The facility management industry’s adoption of technology is growing at a rapid pace, and this year’s report covers a variety of innovations and how they have expanded on the trends from 2019. Inside this report, you will find the latest data, statistics, and trends in technology being used in facilities around the world.

WHAT’S INSIDE

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While the internet of things (IoT) sensors and smart device implementations have been around for a long time, there is still a lot of room for growth as facility management teams continue to adopt more of these technologies.

- In AkitaBox’s State of Facility Management Survey, 50% of respondents said they are currently using IoT devices in their buildings.\(^1\)
- Some facilities have seen a 10% reduction in energy costs with remote energy monitoring.\(^2\)
- Cisco predicts that by 2030 there will be 500 billion devices connected to the internet.\(^3\)

Investments in these evolving types of technology, including smart devices and IoT, will continue as the sensors become smaller, more affordable, and able to transmit at a wider range, and the facility management market alone is estimated to contribute more than $2 billion to IoT by 2025.\(^4\) The focus will be on making asset performance easier to predict as the data is uploaded and analyzed by cloud-based systems since machines can identify trends faster than people.

“...the only way to protect your assets is by putting more people on the ground to monitor performance or deploy real-time sensors with automated performance feedback so you can identify and repair small subcomponent failure before the whole asset fails. It’s not so much diagnosing what the problem is anymore, but extending the life of an asset.”

**Troy Gonzalez, Chief Engineer at Booz Allen Hamilton**

IoT has been a buzzword for nearly two decades, but it is often confused with building management systems and smart devices and buildings.\(^4\) While these technologies are usually designed to reduce the amount of wasteful energy-use and improve occupant comfort without relying on people-power to manually adjust systems, there are significant differences.

**Internet of Things**

A collection of devices that connect to a larger system through a network, such as the internet, so data can be shared between systems without people manually sharing it with other people or entering it into computers.

**Smart Devices**

Devices that collect data on a facility and autonomously manage different fixtures and assets such as lighting and heating. For instance, if a room is not being used, the light will shut off and energy spent on temperature control reduced.
BIM or Building Information Modeling is a highly collaborative process that allows many different AEC professionals (architecture, engineering, construction) and stakeholders to collaborate on the different parts of a building in one 3D model. This includes all the steps that go into a building: plan, design, build, operation, and maintenance. These data-rich models have a wealth of applications:

- In-depth visualization
- Easier code compliance reviewing
- Faster, simpler information sharing
- More accurate structural analysis
- Dynamic asset integration
- Quicker, cleaner, more efficient renovations to building plans

Although building information modeling has become the standard in construction, adoption has been slow in facility management. BIM has only been used in construction the last 20 years or so, facilities teams have only gotten access to this file format for their new buildings or renovations. With a majority of floor plans still in paper, PDF, and CAD formats, it used to be pretty costly to try and convert your whole set.

While the value for construction companies was clearly explained, what it could bring to facility teams became a confusing message. For most, this confusion led them to disregard it as their hand drawn and CAD files were seen as good enough.

"BIM has been around for a long time but is just now reaching a stage where we will see it widespread in facilities management. BIM provides building operators with real-data that stays accurate over time."

Josh Lowe, Co-founder at AkitaBox

The benefits of BIM are widespread but at its core, BIM is a digital technology that delivers intelligence and real-data to inform how to build and operate buildings. Where CAD is a recreation of hand drawings that requires lots of time and manual effort to keep accurate, BIM is able to do this more accurately and in much less time.

As we move into 2021 and beyond, BIM is entering a tipping point where adoption is expected to rapidly rise. Facilities and operations teams have been gathering more and more BIM files during construction turnovers as they add new facilities and have old ones renovated. It will soon make more sense to convert the last few CAD or hand drawn floor plans then to hang onto them as is. The intelligence that BIM delivers is also becoming more and more important for facility and operations leaders to leverage as their responsibilities grow.
While two different acronyms, BMS and BAS, are both referring to the same thing: computer-based systems that automate controls throughout buildings. These systems have been around for a long time, dating back all the way to the late 1800s. While these systems have been around for a long time, they are rapidly undergoing change today that is making most legacy systems obsolete.

The biggest driver of this change for BMS and BAS has been IoT devices. In fact, Gartner predicts that building automation will be the fastest growing sector in the IoT and connected device market (5). As there is growing demand from tenants, customers, and leadership around energy management and cost reductions, facilities teams are looking towards BMS and BAS to help them both automate and open up remote control possibilities so they can be more responsive to needs.

With the growth of IoT and smart devices expected to come to facilities teams, having a BMS and BAS is vitally important to provide a central point of control for those devices. This data can quickly become overwhelming for teams if they don’t have the technology and automation to turn it into insights they can work with. Automating tasks such as adjusting temperature for usage or monitoring for leaks can help reduce energy costs. As organizations focus more on sustainability and green initiatives, having a BMS or BAS in place can go a long way to ensuring goals are met.

Facilities teams can achieve even greater efficiency and cost-savings by integrating their facility management software with their BMS or BAS. Having systems that can work together and not on their own island will be the norm moving forward, as facilities teams focus on collaboration and making data-driven decisions. These systems combined help improve overall asset efficiency, limits downtime, and reduces overall maintenance costs.
While drone technology has continued to grow in the facility management industry, it has still not been widely adopted. Only 18% of facility management teams are currently leveraging drones in their work, mostly to help with roof inspections and condition assessments.¹

Drone technology should continue to rise, since more sensors will be modified for unmanned aerial vehicle (UAV) applications. The increase in drone applications will be in addition to the growing reliance on video inspections, as facilities directors are starting to be more comfortable introducing this technology to their teams. Cost will continue to be a barrier for some, but as this technology becomes more affordable and drones continue to evolve we expect the facility management to fully embrace it.

“Drones will allow you to get a holistic view of what you are trying to inspect or maintain, whereas today you’re taking samples across a campus, roof or facade.”

Thomas Haun, Former Senior Vice President of Partnerships at PrecisionHawk

Drones were originally used for inspecting roofs, towers and other assets difficult or unsafe to physically access through real-life, high-definition video feeds.² Since then, drones have started to speed up and automate tasks in new ways, because they offer a visual feed of the asset’s condition to the pilot, which can be recorded for documentation purposes, in addition to thermal, multispectral, hyperspectral and LiDAR sensor data.

Specifically, they have been used to:

- Expedite and better document inspections of assets and areas by recording images and sensor data, used to evaluate potential maintenance needs
- Detect energy inefficiencies of buildings with thermal cameras, such as to locate inconsistent wear or fractures hidden from site by siding or roofing tiles
- Calculate dimensions of larger spaces, such as parking lots or fields, for capital planning projects

The sensor industry currently has a reactionary approach to using its technology with drones. For instance, LiDAR sensors have been used for decades as hand-held devices to map spaces in three dimensions, and vendors attached them to drones for faster, more efficient data collection. In the future, experts say this will be reversed; sensors will be designed for areal applications and then modified for

The transition to using drone technology for these expanding capabilities will be slow, yet steady, as industry leaders in facility management learn about the technology, partner with vendors to identify the potential return on investment (ROI), invest in these systems and share their findings with other facility

Once drone technology becomes better defined and case studies have been completed on the ROI this data can offer, then facility management teams will either choose to purchase their own drones and use the available software to apply the data they collect, or continue to rely on industry partners to help them collect, process and apply the information.
Industry partners have found more ways to make 360° cameras technology accessible, which has resulted in them gaining traction in the facility management space in the last year. Also known as omni-directional cameras, it was anticipated that lower cost variations of these cameras would flood the market since teams with tighter budgets could purchase them, but it did not happen in the facility management industry; a smaller price tag does not mean return on investment (ROI) is easier to prove to justify the cost.

Instead, facility management teams have relied on vendors to take the photographs, show them how to use the technology and find ways to apply the panoramic images to their programs. Even the consumer

Early adopters of 360° cameras in facility management have used them for:

- Space audits to assess if a room meets the building standards, such as flooring type, available furniture, paint colors and general wear and tear
- Photographic depictions of where the asset is in the room and what it looks like for easy location
- Creation of VR facility tours, which are ideal for new hires who don’t understand what different rooms

“360° cameras provide an immediate visual of that piece of equipment, room or space. Often times, when you’re having conversations about an asset, you spend a lot of time trying to explain where something is located. Now, you can just show them in a photograph.”

James Harrod, Business and Operations Manager at UW Health

Eventually, 360° cameras will live permanently in maintenance rooms so technicians and managers can virtually assess mechanical problems, but, for now, integrations still take time to successfully complete so facility managers can gain confidence with data they have access to and maximize the impact of their investment. In the next year, facility managers can anticipate seeing similar trends as more facilities connect with technology partners to invest in this virtual approach to facility management. Partners will continue to help facilities design goal-centered plans, collect pictorial data and find places to store the 360° cameras. Eventually, facility management teams will have their own cameras available for internal use, but, for now, price and application seem to be the two biggest barriers to entry.
The usage of facility management software continues to be the cornerstone of proactive facility management departments with over two-thirds of facilities teams using facility management software to track their maintenance. These programs help reduce data inaccuracies, automate maintenance tasks and reporting, assist in locating assets in a timely manner and provide digital versions of maintenance and inspection reports linked to the assets themselves.

In the coming years, facility management teams will be looking for:

- Integrations with IoT and smart devices, allowing facilities teams to track usage and control their facilities remotely from their FMS.
- As current facilities team members retire and are replaced by a younger generation, there will be increased demand for easier to use systems.
- Interactive and responsive floor plans that mirror their physical buildings. Having a giant database of assets and work orders won’t be good enough.
- The data is clear that implementing new facilities software is difficult, so teams will start looking for providers who can provide the services upfront such as data collection and software setup to avoid lost investments.

Early adopters of FMS have also seen a number of their day-to-day problems reduced, including:

- Documentation becoming more organized, which reduce the time it takes to find reports and resources since they are easily linked to assets, whether that be previous inspection reports, SDS/MSDS sheets, O&M manuals or previous maintenance history
- Reduce the amount of time teams spend reacting to broken or malfunctioning equipment by scheduling regular and preventative maintenance tasks, which will cost less over time and keep teams focused on regular tasks
- Better coordinated custodial cleaning crews, since accurate space and floor plan data give more accurate task time requirements

In the last few years, facility management software has seen a revolution as new systems were introduced to help maximize facility management team efficiency, and, as facilities continue to transition to these more robust systems, industry expectations will continue to grow.

“Facility managers have relied on insufficient software to organize and support their departments for decades, but they don’t have to settle for the status quo anymore. Facility Management Software is truly the most powerful way to innovate a facility. The innovative solutions being put out to market are really taking facility management software beyond just maintenance management and helping facilities teams solve some of their most complex challenges.”

Scott Tillema, Director of Engineering at AkitaBox

In the future, a new generation of facilities leaders will be looking for new, innovative, and easy to use software solutions that can help them solve their complex building challenges. The facility management role is continuing to evolve, and teams will need technology that can grow with those changes. 68% of facilities teams feel that they are appreciated by executive leadership 1, but the next step is for facilities leaders to get a full seat at that executive table. Technology is the stepping stone to get there.
About AkitaBox

At AkitaBox, our mission is to empower building teams to make data-driven decisions that impact the places we live, work and play. As a one-stop shop for data collection, location-based asset mapping and work order management, you are sure to find a solution that meets your needs. With an à la carte service offering, AkitaBox works with you to identify the best solutions to meet your individual facility’s needs. With custom-tailored training and support, our team of success managers will guide you through the entire process from start to finish in as little as 90 days.

To learn more, visit AkitaBox.com
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