



Operational intelligence in asset management: **A practical guide to using real-time data for better maintenance decisions**

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Introduction

Now more than ever, facilities teams have myriad tools to elevate their maintenance routines to achieve operational excellence. Yet, silos persist as teams struggle to mine the rich data derived from manuals, work order histories, logs, sensors and more, creating a data gap between what is happening within the equipment and what a technician actually sees.

The inability to gain a 360-view into these disparate information sources is the key factor in reactive firefighting, when teams fall into “fix-it-when-it-breaks” routines that ultimately result in costly downtime — which can average \$260,000 per hour in industrial environments¹ — shortened asset lifecycles and inflated labor costs.

As AI, digital twins and other emerging technologies usher in the next era of digital transformation, maintenance teams are getting busier as their assets grow smarter, clearing the way for better, more proactive strategies that drive efficient, sustainable operations. To get there requires a move toward systems where information is available exactly when and where teams need it most.

With organizations managing a growing mix of asset knowledge, performance information and institutional expertise, operational intelligence (OI) is emerging as an effective framework to make sense of it all. It provides the necessary structure to transform [scattered data](#) into a clearer understanding of asset health, maintenance priorities and business impact.



What is operational intelligence?

Operational intelligence is the practice of using real-time data to see exactly how your assets are performing at that moment and providing that insight to the people who can effectively act on it.

It reaches far beyond technology alone to serve as the central dashboard connecting equipment, software and facilities teams.

Critical information from across the maintenance environment is brought into a single, customizable view, reducing the need to navigate between disconnected systems, records and repositories. Armed with this common

operating picture, everyone from field technicians to executive decision-makers can clearly understand asset conditions, evaluate priorities and support long-term performance goals.

The impact of operational intelligence becomes visible in improved workflows that influence how equipment conditions are interpreted, maintenance routines are coordinated and lessons learned in the field are retained and shared over time. This informed approach to asset management creates continuity between people, processes and assets to help organizations maintain a consistent view across their entire operational ecosystem.

How does operational intelligence work?

In asset management, operational intelligence follows a four-step cycle that begins with data collection and culminates in establishing a feedback loop that continually improves your organization's knowledge base. Each stage is a link in the OI chain, transforming raw asset data into actionable insights that can be used to support improved maintenance strategies, strengthen decision-making and establish long-term asset performance.

Step 1: Data collection

The first stage of OI involves gathering information from across the asset ecosystem. This includes data generated by connected equipment, condition monitoring devices, IoT sensors, inspection reports, work orders and maintenance histories. Technical documentation, service records and operational logs also contribute important context.

While each source provides valuable information on its own, under operational intelligence, they collectively create a more complete picture of what is happening across an organization's asset and facilities environment.

Step 2: Data integration

With information gathered, it must be connected and organized in a way that provides meaningful context. OI links live asset data to maintenance records, equipment specifications, digital manuals, service bulletins and other supporting documentation. Rather than forcing technicians to search across multiple systems for answers, relevant information is associated directly with the identified asset — allowing maintenance teams to understand not only what is occurring, but also how current conditions relate to an asset's history, design requirements and previous maintenance activities.

Step 3: Intelligent guidance

With information consolidated into a single view, analytics and AI can evaluate asset conditions and identify the most relevant next steps. Patterns that may be difficult to detect manually can be recognized almost immediately, helping maintenance teams prioritize their efforts more effectively.

Instead of reviewing hundreds of pages of technical documents or searching through years of work order history, personnel receive recommendations that are tailored to a specific asset, issue or operating condition. This accelerates troubleshooting, supports more consistent maintenance practices and helps ensure that critical information is available when it is needed most.

Step 4: Knowledge capture

Operational intelligence continues to deliver value long after a maintenance activity has been completed. Findings from inspections, repairs and corrective actions are captured and added to the organization's growing body of institutional knowledge.

Over time, this creates a continuously evolving resource that reflects real-world operating experience across assets, facilities and teams. Lessons learned from one technician, location or maintenance event can be leveraged across the broader organization, enabling future recommendations to become increasingly relevant and effective.

Operational intelligence's value proposition

Facilities teams that adopt operational intelligence into their digital transformation and maintenance strategy plans can more efficiently translate information into action to implement meaningful improvements across maintenance routines, workforce productivity and asset health. The value of this approach is evident in four key areas:

1

Reduced wasted time

Technicians spend less time searching for information and spare parts, reducing maintenance delays and helping teams move beyond the industry average of 25% to 35% wrench time.²

2

Simplifying decisions

Contextualized information and AI-driven recommendations help teams respond to asset issues with greater confidence and consistency.

3

Closing the experience gap

Institutional knowledge is preserved and shared across the organization, helping newer personnel benefit from years of accumulated expertise.

4

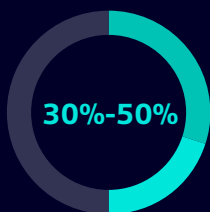
Improving first-time fix rates

Greater visibility into asset conditions, maintenance histories and recommended actions helps technicians resolve maintenance issues on the first try.

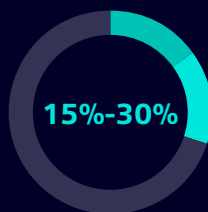
The cumulative impact of these improvements is in the numbers. Organizations that successfully implement real-time data strategies typically see a 30% to 50% reduction in unplanned downtime, a 15% to 30% decrease in total maintenance spend and an extension of equipment useful life by 20% to 40%, according to Siemens' [True Cost of Downtime Report](#).

The benefits of operational intelligence are often realized through the daily work of managing assets, responding to equipment issues and carrying out maintenance tasks across the organization. Each interaction contributes to a more informed asset management strategy, where data is continuously transformed into knowledge, action and long-term operational success.

Organizations that implement real-time data strategies typically see:



reduction in unplanned downtime



decrease in total maintenance spend



extension of equipment useful life

Why operational intelligence matters in your industry

Although the advantages of operational intelligence are broadly applicable, the way they are realized often depends on an organization's operating environment. From hospitals and senior living communities to manufacturing facilities, schools and government agencies, operational intelligence helps address the unique demands associated with managing complex assets at scale.

Education | Manufacturing | Government | Healthcare | Senior Living





Education | Manufacturing | Government | Healthcare | Senior Living

School districts, colleges and universities are responsible for maintaining safe, comfortable learning environments while balancing limited resources, aging infrastructure and competing budget priorities. From classroom HVAC systems and lighting to athletic facilities, laboratories and campus utilities, facilities teams are often tasked with managing a diverse portfolio of assets spread across multiple buildings.

Operational intelligence helps bring greater clarity to these environments by providing facilities teams with timely insight into asset conditions, maintenance needs and operational performance. Information gathered from connected equipment, work orders, inspections and facility systems can be viewed alongside historical records and maintenance knowledge, helping teams identify emerging issues before they disrupt the learning experience.

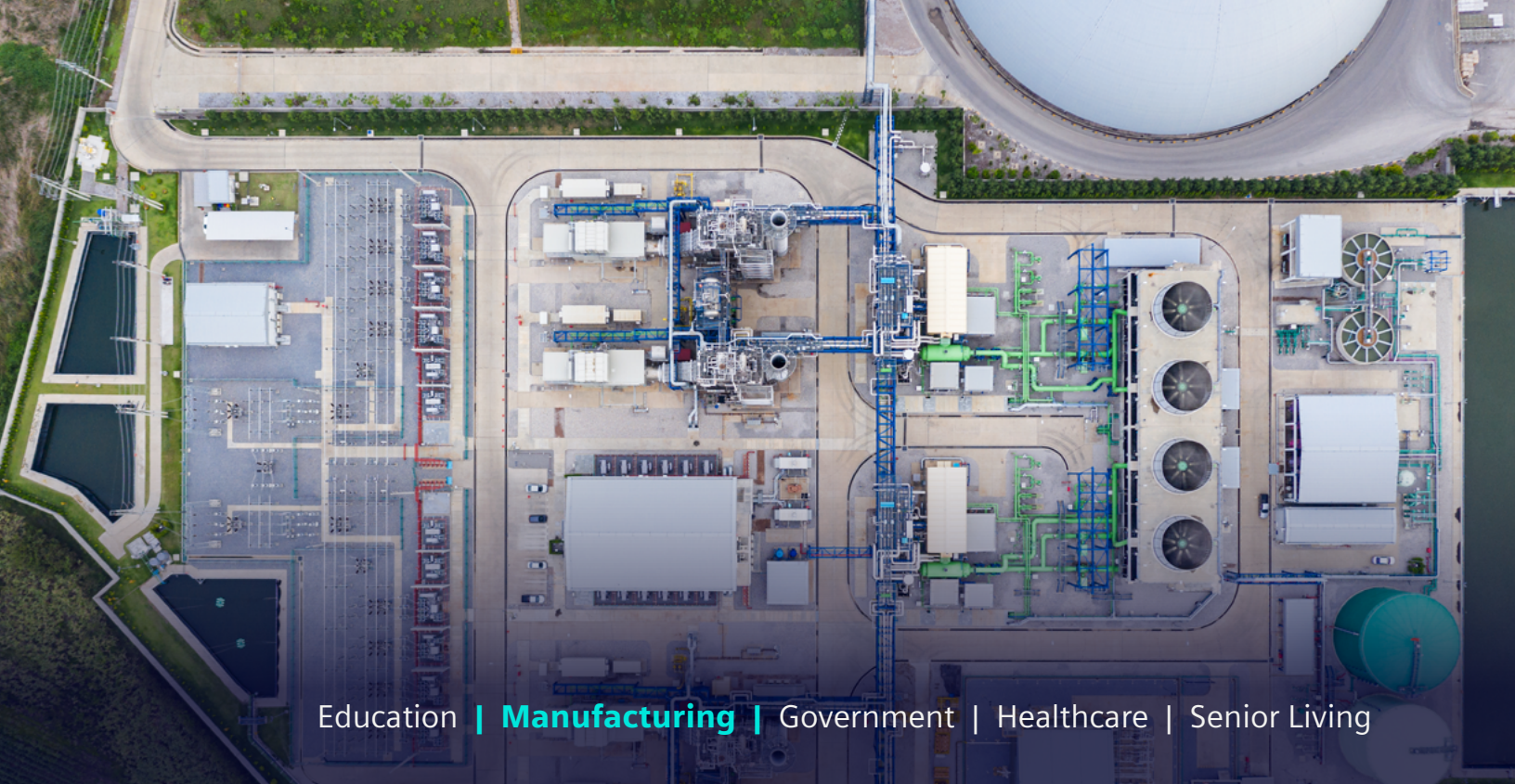
Maintenance teams with access to a complete picture of facility operations can more effectively prioritize work, reduce time spent searching for information and make

better use of available resources. This creates opportunities to improve asset reliability, support long-term capital planning and maintain learning environments that remain safe, efficient and dependable for students, faculty and staff.

[Loyola University](#) New Orleans, for example, adopted a data-driven approach using real-time work order tracking to shift from crisis-driven repairs to a proactive preventive maintenance model following significant infrastructure challenges.

“We’re shifting from being a crisis response team to a preventive maintenance workforce.”

— **Kyle Gregore**, Director of Facilities,
Loyola University New Orleans



Education | **Manufacturing** | Government | Healthcare | Senior Living

Manufacturing facilities depend on reliable equipment, coordinated maintenance programs and uninterrupted production schedules to meet output targets and control operating costs. As machinery, automation systems and production environments become more complex, maintenance teams often struggle to manage disparate information scattered across multiple systems, records and data sources.

Operational intelligence helps bring these information streams together, providing clearer insight into asset conditions and maintenance priorities across the production floor. Equipped in this way, maintenance teams gain access to real-time equipment data alongside work order histories, technical documentation and past repair records, allowing them to identify emerging issues before they halt production. This shared operating view also enables teams to prioritize resources, streamline troubleshooting efforts and respond more effectively to changing operating conditions.

Supporting a more informed approach to asset management, this operational intelligence reduces time spent searching for information, improves maintenance planning and preserves valuable institutional knowledge. As a result, manufacturers can strengthen equipment reliability, minimize production disruptions and create greater consistency across maintenance routines, helping critical assets perform at their best throughout their lifecycle.

Graceland Fruit, for example, used this data-driven approach to improve its inventory accuracy from 75% to 95% and increase its work order completion rate by 14%, ultimately saving technicians more than 80 hours per week by eliminating manual data entry.

“Everybody was queued up at desktop computers before; now, each one of those guys has their own device, eliminating bottlenecks.”

— **John Murray**, Fractional CIO,
Graceland Fruit



Education | Manufacturing | **Government** | Healthcare | Senior Living

Government agencies are responsible for maintaining critical infrastructure that residents depend on every day, from water and wastewater systems to public buildings, transportation assets and community facilities. When information related to these assets is scattered across multiple systems, records and departments, facilities teams may struggle to respond quickly to emerging issues, prioritize limited resources and plan effectively for the future.

Operational intelligence helps bring greater clarity to these environments by combining asset data, maintenance histories, technical documentation and operational information into a unified view. This broader perspective allows teams to better understand infrastructure conditions, identify patterns that may indicate future failures and determine where maintenance resources will have the greatest impact.

These insights support a more informed approach to asset management by strengthening maintenance planning,

improving resource allocation and preserving valuable institutional knowledge. With a clearer understanding of asset performance and operational priorities, government organizations can deliver more reliable public services while making the most of limited budgets and staffing resources.

In 2025, [Washoe County](#), Nevada, enhanced its facility oversight by integrating advanced data-sharing tools to track real-time KPIs, ensuring more transparent reporting and efficient resource allocation across its public buildings.

“Data Share and Asset Essentials not only guide operational decisions but also show what we can achieve with available resources and what’s at stake if those resources change.”

— **Aaron Smith**, Operations Director,
Community Services Department,
Washoe County



Education | Manufacturing | Government | **Healthcare** | Senior Living

Healthcare facilities operate in environments where equipment reliability can directly affect patient safety, regulatory compliance and continuity of care. From HVAC systems that support infection control to sterilization equipment, generators and critical medical infrastructure, facilities teams are responsible for maintaining a wide range of assets while ensuring minimal disruption to clinical operations.

Operational intelligence helps these teams make sense of the information generated across healthcare environments by bringing together asset data, maintenance records, technical documentation and operational insights into a single view. With a clearer understanding of equipment conditions and maintenance priorities, teams can identify potential issues earlier, accelerate troubleshooting efforts and make more informed decisions regarding critical assets.

This connected approach helps reduce time spent searching for information, strengthens compliance readiness and ensures valuable institutional knowledge remains available

across departments and facilities. As a result, healthcare organizations are better positioned to support reliable operations, optimize asset performance and maintain environments that enable safe, high-quality patient care.

Martha's Vineyard Hospital, for example, recently utilized a mobile-first maintenance strategy to provide technicians with real-time access to equipment history, successfully reducing work order completion times from months to just days.

“We’ve seen a huge increase to the services we’re able to provide to our community through a safer, more streamlined operation.”

— **Braden Witt**, Lead Mechanic,
Martha’s Vineyard Hospital



Education | Manufacturing | Government | Healthcare | **Senior Living**

Senior living communities rely on safe, comfortable and dependable environments to support resident well-being and quality of life. From HVAC systems and elevators to emergency generators, security systems and common-area infrastructure, facilities teams must ensure critical assets remain operational while balancing resident expectations, staffing demands and budget constraints.

Operational intelligence helps facilities teams gain a clearer understanding of asset conditions by bringing together information from building systems, maintenance records, inspections and equipment histories into a single view. With access to both current operating conditions and historical context, teams can identify developing issues earlier, prioritize maintenance efforts and coordinate work more effectively across their communities.

These insights help reduce unplanned disruptions, support more consistent resident experiences and strengthen long-term asset management strategies. When facilities personnel can quickly access the information

needed to act, they are better positioned to improve equipment reliability, manage resources efficiently and maintain the safe, comfortable environments residents depend on every day.

Recently, [Clark Retirement Community](#) implemented a centralized dashboard to track maintenance interactions, allowing leadership to “accurately and intelligently speak to when [work] will be done and by whom” to ensure a consistent resident experience.

“I can keep going back to [the administration] with this data and prove that this software is working for Clark, for our staff, and for our residents.”

— **Amy Bromm**, Facilities Coordinator,
Clark Retirement Community



Conclusion

Asset management has always been defined by the pursuit of greater reliability, stronger sustainability stewardship and more data-informed decision-making. On that score, modern facilities generate no shortage of information to support these goals. Yet, data alone offers limited value unless it can be translated into actionable insights.

Operational intelligence provides the framework for transforming disparate data points into a connected body of knowledge that evolves alongside organizational needs and changes. It delivers measurable results quickly, with most facilities teams achieving a positive return on investment within six to 18 months³ — proving that better data, in addition to being a technical catalyst, is also a financial win.

A technician troubleshooting a recurring equipment issue, a facilities manager balancing competing priorities and a leadership team planning future investments all rely on different forms of information to carry out their responsibilities. Operational intelligence creates continuity across these duties, ensuring

that maintenance work contributes to a broader understanding of asset performance rather than existing as isolated events.

Over time, this continuous exchange of information, experience and action becomes an organizational asset in and of itself. Institutional knowledge is retained rather than walking out the door. Decisions are firmly supported by context. Maintenance strategies evolve in parallel with changing operational demands, workforce fluctuations and increasingly complex asset infrastructure.

The organizations best positioned for the future will be those capable of creating consistency between what their assets are communicating, what their teams are experiencing and what their organizations need to accomplish. Operational intelligence provides the framework to maintain that consistency at scale, helping facilities teams preserve context, coordinate effort and apply knowledge wherever it can deliver the greatest value.

Sources

¹ [The True Cost of an Hour's Downtime: An Industry Analysis](#) (Siemens/Senseye)

² [What is Wrench Time in Industrial Maintenance?](#) (Advanced Technology Services)

³ [The ROI of Predictive Maintenance](#) (Reliabilityweb)

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