
WHITE PAPER



GLOBAL INNOVATIONS IN FACILITIES MANAGEMENT

2020 and Beyond

servest

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“Globally, there are six revolutionary innovations that are disrupting and changing the facilities services landscape.”

The facilities management (FM) industry is witnessing the dawn of a new era of user and occupant experience requirements, coupled with business productivity, service integration and the assimilation of smart, cognitive technology. There are several pioneering and revolutionary technologies that are transforming the FM industry in remarkable ways. From robotics and wearable technology to the Internet of Things, facilities services are becoming more interconnected, instrumented and artificially intelligent.

Six New Technologies

This white paper provides an analysis of six new technologies that are transforming the FM services landscape and the role of FM managers, technicians and service providers. It is based on a survey commissioned by the Servest Group, a global facilities management service provider, entitled:

- 2017 Facilities Management South Africa Survey.¹

INTERNET OF THINGS (IOT)

The Internet of Things (IoT) is enabling buildings and facilities to become more automated and interlinked. Buildings of the future will become laboratories for integrating technology with service design. The IoT makes it conceivable to comprehend what is occurring inside each segment of a building and for robotization, or building automation systems (BAS), to enhance execution and optimise every element. Sensors, thermostats and actuators will evaluate and respond to various devices, machines and areas within buildings, enabling them to exchange information in real-time and perform data-driven functions.

Implementing Efficiencies

By expanding the collective intelligence of buildings, the IoT exponentially escalates the effectiveness and efficiency of systems. Combined with BAS, the IoT is shifting intelligence to connected devices and the cloud, where data is stored and analysed. Once data analytics determines the very best operational choices or corrective actions to take, a BAS assumes its role of coordinating the functions, such as for example turning systems on and off, sending alarms, and making other adjustments.²



THE FUTURE IS SMART BUILDINGS

IoT will also monitor energy usage, climate control and ventilation systems in buildings with intelligent meeting room occupancy systems that direct people to empty rooms or workstations thereby enabling greater productivity.

User Control

Building occupants and users will have direct control with mobile apps that can enable them to control air conditioning, heating and lighting systems from their mobile devices. As an example, guests can automatically be directed to empty parking bays, or, in the case of those who drive hybrid cars, to bays with charging stands. When they enter the building they will be met with their favourite beverage, tea or coffee and their hosts will be notified where they are.

The Future

Put simply, IoT solutions will deliver service on demand, seamless communication and intelligent technology that optimises workplaces. The future is smart buildings.

DRONES

Drones are giving facility managers 'eyes in the sky' by enabling them to access, view and evaluate difficult-to-reach areas in buildings. Erecting scaffolding, work platforms and lifts to inspect rooftops will be a thing of the past as drones will enable inspections of hard-to-reach areas, or those dangerous to monitor, thereby saving time, expense and possible workplace injury.

Removing Challenges

Imagine that the top floor ceiling of a building is starting to leak, or one corner of the outer façade is starting to crack. Every facility manager, and their maintenance teams, battle with these challenges. Drones can address these challenges and simultaneously and swiftly collect and transmit data from these problem areas to a maintenance nerve centre that can deploy teams and equipment to deal with them speedily.

Utilising Drones

Outfitted with various sensors, drones can do many things, from locating survivors in condemned and disaster-stricken buildings, to providing the data to allow 3D reconstructions to be built for analysis, to identifying potentially deadly toxic waste and gas leaks in the air.³ Drones can also be utilised for assessment of property damage claims in the event of natural or man-made disasters, helping maintenance and repair teams to respond after hurricanes, earthquakes, fires and other crises and catastrophes.



Using Drones in FM

The use of drones can be one part of a multi-faceted FM aerial imaging strategy. Piloted drones can be utilised to provide aerial imagery and 3D maps. This is great for insurance inspections as they can help deliver faster, more modernized claim processes. Images and data can be submitted to a group of adjusters who can review these claims within hours and provide the necessary damage assessment reports and related insurance relief.

Qualified Drone Operatives

Drones can also be utilised for indoor inspections, flying up and between stairways, chimneys and lift shafts, thereby extending the reach of technicians. Expect to see a shift in maintenance skills from fixing and doing to technology-enabled automation technicians who drive and operate drones and who then recommend ways to improve efficiencies.

3D MODELING = VIRTUAL ASSET INFORMATION

BUILDING INFORMATION MODELLING (BIM)

Building information modelling (BIM) is currently being used by contractors and architects to develop scale models of building projects. BIM provides a way to organise and access information about a building in a 3D format. While not a new technology, it is just becoming commonplace in FM to give managers virtual models of floor plans and asset information.

Streamlining Activities

BIM, with its visualization, interoperability and information exchange capabilities, can streamline FM activities. A digital representation of the building process can be used to facilitate the exchange and interoperability of information in digital format. The BIM data can then be captured and used across entire project lifecycles.

Using Data in FM

Whatever graphical and non-graphical data of the facility is collected in BIM during the project lifecycle can be used for various FM activities such as commissioning and close out, quality control, energy management, and maintenance and repair. While there are other computer aided facilities management (CAFM) applications in which data related to space management, assets and move management can be processed, the sources of information in these systems vary during the project life-cycle leaving information handover processes inefficient. BIM has the potential to be a catalyst to improve efficiency by establishing the relationships between FM and other disciplines.⁴

Benefits

The biggest advantage to this type of FM is that the user can visually “move,” or search, the database without needing an intrinsic understanding of the facility.



"GREEN" HVAC WILL REDUCE ENERGY COSTS



“Advanced HVAC systems can also learn from past problems while recommending better diagnostics and system adjustments in real-time.”

ADVANCED HVAC

The ability to predict, react to, and prevent maintenance issues is an important focus area for building owners and facility managers when it comes to heating, ventilation and air-conditioning (HVAC) systems. HVAC systems are the beating heart and lifelines of buildings as they maintain internal thermal comfort and indoor air quality. However, they are also becoming integrated with other systems in buildings, making them more advanced, smarter and intelligent.

Smart Monitoring

Advanced HVAC systems are being equipped with “smart” monitoring that constantly tests for any failures, and more importantly, impending malfunctions that can be addressed proactively and before they create real complications. Virtual models of complex systems can be created to isolate faults quickly, increase the speed of troubleshooting and repair and monitor complex integrated building systems. These intelligent monitoring systems are now able to remotely monitor various buildings in many local and global locations.⁵

Reducing Environmental Impacts

“Green” HVAC systems will help reduce the cost of heating and cooling facilities, while also reducing carbon footprints. Some organisations are replacing their cooling towers and air handlers with new HVAC systems that pre-cool air before it hits the system. Instead of running at 100% to cool the air, the systems are running at 40% thereby enabling huge energy and cost savings.

Intelligent Scheduling and Guidance

In the future, integrated HVAC systems will auto create and assign work orders to team members based on the type and location of problems. In fact, the latest, advanced HVAC systems can also learn from past problems while recommending better diagnostics and system adjustments in real-time. This enables them to intelligently guide technicians and engineers directly to the source of any problems enabling them to respond timeously, and productively, to maintenance issues and repairs.

AUTOMATION WILL BE THE KEY TO SUCCESS



AUTOMATION AND ROBOTICS

Robotic systems and products are already being utilised in certain facilities areas, but expect them to become smarter and mainstream. Portering, waste management, security systems and catering services will all be managed by robots, while automation will be the key to success in future buildings.

Developing Robotics

Advances in artificial intelligence, sensor technologies and connectivity means the introduction of robotics to the management, control and cleaning of buildings is on the agenda of many facility managers.

Deploying Robots

New sensor technologies are equipping robots to 'see' obstacles in their path. Coupled with cloud technology that provides the computing power to 'think' and respond contextually to different situations, this raises the possibility of the introduction of robots to perform a range of tasks necessary to maintain a building in good condition. Data throughout the building will deploy robotic cleaning equipment to clean areas that need to be cleaned - and avoiding those that don't.

Creating Efficiencies

Those tasks include cleaning of anything from light fittings to floors and walls, to mowing lawns and vacuuming carpets. These are renowned as 'lowtech' and often backbreaking tasks that traditionally have had to be completed manually, at great cost, and with the added challenge of human resource management.

Reducing Costs

On a more industrial scale, machines that have the ability to negotiate the halls of a hospital, cleaning floors, toilets and waiting rooms, whilst being capable of negotiating its way around the pot plants, finding the windows and distinguishing between linoleum and carpet, could not only deliver a clean facility - it could also reduce the cost of doing so. ⁶



WEARABLE TECHNOLOGY

Yes, even wearables are, and will, have a part to play in FM. Wearables are electronic devices, or sensors, worn on the body as accessories or integrated into clothing. Smartwatches, eyewear, earpieces, headsets, and armbands Servest white paper. ⁷

Improving Standards

These new connected devices will enable facility managers to monitor the most populated areas in a building, where employees spend most of their time, and what can be done to improve chill areas, function rooms, canteens and overall workplace ergonomics.

Supporting Data Collection

Wearable technology will also support data collection in varying physical work environments. Facility managers and resource departments are using organisational real-time executive dashboards for resource allocation. By identifying and supporting employee fitness goals, companies can foster a happier and more productive workforce and workplace design can then manifest those ideals through standing or walking desks, yoga and meditation rooms, interstitial stairs, and other active design principles. ⁷

An Agile Way of Working

In fact, wearable technology will contribute to a fundamental shift in FM leading to super mobile applications that will enable facility managers to carry out tasks anywhere in the world. These will augment FM apps enabling remote management with swift, timely responses.

SOURCES:

¹ 2017 Facilities Management South Africa Survey published by Knowledge Executive

² HPAC Engineering

³ Lia Reich of PrecisionHawk in an article published by Control Solutions Inc.

⁴ Mehmet Yalcinkaya and Vishal Singh, Aalto University, Finland

⁵ Kevin Cavanaugh of Qualtech Systems Inc in an article published by Buildings.com

⁶ Donna White, CEO of North Port Events in an article published by Facilities Integrate

⁷ Dr Chris Brauer, the Human Cloud at Work Report and Interior Architects Inc.

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