



The Future of Commercial Facility Management

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Executive Letter

Beyond Delta: Smart Buildings in a Better Post-Pandemic World

Crises often spur innovation. They also afford us all an opportunity for reassessment, delivering a new level of context and perspective to what, before the crisis began, may have seemed settled matters.

So it is with indoor space, or “the Built World,” in the parlance of the burgeoning ESG / sustainability movement. For all its tragic outcomes, the pandemic shone a useful light on the previously neglected question of safety and wellness in the indoor environments, the places where modern humans spend most of their lives. COVID-19 has underscored that society, and business in particular, took for granted the importance of understanding what goes on inside a building’s walls – and how those dynamics affect the people within.

Many around the world have spent a year or more formulating detailed plans on how and when to



reoccupy workspaces. With the Delta variant and possible further mutations at large, the best laid plans of the global corporate and public sectors for some kind of return this autumn have been

thrown into question. But the problem extends well beyond timing. The fact is that the health, responsiveness and sanitation of an office, factory or warehouse has gone from being the tactical concern of a facility management team to a question of the utmost strategic importance.

Among these new realities:

Human Resources directors

see data about the health and wellness of workplace environments as crucial in

retaining and recruiting talent;

Chief Investment Officers are weighing hybrid and remote options and asking how much real estate the company really needs;

Chief Counsels and Risk Managers are concerned about labor relations and liabilities tied to viral spread and worker safety;

And everyone from the CEO to the

receptionist is wondering how to balance the desire to gather, collaborate and produce revenue against the risk to employees’ health, well-being and the firm’s reputation.

Thankfully, as in previous crises, this one has led to innovation. Well before the pandemic, Microshare had already been in discussions with several partners on the rapidly evolving potential of Smart Buildings technology to provide new comfort, safety and efficiency to building operations. By harnessing the Internet of Things (IoT) and increasingly affordable sensor technology, we showed our multinational clients how new data feeds could bring inert brick and mortar assets to life. Besides the efficiencies and cost savings that piqued market interest pre-COVID-19, we promised other important outcomes, things that would boost employee wellness, safety, responsiveness and sustainability.

Now, talk of such transformational technology has gone from “nice-to-have” to an urgent need. Microshare’s offering, EverSmart, was tailored for this precise historical moment. Its core capabilities – Occupancy and Activity Monitoring, Indoor Air Quality Monitoring and TouchFree Feedback™ stations – protect those inside buildings, reassures occupants about the air they’re breathing and

provides quick, safe and anonymous means of reporting problems or registering feedback. Desk occupancy, for instance, enables the hybrid workplace so many of our clients are now deploying, as well as a data-driven Predictive Cleaning solution to bring new level of sanitation and comfort to common areas.

What's more, each of these solutions, from energy and water metering, leak detection and smart waste management, brings immediate cost savings and provides empirical data for sustainability efforts. With the ever-increasing pressure on companies to improve their performance on so-called ESG metrics – Environmental, Social and Governance issues – the need to measure and constantly apply data insights to building performance is not just blindingly obvious; it's fast becoming a regulatory requirement.

This is no “hard sell.” Viewed just from the old pre-pandemic filter of cost savings and ROI, EverSmart solutions cut most operating budgets by 14-\$0 percent in their first year, depending on how responsive the client is in acting on the insights and now many solutions they deploy. This means they pay for the cost of installation in about five to six months. Add the new urgency around the “soft” ROI these solutions bring – wellness, safety, sanitation, sustainability metrics and risk mitigation – and it would seem to be a no-brainer.

At Microshare, we view the challenges of the pandemic as an opportunity to make “the Built World” a better, more responsive and humane place. The idea that your real estate holdings are just a collection of buildings is outdated thinking. With actionable Smart Building technology, Big Data dashboards and alerts, Microshare is transforming our clients' real estate portfolios a into living, breathing assets complete with the kind of vital signs needed to truly understand how they perform and the impact they have on the people within and the world in which they stand.

Sincerely,

Ron Rock
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Our **EverSmart** solutions combine Microshare's proven ability to deliver Smart Building data at scale with the hard-won lessons of COVID-19

The goal:
To create smarter, safer, more efficient and responsive facilities. In short, a workplace that makes your people glad to be back.

Learn more by visiting
www.microshare.io



Introduction

The world of facility management has been experiencing rapid evolution for years now. While this change goes back decades to the arrival of the internet and its impacts on both the work world and the real estate management dynamic, it has reached a critical point over the last few years. First, the arrival and penetration of transformative technologies into the facility manager's role set us up for global transformation, and more recently, COVID-19 executed the final blow.

Now, facility managers are finding their roles evolving from a property-focused, maintenance-centered emphasis to something much more occupied with responsibility for maximizing occupier productivity, sustainability and wellness. With this change comes a bigger profile within the corporate hierarchy and new opportunities to partner across reporting lines to get things done. It also comes with new tools, new needs, and new training expectations to ensure today's facility managers are as effective as they can be.

In this report, we will explore the face of modern facility management and investigate the future of the field. We'll take a deep dive into the shifting role of facility management, and provide an understanding of the tools and tech platforms that facility managers

can enlist to make their jobs easier every day. We'll look into the biggest challenges facing practitioners in the space, and explore facility manager training, in order to provide a better understanding of the competencies and skill sets modern FM professionals should come to the table with.

Through this report, our fundamental goal is to provide an understanding of where the FM role is today, and where it is going in the future, given the unique modern challenges facing experts in the space as well as the new universe of tools and capabilities that technology and data are conferring upon FMs today.

Ground shifts in the facility management world

The goal of this report is to provide an understanding of the changing face, and coming future, facing facility managers. In order to contextualize this discussion, we need to first explain the difference between old and new facility management paradigms.

Old vs new facility management

Traditionally, facility managers have been responsible for the security, maintenance, and services of offices to ensure they meet the needs of organizations and their employees. An FM's

primary concerns were to manage and plan the physical aspects of a workplace and to ensure security and continuity of service for occupiers. They were responsible for most aspects of the space, including planning spatial arrangements and furniture needs, determining layouts, paying property bills, handling maintenance and cleaning when not taken care of by the property manager, managing outside contractors and addressing workspace requirements.

The FM's responsibilities went beyond the nuts and bolts of space management to include planning emergency responses, ensuring that new staff members had adequate space to be productive, and assisting in employee retention activities, all while managing for costs.

Over the course of the last decade or so, the facility manager's role began evolving into something more flexible, holistic, and focused on maximizing worker productivity rather than just meeting workplace needs. Facility managers now put more emphasis on health, wellbeing and productivity of people with integrated services and improved environments. This change is the result of a greater emphasis on workplace technology unlocking new facility management functionalities, as well as a greater focus on productive workplaces driven by firms throughout industries like tech.

ESG: COVID-19 has made building health and safety a critical priority

Excelling in the area of Environment, Social, and Governance (ESG) measures has been an increasing priority for a large number of businesses in the recent past. The 2021 KPMG CEO Outlook Survey found that 49 percent of CEOs plan to put in place more stringent ESG practices at their companies. With the recent pandemic, ESG is now more important than ever, since protecting human health and safety is an archetypal ESG concern. In a JP Morgan poll of investors from 50 global institutions, 71 percent responded “rather likely”, “likely” or “very likely” that COVID-19 will increase awareness of ESG. Now, with much of the population fully vaccinated in the US, many occupiers are already in the middle of their back-to-work processes. However, the emergence of a more virulent Delta variant and continuing resistance to vaccination in some regions means that COVID-19 is far from gone. Thus, responding to the virus and the lessons it revealed about the safety of indoor spaces and the wellness of their occupants will continue to figure into company ESG plans well into the future.

Facility managers have always been responsible for

providing safe places to work, but with COVID-19, the definition of what makes a safe workplace expanded dramatically. Aligning with their companies' ESG

values, facility managers face the crucial task of ensuring worker health and safety. This is one reason why workplace wellness, attained through COVID-19 safety, access to healthy food, ideal noise and temperature levels, air quality and density monitoring, and similar factors are increasingly in the FM crosshairs today.

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Changing labor trends

Aging occupiers

The US has a Gen Z population, at present, of 67.2 million. A large bulk of them are starting to join the workforce. A recent Dell study found that 80 percent of Gen Z workers aspire to work with cutting edge technology. The survey also found that more than half of Millennials and Gen Z use cloud based tools, compared to only a third of Baby Boomers. On average, there is less friction when introducing a new piece of technology into the workplace if the employees skew younger. For FMs, the challenge is that most workforces are multigenerational. What works for a Gen Z or even Gen X worker may not work for older employees.

Remote-blended, hybrid workplaces

One thing that has been demonstrated during the pandemic is that in many cases remote working can be just as effective. A BCG study found that 75 percent of employees reported being able to maintain or improve productivity on individual tasks and 51 percent for collaborative tasks. As nations around the world continue to struggle with virus resurgence, many organizations are going to continue some form of remote or hybrid work models. According to a Gartner survey of company leaders, 82 percent said their organization plans to allow employees to work remotely in some form in the long-term. However, in most cases this will not be a wholesale shift to remote. Instead, workplaces will use some amount of remote alongside traditional work strategies in order to provide a hybrid work model.

With hybrid working being implemented, facilities managers also have to rethink the design and layout of their workplace. Since every employee may not be expected to come to the office every day, FMs and the space planners they work with have the opportunity to remake their workplaces to better fit their employees. This could take the shape of hot desking arrangements that minimize private workspace in lieu of shared ones, or it could be a core of cubicles augmented by a large work from

home component. Either way, facility managers will increasingly be responsible for managing these new dynamics. For FMs, space booking systems together with sensors will allow workers to reserve spaces anywhere with mobile devices.

The future of FM

Tech & tools

Sensors

Many facility managers now face a need for real-time data on their space and occupiers, both in order to ensure their safety as well as to maximize productive and effect space use. FMs want to know how many people are in a certain space, how many desks are being occupied and how workers flow through the workplace at different times of day. A 2018 Gartner survey found that “half of large companies use monitoring techniques on their employees” which increased from 30% in 2015, 22% capture employee movement data, 17% monitor work-computer usage and 16% monitor Microsoft Outlook or calendar usage data. Gartner expected that 80% of companies would be monitoring employees in 2020. The key to all of this data processing is workplace sensors.

Occupancy sensors can be in the form of wearables, like a tag or lanyard, or fixed at a location. This allows

FMs to identify areas where there is overcrowding, restrict visitor access and power room or desk booking systems with real-time occupancy data. Sensors can also be used to monitor other metrics like air quality, temperature, humidity, or even a single drop of water leaking from a plumbing system. Data collected can be analysed to help facility managers understand how the workplace operates and pinpoint areas of improvement. These insights can help organisations align with their ESG goals and values as well as reduce operating expenses and even identify opportunities to reconfigure or downsize a firm's real estate footprint.

- **Occupancy sensors** can be used for desks, meeting rooms, at entrances and large open areas. They also create a usage record that enables predictive cleaning and maintenance solutions.
- **Desk monitors** can be used to facilitate space booking systems and gain perspective of overall office occupancy. In healthcare settings, the same sensors applied to hospital beds have led to dramatic increases in patient flow and per-patient revenue.
- **Entrance sensors or “people counters”** register the number of people that enter a space, ensuring compliance with capacity constraints

and providing valuable data to plan energy usage, cleaning regimens and density.

- **Open space sensors** usually have motion tracking to understand the movement of employees and trends in their usage, which can be used to identify areas of energy efficiency improvements and provide implications for workplace design and planning.
- **Air quality sensors** measure temperature, humidity, and pollutants like particulate matter or volatile organic compounds in the air. Good ones also measure CO2 buildup, which can lead to drowsiness and falls in worker productivity of up to 30 percent.
- **Water usage and temperature sensors** can detect leaks and utility waste. These come in several varieties, including membranes that can be stretched over the floor, and sensors connected to water valves that persistently monitor flow. Water temperature sensors, meanwhile, can provide assurance against Legionella (Legionnaires' Disease).
- **Touch sensors** can be used to actuate different connected technologies, like a preprogrammed set of climate and lighting conditions. Similarly, more pandemic-friendly no-touch interactive

sensors employ QR codes and can be used to make service requests, report problems or register approval or disapproval with the condition of a space.

Sensors generally give real time data and providers will also offer a software platform that hosts an office space booking system, data driven insights to more efficient utilization of the workplace.

FM automation

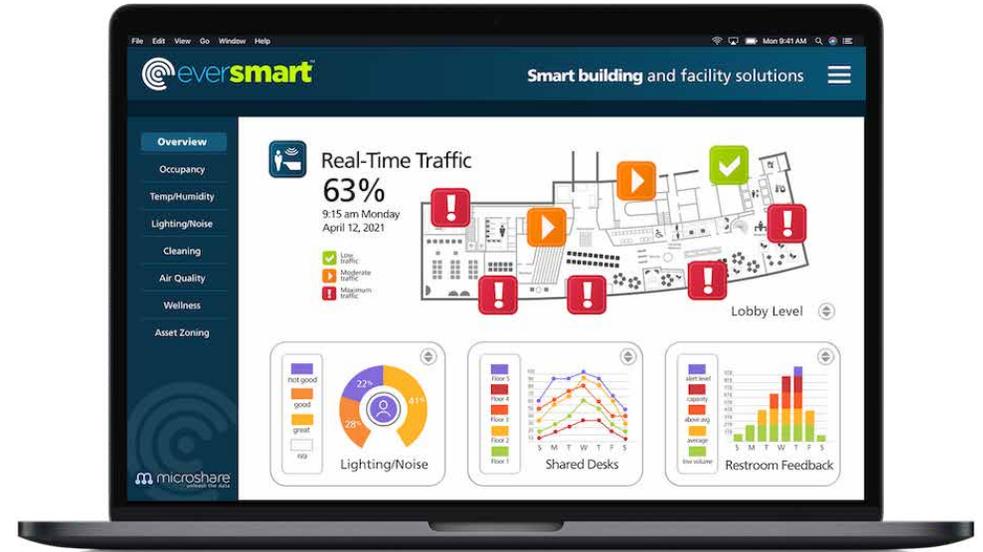
Automated facilities management focuses on putting facility services and functions on auto-pilot through technologies like AI, IoT. Automation allows for minimal human operations to carry out facilities management activities. This makes the process more streamlined and increases efficiency for facilities managers as they can avoid carrying out repetitive tasks. Making their daily operations easier.

Some main features and services that can be automated include managing equipment, maintenance management, access control, reporting etc. One use of FM automation can be used to track all equipment in real-time and send notifications to facilities managers if something unexpected occurs and identify areas of improvement to maximize efficiencies. This is a very effective way of monitoring considering human

monitoring is not 24/7 and is subject to the potential for critical errors. Employees can also submit work orders on lights, damaged furniture and other broken amenities to a software platform, the job can be easily assigned to an available worker. Access control processes can be automated through software where facilities managers can easily manage which personnel have access to which areas and give temporary access to people or guests through a central platform. Combined with data collecting sensors and monitoring devices, the huge amount of data generated can be easily put into formatted reports which will be faster than having to manually put in the information.

Dashboards and data reporting

For facilities managers to maintain an ideal workplace, numerous aspects come into play. Dashboards help compile various metrics and data



A facility management dashboard.

that facilities managers need to be aware of and track KPIs for. Data reporting allows them to gain a comprehensive understanding of the workplace and provide them data driven solutions.

Dashboards offer facilities managers an overview of maintenance jobs and work order management, space utilization, energy efficiency, and beyond. Dashboards combine sensors and automation processes and deliver to the facilities managers a visualization. Maintenance progress can be tracked and reported. Occupancy sensors provide data on space utilization, then the analytics platform can identify underutilized areas and patterns to boost

efficiency. Energy usage data can be broken down and analysed to provide cost saving strategies.

BIM and digital twins

Building Information Modelling (BIM) is a process-driven technology that maps out and quantifies physical aspects of a building. It takes design, planning, construction and maintenance of a building into consideration. BIM's role is to quantify aspects of a building such as electrical plan, plumbing and HVAC and interconnect them so when one change happens, the model can automatically update all the components that are affected. BIM model services includes aspects such as architectural design, structural design, mechanical, electrical, plumbing, interior design, facade modelling rebar and landscapes. These components help build a model that produces visualization, planning and scheduling, cost estimation, sustainability analysis and maintenance.

Digital twin tech is a 3D digital replica of a physical building built using data to enhance decision making. Giving facility managers the ability to run simulations with quantifiable results that provides insights into the possible challenges that might occur. Digital twin gives the facility management team real-time control of the building and an overview of any connected assets through IoT. Digital twins can also analyse and

predict maintenance patterns through usage data. Digital visualization of the physical space is critical to understanding data that goes into the BIM, also allows facility managers to navigate the space like in real life. This technology also helps in training and onboarding of new FM staff, since the digital copy of a physical asset is an intuitive way to display and interact with property data.

Maintenance software

Maintenance is an important part of FM since the process is ongoing and ensures the smooth operations of a workplace. Maintenance focuses on extending the operational life of equipment and assets to maximize their value. In order to effectively discover problems and provide solutions, maintenance software can allow FMs to arrange technician service and track service request progress, thus preventing possible downtime due to facility disruption. Computerized Maintenance Management Software (CMMS) is a data driven approach to maintenance, offering preventative measures to help reduce equipment malfunctions, streamlining the service request process allowing employees to submit work orders, and providing a real-time dashboard with an overview of workplace maintenance. Some provide an integrated visualization and floor plan, pushing this type of technology into digital twin territory.

Property management software

Property management software covers a wide range of features relating to improving occupant's experiences. Generally providers offer vendor management, payment collection, property reporting, cloud security, maintenance management and accounting services. These are time consuming tasks that are easily digitized to make property management easier. Vendor bills and expenses can be tracked and paid using the software. Property reporting helps managers communicate to property owners key data points in expenses and operations. Cloud security protects data collected and addresses privacy concerns through encryption and intrusion detection. Accounting services streamline financial reporting and tax filing.

TEx platforms

Tenant experience platforms are another tool in the facility manager arsenal, but in many cases they present a unique management challenge. This is because these platforms are typically acquired and implemented by property owners and managers. In many cases, the most facility managers can do is advocate for the adoption of a given tenant experience platform to their own employees once one has been procured by property staff.

Facility managers, within the context of the occupier ecosystem, will also find themselves responsible for handling the alignment of tenant experience systems and their own enterprise software. For instance, perhaps a property owner wishes to use a new tenant experience platform to unify property communications, but an occupier typically uses Slack to handle building communications, the facility manager will need to determine how to navigate the situation.

Training

With so many new tools and technologies in use by modern facility managers, some may wonder whether training for these professionals is changing as well. While a bachelor's degree in facilities management is not the most common choice for undergraduates, a number of universities such as Ferris State University in Michigan and the University of Minnesota do offer 4-year degrees in the field. A large number of institutions offer 2-year degrees or freestanding certificates, and the International Facility Management Association offers several credentials which are common amongst professionals in the field.

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ProFM, a credential provider, 91 percent of facility managers say that there is a skill gap between what their teams know and what they need to excel. The survey respondents also self-identified capital planning, financial management, strategic planning, and compliance and standards education as their top training needs.

Privacy

The US federal government doesn't have one central comprehensive law regarding data privacy like the General Data Protection Regulation (GDPR) for the EU. In addition, workplaces are under different laws and guidelines depending on their state or local regulations. This can get confusing and ambiguous,

since laws are often insufficient to keep up with the impacts and implications of changing technology. Depending on the organization's geographical presence, companies might have to comply with other nation's data privacy laws such as GDPR. Some companies have self-certified under the EU - US Privacy Shield which can subject them to more guidelines.

There are different laws regarding workplace monitoring. Federal workplace privacy regarding

employee monitoring stems primarily from the Electronic Communications Privacy Act of 1986 (ECPA). This allowed monitoring of all verbal and written communication given the employers are able to present a legitimate business related reason. In 2020, California, in an action inspired by Europe's own data regulation, passed the California Consumer Privacy Act (CCPA), which echoes many of GDPR's requirements. And just as US and other multinational firms that wanted to do business in the EU needed to comply with GDPR, California's large market is likely to spur similar compliance efforts for companies wanting to do business in the Golden State.

Different aspects of employee monitoring are specifically regulated. Valid reasoning must be given for any workplace monitoring. Employers have considerable rights to monitor employee activities on workplace devices, like company computers or phones. In some cases, employers don't have to disclose to their employees that they are being monitored, but in other cases consent must be given by the employees first. It is only required to inform employees of monitoring in two US States, Connecticut (Gen. Stat. § 31-48d) and Delaware (Del. Code 6 § 19-7-705). California, Florida, Louisiana and South Carolina state residents have a right to privacy in their state constitutions, which could also affect workplace monitoring.

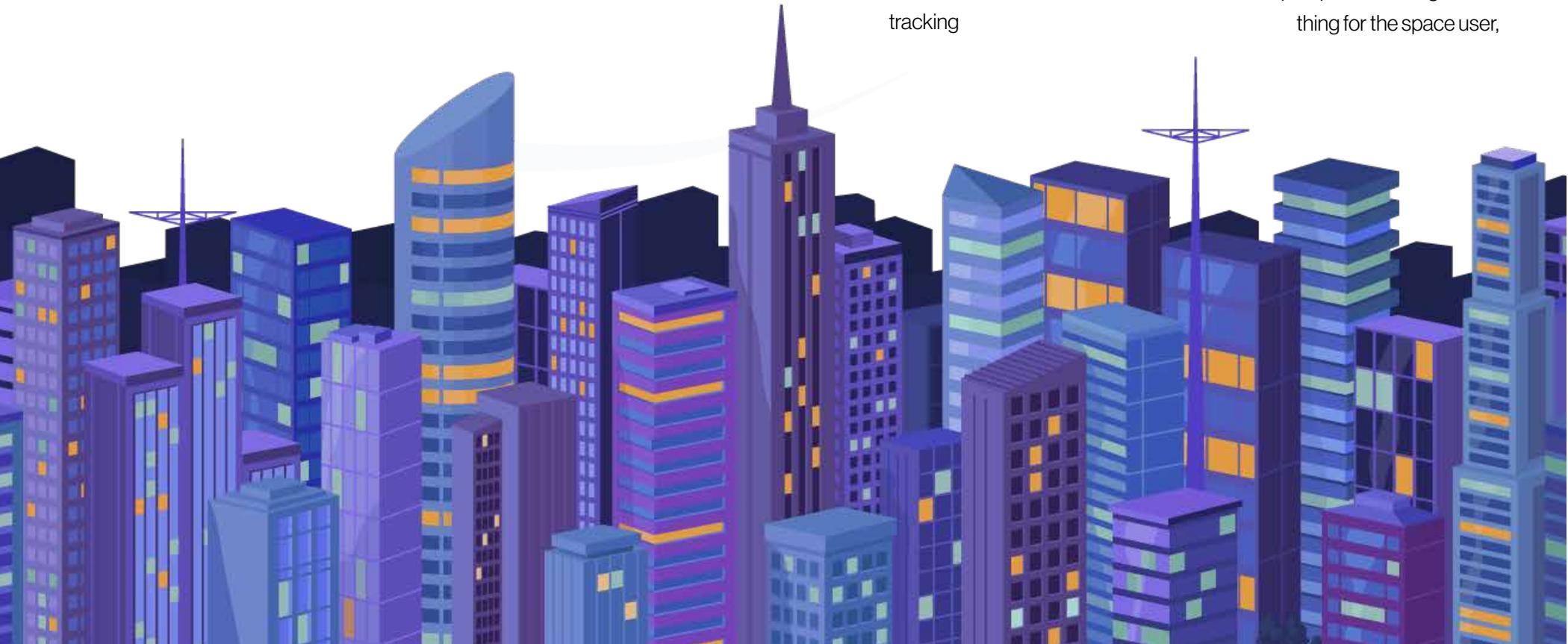
COVID-19 shined a particular light on these requirements. For instance, the development of contact tracing apps for smart phones by Google, Apple and others ran up against public resistance, in large part due to the reputation some leading tech companies have earned for mining the data of their customers. A more successful approach involved wearable contact tracing devices powered by Bluetooth or other wireless protocols. These had the advantage of implicit consent from the wearer through the act of putting them on, as well as being able to leave at the office, unlike a cell phone.

Overall, the scope of regulation within the US varies across locations, but employers can monitor employees to a generous degree with valid reasons. Today, employees often expect low levels of privacy when they enter workplaces. But taking that to the next level with wearable sensors might be a different story. Even beyond the specific privacy element, FMs have other concerns when considering tracking additional employee data. For one thing, data must be securely stored to mitigate the risk of leak or cyberattack. Additionally, FMs must consider the hiring and impact of the tracking morale

technologies they choose to implement.

The FM role within an organization

While the tools and execution of the FM job changes, so too does the place of the facility manager within the fabric of an organization. The overarching trend here is the increasing diversity of roles at the facility management table. While not long ago, FMs themselves were the dominant voice in their space, the modern FM landscape includes stakeholders from HR, IT, legal, sustainability, and other departments. This plurality of perspectives is a good thing for the space user,



but can make the job trickier for FM professionals seeking to avoid analysis paralysis.

According to John Lockett, Group CIO for Serco Group, a leading service provider and facility manager, it's important to have the full range of perspectives at the table, but clear accountability is needed as well. When it comes to workplace productivity decisions, John said that "we look to the property division to make those decisions for us. We have our steering group above that, and we have a property EVP who does a lot of the legwork and you need to have all functions at your table to make a good decision."

Facility management as a field is already an integrative discipline. It combines elements of engineering, property management, design, and even sociology, and this blend of focus areas may continue to grow into the future. FMs need not be experts in any one of these disciplines, but having a good functional knowledge of all of them is necessary for success.

One great example of this is within the field of facility management tech. John added that, "one thing I have learned in 25 years is that facility managers knowing the details of how tech works is irrelevant. It is about what you do with it. As long as people understand what is possible and what can be done, the tech

people can decide how to do it."

John also explained that "Frontline staff needs an appreciation of what tech tools do, and needs to know what is enabled by tech, but you have tech experts to handle the details." The ideal facility management team should consequently have discipline experts in both facility management itself as well as technical experts who have the ability to translate motivation to results.

Conclusion

In this report we covered the current state of the facility management world, including the turning point between "old" and "new" FM practices and the growing importance of ESG measurements for occupiers of all types. We then explored the future of FM, in terms of new technologies, training, and changing roles.

The facility management world is changing, and with it comes a new scope of requirements for the managers who make up this field. But while the FM business is getting more complicated and interdisciplinary, it is also getting more dynamic and effective thanks to the impacts of new practices, ideas, and tech tools.

Facility management is anything but static. The facility managers out there today as well as the

coming generation of FM professionals have an unparalleled opportunity to guide the future of the business and make a positive impact for their occupiers and companies, but fully realizing this outcome will require innovation, creativity, and an understanding of fields as diverse as law and engineering.

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