AI for FM Glossary

Everything you need to know about AI for facilities management, broken down into simple language so you can better understand the technology.

nuvolo

How to Use

This glossary is for facilities professionals exploring how artificial intelligence supports smarter facilities, maintenance, and asset strategies. Each term highlights how data and automation improve decision-making, efficiency, and asset performance.

Use it to build a shared understanding within your organization, evaluate potential technologies, and guide conversations with vendors or stakeholders as you plan for future innovation.

Core AI Concepts

Artificial Intelligence (AI)

Software that simulates human intelligence by learning from data, recognizing patterns, reasoning about information, and making decisions or predictions to achieve goals.

In asset management: AI analyzes historical and real-time data to predict failures, recommend maintenance schedules, and optimize resource allocation.

Machine Learning (ML)

A subset of AI where systems learn patterns from data and improve predictions over time without explicit programming.

Example: Learning which equipment types fail most often under certain conditions and automatically adjusting maintenance schedules.

Rule-Based AI

A form of AI that follows predefined "if-this-then-that" logic to make decisions.

In maintenance: Can automatically trigger alerts, assign work orders, or flag issues when certain thresholds are exceeded.

Why it matters: Rule-based AI standardizes repetitive actions and creates a foundation for more advanced automation.

Generative AI (GenAI)

AI models that create new content such as text, images, or designs using existing data as input.

In facilities: Generative AI can summarize inspection notes, draft reports, visualize equipment layouts, or produce training materials.

Why it matters: It saves time on documentation and improves clarity across teams.

Computer Vision

AI that allows computers to interpret and analyze images or video.

In maintenance: Detects corrosion, leaks, or equipment wear from photos or video inspections, improving accuracy and reducing manual effort.

Natural Language Processing (NLP)

AI's ability to understand and interpret human language.

In operations: Extracts key information from technician notes (typos and all) and formats it into actionable data.

Example: Turning 'Pump busted' into structured data: 'Asset #10B, Failure Mode: Seal Leak, Action: Replaced Seal.'

Agentic AI

AI systems that autonomously pursue goals by planning, taking actions, and adapting based on feedback.

In asset management: Agentic AI can ingest work orders and sensor data, prioritize assets by risk, generate maintenance plans, create and assign work orders, and update schedules based on outcomes.

Maintenance & Operational Applications

Predictive Maintenance (PdM)

The use of AI and analytics to forecast when equipment is likely to fail so maintenance can be performed beforehand, avoid unnecessary costs, and stay compliant.

Impact: Stops unplanned downtime, lets you use your budget on smart replacements (not emergencies), and helps you stay on top of compliance risks.

Prescriptive Maintenance (RxM)

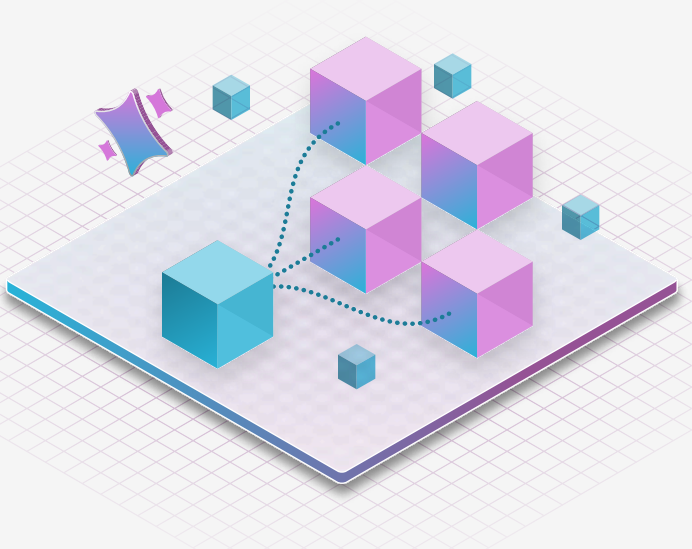
An advanced form of predictive maintenance where AI not only predicts potential failures but also recommends the best corrective action.

Example: Suggesting the ideal technician, part, or timing for a repair based on past performance.

Condition-Based Maintenance (CBM)

A maintenance strategy that relies on equipment condition rather than fixed time intervals.

AI connection: Machine learning analyzes sensor data to determine when maintenance is truly needed.



Work Order Optimization

Using AI to analyze incoming requests, assign technicians, and prioritize tasks for maximum efficiency.

Example: Scheduling work based on location, urgency, and technician skill set.

Anomaly Detection

The identification of unusual patterns or performance deviations in data.

Example: Detecting an air handler consuming more energy than expected, which could indicate a developing issue.

Root Cause Analysis (RCA)

A process for identifying the underlying cause of recurring problems.

AI enhancement: AI can analyze large volumes of work order and sensor data to reveal the most common failure drivers.

Data, Analytics, and Governance

Data Governance

A structured approach to managing data accuracy, ownership, and access.

Why it matters: Reliable, well-managed data is essential for accurate analytics and successful AI adoption.

nuvolo

Unified Data Model

A consistent framework for organizing data across multiple systems such as CMMS, BAS, and ERP.

Why it matters: Ensures information from different sources can be used together without conflicts or duplication.

Training Data

Historical data used to teach an AI model how to identify patterns or predict outcomes.

Example: Using past work orders, failure events, and condition readings to train a predictive model.

Predictive Analytics

Analyzing data to forecast future performance or risks.

In facilities: Predicts maintenance needs, cost trends, or potential downtime.

Prescriptive Analytics

Analyzing data to recommend specific actions that will achieve desired results.

Example: Recommending replacing a chiller this quarter to avoid higher repair costs later.

Digital Twin

A digital representation of a physical asset, system, or facility that updates continuously with live data.

In operations: Allows teams to train, test, and refine AI models and agents using real systems data and realistic simulations, so AI decisions are safer, more accurate, and validated before they impact live environments.

Sensor Data / Internet of Things (IoT)

Connected devices that capture and transmit information about asset conditions such as temperature, pressure, or vibration.

In maintenance: Provides the real-time data AI models need to identify trends and predict failures.

Automated Workflows

Digital sequences that automatically initiate tasks based on set rules or conditions.

Example: When vibration or temperature readings exceed normal limits, an AI agent can automatically take action, such as assigning a technician based on skills and location, alerting the technician's manager, and raising the priority of the work order so critical issues are addressed faster and more consistently.

Work Order Data Labeling

Tagging or categorizing work orders to make them usable for analytics or AI.

Result: Cleaner, structured data improves accuracy and consistency across reports and predictive models. As automation and AI improve data quality, organizations unlock stronger ROI today and create a foundation for more advanced, sophisticated AI solutions in the future.

nuvolo