DISRUPT OR BE DISRUPTED

5 IMPORTANT AREAS OF INNOVATION IN FACILITIES MANAGEMENT

- **Analytical devices predicting critical HVAC equipment failures to avoid downtime and protect bottom line.**
- **Remote monitoring technologies helping reduce energy and manage site maintenance.**
- **3D space models improving labor productivity, scheduling accuracy, and supply costs.**
- **Robots assuming repetitive tasks, improving productivity and employee safety.**
- **Bluetooth connected devices communicating equipment maintenance needs, reducing unnecessary site visits.**

These are just a few of the many technological advances changing the facilities management industry.

From Internet of Things (IoT) to robotics, innovation is changing the marketplace and facilities landscape. This guide calls on Aramark's subject matter experts to share their professional insights regarding the latest advancements impacting facilities management and the implications of adapting to these fast-paced changes:

#1

PREDICTIVE TECHNOLOGIES

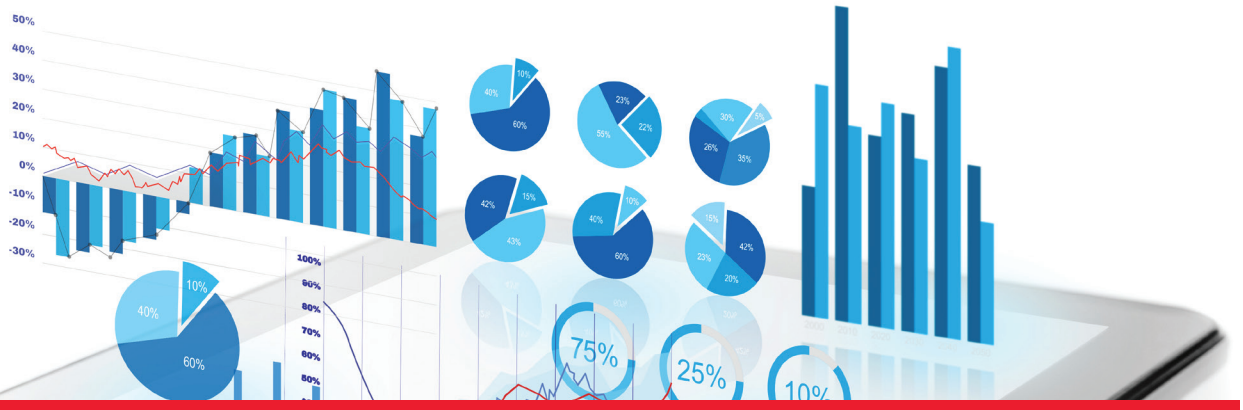
Internet of Things (IoT) Changes Everything

ARAMARK EXPERT: MATT JUDGE
Director, Facilities Program Development and Innovation

Aramark deploys leading-edge predictive technologies—among them vibration diagnostics-as-a-service (DaaS) and smart phone infrared (IR) thermography. Judge explains.

The promise of predictive analytics has tantalized facilities management professionals for years, says Matt Judge, director, facilities program development and innovation at Aramark. The IoT has opened new windows of opportunity to accelerate innovation. One of IoT's greatest advantages is its ability to connect devices and relay data to a central computerized management system.

The acceleration is significant for several reasons, says Judge. "One of the greatest benefits of predictive technologies is containing costs while extending the life of equipment. We are regularly forewarned about equipment performance issues and preemptively schedule repairs and replacements. This avoids program disruption and minimizes costs."



> Without predictive technologies, equipment fails faster and costs more to repair. With predictive technologies, we can proactively maintain equipment and plan for repairs. This can result in a three to 10 times savings."
>
> **—Matt Judge, Director, Facilities Program Development and Innovation**

ARAMARK ON THE LEADING EDGE OF PREDICTIVE ANALYTICS

Vibration diagnostics-as-a-service and infrared thermography are two specialized areas proven to deliver substantial value.

Vibration Diagnostics-as-a-Service

Using a web application and an electronic hardware device with sensors, we can record both Vibration and Ultrasonic analysis for predictive maintenance and mechanical diagnostics. Executed using a handheld device, this analysis provides artificial intelligence to uncover root causes and provide actionable maintenance practices on rotating mechanical equipment within minutes.

Infrared (IR) Thermography Smart Phone Adapter

Maintenance technicians and energy managers can instantly identify hot spots indicating energy waste in walls, overheating motors and insulation voids. A simple adapter can now convert a smart phone into an infrared energy detector. A color-coded heat signature verifies areas of energy waste, failing equipment or potential fire hazards. Problems can be quickly corrected, avoiding wasteful heat loss, reducing energy costs, and increasing the life of a building's many components.

Vibration DaaS identifies mechanical problems in as little as SIX MINUTES, saving clients hundreds of thousands in corrective capital costs.

#2

REMOTE MONITORING

Delivering Centralized Management through Connected Devices

ARAMARK EXPERT: CHRISTOPHER STEMEN
Associate Vice President, Engineering and Asset Solutions

Aramark uses the latest developments in remote monitoring of buildings and equipment across diverse environments to improve operations and manage costs, Stemen explains.

Technology offers a huge opportunity in managing resources and building performance effectively. The value lies in the data that streams from remote sites to a central location, allowing facilities teams to centrally monitor, analyze, and course correct every aspect of a facility. This improves and accelerates decision-making, labor productivity and return on investment.

Connected devices provide facility managers and support teams with greater insight into energy consumption and cost reduction. The devices pair with next-generation energy management software, which provides energy consumption analysis and real-time intelligence to facilitate smarter decisions.

> "What's happening in the residential world with remote monitoring is becoming increasingly applicable on the commercial side. Where homeowners can remotely monitor and schedule their heating, air conditioning, lighting, security and more, businesses are able to remotely monitor and manage those same variables—plus more."
>
> **—Christopher Stemen, Associate Vice President, Engineering and Asset Solutions**

ON THE LEADING EDGE OF REMOTE MONITORING

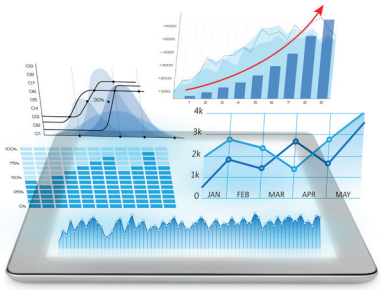
Aramark helps organizations develop remote monitoring technologies for facilities management in four key areas—energy management, site maintenance, telemetry and data and business intelligence.

Remote Energy Monitoring

Remote energy monitoring avoids staff physically inspecting individual equipment, systems, and building performance. This is especially beneficial for owners with multiple locations. From one central hub, personnel can deliver the exact degree of heat or air to any room, determine energy usage rates and identify equipment failure proactively. Remote energy monitoring has **reduced costs in certain facilities as much as 10 percent** while increasing workforce productivity and equipment performance.

Remote Site Maintenance

Small sites, those in sparsely populated areas, or those with many locations are huge beneficiaries of remote monitoring, enabling owners to instantly assess work performance across their portfolio. For example, in the case of energy repairs, staff historically would visit the site to measure and verify the state of the equipment. A return visit was needed after the work was completed to measure and verify the changes. Today, both phases of the operation take place remotely. Owners achieve quality workmanship, faster turnaround times, higher productivity rates and significantly lower costs.



Telemetry Systems

Large facilities like higher education campuses, healthcare systems and factories have thousands of pieces of equipment that require maintenance. All are candidates for monitoring—even something as simple as a hand-sanitizing dispenser. Sending staff to monitor these devices for proper operation and refill is a time-consuming and costly process. Remote telemetry informs staff when service is needed, significantly reducing unnecessary visits, wasted time and excess costs.

Data and Business Intelligence

Beyond day-to-day performance improvements, one of the key advantages of remote monitoring is the quantity and quality of data generated on every level of facilities management. Real time data can highlight anomalies in resource planning and spend, as well as lead to greater understanding of the infrastructure's overall health. For example, data obtained from an evaluation of a campus smart building system revealed that a critical asset was not functioning properly. This intelligence was pivotal for not only extending the equipment life cycle, but **maximizing energy savings of more than $100,000 a year.** Organizations are applying this data to other areas of business intelligence, such as continuous operation improvement and long-term planning, to become better informed about the condition of their entire facilities.

#3

HARNESSING BIG DATA

Visualizing Facilities Improvements

ARAMARK EXPERT: MATT JUDGE
Director, Facilities Program Development and Innovation

Data obtained from technology provides managers with insight never before available. Understanding which systems to deploy and how to interpret the data will be the hallmark of successful organizations in the future. Aramark is implementing a number of these technologies, including integrated workplace management systems (IWMS), building information modeling (BIM), and geographic information systems (GIS).

> "What comes out of our advanced systems on web applications is a vast amount of critical operations data previously unavailable to facility managers and owners. This data directly leads to improved levels of communication, efficiencies, performance and quality control across a campus, school district, healthcare system, or factory."
>
> **—Matt Judge, Director, Facilities Program Development and Innovation**

ARAMARK ON THE LEADING EDGE OF DATA SYSTEMS

Aramark proactively uses technological advances to help facilities management teams achieve more precise data, higher productivity and lower costs.

Integrated Work Management Systems (IWMS)

IWMS is an advanced form of computerized maintenance management software (CMMS) that spans the lifecycle of facilities asset management—from acquisition to operations to disposition. IWMS software is based on a single cloud database platform interconnecting multiple business processes from all disciplines. This facilitates high quality data management collection, service requests, scheduling accuracy, and monitoring and reporting. It allows organizations to optimize use of all resources and assets within an integrated software platform where information can be shared. The result is a greater ability to handle daily tasks and emergencies, while achieving much higher productivity and significant cost savings.

Building Information Modeling (BIM)

BIM holds great potential for facilities management by formulating the creation and visualization of 3D spaces and equipment. It provides professionals with space and assets data, improving overall budgeting, planning and service delivery. Advancements in BIM enable any building to be accurately modeled, resulting in a trove of information for data analysis, virtual equipment diagnostics and improved decision making. BIM saves owners time and money through the accuracy of its data and its virtual visualization capabilities.

Geographic Information Systems (GIS)

While BIM provides visual floor plans of the buildings on a site, GIS provides the ability to capture and analyze accurate spatial data, such as acreage, square footage, linear footage of all hardscapes and softscapes, and even utilities. With this data, facilities teams can better understand staffing levels and schedules, lifecycle and needs of their equipment. The accuracy of spatial data drives savings through improved decision making in staffing, and scheduling, while providing owners with greater insight into their master planning.

#4

ROBOTICS AND SENSORS

Doing the Repetitive "Dirty Work"

ARAMARK EXPERT: CRAIG ARNOLD
Director of Systems Development & Technical Support, Education

Aramark has been exploring robotics since the 1990s, looking for new opportunities to develop and incorporate these technologies within the day-to-day operations. Although still in the early stages, these advancements hold promise for the future of facilities management.

ARAMARK EXPLORES THE LEADING EDGE OF ROBOTICS

"By 2025, we will see a major change in robotics." said Craig Arnold, director of systems development and technical support for Aramark Education services. "For example, robotics will allow us to do certain repetitive jobs faster and safer, freeing employee time for more of the core work."

Sensor technology and software are critical elements that must continue to evolve in order for robotics to reach its full potential. "In the future, improved sensor technology, lasers, and 3D cameras will help robotic cleaning equipment get closer to the walls, improve ability to operate in tighter spaces, and handle dynamic environments more productivity."

> "The priority is always to improve the safety and productivity of employees. Robotics can help by handling the dirty, repetitive or even dangerous tasks, a win-win for everyone."
>
> **—Craig Arnold, Director of Systems Development & Technical Support, Education**

#5

INNOVATIVE PARTNERSHIPS

Providing Service Improvements through Strategic Partnerships

ARAMARK EXPERT: DON PYLES
Associate Vice President, Facilities Center of Excellence

Aramark forges relationship with many of the world's leading companies creating innovations that directly impact facilities management. Aramark's customers reap the rewards of partnering with a service provider who is dedicated to continually improving facilities management. Pyles explains.

Aramark's ability to forge valuable partnerships with innovators in leading-edge technologies leads directly to service improvements for its customers. Our partnerships involve design, development, product incubation, pilot programs, integrated program training, and thought leadership. We work with our channel partners to bring best solutions to our clients and the industry.

FOCUS ON INNOVATION: CURRENT PARTNERSHIPS

Here are just a few examples of how Aramark partners with industry leaders to improve service:

Improved healthcare environment for patients

Aramark partnered with a leading graphics provider to make bulky, omnipresent equipment more engaging and appealing to our clients and customers. The result is the first fully wrapped floor care machine, driving greater customer engagement and community awareness in a children's healthcare environment.

Increased efficiencies and cost savings

By partnering with a leading floor finishing provider, Aramark successfully reduced a two-step floor care process of stripping and burnishing down to a single step. Floors require less maintenance over time, reducing labor, disruption and cost for stripping floors while increasing staff productivity.

Reduction in healthcare-associated infections

A partnership with a disinfection system delivered complete terminal room cleaning. Healthcare clients experienced a 30 percent decrease in health care-associated infections (HSAs), as well as 100 percent elimination of human error in the cleaning process.

> Our partnerships are important, because we work with world leaders in their markets. Each of our clients automatically gains the benefits of our partner's innovations. Our clients can be confident that we don't have almost the best: We have The Best."
>
> **—Don Pyles, Associate Vice President**

Aramark continues its quest for innovation with a focus on improving the quality of work for employees, delivering better service to our clients and customers, and reducing the cost to clients. With a long history of technological advances and partnerships, Aramark pledges to continue this commitment to innovation.