FMJ

IFMA™
International Facility Management Association

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the quantified building

IoT for FM
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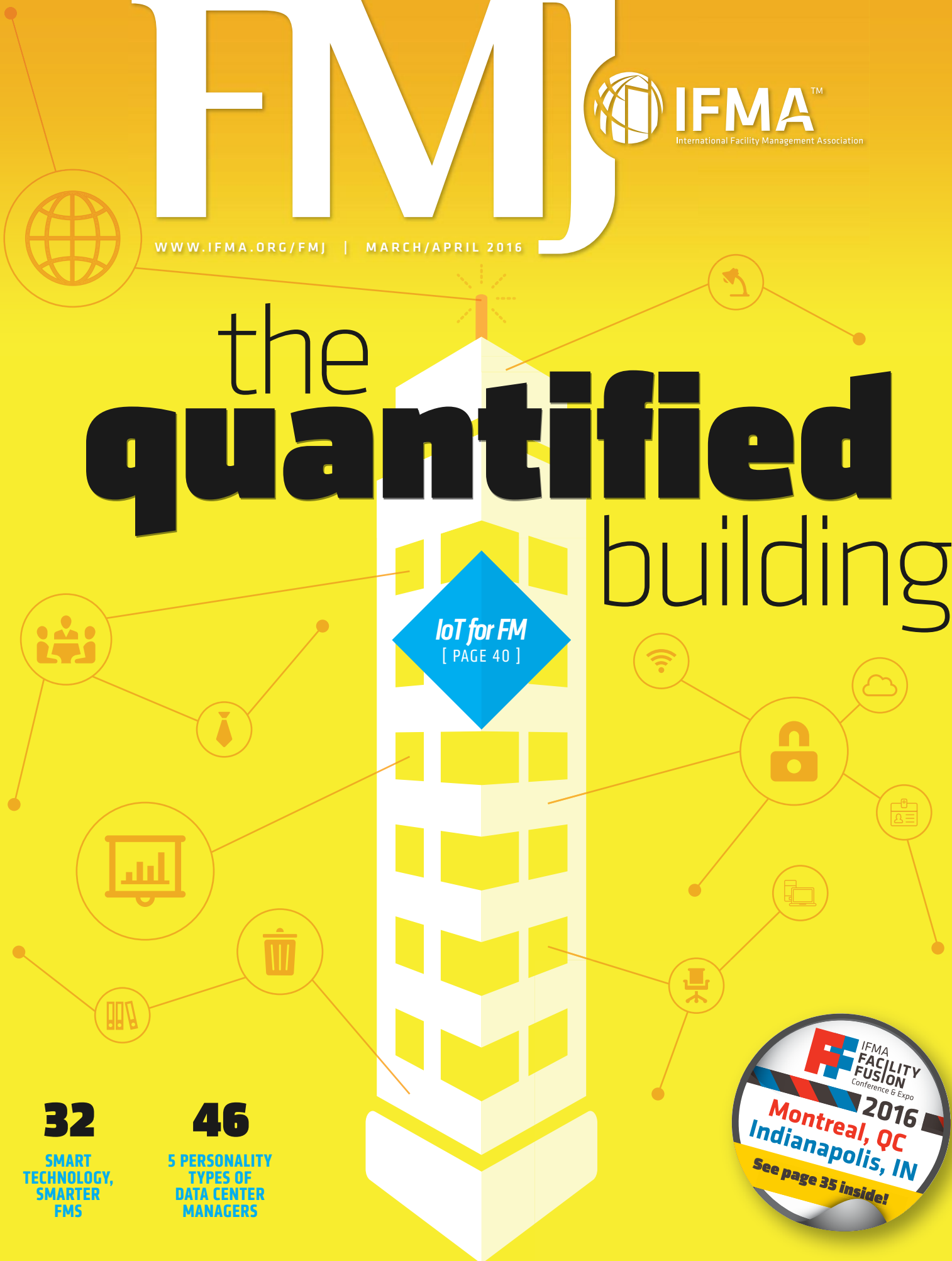

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SMART TECHNOLOGY, SMARTER FMS

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5 PERSONALITY TYPES OF DATA CENTER MANAGERS

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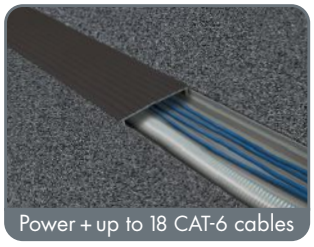

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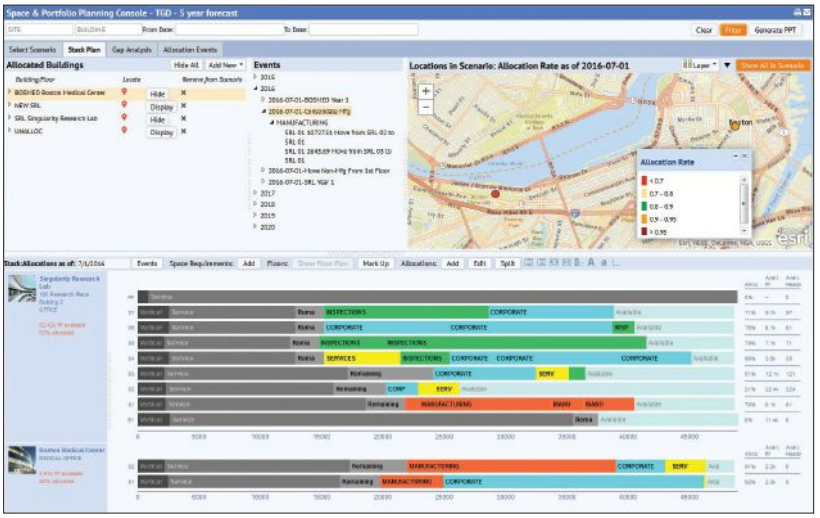

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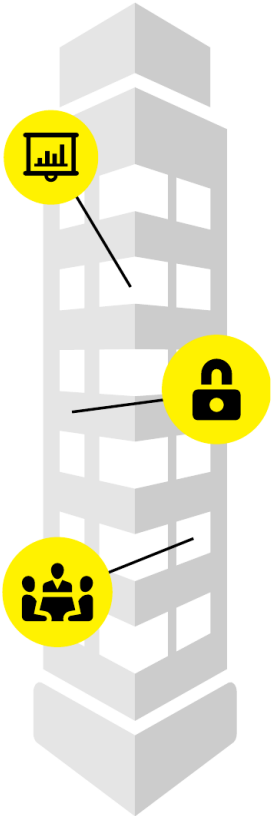
ON THE COVER

40 THE QUANTIFIED BUILDING

IoT for FM

ERIK JASPERS & ERIC TEICHOLZ



FEATURES

ON STANDARDS

SECTIONS

BEHIND THE COVER

The Internet of Things paired with facility management presents a wealth of information from all aspects of a building — all of which can be harnessed to further improve how we work, analyze and adapt.

IFMA™ International Facility Management Association
Empowering Facility Professionals Worldwide

ABOUT IFMA IFMA is the world's largest and most widely recognized international association for facility management professionals, supporting 24,000 members in 105 countries. The association's members, represented in 134 chapters and 17 councils worldwide, manage more than 37 billion square feet of property and annually purchase more than US$100 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 facility management conference and exposition. To join and follow IFMA's social media outlets online, visit the association's LinkedIn, Facebook, YouTube and Twitter pages. For more information, visit the IFMA press room or www.ifma.org.

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IFMA's FMJ

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The online version of FMJ features extra resources like videos, podcasts, white papers and more to enhance your reading experience. Click on the **FMJ Extra** icons that appear in the digital magazine to link to additional sources of information to learn more about topics covered by articles in this issue.

- **ARTICLE:** "How to Manage Remote Direct Reports" to accompany "Remote Management: Building the Foundation for Success" **(p. 26)**
- **VIDEO:** "How Software Really is Eating the World" to accompany "Software is Eating the FM World" **(p. 36)**
- **BLOG POST:** "What the Word Smart Actually Means" to accompany "The Quantified Building" **(p. 40)**
- **SLIDE SHOW:** "Personalities in the Data Center" to accompany "Five Personality Types of Data Center Managers" **(p. 46)**
- **VIDEO:** "ISO 27001 Information Security Management Certification Accreditation Overview" to accompany "FM Perspectives on IT Security" **(p. 52)**
- **BLOG POST:** "Top 12 Emerging Digital Workplace Technologies" to accompany "The Dawn of the Digital Workplace" **(p. 70)**
- **CASE STUDY:** "Workplace of the Future" to accompany "Leveraging Big Data to Advance Workplace Transformation" **(p. 80)**
- **PODCAST:** "IFMA's January 2016 Member of the Month" to accompany "Get to Know IFMA's January 2016 Member of the Month" **(p. 102)**

IFMA members – don't stop reading at the back cover. The online magazine is only available to members and includes **FMJ Extended,** a special section at the end of each issue that contains additional articles not available in print. Navigate in the digital edition to the articles listed below to read contributions from IFMA's FM Consultants Council and Environmental Stewardship, Utilities and Sustainability Committee, and other content just for you.

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>
> ***- Scott Minnix,*** *FMP*
> *Director, General Services Department, City of Houston, TX, USA*

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EDITOR'S COLUMN

ERIN SEVITZ
Editor
IFMA's FMJ magazine

HELLO, (FM) WORLD!

Originally used as a display output for basic computer programming, many have come to associate the phrase "hello, world" with introductory forays into the digital world. With the advent of personal computers, the Internet and social media, and as technology has become nearly ubiquitously entrenched in many societies across the globe, we've likely all experienced some form of "hello, world" moment.

Perhaps your moment was your first keystroke on an Apple II, or when you logged onto the World Wide Web for the first time. Maybe it was your first tweet. These are moments charged with the anticipation of exploring what is – at least for us – uncharted territory. However, as any explorer knows, they can also be moments of vulnerability as we venture into the unknown.

For me, taking the helm as editor of FMJ definitely qualifies.

As FMJ's first millennial editor (yes, *those* millennials), I was curious about those who came before me. Much like the FM profession itself, FMJ has undergone quite an evolution throughout its history. From its beginnings as the text-heavy "IFMA Journal" in 1988, to its debut in 1990 as "Facility Management Journal," to growing a backbone (first time printed with a spine) in 2006, FMJ has endured for 28 years.

In that time, facility management and the world have transformed, and yet FMJ has managed to adapt. This has been possible, not only through the support of its 10 prior editors, but because no matter what else changes, the FM community continues to crave shared knowledge. FMJ exists for, and because of, that need.

Last year, FMJ finally shed the title "Facility Management Journal," since it's neither an academic nor a peer-reviewed publication. It's now simply "FMJ" – IFMA's official magazine, written by and for the people

FMJ exists for, and because of, the FM community's need for shared knowledge.

who create and maintain productive workplaces. FMJ's top two objectives are:

1. To serve as a valuable resource to IFMA members by providing content covering current and upcoming FM trends; and
2. To serve as a platform for IFMA members, partners and affiliates to share expertise.

It seems appropriate that, as FMJ takes another step in its adaptation, this issue focuses on technological trends. Technology by its nature is rooted in change; in assimilating new information to continually refine processes.

In that sense, technology and facility management are a natural fit. FMs excel at solving today's challenges while anticipating future needs. This is echoed by the articles in the following pages, some of which highlight new-to-market innovations while others envision what cutting-edge FM will look like in two years, five years and beyond.

Over the past nine years, Andrea often used this space to talk about passion; about igniting the drive that fuels each individual. Mine is helping others find the right words to tell their stories. No matter where you are in your FM journey, I suspect you have a story and a wealth of knowledge to share.

FMJ will continue to offer tools to aid your exploration of the shifting facility management landscape, and I encourage you in turn to use it to share your experiences with others. And, when you face your own "hello, world" moments in FM, remember to embrace not only what you're capable of today, but also the possibilities you have yet to imagine.

Erin

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CHAIR'S COLUMN

MICHAEL D. FELDMAN, FMP, CM
Chair, Board of Directors

HELLO IFMA MEMBERS AND FMS EVERYWHERE!

Early this year I had the opportunity to join IFMA CEO Tony Keane and First Vice Chair Maureen Ehrenberg at a symposium for nonprofit association leaders. The program could not have been better timed. It provided the opportunity to examine IFMA's governance structure, operating procedures and to consider where IFMA is in the life cycle of an association. I can report that IFMA's governance model and operating procedures are well developed and moving toward best in class.

The work sessions also clearly indicated that while further improvement is always possible, IFMA, at 36 years old, has reached a level of maturity from which it is ready to truly explore strategic growth and service opportunities. This is a testament to the vision and energy of previous boards, who in working with our outstanding staff and volunteers have helped position us for another exciting 36 years!

PROGRESS IN KNOWLEDGE SHARING

IFMA made significant progress in 2015 and the board of directors recently joined me in commending staff for these outstanding results:

- Guiding and managing the highly successful and well-attended World Workplace event in Denver, Colorado, USA;
- The successful launch of the Knowledge Library; and
- Implementation of the new association management system on time and on budget.

The investments in IFMA's business management systems are already bearing fruit. The ability to efficiently collect and analyze data is allowing us to examine fresh, real-time business intelligence.

The Knowledge Library, which went live last October, is a new source of business intelligence. In fact, there were almost 35,000 content views in the first 115 days and more than 4,000 downloads. Analysis of utilization information like this will help keep the library current and relevant. One document, entitled "Redefining the Executive View of Facility Management," was viewed 2,830 times and downloaded 1,169 times – a clear indicator of relevance.

I have asked that a standing committee be formed to guide the Knowledge Strategy with a core responsibility of building and maintaining vibrancy of the library. I really encourage you to check out the library and tell your friends and colleagues to visit. You can access the library at community.ifma.org/knowledge_library.

PROGRESS IN BUSINESS INTELLIGENCE

Business intelligence is vital for the success of any enterprise, including nonprofit professional associations like IFMA. Here are some interesting statistics on IFMA's growth since 2010:

- IFMA's membership has increased from 19,959 to 23,855 or almost 20 percent. That is a reasonable rate if sustained, although the growth was stronger early in that reporting period than toward the end.
- More than 9,600 people hold one or more of IFMA's credentials.
- About 80 percent of all members currently belong to chapters, while membership in councils has declined to about 21 percent. Based on this information, we have initiated work to understand why some councils are struggling to recruit and retain.
- The good news is that IFMA is now able to efficiently manage this data, extract important business intelligence such as performance trends and take appropriate action.

Thanks to our members, volunteer leaders and sponsors, IFMA is in a strong position. Performance metrics such as attrition rate, renewal rate and new member recruitment can now be used to measure performance throughout the association. IFMA's 134 chapters are our association's primary growth engine. In my meetings with component leaders there is strong recognition that member recruitment needs to become an ongoing activity. IFMA's new state-of-the-art technology platform will scale to help support members around the globe.

This issue of FMJ focuses on FM-related technology trends and includes articles on the Internet of Things for FMs, the future of the workplace, and sustainable development and technologies. I hope you enjoy this issue as much as I have.

I am also looking forward to seeing many of you at Facility Fusion in Indianapolis, Indiana, USA, and in Montreal, Quebec, Canada.

Serving as your chair continues to be an incredible honor and opportunity for personal growth. Thank you all for your ongoing support and participation.

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- Robert Kleimenhagen, Jr., CFM

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PRESIDENT'S COLUMN

TONY KEANE, CAE
President and Chief Executive Officer

WE HAVE A CHALLENGE FACING THE FM COMMUNITY: FRAGMENTATION.

Our profession is comprised of multiple communities around the globe. While many of these local communities serve their immediate geographical areas well, we can gain greater benefits by connecting as an FM community that leverages the strength of FM around the world.

IFMA'S VISION: *To serve as the globally recognized resource for facility management.*

IFMA'S MISSION: *To globally advance and support the practice of facility management.*

In order for us to achieve our mission and vision, it is important for IFMA to support a stronger and larger FM community globally. While some organizations around the world want to characterize IFMA as solely a North American organization, there are also members who at times question why IFMA leaders spend time and resources outside the U.S.

IFMA has been an international organization since its second year of existence, and IFMA leaders are focused on enhancing the value proposition for all members as called for in our vision and mission statements.

ADVANCING FM WORLDWIDE

To continue to strengthen the global FM community, IFMA is focused on the following initiatives:

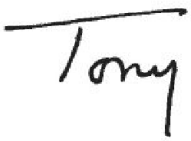
- Launch of the Knowledge Library
- Relaunch of World Workplace Europe (to begin in 2017)
- Continue to lead and drive the EU FM Coalition
- Staff representatives attending EuroFM membership and association leader meetings to interact with chapter leaders
- Evaluation of translating the Facility Management Professional™ credential into Spanish
- Accepting Euros for chapter payments
- IFMA China staffing for local chapter support
- World Workplace India (scheduled for November 2016)
- Infrastructure improvements
- Council and community evaluation to clarify purpose, support for and roles of IFMA's vertical industry communities and horizontal topical communities. A revised model was approved by the board and is now in the implementation phase.
- Chapter performance enhancement and alignment initiative. Focus is to create measurement of chapter programs that drive enhanced member engagement and growth. Will include specific dashboard metrics and participation with the IFMA Foundation. This was approved by the board and is now in the implementation process.

In addition to the above initiatives to build the worldwide FM community, IFMA leaders are constantly looking for new ways to reduce the fragmentation between the numerous FM-related organizations. This includes memoranda of understanding, alliance partnerships and establishing closer working relationships among these organizations. All of these activities are designed to move IFMA closer to achieving its vision and mission.

I would like to recognize our Sun Coast Chapter leaders and say thank you for meeting with our board Chair Mike Feldman, Vice-Chair Maureen Ehrenberg and myself while we were in the region.

In closing, I would like to make quick mention about retaining members. IFMA needs each of you to help increase our member retention rate. Please engage with fellow members – if you haven't heard from a member in a while, reach out to him or her to extend a warm welcome to get more involved.

Your continued efforts and time are what make IFMA more than a connected global FM knowledge network. Invite a colleague to join IFMA and become part of the family.



STUDY: STAPLES ADVANTAGE WORKPLACE INDEX PROVIDES TIPS TO HELP BUSINESSES PREPARE FOR FREELANCERS

The freelance economy, a trend with significant implications for the workplace, is growing rapidly. Nearly one in four employees freelance in some capacity, according to the Staples Advantage Workplace Index, a recent study of office workers in the U.S. conducted by the business-to-business division of Staples.

Overall, 12 percent of U.S. employees work as freelancers as their primary source of income, and the same percentage freelance in addition to their primary job.

BENEFITS FOR FREELANCERS AND BUSINESSES

Employees freelance for a variety of reasons, including the flexibility to make their own hours (37 percent), make more money (39 percent) and achieve a work-life balance (32 percent). Businesses also benefit from this arrangement by getting access to highly skilled workers they need for special projects.

CONSIDERATIONS FOR BUSINESSES HIRING FREELANCERS

Freelance workers need temporary access to IT services and equipment, designated workspaces, open communication with coworkers and necessary supplies for projects. Additionally, businesses should consider:

» **Aligning on a workforce strategy.** Human resources and procurement officers need to develop a strategy that balances efficiency, effectiveness and risk when vetting, managing and compensating freelancers and contract workers in line with the market.

» **Finding the right mix of face-to-face interaction.** Most freelance work should involve some sort of face-to-face interaction, whether the freelancer sits in the office for the duration of the project or has a mix of virtual and in-person work.

» **Providing necessary technology and accommodating personal mobile devices.** Businesses should ensure extra equipment such as laptops, docking stations and monitors are available so freelancers can plug in and get to work immediately. IT departments should also be prepared to incorporate personal mobile technology into their mobile device management service as appropriate.

» **Considering safety concerns.** When new freelance employees enter the building, facility managers must provide the necessary safety training, such as the U.S. Occupational Safety and Health Administration Right to Know standard.

» **Managing expenses for supplies.** In some cases, freelancers or contract workers may use their own office supplies and charge this back to the company as an expense, which means negotiated cost savings with office supply providers can be lost. Procurement officers should ensure freelancers and contract workers use company bill codes when acquiring supplies to get company discounts.

Visit the Staples Advantage Workplace Index microsite at **www.staplesadvantage.com/sites/workplace-index/index.html** to download the full report.

IFMA INTERACTIVE WORKSHOP SERIES LAUNCHES IN HOUSTON, TEXAS, USA

The inaugural session of IFMA's new educational offering, IFMA Interactive, occurred on Wednesday, Feb. 3, 2016. An ideal educational opportunity for FMs who value interpersonal learning, IFMA Interactive proved a truly informative and collaborative experience for attendees.

FM industry professionals gathered at IFMA's Houston Service Center of Excellence to join their collective experience with expert instruction on workplace emergency response. The daylong program, "How to Protect Your People, Property, Productivity & Your Posterior" was facilitated by Bo Mitchell, CEM, CPP, CHS-V, CBCP, CHSP. President of 911 Consulting, Mitchell has earned 20 certifications in homeland security, emergency management, disaster recovery, business continuity, safety and security. Attendees learned key strategies concerning emergency planning, active shooters and crisis communications through lectures, discussion, group problem solving and cooperative learning exercises.

The IFMA Interactive workshop series will be offered throughout the year, and each workshop in the series will concentrate on additional topics of current interest and importance to the FM profession. Visit **www.ifma.org/events/fm-events/ifma-interactive** for more information about the workshop series.

ICC ANNOUNCES THEME FOR 2016 BUILDING SAFETY MONTH

The International Code Council's (ICC) theme for 2016 Building Safety Month, a public safety awareness campaign celebrated in May, is "Building Codes: Driving Growth Through Innovation, Resilience and Safety."

During May, ICC's 57,000-plus members, along with other professionals in the construction and design community, will conduct school assemblies, host information booths at builder supply stores and implement proclamation signing ceremonies to increase awareness about the importance of building and remodeling to modern codes and standards.

The Building Safety Month theme, "Building Codes: Driving Growth Through Innovation, Resilience and Safety," will be supported by weekly themes that spotlight a specific area of building safety and fire prevention:

- **Week One,** May 2-8: Building Solutions for All Ages
- **Week Two,** May 9-15: The Science Behind the Codes
- **Week Three,** May 16-22: Learn from the Past, Build for Tomorrow
- **Week Four,** May 23-29: Building Codes: A Smart Investment

ICC will provide several resources to assist communities in promoting Building Safety Month, including strategies on how to set up an event, a fill-in news release, a sample proclamation, kids' activity pages and much more. Many resources will be available for free download.

For more information about ICC and Building Safety Month, visit **www.iccsafe.org/about-icc/building-safety-month/2016-building-safety-month.**

MCS PARTNERS WITH LEESMAN TO CREATE BETTER WORKPLACES

Antwerp-based global software company MCS has signed a partnership agreement with Leesman, a world leader in measuring the effectiveness of workplaces. The Leesman Index benchmark is generated from the largest global database of employee workplace satisfaction surveys available. The standardized survey provides deep insights into how workplaces support organizational performance.

MCS, a software developer and real estate/workplace management consultancy, will (as a Leesman Consulting Partner) apply the Leesman methodology in workplace transformation projects. The approach will combine user perception data from the Leesman survey with big data from other sources, such as:

- Data streams from connected building sensors that permanently track variables such as space usage and indoor climate (temperature, light, air quality, noise levels, etc.), as well as energy consumption
- Instant user feedback on service quality and work environment through a mobile app for micro polling
- Activity measurements on the ground, mapping collaboration patterns through the ABOOT™ methodology, patented by MCS
- Workshops and deep-dive interviews with top and middle management

The resulting big data goldmine is stored and processed in the MCS big data platform where it is further analyzed and interpreted by data scientists. Their insights support real estate and workplace managers to allow them to optimize workplaces and make better-informed decisions.

HAVE RELEVANT FM INDUSTRY NEWS TO SHARE?

Submit it to communications@ifma.org to be considered for inclusion in the Industry News section of FMJ.

UPCOMING FM EVENTS

IFMA'S FACILITY FUSION U.S. CONFERENCE AND EXPO
April 12-14, 2016
Indianapolis, Indiana, USA
facilityfusion.ifma.org/indianapolis

IFMA'S FACILITY FUSION CANADA CONFERENCE AND EXPO
May 4-5, 2016
Montreal, Quebec, Canada
facilityfusion.ifma.org/montreal

INTERNATIONAL SUSTAINABLE ASSET MANAGEMENT CONFERENCE
June 22-24, 2016
Atlanta, Georgia, USA
isamconference.com

IFMA'S ADVOCACY DAY AND PUBLIC POLICY FORUM
Sept. 6-7, 2016
Washington, D.C., USA
ifma.org/events/fm-events/advocacy-day

IFMA'S WORLD WORKPLACE CONFERENCE AND EXPO
Oct. 5-7, 2016
San Diego, California, USA
worldworkplace.ifma.org

STAPLES AND OFFICE DEPOT EXTEND MERGER AGREEMENT

Following their 2015 merger agreement, the boards of directors of Staples, Inc. and Office Depot, Inc. waived the merger agreement termination date of Feb. 4, 2016 and extended it to May 16, 2016. The extension allows for the completion of ongoing federal district court litigation with the Federal Trade Commission. The companies are working to extend financing terms for the transaction, and expect to execute the merger extension agreement once financing terms are finalized.The companies have gained approval for the merger in New Zealand, China, Australia and Europe.

On Feb. 4, 2015, Staples and Office Depot entered into a definitive merger agreement to combine as a single company. The combined company will be better positioned to provide value to customers and compete against a large and diverse set of competitors. The company expects to deliver more than US$1 billion of annualized synergies net of investments to provide increased value to customers by the third full fiscal year post-closing. The combined company will be better equipped to optimize its retail footprint, minimize redundancy and reduce costs.

IFMA'S KNOWLEDGE LIBRARY: **TRENDING NOW**

Located within the Online Community, IFMA's Knowledge Library features hundreds of quality FM-related content resources, including whitepapers, research reports and articles written and reviewed by industry-leading professionals.

Featured among the highest-rated resources in the Knowledge Library, the whitepaper "The 17 Mistakes Made in Emergency Plans & How to Avoid and Correct Them" by Bo Mitchell, explains why emergency plans are integral to strategic emergency preparedness and business continuity. As president of 911 Consulting and recent speaker at IFMA's new workshop series, IFMA Interactive, Mitchell represents the level of authorship and content quality available in the Knowledge Library.

*Visit the Knowledge Library at **community.ifma.org/knowledge_library** to browse, download and rate content. Your suggestions are essential to improvement as IFMA continues to enhance the Knowledge Library – share your feedback at **www.ifma.org/know-base/knowledge-library/feedback.***

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BUILDING A BETTER WORKPLACE...TOGETHER

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Saint-Gobain and Sodexo partner to enhance the quality of life in Saint-Gobain's new, state-of-the-art corporate headquarters in Malvern, Pennsylvania. This LEED® v3 Platinum building houses Saint-Gobain's extensive portfolio of building products and provides more than 800 employees with a healthy, comfortable, environmentally friendly and sustainable work environment.

Sodexo Integrated Facilities Management services include:

- Management of leading-edge energy systems, such as SageGlass® electrochromic windows that dynamically control sunlight to optimize building temperature
- Full-scope asset management and maintenance services that optimize Saint Gobain's capital plan and extends the life of assets
- A 11,925-square-foot café for employees and guests offering fresh, healthy menu items, along with seasonal outdoor dining, a full-time barista and catering services
- Closely monitoring operational and financial metrics and collecting employee feedback through technology tools such as FMiQ by Sodexo to drive continual improvement of the workplace experience

Since 1980, Sodexo has been working with Saint-Gobain to enhance the quality of life for employees, customers and communities at more than 200 sites around the world. We're proud to be part of their story.

"Sodexo's services perfectly align with Saint-Gobain's mission to develop innovative products that improve people's lives. This partnership enables us to design and deliver an environment that enhances the work experience for our valued employees and fuels innovation. Choosing Sodexo as our partner was a natural choice."

– John Crowe,
President and CEO of Saint-Gobain and CertainTeed Corporations

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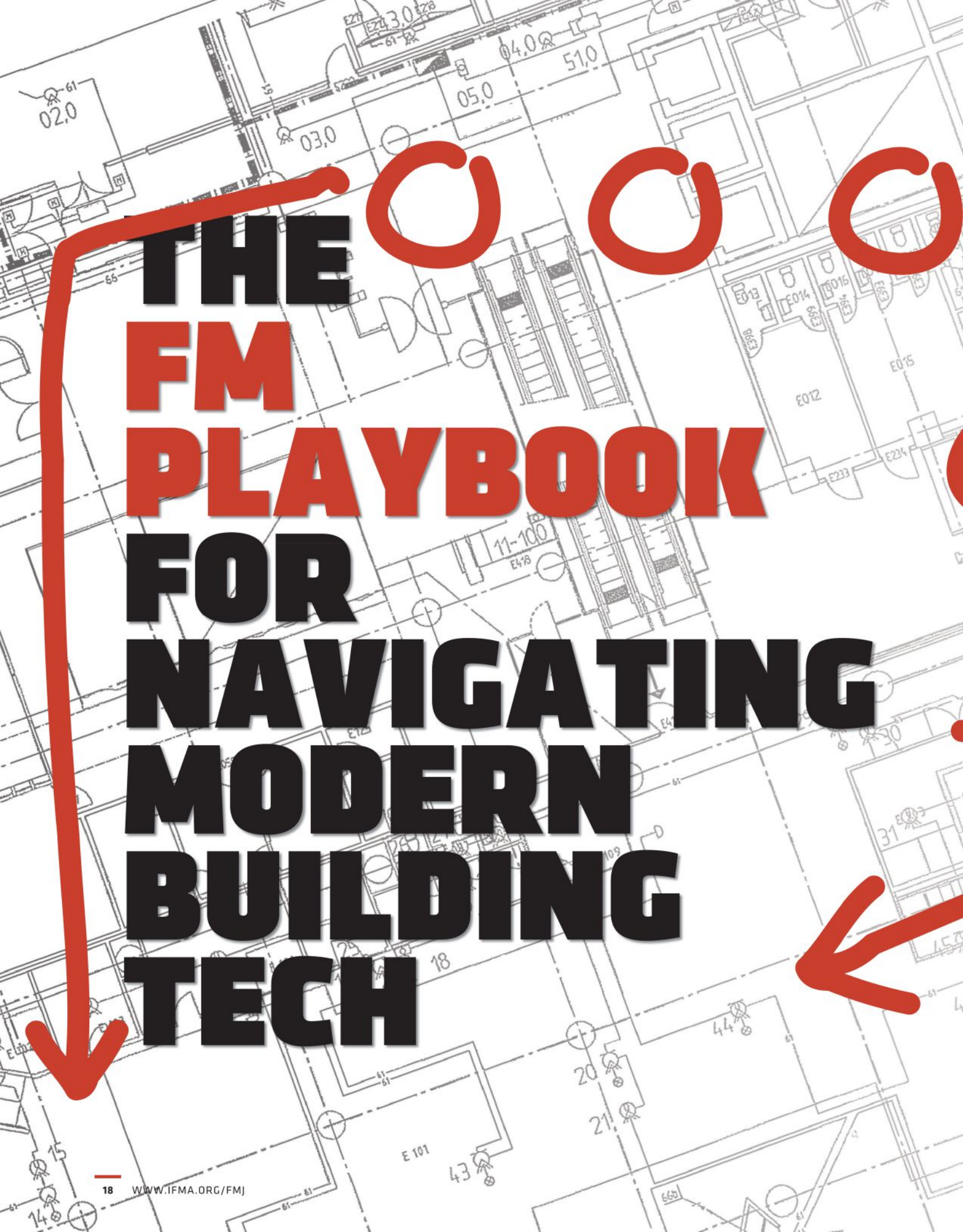

THE FM PLAYBOOK FOR NAVIGATING MODERN BUILDING TECH

BY ERIC GRAHAM

Today's buildings are in the midst of dramatic reinvention, with new technology flooding the market at unprecedented rates. And, during this period of upheaval, it's the modern facility manager who is left trying to navigate an evolving set of responsibilities and an increased demand for new skills.

What's needed is a set of universal tips for intelligently curating, installing and applying new building tech. This information has been compiled into a comprehensive roadmap on how to best use modern building technologies with an emphasis on tangible returns, interpersonal capitalization and thoughtful decision making.

1 Don't panic

It's important to remember that the core needs of your buildings haven't changed. Occupants still want to feel safe, comfortable and productive at work; management still wants to see a solid return on investment for building spaces. The advantages provided by these new technologies are, by and large, designed to enhance the pursuit of these goals.

In fact, the promise and potential of new building technology is to enable stronger communication between facility managers, occupants and the building itself. Thus, before implementing any new systems, it's worth getting back to the basics with some simple questions:

- What can we do to improve building safety?
- How might we improve comfort and productivity?
- Can we reduce waste?
- What don't we know about our building and occupants?

If a product isn't addressing at least one of the above concerns, then there's a good chance that it's superfluous to your organization's needs. Conversely, the more questions it can address, the greater your odds of seeing a strong, meaningful return.

Like everything else in facility management, decisions on whether to implement an upgrade should be weighed against short- and long-term alternatives for your building's resources. But, if a product seems to make problems more complicated than they were before, there's a good chance it's not a great fit for your organization.

2 Fill in gaps and get ahead of the curve

Today's tech does have its limitations. Machines possess no means of empathizing with human needs, nor do they offer any utility as creative problem solvers. They are, for all intents and purposes, still just tools for fulfilling specific tasks.

And yet, they can be extremely powerful tools.

Software that tracks natural gas usage is a multi-faceted tool in buildings: it can not only manage energy expenditures, but it can also save lives if it shows a spike in usage that's indicative of a leak. Sensors that monitor room occupancy can eliminate wasteful energy consumption, such as lighting and heating. And, when it comes to security, similar sensors can confirm and identify authorized occupants, resulting in mitigation of risk from unwanted intruders.

Thus, the pursuit of new tech should begin and end with honest introspection: What aspects of your building seem to be consistently underserved? Which tasks create the most clutter and administrative burden? In which areas do you always feel behind?

Understanding points of friction within your building enables you to refine your search and better fill gaps in the facility management cycle. Perhaps your organization already thrives on preventive maintenance, but has been having trouble sourcing feedback from occupants. Or, maybe your organization has stellar comfort and employee satisfaction metrics, but is seeing higher-than-desired expenditures on utilities.

Knowing your building's unique pain points goes a long way toward informing a discussion with vendors, and ensures that you'll ask the right questions to align solutions with your needs.

3 Use tech to tap your "human sensor network"

Perhaps the chief impact of tech's transcendence over the past century has been the ways in which it brings us together. Telephones, transportation advances, computers and the Internet have radically altered what it means to "belong" in a society. But, if the world has evolved through connectivity, can the same be said of your facility?

Fifty years ago, building issues would likely be logged by a formal, handwritten report (or perhaps received via an angry phone call). In today's evolved climate, reports sometimes come through similar channels, but can also be sent by email, text, social media and other digital dashboards with back-and-forth communications. And, in many cases, they come from all of the above, which can create a sizeable administrative headache for the receiving FM.

Frankly, this is unacceptable; good tech should eliminate clutter, not create it. To this effect, a high priority for facility managers must be the acquisition of technology that helps unify (and organize) reports. In fact, companies using cohesive, dedicated reporting channels for facility requests have seen a sevenfold improvement in response time for health and safety issues. And, those that rely on direct feedback from occupants see an annual savings of US$0.30 per square foot.[1]

These advantages aren't isolated. Those who intelligently wield what is called the human sensor network – the full, recordable scope of human experiences as gathered from building occupants – can draw a wealth of insights to immediately improve comfort, health, productivity and building efficiency.

After all, this profession is really about helping people achieve their best work. Without sufficient insight into people's needs, how can we be sure our efforts are on point? And, of course, encouraging feedback and offering subsequent solutions yields the intangible benefit of fostering a sense of community and improving organizational morale.

4 Collect and review data to better allocate resources

In addition to the immediate benefits of tech integration, it's important to note that many of today's sensors (and even core utilities) generate their own streams of usage data. Combining this feedback with insights from the human sensor network augments the value of each, and viewing the aggregate over time – a field many know as big data – can yield unparalleled insights about what's really happening in your buildings.

By mapping the frequency and location of occupants' reports, for instance, organizations can better predict where problems may arise in the future, thus helping FMs to build stronger preventive maintenance calendars and learn where upgrades are most needed. By charting these reports against energy expenditures, facility managers can gauge the true cost of inefficiencies, thus validating renovation budgets.

Admittedly, reports like these can be tedious to run manually. As such, investing in a content management system (CMS) makes a lot of sense for larger organizations that want to track multiple streams of data at once, and subsequently run analytics down the line. The right CMS can also make daily review of systems far easier, and some even facilitate communication with building occupants. Review any CMS thoroughly to ensure it meets your building's unique demands – both today, and as you map technology investments down the line.

GOOD TECH SHOULD ELIMINATE CLUTTER, NOT CREATE IT.

5 Remember that safety is never automatic

It's been more than 100 years since the sinking of the Titanic, but we still retell the legendary ship's story with great regularity. In recounting this story, it's especially important to note the ship's perceived "unsinkability," as well as how this egotism led to an inadequate number of lifeboats and subsequent loss of human life.

Today, we're constantly barraged by product marketing which aims to demonstrate just how much easier new technology can make our lives. When it comes to facility management, however, these messages tend to overlook the fact that new systems actually add an additional item requiring review during routine maintenance. Never assume that technology is incapable of failure.

This is especially prudent advice when it comes to safety. Hundreds or even thousands of people rely on the work of the facility management team, so it is especially important never to become overconfident with technology and be – as a result – underprepared. Just as a smoke detector doesn't replace the need for fire drills, building sensors don't replace the need for hands-on, human review of any given space. Remember that even aerospace engineers, working at the pinnacle of modern computing, check and recheck their systems manually dozens of times before putting a rocket in space.

Applying the five steps

These five core principles should help facility managers lay a foundation for smarter curation and utilization of emerging systems. However, for many FMs, the sheer abundance of available technology makes it difficult to understand how one might even begin to update a building. A good place to start is by further researching how different aspects of your building's daily operations affect both budget and occupant comfort.

The following are two especially potent arenas in which small, simple tech investments can yield big results.

LIGHTING

According to research from Madison Gas & Electric, lighting represents nearly 40 percent of the average facility's electric bill. A decent chunk of this expense goes toward rooms that are unoccupied. By employing occupancy sensors, facility managers can help reduce energy waste (up to 68 percent) and produce significant savings.

What's more, nearly three decades of research have shown occupant preference for lensed indirect lighting systems over parabolic alternatives. Such updates can reduce glare, lower strain on eyes and generally produce a more comfortable work environment. With an overwhelming majority of today's workers relying on their vision to complete daily tasks, it's an area worth getting right.

CLIMATE CONTROL

For facility managers, climate control can represent a considerable headache; it often feels like occupants will never agree on a comfortable setting. However, these problems aren't always ones of personal preference. In fact, building design, flawed insulation and airflow can all contribute to unequal heating within a space. This not only validates such complaints, but also indicates where corrections are most needed.

To combat these issues, facility managers can wield occupant communication platforms to track the location and frequency of temperature problems. With this information in hand, it's far easier to pinpoint areas where window seals, cracks or other problems may be emerging. In one particular case, a large company found that an open stairwell was leading to heat floating off the main floor and toward the second, thus creating discomfort at both ends.

As seen in these examples, updates to a building need not be expensive nor complicated — they need only to offer new means of pursuing your existing goals.

Intelligent implementation

The keys to effectively updating your building are actually fairly straightforward:

- Know what you need (don't update for the sake of updating).
- Recognize tech's limitations and routinely tap into your human sensor network for additional insights.
- Wield data for deeper insights and refined approaches to facility management.
- Never offload building safety to a non-thinking device. Ultimately, you're still the last line of defense between occupants and disaster.

Remember — technology is only as valuable as the applications to which it's applied. But, when implemented intelligently, it can have huge positive impacts on building efficiency, employee productivity, company morale and safety. **FMJ**

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1. According to averages pulled from CrowdComfort's 2015 Data Review.

Eric Graham is the CEO and cofounder of CrowdComfort. He is an entrepreneur who has launched many leading clean energy tech companies and helped bring their technologies to market, including EnerNOC, Fraunhofer CSE, Next Step Living and Building 36/Alarm.com.

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Information on the 2016 Student Program is now available at foundation.ifma.org/students. Each program is geared toward supporting aspiring and practicing FMs in their efforts to reach higher, go further and make a difference.

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How to Manage Remote Direct Reports

REMOTE MANAGEMENT:

BUILDING THE FOUNDATION FOR SUCCESS

BY SCOTT OFFERMANN

As reliance on technology increases, many companies are encouraging employees to work remotely in order to reduce the office space required, streamline management structure and increase candidate pools. The result is “remote management” — the supervision, direction and mentoring of employees who are not located in proximity to and in regular physical presence of managers. Employees, including both mangers and subordinates, are often placed in remote management situations with little understanding and even less support, resulting in failure at all levels.

While there are several causes behind remote management failure, the main reason is because those employees do not take the time to understand the preferred communication process, do not recognize both the personal and professional needs of the participants and do not commit to the additional time and effort required for success. When participants take the time to understand manager, subordinate and peer preferred communication styles in addition to their personal style and are willing to commit the appropriate time and effort required, remote management can be very successful.

Communication approach

Remote management utilizes a different approach requiring more forethought and focus than traditional face-to-face management. A significant reason for breakdown of the remote management approach is the failure of participants to recognize their own interaction preferences and needs. This is the way individuals prefer to communicate, including not only the means of communication, but the frequency, content, cadence and tone of these interactions.

DEFINING THE PARAMETERS

To create a strong remote management relationship, the employee and the manger need to identify and understand how they prefer to interact and communicate. This includes how often formal and informal communication occurs, what information is required for operating the business and, just as importantly, what is required for the manager and subordinate to feel successful.

The frequency, content and cadence will vary with each individual based on his or her needs. At one end of the spectrum are people who want little to no direct contact with colleagues and prefer a solitary job, requiring little interaction. On the other end are those who are social butterflies and only thrive in direct contact with others who require frequent interaction.

The recognition of how much and the type of feedback given and received is also essential to creating a positive remote relationship. Just as in a traditional management relationship, it is easy to have managers who over- or under-communicate. Remote management relationships are more fragile due to the isolation from management. Too much or too little feedback will damage the remote relationship since the participants do not get the opportunity to receive immediate feedback, creating frustration and a feeling of insecurity.

Understanding the preferred level of interaction with people creates the foundation for the remote relationship by reducing uncertainty. This understanding is essential since it is necessary to fulfill individuals' personal needs and expectations as well as to provide the support needed to make them feel like they are a part of the team. This not only includes work information but also immediate performance feedback, direction and mentoring.

SELECTING THE TOOLS

In addition to the frequency of contact, clarifying the preferred tools of communication is also essential. This involves specifying the method each team member is the most comfortable using to interact with others. Whether it's face-to-face, telephone, sending emails, texting or instant messaging, everyone has a preferred method of communication. Managers and employees need to recognize each other's preferred communication tools in order to achieve effective communication.

There are times when the communication method is determined by the content or audience. For example, if you have to share consistent information among a large group of people, an email or a group meeting is often the best method. When discussing information with individuals, a phone call or email may be more appropriate. Determining the best form for the given requirement will allow managers to make clear how communication will be made. With this understanding is also the clarification of how given situations will be communicated and expectations on the speed of reply.

MANAGEMENT STYLES

Once you have an understanding of the desired quantity of interaction and preferred communication channels, it is possible to define the appropriate management style. This is the way a manager and employees interact, request information and provide direction and feedback.

Typical management styles include micro management, macro management, task-directed, outcome-directed and process-driven methods. The management style that aligns with you personally will result not only in satisfying business requirements, but more importantly support a feeling of success and reduce frustration. Consider how you manage or how you prefer to be managed. Understanding this will assist you in setting the expectations for the highest success.

PREFERENCES AND COMPROMISE

The information discussed so far is about defining the frequency and the tools used for communication. While this well thought-out information will help in traditional management, it is essential to the success of remote management.

It will also help in recognizing what is not working and enable dialogue to determine if it can be corrected, or if the relationship will never be successful. For example, if your preferred communication is in person or by telephone and the manager only will communicate by email or text, this relationship will not be successful. Both participants will need to work on a compromise. If one cannot be reached, there will be little chance of success. Using personal preferences to identify and discuss communication will provide a strong understanding between the participants, recognizing that these communication styles will need to be altered based on situation, audience and urgency.

Adjusting methods for remote settings

How do we use this information to create successful remote management relationships? In a traditional management relationship there is engagement in a variety of different face-to-face opportunities, both official and unofficial, that enable us to learn about

manager and employee expectations, challenges and successes. These include informal drop-in meetings, watercooler conversations, and peers overhearing conversations and injecting opinions and suggestions, providing the immediate feedback necessary for creating success. Nonverbal cues are also key components of communication. When an employee is displaying frustration or confusion in a traditional management setting, it is easier to identify and mitigate the problem, provide mentoring, direction and clarity.

Working within a remote environment, however, there is a need to actively replace face-to-face opportunities. This requires a conscious effort and additional time. It is far too easy to overlook the need to regularly connect with remote employees.

As a manager you are required to understand and replace the traditional methods of team building. As an employee you will need to support the manager in replacing these traditional activities. This includes identifying what information you want and need to know, and the level at which you wish to be engaged, as well as providing access to your thought process.

There needs to be an understanding of what information is important to the manager and the subordinate and how that information is delivered, the frequency and the method of delivery based on the situation. This communication will allow you to mentor the remote employee or be mentored by the supervisor setting expectations and preferences.

The recognition of how much and the type of feedback given and received is essential to creating a positive remote relationship.

A successful remote management relationship must be consciously constructed. In the beginning, more time will be required to learn the preferences of the participants. This usually means a defined time to speak with employees to discuss activities and issues.

To create the foundation, a daily meeting should be scheduled. This time should be scheduled during the employee's normal working hours and not for the convenience of the manager. These meetings are typically unstructured and should be used to create a rapport and provide immediate information and feedback on expectations, challenges, corporate direction and personal challenges. As the rapport is built, the frequency can be reduced. The frequency of subsequent meetings will need to be determined based on the participants' needs and situational requirements.

These meetings do not remove the need for formal, structured meetings such as weekly or fortnightly, one-on-one meetings and team meetings. When you schedule a meeting, it is important to follow through with the established meeting time. Do not cancel because of conflicts. It is essential that these meetings are made the priority. If you continually reschedule, cancel or cut meetings short, you send the message that the remote employee is unimportant. Take the time to reschedule and make yourself available.

Success is proportionate to effort

Remote management can be a highly successful and fulfilling way to conduct business. Success is generated by taking the initial effort when beginning the interaction and dedicating the time required to generate success. This includes understanding communication requirements, defining the tools and setting expectations. It also includes providing mentoring, interaction and support, which are foundational requirements for a successful remote management relationship.

Clearly understanding and articulating this information will generate acceptance from all participants and provide a path for personal and professional success. Each participant must also be willing to dedicate the time required to make the remote management successful.

Remote management is not an easier way to manage. It requires a deeper understanding of communication preferences and a significant time commitment to create a strong and successful relationship. **FMJ**

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An authority on remote and direct management, his strong leadership encourages innovation and collaboration which results in the delivery of superior business services to his clients and customers. Further, as an expert in program development, his creation and delivery of programs drives global consistency and efficiency, enhances value, mitigates risk and improves customer satisfaction.

Offerman earned his bachelor's degree at Arizona State University and is a published author and speaker covering FM-related topics.

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- **Finance and Business:** Facility managers manage/oversee high-value assets that represent significant financial investment in technology, buildings, structures, interiors, exteriors and grounds. Since facility managers are typically responsible for the oversight, operation and maintenance of the buildings and grounds, as well as oversight of various service contracts, understanding the basics of finance and business is critical.
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- Brian Rush, CFM, FMP

SMART TECHNOLOGY, **SMARTER FMS**

BY MICHAEL ROTHMAN

Technology is fueling a whole new era in strategically driven facility management decisions. By tracking data and analyzing trends in pioneering new ways that may have seemed impossible only a few years ago, senior managers are able to make smarter, more informed decisions, and ultimately put technology in the hands of technicians.

As these high-tech tools evolve, top facility managers are working alongside service providers to drive innovation and reshape the way companies manage their maintenance operations.

What's your strategy?

Thanks to the increased visibility provided by integrated cloud-based facilities maintenance platforms, industry leaders across all facility types are increasingly asking, "What's your strategy?"

While it has always been possible to ask the question, integrated, real-time technology platforms provide so many analytical opportunities to enhance the occupant experience while reducing costs that the question becomes a necessity.

Enhancing the quality of the occupant experience demands a multi-faceted approach including providing a safe and clean environment for employees and customers, reducing costs and preventing costly repairs in the future. Integrated, real-time technology offers the transparency and tools necessary to manage thousands of locations concurrently at all times.

For example, professionals and technicians can now use weather alerts to predict when snow removal may be needed in key locations. Technicians utilizing centralized platforms can optimize routes to ensure that plows are smartly deployed, which speeds up response times, reduces mileage by nearly 50 percent, eliminates unnecessary wear and tear on vehicles, and ultimately reduces a fleet's carbon footprint. In addition, workers can use before and after photos to deliver real-time updates to both buildings and facility managers to confirm that the highest-quality work is completed on time and on budget.

National retailers can also use weather forecasting to plan which products to stock their shelves with, which improves revenue by reducing overstocks and markdowns. For example, by forecasting weather trends up to 15 months in advance (with an estimated 65 to 75 percent accuracy), one company helps Duracell allocate more batteries to parts of the U.S. expected to be most hard-hit by hurricanes. This creates significant savings for big-box retailers such as Home Depot, Walmart and others that rely on delivery of those batteries in order to perform the daily operations that allow them to provide meaningful customer experiences.

The availability of this type of data will only increase as the Internet of Things offers new solutions and tools. Experts are already able to monitor key operational systems with highly sophisticated real-time sensors, and this trend is rapidly expanding.

For example, by measuring or listening to the type of vibration or sounds an HVAC fan makes, some systems are able to accurately predict when equipment may fail and order preventive maintenance work before a larger, more costly repair is needed. Not only does this help the FM team to be more proactive, but by reducing individual repair costs it can also save thousands in avoided costs from lost revenue (in the event that a facility remains open during unpleasant or unsightly repairs, or if major repairs force it to close entirely).

Some municipalities using custom-designed maintenance software are also realizing benefits from the Internet of Things, using global positioning system sensors and real-time communications throughout their fleets to modernize snow removal in cities. In both fleet and facility management contexts, accurate real-time feedback is essential.

This kind of visibility and access is helpful when managing a single service at a single facility, but it is essential for managing dozens of interior and exterior services. This is especially true for portfolios that extend across thousands of locations and hundreds of thousands of annual work orders.

If you can see it, you can save it

Harnessing the power of big data offers the real-time visibility and unprecedented site-specific detail to better manage thousands of facilities seamlessly and strategically for some of the world's most respected brands. Asset management and indemnification are areas for which technology is transforming the industry and data integrity is key.

Asset tagging, a database-driven discipline, uses smartphone photographs to create asset records for equipment. This information is integrated into a comprehensive database with warranty information, property records and repair histories. If a needed repair is covered under an active warranty, the FM is engaged immediately to take responsibility for the repair.

ENHANCING THE QUALITY OF THE OCCUPANT EXPERIENCE DEMANDS A MULTI-FACETED APPROACH.

It sounds simple, but when there are thousands of locations and millions of warranties to track, asset tagging eliminates seemingly simple gaps, and that adds up to millions in annual savings.

Additionally, real-time tracking of assets and work orders can now reduce excessive or duplicate charges for multiple visits to address the same issue. Taking this one step further, this information can also be compared to market data to show if certain vendors return more frequently than others.

By using a platform with robust data analytics, facility managers can identify and project maintenance trends. Identifying these trends can help shift from cost- to need-based allocation of retrofit funding, resulting in reduced costs and increased savings.

One more way to reduce costs is to avoid repairs entirely. Technology equips us with the information to make smarter, more strategic decisions, but it also offers the tools to empower on-site managers to better assess immediate needs. Diagnostic Web-based tools can allow technicians to walk through a series of steps to identify an issue and more quickly get the right support for the right repair.

For example, a U.S.-wide retailer needed to reduce HVAC maintenance costs across its portfolio of thousands of stores. Reactive and preventive response times for emergency HVAC issues were unpredictable, which negatively affected the company's ability to serve its customers. By implementing a seasonal preventive maintenance plan based on real-time data, including HVAC asset tracking, the retailer was able to decrease work order response times by 12.5 percent, issue resolution times by 20 percent and average maintenance spending by 3.4 percent per store.

Another HVAC-related advantage of leveraging software platforms for FM: If a single air conditioning unit seems to be broken, a technician can verify the level of repair, ruling out alternatives before determining whether a more costly HVAC specialist is needed. By putting technology like this in the hands of technicians managing these repairs directly, one firm reduced repair calls by ten percent alone last year.

Sometimes, the simplest approaches can be the most effective. Quality can be ensured and cost contained simply by using smartphones to verify service performance. When this approach is comprehensive, the result is a treasure trove of reliable and actionable data that weeds out problematic technicians, ensures accurate service times and promotes quality completion through real-time photography.

As the industry better understands more of the direct benefits of big data and real-time tracking, these high-tech tools have also given rise to other cost-saving developments like better risk indemnification, buying co-ops and improved route density for maintenance fleets. Better facility management pays dividends by protecting asset value.

Performance metrics

The innovative solutions and cutting-edge technology available in FM software platforms make it possible to increase quality, improve efficiency and reduce costs. Importantly, this can enable multisite facility managers to better execute against key performance indicators (KPIs) — data points driven by company goals.

KPIs are critical when measuring how well vendors perform. Some of the most important indicators in multisite facility management are turnaround time, response time, completion time and customer service rating. However, as goals evolve, it is likely metrics will change, so it is important to concentrate on what is right for the business, including long-term objectives, and adjust the KPIs as needed.

KPIs can be adjusted to track service levels, for example, and allow users to generate scorecards to measure and track vendor performance in real time.

In one case, a facility management company implemented a solution to help one of its global retail clients track and capture actionable data for improving invoicing, quality of service and budget management. This resulted in a 30 percent reduction in maintenance spending, a 73 percent reduction in call center overhead and a 63 percent improvement in work order recall, allowing the retailer to negotiate better rates with its vendors and provide higher quality service.

These types of performance improvements help drive costs down, resulting in more value for the end user and the whole value chain. Increasing focus on the most important information, working closely with partners to aim for the same targets and talking through solutions can help ensure the entire team is set up for success and delivers great results.

As technology continues to advance the field of facility management, high-tech solutions are becoming part of the DNA of the industry, enabling FM professionals to make more strategic and increasingly proactive decisions. Ultimately, this means higher quality, lower costs and a better occupant experience. **FMJ**

Michael Rothman is chair and chief executive officer of SMS Assist, LLC, one of the U.S.' fastest-growing technology companies revolutionizing the multisite property management market with a network of more than 20,000 subcontractor affiliates and 120,000 client locations. He has more than 35 years of experience in industrial and retail services.

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SOFTWARE IS EATING THE FM WORLD

(AND THAT'S A GOOD THING)

FMJ EXTRA

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How Software Really is Eating the World

BY DAVID MARKOWITZ

Managing the entire range of a multi-location company's facilities and equipment is a trying task in the best of times. Organizations are facing a highly competitive environment in which to attract and retain customers. Add to this ever-demanding occupant and service requirements, increasing competitive pressures and always-tightening budgets, and it can seem like a never-ending task to simply keep the lights on – literally and figuratively.

Compounding that, there are approximately five million commercial and industrial buildings in the United States across myriad technical disciplines and trades, all of which require ongoing care through maintenance and repair. The management of these facilities is estimated to cost approximately US$500 billion per year in aggregate, and is historically administered by a network or brokers and middlemen who provide an interface between building managers, service providers and contractors.

The world outside of facility management, however, is rapidly evolving through digital transformation, defined as changes associated with the application of digital technology in all aspects of human society. This is sometimes called "Uberfication," in reference to the revolutionary impact Uber and its software application are having on the transportation-on-demand industry, conservatively estimated at US$50 billion worldwide.

Uber is not alone. Software and online marketplaces are disrupting and modernizing large, seemingly

well-entrenched industries around us every day. Famed Silicon Valley technologist-turned-venture-capitalist, Marc Andreessen, described this phenomenon as software "eating the world" in an article he wrote for the Wall Street Journal in 2011. In it he introduced the Uberification concept, pointing out how it is reshaping the very definition of industries and their businesses.

For example, he argued that Amazon is not a retailer; it is a software company that happens to sell retail goods. Tesla is not a car company; it's a software company that happens to manufacture automobiles. The same can be said for Kayak (travel), LinkedIn (recruiting) and Square (payment systems), as well as hundreds of other companies.

It is clear that the facility management industry, especially for maintenance and repairs, is ripe for Uberification through the transformative effects of modern software and associated technologies such as cloud computing, enterprise mobility and big data analytics.

According to many industry sources, facility maintenance and repair activities often suffer from high markups, inconsistent quality and low transparency. While collectively large, the FM industry itself is still fragmented. Thus, as software eats more and more of the facility management world, FMs have reason to cheer it on.

Facility managers as the stewards of brand uptime

More and more FMs are viewing themselves as critical contributors to organizational success. However, in many companies, facility management is still relegated to the lower rungs of the corporate hierarchy, viewed more as a cost center rather than a strategic function. The good news is that Uberification of facility management presents many opportunities to tie FM's value to corporate success.

One key opportunity is for facility managers to play an active role in brand uptime by applying modern, technology-driven industry practices. Brand uptime is defined as how the state of a company's facilities has a real and tangible impact on how a corporate brand is perceived.

There's a reason why this is so important. According to a study by Interbrand in association with JP Morgan, "on

average, brands account for more than one-third of shareholder value." A prime example of this is among retail companies whose brands' measurable components can be critical in driving consumer selection and impacting purchase decisions, hence real revenue impact.

In addition, consumers today are armed with ubiquitous and instantaneous mobile communications and social media that can magnify brand issues caused by poorly maintained facilities and shoddy infrastructure. If properly maintained, however, brand uptime can have many positive benefits for a company by enabling outcomes such as:

- Driving customers into stores, restaurants or other company locations;
- Encouraging customers to stay at those locations longer;
- Purchasing more goods and services than planned; and
- Causing customers to refer the company to others as well as becoming regular and repeat customers.

New technologies enabling improved FM performance

Software is the weapon that many FM pros today deploy to ensure brand uptime is maintained at their companies and stores. In fact, the commonality among the leading retail, restaurant and other multi-location companies is that they are using some type of facility management software to ensure that their locations' conditions are operating at 100 percent.

This is particularly the case for those who use Web- and mobile-based applications to manage all the repair and maintenance work performed at their locations as well as their planned and on-demand service requests. Without such tools, it can be virtually impossible to ensure all work is performed on time and cost effectively, while also meeting compliance and brand standards.

A number of key technologies have proven critical to the growing deployments of these powerful FM software systems. Unlike years past when a software deployment necessitated heavy IT involvement, big upfront licensing costs, often multi-year installations and never-ending upgrade headaches, new advances have greatly simplified getting these systems in place and supported.

Cloud-based computing and software-as-a-service (SaaS) business models have changed the game for virtually every type of application, including those for facility management. With cloud-based SaaS systems, companies are no longer responsible for all the technology and its associated upkeep, as it is outside the company. Using such a system requires no more than an Internet connection and Web browser. Software upgrades occur automatically and behind the scenes; applications are available 24 hours a day, seven days a week, regardless of location; costs are vastly reduced; system uptime is assured and there's no longer any needed IT infrastructure investment.

Once such FM software is in place, an additional and tangible benefit of its use is the ability to reduce repair and maintenance costs by at least 20 percent through more efficient processes and speedier work order resolution. Adding these cost savings to the unrealized gains of maintaining high brand uptime can dramatically and positively impact a company's bottom line. This kind of success will be welcomed inside any boardroom at any company, likely elevating the brand uptime of the facility management function itself.

The era of the data-driven FM professional

Arguably, though, the true benefit that these FM software systems provide is visibility. It has been said countless times that one cannot improve what one cannot measure. For today's FM professionals, it is imperative to have insight into the state of all physical assets, active service orders, level of contractor compliance, problem resolution metrics, outlier locations, etc. Using software to provide real-time data and actionable insights into issues as they arise, proactively maintaining equipment on schedule, and having the business intelligence tools to cost effectively monitor all operations are the keystones to success.

In fact, by not collecting and analyzing facilities data, companies today risk incurring a number of actual and opportunity costs. The good news is that many FM software systems can seamlessly integrate into business intelligence and big data analytics tools, providing powerful visibility into an enterprise's historical data that can be leveraged into real-time insights and actionable information.

For example, without data and analytics, it would be difficult for any company to break down repair and maintenance spending on a real-time basis, unless that business had kept meticulous records. But powered with big data analytics, it is now possible to have details such as spending by trade, equipment or service order type at the click of a button. Further, tracking these types of data over time could make FM practitioners an essential part of a company's planning and budgeting process. This level of insight and information could be easily shared company-wide,

making facility managers better business partners with other corporate support functions such as finance, procurement and operations.

Effective vendor performance management is another benefit of empowering FMs with better data and actionable insights. This solves a major issue with traditional vendor performance, if completed at all, in that it was a highly asynchronous process — typically done after the fact and, often, on the honor system. Contractors provided performance updates and reviews, and customers took the information prima facie, if they chose to at all. Real-time performance management and project status updates were very difficult to achieve before modern FM software systems.

Now, it's second nature with contractors able to check in to a project site (using mobile, global positioning system-enabled devices) and providing real-time, blow-by-blow project updates, including the ability to share photos and other multimedia information to demonstrate progress. Additionally, FMs gain a historic view of how any vendor performed over time using key performance indicators such as reliability, time to case resolution, costs and other measures. Having these quantitative data points is the ultimate tool for accountability, as there are objective, hard metrics to back up performance evaluations, good or bad.

Other data sets and actionable insights enabled by today's FM software systems include:

- Easily tracking the progress of work orders on any connected device, by any user;
- Sourcing qualified, certified contractors with skills needed to handle specialized equipment, materials and fixtures;
- Ensuring all scheduled and preventive (planned) maintenance occurs as required;
- Performing consistent and comprehensive facility environment of care audits in support of accreditation processes; and
- Capturing warranty information in one system to eliminate unnecessary repair costs and optimize asset repair/replacement decisions.

Conclusions

Online, self-service marketplaces provide improved quality and responsiveness. These are the foundational elements of digital transformation, powered by modern enterprise software that is revolutionizing practically every industry and profession, including facility management.

FMs who are seizing upon the new opportunities created by this revolution are benefiting from vast efficiencies and cost savings in their day-to-day operations. Further, they are gaining the means to play an integral role in maintaining their company's brand and reputation — while substantively impacting the bottom line from both a cost and revenue perspective. It's no wonder that facility management is becoming yet another "killer app" for the many positive effects of software eating the world. **FMJ**

David Markowitz is the senior director of product marketing at ServiceChannel and writes about various technology topics. ServiceChannel is currently in use by 250 leading brands to manage more than 50,000+ contractors at 170,000+ commercial locations in 63 countries worldwide.

the quantified building

IOT FOR FM

BY ERIK JASPERS & ERIC TEICHOLZ

Imagine if every asset of your building – fans, doors, furniture, coffee makers, windows – contained a tiny embedded sensor that gathered simple data to determine the actual behavior of those assets. Imagine having systems in place that could capture this data and use it in real time to adjust behavior and signal human intervention as needed. Imagine being able to analyze the accumulation of this data over time to assess structural improvements and optimize operations.

This is the promise of the Internet of Things (IoT) for FM. So, what is actually happening in IoT-related technology and how can you plan for its adoption?

Trends in technology

IoT, smart buildings, analytics, machine learning … an array of terms is used to describe technology trends that impact, among others, the professions of real estate and facility management. These technologies, while initially disruptive, are positioned to revolutionize our business.

One current problem is that this terminology is often poorly defined, ambiguous or confusing. However, it is important to first understand what these terms mean in order to leverage these trends.

INTERNET OF THINGS

IoT is probably one of the most discussed phenomena these days. But what is it?

Gartner, Inc.'s[1] comprehensive definition applies to both real estate and FM: "The Internet of Things is the network of dedicated physical objects (things) that contain embedded technology to sense or interact with their internal state or external environment. The IoT comprises an ecosystem that includes things, communications, applications and data analysis."[2]

Within FM, this translates into the introduction of meters, sensors, building systems and devices that measure actual behavior and can communicate and interact with other systems, thus creating the ability to use data to adjust behaviors.

BIG DATA

As we increasingly connect more systems, devices and objects, the amount of data grows exponentially — hence the term big data. This term addresses not only the volume of information collected but also its variation (volatility) and speed. Technology allows us to capture, store and intelligently analyze these vast quantities of data in a variety of ways and at a low cost.

BUSINESS INTELLIGENCE AND ANALYTICS

The real value in acquiring data is in using it to your advantage. One area of use is reporting and analysis.

The term analytics has recently entered our vocabulary. We have traditionally thought in

terms such as reporting (e.g., for operational data overviews) and business intelligence (e.g., for publishing KPIs and business dashboards). So how does the term analytics differ?

The most common characteristic within the variety of definitions for analytics lies in the principle of discovery. Analytic systems tend to provide support in discovering patterns that are not obvious or easy to see.

SMART

The adjective smart is frequently used (e.g., smart machines, smart buildings or smart meters) but can vary significantly in meaning depending on context. Smart meters, for instance, are merely connected devices that have the ability to transfer their readings. However, the word smart connotes a fundamentally different meaning when used in the context of machines. Gartner[3] defines smart simply and sensibly by linking it to the property of learning, which in turn implies artificial intelligence (machine learning, deep learning).[4]

Machine learning technologies will provide significant value to FMs, allowing identification of correlations, rapid analysis and prescription of appropriate responses (also referred to as predictive or prescriptive analytics). This could apply in situations such as emergency response, energy management, asset/maintenance intervention, security system behavior, etc.

IoT is not merely about connecting things; it about using data to create new types of interactions.

When we integrate these technology trends, the resultant paradigm allows us to create new applications for real estate and FM. IoT allows for connectivity and interactions, big data allows for data capture and storage, and smart technologies use this data, learn from it and act on the results of the learning. Putting this in the perspective of facilities, it is plausible that we are heading toward truly smart buildings.

The dominant underlying trend: Quantification of people, cities and buildings

We are installing sensors into our infrastructures at ever higher rates. Ubiquitous computing is occurring: these sensors and devices assess conditions and are consequently used as inputs for adapting system behavior.

All of these sensors are not yet integrated, but this will happen over time. Buildings, for example, currently use sensors to optimize energy utilization, such as adjusting lights based on room occupancy. These and hundreds of other functions communicate through the cloud with data centers that can be located anywhere in the world. Based on the information collected, the servers can return commands to control the sensors in order to operate a facility more effectively.

Cities are doing the same with their assets. Examples of urban applications include preventive maintenance data about urban transportation infrastructure, finding unoccupied parking locations, optimizing traffic flow on road networks based on current real-time density and accident data, locating the closest support needed for emergencies and other security applications, to name a few.

Ubiquitous computing is increasingly associated with people as well. Personal health is a major driver behind us adopting health apps. Today, wearable devices can track heart rate, pulse and a host of other fitness statistics. In January of 2016 at the Las Vegas Consumer Electronics show, there were dozens of new wearable computer apps related to telling users when and what to eat, when to take a break, timing and quantities of medication, and so forth.[5]

WHAT IS REALLY HAPPENING?

Applications associated with people, cities and buildings have a common denominator: they all start with gathering data. This is then used to describe actual behavior in simple terms. In fact, the process starts with quantification.

Quantification is necessary for understanding and describing the behaviors of the system being studied. Without quantification there cannot be science. Without data, machine learning is not possible. So, in order to acquire smart capabilities, we need to first capture data. Investing in sensor data capturing initially and then waiting for smart technologies is not effective.

There are currently apps that introduce sensor technologies and use data to immediately return value, even without the use of machine learning. For example:

- Data gathered from occupation sensors can help identify and inform users of vacant locations and allow FMs to analyze occupation patterns.

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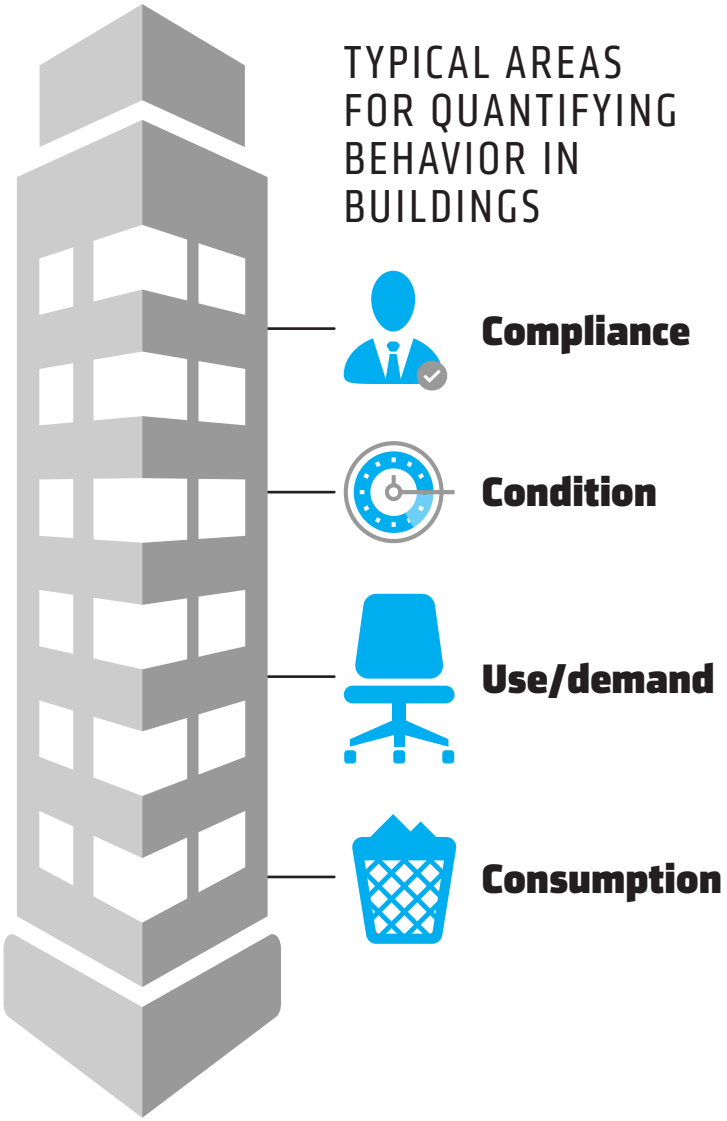
- Connected meters can register energy consumption and analyze patterns to avoid waste and inefficiency.

- Sensors installed on critical assets like escalator motors can monitor their behavior and signal maintenance needs in a timely manner, reducing safety risks and avoiding failure situations.

We can achieve real innovation in FM operations when we integrate various forms of quantifiable systems. Think of cleaning or energy management steered by actual occupancy, or building management systems operated based on climatic and air conditions (temperature, humidity, carbon dioxide).

This type of behavior is often denoted as smart; however it actually involves no element of machine learning. Every situation that is detected is processed in ways we have known about for years, leading to predictable responses. Google calls this type of data processing "if this then that." In other words, the system always will respond in predictable ways: input defines output.[6]



So, although helpful and cost effective to FMs, these types of systems (and thus buildings) are not truly smart yet because no element of learning is in play. To distinguish this first and necessary step from the ultimate smart buildings, we should speak instead about quantified buildings. These are buildings that have the capability to describe their behavior and adapt their responses in effective ways.

When IoT is applied to quantified buildings — described as the Building Internet of Things — the low-hanging fruit currently relates mostly to building automation systems (BAS). Research and development is connecting and integrating data from all BAS systems, then analyzing and fine tuning systems in seconds without human intervention. This is possible because of open communications Internet protocol which enables such BAS connectivity. Using big data analytics, BAS systems will increasingly improve using smart learning practices. This type of integration is still in its infancy, as problems, such as security issues, need to be resolved.

It is just a matter of time before quantifiable cities, buildings and people start to share and integrate their data. FMs can now look beyond the walls of their own facilities to see vast amounts of available data and describe the behavior of the built environment.

In terms of IoT applications and solutions, technology vendors like Google, IBM, Microsoft and Amazon are developing platforms that allow for vast amounts of devices and systems to be connected, providing the scalability and allowing for the device diversity that are prerequisites for the data capturing needed. Cloud provisioning plays a pivotal role here, enabling systems to interact over the Internet. Once such functionality exists, FM vendors (e.g., CAFM, CMMS, BAS) will adopt these smart systems for FM applications.

Getting smart

Although IoT is beginning to take root in facilities, smart (learning) technology deployment in commercial buildings is still rare. And for a good reason: we need current and reliable data first!

The concept of turning the world into a smart object is fairly startling and represents a quantum shift in computing as currently practiced. The promise of smart systems for FM is the same as for business to consumer

markets: process automation, replacing human activity to achieve efficiencies and providing great user experiences. The good thing is that we can start adopting this incrementally, making sure that each stage will return tangible value.

Implications

These technologies will deeply impact the professions of real estate and facility management over time. Here are some implications of these trends:

1. **Data increasingly becomes an asset:** Buildings can no longer be seen only in terms of their physical properties. Data management around buildings is something to plan for and manage. Although traditional vendors will provide for smart solutions, we need to understand principles and develop new and stronger partnerships with IT.

2. **Planning and applying:** There is so much opportunity and yet so little time (and money) to make this happen. RE and FM managers need to understand and plan for sma rt innovations. This requires understanding not only potential benefits but how to implement the new opportunities that smart technologies provide.

3. **Engineering skills:** To effectively implement smart systems, FMs will need staff with operational knowledge as well as an understanding of the principles behind the wider IoT technologies available. At present, there is a vast shortage of engineers with the appropriate skillsets.

4. **Privacy:** Issues related to what personal data is gathered and determining the appropriate level of privacy have yet to be resolved. Where data on the workforce and buildings is concerned, these determinations should involve stakeholders outside of IT.

5. **Security:** IoT's ubiquitous nature is both beneficial and daunting. Options for hacking into systems multiply, producing new risks for facilities. Risk analyses, continuity of operations, mitigation and contingency plans will be critical tasks for organizations and should not be performed solely by IT staff.

IT increasing will play a more fundamental role in the lives and work of real estate and FM professionals as smart systems become available and proliferate. We need to prepare ourselves for a smart future. **FMJ**

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Erik Jaspers, Global Strategy & Innovation for Planon Software, translates innovation policy and investment planning market developments into solutions for FM and real estate. He has more than 30 years of experience in IT and has held various positions in project and information management for multi-national companies like ATOS (Origin) and Philips.

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He is a member of the IFMA Foundation board of trustees and co-chair of their knowledge management committee. He is also a member of IFMA's Research Committee and the Workplace Evolutionaries leadership team.

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FMJ EXTRA

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Personalities in the Data Center

PERSONALITY TYPES OF DATA CENTER MANAGERS

BY ABBY GABRIEL

The rise of big data and incredible growth of the Internet of Things have changed the function and scope of the data center. As data becomes our digital world's biggest competitive differentiator and data handling becomes more closely aligned with business success, the data center has transformed from cost center to business driver. In turn, delays, downtime and other interruptions are becoming increasingly detrimental and intolerable.

As a result, the role of modern data center managers — those responsible for ensuring the 24/7 availability and uptime of mission-critical equipment — has become more important than ever before. Today, these individuals are tasked not only with efficiently maintaining a data center that is performing at a higher level and processing ever-increasing quantities of information, but with operating under stringent budgetary constraints and increasing environmental pressures.

In addition, the pressure placed on the data center manager will only grow over time. According to AFCOM's 2015 State-of-the-Data-Center survey,[1] 42 percent of IT decision-maker respondents plan to build new data centers within the next one to three years. This means that there will be a growing need for experienced facility management professionals who can optimize data center performance in accordance with rapidly evolving business needs.

But how can an organization determine who might best fit the unique requirements of both its business and data center? There are two main qualitative areas to evaluate: management style and personality.

Personality

Each data center manager has a preferred style of operation, whether it's experimenting with new technologies, sticking to established practices or relying on quantitative results to make important and functional decisions.

A recently deployed personality assessment, based on the well-known Ten Item Personality Measure,[2] aimed to understand how those charged with running data centers identify their management styles. This data center manager personality test found a mix of styles and tactics that all contribute to powering today's most important business functions.

Common personality types found in the data center manager population include:

THE GO-GETTER

Go-getters are optimistic and use enthusiasm to fuel productivity. With their affinity for collaboration, they are a resource to those in need of support and guidance. This personality outranked the other types, accounting for 33 percent of respondents. Go-getters will thrive in a company that allows for innovation and can benefit from leadership that maintains staff with knowledgeable insight.

THE QUANTIFIER

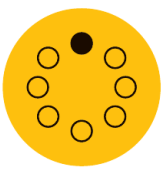
Analytical in their approach, quantifiers thrive on research and data analysis. That balanced and methodical attitude makes for a very capable and reasonable management style. Not one to stray from tried-and-true processes, this manager will determine the best course of action by collecting the proper information to make the best possible decision to maintain an effective data center.

THE ROCK

Data center managers perform in a high-stress environment. Luckily, a majority of managers associate with the rock personality, which means that they are dependable, forthright and directional to their colleagues during unexpected troubleshooting. In our current era of uncertainty, the informed decisions of data center operators with this management style make them an asset to business intelligence.

THE REFORMER

Reformers manage with a maverick mentality and are willing to go where no one has gone before in the name of data center performance. Tried-and-true practices will not fly when this manager takes the reins. This does not necessarily imply that the leaders of this style must take risks, but rather that they have curiosity and a willingness to try new technologies and approaches. Reformers thrive with maintaining data center functionality with cutting-edge technologies and can often free up time to produce meaningful results in other areas of their responsibilities.



THE COLLABORATOR

Seeking answers through crowdsourcing of business leaders and IT teams, collaborators account for only 10 percent of data center managers. Collaborators must strengthen their stock by providing business decision makers with enough evidence to make strategic changes that will decrease spending and increase productivity.

Management style

As we well know, the personality of a data center manager is only a small factor contributing to his or her overall success. Whether a go-getter, quantifier, rock, reformer or collaborator, each individual data center manager must have the knowledge and skills necessary to not only competently manage the complex IT environment, but initiate an overall operational strategy that minimizes risk, ensures personnel safety and reduces costs. This is where FM comes into play.

EFFECTIVELY MANAGING AND OPERATING A DATA CENTER ENVIRONMENT DICTATES THAT FACILITY MANAGERS AND THEIR STAFF ADOPT A MISSION-CRITICAL MENTALITY.

Effectively managing and operating a data center environment dictates that facility managers and their staff adopt a mission-critical mentality that focuses on risk mitigation and grasps the interconnectedness of facility and IT systems.

Consider this: 70 percent of data center outages are directly attributable to human error, according to the Uptime Institute's analysis of "abnormal incident" reporting.[3] Downtime in data centers is directly correlated with large losses in profits and frustration within the data center environment.

With such harsh implications of downtime, it falls to the data center manager to maintain an action plan to mitigate this type of problem. Data center managers are only human, but with proper planning, thought and effort put into a proactive operations and maintenance (O&M) program — which can often be overlooked — downtime and human error can be minimized.

Typically developed at the onset of construction, O&M programs can mean the difference between the proper functioning of the data center or downtime. The core principals of an effective O&M program include:

- Focus on risk mitigation in all operational and maintenance activities, work processes and procedures;
- Acting with the confidence and patience that come with careful planning and preparation;
- Analytical, process-driven approach to risk avoidance and problem solving; and
- Commitment to continual learning and process improvement that increases skills and operational efficiency to maintain an edge in a constantly changing environment.

Data center managers and facilities teams that embody this mindset will be in a much better position to successfully implement and manage an effective O&M program.

Data center managers should also consider staffing carefully and be sure to employ an adequate number of data center professionals to meet the growing needs of the data center and surrounding facility. A well-rounded team includes subject matter experts in the following disciplines: electrical, mechanical, controls, fire detection/suppression, quality management and training, as well as computerized maintenance management systems and other operational support systems, such as data center infrastructure management and building management systems.

It is crucial to have clearly defined roles and responsibilities for each of these individual positions, as well as a thoroughly delineated team and concrete organizational mission statement. A well-adjusted and trained staff focused on a common mission provides the foundation upon which a successful mission-critical O&M program must be built.

The more involved data center managers can become in the data center life cycle, the more opportunities

they have to thrive in their roles and maintain optimum levels of service. At every stage of the life cycle, a hands-on approach by the men and women in charge of functionality will go a long way toward mitigating problems and missteps. Their maintenance action and contingency plans can save precious time in all aspects of the process.

The data center is a complex yet imperative part of the business, and its proper maintenance falls in the hands of the data center manager. The personalities that manage this highly important business process should build upon their strengths, address their weaknesses and hire an effective team around them.

It is clear that the role of the data center manager will continue to evolve as organizations become more reliant on data center infrastructure as a crucial piece of business strategy. Knowing the strengths that lie within each organization will only further enable growth that is in line with the changing nature of the data center. **FMJ**

For more information on the findings, as well as to find out what type of data center manager you are, take the Data Center Manager Personality Assessment.[4]

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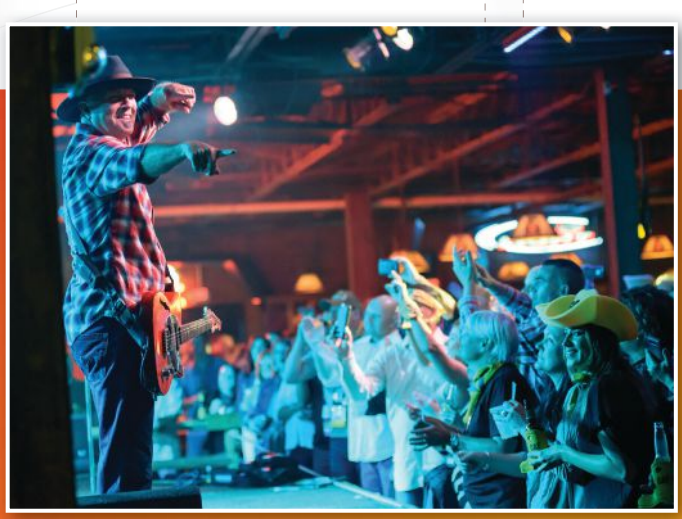

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ISO 27001 Information Security Management Certification Accreditation Overview

RISK, IMPACT AND PREPARATION

BY DEKE SMITH AND JIM WHITTAKER

There is an 800-pound gorilla in the room that most do not want to recognize exists – IT security.

The risk has reached the levels of extreme that can strike significant calamity quickly. It affects individuals, companies and countries on a daily basis. It can take the form of identity theft or corporate espionage, to name a few.




While facility managers may consider IT security to be someone else's responsibility, recent cyberattacks on facilities and through FM IT portals have demonstrated vulnerabilities that FMs must take part in addressing. While the level of protection is normally based on the value of the information or items being protected, penetration into a network will likely be through its weakest link. For example, the financial records of a corporation could potentially be accessed through the heating, ventilation and air-conditioning (HVAC) controls system in order to pass classified information in the clear.

Challenge

Between 2011 and 2014, the number of cyber incidents involving building automation systems (BAS) reported to the U.S. Department of Homeland Security (DHS) increased by 74 percent. The following examples illustrate that these systems are at risk:[1]

- In 2014, a U.S. federal agency reported a cyber incident at a wastewater treatment plant.
- In 2013, the retailer Target experienced a breach in its payment card data, which the company believes occurred after intruders obtained an HVAC system vendor's credentials to access the outermost portion of its network.
- In 2010, a sophisticated computer attack was discovered that targeted control systems used to operate industrial processes in the energy, nuclear and other critical sectors.
- In 2009, a security guard at a Dallas-area hospital loaded a malicious program onto the hospital's computers, one of which controlled the HVAC control system for two floors, which, according to court records, could have affected patients' medications and treatments.
- In 2006, Los Angeles city employees hacked into computers controlling the city's traffic lights, an action that disrupted signal lights and caused substantial backups and delays.

Because our IT assets are such a target-rich environment, it may seem only a few are affected. However, the problem is massive and not easily managed because of the level of dependence we now have on Internet-connected devices.

To increase efficiency, centralized control of building and access systems is increasingly achieved through automation. These systems, and the devices within them, are often configured with connections to the Internet. These Internet connections allow remote access to the systems for software patches and updates, which also makes them vulnerable to cyberattacks.

Intelligent buildings operate on a single communication backbone, which creates opportunities for attack by hackers. More than 84 percent of respondents to an automation survey[2] said they had BAS connected to the Internet. Some Internet-enabled building and access control systems in facilities include:

- **Closed-circuit camera systems:** Cameras, televisions or monitors, recording equipment and video surveillance capabilities
- **Access control systems:** Card readers, control panels, access control servers and infrastructure such as door actuators and communications lines, which restrict access to allow entry of authorized persons only
- **Fire annunciation and suppression systems:** Fire alarms, emergency communication equipment and water-based or other systems designed to prevent, extinguish or control a fire or other life safety event
- **HVAC systems:** Equipment for heating, cooling, moisture control, ventilation/air handling, and measurement and control (often managed through a BAS)
- **Power and lighting control systems:** Lighting devices and their controls, advanced metering controls, power distribution systems, and emergency power or lighting systems (often managed through a BAS)
- **Elevator control systems:** Operating machinery, safety systems and control systems or panels

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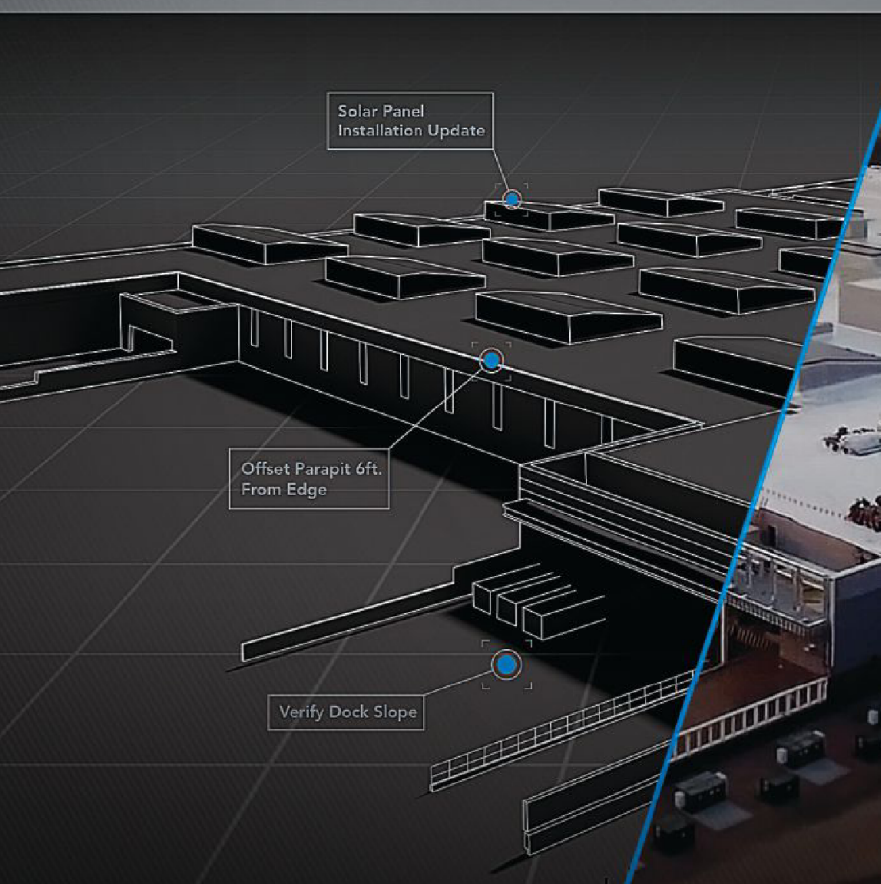

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Risk reduction

A cyber-attack on our power grids or communications infrastructure would impact our world as effectively as climate change or war. Without an information infrastructure, all communication, finance, transportation and work would stall. Add a lack of power and even toilets or potable water would be inaccessible.

IT security includes not only securing the information itself, but also protecting the grid delivering the power needed to run devices. The fact is that power and information flow can be affected by anything from that which is beyond our control (like a solar flare), to an electromagnetic pulse as occurs with the explosion of a nuclear device, to terrorism or simple vandalism. All of these possibilities substantially increase the scope of the protection issue.

Another area of vulnerability is through open-source software applications and interoperability of building information modeling (BIM). While BIM is most often thought of as a tool for design and construction, it is also now increasingly viewed as a tool for operations and maintenance. The information developed during design and construction can be of significant value in supporting IT management, IT infrastructure and thus IT security.

BIM offers a huge advantage by showing IT infrastructure overlaid on physical infrastructure. Knowing exactly where cabling is located can help prevent cutting a cable accidently when remodeling interiors. This is also true for externally buried cable. Utility location services can help, but knowing what devices are affected is also of significant value and a utility locator does not give this level of detail. Make sure your redundancy is not two cables buried in the same trench.

Regulatory climate

Cyber security has been under discussion for quite some time, but it seems to be an issue that doesn't come to the forefront until major disasters occur and/or government regulations are published. It is likely that both of these will be motivators for improving building automation systems and interoperability via BIM in the future.

Some recent U.S. government regulations and international standards addressing cyber security include:

- **ISO 27001: Information technology – Security techniques – Information security management systems – Requirements:** This international standard was developed to provide requirements for establishing, implementing, maintaining and continually improving an information security management system.

- **U.S. Homeland Security Act of 2002:** Under section 1706 of the Homeland Security Act of 2002, DHS is required to protect the buildings, grounds and property that are owned, occupied or secured by the federal government as well as the persons on the property.

- **U.S. Federal Information Security Management Act of 2002:** The act requires, among other things, that:
  - » *Each agency develop, document and implement an information security program to include periodic assessments of risk, policies and procedures that are based on these risk assessments; security awareness training for its personnel; and periodic testing and evaluation of information security policies; and*
  - » *Each agency prepare and maintain inventories of major information systems under its control and to develop procedures for detecting, reporting and responding to security incidents.*

- **U.S. National Institute of Standards and Technology (NIST) Standards and Guidelines:** NIST is responsible for providing information security standards and guidelines for non-national security information and information systems.

- **U.S. Presidential Policy Directive 21:** Issued in February 2013, this directive establishes the protection of critical infrastructure against both physical and cyber threats as national policy. The directive:
  - » *Requires DHS to provide strategic guidance to promote the security and resilience of the nation's critical infrastructure; and*
  - » *Tasks agency and department heads with the identification, prioritization, assessment, remediation and security of their internal critical infrastructure that supports primary mission-essential functions.*

In addition, the U.S. Cybersecurity Act of 2012 sought to protect computer networks running power grids, gas pipelines and water supply and transportation systems from hackers by creating security standards. The act, however, was not enacted by congress.

Fortunately, businesses can implement a first line of system protection based on personal information protection by requiring individuals to have access cards, to know passwords and/or to use biometrics such as fingerprint or iris scanners. Today, however, few organizations require such a robust level of protection. In fact, they most commonly rely on relatively easy-to-guess passwords, which are poorly protected and often shared. Full protection should also include physical protection, survivability and hardening (securing a system by reducing its surface of vulnerability), as well as backup and redundancy.

Solution

The solution, just like the problem, is complex and multi-layered. The first step is to develop awareness of the issues,

Disaster recovery and continuation of operations plans should consider:

- Short-term outages of less than a day or a week
- Longer outages of a month or more
- Single points of failure
- Redundancy and backups

ensuring that all stakeholders are keenly aware of the critical risks and enormous impacts. Then, develop a usable and realistic disaster recovery and continuation of operations plan (DR/COOP).

There are some excellent international standards, such as ISO/IEC 27001:2013[3] and ISO/IEC 22301:2012[4], that provide the full scope of a DR/COOP. Although each organization should adjust the plan according to its needs, it should also address the issues identified in these standards.

Redundancy, back up and well-trained personnel are keys to flawless operation. ISO standards are also foundational to developing a framework that will ensure access to data long into in the future, which is critical for facility support.

An IT security operation can range from protecting data on computers or smartphones to an infrastructure operations center that continuously monitors all IT assets. Often in the latter configuration, the monitoring of a larger infrastructure is likely combined with a network operations center, as well as linked to physical security systems in order to make it as cost effective and as comprehensive as possible.

Even with the best of intentions and an unlimited budget, it is unlikely that all potential problems will be eliminated. Organizations should be prepared to act quickly when the inevitable event occurs. They should predetermine a plan and rehearse it on at least a monthly basis. Ideally, business processes will be in place that can be modified through a change management process. One of the items mentioned in ISO/IEC 27001:2013 is identifying goals and working to achieve them. It is of significant value to know how long it takes the IT team to identify and correct problems.

Security of operational information technology

The role of facility managers has expanded to include working with the chief information officer and the assets associated with supporting IT. In addition, BIM and facility products are becoming so closely integrated with IT that ultimately every object will have an IT component in the envisioned Internet of Things.[5]

From an environment not that many years ago in which few on the FM team even had a computer, to today when everyone now has mobile connectivity, information security has become everyone's issue. FMs manage data centers and increasing amounts of both sensitive and critical facilities, people and financial data.

With BIM and BAS enabling the use of more real-time facilities information and control, FM professionals have an ethical responsibility to protect not only physical and personal property, but information as well. They have to tailor a response predicated upon several things, including the degree to which users of BAS have access to other organizational networks, IT capabilities, use of vendors and outside contractors (and how those vendors are allowed access to networks), and finally, education of staff, who in many ways are the linchpin behind the security of an organization's operational technology and informational technology. **FMJ**

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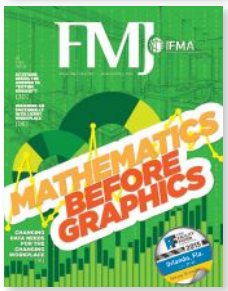

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MELDING TWO WORLDS:

Sustainable Development & Technology

BY BILL CONLEY

"So easy a child can do it!" These fateful words have conspired to lure many unsuspecting FMs into treacherous territory. Push that button; just set that dial! There are many concepts and precepts in the world of facility management that sound simple, but are far from easy. Thus it is with sustainability.

Sustainability makes sense. In concept it seems simple enough and there's plenty of information about it. However, having the proper tools and instructions is not a formula for success. Being able to find and apply the right knowledge and truly understand the ends and means of a process are the true keys to saving money, becoming more efficient and ensuring continued existence of a company or facility, as well as the environment.

Sustainability is a characteristic of a system — in this case, the global ecosystem — in which all defining processes, such as the maintenance of biodiversity at a high quality of life, are able to continue indefinitely.

Sustainable development is one of the most significant societal changes of the 21st century. One universal trend that has major implications for sustainability is the rapid evolution and application of technology. These disciplines are two of the most powerful drivers of change within modern economies and have the capacity to transform the relationship between governments, companies, citizens and consumers.

Facility managers are at the ground floor of the integration and implementation of these two forces. They both require facility professionals to rethink the nature of goods and services, their availability and their use. In this climate, it is increasingly important that the correct and applicable decisions are made.

Sustainability can be simply defined as doing the right thing, at the right time, for the right reason. Actions tend to be right when they serve to preserve the integrity, stability and beauty of the biotic community. They can be broadly defined as wrong when they tend otherwise.

There is a great reliance on technology to solve environmental problems around the world today, because of an almost universal reluctance by industry and government leaders to make the social and economic changes that would be necessary to conserve natural resources. There seems to be a failure to understand that sustainable development policies seek to change the nature of economic growth rather than limit it.

Conversely, though, technology does have the potential to transform modern business into a more efficient, cyclical, networked and sustainability-oriented system that pays returns for economic, ecological and social prosperity. Moreover, the right technology can be leveraged effectively to facilitate transitions to sustainability as long as positive and viable linkages are identified and utilized appropriately. It is also important that the technology can be customized to fit specific needs and address critical institutional and organizational challenges and opportunities. This entails a new strategic methodology for gauging and assessing current and long-term needs.

Technologies are meant to be total systems that include experience, utilitarianism and procedures as well as digital, organizational and operational measures. Technology should not be categorized as just digital or just scientific. Instead, it is necessary to cultivate a broad view of the term that encompasses information technology as well as machines and equipment.

Skills, abilities, knowledge, systems, processes and common sense need to be part of the exercise in order to fully allow technology to fulfill its promise. Such technologies must be accompanied and supported by the parallel development of more holistic environmental and facility management strategies. This requires integrated planning and management, accountability, effective capacity building and informed decisions in implementing sustainable actions.

Information technology

Over-arching all of this discussion is a cross-cutting focus on the role of information technology and its contributions to development processes. The convergence of three new trends is creating opportunities for transcending barriers to sustainable development. Globalization, the expansion of information and communication technology/infrastructure, and knowledge intensity of economic activity are becoming more and more inter-linked. This symbiosis is enabling technology to allow intuitive leaps in decision making by taking advantage of the contributions of IT to development.

Information technology facilitates the reduction of gaps between knowledge provision, access and diffusion. It supports key global initiatives in best practices and responds to demand for local and global content availability.

The Internet has led to an increase in information visibility and community building on an international scale. It allows for more teaching and learning, is a vast resource for research and capacity building, and highlights the role of technology in contributing to developmental processes.

Addressing operational IT strategies and investment development is the newly emerging Internet of Things (IoT). This discipline offers vast opportunities for transformational innovation and sustainable growth. Complementing industry efforts to reduce direct emissions footprints, IoT and other IT-driven technologies provide opportunities to increase mitigation efforts in reducing the climate footprints of other sectors of society. The potential benefits of IoT are estimated to include a 20 percent reduction of global carbon

Sustainable development is one of the most significant societal changes of the 21st century.

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IoT can help enable transformational accomplishments via intelligent efficiency. It can change lives and economy in ways as significant as the Internet itself did over the past two decades. IoT advances offer nearly limitless possibilities for incorporating smart technologies in ways that could not have been imagined even in the most recent past. With smart cities, smart transportation and other innovations, it could be possible to raise the quality of life in society, while decreasing humanity's footprint on the Earth and its climate.

Sustainable technology

The term "sustainable technology" describes technologies that enable more valuable use of natural resources and greatly reduced ecological impact, among other technological benefits. It focuses on enabling significant savings through using less materials and energy. The technology allows for a shift from non-renewable resources to renewable ones; from persistent chemicals to bio-degradable substances; from extra-active systems that use up the eco-system to restorative ones.

Practitioners of sustainable technology have established three strategic commitments in efforts to address global climate change. First, the tech sector aims to reduce the carbon footprint of its operations by supporting corporate goals and policies that focus on conserving energy, reducing emissions of fossil fuels and generating or using renewable energy. It is committed to reducing the carbon footprint of technological products over the course of their life cycle.

Even as these technologies are created to improve quality of life, the tech sector is devoting renewed attention and resources to ensuring that these products leave a more positive mark on the world. Industry leaders are taking into account the carbon footprint of the technology by considering sustainability and energy efficiency in their creation, packaging, use and disposal.

There is a lot that can be said to support these claims. A sustainable technology is planned to be economically viable; it aims to create more value than it costs. In the case of energy savings, a sustainable device will be designed to save more money in energy conservation than it cost to create.

Sustainable technology is to be managed so that it does not irrevocably destroy any resource that is not renewable and is durable enough that any renewable resources it requires can be replenished during its life. It will create a trend of reduction in resources required per unit so that overall resource consumption remains constant or decreases even as population and economic growth increase. A sustainable technology and the training required to operate and maintain it should be proportional in value.

The challenge arises when ideals meet with reality. Knee-jerk reactions or technological "fixes" sometimes do more harm than good. Instead of trying to solve pollution with pollution control technology, attempts should be made to devise technology that does not pollute. Rather than using natural resources conservatively, use only renewable resources. The point is to look at technology that is appropriate as well as sustainable.

Implementation

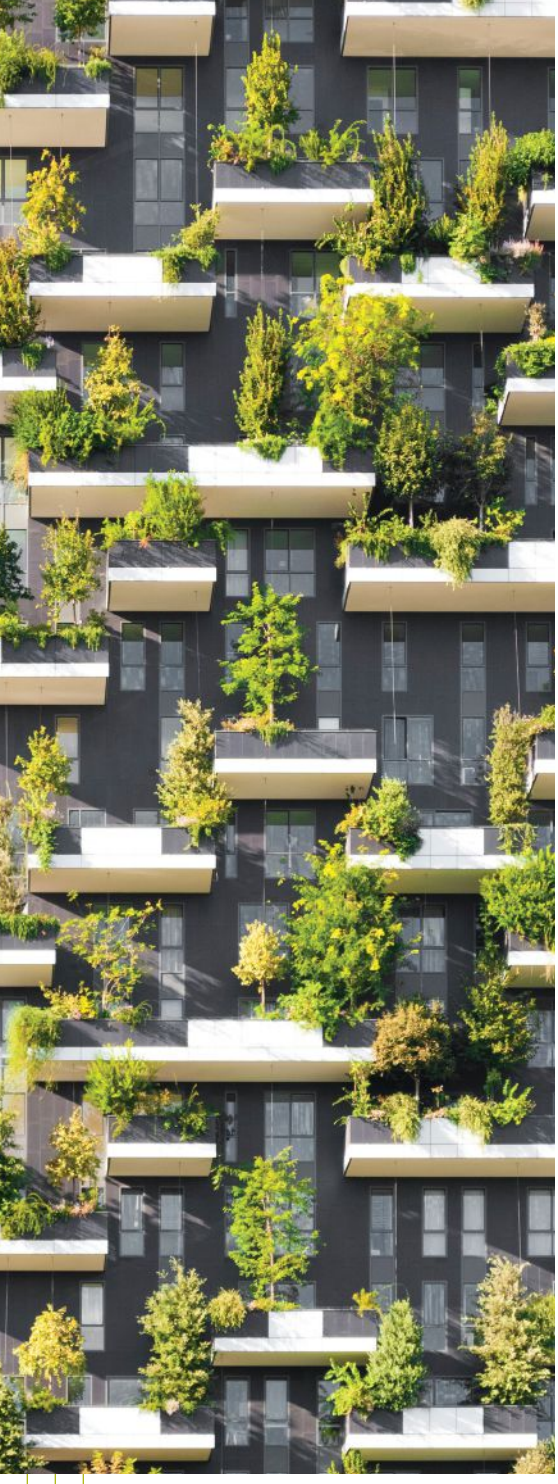
There are tried-and-true sustainable technologies that are helping to actively reduce the carbon footprint of operations over the life cycle of facilities and align FM with corporate goals and policies.

FMs can develop energy-efficient practices and networking systems through a number of right-out-of-the-box solutions. They can investigate and implement innovative and/or diverse solutions for resource efficient data centers. Used products can be reused, refurbished or recycled to extend their life spans. Understanding and employing relevant green label brands and developing green procurement programs can lead to better resource utilization. ENERGY STAR or other

energy benchmarking systems are available to help measure and monitor facility operations.

Looking forward, there are glimpses of the transformational innovation that is possible leaning toward more assistance from technology when wrestling with sustainable operations.

Smart grids offer sensors deployed in both traditional electric grids as well as distributed generation networks.



This helps increase transmission and distribution efficiencies and promotes greater visibility to improve system reliability through the use of big data techniques.

Technology has enabled smarter manufacturing processes and engines that are making factory floors far more efficient and productive. Building energy management systems and building automation systems create the opportunity for a comprehensive, systems-based optimization of energy in commercial and industrial buildings. Intelligent transportation systems and connected vehicles are reducing vehicle emissions while making traveling easier and safer. Smart city projects are setting trends for municipal leaders to follow that can provide more livable and more resilient cities at less cost.

The right technology can foster resilience — enhancing the capacity of a system to absorb disturbance and reorganize while undergoing change — to still retain essentially the same function, structure, identity and feedbacks. Resiliency will prove to be the next major component of business continuity and sustainable development.

So many choices

Facility management should not be a profession that relies on the stagnancy of the status quo, and when it comes to the health and well-being of this biosphere, the status quo is unacceptable. But neither should FMs be led down the garden path. They should be determined to use their innovative minds to find solutions to the challenges that sustainability and technology present. It is prudent to identify the opportunities that lie ahead to reduce carbon emissions and conserve natural resources. The research and development of new, sensible advances that can help lead the transition to a vibrant, sustainable, livable world should be supported.

People would be hard-pressed to run into a challenge that has not been faced by someone else. Answers are out there; finding the right questions is the issue. What is needed is the implementation of a structural learning process that will define the criteria for correct solutions and applications. The key components of such a process is knowledge derived from real-world experience, coupled with the facility management expertise and insight that is capable of transforming that knowledge into action.

Sustainable development is probably the most daunting challenge that humanity has ever faced, and achieving it requires smart choices. In all respects, the role of science and technology is crucial to success. Scientific knowledge and appropriate technologies are central to resolving the economic, social and environmental problems that make current development paths unsustainable.

However, just as the Industrial Revolution seemed like a good idea at the time, technology should be viewed with a long range eye-glass. FMs must be cognizant of the repercussions and ongoing impacts of any processes they implement or technology to which they may ascribe. A good example is plastic; built to be a less expensive alternative to glass, plastic does not degrade in landfills, because it was created to be persistent.

Technology can only serve sustainability if its aims are designed with the ecosystem in mind, rather than the immediate short (sighted) term solution. Thus comes the caveat: not all technology will work for specific needs; not all technology will work well in the sustainability realm. Like anything else, one size does not fit all. FMs should embrace technology, but be careful what you hold on to: the match may not be ecological. **FMJ**

Bill Conley, CFM, SFP, FMP, LEED AP, IFMA Fellow, is 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 and sustainability consulting 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 50 FMJ articles.

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FMJ EXTRA

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Top 12 Emerging Digital Workplace Technologies

THE DAWN OF THE DIGITAL WORKPLACE

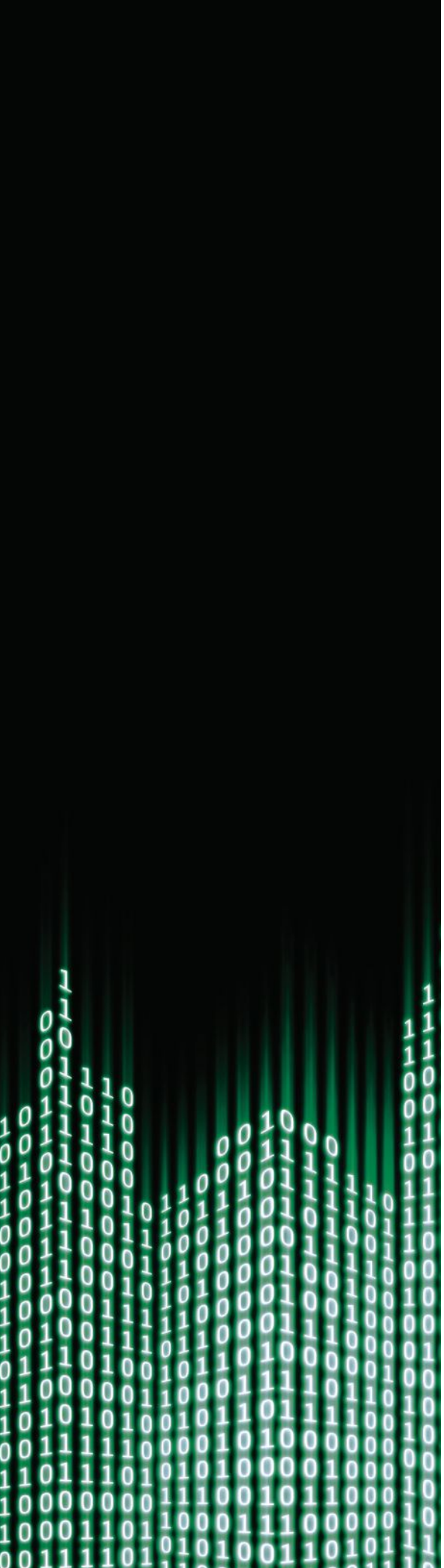
BY NANCY JOHNSON SANQUIST

New technologies are creating a closer interaction between the digital and physical, allowing us to create smart connected products and services that are transforming the way we all work. Amazing new software and hardware devices are bringing the virtual and real worlds closer than ever before.

This article imagines the future of the FM profession through the lens of what it will be like to work two years from now. Tasks that once took days and weeks will soon be accomplished in minutes. Some of the technologies described in this story exist today and some are still in the prototype phase in research labs.

These technologies are part of what the IT research analysts at Gartner call the digital workplace (DW). The DW takes its cue from the consumer world with the goal of creating more engagement, effectiveness and efficiency for the workforce. It uses cloud computing, analytics/big data, mobile devices and the Internet of Things, as well as many more existing technologies and those emerging through research and development. The goal of the DW is for employees to have the same type of experience in the digital world that many companies are trying to create in today's physical workplaces to increase engagement and effectiveness.

The digital workplace applies specific types of technologies to different work styles and specific areas of the organization. For example, facility management and real estate groups may use general workforce tools — such as phablets (smartphone-tablet hybrids) and telepresence software — but they also have their own digital workplace building devices. These consist of the latest software and hardware required to support the specific requirements for managing every stage in the life cycle of the physical workplace.



Managing the digital workplace in 2018

BACKGROUND

It's the year 2018. Our story is a day in the life of fictional Gina Chapman, an architect in the workplace resources department of a global consultancy firm in London. She also serves on the newly formed Digital Workplace Project Team (DWPT).

The DWPT arose after the realization that although the consultancy's IT and HR teams had made great strides in engaging and retaining top talent with a plethora of technology tools, they had missed a vital component of a successful digital workplace for knowledge workers. They recognized the need to include FM/RE representatives, who were already using specialized technologies to create and manage the kind of workplace that was needed to support the business.

Gina has a degree in architecture and an MBA in design strategy, which is based on design thinking and sustainability — the perfect background for her DWPT role. She is an American who originally came to the U.K. to work on an exciting digital business project in her industry, the Digital Built Britain initiative. The aim of this country-wide program was to encourage the adoption of building information modeling (BIM) as the tool to integrate data for the entire life cycle of buildings — from planning through design, construction, management and optimization — in all public sector projects by 2016.

As a BIM expert, Gina understands the value of facility management being involved in every stage of the building life cycle. All buildings in her company's portfolio have a three-dimensional information model interfaced with an integrated work management system (IWMS). This seems like old technology in 2018, but it is still relevant for much of the data she needs to plan and manage the real estate portfolio. She can retrieve information seamlessly on any hardware device she chooses.

A DAY IN THE LIFE

At the beginning of her work day, Gina realizes she has to schedule a room for a team meeting later that morning. She books a small conference room on her mobile phone using a space scheduling application that is also integrated with the IWMS used to manage all the spaces and leases in her company's real estate portfolio. She also uses her phablet to display the best route to that conference room, as well as to locate the closest company café so that she can grab a latté before the meeting.

As she logs onto a monitor on one of the free address stand-up benches in the sunlit greenhouse-like conference room, she realizes that one of her team members is in Bristol today. Gina knows he finished a space plan for a remodel in the Covent Garden office late last night, so she accesses a document-sharing platform using the cloud to retrieve it for review. Yesterday she used a new tablet device to see through the walls in the renovation area, map the position of the pipes and scan the space to create a 3-D model.

Before she approves the budget for this renovation, she accesses a workspace-as-a-service tool to locate availability in other corporate offices or hotels near the office that could accommodate temporary occupancy during the move. She doesn't find any for the right time period, so she instead accesses the mobile app of a nearby coworking facility and finds the amount and type of space she needs down the street.

Before Gina commits to renting the coworking space, she uses an application in her IWMS to analyze her company's real estate portfolio located in the central part of the city to make sure there is not a lease expiring in the next six months. She also reviews the last three months of each of the buildings' total cost of occupancy. The workplace analytics tool pinpoints a consolidation opportunity and Gina

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realizes it is time for a thorough analysis of the requirements of the business units housed in that area of London.

Gina's counterparts in the DWPT represent IT, HR and the business units. She schedules a virtual meeting for the group and reserves a conference room with telepresence capability and smart boards designed for major brainstorming. This setup will allow her to present the latest environmental and well-being key performance indicators for each of the buildings to the team.

Gina tracks these performance metrics via the IWMS, which continuously collects data from the building management system and people-monitoring sensors. She uses this to view the buildings in real time and to maintain a balanced scorecard for each facility in the portfolio.

In the afternoon, Gina receives a help desk alert on her smartphone indicating that two chairs in one of the team huddle rooms have broken legs. Gina is anxious to use this repair as an opportunity to try out the new maker lab she designed, which is equipped with various fabrication tools. In the maker space, she can print out the missing legs using a 3-D printer linked to a simple modeling tool which includes an extensive catalog of furniture and parts. When she finishes, she is notified by her smartwatch that she is at her maximum allowable stress level for the day, so she walks over to the yoga lounge for a much-needed break.

Before her next meeting, she examines the aging upper façade of a building her company owns using detailed photos captured via unmanned aerial technology. Gina spots a problem with the soffits and asks her digital assistant to recommend and schedule an available robot to scale the building and repair the structure.

Gina is now in Bristol at the construction site of her company's newest office building. She's here to meet with the outsourced project managers, who have helped bring to life many of Frank Gehry's buildings, and to learn to use their tool for connecting all of the project's stakeholders. Together, they scrutinize a hologram of the planned structure. They've identified a problem with the installation of part of the building system and are discussing it with the architectural team in New York City. When they superimpose the BIM plans on the hologram of the actual site, they see that the system will be inaccessible for repairs as designed.

On Gina's head (and the heads of the PMs and the New York team) is a self-contained holographic computer that provides a mixed-reality experience through a pair of double lenses. It enhances their interactions by blending real-world objects (the job site) with digital content (the building information model). Gina brings in the vendor's installation instructions so they can get the right information to create the new design scenario in the augmented reality setting. The architects then make the appropriate changes to the holographic BIM using simple hand gestures and automatically project revisions onto the construction site in real time.

STATE OF FM

Gina is an avid player of video games and no stranger to working within the world of virtual and mixed reality. A Gallup poll taken a few years ago in the U.S. said that more than 80 percent of the workforce was not engaged in their jobs — this is not the case with the DWPT. The technology within the building digital workplace makes work more like play, whether it's during design, construction, operation or post-commissioning.

As a digital workplace technologist, Gina uses her skills with augmented reality, as well as knowledge of analytics, IWMS, 3-D printing, scanning, drones, radio-frequency identification and other technologies, to create new and innovative ways to perform the RE/FM function.

The days when FM was considered a job for a low-level technician or a secretary are gone. Secretarial duties are now performed by a digital personal assistant. In the new facility management paradigm, the strategic job of using innovative technologies to create and maintain buildings is a standard business practice. FMs enable energetic, collaborative, healthy work environments that increase the economic performance of the organizations they serve.

Back to (digital) reality

As you read this article, hardware developers and leading real estate and FM software providers are piloting many of these new technologies to deliver substantial value to the market. They are all cloud-accessible and utilize collaborative platforms to allow FMs to be part of the entire building life cycle, not just at the front and back-end stages.

The futuristic scenario illustrated by Gina's story offers a glimpse into just some of the possible ways that traditional real estate and FM work will soon be transformed by the advent of the digital workplace. **FMJ**

Nancy Johnson Sanquist, IFMA Fellow, AIA Associate, is real estate and workplace solutions strategist for Trimble. An internationally recognized technology specialist with 25 years of diverse experience in corporate real estate and facility management, Sanquist is a leader in the field and created the first seminar for IFMA more than 20 years ago.

She has contributed substantially to the research and development of CRE and FM through her many written works, including the award-winning IFMA Foundation publication "Work on the Move." Additionally, she currently serves on the foundation's board of trustees.

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CSP LEVEL Gold
CSP SINCE 2006
WEBSITE planonsoftware.com

FMJ: CAN YOU SHARE SOME UPCOMING WORKPLACE TECH TRENDS THAT WILL IMPACT FM?

PLANON: The workplace has always been simply that – a place to work; inanimate, unthinking and unhelpful. With the introduction of the Internet of Things, a revolution is underway.

Over the next several years, the incorporation of intelligent, learning-enabled equipment, sensors and other monitoring devices into FM processes will transform the way we gain knowledge about the workplace and its effectiveness for users. This will allow FMs to tackle today's issues, like inadequate lighting, uneven heating, wasted space and so much more. Tomorrow's workplace will be intuitive and proactive, constantly adapting to those who interact with it.

Using IoT technology, we will see principles of quantification entering the field of FM: collecting simple data that describes the actual performance of buildings and the components in them – including people – and using that data in real time to improve operations and building services, as well as the end user experience. The emergence of "the quantified building" is the first valuable and necessary step toward creating really smart buildings.

Applying artificial intelligence to vast amounts of data generated will allow for self-learning systems to emerge. Applications of those new but existing technologies can be expected to emerge in process automation (decision making), as well in applications like personal digital assistants which proactively provide advice to their users. For more on this trend, read the article by Erik Jaspers and Eric Teicholz on page 40 of this issue of FMJ.

Another strong trend is virtualization. The emergence of technologies and products in this area will allow FMs to rethink their workplace strategies. Video conferencing 3.0 – types of solutions allowing for new forms of meetings with 3D virtual presence – will require new types of places to facilitate them. The building itself will become a hybrid physical and virtual structure.

In core FM processes, such as maintenance, we expect to see virtualization as well. Through augmented reality we expect, for instance, that engineers will receive documents and instructions in real time to facilitate their work.

FMJ: HOW CAN FMS BUILD A BUSINESS CASE FOR IMPLEMENTING AN IWMS?

PLANON: Making the business case for IWMS rests on the first word in the system name: Integrated. The original reasons for developing these systems in the 1980s still exist today:

- Buildings and workplaces are complex systems of systems
- The organizations that occupy them engage in a broad spectrum of activities
- There is high potential for conflict if a single system does not have oversight into all of these varied activities
- A single, unified source of truth resolves many conflicts

Ultimately, the business case for IWMS is related to three key benefits: transparency (what, where), control (who, when, how) and the ability to align quickly with changing business requirements. As companies look at measuring their performance, an IWMS is becoming a fourth fundamental business tool next to the ERP, HR and CRM systems. Since facilities can represent up to 30 percent of costs, it is unbelievable that some companies still don't have a performance measurement tool in place.

FMJ: EXPLAIN PLANON'S "INTEGRATED BY DESIGN" APPROACH AND HOW IT BENEFITS FMS.

PLANON: Some software solutions evolve as a patchwork of acquisitions and additions, leading to clunky systems and a lack of true integration. Planon Universe, however, is designed and developed with a vision for the future of facility management and real estate: integration of processes and functions, unifying stakeholders in one platform, and delivering valuable management information.

We have more than 100 developers who build our software in-house, listening to customer feedback as they develop new functionalities and user experiences. This eliminates the risk of some pieces of a system losing support or not completely integrating with the larger solution.

By deliberately designing an integrated system, Planon offers a single source of truth for facility managers as they aim for the optimum in workplace performance, whether that is a single desk or a complex environment of connected buildings scattered around the globe.

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EvensonBest

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EXPERTISE Furniture **CSP LEVEL** Silver
CSP SINCE 2015 **WEBSITE** www.evensonbest.com

FMJ: WHAT CRITERIA ARE MOST IMPORTANT FOR FMS TO CONSIDER WHEN EVALUATING, SPECIFYING AND SELECTING FURNITURE SOLUTIONS?

EVENSONBEST: There are a few key factors to consider regarding contract furniture acquisition. When evaluating a furniture solution package, the strength of the manufacturer is of significant importance. It is critical that the manufacturing partner has sound financial strength, a comprehensive breadth of product and enough product flexibility to be able to properly meet the client's desired furniture specification.

During the product specification and selection process, recognizing a manufacturer that can provide extensive and compatible product lines will prove invaluable. This will allow the specifier to mix and match products across several lines to provide a unique furniture solution without having the burden of customization costs. While production levels fluctuate at any given plant, a manufacturer that can increase capacity during peak production cycles should be taken into consideration in order to ensure that the vendor maintains their guaranteed lead times. Lastly, warranty provisions are of importance to assure that the product life cycle meets the client's expectations after installation.

FMJ: HOW DOES EVENSONBEST CONTINUE TO DELIVER VALUE TO CLIENTS BEYOND THE PURCHASING PHASE?

EVENSONBEST: EvensonBest provides value beyond the order process through several of its service applications. The strength and experience of EvensonBest's project and field management teams exist through onsite management of jobsite logistics activities. EvensonBest works with the other onsite trades to oversee the entire delivery and installation logistics process. As part of the process, EvensonBest provides real-time status reports of all furniture related activities as well as finish documentation which includes project binders and as-built floor plans.

Post installation services are also a key service factor for EvensonBest. Once the punchlist is complete with client sign-off, EvensonBest executes all product manufacturer warranty issues. The client receives a warranty and maintenance manual catalog for every product which aids in extending the product's life cycle. Additionally, EvensonBest works with the client to develop an ongoing online inventory that includes product photos, condition reports and an electronic reservation screen.

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FMJ EXTRA

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Workplace of the Future

Leveraging Big Data to Advance Workplace Transformation

EY's Workplace of the Future

BY MATT DAWSON

Using big data as a transformative tool needs big judgment — human judgment — to drive business change that leads to a better working world.

Analyzing collected information through a human lens is where true business advantage lies. Without the human element, analytics is an informative tool to create a bank of information. To create value from big data, you need to intelligently analyze, review and act on data findings.

According to a recent survey conducted by professional services organization EY and Forbes Insights, the majority (66 percent) of global companies are investing upwards of US$5 million in analytics, yet only 12 percent of global companies describe their analytics maturity as "leading." Those who were not "born" digital have a longer journey ahead than those who are capturing customer data and interactions digitally from the start.

The leading 10 percent of enterprises surveyed reported a significant shift in their ability to use data to help meet competitive challenges. They encourage data analysis to be performed by someone who knows the organization — someone who is fully aware of the business objectives in the context of culture and leadership who will inspire the right line of questioning.

Data, at its best, should have the power to disrupt and transform. Results from rigorous analysis of short- and long-term data sets can confound an organization's accepted wisdom and assumptions influenced by human bias.

Real-world application: EY's Workplace of the Future

EY's approach to analytics centers on its belief that the better the question, the better the answer, and that these better answers will produce the best solutions.

To this end, EY has developed the Workplace of the Future (WOTF) — a trust-based flexible environment that supports exceptional client service and helps attract and retain the best talent.

At WOTF locations, the office is a place to work, but it's not the only place. EY's people can either choose to work from a variety of workspaces in the office or they can leverage

Analyzing collected information through a human lens is where true business advantage lies.

technology to virtually or remotely collaborate from client sites, their homes or while in transit. This ability to be connected and work in a variety of ways enables high-performing teams.

EY developed the WOTF knowing that the workspaces people occupy have an important impact on their well-being and productivity. But as EY continues to grow — and lifestyles, technology and the mix of its workforce changes — those spaces won't be the same as today.

Over the coming years, WOTF will provide the framework and leading technologies to drive improvements to the work environment and working practices of EY's global workforce. These changes will involve the refurbishment of many EY offices and greater flexibility in how, when and where people undertake their work.

For the EY culture to thrive, its global infrastructure and related tools will need to enable its people.

Internal collaboration

Having an integrated approach from the start has been the key to success for EY, with its talent (HR), IT and real estate (RE)/FM functions working together globally on the WOTF program. The group determined early on that having a Business Enablement Center (BEC) function with related support tools was also essential. But big data barriers existed among IT, FM and HR groups which control key source and dependent systems.

WHY IS THIS IMPORTANT?

In order for the BEC to be successful, it needed to be able to provide comprehensive data that could be used to influence the offices that were to pilot WOTF, WOTF business case decisions and later deployments.

C-level members of the WOTF team worked to ensure success across EY's matrixed environment and aligned the program with EY's 2020 strategy. In addition, the executive team helped to ensure a thorough global view by engaging legal and data privacy/security among others to resolve and accelerate solutions.

Virtual WOTF BEC

EY used its big data analytics framework as a starting point, but human insight was essential to properly interpreting the information and managing change.

EY elected a phased WOTF implementation starting with its top 100 locations in 47 countries. The operational model and costs were accepted as a strategic investment. Change management issues were identified early on, largely related to BEC big data analysis and influence on location business cases. The objective was to unlock EY big data and analytics in a meaningful way, serving as a catalyst to optimize all WOTF transformational investments.

RE led the development of the BEC by leveraging three new key global business support tools:

- **Utilization system:** Pulls data and analytics on office and remote work activity
- **Workstyles survey:** Gathers employee perspectives for WOTF local plans
- **Global workspace and room reservations:** Helps with optimizing density via user-friendly, intuitive technology

It took 18 months, but thanks to regional business input and analysis, team deliberations and ultimately the creation of a global project team, EY developed key tools, an analytics team and the BEC. During the process, EY also considered disruptive technologies, such as cloud, big data, mobile and social.

Today, the WOTF program is enabling EY's people to improve the way they work and collaborate and is influencing business results. EY's global portfolio now aligns to its 2020 strategy, allowing it to leverage technology investments, strengthen engagement and recruitment, enable high-performing teams and deliver cost/space efficiency.

Since the start of WOTF, EY has delivered on key talent flexibility objectives while maintaining flat occupancy spending and spatial portfolio during a period of growth — including a 33 percent global staff increase while delivering a 23 percent reduction in cost per person.

Lessons learned

Leadership tone sets the culture and acceptance of innovation and change. To leverage this, the overall WOTF program was specifically incorporated into EY's 2020 strategy.

C-level team members were key to success, and an entrepreneurial approach was essential given that EY is not a single firm, but rather a global organization of partnerships with varied local HR and FM teams. EY's passion to deliver exceptional service came into play internally by pulling together a unified team that was driven to produce results.

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Outcome

Big data is now a core element of the real estate decision-making process, with the EY RE portfolio exceeding 22 million square feet in more than 140 countries.

WOTF helps EY realize a significant financial benefit that can be reinvested back into the business.

Controlled governance, visualization and IT collaboration tools are now universally leveraged, helping to ensure quality use cases that are advanced to EY leadership, including:

- **HR:** WOTF action plans/new ways of working initiatives, retention and flexibility targets
- **IT:** Investments for remote and onsite technology
- **RE/FM:** Portfolio sizing strategies, WOTF fit out and indirect cost control

Leading practice

Big data analytics now enable all EY leadership to get a better understanding of people's requirements, and most importantly, how EY's people interact within their local workplaces. This establishes how people are physically working within their offices or from other locations, such as another EY office, in transit, at home or from client sites.

The BEC also now provides data analytics and support to:

- Understand the big picture — it's more than just a real estate tool
- Align RE global and local strategies with WOTF and region objectives
- Know and meaningfully communicate how RE impacts the business
- Connect the WOTF dots — from workplace, to flexibility, to technology, and so on
- Synthesize concise and meaningful messages

Innovation

EY RE used — nearly exclusively — existing internal resources, tools, related big data and analytic methods to shift its operating model to the next level. EY now has a single interactive source for its changing business mix with a database containing roughly 80 million records.

The project tools that were developed to integrate with other EY applications will continue to change, specifically related to how EY applications are participating with new cloud-based platforms.

The WOTF team is planning "version 2" enhancements and updates to stay ahead of the curve and new IT platforms.

Governance and audit procedures

EY leveraged a project activity management tool used for lease management and capital projects among other integrated workplace management system support modules. Qualitative and quantitative reports are reviewed by a WOTF Global Executive Steering Group and by procurement, finance and EY internal audit.

In addition, EY has the following reporting and review processes:

- **Management team reporting:** Monthly and managed through the BEC analytics team
- **Leadership reporting:** Quarterly and audited by EY procurement
- **Biannual review:** Global finance reviews, audits and reporting validation

Savings and cost avoidance targets were established to support EY's strategy, and quarterly progress reports are shared with senior management.

Savings and value definitions and processes were developed to help ensure consistency with procurement, and validations are reviewed with finance annually to audit and obtain final approval and help ensure accurate, credible savings figures to senior leadership.

Translating success for your organization

How can big data influence your RE/FM organization and drive transformative business change?

Data-driven insight can create value — including reducing risk and improving performance — that positions your organization at a competitive advantage. However, some enterprises are missing out on the opportunity to harness its full potential. FMJ

REFERENCE

www.forbes.com/forbesinsights/ey_data_analytics_2015/index.html

Joseph M. (Matt) Dawson is the global operations leader of the EY Real Estate Services group. Dawson and his functional managers lead lease administration, business enablement technologies, reporting, compliance and operations support.

Dawson provides ongoing FM industry leadership and promotion through academic conferences and international not-for-profit professional organizations. He has served as chairman of the IFMA Board of Directors and was a founding director of Global FM.

Within the FM profession, Dawson has received numerous awards and international recognition. He holds a degree in Business Administration from Georgia State University.

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HOW TECH IS TRANSFORMING THE VISITOR EXPERIENCE

BY GREGORY BLONDEAU

Facility managers wear many hats. From performing daily maintenance to figuring out how to make their facilities more sustainable and energy efficient, there's never a shortage of work to do. One can argue, though, that the most important duty of all pertains to maintaining facility security. Understanding — at all times — who is entering and exiting the building is of utmost importance. The safety of both the facility and its occupants, after all, is essential to a smooth operational infrastructure.

That being said, it's hard to feel completely secure when visitor security is completely reliant on a sheet of paper. Standard visitor log-books and sign-in sheets have dominated front desks for decades. The amount of power they hold often goes overlooked, as the real problem unfortunately does not become fully apparent until disaster strikes. There are several reasons why relying on old-fashioned visitor sign-in sheets is detrimental to facility operations:

- **Some visitors shun sign-in sheets.** For whatever reason, visitors might not feel that it is necessary to write their names upon arrival. Perhaps a receptionist is already there to greet them and it seems like establishing their presence has already been accomplished. If that's the case, it's going to be hard to find a record of the visit later down the line (unless your receptionist has an unbelievable memory).

- **Illegibility.** Even if you are lucky enough to get a visitor to sign in, it can be almost impossible to actually read the name on the sheet. What good is having a person sign in if you can't figure out who it actually was? Of course, this is completely out of facility managers' scope of control when relying on standard sign-in sheets.

- **Fake names.** Yes, it happens. There are times when a visitor may use a fake name to get in the door. If the visitor actually does this, it's safe to assume he or she would not be welcome in the building. This is the exact type of situation for which it would be wise to have a more effective means of double-checking registered guests.

- **Receptionists can be missing in action.** Currently, the only recourse when it comes to monitoring visitor check-ins is the presence of a receptionist behind the desk. However, there will always be times when receptionists step away from the desk, giving unwelcomed visitors a chance to roam around the office unattended (and unannounced).

NOW IS THE TIME TO TAKE **FACILITY SECURITY** SERIOUSLY.

After breaking down the problems with the sign-in sheet status quo, it's easy to see that there needs to be an alternative measure in place. That's why many facility managers are looking at new, technology-driven solutions for visitor management.

The next-generation visitor sign-in sheet

So, what does this updated sign-in sheet look like? Typically, it's an app or program housed within a tablet device that monitors visitors from invitation to check out. The process of signing in is as simple as the visitor clicking the correct name displayed, which then alerts the host to the guest's arrival. Most visitor registration apps also come with the ability to print out personalized visitor badges as well. However, the process of visitor monitoring doesn't begin at sign in. With these programs, visitors are pre-registered before they even arrive.

For example, as soon as the decision to meet has been made, the host has the option to send an automatic invitation that outlines all visit details, including a map and directions to the building. On the day of the visit, the visitor can receive a text message reminder that the meeting will still be taking place.

Both the guest and host benefit from this arrangement. For visitors, the process of finding the meeting location, confirming whether or not the meeting will take place as scheduled and getting real-time notifications about the check-in process are welcomed. For hosts and facility managers, knowing the exact moment of visitors' arrival and being able to keep track of them in the building is invaluable.

Additionally, many of the software options available will send a summary of the guest to the host before he or she arrives. This can include a LinkedIn profile, recent press materials or any other key facts that would be helpful for the host to know in advance. Instead of feeling unprepared for the meeting, the host will feel empowered.

Beyond the front desk

Huge companies like Johnson Controls, Airbnb, Audi, Bosch, Black & Decker and more currently have some sort of "updated sign-in sheet" sitting at their front desks. However, creating a more enjoyable front desk experience is not the only visitor registration technology that's changing the office atmosphere.

For example, there are several options on the market that offer a way to visually track visitors as soon as they step into the building. This "person of interest" facial recognition software may sound like the stuff of the future but is currently being implemented in buildings across the globe. This type of scrutiny provides significant security benefits.

Another piece of visitor monitoring software seeks to free up space within the building itself. For example, if a meeting room on the first floor is overcrowded, this particular app will direct a newly checked-in visitor to an empty room for the meeting to take place. It's a simple tool that can give visitor hosts, and facility managers, some piece of mind.

Security in an insecure time

It's no secret that the world as we know it is not as safe as it once was. With the increase in mass shootings in the U.S. and terrorist threats popping up across Europe and around the globe, now is the time to take facility security seriously.

Visitor registration technologies provide a simple way to increase building security through innovative features. Having the ability to quickly reference the current visitors in your building, and where in the building they are located, is invaluable. In case of an emergency, being able to find and evacuate everyone at a moment's notice can mean the difference between a front-page disaster piece and an uplifting survival story.

With the litany of alternatives to the traditional sign-in sheet popping up faster than ever, it's important to learn more about the options available for any given building. Based on the features discussed, it's safe to say that the time of the log-book has almost come to an end.

Making your facility's visitor area more tech-forward

With the stage set for an update at the front desk, here's how facility managers should execute on the introduction of visitor management technologies:

- **Assess the situation.** First, make sure to assess whether or not it makes sense to introduce an updated visitor experience. Has the facility struggled with guest management and coordination in the past? Take into account whether or not there have been security issues, communication problems or other visitor-related dilemmas.

- **Research available options.** There are so many products on the market that aid with visitor registration and management. Make sure to take the time to research every option to find the right product. There will be some more geared toward security while others focus on visitor experience. Depending on the facilities situation, one product might be better suited than another.

- **Assess implementation involvement.** It's important to determine how much time and energy it will take to implement a visitor registration or management application. Will it be quick and easy — something a facility manager can handle alone — or will it require an IT team to help keep in check? These are important questions to ask when determining the best product to use.

- **Test, test, test.** Since the introduction of a new front desk experience will take some getting used to, it's important to make the transition as smooth as possible. It may be wise to inform the receptionist that he or she may need to explain to guests the correct way to sign in at first. Or, it could be useful to keep the old-fashioned sign-in sheet present during the software trial period.

- **Reiterate.** Sometimes the first option doesn't always meet a building's needs. If after going through initial testing it becomes apparent that the facility's demands are not being met, it's alright to start from the beginning and try another option. Understanding the right option can take time and it is by no means a failure on the facility manager's part if the first visitor management system is not as effective as he or she may have hoped it would be.

Facility managers are challenged daily with duties that seem never-ending. Fortunately, thanks to recent technological advances, some of these can be better managed and streamlined. If visitor registration and management can be "put on autopilot," the energy that was once allocated to consider a guest's whereabouts, maintain building security and effectively manage visitor/host interactions can now be redistributed to other pressing matters.

With so many tasks at hand, the greatest challenge for a facility manager may be finding a solution that tackles them all effectively. **FMJ**

Gregory Blondeau is director of Proxyclick. As co-founder of one of the first cloud-based visitor management solutions on the market, Blondeau helped develop Proxyclick from an idea into an award-winning robust solution that PepsiCo, L'Oréal, Acer, Audi, Bosch and many other businesses use globally. Consistently receiving high marks for easy implementation and being highly user intuitive, businesses entrust their visitors' experiences and their facilities' security to Proxyclick's Web-based visitor management solution.

DATA-ENABLED WATER MANAGEMENT

The water struggle

In facility management there is often a love-hate relationship with water. From cooling towers to sewer systems and landscape irrigation, water is one of the four key elements of nature that must be harnessed safely and efficiently by facilities.

However, water is a beast unto itself. It loves to go where you least want it. When disaster strikes and a power line is cut, energy stops; when a window is broken, hot or cool air escapes into the sky; but when a water system fails, that is usually just the beginning of a potentially long and costly series of events.

Unfortunately, water systems, by their operational nature, have historically functioned out of sight and often out of mind — until something goes seriously wrong. Then, it is just a matter of time and level of damage before someone eventually notices, and even then sometimes we still don't correct the problem.

Outdoor water management is a perfect example. Many facilities operate irrigation systems with irrigation controllers that are nothing more than glorified timers. These are rarely adjusted, so the typical facility is overwatering every day. If it rained recently; if the weather is warm or cold, the timer applies the same amount of water, whether or not the landscape needs it.

Overwatering truly shows how applying the same approach under varied circumstances can lead to serious consequences. Damages from overwatering can include:

- Hardscape damage
- Slope and foundation damage and increased risk of mold
- Plant loss
- Penalties and fines
- Brand damage
- Increased slips and falls

Despite these apparent costs and damages, the vast majority of sites simply resign themselves to what have traditionally been considered to be unavoidable expenses and risks.

Data-enabled water management

The good news is this does not have to be the status quo. Many facility managers are proving that the Internet of Things (IoT) and big data are powerful tools in realizing extraordinary water and monetary savings through smart water management.

Why are leading facility managers now focusing on water? Since 2010 water rates in the U.S. alone have risen more than 41 percent on average,[1] and large water users are seeing substantial increases in their water costs. As cities are forced to make difficult

BY CHRIS SPAIN

As the technological revolution continues to hurtle along at its ever-accelerating meteoric pace, sometimes the easiest way to navigate is to find refuge in the things that are most real: the physical spaces where we come together to think, work and play.

In an ever-increasing world of virtual things, it is the world of real things such as air, light, energy and – last but not least – water, that technology has the best opportunity to make a meaningful change in our lives.

decisions due to lack of resources, costs to repair or retrofit aging water infrastructure are increasing, which means that water prices will continue to rise. As water ordinances increase, so will water-related non-compliance fines. And, as home owners are asked to make water use sacrifices, unintentional water waste by companies can cause significant brand damage among customers.

So how do IoT, big data and the cloud all fit into helping solve these problems?

Leveraging IoT

IoT provides the ability to cost-effectively establish real-time wireless communication, control and sensing in the field while leveraging the cloud and big data to do the heavy lifting. What is critical about this unique array of tools is that it offers an unprecedented amount of information at an equally unprecedented low cost, thereby providing the most important goal required for meaningful scale — economic sustainability.

For instance, as implementation of water restrictions and regulations continues, smart water management applications can help users keep track of water agency compliance regulations. Without them, facility managers could spend hours verifying that their buildings are in compliance, only to find that regulations have changed.

Smart water management solutions provide the capability to verify compliance in a single report and automatically receive updated information on a regular basis. Facility managers can now take these massive amounts of information and use analytics to transform the data into succinct actionable knowledge.

The problem for site water management before IoT, big data and cloud solutions were available was the inability to realize cost-effective continuous visibility into a facility's water use and waste. With affordable real-time flow sensors and wireless technology, facility managers and landscape contractors can be instantly alerted to any leak issue, whether it happens indoors or outdoors.

With smart irrigation systems, irrigation is weather-based and gathers as much data from the sites as is sent down, thereby enabling cloud-hosted big data

IOT AND BIG DATA ARE POWERFUL TOOLS IN REALIZING EXTRAORDINARY WATER AND MONETARY SAVINGS.

systems to identify new problems before they become huge expenses. With flow sensors on cooling towers, changes in water makeup percentages enable a host of operational inefficiency alerts.

Smart water management platforms today are saving leading companies billions of gallons of water, millions of dollars and thousands of staff hours annually. They accomplish this by leveraging field-proven water sensors and water control systems with affordable wireless communications (IoT) that connect these systems to the Internet where huge amounts of data can be affordably stored (cloud) and analyzed (big data) to deliver business intelligence.

Similar to energy management systems, companies are able to customize water management systems to their unique needs. Facilities that manage their water with the same focus as they apply to their energy use realize not only proven savings and time efficiency for their customers and partners, but that saving water is one of the goals with which they want to be associated.

By creating building water use footprints across their portfolios, companies can identify use anomalies and potential liabilities. Similarly, by understanding site water demands and weather normalization, facility managers can manage water use through real-time dashboards that allow proactive budget monitoring.

System selection

When selecting a smart water management solution, be sure to consider three critical issues:

- **Solution track record:** If the water management solution is smart irrigation, ensure it is certified (such as by WaterSense, a partnership program by the U.S. Environmental Protection Agency) and be sure to check recent references of customer sites similar to yours. Additionally, have any independent studies been performed on the technology? If so, how many and by whom?

- **Total cost of ownership:** Your goal as facility manager is to ensure you get the biggest bang for your buck. Don't be lured into systems that tout low costs only to realize later that these "low-cost" solutions fail to deliver more than average savings and that the technology requires either frequent recalibration or replacement to remain accurate.

  Instead, look at the total cost of ownership and compare on that basis. Look at the technology choices offered by large retailers, as they are always looking at the long view when selecting technology and are extremely cost conscious.

- **Extensibility of solution:** A key consideration when selecting a smart water management solution is whether it is based on an entire platform that allows you to efficiently and economically add additional solutions and address new pain points as they arise. Can the solution interact with smart building systems and is there an integration application program interface available as well?

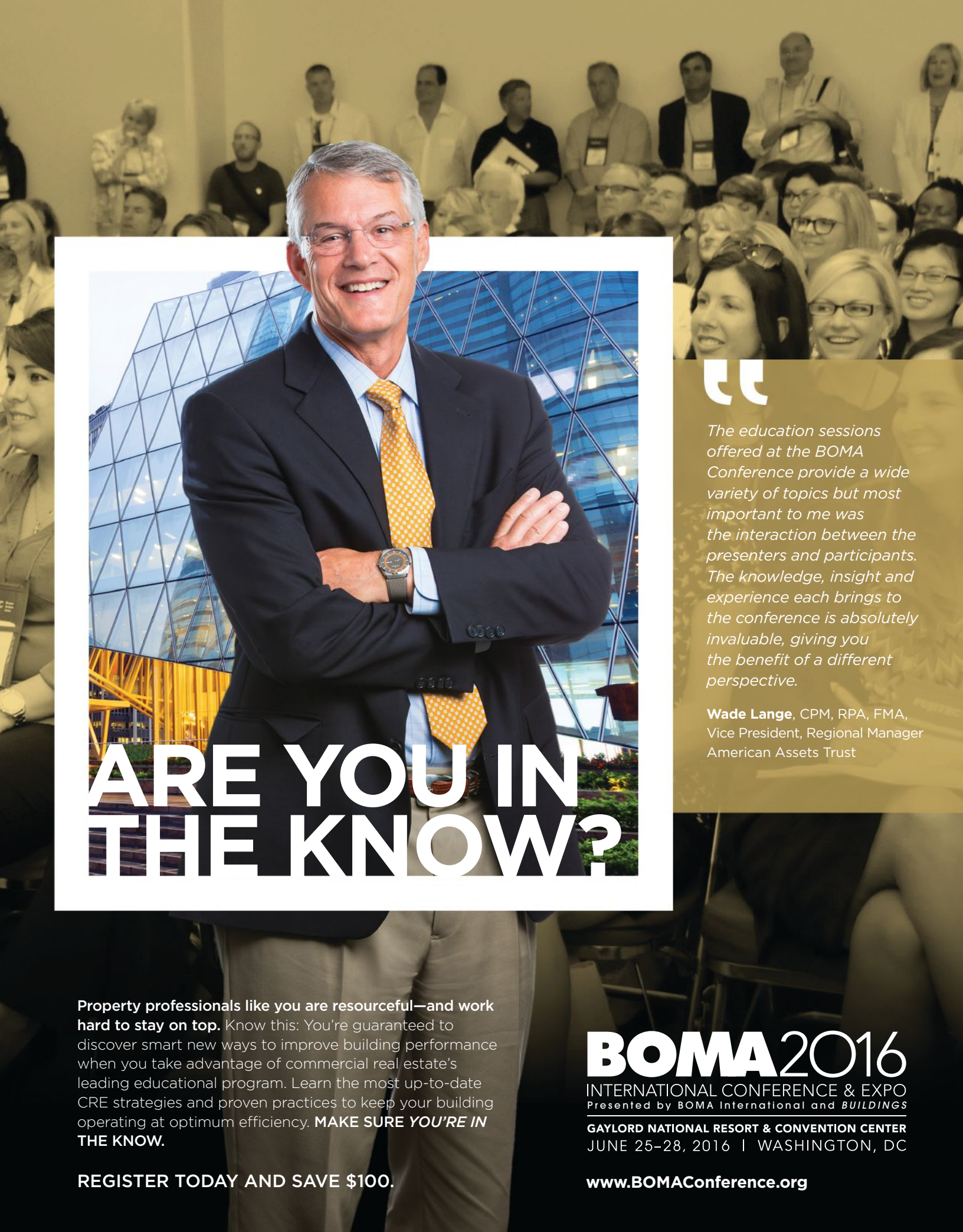
IoT and big data have certainly been dragged into the world of major buzzwords, which should always trigger caution. However, despite the hype they offer true value which can be applied to some of a facility's most important issues and cost areas. The key is to make sure your first foray into the world of IoT and big data makes economic and operational sense — do not fall victim to data for data's sake.

Be sure to also recognize your biggest obstacle when implementing a new system: team adoption. As difficult as that obstacle may be, remember to select a solution that delivers more than simply data and analytics. Make sure your system delivers what really matters — actionable knowledge that saves the team time, money and, ideally, one of the planet's most precious resources. **FMJ**

REFERENCE

1. www.circleofblue.org/waternews/2015/world/price-of-water-2015-up-6-percent-in-30-major-u-s-cities-41-percent-rise-since-2010/

Chris Spain is CEO and president of HydroPoint, which he co-founded in 2002. HydroPoint is the established leader in smart water management solutions designed to identify, eliminate and automatically manage water at the last mile. As an EPA WaterSense® Manufacturer Partner of the Year, HydroPoint's WeatherTRAK® smart irrigation system helps commercial, municipal and residential customers cut US$137 million in expenses saving 15 billion gallons of water and 62 million kilowatt-hours hours of energy in a single year.



ARE YOU IN THE KNOW?

The education sessions offered at the BOMA Conference provide a wide variety of topics but most important to me was the interaction between the presenters and participants. The knowledge, insight and experience each brings to the conference is absolutely invaluable, giving you the benefit of a different perspective.

Wade Lange, CPM, RPA, FMA,
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Móz Designs Digital Imagery, an imaginative new metal surfacing material, is now available for application onto architectural column covers. Móz Digital Imagery integrates the visuals of a photograph or abstract art with the textural grains of Móz metals for a unique multi-layered effect. Images are printed on solid core or perforated aluminum, and Móz color collections can be added to create a custom look.

Móz Digital Imagery allows exceptional flexibility for design creativity. Customers can submit their own high-resolution photos or artwork for printing. The images are printed on solid core aluminum .040 to .125 inches thick or perforated aluminum .063 to .125 inches thick. Móz column covers are offered in round, oval, square or racetrack shapes, with durable finishes available in gloss or matte. Móz metal products are fabricated from 80 percent post-industrial recycled material and contribute to LEED 2.0 MR Credit 4, Recycled Content.

Móz columns are shipped ready to anchor to metal studs and all bracketing, angles, trims and clips are included. Any column height can be achieved with stacking segments, and the columns can be installed in exterior or interior applications. Additionally, column covers

can be ordered with either vertical or horizontal reveals, insulation or sound deadening treatments, seam trims, recessed bases and/or capitals.

For more information or to request product samples, contact Móz Designs at **+1-510-632-0853** or visit Móz online **www.mozdesigns.com.**

WAYFINDING SIGNAGE RESISTS UV AND CORROSIVE ENVIRONMENTS

Wayfinding signage is an essential component of meeting facility accessibility standards. Interior and exterior signage presents the issue of durability against both indoor and outdoor elements. Duets™ by Gemini has announced that its complete line of engraving and architectural sign substrates has been tested and proven to resist damage caused by exposure to ultraviolet (UV) light and corrosive salt spray.

Duets substrates underwent rigorous UV resistance testing with an Atlas™ Xenon Weather-Ometer and corrosion testing

with the Advanced Cyclic Corrosion Exposure System. The results of the testing indicated extensive resistance to both forms of exposure.

The Atlas Xenon Weather-Ometer exposed DuetsTactiles™ and Laser XT products to a high-watt Xenon Arc bulb with the destructive capability of direct sunlight, in addition to varying levels of humidity and darkness, to exaggerate and accelerate environmental conditions likely to be encountered in the field. The machine also employs cyclical humidity and temperature features to ensure substrates comply with one of the most stringent and widely adopted standards within the automotive industry.

In addition to UV resistance, engraving substrates were tested for corrosion resistance from environmental moisture or chemicals with the Advanced Cyclic Corrosion Exposure System. This process includes repeated immersion in salt fog, and exposure to moisture and heat cycles to simulate long-term effects of the harshest environmental conditions.

To learn more about Duets by Gemini sign substrates and testing programs, visit **www.duetsbygemini.com** or contact the company directly at **+1-800-548-3356.**

1550-NANOMETER INFRARED LED LIGHT BAR WITHSTANDS EXTREME ENVIRONMENTS

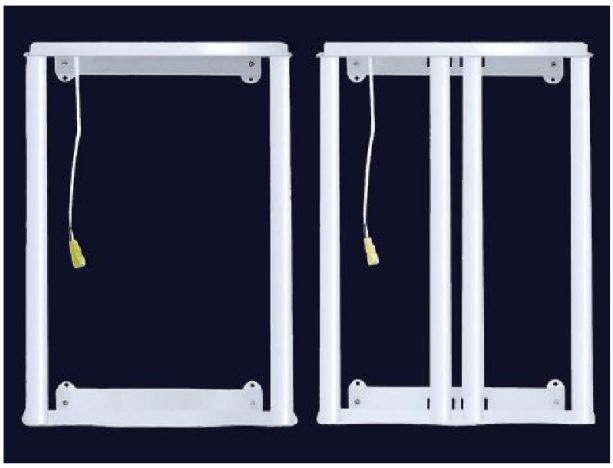
The Larson Electronics LEDLB-24E-IR-1550NM LED light bar offers high-infrared light output and extreme durability for demanding operating conditions. This infrared LED light bar produces 1550 nanometers of infrared light and produces a beam that is 900 feet long by 100 feet wide, which can only be seen through the use of night-vision goggles.

Twenty-four Edison Edixeon® 3-watt infrared emitters are arranged in rows and paired with high-purity 10-degree optics to produce a tightly focused spot beam. This light is also offered in a flood beam pattern with 35-degree optics to produce a wider beam spread that provides more light over a larger area. These LED light bars are IP68 rated and waterproof to three meters, sealed against intrusion by dust and dirt and very ruggedly constructed to withstand the most demanding environments. This light can run on any voltage from 9 to 42 volts and is ideal for use in commercial and industrial security applications as well as military environments.

The entire LEDLB series is constructed of extruded aluminum and features heavier housings, rubber isolated mounts and unbreakable polycarbonate lenses to provide increased durability against vibrations, impacts, waves, hard rains, sand and high winds. The extruded aluminum housing also incorporates an advanced heat radiating fin design that dissipates heat efficiently to produce the maximum amount of power and longevity from the integrated Edison Edixeon® Emitters. The end result is more light and longer LED life with higher average intensity maintenance after 50,000 hours.

To learn more about Larson Electronics' industrial lighting and power distribution products, visit **www.larsonelectronics.com.**

LED RETROFIT MODELS ALLOW EASY CONVERSION FROM LINEAR FLUORESCENT TROFFERS



Two new 2-by-2-foot LED Retrofit models expand Litetronics'® innovative patented system to convert conventional 2-by-2-foot T8 or T12 U-shape fluorescent ceiling troffers to much more energy-efficient linear LEDs. The result is an inexpensive, energy-efficient, ultra-long-life, maintenance-free interior lighting system for a wide variety of commercial, industrial and institutional end users.

- **Two-lamp LED retrofit** replaces typical U-shape linear fluorescent T8 lamp system and consumes only 22 watts while producing 2,300 lumens with a color rendering index of 83

- **Four-lamp LED retrofit** replaces two 1 5/8-inch U-shape fluorescent lamps and consumes 52 total watts while producing 5,380 lumens with a color rendering index of 83

The rated operating life of 85,000 hours per Litetronics® unit lets facility operators enjoy 50 percent or higher energy savings compared to T8 or T12 U-shape linear fluorescents throughout years of use for both products. The two- and four-lamp LED retrofits are available in 3500, 4000 and 5000K and are UL listed, DesignLights Consortium recognized and backed by a 7-year factory warranty.

Learn more about the innovative new LED retrofit models and other Litetronics® advanced-design energy-saving light sources and customer capabilities by visiting Litetronics® at **www.litetronics.com** or calling **+1-800-860-3392.**

MOBILE CORPORATE MAIL APP TRACKS STEPS, DELIVERIES AND LEADERBOARD STATS

iOffice, an IWMS software designed for corporate workplaces and a Silver-level Corporate Sustaining Partner of IFMA, is reinventing corporate mail delivery. Gone are the days of easy package delivery to one numbered office. Today, people work at hot desks, in collaborative spaces, at mobile desks and cubicle-free floors – making it more difficult to get the right package into the right hands, quickly and easily.

iOffice's newest mobile app complements its popular Mail Module. Available in iOS, this app version of its desktop mail module turns mail delivery into gamified fun. It tracks your steps, number of packages delivered and sets up a company leaderboard to track who is delivering the most packages first.

Unlike any other corporate mail app, iOffice gives mail workers a full visual diagram of floors and buildings when delivering packages. Prior to the iOffice Mobile Mail App, mail and package carriers could search offices by room number only. As a SaaS-based platform, the Mobile Mail App ties in directly to the corporate floor plan and is constantly updated with the exact desk location for each employee. Now mail employees can reach their coworkers faster, with fewer errors and misplaced or misdelivered packages.

Just as powerful as the desktop application, the Mobile Mail App gives deliverers and recipients the freedom to access and track information anywhere, even offline. Address, delivery and tracking data can be accessed (even without an Internet connection) and automatically updates again once a Wi-Fi connection is established.

To learn more about the iOffice Mobile Mail App, schedule a one-on-one demo at **www.iofficecorp.com/demo.**

MULTI-USER LAVATORY BLENDS STREAMLINED STYLING WITH SUSTAINABILITY AND EASY MAINTENANCE

Bradley Corporation, a producer of high-design, multi-user lavatories, introduces the Verge® LVS-Series to its line of elegant, sleek and refined Verge® Lavatory Systems. Characterized by its elongated and organic design, the Verge LVS-Series features individual drains, creating personalized hand washing space for multiple users and eliminating communal water concerns.

Made from Bradley's durable, sustainable and moldable Evero® Natural Quartz surface, the Verge LVS-Series combines functionality with a high design aesthetic. Evero is also available in the new Evero Pearl Series, made of a blend of bio-based resin, natural quartz, seashells and recycled glass. The lustrous color palette is made with 70 percent recycled content. GREENGUARD certified as a low-emitting material, Evero's considerable recycled content is ideal for sustainable high-end applications, as it contributes to LEED points.

Constructed with a smooth, seamless finish, Evero's non-porous surface does not support microbial growth, and is stain, chemical, scratch and heat resistant. In addition to a Class A fire rating, it meets American National Standards Institute standards Z124.3 and Z124.6, and is backed with a 15-year guarantee.

Available in three standard models, including one, two or three stations, the Verge LVS-Series creates distinctive restroom spaces for contemporary office buildings, hotel lobbies, fine art establishments, retail and restaurant environments, spa resorts and more.

For more information on Bradley's line of plumbing fixtures, washroom accessories and partitions, visit **www.bradleycorp.com.**

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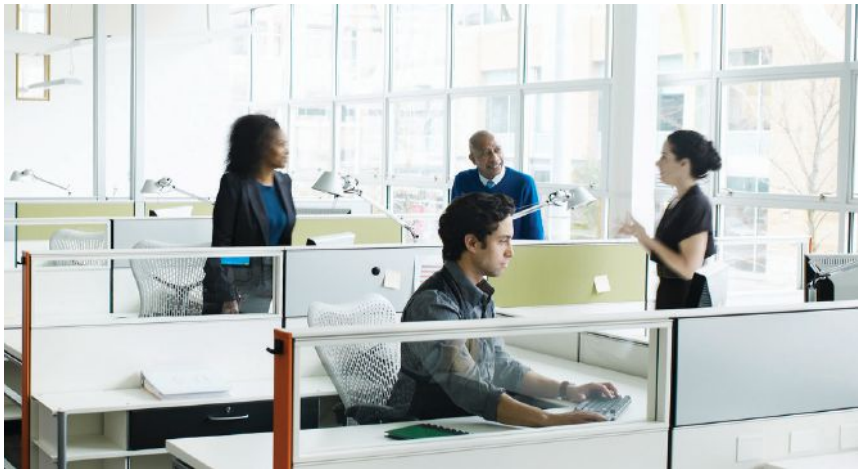
Rapidly changing workplaces are requiring facilities teams to plan, optimize and manage their portfolios in new ways.



Modern organizations are adopting new approaches to workplace planning and operations that have been enabled by mobile technologies and a highly dynamic workforce. These new approaches include flexible workspace, support for cross functional teams, ad-hoc and collaborative areas, and flexible workspaces that break away from the practice of assigning one workstation per employee.

FM:Systems® has a powerful set of tools that are part of the FM:Interact® Integrated Workplace Management System that help organizations plan and manage alternative workplace strategies. Stop by and see us in booth 214 at IFMA's Facility Fusion & Expo 2016 or learn more at http://go.fmsystems.com/fmj.

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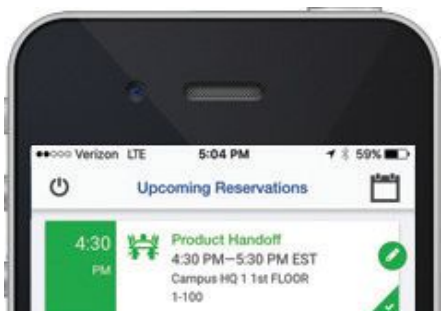

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GET TO KNOW IFMA'S JANUARY 2016 MEMBER OF THE MONTH

FMJ EXTRA

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IFMA's January 2016 Member of the Month

IFMA™ International Facility Management Association

MEMBER of the MONTH

As members of the world's premier association with a network of more than 24,000 facility management professionals, IFMA recognizes how hard you work in your careers and in advancing the FM profession. It is through members such as you that the association has had a positive influence and made a difference in increasing the visibility of facility management.

In 2015, IFMA committed to further recognizing your accomplishments within the industry by developing a Member of the Month program. Members selected for this honor gain additional recognition from their peers and IFMA.

Please join us in congratulating **Myrnan Fronczak**, IFMA's January 2016 winner. Refer to the Member of the Month podcast and video linked at the top of this page to hear directly from her.

MYRNAN FRONCZAK

JANUARY 2016 MEMBER OF THE MONTH

Myrnan Fronczak currently serves as property director for the Girl Scouts of Colorado and was nominated as Member of the Month by the Denver Chapter of IFMA.

Fronczak has been involved with IFMA as a member for more than 26 years, originally with the San Diego chapter and followed by the Denver chapter beginning in 1996. She has participated at every level of leadership, including serving as president of both chapters, and currently serves as communications chair for the Denver chapter.

Her passion to support people through maintaining excellent facilities is an ongoing example to the industry of how to best serve customers. An advocate of education, she has helped to develop a culture of learning within the Denver chapter, working to encourage members to achieve industry credentials such as the CFM® and FMP® designations. She has also received numerous awards, including professional of the year and distinguished leader of the year, by both the San Diego and Denver chapters.

IFMA NEEDS YOUR HELP! **Nominate a member who has made a difference in the FM industry at www.ifma.org/membership/member-of-the-month, or contact Senior Manager of Membership Lauren Krueger at lauren.krueger@ifma.org for information on the nominating process.**

RESILIENCE PLANNING FOR FACILITY MANAGERS

BY E. SARAH SLAUGHTER AND ERIC TEICHOLZ

This article is part of a regular series in FMJ Extended contributed by IFMA's Environmental Stewardship, Utilities and Sustainability Strategic Advisory Group.

Recent natural disasters, such as the Japanese earthquake and tsunami in 2011, Hurricane Sandy in the United States in 2012, and the floods in Europe in 2015, have massively disrupted communities and economies across the world. As damage cost estimates to businesses, governments and individuals continue to increase, and as extreme weather events increase in frequency and magnitude of damage, more communities and organizations are focusing attention on resilience planning and investments.

In certain locations, resilience planning is required for all facility-related investments. For example, New York City added new requirements to its Building Code[1] and Boston requires a resiliency checklist for all projects.[2] Some organizations require resilience assessment and investments for all real property assets; for example, the U.S. Federal Government is required to assess and improve the resilience for all built facilities.[3]

The challenge for facility managers and other professionals responsible for the built environment is to understand the key concepts associated with resilience that impact buildings and employees. They should act to identify and prioritize major vulnerabilities and hazards, and incorporate resilience into operational and investment planning.

The risk profile of buildings is changing because of natural (e.g., extreme weather events) and human-caused events. IFMA and other organizations have an important role in developing capabilities and capacities within facility management to improve resilience through training and resource materials.

Defining resilience

Resilience can be seen as the capability of an organization or system to accommodate changes over time and to continue to function. The original concept of resilience was developed in the field of ecology in 1973 by Prof. C.S. Holling as "persistence of systems and their ability to absorb change and disturbance and still maintain the same relationships among populations."[4] More recently, the U.S. National Academies of Science, Engineering and Medicine defined resilience as "the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events."[5]

These types of changes can be divided into acute disruptions and chronic stressors. Acute disruptors include natural disasters (including storms), accidents (ranging from car accidents up to events such as Three Mile Island and Chernobyl) and malicious attacks (such as the World Trade Center bombing).

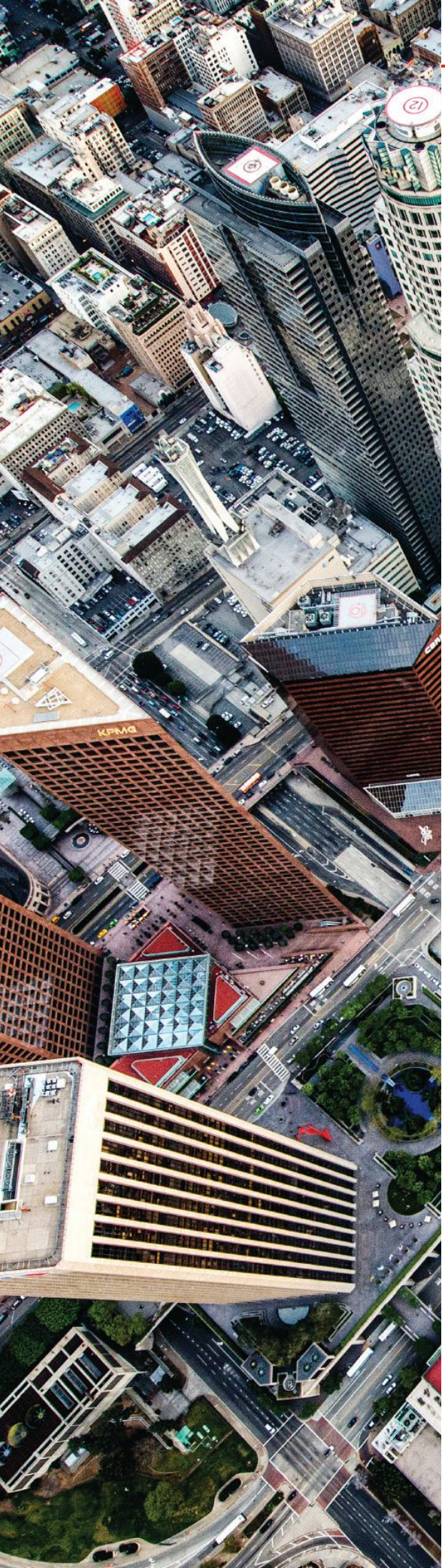
These events occur within a limited time period and cause immediate damage to built, social and natural systems. The damages can propagate to interdependent systems and cause secondary and tertiary damage. For example, the 1979 Loma Prieta earthquake in California caused a power outage and ruptured a gas pipeline, which started a fire. Without the electricity to pressurize the fire hydrant system, the fire had to be extinguished with other, more distant, resources.[6]

Chronic stressors tend to emerge over longer time frames, and include economic downturns (such as the 2008 international economic recession), social shifts (such as the increase in telework arrangements) and extreme climate change impacts (such as drought or sea level rise). These stressors may impair multiple systems simultaneously and may make it difficult to discern the discrete immediate and long-term impacts.

For facility managers, chronic stressors can alter the way in which the facilities are used and provide value for the organization. For example, a company that requires large quantities of water to operate its facilities may, during an extended drought, need to either curtail operations or relocate its facilities to ensure functionality.

Resilience and sustainability

Resilience is different from, but complementary to, sustainability. Sustainability can be defined as the balance among social, economic and natural systems to enable health, safety and well-being for all, and to ensure social justice, economic opportunity and environmental



regeneration. Sustainability strategies for the built environment often focus on improving the efficient and effective use of resources and reducing, eliminating and mitigating environmental impacts. These sustainability strategies can also improve resilience; for example, increasing the energy and water efficiency for a facility by 50 percent can allow that facility to function for twice as long on the same resources.

To optimize resilience, facility managers should incorporate sustainability into the resilience plan. For example, if there is a high probability of a blackout that will require backup power, FMs should plan first for the most efficient use of power under both normal and extreme conditions, and second, for that power to be provided by a fuel that will minimize greenhouse gas and other emissions.

IFMA's Environmental Stewardship, Utilities and Sustainability Strategic Advisory Group provides a number of sustainability support tools and educational products that directly impact resilience for the buildings managed by IFMA members. These include, for example, how-to guides, benchmark reports using tools such as ENERGY STAR's Portfolio Manager and a series of outreach programs on a variety of sustainability topics through channels such as FMJ articles, webinars, chapter outreach programs, newsletters, etc.[7]

Resilience planning for facility management

Resilience planning for facility management is the process through which an organization identifies the overall strategies and specific mitigation tactics it can employ to improve the capacity of its facilities to accommodate changes over time and maintain functionality.

Resilience planning is distinct from business continuity planning and disaster preparation. While business continuity planning and disaster preparation focus on immediate actions during and just after an acute disruption, resilience planning focuses on the longer-term functionality of the facility for the organization (and adjacent community) before, during, immediately after and long after a specific disruption or event. Facility management resilience plans are an increasingly crucial part of overall organizational planning for acute disruptions. They can also be critical inputs for an organization's strategic planning, particularly for maintaining mission-critical operations in the face of both acute disruptions and chronic stressors.

Below are four steps for FM resilience planning.

Steps

- **Identify and characterize currents assets**
  The first step of FM resilience planning is to identify and characterize all built, human and natural system assets directly associated with — or in close proximity to — the facilities in question. The data may include attributes such as the size, condition and function of the facility itself as well as the identification and prioritization of specific facilities that are core or unique to a particular organization, particularly the human resources and strategic operations of that organization.

  The data collected should also identify and characterize the critical infrastructure services (including transportation, energy, water, waste and communications), human capabilities, natural systems and other resources upon which each facility depends. Thus, resilience is strongly interconnected with the urban infrastructure in which the building resides.

A resilient building is not effective if its critical infrastructure services are not functioning.

- **Assess current and emerging vulnerabilities and hazards**
  The second step is to assess current and emerging natural and human caused vulnerabilities and hazards to the facilities, people and natural resources, including threats to the adjacent communities and infrastructure services. Depending on the scope of the resilience planning process, priority may be given to acute disruptors that are most relevant for each location (e.g., climate change events such as drought and wild fires in California). The role of the FM is to define how to manage the vulnerability analysis, convene the stakeholders that will be involved with a particular risk, assess the risks associated with a particular vulnerability (including the regulatory issues), and coordinate with recovery and continuity planning.

Effective resilience planning not only mitigates risks but also can significantly improve the long-term value of built facilities.

Multiple resources exist to identify location-specific vulnerabilities, such as local and state hazard mitigation plans (which are required in the United States under the Federal Emergency Management Act for disaster relief). These hazard mitigation plans record the timing and impacts of past extreme events, identify likely future extreme events, and describe current and future mitigation efforts.

Additional resources may include local, regional or national assessments of climate change impacts, including extreme heat, drought, sea level rise and storm surge, and hurricanes/cyclones. The U.S. recently released the National Climate Assessment, which provides an assessment of climate change impacts by region and sector.[8] For example, the U.S. Army Corps of Engineers studied the vulnerability of the U.S. North Atlantic coast, specifically major population centers and infrastructure assets, to flooding and storm surge under scenarios that include almost four feet of sea level rise in the next 100 years, and rated the vulnerability of different regions.[9]

This step for facility management will also assess the degree to which an extreme event (or a series of such events) will damage each facility, and to what extent the FM team and organization may be able to maintain functionality despite the damage(s). For example, a facility site may flood during extreme rains; if the floods only affect the parking lot and other noncritical functions, this facility is less vulnerable to that hazard than a facility that has permanent damage to critical functions (such as power loss), or compromises health (such as mold growth).

This step should also assess the extent to which damage to a facility may cause harm or damage to nearby people or adjacent facilities. For example, if loss of fire protection during an event could cause a fire or explosion, or release of hazardous materials or gases, the organization is highly vulnerable to this risk for this facility.

- **Identify and assess resilience interventions**
  During the third step, facility managers identify and assess potential interventions to reduce the vulnerabilities, and improve resilience of the facility and the organization as a whole. Interventions can include: 1) capital investments to modify, augment, or buffer real property assets; 2) operations and procedures to manage the human, built and natural systems; and 3) initiatives to redirect human or natural system flows to reduce damage and harm. The potential interventions should be prioritized with respect to the criticality of the functions and operations, and protection of human life across the full portfolio of facilities.

Certain interventions may be "stopgap" actions that provide immediate benefit for high probability events, while other interventions may require a progressive series of actions that together reduce the vulnerability or improve the capacity to absorb the impact or recover quickly. Resources for specific interventions for existing buildings include Building Resilience in Boston: Best Practices for Climate Change Adaptation and Resilience for Existing Buildings,[10] Retrofitting Buildings for Flood Risk,[11] and multiple publications from the U.S. Federal Emergency Management Agency, including Unreinforced Masonry Buildings and Earthquakes: Developing Successful Risk Reduction Programs.[12]

Appropriate interventions will be specific for each location, organization, facility and operation, and may include collaboration and coordination with neighboring properties, local communities and regions, and other organizations. The impacts of acute disruptions and chronic stressors will not be limited to a specific place, or necessarily be apparent

immediately, and prudent resilience planning will consider the full systems impacts of these changes.

- **Incorporate resilience into all investment and operations planning**
  The final step is to incorporate FM resilience planning in all capital investment and operations plans. The construction of new facilities and the renovation of existing facilities should explicitly consider assets, vulnerabilities and resilience interventions as a matter of course, and leverage the progress achieved through sustainability actions. It is less expensive to include resilience from the start than to come back after a disaster to rebuild or repair.

  Additionally, education and communication play an important role here. All stakeholders must understand how various risks impact the operational, financial and functional health of the organization as well as the organization's responsibility (and liability) for the health, safety and well-being of its employees and stakeholder communities. The stakeholders must be committed to and support the resilience plan.

Our industry is not doing enough to address resilience planning. It behooves organizations such as IFMA to educate members and share best practices in order to address this growing threat to the built environment and the health and welfare of employees. Effective resilience planning not only mitigates risks but also can significantly improve the long-term value of built facilities. **FMJ**

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Dr. Sarah Slaughter is CEO of the Built Environment Coalition and currently serves on the Green Building Advisory Committee to the U.S. General Services Administration. She was recently a visiting lecturer in the Massachusetts Institute of Technology (MIT) Department of Urban Studies and Planning, the associate director for buildings and infrastructure in the MIT Energy Initiative, faculty head of the Sustainability Initiative in the MIT Sloan School of Management, and previously the founder and CEO of MOCA Systems, Inc.

She was an MIT professor in the Department of Civil and Environmental Engineering, and earlier was a Lehigh University professor of Civil and Environmental Engineering. Slaughter is a member of the National Academy of Construction; an associate member of the National Academy of Sciences, Engineering and Medicine; and serves on the board of directors for the Charles River Watershed Association. She received her Ph.D., SM and SB from MIT.

Eric Teicholz, IFMA Fellow, chairs the board of advisors of the Built Environment Coalition and is president of Graphic Systems, Inc., a technology consulting company located in Lexington, Massachusetts, USA. Teicholz currently serves as chair of the IFMA Environmental Stewardship, Utilities and Sustainability Strategic Advisory Group and as a member of the IFMA Standards Committee. He is also an advisor for the Commonwealth of Massachusetts Advanced Energy Project and Integrated FM initiatives.

Teicholz is the author/editor of 13 books. He is an associate professor emeritus at the Harvard University Graduate School of Design and served as the associate director of Harvard's Laboratory for Computer Graphics and Spatial Analysis.

ASK THE EXPERTS

BY IFMA'S FACILITY MANAGEMENT CONSULTANTS COUNCIL

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International Facility Management Association

In each issue of FMJ, IFMA's Facility Management Consultants Council shares some commonly asked FM-related questions accompanied by advice from top FM consultants. The questions and answers presented in this section align with IFMA's core competencies following the themes outlined for the given edition of the magazine.

While the following answers are intended to be helpful, these responses should not be deemed complete and are limited in context by the space allocated. Please contact the individual consultants directly for further explanation of the opinions expressed.

The theme of this edition of FMJ is **"Tech Trends."**

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

Questions regarding the Ask the Experts section of FMJ can be directed to Mark Sekula, CFM, FMP, LEED AP, IFMA Fellow, president of Facility Futures, Inc., at msekula1@wi.rr.com.

Visit FMCC online at fmcc.ifma.org or join the conversation on the council's LinkedIn group at http://linkd.in/1gAa8ae.

QUESTION

You have been contracted by a client to help them implement a new computerized maintenance management system (CMMS). The new CMMS will replace an existing automated work order system that is 10 years old. This will require end users to significantly change the way they submit work orders. In light of the fact that most people are "change adverse," what advice would you give your client to help make this change, specifically in the way their end users utilize the system, as smooth a transition as possible?

ANSWER:
Two questions for the client:

- **What is the project/problem scope?** If the client's goals with respect to work order submission and processing are mainly to reproduce the previous results, minus the risk and trouble of a system that's no longer supported, the picture is different from launching a new CMMS that should provide opportunities to improve the work order and fulfillment processes as to effectiveness and economy.

- **Is the current process designed and documented by a team?** Does it have a custodian to keep documentation and track results? Does it have performance measures? Or is it just familiar and informal — one that users just accept, without much thought about whether things could be better? Everyone has plenty to think about. Why change the work order system when other issues need attention more?

A basic, minimal answer: If the answer to No. 1 is as-is replacement and to No. 2 that technology, old and new, comes from management and the challenges are acceptance and training, then market the transition to users through focus groups and internal media. Deliver orientation, training and ongoing support to all types of users of the new system until it becomes accepted. Step in before the new one goes live. Involve users. Also, configure the new form(s), dashboard(s), etc. to at least resemble the old interface in as many ways as practical without sacrificing functions needed now or later. You can, for example, include but hide new features, then roll them out later.

To really get buy-in and success: If the answer to No. 1 is that your client has strategies, objectives and goals toward improvement over a planned interval — say, refining the work order processes for new results and better outcomes — and the answer to No. 2 is that it is time to realize continual improvement involving all parties in the work order process, then help the client to form a team with a strong representation of groups who use and derive value from the CMMS. Their assignment: define work process, define results to track, targets to reach and what to do if the process under- or over-performs.

As a consultant, I want to help my client toward continual improvement, which might be best afforded by a new CMMS. But buy-in is essential no matter what.

ANSWERED BY:
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Reynolds is with FM-CONSULT-CREATE. He joined FMCC in 2014, is a recent CFM and has held an FMP since 2004. His background is in systems, project management and consulting in small companies serving a variety of clients and industries. He holds degrees in science, engineering and allied health areas.

He focuses on FM as organizations adopt asset and risk management principles and practices, where clear, visible, interactive and maintainable processes and models, data and measurements can better frame FM in alignment with organization strategies and objectives. Reynolds' pro bono work includes construction, maintenance, safety and health. He is also a member of IFMA's Environmental Health and Safety Council.

ANSWER: I would advise my client to first explain to all users why the changes are taking place and the benefits to both the client and the user (e.g., faster response time, quicker payment, etc.).

It's always important to let the users know why you are changing the system and the benefits that come with the change — this will get the users excited that it is improving.

I would advise the client to give ample time for the transition; if users have enough training time they feel more at ease and they won't push back with a negative attitude.

I would also recommend having a hotline or on-site personnel to assist users at any time to ensure a smooth transition.

ANSWERED BY:
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Bryan is facility manager of TD Bank Group and has worked with Brookfield Global Integrated Solutions for close to three years taking care of roughly 80 retail sites. He previously worked for Direct Energy running the service department in charge of dispatch, quoting, scheduling, coordinating projects and managing major customers.

ANSWER:

- Focus on the workflow that makes the most sense for the organization in terms of efficiency and effectiveness.

- Examine the new tool and see how it fits the agreed-upon workflow. Either modify the tool or search for another that is adaptable. (I find that a 70 percent rewrite is generally needed to tailor one to FM requirements.)

- Have FM lead the modifications and iterations with IT help, but definitely not the other way around. Determine the need for and degree of integration with other operations and maintenance systems.

- Pull together a pilot group, highlight the changes and let them debug/critique the modified tool.

- Implement with a grace period for building occupants, communicating prior to, during and following implementation.

- Provide feedback to the vendor on everything you found out in the process and negotiate a support agreement that is mutually beneficial.

- Teach other FMs and clients how to do the above.

ANSWERED BY:
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With five decades of industry experience and FM consulting, Aldrich is a strategic leader, laboratory expert and globality advocate. He was chair of the IFMA Board of Directors, cofounded IFMA's Research and Development Council, has served on advisory boards, communicates in word and print, and helps nonprofits.

ANSWER: Change is about getting people to accept it. Gaining people's acceptance of changes in the way they access or request services from facilities includes convincing them that the changes won't negatively impact them and that they will, in fact, benefit them. Here are some methods you can use to improve the likelihood that your users/occupants will welcome and embrace your new changes:

- Consider the change as part of a sales initiative. You may think it is the best thing to do, but users won't see or care about many of the benefits you get from the new system, so you need to figure out what matters to them. Talk to them about benefits to them, not benefits to you.

- Think about what the user/occupant objections might be and take those into account. If you don't know or aren't sure, ask.

- Do your homework with existing satisfaction survey results and past performance such as time to complete requests or complaints/issues you have from users of the current system. Then, use this information to show how the new implementation will solve or prevent the problem.

- Design your systems/processes not just for your needs. Consider the user/occupant experience and minimize the time required for a work order to be acted on and the effort for someone to place a request and learn of updates to their request. (Think short phone menus, pick-up times, easy Web forms, etc.)

- Do a trial with one building, one department or one area. Hold a facilitated discussion session to gather feedback and incorporate comments. Gaining acceptance from one group by incorporating their input will make it easier to sell to everyone else. And, you will work the bugs out of your process before "going live."

- If you know there will be specific people or departments who are your greatest roadblock, engage them up-front in the process instead of trying to avoid them. Use their suggestions to modify your approach or mitigate their concerns to the point where they can no longer object.

ANSWERED BY:
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Theriault has been in FM for 25 years, working in-house and with an outsource provider and has been an FM consultant for nearly a decade. He is an award-winning author, international speaker and a qualified IFMA FMP® instructor. His award-winning book, "Managing Facilities and Real Estate," emphasizes strategy, management and leadership in the FM role.

As principal and strategic advisor of FM Insight Consulting Ltd., Theriault focuses on management and strategic issues, helping facility managers in a wide variety of industries analyze, justify, plan and implement their initiatives with a strategic approach. For more information, visit his website at www.strategicadvisor.ca or his blog at thebuiltenvironment.ca.

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This one day facility management conference features a variety of classes targeted specifically at **FM and Workplace Strategies Best Practices.** It will widely cover different infrastructure environments, sustainability and building resilience for the future. The current emerging business trends and the slowdown of real estate development enables workplace occupiers to become more and more sophisticated in delivering facilities management within their organizations. Last but not least, the **IFMA 24th Annual Dinner** will be held after the conference in the Hong Kong Jockey Club to round off a memorable day.

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