

How IoT is reshaping Facility Management

The role of Facility Managers

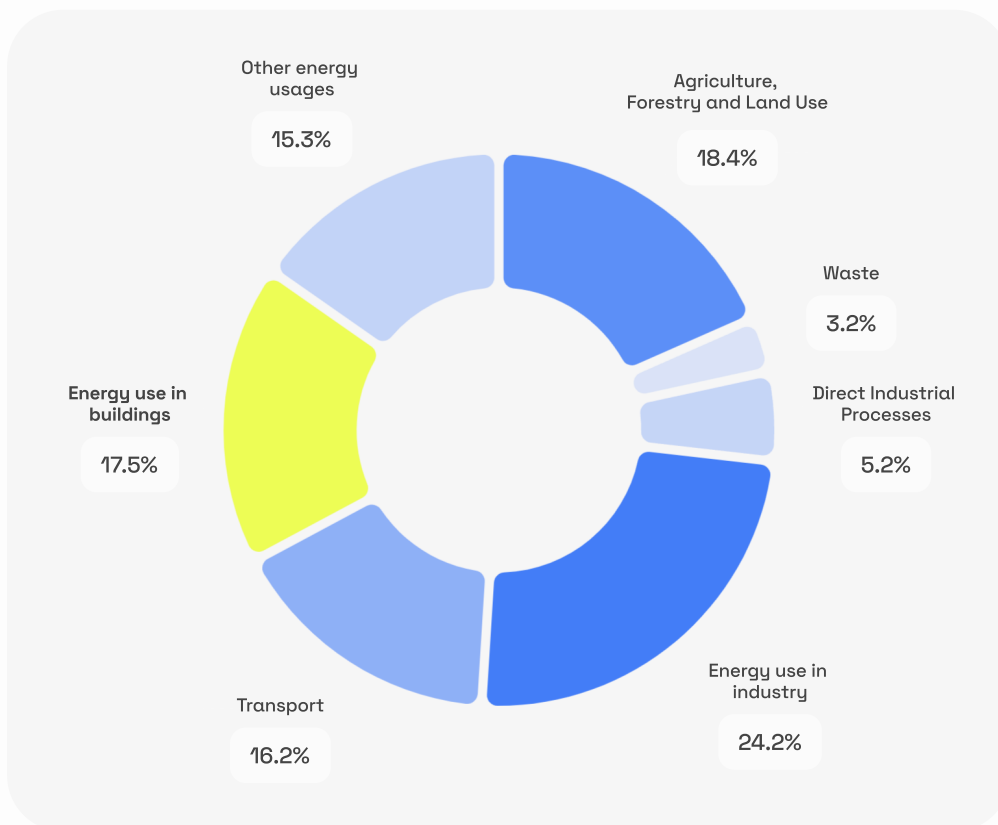
Facility management (FM) coordinates a range of disciplines supporting the safety, sustainability, and functionality of infrastructure, buildings, and real estate. The wide range of activities that FM coordinates makes it a complex endeavor: facility upkeep and improvement, process establishment, supervision, and emergency planning, among others. Even more challenging is looking after multiple assets since most facility managers oversee more than just one building. It requires a comprehensive understanding of the various systems involved in order to make sure everything works smoothly without compromising safety or any other important criteria.



The role of modern FM is crucial, as according to IBM, people spend 87% of their time in buildings. A building with a solid technological foundation enables efficient management of its duties. In modern building automation systems (BAS), one platform controls, monitors, and maintains building-wide infrastructure. Digital buildings have many proven benefits, including greater energy and operational efficiency. However, challenges remain due to the increasing pressure to reduce energy costs, achieve carbon-neutral targets, and meet demands for safer environments.

Challenges faced by Facility Managers

Proper facility management is no easy task. Constant demands and uncertainties, especially in the post-pandemic world, make identifying concerns and overcoming them the key to keeping business operations running smoothly. We have devised a list of four challenges facility managers face.



Sustainability

Sustainability is an essential consideration for facility managers to significantly reduce the environmental impact of buildings. It is estimated that buildings consume 17.5% of global energy, with residential buildings contributing 10.9% and commercial buildings 6.6%. However, 30% of the energy used just in commercial buildings alone is wasted, meaning most have a substantial environmental footprint. Managers can and must make drastic energy-saving measures for greener and more efficient buildings.

Access to data

A second FM challenge is a need for more available building data. A lack of infrastructure information gives no real insight into air quality or occupancy, for example. A Harvard University study on office air quality found that indoor air with high levels of Carbon Dioxide (Co2) and particulate matter (PM2.5) influences cognitive function, slowing response times. Similarly, the lack of building data makes eliminating the risk of overcrowding or underutilization difficult. Jones Lang LaSalle reports that the average utilization rate across industries is approximately 60%, meaning 40% of available space is wasted. Most companies are spending money on cleaning, heating, and cooling rooms that are not fully occupied.

Facility maintenance

According to McKinsey & Company, maintenance cost in most industries is between 10 to 25 percent of total operating costs. More than half this cost is labor, so proper maintenance efficiency can save money and improve resource management. In the cases that facility managers oversee multiple facilities and communicate with many service providers, teams, and ticketing systems, they must equip themselves to respond promptly to requests.

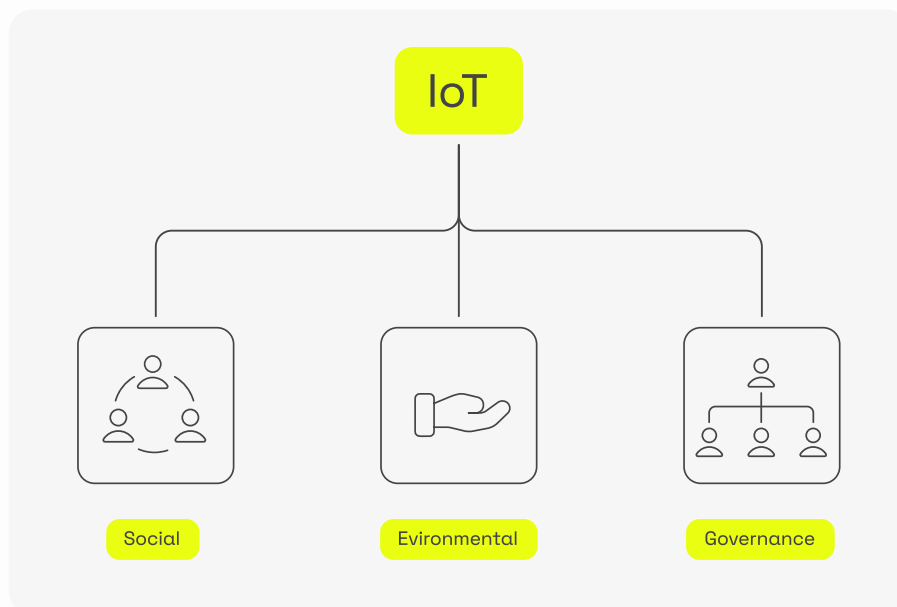


Flexible work and evolving workplace

Due to COVID, there has been an unpredictable transformation in the workplace. Real estate group CBRE reports that the average employee will spend 24% less time in the office, which has driven 87% of large companies to adopt a hybrid workplace model. Companies must optimize space and create an environment that supports employee needs, meeting health and safety standards. This shift creates new challenges in workspace organization and occupancy monitoring.

Leveraging the power of IoT

Fortunately, new advances in network and cloud technologies offer a great toolbox to tackle previously mentioned challenges. As hardware costs sink and sensors become commodities, modern buildings can integrate more connected devices and aggregate the collected data on a central, cloud-based building management system. Moreover, buildings from older generations can also be retrofitted at lower costs with smart devices. This opens the door for a multitude of smart building solutions, improving legacy processes and enabling new digital services. Let's see how to address FM challenges with the help of IoT.



Impacting resource management and energy consumption.

IoT solutions are transforming how facility managers manage resources and optimize energy consumption. A typical example is the automation of heating, ventilation, and air conditioning (HVAC) systems to heat or cool facilities only when necessary. This can be achieved at lower cost by adding indoor environment sensors in the right places.

The opportunities for better resource management, from energy savings to smart waste management, are manifold. According to the American Council for an Energy-Efficient Economy, achieving 30-50% savings with the integration of smart building systems is possible. This savings is also why numerous companies make IoT an integral element in their ESG strategy.

From the device to the cloud

Thanks to the commoditization of the hardware, it becomes possible to deploy numerous sensors in facilities. This myriad of devices acts as auxiliary data sources when connected to an IoT platform. Modern IoT platforms offer a cloud-based infrastructure where all the data from the intelligent building can be collected and normalized. This data is then made available to the building automation system and can be aggregated with additional 3rd party data to be accessible to the tenant.















Real-time IoT sensor data visualization

Built-in data visualization provides a direct overview of the data from the device. The real added value of this integration lies in the potential of real-time alerts and automated reactions based on the collected data. By defining a set of custom rules and notifications for different building cases, one can instantaneously generate alerts to the right person. This data can also help an organization understand long-term utilization patterns and improve operations accordingly.

Automating FM processes

IoT across a facility manager's whole real estate portfolio allows for the automation of service requests and the improvement of internal processes. A typical example is the improvement of washroom cleaning procedures by transitioning from a predefined periodic cleaning to a usage-based approach. The clear benefit is to clean the washrooms based on actual use measured with door counters and occupancy sensors and not by following a predefined "blind" cleaning calendar.

Floor	Washroom Type	Monday	Tuesday	Wednesday
2 ID 238		26 48 54 24	35 51 78 31	
		68 53 61 31	72 182 85 28	
		2 0 5 1	1 12 0 3	
3 ID 325		20 42 72 21	31 48 81 16	
		52 48 57 21	84 99 38 12	
		0 14 0 1	0 21 0 5	

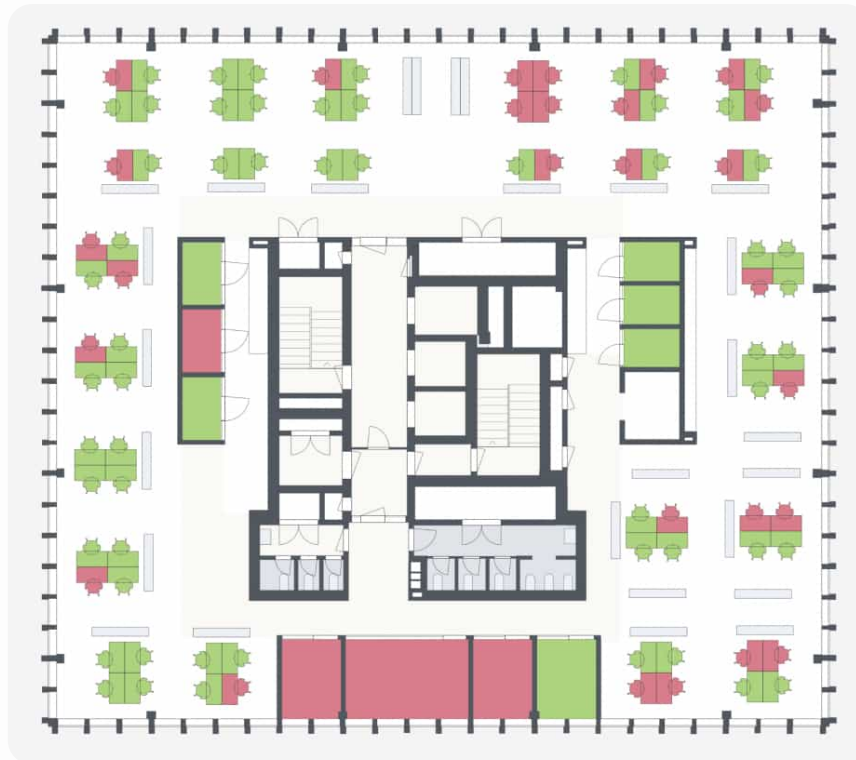
Floor	Washroom Type	Monday	Tuesday	Wednesday
2 ID 238		Visual Inspection 1x Full Clean 2x Full Clean Visual Inspection	1x Full Clean 2x Full Clean 2x Full Clean 1x Full Clean	1x 2x Visual 1x
		2x Full Clean 2x Full Clean Visual Inspection 1x Full Clean	2x Full Clean 2x Full Clean Visual Inspection 1x Full Clean	1x Visual Visual 1x
		Visual Inspection Visual Inspection Visual Inspection 1x Full Clean	Visual Inspection 1x Full Clean Visual Inspection Visual Inspection	1x 2x 2x Visual
3 ID 325		1x Full Clean 1x Full Clean 2x Full Clean Visual Inspection	1x Full Clean 1x Full Clean 2x Full Clean Visual Inspection	2x 2x Visual 1x
		2x Full Clean 1x Full Clean 2x Full Clean Visual Inspection	2x Full Clean 2x Full Clean 1x Full Clean Visual Inspection	1x 2x Visual 1x
		Visual Inspection Visual Inspection Visual Inspection 1x Full Clean	Visual Inspection Visual Inspection Visual Inspection 1x Full Clean	1x Visual Visual Visual

Example of the smart washroom monitoring dashboard enabling the implementation of a cleaning scheduling model.

The IoT offers many benefits for preventive maintenance and managing aging infrastructures. The fast detection and reporting of faulty equipment reduce technical downtimes and increase building user satisfaction. And sometimes, noticeable improvements can be achieved by simple measures. Installing, for example, service-on-demand configurable buttons can already help automate service requests.

Supporting smart workplaces

Since the rise of COVID, integrating IoT solutions can assist companies in implementing office measures to protect employee health and promote safety. With the rapid spread of infection, measuring space utilization is crucial to prevent overcrowding.



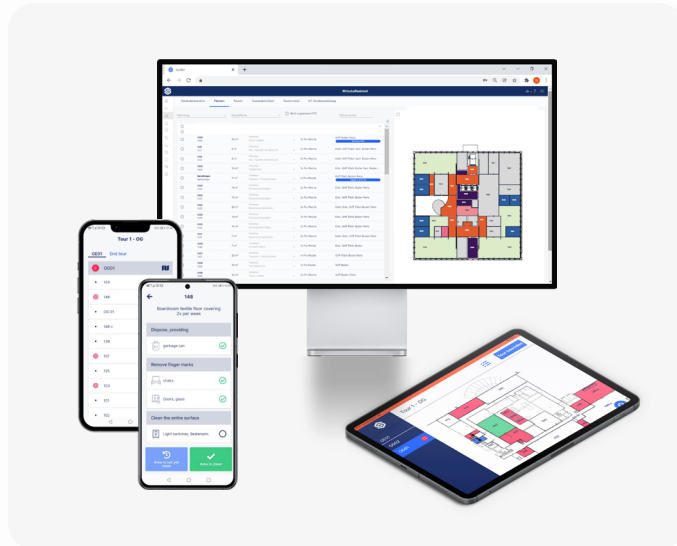
Desk & Room Occupancy

Occupancy monitoring provides a comprehensive overview of building patterns, such as individual desk usage. Sensors continually monitor the number and location of people and send data centrally to provide real-time occupancy floor maps. Both office servers and personal devices can display data. Visual feedback allows employees to make informed decisions and is a valuable prevention tool for avoiding crowded spaces. Notifications can also send alerts when the room is at capacity.

This data can further optimize office layout to facilitate collaboration and enhance productivity. With the rise of hybrid work models, companies need to be able to adapt and change the workplace accordingly. Access to reliable models that account for usage patterns and seasonality effects enables one to better plan the office space.

soobr: a smart cleaning solution

A practical case



The soobr dynamic cleaning platform

The Swiss company soobr offers a smart cleaning solution to plan cleaning tours in buildings efficiently. The soobr cockpit uses IoT data and artificial intelligence to dynamically plan and execute the cleaning based on building occupancy and real usage.

Kaspar Adank, founder and CEO, gives us his view on the impact of IoT in Facility management.



Kaspar Adank
Founder and CEO, soobr

“IoT enables the rise of new categories of FM services, in our case: smart cleaning. It allows data-driven & demand-oriented planning, execution and control of cleaning services based on the effective usage of buildings. IoT enables a more effective execution of cleaning services: operating in the right place at the right time. In order to provide clients with actionable insights, we use occupancy data from different room types, such as meeting rooms or offices, to provide on-demand cleaning. Our algorithm considers room usage as one of many variables to deliver an optimized cleaning process across the entire building. Though the adoption of IoT in facilities is rising, I experience several barriers:

- Data protection & compliance challenges when using the data.
- No established standards for the transfer of data.
- Implementations need to become more cost-efficient as it is a low-margin business.

However, I am optimistic that the ecosystem will manage to handle these challenges, as the benefits clearly outweigh the previously mentioned barriers:

- Cost & time savings (based on more efficient planning and more effective execution).
- Enhanced transparency and quality of services.
- Standardization for procurement and controlling.
- Sustainability (save chemicals, plastic, etc.).

In the next ten years, the use of building data to plan and execute facility services will become standard practice. Additionally, platforms will be increasingly used to orchestrate a cooperative partnership between providers and occupiers of buildings, such as the idea behind smart cleaning.”

Smart Buildings built to last

The critical need for a strong technological foundation

As discussed in the previous sections, the convergence of new technologies, changes in habits, and expectations creates the perfect base for the broader adoption of smart building cases. Deploying large scale solutions is now more accessible than before. However, managing change over the whole building life cycle requires a holistic view that doesn't limit itself at the first implementation of the IoT cases. Facility managers need to rely on an IoT system that is flexible and resilient to change. Who knows what new connectivity or sensor technologies will the future hold? Therefore, it is crucial to create IoT ecosystems that are future-proof.

A resilient technology stack

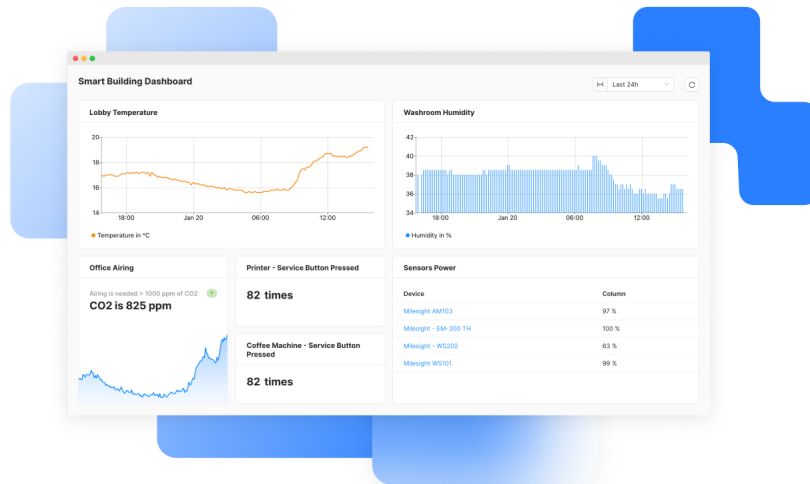
This is what the IoT platform akenza offers. With the numerous data input sources supported and integration to a wide range of cloud services, the horizontal architecture of akenza is able to support virtually any smart building case. Moreover, the self-service and low-complexity approach of the platform make it more accessible for FM professionals to launch new proof of concepts, all without coding knowledge. This allows to start with as little as one connected sensor with basic data visualization and later scale to a thousands of devices spread among several facilities.

Probably the smartest building in the world

A great example of a large-scale Smart Building deployment is the Zurich Insurance headquarters in Zurich. In this building, more than 2000 sensors have been installed and together collect 750 Mio data points per year. All the devices are managed on the akenza platform which collects and decodes the data, before making it available to various applications on the cloud. These applications cover a wide range of cases such as occupancy tracking, facility monitoring, people flow counting, and asset monitoring.



The IoT platform at the heart of your smart building



At akenza, we offer a reliable IoT platform that can serve as the backbone for your smart building applications. Contact us today to learn more about our services and how we can work together to build the future smart building ecosystem.

ask@akenza.io

Why akenza?

Centralized connectivity management & integrations to numerous connectivity providers

No-code data flow to define the data processing chain with pre-integrated device types

Rule engine to trigger actions based on your sensor data

Multiple output connectors to data sinks & notification services

Dashboard builder to visualize your data and share it with your colleagues

White labeling and private cloud deployments for your enterprise

