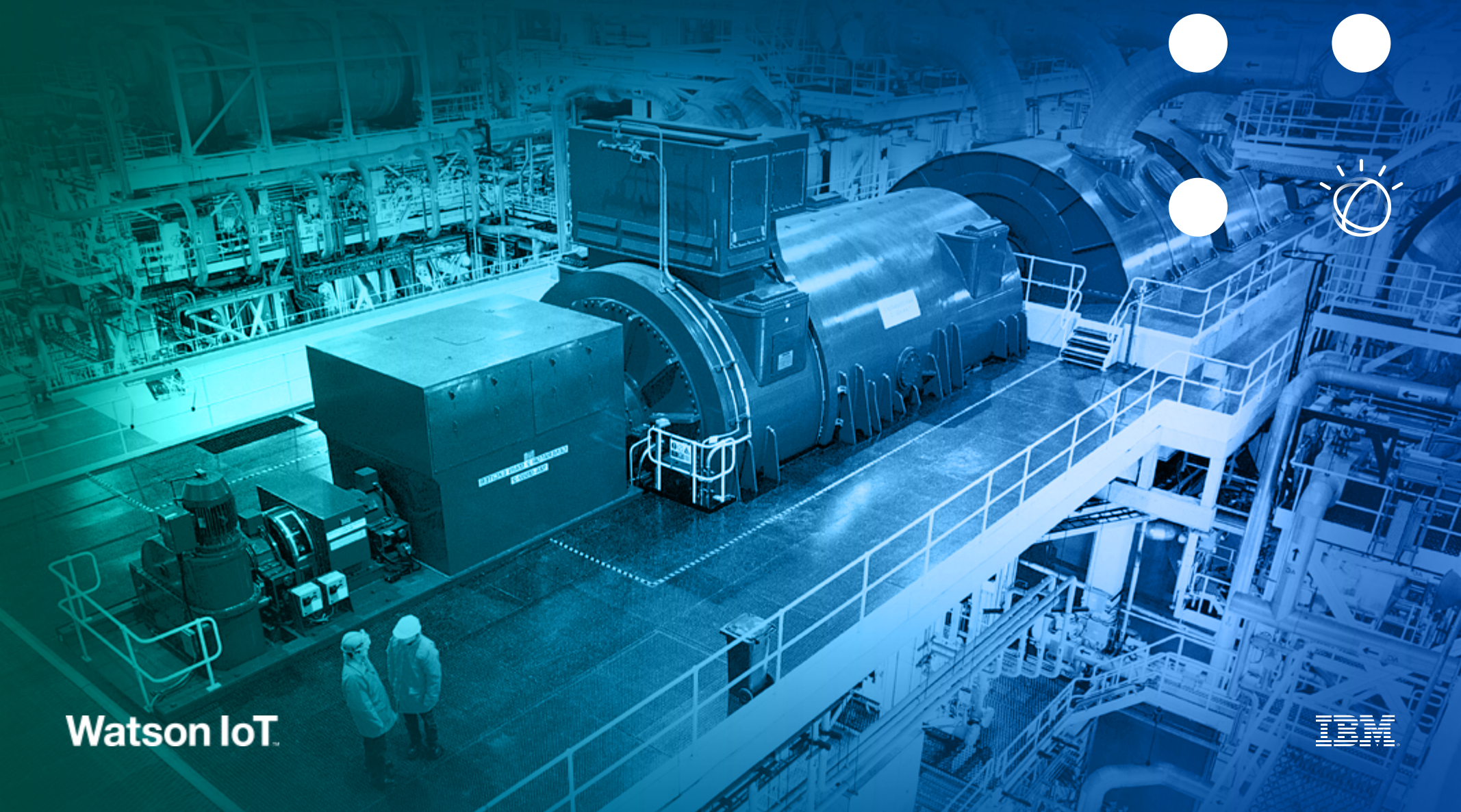
Why the best-run companies use IBM Maximo and ERP

The advantages of using IBM Maximo in an ERP environment



Watson IoT

IBM

Contents

Introduction

Enterprise asset management (EAM) addresses the entire lifecycle management of an organization's physical assets to help maximize value. It covers the design, construction, commissioning, operation, maintenance, and decommissioning or replacement of plants, equipment, facilities, and other high-value assets. A high-value asset is one that has a significant operational and financial impact on a company's main line of business and profitability. What makes it "enterprise" is the fact it spans departments, locations, facilities, business units, and regions. The goals of managing assets this way include:

- Improving utilization and performance
- Reducing capital costs
- Reducing operating costs
- Extending an asset's life
- Improving ROA (return on assets).

Asset-intensive industries operate in highly competitive markets, and each time an asset fails can be very disruptive and costly. At the same time, they must adhere to stringent occupational safety, health and environmental regulations. Maintaining availability, reliability, profitability, and operational safety of plants, equipment, facilities and other assets is essential to an organization's success.

Some companies still regard physical asset management as a more business-focused term for maintenance management. In fact, the term "computerized maintenance management system" (CMMS) has commonly been used to describe this market space. However, many other organizations are expanding beyond this limiting term. Instead, they're taking a holistic view that considers the organization-wide impact of asset management: how it affects operations, design, asset performance, personnel productivity and lifecycle costs. This expansion coincides with the shift from CMMS to EAM.

IBM® Maximo® EAM solutions can deliver a significant return on investment relatively quickly. Surveys have shown the following benefits:

- 10–20 percent reduction in labor costs.
- 10–15 percent reduction in inventory costs.
- Up to 25 percent reduction in time lost to equipment failure.

More than just maintaining plants and equipment, EAM collects data and generates reports to support better enterprise-wide decision making.

The first part of this ebook explores 10 ways that IBM Maximo Asset Management complements existing enterprise resource planning (ERP) systems like SAP Plant Maintenance (SAP PM). This section illustrates how ERP users can benefit from using the Maximo EAM solution, and describes the many options and industry add-ons that make it useful in niche industry spaces and operational best practices. The ebook also features examples of how Maximo can help enhance business functions to build an IoT environment in an asset-intensive organization.

The second part of the ebook includes customer deployment success stories. These stories provide examples of organizations that have used EAM to ensure safe and reliable operations, reduce complexity, save money, and offer more reliable services to their end customers.

The advantages of using IBM Maximo in an ERP environment

IBM Maximo offers SAP users distinct advantages

Asset-intensive organizations use a multitude of physical equipment, machines, linear assets, vehicles, tools, and more. For organizations using SAP for ERP, there are different SAP applications for enterprise asset management, such as SAP PM.

However, using an ERP application to manage assets may leave your organization lacking in the areas critical to enterprise asset management: scheduling, workflows, standardization, benchmarks and key performance indicators, best practices, analytics and predictive maintenance. To ensure your organization is able to maximize the useful life of your assets, minimize risk, and pave the way for predicative analytics, there are better options.

Maximo Asset Management has been the market-leading EAM solution for the past 15 years. Maximo software offers straightforward integration with SAP, and many SAP customers already use the Maximo solution for EAM. Doing so gives them the best of both worlds: the business benefits of Maximo's advanced asset management capabilities, and the ability to preserve existing investments in SAP systems.

Maximo Asset Management offers SAP users distinct advantages:

- Maximo is extremely rich in features and functionalities, and is highly configurable.
- The Maximo Integration Framework (MIF) provides an application-based method to define integration with any external system.
- ERP adapters and a comprehensive ecosystem of partners spanning technology and service providers allow for unmatched capabilities.

Ten ways asset-intensive organizations are improving operational efficiency with IBM Maximo

01
Designed for enterprise asset management

Unlike SAP, which is a financial application that also has asset management capabilities, Maximo is a purpose-built EAM application. With Maximo, users can focus on business processes related to assets and operational control, rather than financial and accounting requirements.

As an EAM application, Maximo can serve as a single platform for managing critical assets that organizations rely on to run their activities, including:

- Production equipement
- Facilities
- Linear infrastructure
- Vehicles and mobile equipment

Maximo also supports advanced asset management activities, such as predictive maintenance, reliability-centered maintenance and condition-based maintenance.

Maximo also includes capabilities for assets, labor and parts management, combined with supply chain functionality. It tracks asset data, including attributes and repair history. It offers advanced management capabilities, work order flow and automated scaling functions, and many predefined workflows to accelerate implementation. No programming is required to configure workflows.

Listen to the ERP & EAM myth buster webcast to understand the real risk to asset-intensive organizations.

Why is Maximo different?

- Maximo is the market leader in the EAM space, and has been for over 15 years.
- Maximo uses agile development and a continuous delivery process to quickly deliver functional enhancements.
- Maximo is integrated into both the SAP platform and the Oracle Financials platform as a preconfigured solution.
- Maximo has functionality to support 21CFR (eSig/eAudit)
- Maximo gives users faster time to value relative to other EAM applications.

02
Agile deployment options

Unlocking the potential efficiencies embedded in an asset-intensive organization's business model requires operational orchestration across the business, whether it's common processes, common resources or supply chain integration. In the wake of industry consolidation, many organizations have assembled a business portfolio that looks synergistic on paper, but still faces tremendous challenges in aligning with their acquired or merged businesses.

Maximo supports agile deployment methods that allow organizations to take advantage of Maximo's numerous built-in utilities to support controlled, incremental deployments across the enterprise. For example, Maximo's Integration Framework streamlines connecting to legacy systems and supports rapid development of interfaces, both temporary and permanent.

Maximo adapts to current business processes and doesn't require significant training for operations staff to learn and use it. While the SAP PM process model reflects the SAP view of EAM best practices, it's not necessarily appropriate for all businesses at all stages of maintenance maturity, nor is it preferred or effective for all operating departments.

ERP functionality isn't as robust as EAM functionality. Engineers and maintenance professionals resist compromising business practices that have taken years to develop and institutionalize. In most cases, engineers and maintenance personnel will create workarounds and implement local solutions to continue to operate efficiently.

Read how the world's largest contact lens manufacturer achieved continuous ROI through a phased rollout.
Read the case study.

03
Interoperability through standardization

Maximo is built around industry standards for enterprise asset management, and contains a very powerful set of tools to make implementation and deployment fast and stable. While the basic standards cover most requirements, the power to configure and customize to your specific needs are unmatched.

The flexibility of Maximo allows you to use it in the way that best fits your needs. If this is your first EAM implementation, you can choose out-of-the-box functionality that exceeds the power of other products while also limiting complexity. If you have a complex organization that needs interfaces to multiple external applications and requires specialized business processes, Maximo can meet your requirements using tried and true solutions.

Organizations using SAP can drive interoperability through standardization with Maximo. Standardization drives software interoperability and interchangeability. Breaking the dependence on proprietary methods, trade secrets, and single providers can foster organizational flexibility. The result is a stronger foundation on which organizations can quickly build and innovate.

Align operations with business objectives

By breaking down multiple silos of non-standard, non-integrated systems, an integrated approach can help align operations with overall business objectives. An integrated approach can also support long-term and short-term planning objectives, such as controlling inventory and outside service providers to better meet demands.

Being agile is critical to organizations working toward optimizing asset management practices across multiple sites. Maximo offers organizations more flexibility to make changes. Its standards-based flexible architecture encourages workplace best practices to be adapted across multiple sites, without having to make changes to core business systems.

Deploying Maximo for performance, usability, and stability

The success of an application that relies on input from its users is directly tied to the usability of the tools. If a user must wait too long for the tool to respond or the process they must follow is too complex or their training on the tools is not sufficient, a natural instinct will be to find ways around using the tools properly.

04
Freedom to grow as you go

Using Maximo can help minimize costs and risks of implementation and upgrades. Maximo is built on a flexible architecture that enables standards-based rapid deployment, ease of setup, and smooth migration to future versions. Large initial investments aren't required because IBM offers software for integration with SAP ERP.

Maximo can save you time and money over SAP PM. In part, this is because SAP may require the purchase of new licenses for additional enterprise asset management users when the PM module is implemented. In addition, due to the high degree of interdependence between SAP modules, using the PM module may require configuration changes to other business-critical modules, such as Purchasing, Inventory, and General Ledger. This can introduce risks to the supply chain, requiring tests on all affected modules in SAP.

Agile post-deployment changes

Once implemented, Maximo can be updated at any time, in line with the operational requirements of the business, and independent of any ERP implementation. However, SAP PM requires that all modules remain in the same version. Even with simplified new updates, the effects of these changes aren't always easy to determine. This can be especially problematic for companies in asset-intensive industries that want to take advantage of new EAM features. This may require a long and complex process of renovation, putting operational objectives at the mercy of corporate IT strategy and jeopardizing the organization's ability to capitalize on advances in asset management.

Since Maximo isn't required to conform to a particular process model, it enables companies to freely innovate on competitive differentiations. There is no highly centralized focus on finance that can prevent operational departments from achieving continuous improvement in their asset management practices.

Instead, Maximo's flexible workflow capabilities and business processes are explicitly designed to support post-deployment changes, helping to meet new regulatory and customer requirements. Maximo is tailored to the needs of the company, rather than forcing the company to adapt to it.

The power to grow as you go

Enterprise asset management is the practice that many companies and enterprises employ to make sure they're getting the maximum value from their operating assets and critical infrastructure. Asset management has to do with improving the availability, reliability and uptime of different types of operating assets. The structure of technical product functionality can run very deep, depending on how the product is used and the skills of the team implementing the solution. There are a host of built-in services and concepts that are most often used to deliver functionality.

Some of the business value of Maximo comes from the availability and reliability of business data. This data can be used to help answer many difficult questions, such as:

- How many hours does it take to accomplish a particular task?
- How do those hours break down across tasks and groups?
- What level of skill is required?
- How much does it truly cost to accomplish the task, including all hidden costs?

For most organizations, the path to good asset management answers is a journey, not an immediate destination. Maximo provides the "grow as you go" ability for customers to minimally engage components until they're ready to enhance the offering by further exploiting additional functions and capabilities. In most cases, it's issues of organizational culture, rather than technical limitations, that stand in the way of pursuing these capabilities quicker.

05
Advanced maintenance practices

There are many different elements you must consider before you can get a complete picture of what it takes to maximize asset ROI, including:

- Asset locations
- Maintenance plans and history
- Contracts
- Warranties
- Leases
- Parts inventories
- Tools
- Technicians

All these pieces and more are critical to solving the asset management puzzle. For instance, some organizations are more prepared than others to conduct preventative maintenance. Some companies may choose to fix assets only after they break. Others may operate in asset-intensive industries such as telecommunications. For these organizations, the risk that a given asset might go down is high enough that preventative maintenance would be a good use of their time and resources.

While both SAP PM and Maximo support basic maintenance based on time or usage, Maximo supports advanced maintenance practices that are crucial in capital-intensive industries. Maximo is designed to enhance reliability-centered maintenance (RCM), predictive maintenance, and financially optimized maintenance processes. Companies using SAP PM may require additional third-party solutions to harness these processes.

Key performance indicators and service-level agreements

Maximo key performance indicators (KPIs) are tied to service-level agreements to keep both contract personnel and government stakeholders apprised of asset reliability and logistics management performance. It's easy to analyze Maximo business data through KPIs, charts, and the powerful new integration with IBM Watson Analytics™.

KPIs come preconfigured for some standard business questions: am I trending towards SLA violation, how many open work requests are there for my department, and so on. These KPIs provide visual representations of the answers to these questions. KPIs provide the basis for building "dashboard" views for management or individuals being assigned work within the solution.

The power of KPIs in the Maximo solution is that they can be customized to use a wide array of variables, including site, unit and system options. This means the feedback is targeted to the viewer. For instance, a person in Organization A can be viewing the same KPI as someone in Organization B, but the content displayed will be the appropriate data for their organization.

Discover the value of IBM Maximo Work Centers. Watch the demo.

Preventive and condition-based asset maintenance

Maximo enables preventive and condition-based asset maintenance. In addition, it can help vendor management by supporting a full range of contracts and service agreement management. For example, IBM Prescriptive Maintenance applies machine learning to help reliability engineers identify and manage asset reliability risks that could adversely affect plant or business operations.

Prescriptive maintenance can help optimize maintenance resources to reduce overall costs and identify risks to operations using operational data. Sign up for a 30 day trial.

06
Asset convergence

An emerging market force that is shaping the future of EAM is asset convergence, driven by the increasing sophistication of operating assets that include hardware and software. Operative equipment—either on a plant floor, a power plant or integrated into the infrastructure—is increasingly dependent on IT for operation and maintenance.

Assets are also increasingly connected to computer networks for remote administration and monitoring. More and more operating assets, including production, transportation and facilities assets, have incorporated performance-enhancing components.

- Plant floor devices increasingly incorporate operating software and production applications, and are connected to IT infrastructure through IP addresses. These assets usually have built-in monitoring systems for remote management, active RFID, microprocessors, firmware, storage devices.
- Fleets include onboard monitors as Global Positioning Systems (GPS).
- Building automation for environmental control, security and infrastructure management, increasingly use hardware, software and networks.

The SRO Data Replicator connects Maximo systems operating on deployed assets to central systems through reliable low-bandwidth replication. No other logistics system on the market has this application-specific, configurable replication capability.

ERP user interfaces require too much modification and additional products to enable maintenance workers in the field to efficiently use the software. Deploying ERP to field operations with limited connectivity, bandwidth or infrastructure is difficult or even impossible.

07
Role-based security

Performance-based logistics (PBL) are fully supported through Maximo contracts, service provider applications and service-level agreement modules. Powerful role-based security enables contractors and government personnel to leverage a single instance of Maximo to efficiently plan and execute supply chain support.

All organizations want their assets and systems to be secure, but they also want to avoid cumbersome security processes that stand in the way of people doing their jobs. With Maximo, it is possible to have it both ways. Maximo offers very granular security capabilities to control what someone sees (fields on the screen), what content they can select/view, and whether they can only read records, modify them, or create new ones.

In Maximo, security is based on the role that individuals play in the organization. In order to perform their role, they may require multiple security permissions spanning groups. In some cases, the organization may need to restrict their data viewing to a particular site, or to read records from any site but only edit records for their site.

In addition to standard role and user privileges, it's also possible to restrict users' limits and tolerances, such as how much a purchase order can be approved for. These rules can be built into the solution and integrated with other functionalities like workflows, escalations, and automated approvals.

Through configuration , even more security controls can be pieced together. For example, you can display a client record while blacking out the client's credit card information, without actually removing the credit card information. Users who don't need to see the card numbers can see that one has been entered in the record, but not what the number is. Authorized users can see the full content, including the numbers. Users who do n'ot need to see the card numbers can see that one has been entered in the record, but not what the number is. while Aauthorized users can see the full content, including the numbers.

The value of Maximo from a security standpoint is that it allows out-of-the-box security to be configured to very exacting security standards. User actions can be automated and controlled according to business process, limiting risk exposure for your organization.

08
Real-time data and the Internet of Things

A robust ecosystem allows organizations to access a system of systems, suppliers and partners. Here are some examples of business functions that are enhanced by using Maximo to leverage an IoT ecosystem in an asset-intensive organization:

- Configuring the asset hierarchy to minimize operational risk. All assets are not equal and should not be treated as such, especially in a limited resource environment. Maximo enables you to establish and maintain a hierarchy based on asset criticality (and risk). This helps users decide the level of IoT investment necessary to connect elements of their infrastructure. In addition, it then enables and improves predictive analytics using real-time data.

- Asset locations and their configuration in systems of systems is critical to leveraging IoT information. Maximo supports this through location hierarchies and linear and spatial screen metaphors.

- Seamlessly capturing maintenance history and failure data according to the latest maintenance methodologies. Combining real-time performance monitoring information with maintenance history and failure data enables predictive analytics, predictive maintenance and reliability-centered maintenance (RCM) methods and practices.

- Two-way messaging, enabled by Watson IoT Platform, allows users to notify field personnel and even alter equipment operation based on maintenance data and preset analytics triggers.

- Optimizing maintenance execution by integrating maintenance, operational, health, safety and environmental information. Maximo HSE functions with IoT data to unify; incident management, permitting, risk, change management, and more and management of change among other applications to unify HSE and maintenance work in a single platform.

Knowing asset locations and configuration enables operational decision making. Maximo has spatial capabilities and advanced scheduling features that, when combined with real-time data (through IoT), enables managers to optimize both production and maintenance schedules.

See why analysts recognize IBM Maximo as a leader in enterprise asset management. Try one of our demos.

09
Optimize asset performance with analytics

Maximo enables asset-intensive organizations to leverage connected devices by merging real-time asset operational data with critical asset information. Implementing Maximo alongside critical business and enterprise systems—including SAP—can help significantly reduce complexity, transform business processes, modernize an aging infrastructure, integrate and optimize multiple systems, and enable users to gain valuable insight and intelligence from the years of historic maintenance data and records which exist across an organization's many systems.

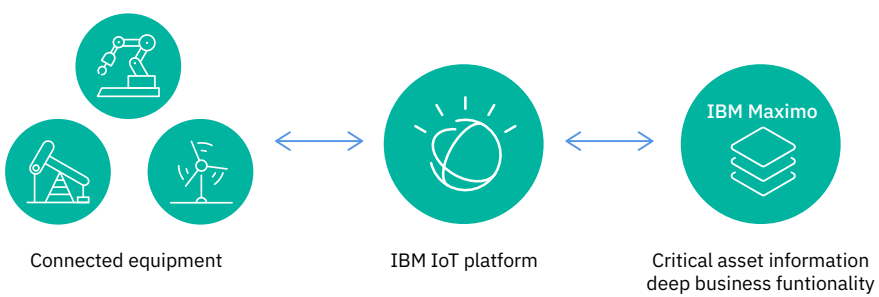


Figure 1: Gain insight by leveraging connected devices and real-time asset operational data

Distill insight from the Internet of Things

Maximo can distill insights from the Internet of Things to help:

- Focus maintenance resources
- Reduce unplanned downtime
- Increase operational efficiency
- Provide near real-time visibility into asset usage
- Extend the useful life of equipment and defer new purchases
- Improve return on assets
- Unify processes for wide-ranging enterprise asset management functions across multiple sites

Manufacturing

Minimize downtime and optimize asset and equipment performance; Improve quality and yield from design through support; optimize resources engaged around production.

Electronics

Differentiate and innovate. New entrants, price erosion and other competitive pressures make the ability to innovate even more critical than it has been, so properly developing IoT and cognitive capabilities to drive innovation is key to success.

Energy

Increase production without increasing resource usage; predict extreme weather events and mitigate negative consequences.

Automotive

Improve product quality and safety, and easily diagnose issues; increase vehicle availability through condition-based maintenance; enable connected services that improve the in-vehicle experience; connect with external data sources to optimize fleet logistics.

Make smarter decisions using analytics

IBM Maximo and Predictive Maintenance and Quality (PMQ) can help organizations make smarter decisions about assets. Combining Maximo and PMQ software with IoT data and cognitive computing gives enterprise the ability to manage the management of their physical infrastructure assets, while enabling them to make better decisions using real-time operational insight. For example, an integrated approach to managing discrete or complex assets can help organizations overcome challenges rooted in their aging infrastructures or human assets, and in their silo or disconnected systems.

Discover how easy it is to upload a .CSV file containing your Maximo data and get powerful insights into patterns you might not have known were impacting your business. Watch the demo.

10
Tailored for industry

Maximo supports all asset types but has particularly deep enterprise asset management functionality for key industries such as transportation, manufacturing, oil and gas, life sciences, nuclear, utilities, aviation, and service providers. Maximo's industry solutions were born out of opportunities to capitalize on its powerful configuration capabilities, and apply them within the context of IBM's deep industry expertise.

Industry solutions were created in market segments that were clearly definable and repeatable (that is, industries that have common feature requirements throughout the sector). In addition, these market segments are often highly regulated, making it possible to configure and customize to a specific standard. Industry solutions bring tremendous value to such markets with high-value assets and mature asset management needs. Maximo customers in asset-intensive industries can take advantage of industry-specific solutions to meet the unique challenges of asset management. For instance, an organization can run multiple industry solutions for different business areas in a single Maximo instance.

Maximo specializes in meeting the unique needs of capital-intensive industries such as oil and gas, petrochemical, manufacturing, power generation and supply of energy, telecommunications and transport. Maximo solutions for these industries offer rich management capabilities, with improvements that align with the specific industry on issues such as security, reliability and compliance. These ready-made solutions reduce total cost of ownership (TCO) because they:

- Eliminate the need for extensive customization
- Are fully supported
- Are upgradeable

The benefits that core Maximo and Maximo industry solutions offer include:

- User access. Knowing how and where users are accessing information is critical.
- Auditability. Regulatory requirements make it mandatory for asset management to be both auditable and traceable.
- Ease of use. An asset management solution must help speed—rather than impede—business processes and information extraction.
- Maintenance. Software standardization must not constrain maintenance processes.
- Flexibility. As business processes evolve, your solutions must adapt as well.
- Information capture. To extend the life of assets, you must also have a way to capture additional required information.

Learn more about Maximo solutions.

Maximo for Transportation

IBM Maximo provides transportation organizations with best practices to help improve the productivity of their critical assets. This industry solution helps manage critical aspects of each asset's lifecycle, while providing key capabilities such as acquisition, automated alerts, campaigns, contract management, lifecycle accounting, labor certification, service-level agreements, warranty and disposal.

There is often opportunity for Maximo for Transportation in cases where a company's main revenue generating business is supplemented by a fleet of vehicles. For example, a utility company may use Maximo to manage their transmission/distribution assets, and implement Maximo for Transportation to service their fleets associated with customer service. Both types of assets have interdependencies, and combined, drive success and profitability.

Maximo for Oil and Gas

The IBM Maximo for Oil and Gas industry solution provides oil and gas companies with best practices to help improve the productivity of their critical assets. This industry solution helps manage each asset's lifecycle, including acquisition, work management, inventory control, purchasing and preventive maintenance, all within the strict confines of regulatory compliance. In recent years, regulatory compliance has become increasingly important, as companies strive for environmental sustainability and accountability, as well as operating efficiencies and safety. The oil and gas industry solution has a number of industry-specific enhancements that align to corporate goals and objectives, including scalability and standardization, helping to minimize the amount of tailoring required.

Maximo for Life Sciences

Maximo offers a complete set of asset management solutions tailored for life sciences organizations that enables operational, service and maintenance managers to track and better manage assets critical to the performance of the business. In addition, these solutions help maintain required service levels, all within regulatory compliance. Maximo for Life Sciences helps manage all assets, from equipment, tools and laboratory instruments to maintenance and engineering facilities, to IT equipment such as mobile devices, IP-driven assets and servers.

Asset managers within life sciences organizations need a comprehensive way to centrally manage critical assets throughout the various divisions in which the assets are located—from maintenance, engineering, and research and development to facilities, logistics and IT.

For most healthcare organizations, maximizing service delivery while managing a sophisticated mix of computerized devices, tools and equipment, systems and technologies is challenging. The ability to proactively monitor these different types of assets in a fast-paced environment is critical to improving quality of care.

Hospitals that have better asset management can maximize service quality, reduce risk of noncompliance, and manage costs, while assuring the availability of all assets. Using Maximo EAM, organizations can better coordinate the needs of diverse physical facilities within an enterprise while maintaining specific functions within these different facilities.

The Maximo solution includes specific capabilities for healthcare. These include:

- Calibration of instruments, tools and special equipment
- Support for electronic signatures, records and audits
- Support for asset-related corrective and preventive action (CAPA)
- Validation project support
- Integration with document management systems

Energy and utilities

Maximo has evolved significantly over the years and has become a leader within the EAM space. Due to the fact that there are multiple disciplines within the broader utility sector, the competitive landscape is important to consider, and varies within the type of utility.

Maximo for Nuclear Power

Addressing stringent regulatory requirements and improving productivity are critical requirements for nuclear organizations. Maximo for Nuclear Power is a complete enterprise asset management system that manages the lifecycle of assets of nuclear plants and fleets. It streamlines and automates key asset management processes while providing a single platform for managing all asset types. It also supports industry-specific requirements by modeling nuclear objects and business processes—including tech specs, clearances, permits, surveillance testing and corrective actions.

Use Maximo for Nuclear Power to:

- Manage all stages of the asset lifecycle including purchasing, acquisition, inventory control, configuration, work management, preventive maintenance and corrective action.
- Provide dedicated applications to support the management of tech specs, surveillance requirements, calibration and procurement engineering.
- Develop standardized job plans, impact plans, permits and clearances for critical and recurring work activities.
- Create advanced scheduling and sequencing capabilities for the management of preventive maintenance programs.

This solution also:

- Supports processes for new plant construction and decommissioning
- Helps to promote nuclear safety through the use of impact plans, permits, clearances and corrective action programs
- Provides a simple user interface to facilitate rapid execution of work management tasks by personnel in the field
- Supports best-practice business processes defined in the Standard Nuclear Performance Model by providing ready-to-use and configurable workflow content
- Provides industry-specific decision support by providing ready-to-use and configurable report content that is based on nuclear KPIs

Maximo for Utilities

Maximo for Utilities is preconfigured specifically for asset-intensive companies involved with the transmission and distribution of water, gas and electric utilities. Maximo for Utilities helps increase asset and resource effectiveness by providing a platform to support all types of asset classes and all types of work in water, gas and electric utilities.

Some of the features and configurations of Maximo for Utilities include:

- Improved productivity with Compatible Unit Estimating (CUE) and a multilevel compatible unit library.
- Manage crew type and crew configuration with enhanced crew management while tracking labor skills and certifications.
- Integrated with fixed-asset accounting, mobile workforce management and design tools based on SOA.
- Validation project support.
- Includes Maximo Spatial to support map-based user interface built on ESRI ArcGIS Server technology and interoperates with other GIS.

Maximo for Aviation

Maximo for Aviation is a comprehensive solution for airlines, government entities and MRO providers that operate or maintain rotary or fixed-wing aircraft. Maximo for Aviation includes capabilities for the entire engineering and maintenance organizations, in addition to ad hoc work scheduling, inventory management and logistics.

Built on proven Maximo technology currently being used worldwide to manage aircraft and key aircraft components, it includes industry-unique applications to address critical aircraft maintenance and airworthiness requirements. Maximo for Aviation provides critical capabilities for efficient and effective aircraft maintenance, including:

- **Configuration management** of the hardware and software on the aircraft.
- **Analytics-driven validation** of the configuration of the aircraft at any time.
- **Management of the history of the aircraft** configuration and the operational maintenance plans for the life of the aircraft—including any structural damage and repair history.
- **Management of airworthiness directives and service bulletins** over the life of the aircraft.
- **Graphical scheduling of work** based on technician skills and certifications, and the availability of tooling and hangers.
- **Flexibility** to support planned and unplanned maintenance activities
- **Management of inventory** of etables and consumables across multiple storerooms, including purchasing, shipping, receipt, inspection and vendor payment.
- **Management of warrantees** including maintaining a record of all components under warrantee on the aircraft, full claim processing for monetary compensation or no-charge parts, and advanced notification of pending warranty expiration.
- **Contract management and billing** including billing for parts and labor, and SLA penalty fee billing.
- **Mobile applications** that support both connected and disconnected use.

Five success stories and use cases

Enterprises are choosing the market-leading asset management solution

10 of the 13 largest pharmaceutical companies[1]

5 of the 15 busiest shipping ports in the world[1]

10 of the 20 largest oil and gas companies[2]

16 of the 24 largest automotive companies[1]

16 of the 24 largest diversified utility companies[1]

7 of the 10 major aerospace and defense companies[3]

14 of the 20 largest power generation utilities[1]

12 of the 20 largest power distribution utilities[1]

44.2 million rail travelers daily

9 of the 18 busiest airports in the world[4]

View the Infographic to learn more.

Maximo solutions offer organizations an approach that prioritizes enterprise asset management processes, rather than basing their enterprise asset management strategy on an ERP platform. Hundreds of asset-intensive businesses are using ERP and EAM solutions together. Among its many uses, asset management is critical for asset-intensive organizations seeking to proactively service and maintain their million-dollar or billion-dollar base of facilities, assets and equipment in order to minimize downtime and thus deliver the highest quality service to customers.

With the workforces in many asset-intensive organizations now aging, asset management systems have become an increasingly important way to do more with less. Work management systems work hand in glove with asset management by helping utilities control the resources—human and material—required to get these critical jobs done. Here are five use cases where organizations derived more value, leaner operations, efficiency gains and cost savings using IBM Maximo.

01
Achieving organizational alignment, best practices, compliance improvements, and higher utilization rates

Delivering continuous return on investment (ROI) with IBM Maximo

Discover how the world's largest contact lens manufacturer, Vision Care, a subsidiary of Johnson & Johnson, is keeping an eye on innovation by standardizing on Maximo to reduce costs, make compliance improvements, drive continuous improvements, and share best practices.

Vision Care, part of Johnson & Johnson, is the world's largest contact lens manufacturer. Working in partnership with Banetti and G3P Consulting, Johnson & Johnson is in the process of standardizing on Maximo, rolling it out to 150 manufacturing facilities. The undertaking spans 60 countries, 15 asset management roles, and 18 different languages.

Disparate systems cause widespread organizational inefficiencies

The use of different systems and solutions caused widespread organizational inefficiencies across Johnson & Johnson. To maximize return on investment for both its physical and human assets, Johnson & Johnson needed to establish an enterprise asset management standard across Vision Care.

The complexities associated with multiple asset management systems from different vendors prevented the organization from driving improvements at a macro level for two reasons. First, the use of disparate systems and isolated practices made benchmarking virtually impossible. Second, many of the existing systems and solutions had a non-validated state that created compliance risks, obsolete software and hardware, and inconsistent usage. In order for Vision Care to take advantage of standard processes, naming conventions and workflows, it needed a solution built on standards.

A single EAM solution

Johnson & Johnson's Vision Care selected Maximo to be the single enterprise asset management solution across all of its sites. Standardization is helping Vision Care reduce costs, while driving continuous improvements.

Using IBM Maximo as a single, unified asset management solution, Johnson & Johnson is able to address two of its main challenges: to maintain and upgrade systems in a consistent way, making validation easier and less expensive, and to identify and share best practices across all their sites.

A foundation for the future

Maximo provides the foundation for standards on which future process and operational improvements can be based, successfully positioning the organization for future innovation and business transformation across many different Johnson & Johnson sites.

The benefits of standardization

Cost savings
- –Headcount reduction
- –Optimization of PMs
- –Reduction in site PC license costs

Turnaround time on improving job plans
- –Maximo vs Local Quality System

Access to information out in the field
- –Spare parts consolidation

Asset identification and tracking

Accurate asset costing (repair versus replace)

Audit readiness

Scope and scalability

The eight-year project plan consisted of three phases. The first, entitled Enterprise Computerized Maintenance Management System (ECMMS), focused on configuring Maximo 7.5 to align with the Johnson & Johnson asset management program. Each site rollout was considered a separate project, with an estimate of six to nine months required to complete the program at each site.

Over the course of the six to nine-month project, the program was divided into specific areas, including process and data assessment; internal and external compliance requirements; data alignments; assessment of cost savings opportunities; validation of data migration; user training and go-live support.

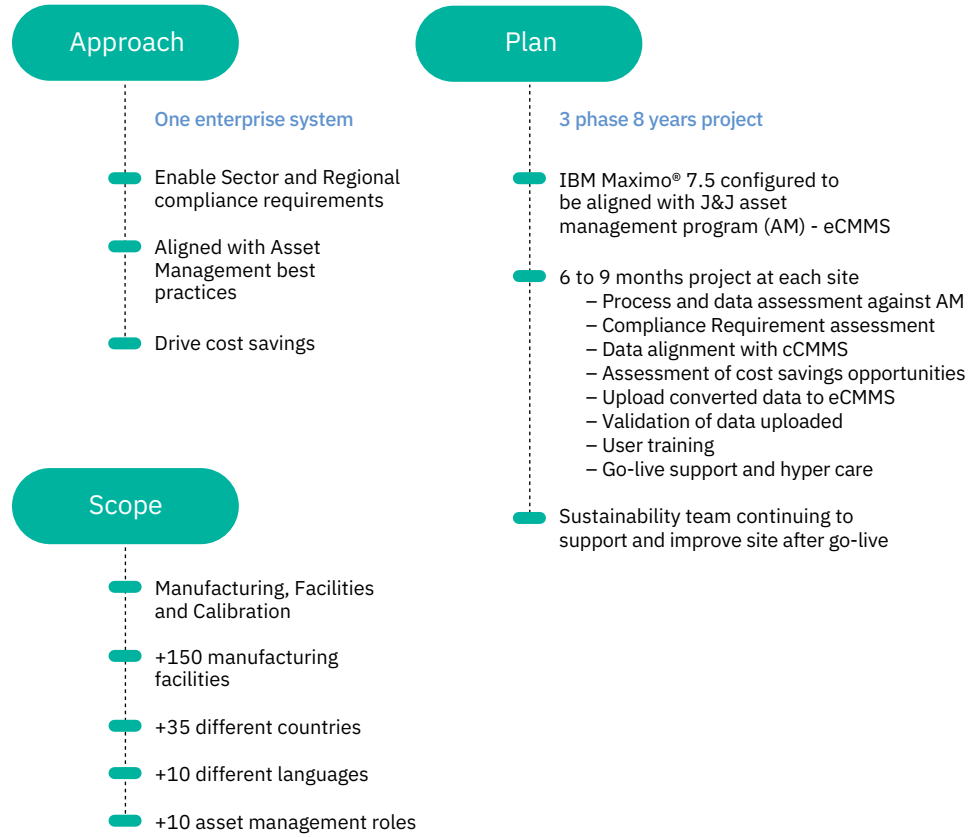


Figure 2: Johnson & Johnson implementation project plan

Aligning best practices

The adoption of Maximo as the single asset management solution aligned Vision Care with the Johnson & Johnson asset management best practices program. Implementing a best practice strategy at Vision Care that aligned to the best practices program at Johnson & Johnson resulted in Vision Care experiencing higher asset utilization rates—for both physical assets, equipment, and the organization's human capital: its employees. In addition, both Vision Care and Johnson & Johnson experienced much-needed improvements in sector and regional compliance requirement levels.

A future with analytics

Innovation has always been a critical aspect of Johnson & Johnson's operating principles. Adopting a holistic analytics solution that helps the organization discover new ways to expand its market share is critical to the evaluation.

Critical learning

Based on the experiences gained from the last five years of rolling the program out, Johnson & Johnson now realizes how critical using the right terminology is to the transformation project's successful buy-in and adoption. Starting with value and return on investment (ROI) concepts can help to avoid delays for future evaluations and decisions.

"Having a clear understanding of readiness within the stakeholder community is important. It takes time for individuals to understand new terminology and concepts like Internet of Things and even analytics. Bridging the vocabulary helps to overcome confusion; for example, using more acceptable phrases such as process control, rather than analytics, or condition monitoring, rather than IoT can help to bridge the gap between the knowledge bases of the different decision makers."

Shannon Craft, Johnson & Johnson,
Execution Systems Manager

Read Vision Care's full success story.

02
Use case: Simplifying operations, reducing hundreds of applications and systems to two

Unlocking synergy and gains flexibility with integrated business processes at DTE Energy.

"IBM is helping us to reduce our costs and enhance the availability of our generation and distribution assets, which translates into a better service for our customers."

Ed Nickolite,
IT Manager, DTE Energy Corporation

DTE Energy Co is a Detroit-based utility incorporated in 1995, involved in the development and management of energy-related businesses and services nationwide. To keep rates flat for customers and deliver greater return on investment for shareholders, DTE Energy wanted to boost operational efficiency by transitioning to a proactive maintenance model.

DTE Energy deployed Maximo Asset Management solutions, enabling it to preemptively plan and carry out maintenance, repairs and replacements for its extensive asset base.

By increasing its proportion of proactive maintenance, DTE Energy enables faster maintenance cycles and lower costs, and redirects investment for customers and shareholders.

Maximo Asset Management is helping DTE Energy transform from preventive maintenance to predictive maintenance. DTE Energy also uses Maximo for Transportation to manage their vehicle fleet by integrating telematics data and focusing on things like fuel consumption. Increasing reliability and lowering costs help the consumers.

Hear how DTE Energy has simplified the complexity of their enterprise asset management infrastructure by reducing hundreds of applications and systems to two. Watch the video.

03
Use case: Improving asset maintenance to increase operating efficiency and avoid equipment failure

Automated, company-wide asset management is helping this power generation company increase operating efficiency, which helps the company provide better, more reliable power-generation services to its customers.

For energy companies to provide efficient fuel sources for consumers and businesses, their operations must be efficient. If it takes too much labor or too much money to keep power plants running, output may suffer, and customers end up paying the price. Therefore, it is imperative that power companies run the most efficient plants possible, ensuring that all parts work together cost-effectively and provide high availability for energy output at the lowest price.

An integrated solution with superior functionality

This power generation and distribution company aimed to improve asset management and reduce operating costs to respond efficiently to the company's strategic plans, regulatory framework requirements, and increased service levels required by customers.

The utility needed to replace an in-house solution for asset maintenance and management with one that would integrate with its current enterprise systems. The in-house system could not address preventive maintenance, which left the utility to react to incidents instead of being able to prevent potential issues from growing into problems. It wanted to update current processes with industry best practices based on consulting services by adding management control.

The company sought a business and technology partner to help it improve its overall asset management and business processes, replacing its current maintenance application with an enterprise asset management (EAM) solution. Ideally, the solution would integrate all processes, monitor and trace all plant components, identify risks in advance and pool all the information for integrated and transparent asset management.

An automated asset management system using advanced analytics

Power plant equipment that breaks down causes energy waste, downtime and ultimately, higher energy prices for customers. Power companies need to find and fix those potentially faulty assets even before they begin to cause trouble. This power company implemented an automated asset management system that uses advanced analytics to measure, monitor and maintain its power plant assets.

Through sensors located in the company's power plants, engineers monitor a display that reveals the state of each asset in a single, comprehensive view, which helps spot deviations from normal performance. By analyzing this data compared with historical data, the solution helps plant managers identify anomalous patterns and abnormal performance. This enables them to perform preventive maintenance and predict where assets may start to break down in the future, improving plant performance and avoiding costly outages

To help better manage equipment and operations, the power company worked with IBM Global Business Services - Application Innovation Services to implement a solution based on Maximo, Maximo for Utilities and Maximo Adapter for Microsoft Project software.

Improved data flow, preventive and reactive maintenance capabilities

The solution provides both preventive maintenance recommendations and reactive maintenance programs. Maximo Asset Management and Maximo for Utilities allow the power company to anticipate and prevent failures, and correct systems and processes before they are carried out. The solution also helps improve data flow between departments. Better asset management and smoother operating processes mean less downtime in power plants. The new solution provides plant safeguarding as well as planning transparency, proactive issue identification and plant asset management.

Real business results:

- Maintains 100 percent of the company's distribution and generation assets, and 80 percent of its total assets, including preventive maintenance services.
- Reduces operating, maintenance, logistics and inventory costs.
- Improves safety, efficiency and product lifecycles with improved transparency and tracking abilities and more preventive maintenance.

04
Use case: Gaining competitive advantage and increasing profitability with leaner operations

Swedish Match

"To ensure that we always go to market with competitive pricing, we are constantly on the lookout for innovative ways to shrink our costs. We realized that by achieving greater utilization of our extensive manufacturing capacity, we could drive significant savings."

Mattias Fritz Wermé, Business Engagement Liaison and Global Project Manager at Swedish Match North Europe

Swedish Match is a manufacturing organization which produces tobacco products, lighters and matches. The challenge facing Swedish Match, a global consumer goods producer headquartered in Stockholm, is to maintain its share of a highly competitive market. The organization is always looking to improve its costs in order to protect its profitability. The company implemented Maximo Asset Management as a unified solution to help keep costs lean.

A lack of standards and benchmarks made comparisons impossible

Machines are the lifeblood of a manufacturing organization. For Swedish Match, ensuring equipment in its factories is running optimally, with maximum availability and uptime is critical to managing costs. However, the ability to manage its asset maintenance processes efficiently was hindered by different legacy systems being used in its factories, which made comparisons across the Swedish Match sites difficult.

KPIs and planning tools increased productivity

The inability to establish benchmarks and best practices prevented the organization from improving return on time invested in asset maintenance processes.

Before using Maximo, the factories were not well aligned; the processes and systems were different, making it impossible to compare the efficiency of one factory with another. Using Maximo gives Swedish Match the capability to schedule work, establish key performance indicators, and compare results. These capabilities enable the organization to establish benchmarks, while planning their asset maintenance holistically.

Since implementing Maximo, Swedish Match has achieved 2 percent inventory savings each year. Watch the video to learn more.

From firefighting to preventive maintenance

Maximo helped Swedish Match move from the firefighting mode they were in, into a preventive maintenance situation where they could plan and predict things in the future. This enabled the company to plan work more efficiently. As a result, machine uptime has improved, which in turn has helped to increase productivity.

05
Use case: Striking the right balance between maintenance and operations Royal Boskalis Westminster N.V.

"IBM and SRO Solutions are helping us find the optimum balance between maintenance and operations."

Marc Boer, Manager, Plant & Management Support, Royal Boskalis Westminster N.V.

Founded in 1910 and employing 8,500 people, Royal Boskalis Westminster N.V. is a leading global services provider operating in the dredging, maritime infrastructure and maritime services sectors. Its clients include governments, port operators, oil, gas and power companies and shipping companies.

Maximizing fleet availability and boosting profitability

To drive profitability, Boskalis needed to ensure maximum availability for its fleet of dredging vessels. The organization required a solution which enabled it to plan essential maintenance effectively, even when its ships were out at sea.

EAM to support engineering of dredging under complex environmental circumstnaces

Boskalis worked with partner SRO Solutions to enhance its Maximo solution with remote data replication, helping it monitor assets on and off shore—even over poor connections. Today, Boskalis manages 200 percent more vessels remotely, increasing transparency of maintenance requirements and costs, enabling higher asset availability and driving greater profitability.

The solution included configuration to support unique requirements for item management, metering, certificate management and accident / incident reporting; integration with BAAN ERP; and data synchronization from office to vessels using IBM Business Partner SRO Solutions' Data Replicator, allowing each vessel to have its own database instance.

The IBM Maximo solution, supporting four 'home markets and 50 vessels, enabled the organization to:

- –Use one set of Master Data 'Boskalis wide.'
- –Use multi-site and multi-currency to manage the locations in the Netherlands, UK, Mexico, USA and Abu Dhabi.
- –Offer Standardized Preventive Maintenance.
- –Captains and Certificate Managers could monitor timely completion of critical inspections.
- –Meet requirements to manage consumption of Fuel Lubricants Grease Oil (FLGO).'

Summary

As organizations work to adapt to changing business needs moving toward benchmark standards in the industry, Maximo provides standards and asset management services intensive capital companies require.

Maximo combines the best asset management processes in its class, which allow companies to address the convergence of IT and operational assets, clearly defining the expectations of asset performance, establishing service-level agreements (SLAs), meeting the specific requirements of the industry, and establishing automatic response plans for proactive management of assets.

- –Gain central control of activities including long-term and short-term scheduling; preventive, reactive and condition-based maintenance; crew management; resource optimization and performance indicators.
- –Improve operations across asset availability, reliability and utilization. Clients report up to a 20 percent reduction in both downtime and material costs.
- –Reduce excess or obsolete inventory. Maximo can plan inventory to meet maintenance demand accurately and manage vendor relations for contracts.
- –Increase asset utilization by tracking and managing asset deployment, specs, conditions, calibration and costing from a single system.

This level of integrated functionality is built into a solution that was born as EAM, rather than a component of a financial tool.

Asset-intensive organizations involved in industries such as manufacturing, mining, oil and gas, transportation and utilities need an enterprise management solution to help them stay up to date with continuously changing industry standards and regulations, while offering users an agile environment through which they can manage equipment and assets to a higher standard.

These organizations are successfully integrating Maximo Asset Management with SAP and other legacy systems to achieve huge gains in efficiency, cost improvement, and customer satisfaction. Some of the common triggers for an organization to consider a solution like Maximo include mandates to:

- –Improve reliability and decrease downtime
- –Reduce costs and downsize resources to operate within limited budgets
- –Increase agility to take advantage of technological innovation
- –Meet regulatory requirements
- –Implement corporate standards and best practices
- –Provide executive management KPIs and reporting insight

The single most important value of Maximo is that it can support and manage any and all asset types. The system is extremely flexible and can be tailored or configured to address nearly any asset or organizational needs and requirements.

The advantages of using a holistic solution gives users improved visibility and insight over the processes needed to maintain and manage an array of complex equipment. Whether it's an oil refinery, a vehicle fleet, rail infrastructure, public utility or an automotive assembly line, Maximo is an enterprise solution that supports the management of all asset types on a single platform.

IBM Enterprise Asset Management (EAM) solutions provide you with the capabilities to:

- Support all asset types with deep enterprise asset management functionality.
- Address regulatory and industry-specific needs with ready-made industry solutions serving transportation, manufacturing, oil and gas, life sciences, nuclear power, aviation, utilities and service providers.
- Gain visibility and control over critical assets that affect compliance, risk and business performance.
- Increase the useful life of physical assets with improved business processes for an increased return on assets and enhanced operational efficiency.
- Spread responsibility for operational efficiency across all organizations within a company, beyond the typical MRO stakeholders, mtaking EAM a strategic application for the business.

For more information

To learn more about Maximo, contact your IBM representative or IBM Business Partner, or visit: **ibm.com/internet-of-things/iot-solutions/asset-management**.

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