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# Clean Break

Using data to adapt  
commercial cleaning  
services for the new  
reality

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## COVID Cleaning Capacity Assessment **C3A**

Question	
1	What is your current custodial resource commitment?
Question	
2	Number of Floors and/or Sq Footage
Question	
3	How do you currently allocate your custodial resources by type of space?
Question	
4	What are your new cleaning requirements due to Coronavirus?
Question	
5	What is your organization's current re-occupancy plan?

## Clean Break: Using data to adapt commercial cleaning services for the new reality

By Thomas Jackson and Michael Moran

### Executive Summary

Commercial cleaning contractors face unprecedented demands for new standards, revised methods and a more visible presence in the delivery of their services to commercial real estate, manufacturing and other large facilities. COVID-19's precise characteristics continue to be debated and may yet evolve further, but the economic distress caused globally by pandemic-related lockdowns have supercharged the appetite among building owners, corporate clients and public sector landlords for deeper, more thorough cleaning of facilities both to stem the risk of viral spread and to reassure people that the buildings in which they work, shop, live, and breathe are taking every step possible to safeguard their health. Sadly, the falloff in revenues many clients have experienced means these new demands often do not come along with additional funding. These changed expectations will persist well beyond the current pandemic period, meaning commercial cleaning contractors must revise time-honored assumptions on how to deliver their services, both for today's challenges and for the post-pandemic world. To meet these new demands, commercial cleaning must move from a territorial approach that assumes an after-hours, one-time pass through a given floorplan, to a targeted, data-driven metabolism that uses cleaning resources more dynamically and cleans based on usage and occupancy, demonstrating to clients and their occupants that post-COVID cleaning is more vigorous, responsive and effective.

### Introduction

The COVID-19 pandemic, striking as it did without warning, left the Commercial Real Estate (CRE) sector and all of its varied service contractors, tenants and portfolio investors with little time to think strategically about how to react. With many offices, retail spaces and other facilities emptied of occupants by emergency lockdown orders aimed at containing the virus, a kind of triage took root throughout the CRE ecosystem.

- **Tenants** scrambled to implement remote working technologies where possible, or to enact protocols aimed at keeping staff, customers and other occupants safe through social distancing or contract tracing protocols.
- **Landlords** and portfolio managers struggled with demands for rent holidays and laws in some jurisdictions suspending evictions even as their own revenues and business models were under stress.

- **Retail and manufacturing firms** wrestled with the fact that remote working offered little relief and that maximizing the number of workers who could safely remain at work has a direct correlation with corporate revenue.
- **Facilities Managers (FMs)** grappled with the reality that expectations around cleanliness, occupant wellness and building configuration would be permanently raised and altered by the pandemic.
- **Commercial cleaning and other building management contractors**, already locked into low margin contracts, faced new demands to provide reassurance to building occupants that every step possible was being taken to prevent the spread of the virus – all without any additional money or resources to do so.

Indeed, the economic disruption caused by lockdown orders and lingering public fears of the deadly virus meant few businesses had the luxury of directing new budget resources toward initiatives that would deal with these new challenges. By and large, CRE professionals were expected to redeploy existing resources, and in many case, do more with fewer resources because of the collapse of revenue brought on by lockdown mandates, defaults on lease payments and other economic distress.

*Take the COVID Cleaning Capacity Assessment online survey  
on the Microshare website*

For much of the first six months of the pandemic – whose onset in much of the developed world can be loosely pegged to the lockdown orders that began in the second week in March, 2020 – commercial office buildings and many facilities that would normally see high density occupancy like shopping malls, university and other school campuses, movie theaters, sports stadiums, train stations and other transit hubs – have looked like ghost towns. This has deepened economic distress, with the 37 nations represented by the Organization of Economic Cooperation and Development (OECD), a club of industrialized nations, seeing GDP drop by an average of 9.8 percent in Q2 of 2020. For comparison's sake, the OECD's average GDP hit in Q1 2009, the worst quarter of the Great Recession, was a mere 2.3%.

The near complete shutdown of commercial and high-density spaces buffered the effect on the commercial cleaning industry, which in many cases could adopt a mothballing approach. This may have conserved budget and resources in the short run but it also left festering the question of how companies will to adapt to the so-called "New Normal."

### **Clean = Safe: Grappling with the 'New Normal'**

In reality, no one yet knows for sure what this "New Normal" entails, whether it will mark a permanent shift in employment and leasing practices, and if a great upheaval in the CRE sector lurks ahead. Two things appear certain at this juncture, however:

- The demands of the next phase of the COVID-19 pandemic – the Return to Work (RtW) phase – will fall heavily on Facilities Managers and on the commercial cleaning industry as owners and operators of commercial real estate assets seek to implement new policies to reassure occupants. With the industry under financial duress and bracing for new regulatory pressures, these new demands will not necessarily come with additional budget resources. In effect, the demand will be to clean more effectively with the same resources or less.
- The priority accorded to cleaning, building wellness, and the safety of the people inside a facility will rise and this new emphasis will become a permanent feature of Facilities Management and commercial cleaning operations.

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How should commercial cleaning firms react? The first step is in asking the right questions and attempting to fully understand the implications of the pandemic for commercial real estate. In some ways, the pandemic should elevate the value proposition of a well-designed, competently and competitively delivered cleaning service. That should be welcomed by all in the industry whose work too often takes place after working hours and thus has little visibility to staff, customers, or the facilities managers who pay their cleaning bill.

Facing the new realities is also key. COVID-19, whether it diminishes in the autumn and winter of 2020-2021 or spikes anew, has forever altered the attitudes of those who own and operate commercial buildings, from offices, to apartment blocks, to factories and warehouses. Cleanliness, and a visible, persistent effort to maintain it, may or may not play a role in actually deterring the spread of COVID-19 and similar coronaviruses, but it unquestionably prevents the spread of microbial and other types of infections. Perhaps as important as any of these scientific facts, manifesting an aggressive and professional effort to keep a facility clean now plays an important role in reassuring the people inside a facility that everything possible is being done to keep them safe and secure. Social distancing and reconfiguring spaces to minimize density will not assuage the apprehension of people who have seen hundreds of thousands perish during the pandemic. If staff, customers, and tenants are to reoccupy the Built World in earnest, they will need to see that factors like sanitation, ventilation, social distancing, and basic cleanliness are taken seriously.



### What commercial cleaning firms need to ask themselves

At the tactical level, it will no longer be possible to satisfy the demands of quality CRE clients by pursuing undifferentiated cleaning schedules. The typical Commercial Cleaning Services company approaches a modern job the way a military force approaches war: by plotting out a plan of attack that manages to cover all the territory in question with the resources available within a given timeframe. A typical plan of attack matches cleaners to square footage. In an after-hours office environment, for instance, large clients of Microshare generally assumed a single cleaner can cover about 4,000 square feet an hour, barring special demands like bathrooms or kitchens, which take longer to clean. Nonetheless, this approach – call it the territorial mindset – simply will not do in the post-COVID world, and especially not in the Return to Work period. The fact is, cleaning a large facility the way Caesar conquered Gaul will waste time and leave heavily utilized areas underserved. What's more, it ignores a crucial fact of the new normal: Commercial cleaning is coming out of the shadows. Building owners, corporations, and facilities managers have every reason in this new environment to want occupants to witness cleaners in action, tending to precisely those spaces that require attention, precisely when the need for attention is evident.

This leads to a series of questions that commercial cleaners should be asking:

1. What was my pre-COVID level of cleaning resources, and do I still have that budget to work with to meet the current situation? Or have the COVID-related economic pressures reduced my budget?
2. What are my incremental cleaning requirements (in total hours) due to increased cleaning related to COVID-19?
3. What is my company's/client's re-occupancy plans (over the next six months)?
4. How will I meet the increased cleaning requirements with my current resources?
5. Do I need to change the way I have configured my staffing and shifts to meet the new and existing requirements?

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The answers to those questions can begin to inform a transformation of commercial cleaning operations. This sounds easy but is not: too often, back-of-the-envelope calculations about how to redeploy resources wind up producing little change. Either that, or the exercise produces a raft of raw data and insights that firms struggle to turn into actionable insights.

This is why, for instance, Microshare has developed C3A – the COVID Cleaning Capacity Assessment – to help our clients rethink the deployment and configuration of cleaning assets in the context of the pandemic.

## From conquering territory to data-driven, targeted operations

This innovative assessment – the C3A tool – is designed to take cleaning operations smoothly to the next level – a place informed by real-time data, and operating at maximum efficiency with minimal disruption. We call this “Incremental COVID Cleaning” and it implies a much greater use of data to make more precise decisions on what is cleaned, and how frequently.

Question										
1	What is your current custodial resource commitment?	2	2	2						
Question		# of Floors	Sq Ft per floor							
2	Number of Floors and/or Sq Footage	5	22,000							
				% of time by Type of Space						
Question	Shift: Day Shift	Hours	Avg \$ Rate	Restrooms	Offices	Workstations	Conference Rooms	Other	Hard Surfaces	
3	How do you currently allocate your custodial resources by type of space?	37.7	22,000	50%						
Qty:1	Custodial Staff 1	37.7		50%			30%	20%		
Qty:1	Custodial Staff 2	37.7		50%			30%	20%		
Qty:0	Custodial Staff 3				4%		60%			
Qty:0	Custodial Staff 4		67000							
Qty:0	Custodial Staff 5									
Qty:0	Custodial Staff 6									
Qty:2	Total	75.4	67000	100%	4%	0%	60%	40%	0%	

This transition was already beginning before the pandemic took hold; COVID-19, in some ways, is acting as an accelerant for changes that many in the commercial cleaning industry were already anticipating. One way to understand this transformation is through an analogy with the evolution of modern warfare. Where once it was enough to send a crew of three or four cleaners on a rotation through a given floorplan – akin the old military strategy of conquering territory – today’s realities require a more targeted approach. This is made possible with the use of Internet of Things (IoT) occupancy sensors; simple, cost-effective devices that will provide real-time data on whether a given space was used lightly, heavily, or not at all during a given period. Just as sensors and guidance systems enable “smart weapons” and guided missiles on the battlefield, IoT sensors produce the data that informs the new, demand-driven approach to facilities cleaning. In effect, carpet bombing is out, precision targeting in. In commercial cleaning terms, this means certain areas – heavily used conference rooms or toilets – are cleaned multiple times during a given shift, while some offices or other spaces can be left untouched for the day.

Microshare, for instance, deploys an Occupancy Monitoring solution along with Predictive Cleaning and other sensors to enable this kind of intelligence. We believe these capabilities go a long way toward enabling the change in mindset required for progressive FM managers to meet the current and future challenges.

Of course, some Facilities Managers seem to believe that things will return to a pre-pandemic normal and that

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all they need to do is get through this period of uncertainty before returning to business as usual. We do not agree, and our clients – including some of the world's largest FM firms and corporate real estate managers – bear this out. In the context of commercial cleaning service professionals and facilities managers, the environment we foresee continues to be uncertain for 18-to-24 months, with budgets that will remain under pressure. In effect, we're entering a new era in which what is expected from facilities managers and those contracted to provide services is even greater than ever.

## Our view of COVID Cleaning Capacity

Even those acutely aware that serious revisions to standard procedures will be necessary are struggling to understand precisely how to react. Most Facilities Managers, for instance, are unaware that the average office building, pre-COVID-19, were only 50% - 65% utilized and, in effect, the “territorial” approach to cleaning them entailed a good deal of wasted, repetitive or downright unnecessary activity. That is because these Facilities Managers had no empirical data on how much of their floor plan was used, and how acutely in any given time period. The result was a misallocation of resources representing both a waste of manpower and a hidden solution to their future success. The “Incremental COVID Cleaning” required of them can be met by optimizing their current resources and deploying those resources against the new cleaning requirements.

In the short term (or at least until COVID-19 is vanquished), the utilization of office buildings will generally remain lower than the rates cited above. This may be true of the longer-term as well, depending on how deeply the pandemic alters cultural and financial realities for those operating commercial facilities.

Either way, this translates to a pattern of space usage that diverges from historical usage patterns in favor of smaller, more varied, and distributed facilities, and with a significant and permanent uptick in Work From Home (WFH) policies. In sum, even as the importance accorded to cleaning remains at an elevated level, the changing, probably shrinking footprint of space that needs cleaning will impact Facilities Managers' cleaning routines in significant ways. Certainly, the old notion of fixed space, fixed routes and a fixed set of cleaning tasks will be seen as wasteful and a poor use of resources.

## Our view of COVID variable tasks

Most organizations have the cleaning staff capacity to meet the Incremental COVID Cleaning requirements, but are unsure how to allocate their resources because they view their COVID-related cleaning requirements as incremental and don't know the true usage of the current spaces at a granular level. As we have emphasized,

### Case Studies: Surge Response and Responsive Cleaning

Microshare's client list includes some of the world's largest Facilities Management, Commercial Real Estate, university, and manufacturing firms, as well as world-renowned partners like Microsoft, Rackspace Technologies, Arrow Electronics, Microland, Semtech and Kerlink.

Two of our clients, in particular, have embraced a more flexible approach to cleaning their portfolio of real estate in light of COVID-19 and the capabilities Microshare's IoT Occupancy Monitoring and data streams provide.

For our first client, a major global FM firm, the challenge was specific. They had six cleaning staff to handle 5 floors of a high-rise comprising 22,000 square feet. New demands from management included the need to staff working hours so that cleaning could be done on demand – i.e., creating a Surge Response capacity. The firm did this by moving two of six staffers to daytime hours, installing Touchfree Feedback Monitors in heavily used spaces, and leveraging data from Microshare's Occupancy Monitoring solution to recalibrate the work of the remaining four “after-hours” staff.

Our next client ranks among the world's most prestigious universities and must deal with a sprawling urban campus, myriad floor plans, and the demands and liabilities implicit in the academic sector. The university's FM team realized that not only would they be asked to adopt new cleaning protocols, but they would also be required to be more visibly engaged in delivering this new level of service.

“Understanding which rooms were not used, or used very little on any given day was a crucial data point in our effort to more effectively redeploy resources as we considered a more utilization driven cleaning approach,” the FM director said.

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utilization rates are, and will continue to be lower. This should not be mistaken for a temporary phenomenon, but also may not be as much of a threat to margins as some assume. We believe that, with the right steps and technology, this situation actually frees excess and wasted capacity to meet the new requirements.

There is a catch, however. Collecting granular, real-time data on space utilization – something not historically available – is a prerequisite to getting this right. Today, IoT technology provides this data and allows Facilities Managers, and others who supervise cleaning services, and staff, to responsively clean the spaces that were used and not waste resources where they are not required.



At Microshare, we monitor space usage in several different ways. We track the flow of usage (traffic), as well as the persistence of usage (occupancy). We then combine these factors together with the historic use of various spaces to determine the utilization score of those spaces. Next, we rank the spaces in terms of their level of utilization and match that figure with the routes that custodians follow during their cleaning rounds. This will determine which spaces and rooms require cleaning, and how much effort will be applied to each. This data-driven approach allows us to take a fresh look at how to best utilize existing resources and deploy them in a way that maximizes effectiveness.

In light of COVID-19, many Facilities Managers are responding by increasing the frequency of cleaning in high-touch and high-use, high density areas. This includes restrooms, common areas like breakrooms, kitchens, and conference rooms. The increased demand for cleaning such spaces can now be met by redeploying resources from areas which are underutilized in any given day, allowing crews to focus on those areas where the need and risk is the greatest.

Beyond utilizing data to influence which spaces require cleaning, there is a challenge to be more dynamic in thinking about staffing. The historic approach of fixed routes, resources, tasks, and shifts is increasingly being modified to allow for a more responsive, data influenced mixing of those variables in new ways to improve timeliness, visibility, and effectiveness.

### **The risk of getting reoccupancy wrong**

No one wins when trust is lost. If there is any single way to characterize the scenario that everyone involved in the Commercial Real Estate value chain wants to avoid, that is it. Depending on one's position in that value chain – tenant, broker, staff, investor, building owner, cleaning contractor – a major concern expressed across the board is the risk of legal action should the facility be found wanting in terms of steps taken to protect those within its walls from COVID-19 infection. This tends to be seen through the lens of legal liability, and for good reason: little regulatory guidance exists to inform decision-makers, and legal precedent drawn from court decisions will take even longer to emerge.

Wrestling with the legalities will be the preserve of legal counsel and risk managers, all of whom are looking to government and the courts for guidance that may not emerge until after the most virulent stage of the pandemic has run its course. Building owners, Facilities Managers, and cleaning contractors cannot wait for these smoke signals. As the pressure to reopen grows more acute (driven to varying degrees by local regulations, hot spots, revenue, and productivity concerns), skimping on the protection of human health is a poor bet.


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At a fundamental level, every company needs to protect its relationship with those who enter its facilities, whether they be customers, visitors, tenants, or employees. For employees working in office settings, the need to ensure a safe working environment is a core value and one which cannot be faked. Companies that fail to take steps to reassure staff will find themselves subject to reputational and legal risk, and will quite probably find themselves locking down again due to COVID-19 spread. A failure to take all reasonable precautions will result in a breach of trust between the company, its staff, and ultimately the public, government regulators, and investors too. This puts any company at serious risk.

In a similar vein, every company's brand (their relationship with their clients) is at risk to the extent that the company doesn't take widely accepted steps to create a safe environment for their employees, tenants, and/or customers. Many organizations label this a public relations risk, but it is fundamentally an issue of trust and can extend well beyond public images. Regulatory action from OSHA in the United States or the EU's European Labor Authority can result in stiff fines and other penalties. Boycotts and activism coordinated by social media influencers can erode the value of a corporate brand. Remember United Airlines' decision to forcibly remove a customer from one of its flights in 2017? It's reputation has never fully recovered, nor did the reputation of its then-CEO, Oscar Munoz. In a commercial office, all it takes is a furtively recorded cell phone video of substandard sanitation practices and a subsequent COVID-19 outbreak to create a similar reputational crisis.

Meeting the challenge: 21st Century answers for a 21st Century crisis

Happily, cost-effective technologies exist that will smooth the transition and allow Facilities Managers – whether they run a building, a corporate real estate portfolio, a university campus, or a factory – to generate the kind of data that will mitigate many of these risks.

Anytime new technology enters the picture, there is understandable concern. But Smart Facilities IoT sensors of the kind that generate Microshare's solution set have many advantages. They are small and wireless, cost-effective, quick to deploy by non-technical staff, and in fact run on a network known as LoRaWAN® that operates entirely separate from corporate networks, significantly reducing the risk of cyber breaches. For years before the COVID-19 pandemic, Microshare has been deploying thousands of these IoT sensors to bring a new level of visibility into building performance and wellness across the CRE, Manufacturing, Healthcare, and Transportation sectors.

Clients invariably encounter challenges moving to a data driven approach. Some of these are cultural – the kind of friction that comes along with any change to well-established routines. Others involve an understandable concern about technology and whether data streams created will be easily absorbed to produce actionable results.

Here are some common issues:

- **Taking the technology leap:** For many FM professionals, the idea of using IoT solutions to aid in the cleaning process will not be a bolt from the blue. Talk of the transformative power of data has been around for a while, but the incentive to put that power to work was previously lacking, and the price and presumed complexity encouraged the FM industry to put such projects off. That is no longer the case. Prices for IoT sensors and the associated network gear have dropped precipitously in recent years. At the same time, standardization and turnkey approaches (like those designed by Microshare) have removed much of the complexity. Indeed, because Microshare solutions operate outside existing WIFI communication network, installations can occur without involvement of corporate IT departments.
- **Trusting the data:** While many FM professionals already use data in their day-to-day activities, the notion of allowing data to drive cleaning decisions requires some buy-in. "If it's not broke, don't fix it," has been the attitude in far too much of the industry, and COVID-19 has exposed the dangers overly conservative thinking can produce. Today, well designed solutions eliminate the complexity of IoT technology and deliver actionable data rather than raw analytics. Even the most skeptical clients, with a short learning period, quickly comprehend the validity of the data and its ability to

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identify waste, drive value, and improve margins. Like any other change, of course, managing with data requires an initial leap of faith. But trusting the data quickly becomes second nature after improved results become evident.

- **Dynamic scheduling:** Clear, granular data provides managers with information they simply never had before, and that data makes it easy to see that historically fixed schedules need to be modified and modernized. Whether it's the need to clean a high-density space immediately or taking a fresh look at the existing routes to identify better ways to deploy resources, all of these alternatives appear as viable options when the data is taken into account.
- **Rebalancing routes & shifts:** Not only routes but also shifts and resources need to be taken off "autopilot" and be more actively managed in today's environment. These adjustments might feel large at first but over time, with fine tuning and constant attention to the use of your spaces, it becomes second nature. Custodian visibility is a new and increasingly demanded. That not only involves shift changes but possibly some training and rethinking of custodial practices.
- **Equating change with progress:** The way your building is used will change on a day-to-day basis, and while that doesn't always result in revised cleaning shifts, resources, routes, and tasks, it frequently does. Learning to identify and flow with these changes is part of the excitement that IoT offers and should be viewed as an opportunity, not a burden. It is the opportunity to better serve your customers, to demonstrate flexibility, and to provide better service than was possible in the analog past. And isn't that at the core of what all FM professionals wish to deliver: Great, efficient service that reacts instinctively to client needs with satisfied, high-performing staff members.

### Conclusion: Smart Facilities are a smart move today

Remember the first time a digital mapping system directed your driving rather than the clunky but familiar folding maps? It felt like a big change at first, yet over time you start to wonder how you ever got from Point A to Point B in the old days. That is true about the changing demands of the commercial cleaning industry as well. The rising expectations regarding wellness and sanitation from those who work, shop, live, and transit modern facilities will persist well beyond the current pandemic period. Even before 2020, a revolution in Smart Facilities technology, driven by lower cost sensors, longer-life batteries and powerful building intelligence dashboards, had been underway. COVID-19 may leave few positive legacies, but one of them seems to be an acceleration of the Smart Building/Sustainability movement, a trend that enables many other positive outcomes, including greener, more sustainable facilities, a more transparent and predictive understanding of building operations, and a genuinely more positive relationship with the most valuable assets of all: people.

In order to realize these advances – indeed, in order to properly meet the demands of the current crisis – Facilities Managers and their commercial cleaning contractors must rethink tried-and-true assumptions on how to deliver their services. By embracing real-time data and the technology that produces it, Facilities Managers and building service contractors can transform their operations in line with current demands, and in ways that prepare them for the changed market environment that will follow the pandemic.



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## The Benefits?

Beyond being the “right thing to do,” the benefits of taking these steps are legion:

- Positioning your brand or building as innovative: Wringing hands is no response to a crisis of this magnitude. The market will reward those who take an active role in solving the problems thrown up by COVID-19, and a data-driven approach not only reflects well on you; it will force customers, tenants and competitors to take notice.
- Cost savings: Beyond working smarter, the insight derived from the applying data through the C3A tool will reveal efficiencies and potential waste that can only be verified through empirical metrics. That is precisely what IoT data provides in real-time.
- Safer, cleaner spaces: There’s no such thing as “clean enough” at the moment, and we suspect it will be some time before sanitation and building wellness return to the “nice to have” category they inhabited before the pandemic.
  - a. Better and more timely service: After hours cleaning sweeps may well survive, but the marketplace now demands new levels of visibility and proactivity when it comes to commercial cleaning. Knowing which spaces were occupied, how intensely, and when are the building blocks for a targeted approach that building owners, Facilities Managers, and tenants alike will notice and appreciate.
  - b. Leveraging proven and expandable IoT network infrastructure: Making decisions informed by IoT data can feel like a leap into the unknown. Microshare, which runs on the fast-growing LoRaWAN standard, will put your worries to rest. With over 500 manufacturers, tech firms, and other participating organizations already on LoRaWAN – including names like Google, Microsoft, British Telecom, Comcast, and others – you can be comfortable that your investment in IoT infrastructure was a wise one. New and cheaper sensors will continue to appear and because LoRaWAN has quickly become the global standard, you can be sure they will work with your existing infrastructure, providing you with a clear route to future innovation.
  - c. New skills and continuous improvement: A final and critical factor involves career development and life-long learning. No one gets to skate in today’s business environment, not the IT guys, not your CEO, and not the cleaning crew, either. We live in an age of profound technological disruption and myriad forms of risk. Embracing the future is a well-worn path to success across all industries, and the future of cleaning, like the future of most everything else, is intertwined with data. Deploying IoT solutions like those Microshare offers not only improves service but will reduce costs, reveal potential problems before they happen, and open the door to more sustainable performance, too. IoT Solutions offer all this and more to those willing to walk the innovative path.

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