

# IBM Maximo Asset Management solutions for the oil and gas industry

*Helping oil and gas companies achieve operational excellence*



## Highlights

- Improve safety, reliability, and compliance while controlling costs
- Boost operational intelligence through standardization, convergence, collaboration, and the adoption of better operational practices
- Enable processes that capture organizational knowledge from an aging workforce
- Leverage a consolidated and trusted platform for managing all types of assets, from the smallest tools and parts, to highly complex and digitized business-critical assets, to the largest production and maintenance facilities

## Embracing the opportunities in oil and gas

As technology reaches into every corner of the globe, the world we live in becomes smaller—and smarter. With global organizations and systems that are more instrumented, interconnected, and intelligent than ever, we now have enormous potential to achieve new levels of business value—to optimize operations and accelerate business growth as never before. The oil and gas industry is no exception. And IBM, leveraging its flagship technology and decades of leadership, is helping organizations across this industry embrace the opportunities that a smarter planet represents.

From exploration and production to refining and marketing, IBM offers industry-leading solutions for smarter oil and gas operations. With deep industry and process expertise, IBM enables oil and gas companies to enhance all areas of operation, improving efficiency and optimizing global resources in ways that help organizations manage growth while controlling costs.

## A wave of change in the industry

Like businesses in any industry, oil and gas companies are facing major changes and challenges that are redefining the way they do business. Perhaps the greatest of these is “The Great Crew Change,” the transition from a retirement-age

workforce to a younger and less experienced one. Large numbers of highly qualified personnel have left and are continuing to leave the industry, creating considerable gaps in practical knowledge. Oil and gas companies are increasingly relying on technology to help fill these gaps and shore up their knowledge bases.

Another change facing the industry is the convergence of business and IT assets. What were once traditional business assets are now becoming digitized, smart-chipped, traceable through RFID tags, or IP-enabled, bringing them under the IT asset umbrella. Many business-critical assets have layers of complexity, requiring unique asset management capabilities, while others have regulatory components. Oil and gas companies are again turning to technology for help in managing these assets.

Oil and gas companies must also continue to address a range of tough industry challenges, including:

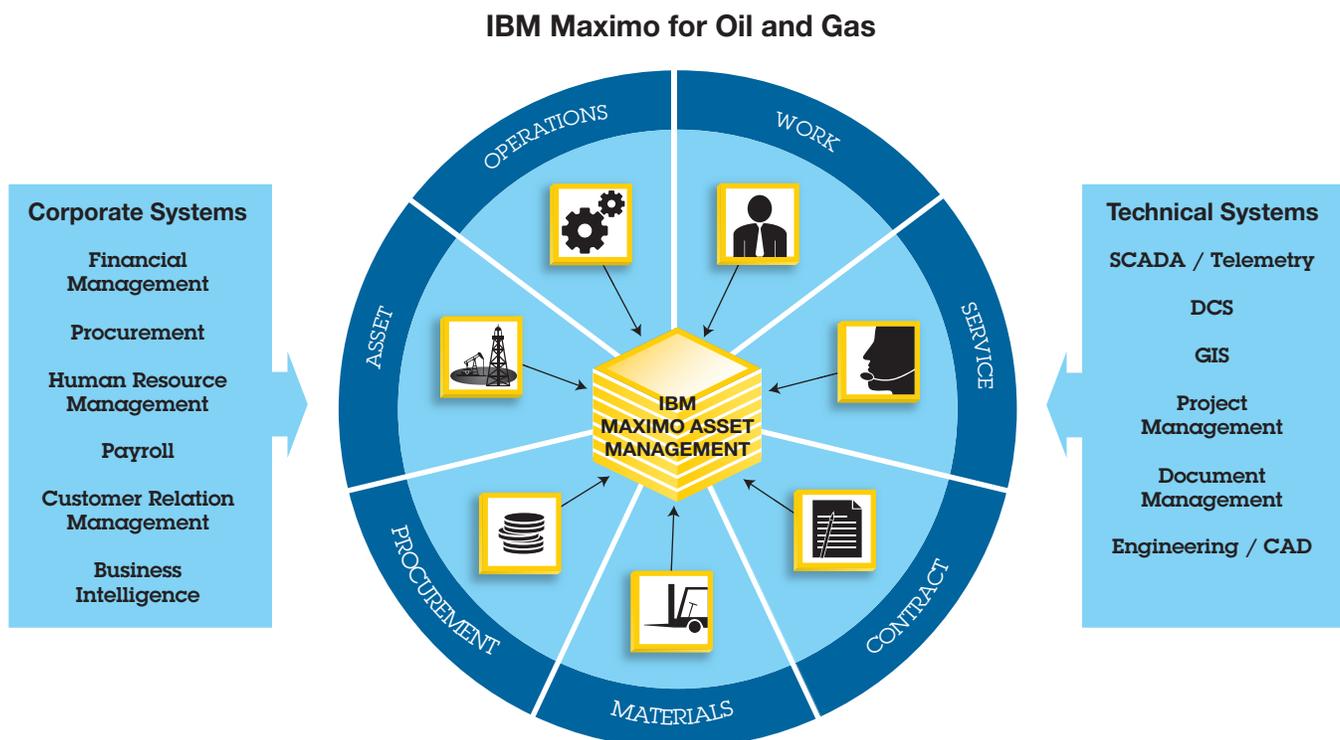
- Improving asset analysis.
- Facilitating compliance efforts.
- Planning shutdowns.
- Reducing manual intervention.
- Responding to complex supply chain demands.
- Aligning roles and responsibilities.
- Facilitating continuous improvement.

Industry-proven asset management solutions from IBM can help oil and gas companies face this sea of challenges. IBM Maximo® for Oil and Gas builds on the strength and reliability of IBM Maximo Asset Management to deliver the critical capabilities that oil and gas companies need, from enabling processes that capture organizational knowledge, to providing a consolidated and trusted platform for managing all types of assets—from the smallest tools and parts to the largest production and maintenance facilities.

Today's oil and gas companies are on a quest for operational excellence—to improve safety, reliability, and compliance while controlling costs. Success depends on how well they manage physical assets and human capital, and how well they leverage operational intelligence, making use of available data and information to make better operational decisions. IBM Maximo for Oil and Gas can help organizations boost operational intelligence—and realize operational excellence—through standardization, convergence, collaboration, and the adoption of better operational practices.

### An integrated foundation for improved operational intelligence

Built on a service-oriented architecture (SOA), Maximo for Oil and Gas consists of seven key functional areas—work, service, contract, materials, procurement, asset, and operations management—bringing together traditionally separate business functions onto a single, integrated platform.



Maximo for Oil and Gas brings together traditionally separate business functions onto a single, integrated platform, then adds a layer of industry-specific functionality to support the unique requirements of the oil and gas industry.

This integrated platform reduces the number of applications and redundant data stores, which helps reduce costs while enabling a “single version of the truth.” It enables collaborative, cross-functional business processes that help improve efficiency. And with increased collaboration across functional roles and increased confidence in the underlying data, Maximo for Oil and Gas can provide a foundation for improved operational intelligence.

### **Driving operational excellence in the oil and gas industry**

Maximo for Oil and Gas adds a layer of industry-specific functionality to Maximo Asset Management, delivering capabilities that are designed to drive operational excellence, supporting better practices and meeting the unique asset and service management requirements of the oil and gas industry.

**Action Tracking** – Tracks actions resulting from regulatory audits or internal reviews. Action Tracking provides a mechanism for ensuring that the findings and recommendations of internal and external audits are managed and tracked through to closure.

**Asset Management** – Provides capabilities for managing detailed information about assets, including elements such as locations, hierarchy modeling from enterprise to subassemblies, condition monitoring, metering, hazards and precautions, costing, and rich work order history.

**Benefits and Losses** – Captures benefits associated with improvements, or losses associated with planned or unplanned shutdowns or near-miss losses. Capturing benefits for proposed solutions or losses associated with equipment downtime (planned or unplanned) helps provide insight into areas for improving availability and safety.

**Calibration** – Automates calibration processes, leverages traceability, and improves compliance and work planning with an integrated approach. With the explosion in instrumented devices, being able to view calibration work alongside other work helps drive efficiency from work planning, scheduling, and execution as well as having a positive impact on equipment reliability.

**Condition for Work** – Aggregates similar jobs across assets, groups of assets, areas, or individual locations, supporting opportunity maintenance. Identifying work that can be merged into planned or unplanned work improves efficiency as well as equipment reliability.

**Contract Management** – Provides capabilities for managing many types of contracts associated with maintenance, repair, and overhaul materials and services. Functional areas supported in Maximo for Oil and Gas include purchase contracts, master contracts, warranty contracts, lease and rental contracts, labor rate contracts, payment schedules, and terms and conditions.

**Control of Work** – Manages permits for work orders and job plans. Including permit and certificate requirements in work orders and job plans can improve safety, efficiency, and communication and collaboration between operations and maintenance.

**Defect Elimination** – Enables an integrated approach to managing and eliminating mechanical defects. With this standardized approach, operations and maintenance can record equipment defects in real time, improving communication between different domains and helping to ensure service levels.

**Failure Reporting** – Supports the ISO 14224-based standard for Failure Mode Effects Analysis (FMEA) and Failure Reporting and Corrective Action System (FRACAS) processes. Implementing a standardized better practice around failure reporting and root cause analysis is the foundation of a good reliability program.

**GIS Spatial Integration** – Enables spatial visualization and analysis of work and asset objects. Many oil and gas companies use GIS software to provide geospatially enabled applications, and some of these GIS solutions capture asset information that is valuable for an asset management system. IBM Maximo for Oil and Gas enables bi-directional data exchange, providing valuable work and asset information from IBM Maximo software to the GIS system and vice versa.

**Integrated Information Framework (IIF) Integration** – Provides integration to IBM's information framework, which enables open industry standards integration with real-time systems and engineering data sources such as MIMOSA, ISA88/95, ISO 15926, Open O&M, and others. Real-time systems integration can trigger defects, incidents, inspection notification, or other work orders in IBM Maximo software. Other systems, including engineering systems, integrated in a bidirectional fashion can enable cross-domain workflows and process orchestration.

**Improvements** – Helps manage continuous improvement programs like Six Sigma or similar methodologies. Providing an enterprise standard or better practice for capturing improvements at all levels and across all domains helps facilitate continuous improvement programs.

**Incident Management** – Provides an integrated approach to work and safety incident management. Incidents occur across organizations that perform work around assets and equipment in challenging and hazardous locations. Integrating the work and asset management system and processes enables a better practice for capturing these incidents. Asset custodians can view incidents and trends in their areas of responsibility as well as status information on corrective and preventative maintenance work.

**Investigations** – Supports required incident and defect investigations such as Root Cause Failure Analysis (RCFA) or After Action Review (AAR). Regardless of the significance of the incident or defect, an integrated investigation application is a better practice because it provides complete traceability into historical incidents, defects, work orders, and other relevant data, helping to support the investigation.

**Linear Asset Modeling** – Provides linear modeling capabilities for linear assets such as wells and pipelines, enabling levels of data capture, exchange, and analysis that cannot be achieved using hierarchical models. Many data elements associated with linear assets, such as station and offset or mile posts, are not relevant to hierarchical assets. Some of these data elements are also dynamic in nature or have regulatory requirements and need to be managed in different ways. Capturing linear information in free-form text fields within a hierarchical model is no longer effective or efficient. Maximo for Oil and Gas enables the better practices of modeling a linear asset based on the features and attributes associated with linear assets.

**Location and Work Details** – Captures characteristics such as physical location, engineering reference numbers, drawing IDs, safety zones, safety criticality, and permitting requirements, and provides the ability to report production losses against a work order or location. IBM Maximo for Oil and Gas workflow enables all fields within the Maximo database, allowing more detail to be captured. This additional detail can enhance operational intelligence and enable better operational decision making.

**Management of Change** – Enables full management of change processes, integrated with work management and other applications. Providing transparency and visibility across operations, maintenance, and engineering domains for all types of changes can improve communications and collaboration, helping to reduce risk and driving more efficient operations.

**Materials Management** – Provides capabilities for managing maintenance, repair, and overhaul inventory. Functional areas supported in Maximo for Oil and Gas include item master, storeroom management, inventory management, lot management, kitting, issues and transfers, condition codes, stocked tools, service items, cycle counting, ABC analysis, inventory costing, and more.

**Operator's Log** – Provides an electronic log used by shift operators for recording and qualifying events that occur during an individual's shift watch. The application tracks shift staffing, plant operating parameters, log entries, associated qualifying data, and Web/document links on an individual plant unit and/or staff position basis. The Operator's Log, integrated with work management, incident management, and other asset management applications, raises the bar for collaboration across operations, maintenance, and engineering domains.

**Permit and Certificate Types** – Defines permit types and certificates for use on job plans and work orders. A critical part of a safety culture is identifying the hazardous locations within operating environments and the appropriate procedures for isolation and safety, including permits and certificates. Having this capability integrated with work management planning and scheduling increases the effectiveness of work management, as well as improving overall safety compliance.

**Plant, Facility and Equipment Modeling** – Establishes a common, standard approach for reliability and maintenance data capture, exchange, and analysis based on ISO 14224 engineering and asset specifications. Standardization of location, asset and equipment referencing, and asset classifications across the enterprise provides the foundation for measurement, benchmarking, and continuous improvement within an enterprise and across the industry.

**Procurement** – Provides capabilities for acquiring maintenance, repair, and overhaul materials and services. Functional areas supported in Maximo for Oil and Gas include request for quotation, purchase requisitions, purchase orders, receiving, material inspections, invoicing, desktop requisitions, and more.

**Regulatory Compliance** – Helps demonstrate efforts to comply with health, safety, and environmental statutes. Regulators provide the licensing requirements to safely operate the industry's infrastructure, with requirements that apply to assets and equipment in certain locations. IBM Maximo for Oil and Gas can identify regulatory compliance against assets and locations, and associate job plans and work orders to these regulations to help ensure compliance, significantly reducing the costs associated with compliance.

**Risk Analysis** – Manages and records risk assessments.

Maximo for Oil and Gas helps standardize how an enterprise manages risk across challenging operating locations, assets, and equipment, and across job plans, work orders, and change records, providing a comprehensive solution for managing risk and improving safety, reliability, and compliance.

**Risk Matrices** – Supports risk management processes by modeling probability and the consequences of events.

Standardizing how risk is modeled within an enterprise provides a common approach across operating locations, assets, equipment, and different types of work. This better practice improves how an enterprise manages risk, promotes a safety culture, improves reliability, and helps ensure compliance.

**Solutions** – Provides an operational learning repository that captures lessons learned as well as proven solutions within an operational, maintenance, or engineering context. This better practice captures and stores the environmental context, history, scenario, and experience across operations, maintenance, and engineering domains. The learning repository offers a valuable opportunity to capture institutional knowledge from an aging workforce and expose it in actionable and collaborative ways.

**Work Management** – Provides capabilities for managing multiple types of work, including planned, unplanned, and emergency work. Functional areas supported in Maximo for Oil and Gas include job planning and routes, service requests and service items, safety, labor reporting, qualifications, lock-out/tag-out, labor, materials and tools, planning vs. actual costing, preventive maintenance, and more.

**Work Prioritization** – Enables matrix-based prioritization for optimizing planning and scheduling of maintenance, using operational standard criteria to prioritize critical assets. This better practice enables dynamic scheduling and schedule optimization, improving overall operational efficiency.

### **Maximo for Oil and Gas: Vital support for a critical industry**

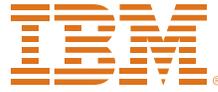
Maximo for Oil and Gas provides vital support for a critical industry facing complex and evolving issues. Maximo software provides the visibility, control, and automation necessary to capture valuable knowledge, improve operational efficiency, and manage and operate mission-critical assets safely and productively. As oil and gas companies strive for operational excellence in a world that's growing smaller and smarter, Maximo for Oil and Gas helps provide a competitive advantage.

## For more information

To learn more about how IBM Maximo for Oil and Gas can facilitate your organization's journey toward operational excellence, contact your IBM sales representative or IBM Business Partner, or visit [ibm.com/tivoli/products/maximo-oil-gas](http://ibm.com/tivoli/products/maximo-oil-gas)

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