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LEVERAGING AI-DRIVEN PREDICTIVE ANALYTICS IN:

IBM MAXIMO 9
FOR PROACTIVE FACILITIES MANAGEMENT

Executive summary

Facility managers who lack visibility into aging-asset health and sufficient analytics for comprehensive asset data often struggle with reactive maintenance, leading to increased failure rates, higher repair costs, and negative operations impacts.

For example, **a lack of accurate data** makes it nearly impossible to determine which assets will fail next, which leads to:

- Under- or over-maintained equipment
- Increased maintenance costs
- Reduced reliability and performance of facility operations

Limited access to asset health data hinders maintenance optimization, which can cause:

- Unplanned downtime
- Undetected asset issues
- Reduced productivity and profitability

When facility managers have to focus on crisis management and unexpected outages, they can miss opportunities to perform maintenance at low-impact times and struggle to anticipate and prevent asset failures. This reduces asset lifespan, increases capital expenditures, and impacts the facility's overall productivity and financial health.

AI-driven predictive analytics allow facility managers to shift from expensive reactive operations to proactive cost-efficient strategies. The IBM Maximo Application Suite (Maximo 9) harnesses advanced AI and predictive analytics to provide deep insights into asset health, optimize maintenance schedules, and minimize disruptions.

This paper explores how facility managers can leverage Maximo 9's AI-enhanced features to help:

- Predict equipment failures before they occur
- Enhance efficiency
- Reduce costs
- Improve operational reliability

The paper also highlights Deloitte's experience leveraging AI for facilities management and maximizing the value of Maximo 9, ultimately driving facility efficiency and lowering maintenance costs.

Introduction: The need for proactive facilities management

Facilities maintenance has long reacted to equipment failures and breakdowns only after they occur. This run-to-failure methodology has a cascading effect on operations from delays in production schedules to reduced customer satisfaction.

As new facilities introduce Internet of Things (IoT)-enabled assets with asset monitoring capabilities, they can use the asset sensors to generate real-time data and insights for improving facilities management. But facility managers must make sense of and act on this large influx of data from perhaps thousands of connected assets. Managing numerous IoT-enabled assets requires advanced systems and a strategic approach to ensure that the data collected is used to optimize operations.

- Without advanced systems to monitor and interpret data, analysis paralysis can overwhelm facility managers.
- Without actionable data, the higher costs and increased downtime of reactive maintenance can limit energy efficiency goals.
- Without data-driven optimization, aging assets are more likely to prematurely fail, leading to increased carbon emissions, parts consumption rates, and energy consumption.

Reactive maintenance typically requires resource-intensive emergency interventions that can harm the environment and push energy efficiency goals out of reach, including reduced carbon footprint targets and regulatory compliance.

Alternatively, condition-based and predictive maintenance—enabled by AI and predictive analytics—empowers managers to identify and resolve issues before they become costly equipment failures. IBM Maximo 9 provides these advance AI-driven tools that empower facility managers to:

- Predict asset failures
- Proactively schedule maintenance activities
- Optimize resource allocation

Facility managers can then use Maximo 9 to enhance operational reliability, reduce maintenance expenditures, improve asset performance, and extend the lifespan of critical infrastructure.

Additional challenges in today's facilities management

Another challenge that facility managers face is a retiring, experienced workforce and the loss of valuable institutional knowledge. As seasoned technicians retire in greater numbers, facility managers may struggle to maintain viable service levels as newer staff lack the expertise needed to diagnose and resolve complex issues. This shortage of experienced personnel can:

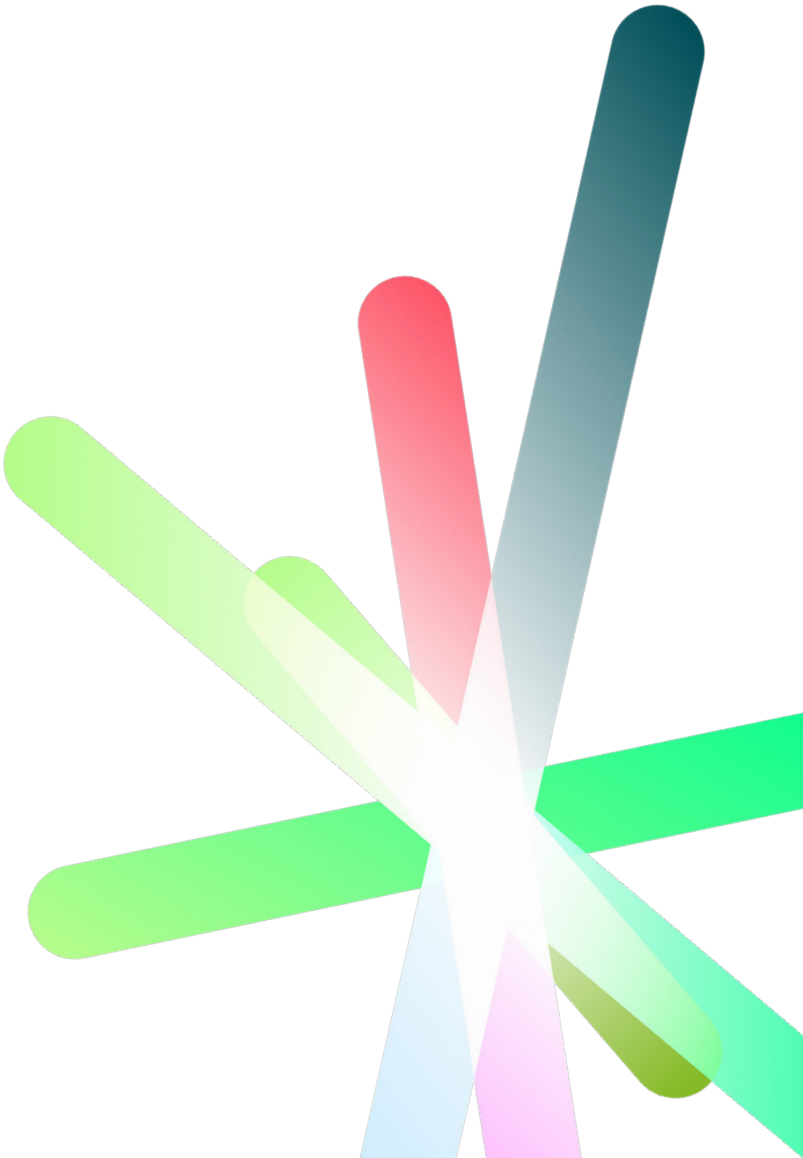
- Exacerbate maintenance delays
- Reduce the availability of facility services and features
- Negatively impact both operational reliability and customer satisfaction

The need to capture and transfer critical institutional knowledge to new technicians also creates additional time and resource demands, further straining facility operations.

The retirement boom also creates a competitive job market, where skilled maintenance professionals are in high demand, potentially leading to further losses of valuable personnel.

To mitigate the impact of this talent loss and keep facility managers out of a talent bidding war, analyzing historical maintenance data to recapture lost institutional knowledge becomes critical. By leveraging AI-driven analytics, facility managers can extract insights from past maintenance activities to help build a digital knowledge base that can guide newer technicians.

This approach empowers facility managers to bridge the skills gap and increase the productivity of less experienced staff by providing actionable recommendations and best practices derived from historical data. Leveraging AI in this way ensures that valuable expertise is preserved and used to achieve high standards of facility operations.



Maximo 9: AI-driven predictive analytics for proactive maintenance

The IBM Maximo Application Suite addresses challenges by providing advanced AI-driven predictive analytics that empower facility managers to transition from reactive to proactive maintenance strategies. The following key features of Maximo 9 can support proactive facilities management and the recreation of institutional knowledge:

1

PREDICTIVE MAINTENANCE: Maximo 9's AI algorithms analyze historical work orders, sensor readings, and other asset-related information to predict potential failures before they occur. This allows facility managers to:

- Plan and schedule maintenance activities
- Reduce unexpected downtime
- Lower lifecycle costs
- Extend asset lifespan

AI-powered analytics use historical data to establish maintenance best practices and identify common failure patterns to recapture lost institutional knowledge. By focusing efforts on assets most likely to fail, facility managers can allocate resources more effectively and avoid unnecessary maintenance on equipment that is in good working condition.

2

REAL-TIME MONITORING AND ALERTS: Maximo 9 continuously collects data from connected assets and uses AI models to detect impending failures. It can also create work orders and alert facility managers to take action before any failures occur, reducing the risk of costly repairs and operational disruptions. Real-time dashboards provide up-to-date information on asset health, empowering teams to make better-informed decisions and prioritize maintenance tasks. Moreover, teams can add newly collected data to institutional knowledge databases to help newer technicians understand asset behavior and recognize early warning signs of potential failures.

3

HEALTH AND RISK ASSESSMENT: IBM Maximo 9's Health module provides a comprehensive view of asset health by assessing performance metrics, usage patterns, failure patterns, and historical data. These AI-driven health scorecards help facility managers understand the current state of their assets and prioritize maintenance based on risk levels. This helps ensure critical assets are maintained optimally and less likely to experience unplanned downtime. By identifying at-risk assets early, facility managers can:

- Avoid costly unplanned downtime
- Extend asset life
- Contribute to greater operational stability and reliability

Additionally, with health assessments derived from historical data, teams can recapture experienced technicians' expertise, which increases the effectiveness of less experienced staff.

4

DATA INTEGRATION AND AI INSIGHTS: The Maximo Application Suite integrates data from IoT sensors, legacy maintenance systems, and other sources to provide a unified view of facility operations. The resulting insights empower facility managers to:

- Make improved data-driven decisions
- Optimize maintenance schedules
- Prioritize asset inspections
- Allocate resources efficiently

By integrating multiple data points, Maximo 9 helps overcome data silos to provide a holistic view of asset health and performance. The insights gained from analyzing current maintenance activities then adds to the organization's institutional knowledge, making it accessible to current and future team members and continually improving productivity.

Benefits of AI-driven predictive analytics in facilities management

The use of AI-driven predictive analytics in facilities management offers several advantages, including:

- ***REDUCED DOWNTIME:*** Identify potential equipment failures before they occur, minimize unplanned downtime and enhance operational reliability. This allows facility managers to schedule maintenance during times of minimal operational impact, minimize productivity disruption, and maintain consistent service levels, which impact customer satisfaction. Additionally, by analyzing historical maintenance data, AI can help identify recurring patterns and provide preemptive warnings that reduce future downtime.

- ***OPTIMIZED RESOURCE ALLOCATION:*** AI-driven insights facilitate better, more efficient maintenance planning, scheduling, and allocation. Instead of over-maintaining or under-maintaining assets, facility managers can focus on the right assets at the right time, reducing costs and improving efficiency. This approach also reduces the workload on overworked maintenance teams, allowing teams to focus on higher priority tasks.

- ***EXTENDED ASSET LIFESPAN:*** By addressing breakdowns before they happen, which can cause premature wear on overall systems with downstream impacts, predictive maintenance helps extend the lifespan of aging assets. Less stress on aging infrastructure often results in fewer replacements needed, reduced capital expenditures, and smaller environmental impact. Extending asset life also means that facilities can avoid protracted service disruptions due to major replacement campaigns, which leads to more stable operational availability.

- ***INSTITUTIONAL KNOWLEDGE RETENTION:*** By analyzing historical work orders and IoT data streams, AI can help recapture lost institutional knowledge by exiting experienced technicians. Historical data analysis helps identify maintenance activities that have extended asset life in the past so facility managers can create a dependable body of maintenance knowledge. This AI-driven institutional knowledge can also help identify new maintenance strategies, allowing facilities to achieve greater savings without compromising operational quality.

- ***COST SAVINGS:*** Proactive maintenance strategies reduce asset lifecycle costs by preventing major failures and minimizing the need for emergency interventions. Improved efficiency of maintenance activities lowers operational expenses, reduces energy consumption, increases energy efficiency, and adds to overall regulatory compliance. By extending the meantime between failure rates and reducing the need for emergency repairs, facilities can achieve significant cost savings, which they can reinvest to drive energy efficiency and modernization goals.

Overcoming the challenges of data management

The need to collect, store, synthesize, and analyze data from a wide range of different sensors can be overwhelming. IoT data often comes in different formats, which can also make consolidation and interpretation difficult. Without an effective data management plan, the resulting data overflow can lead to missed opportunities to derive actionable insights, reduce costs, and minimize carbon footprints.

Maximo 9 can reduce the complexity of data management and allow facility managers to make informed maintenance decisions that improve asset performance and energy efficiency. By providing centralized, organized, and concise views of all asset data, Maximo 9 makes it easier to:

- Identify patterns
- Predict issues
- Take corrective actions before problems escalate

Maximo 9's blend of new and historical data analysis also plays a crucial role in capturing and preserving institutional knowledge—retaining valuable expertise even as experienced technicians retire or move on.

Conclusion

AI-driven predictive analytics can transform facilities management, empowering facility managers to shift from reactive to proactive maintenance strategies. The IBM Maximo Application Suite provides a comprehensive mix of technologies that leverage AI to predict asset failures, optimize maintenance, improve overall operational efficiency, and achieve energy efficiency goals.

By leveraging Deloitte's experience in helping organizations implement enterprise-wide digital transformation, and leverage the AI-driven benefits of Maximo 9, organizations can reduce downtime, extend asset life, achieve significant cost savings, support regulatory compliance, reduce carbon footprints, and help preserve their institutional knowledge.

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