. This will minimize unneeded contact from using check-in kiosks or spending too much time near other employees when trying to secure a space, service or asset.

Space management software offers a quick, mobile solution to booking desks, rooms, equipment and services. Employees will be able to reserve their workspace for the day from their mobile devices any time and from anywhere. They will have their spaces and equipment ready for them when they arrive at the office. Doing

this will prevent employees from unnecessary contact in the office while aimlessly searching for open desks in the office.

Specific desks can be blocked off at any time in order to adhere to social distancing norms or to leave time for sanitization. And if the desk-hoteling plan depends on work-shift patterns, the desk reservation system can be set up so as to align with these time patterns and thus make it easier to implement the seating strategy.

3. IoT Sensors

Some space management software systems can also integrate IoT sensors into the system for better monitoring of workspaces. With space monitors in place, real-time occupancy can be assessed as well as comfort measures such as room temperature, humidity and air quality.

Installing occupancy sensors at desks and conference rooms enables employers to track how many employees are in each area. Alerts can be sent out when a monitor picks up a violation of room capacity or social distancing. The IoT sensor system also can be synced to FM operations for automated and optimized cleaning services.

For example, when the space monitor sensor detects that an employee has left their desk for the day, it can trigger a service request for clean-up and disinfecting. Sensors can even be placed in the restrooms, so that FMs can know which areas are getting the most traffic and require more sanitization throughout the day.

4. Automated Facilities

Space management software also offers a wide range of FM functions. Employees can submit service requests based on different needs, such as if they spot areas in the office that need cleaning or if their desk needs repair. Their requests will be sent directly to FMs who can delegate the work to custodians and technicians or outside vendors as needed. FMs can track the work until it has been fully completed.

With the help of space management software and sensor monitoring, FM operations can be set up so that workspaces are automatically cleaned before and after an employee uses a desk or conference room.

Preventative maintenance can be scheduled ahead of time so that cleaning shifts are in place and critical inventory such as hand sanitizer is in stock. Different company departments – such as HR, IT and FM -- can join forces on a single platform to easily coordinate and execute all services to keep the office fully disinfected and equipped at all times.

5. Contact Tracing

Space management software's contact tracing capabilities can help prevent virus outbreaks by tracking when and where employees are working in the office. Analytical reports can be run at any time to summarize which employees were working in office on any specific date/time, along with the location of their workspaces(s) and nearby employees.

The option to retrieve this type of data can help halt any potential virus outbreaks by identifying the trail of employees who may have been infected and then requiring these employees to self-quarantine. These employees can be contacted directly through the system. Further, seats and areas that were used by potentially infected employees can be identified and sectioned off for deep cleaning.

6. Asset Tracking

A hybrid workforce means that while many employees will begin working in the office again, many employees will still be working from home for a certain part of the time. These fluctuations require the close tracking of any company equipment removed from the office, including items such as laptops and mobile devices.

With space management software, corporate assets can be assigned to remote employees and tracked to ensure that nothing is lost or damaged beyond repair. Employees can use the software to request services from IT or FM if they need help setting up or fixing equipment while working from home.

SUMMARY

Transitioning employees back to the office in light of COVID-19 is a daunting task that requires smart and safe decision-making. Space management software can help companies navigate the challenges that come with implementing temporary occupancy strategies and dealing with a hybrid workforce. From desk-hoteling to contact tracing, and automated FM tasks to sensor monitoring, space management software can help bring employees back to the office safely without losing sight of corporate goals and progress.



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Vendor Profiles

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

ACOUSTICAL/SOUND MANAGEMENT




LogiSon Acoustic Network

Greater openness and reduced absorption make today's workplaces even more dependent on sound masking for speech privacy and noise control. The LogiSon Acoustic Network is designed and manufactured by a company with over 40 years' experience in the sound masking field. This technology has been installed in many hundreds of millions of square feet worldwide for clients in offices, hospitals, banks and more. It has also earned more than 20 awards for innovation, performance and ease of use.

 logison.com

 twitter.com/LogiSonSoundMsk

 [linkedin.com/showcase/logison-acoustic-network](https://www.linkedin.com/showcase/logison-acoustic-network)

BUILDING CONSTRUCTION/DESIGN

KnollTextiles

Knoll, Inc.

KnollTextiles offers a wide breadth of high performance, forward -thinking wallcovering, wrapped panel, upholstery and drapery products. Driven by design, KnollTextiles creates inventive products that elevate commercial, healthcare, hospitality educational and residential settings, offering some of the industry's most technically advanced materials. Against the backdrop of the rich and storied work of Florence Knoll, KnollTextiles combines beauty and function in the Modernist tradition.

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HVAC/INDOOR ENVIRONMENTAL QUALITY SOLUTIONS



CETEC

CETEC is an international scientific consultancy focused on optimizing occupant health, wellbeing, and performance and with an unparalleled record across 32+ years and 25 countries. CETEC offers both proactive and reactive risk management dangerous goods design and certification, onsite testing, performance verification against rating schemes like WELL and Fitwel, and more.




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WATER MANAGEMENT SERVICES/ TECHNOLOGY



Nalco Water

Keep your facilities operating efficiently and safely with Nalco Water, An Ecolab Company. Our solutions for water, air, energy management and facility maintenance deliver maximum ROI by reducing energy costs, protecting building assets, minimizing risk and increasing tenant satisfaction. Trusted at more than one million customer locations, Nalco Water and Ecolab specialize in safe, simple and sustainable programs including our 3D TRASAR Technology solutions, water safety programs, and building recommissioning programs.

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WaterSignal

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October 20-22, 2021
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IFMA's Facility Fusion 2021
April 21-22, 2021
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IFMA Global Canada
June 9-10, 2021
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World Workplace Europe 2021
17-18 March 2021
HYBRID EVENT



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World Workplace Asia Pacific
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