

Understanding the impact and value of enterprise asset management

Implementing IBM Maximo Asset Management to enable your smarter physical infrastructure



Highlights

- Collect, consolidate and analyze essential information on all types of assets
- Improve operations through better asset availability, reliability and asset utilization
- Significantly extend the value of assets and increase flexibility
- Extend the useful life of all assets or equipment, improve return on investment and defer new purchases
- Unify processes for wide-ranging asset management functions across multiple sites

Introduction

Perhaps one of the biggest challenges in asset-intensive industries is how to effectively manage all their different types of assets—without creating a huge management workload that erodes the bottom line. Enterprise asset management (EAM) processes and solutions are big business due to the inherent complexity of this problem.

In developing or manufacturing a product, or delivering a service for a market, asset-intensive organizations must constantly track, assess and manage an extraordinarily wide range of physical, technology and human assets. Organizations in asset-intensive industries must manage both inventory and production; repair machinery; hire and schedule employees; deploy and manage their IT infrastructure; and maintain physical plants, their linear infrastructure or rolling assets. To further complicate matters, technology infrastructures are tremendously complex, typically running applications and data in silos that can limit the effectiveness of cross-organizational operations and efficiencies.

These organizations must deal with continually aging physical assets—from power plants to railroad bridges to sewer systems, or from generators to electronic devices such as handheld computers—that require ongoing maintenance and repair,

since asset performance and the resulting quality of the company's products are impacted by the reliability of the asset or equipment. The increased need for asset maintenance and its management therefore can have a direct impact on customer satisfaction. This applies to processes, as well—as production, maintenance or service processes age and erode, end goods or service output may not be produced or delivered to the quality standards that were originally specified.

Managing human resources—the most valuable asset of all—comes with its own special set of challenges. Long-term employees, for example, are continually edging toward retirement, which can mean a loss of knowledge and skills—and the expense of training new employees.

Despite these challenges, an organization's products or services must constantly evolve to meet customer demands. Issues such as increased globalization; commoditization and competition; compliance with industry and government regulations; green and sustainable operations; health and safety in the workplace; eroding margins; and the resulting higher costs of doing business all contribute to this phenomenon.

So, how can an organization hope to both control assets and remain profitable? Successful organizations adapt to change by improving their operations and enabling flexibility and agility. And asset management can be a significant factor in their success. One critical step in rising to the challenge of change, and in controlling the complex asset environments necessary for bottom-line results, is to unify processes that manage wide-ranging functions across an organization's multiple sites—while optimizing production and service systems within each site.

It is clear that enterprise asset management is critical to the health of an organization. If handled correctly, it can be the key to continued operations in times of reduced budgets. It can help extend the useful life of equipment, improve return on investment and defer new purchases.

On today's smarter planet, where assets are becoming more and more *instrumented, integrated and intelligent*, an effective asset management solution can help organizations reach these goals by collecting, consolidating and analyzing information—and then putting information to use—across assets.

Introducing the IBM Maximo® Asset Management solution, which provides the key to better managing your physical infrastructure assets. This brochure offers insight you can leverage to make better decisions around all aspects of asset management, and describes how the Maximo Asset Management solution can move you toward this goal.

Defining asset management

The term *asset management* is defined by the PAS 55 industry standard as “... systematic and coordinated activities and practices through which an organization optimally and sustainably manages its assets and asset systems, their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organizational strategic plan.”

There are different levels at which critical or strategic assets can be identified and managed—ranging from discrete assets to more complex functional asset systems, networks, sites or portfolios.

Asset management focuses on all types of assets, varying from critical or strategic physical assets to human assets.

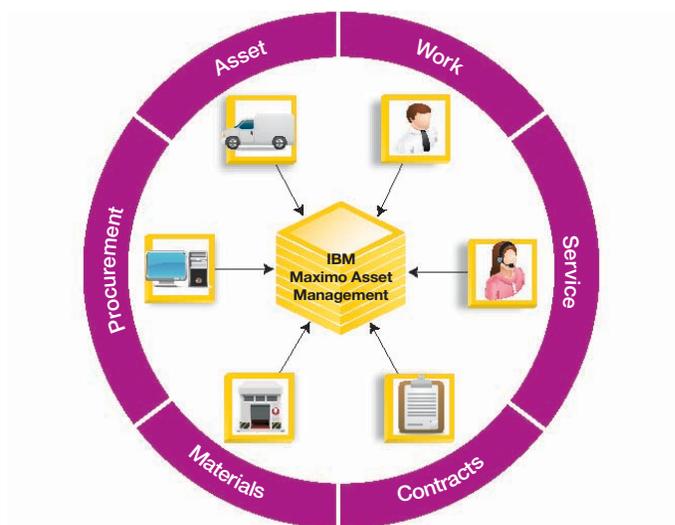


Figure 1: Enterprise assets encompass many different types.

Physical assets, which are part of an organization's infrastructure, are positioned in the following four classes:

- Plant and production (occurring, for example, in industries such as oil, gas, chemicals, mining, manufacturing, pharmaceuticals, food, electronics and power generation)
- Infrastructure (including railways, highways, telecommunications, water and wastewater, and electric and gas distribution networks)
- Transportation (for military, airlines, trucking, shipping, rail and other use)
- Real estate and facilities (for example, in offices, schools and hospitals)

The human asset perspective provides a broad view of personnel motivation, expertise or skills, roles and responsibilities, as well as insight into leadership teams within the organization.

Maximo Asset Management provides an integrated approach to managing these discrete or complex assets, to help organizations overcome challenges rooted in their aging infrastructures or human assets and in their siloed or disconnected systems. By breaking down multiple silos of non-standard, non-integrated systems, an *integrated approach* can help align operations with overall business objectives.

Such an integrated approach can also support long- and short-term planning—controlling inventory, for example, to better meet demands. It can enable preventive and condition-based asset maintenance. It can help manage vendors with comprehensive support for a full range of contracts and full support for managing service agreements.

Building on the enterprise asset and facilities foundation

There are many reasons for the increasing demand for better asset management. When organizations raise the importance, risk, quantity and/or cost of their corporate critical or capital assets, they often see a corresponding rise in interest by management to better maintain control and visibility of all these assets.

In addition, governments, regulatory bodies, shareholders and other key stakeholder groups have increased the pressure on organizations in both the public and private sectors to be able to locate and track asset whereabouts. The higher the risk or opportunity cost in not knowing where an asset is located, the greater the incentive for management to implement an asset tracking system. Enterprise asset management can provide real-time insight or visibility into all physical assets, as well as across the maintenance, repair and overhaul (MRO) supply chain.

EAM foundational capabilities—such as tracking, monitoring and managing information around asset reliability, asset utilization and performance, as well as information around the services to execute this type of information—should be integral in managing a company’s smarter physical infrastructure.

These capabilities are included in two categories of activities: asset management and facilities management. The following diagram depicts the points of focus within these categories which are supported by the Maximo Asset Management solution portfolio.



Figure 2: A robust set of enterprise capabilities is designed to meet the demanding needs of asset-intensive organizations.

Asset management

- **Operations management**—An effective enterprise asset management solution must manage and optimize the use of all assets to achieve greater asset availability, reliability and performance. The result is the ability to extend the asset's life because assets are better maintained. The ability to gather and analyze data about asset operations allows an organization to move from corrective (repairs made after a problem occurs) to preventive (maintenance dictated by a schedule based on past experience) to predictive maintenance (performed because data for a particular asset indicates that a failure is imminent).
- **Health, safety and environment**—The primary objective of health, safety and environment initiatives is to reduce overall risk, to comply with appropriate regulations and to create a safe yet efficient operating environment in which assets are used. Achieving this objective is as much about standardizing health, safety and environmental practices and integrating these practices with day-to-day operations management.
- **Supply chain management**—As traditional business assets become more technology-enabled, operations and IT functions are increasingly converging in today's changing business and technology environments. As a result, one way to manage operational applications more effectively and efficiently is to consolidate them. Companies seeking to better manage their supply chains must:
 - Find support that is able to manage all types of assets and asset maintenance information
 - Establish a single technology system to manage all types of assets and asset information—production, linear, facilities, transportation and IT—including calibration support and use of mobile capabilities
 - Have an integrated asset management solution that enables optimal return on assets, complies with regulations and helps minimize risk
- Be able to develop smarter processes and to provide users with an innovative, fully integrated supply chain management system designed for asset-intensive industries
- **Service management**—Service management enables end users to submit new service requests for the deployment or use of assets, as well as track and update open service requests. This supports service management best practices through service desk capabilities. And it can align asset management goals and priorities in a manner that best supports overall business objectives. By infusing comprehensive service level management into an asset management practice, organizations can:
 - Define service offerings to help improve organizational communication and verify that the services provided are those required to support the business
 - Establish service level agreements (SLAs) to help increase communication between the organization and the business units or external customers, helping to align service levels with business objectives
 - Monitor service level delivery proactively against metrics to avoid missing service level commitments
 - Implement escalation procedures to properly manage resources to achieve service level commitments

It is also recommended that organizations have enhanced control over the service contracts they have with vendors, suppliers or customers. Integrated contract management provides comprehensive support for purchase, lease, rental, warranty, labor rate, master, blanket and user-defined contracts. Contract correlation links SLAs to vendor contracts, helping organizations identify unreliable vendors and low-quality products. It also enables them to reference SLA performance metrics when renegotiating vendor terms.

“IBM Maximo Asset Management helps us better plan and find the optimum balance between maintenance and operations. This will help us increase the uptime of our assets and reduce inventory costs to increase our profits.”

—Marc Boer, manager, plant and management support, Royal Boskalis Westminster, The Netherlands

Facilities management

- **Facilities and space management**—This type of management refers to maintaining sustainable building operations by improving planning to ensure optimal use of space for offices, production floors, data centers, research laboratories and other physical spaces to enhance worker productivity. Facilities and space management can provide aggregated and processed information that includes a broad range of data to solutions for monitoring building conditions and maintenance from specific pieces of equipment operating at specific physical locations.
- **Environmental sustainability**—Managing assets for environmental sustainability can help an organization meet cost and regulatory drivers for energy efficiency by providing advanced abilities to analyze the energy usage of building systems in real time. The facilities management components of an EAM system can include automated solutions that can identify and suggest opportunities for energy savings in areas such as energy consumption, carbon management and greenhouse gas emissions.

- **Real estate management**—This type of management provides a clear view of strategic real estate objectives through portfolio plans and streamlines the implementation of these plans through integrated life-cycle processes. It tracks and manages real estate contract obligations, critical lease information required for reporting against federal guidelines and regulations, and provides real-time information about the real estate life cycle in one centralized location.
- **Capital and project management**—This standardizes and streamlines project portfolio management, project schedules and project vendor management. Business analytics help identify under-performing projects, resources and project management processes. It improves project planning and accelerates project schedules. It can also identify high return projects, reduce project schedule overruns and streamline project cost accounting processes.

Gaining asset management benefits with visibility, control and automation

In order to manage the full asset life cycle and better address business imperatives, asset-intensive organizations require integrated *visibility, control and automation* across their business and technology assets. This can help them better achieve their business objectives and maximize the value from all assets supporting the operation.

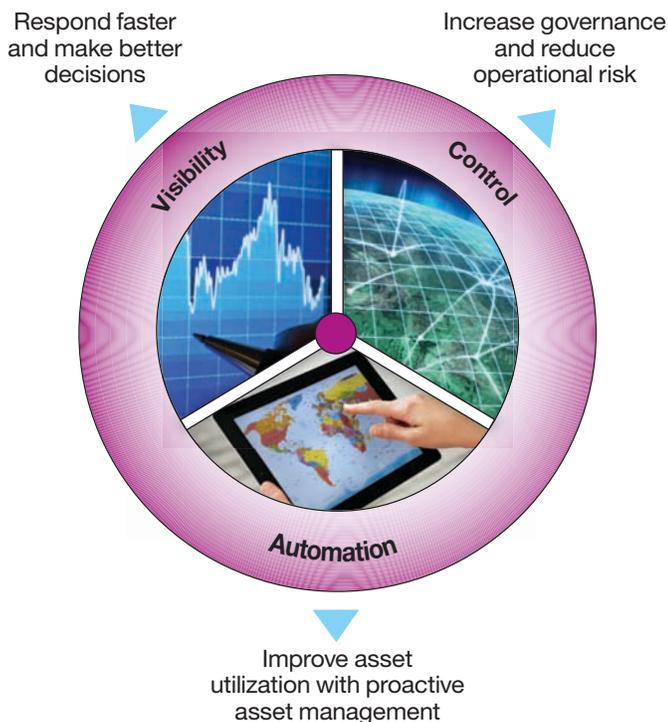


Figure 3: A comprehensive enterprise asset management solution provides increased visibility, control and automation.

This increased visibility of all assets across the enterprise allows organizations to respond faster and make better decisions. Visibility provides an enterprise-wide view of asset details and processes from across the organization—including visibility into asset service processes across the enterprise supply chain.

With better control of their assets and asset-related data, organizations can:

- Better manage and secure their investments
- Increase governance and reduce operational risk
- Extend asset life, reduce inventory costs and control spending
- Mitigate compliance issues and risk
- Improve health, safety and environment, and security

In addition, increased automation enables organizations to:

- Build agility and flexibility into their operations
- Improve asset utilization with proactive asset management and consolidation of their systems
- Enhance operational capabilities by automating workflow, reporting through key performance indicators and dashboards, and improving inventory data reliability

In order to manage the full asset life cycle and address these business imperatives, asset-intensive organizations can derive great value by implementing and using the Maximo Asset Management solution.

“Prior to implementing Maximo software, we were using many contractors to support our day-to-day operations, with little coordination. Using Maximo to plan our maintenance has significantly improved the efficient use of contractors here at PWCS.”

—Greg Harrap, specialist advisor, maintenance systems, Port Waratah Coal Service Ltd. (PWCS), Australia

Adding value through improved enterprise asset management

Increased asset availability and greater asset reliability provide a basis for *improving service delivery* and *growing more revenue* from the same asset base. As organizations tune their supply chains to meet specific supply levels, their asset or equipment uptime and availability must align to these demand schedules.

Asset management has a direct impact on profitability, since it affects the quality of the product or service produced or delivered. It can be a significant component toward justifying the price, and ultimately, determining profitability. The quantity of goods produced or services delivered directly contributes to the

top-line revenue for any organization, whether in energy, utility, manufacturing, transportation, logistics or public sector—whether that good produced is a hard asset, such as an engine component, or whether the good produced is a service delivered to a customer.

Asset management also has a logical impact on operational costs. Efficiencies realized by effectively managing labor, inventory and other support services directly impact the bottom line by helping to control costs. More timely and precise user intervention can improve productivity and reduce materials use and, in turn, overhead.

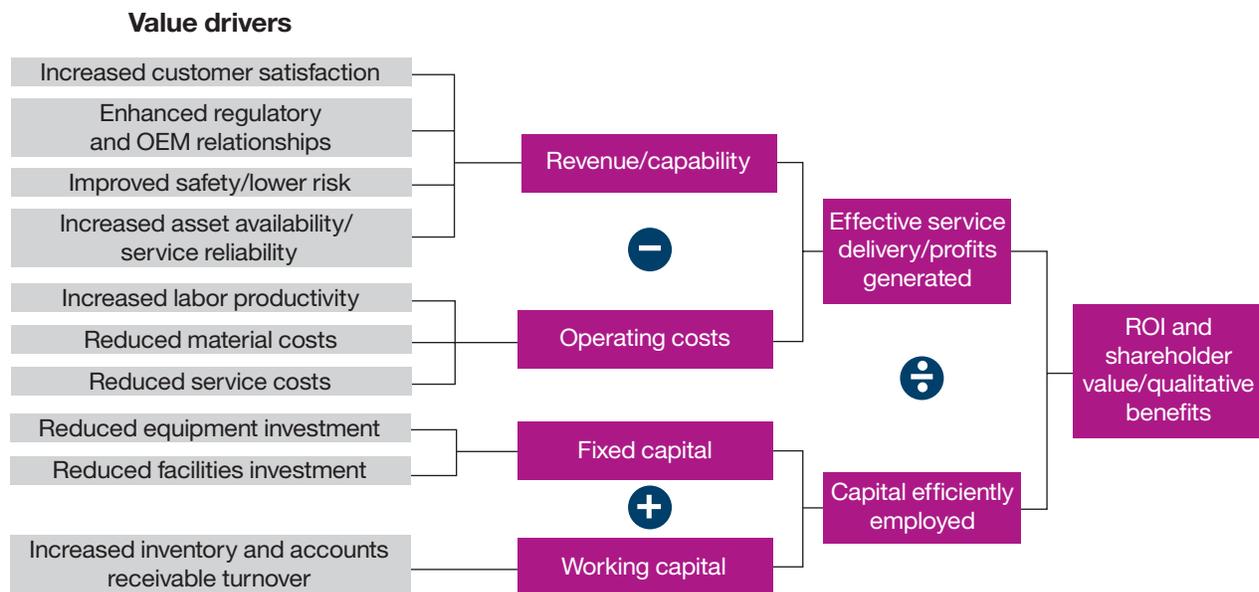


Figure 4: Certain value drivers contribute directly to ROI and shareholder value.

A significant challenge for organizations today is to balance the utilization loads of their asset portfolios effectively to meet customer expectations with the lowest operational cost. It's common practice, as a result, for organizations to overstock equipment and fleets to make sure they always have the assets they need. Other companies stockpile spares and inventory to shorten repair times by eliminating delays caused by an inefficient supply chain. Each of these "insurance policies" comes with high premiums associated with constant upkeep, refurbishment and financial carrying costs that will never go away.

These strategies can increase, rather than decrease, costs. Using Maximo Asset Management, however, helps control or eliminate overstocking and stockpiling, and can also help reduce the organization's fixed capital investment and contribute to positive, bottom-line results.

“IBM Maximo software gives us insights that we didn't have before, letting us focus on individual processes and identify possible improvements.”

—Brian Urbanek, business systems analyst, Lower Colorado River Authority, USA

Choosing a solution that can increase revenues and decrease costs

With Maximo Asset Management, organizations are better able to meet today's business, operational and technology challenges, as well as more efficiently address the complete life cycle of resources. This solution enables companies to:

- Manage an aging infrastructure by:
 - Implementing and enforcing standard processes for asset management
 - Supporting real-time data collection, diagnostic and analysis tools that closely monitor aging assets to extend the useful life while improving overall maintenance best-practices, as well as meeting increasingly complex health, safety and environmental requirements
- Control the “brain drain” among employees facing retirement by:
 - Responding to global price pressure by enabling a reduced workforce to work more efficiently and cost-effectively
 - Putting into place proven workflows and enforced best practices that capture the knowledge and critical skills of long-time employees
- Consolidate operational applications by:
 - Standardizing asset management best practices across all asset types across the entire enterprise
 - Supporting global operations by leveraging a wide range of languages
- Provide a lower cost of ownership by using one global enterprise application instance, consistent metrics and best-in-class practices that are enforced with the same standard asset management solution at all of the organization's sites
- Enable asset-intensive organizations to optimize their maintenance and repair supply chain with management of materials and spare parts inventory that is fully integrated into the asset management solution
- Leverage easy-to-use, integrated capabilities for integration with other systems for enterprise resource planning, operational systems, financial management, reporting and analysis to support better quality decision making overall

Implementing a solid enterprise asset management solution can directly contribute to the way organizations in asset-intensive industries increase revenues and decrease costs.

IBM Maximo Asset Management

The IBM Maximo Asset Management solution offers the required visibility, control and automation of key information an organization needs to achieve greater efficiency in asset management by managing all asset types, from traditional IT, physical and emerging smart assets, on a single technology platform.

Maximo Asset Management can support the maintenance of an organization's smarter physical infrastructure and improve customer service, increase return on assets, enable greater compliance, improve asset performance and reduce risk. And it can do it in a shorter time period, while providing better visibility and control of all required information to better align with an organization's overall business goals and objectives.

The IBM solution for an integrated enterprise asset management approach is designed to naturally align with asset management best practices across an organization or in an industry. Maximo Asset Management software provides industry-leading capabilities and functionalities that allow capital, asset-intensive industries to leverage the benefits of an integrated enterprise asset management system to manage all critical assets and facilities within the organization.

Maximo Asset Management software unifies comprehensive asset life cycle and maintenance management activities, providing insight into all enterprise assets, their conditions and work processes to achieve better planning and control, leveraging the business function within an organization.

Maximo Asset Management is available for and can be tailored to the following industries:

- **Government**—Addresses requirements unique to federal and local governments, including municipalities managing contracting and personal property
- **Utilities**—Provides smarter work and asset management activities for transmission and distribution in water and wastewater, as well as gas and electric power distribution
- **Oil and gas, mining and metals**—Focuses on operational excellence by improving safety, reliability, compliance and performance while reducing costs through standardization, collaboration and the adoption of better operational practices
- **Manufacturing**—Helps industries such as automotive, aerospace and defense, electronics or industrial products, food and beverage, or consumer products manage all their assets and maintenance activities; leverages concepts such as Lean/Six Sigma; and complements product life-cycle management requirements
- **Life sciences**—Helps monitor, track and manage equipment, facilities, mobile and IT-enabled assets; integrates with IBM Maximo Calibration to help meet complex compliance requirements from the FDA and to provide support in validation projects
- **Healthcare**—Tracks and locates all critical assets, monitors facility conditions, complies with reporting requirements and integrates with operational health information systems
- **Nuclear power**—Helps nuclear organizations manage all work and asset management activities and address stringent regulatory requirements on compliance, health, safety and security
- **Transportation**—Provides best practices to help improve the availability and utilization of critical transportation assets in companies operating rail, road and air traffic or logistics
- **Service providers**—Helps manage SLAs and all related service management activities for multiple customers in a single deployed instance

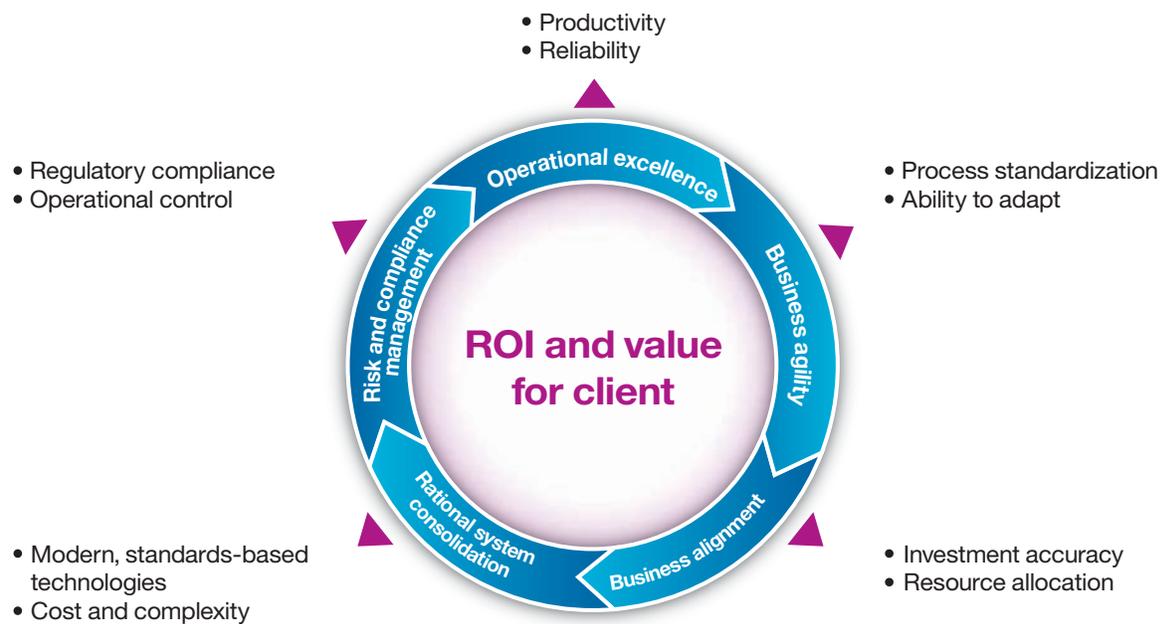


Figure 5: IBM Maximo Asset Management provides a core business solution.

In addition, Maximo Asset Management solutions can leverage the following key aspects of enterprise asset management to their advantage:

- **Asset maintenance management**—Optimized at the *process* level. Examples include reactive, preventive and planned maintenance combining materials and service management. Maximo asset and work management modules in general address this requirement.
- **Asset risk management**—Optimized at the *asset performance* level. For example, asset reliability, service and performance management, Maximo Calibration and key performance indicators and metrics, such as mean time to repair and mean time between failures, address such requirements.
- **Infrastructure management**—Optimized at the *service performance* level. Examples include utilities and facilities management. Spatial and linear asset management, facilities and integration with intelligent building management systems address these requirements.
- **IT asset management**—Optimized across the enterprise. This aspect is important in today's asset management environment to integrate specific requirements from the shop floor to the corporate office. Examples include management of data repositories, servers, telemetry and database connection services. Maximo IT Asset Management addresses these capabilities.

According to ARC Advisory Group, “IBM Maximo solutions are well proven in the industry, as they have had the leading overall market share in their class for the past five years. Specifically, IBM holds the leading market position in the following segments: EAM worldwide and in North America, EAM software revenues and service revenues, EAM for oil and gas, pharmaceutical and biotech, electric power, water and wastewater, automotive, logistics, government and independent maintenance service providers.”¹

For more information

To learn more about how IBM Maximo Asset Management solutions can help you manage your enterprise assets more effectively—and help to bolster your bottom line—contact your IBM representative or IBM Business Partner, or visit: <http://www-142.ibm.com/software/products/us/en/category/SW222>, where you’ll find white papers, data sheets and more.

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¹ ARC Advisory Group, “Enterprise Asset Management and Field Service Management Worldwide Outlook, Market Analysis and Forecast Through 2015.” ARCWeb.com, April 4, 2011



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