Playbook

The AI playbook for smarter maintenance and asset management operations





Turn AI potential into measurable impact across the work that keeps operations running



Maintenance and asset management operations teams are under more pressure than ever. Growing complexity, rising expectations of uptime and reliability, low operating costs, and faster issue resolutions are just some of the challenges they face. At the same time, AI is rapidly reshaping what's possible—but knowing where to start, or where it can add value, isn't always clear.

This playbook helps you cut through the noise and focus on what matters: real, actionable ways AI can improve asset and facility operations.

You'll learn how to:

- Identify high-impact opportunities to use AI for your business.
- Take practical, low-risk steps to get started with AI.
- Connect AI to maintenance and asset operational work.



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It’s underutilized.

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01

Data isn’t missing. It’s underutilized.

Data isn’t missing. It’s underutilized.

Maintenance and reliability teams capture vast amounts of information—from structured work orders and asset hierarchies to inspection notes and asset condition data. However, data alone doesn’t turn information into insight and action.

In many cases, the challenge is that data isn’t consistently structured, connected or ready to be used at scale. Instead, it remains fragmented across enterprise asset management (EAM), enterprise resource planning (ERP), asset performance management (APM), field service management and inventory systems.

As a result, teams struggle to act on the information. Without a unified and well-structured view of assets, it becomes difficult to extract meaningful insights, prioritize maintenance or respond to emerging risks.



Data isn’t missing. It’s underutilized.

How familiar are these challenges within your organization?



A senior technician leaves— and suddenly routine failures take far longer to diagnose. The fix hasn’t changed. The knowledge is no longer accessible when it’s needed.



Information is fragmented— with no single authoritative view. Teams are forced to manually correlate sources to understand context, dependencies and impact.



The backlog keeps growing— but no one has a clear view of what matters most. Work orders accumulate, priorities shift and determining urgency still requires significant manual effort.

02

How AI changes maintenance and asset operations

Most AI transformation efforts fall short because adding more dashboards and integrations doesn't turn fragmented data into usable, actionable insights.

Newly hired technicians head into jobs without full context, relying on veteran technicians for the right answers. Maintenance, plant and site managers juggle scheduling, work order completion and safety while keeping operations on track. Meanwhile, engineers analyze patterns to anticipate failures and respond when they recur.

AI changes these workforce issues by showing up inside the work itself—where decisions are already happening. It functions not as a new tool or another dashboard. AI functions as an intelligent system of action that connects data, context and decision-making within existing workflows.

1

Unified access: Bring the right information together
AI connects information across EAM, computer maintenance management systems (CMMSs), APM, ERP and other operational systems, creating a single point of access to work orders, inspection reports, maintenance history, manuals and asset documentation. Teams can retrieve the data they need through a single interface.

2

Actionable understanding: Turn data into decisions
AI transforms operational data into clear, prioritized insights and recommendations. Rather than spending time reviewing records, teams receive guided actions and contextual intelligence that accelerate and improve decision-making.

3

Proactive detection: Trigger smarter responses
AI continuously monitors operations to identify patterns, risks and anomalies. By surfacing what matters and prompting timely actions, it helps teams shift from reactive response to proactive maintenance and reliability management.

4

Contextual delivery: Apply intelligence where it matters
AI delivers the right insights, actions and automation in context. Tailored to roles, embedded in daily processes and backed by trustworthy, extensible architecture, it helps enable teams to act quickly, confidently and at scale without leaving their workflow.

03

When AI meets real workflows

What does applying AI to maintenance and asset operations look like in practice?

The following real-world examples illustrate how intelligence appears exactly when and where it’s needed, adding context, surfacing insight and supporting decisions without interrupting the task at hand.



Field Technician
Work happens in the field, where decisions must be made quickly and often with incomplete information. Instead of searching across systems or relying on legacy knowledge, technicians receive relevant operational context as part of the task itself.



Maintenance Manager
Managing maintenance means balancing risk, resources and production priorities. AI helps transform incoming work, asset conditions and maintenance history into actionable insight that supports better planning and scheduling decisions.



Reliability Engineer
Reliability teams focus on understanding systemic issues and preventing future failures. AI continuously analyzes operational and maintenance data to identify trends, recurring failure modes and hidden risks that may otherwise remain buried across systems.

04

Before and after

Before and after

When AI is applied in context, everyday operational challenges evolve into opportunities. These opportunities convert daily friction into measurable improvements in efficiency insight and performance.

Shifting from	↷ Before AI	↷ With AI	↷ Operational win
Search to context	Technician manually searches old work orders and manuals.	AI surfaces relevant asset history, prior fixes, and procedures.	Less search time and faster troubleshooting.
Manual documentation to automated summaries	Teams write updates and recaps from scratch.	AI drafts summaries based on work order context and recent activity.	Less administrative effort and more consistent documentation.
From intuition to prioritized backlog	Managers sort through noisy queues and competing priorities.	AI highlights backlog risk, recurring delays, and likely bottlenecks.	Better planning and more confident prioritization.
From repeat failures to pattern detection	Recurring issues are hard to connect across fragmented records.	AI identifies patterns across maintenance and performance history.	Faster investigations and fewer repeat failures.
From reporting chores to operational briefings	Managers spend time pulling updates from multiple sources.	AI generates operational summaries and status narratives.	More time for decisions, less time formatting reports.

05

Where AI may fail, and how to fix it

AI delivers impact only when it becomes part of operational execution. In facilities and asset-intensive operations, you realize value at scale when intelligence is embedded in your workflows and trusted by the teams who rely on it.

The difference comes down to avoiding a few common mistakes:



Treating AI as a standalone tool

Risk
Low adoption when AI feels like *extra work* outside existing systems.

Fix
Adopt and embed AI into core applications and workflows so it supports decisions in context, not as a separate step.

Over-automating decisions

Risk
Reduced transparency and user confidence.

Fix
Keep humans in control—AI should provide recommendations and insights that users can evaluate and act on.

Starting too big

Risk
Delays and stalled initiatives due to complexity.

Fix
Begin with targeted, high-value use cases that demonstrate measurable impact and build momentum.

Underestimating adoption

Risk
Strong capabilities that go unused.

Fix
Design around real user workflows and provide context so users understand how AI insights are generated and applied.

06

The 5-step path to AI adoption

The path to AI-driven maintenance and asset operations is rarely a single transformative leap.

Sustainable progress comes from establishing trust, proving value and scaling capabilities in alignment with business objectives.



This step-by-step model provides a practical path to introduce AI in a controlled, outcome-driven way that fits how your operations already run.

1

Identify where time and effort are lost.

Start with friction points in daily work. Look for tasks that slow teams down, such as searching for asset information, compiling reports, prioritizing work, diagnosing issues or repeating manual updates.

2

Select one high-impact use case.

Focus on a single, clearly defined scenario where AI can add value, such as work order summaries, asset history search, backlog insights or technician knowledge support.

3

Pilot within a defined workflow.

Introduce AI in a single workflow, with a specific team or site. Align the pilot to measurable outcomes, such as improved speed, consistency or time saved.

4

Integrate into existing workflows.

Avoid introducing stand-alone tools. Embed AI into the systems and processes teams already use, enabling adoption without disruption and supporting more connected operations.

5

Measure impact and expand.

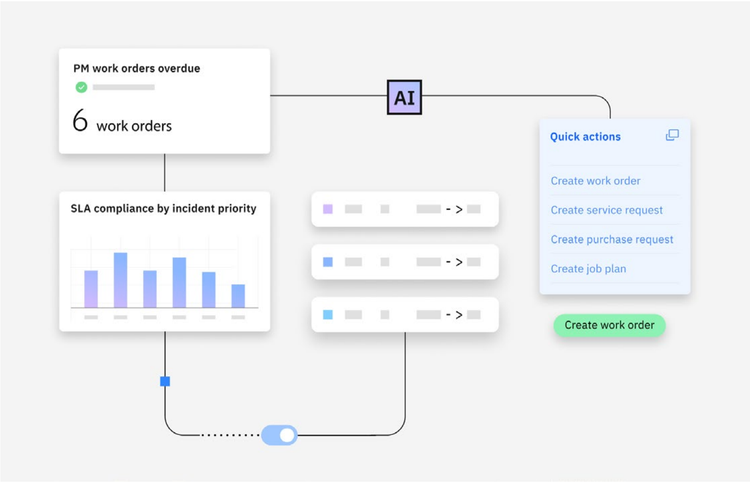
Track adoption, usability and operational outcomes. Use these insights to scale AI into additional use cases, building on proven success rather than assumptions.

07

Why IBM Maximo

To move from AI potential to measurable operational outcomes, organizations need a solution that brings intelligence into the flow of asset and maintenance work. That process means connecting asset data, work history, conditions and workflows so teams can surface context, prioritize action and detect patterns.

The IBM® Maximo® management system provides embedded AI in preexisting workflows that can help you move faster, operate smarter and make more informed decisions, while adhering to governance and security requirements.



How Maximo uses AI to modernize maintenance and asset operations:

Role-based
AI is tailored to specific jobs to be done—so technicians, planners, supervisors and executives make smarter decisions with context-aware recommendations and actions.

Embedded
AI works where your teams work, directly inside workflows, helping teams act faster with near real-time insights, predictions and automation without disrupting processes.

Trusted
Teams can act with confidence through secured, enterprise-ready AI that combines IBM's asset management expertise with transparent governance and explainable outcomes.

Extensible
Maximo connects workflows across systems and can help scale AI faster with a secured, open architecture powered by APIs, agents, ecosystem integrations and model context protocol connectivity.

Maximo goes beyond data centralization. It connects processes across the entire asset lifecycle, turning AI from a general-purpose capability into a potential operational advantage.

Take the next step
The value of AI comes not from automation alone, but from empowering teams to operate with greater speed, accuracy and insight.

Organizations already have the data and knowledge they need. The real opportunity is using them to drive faster decisions and smarter actions. Maximo helps make that shift a reality.

Explore AI insights in IBM Maximo →

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