

Drive down costs with better asset lifecycle management

A large, stylized graphic of the letters 'IBM' in a bold, sans-serif font. The letters are filled with a gradient of purple and magenta colors, with some sections appearing as solid dark purple or magenta, while others are white, creating a layered, 3D effect. The 'I' is dark purple, the first 'B' is magenta, the second 'B' is dark purple, and the 'M' is magenta.

The current landscape

Energy and utility companies around the world are being challenged on multiple fronts. Business models are being challenged by the need to integrate alternative energy sources and consumers demanding more sophisticated interactions. Long-standing issues, such as an aging workforce and the attendant knowledge loss as workers retire, aging assets, and continuous regulatory and market pressures all present serious obstacles for future industry growth. Newer challenges, such as renewables integration, customer retention, and capital investment strategies combine with these long-standing issues to effectively dismantle the notion of “business as usual.” As shown in Figure 1, the landscape of emerging energy and utilities trends portends even further change. Utilities are faced with charting a course through these disruptions while identifying and seizing the new opportunities presented by these challenges.

The large existing asset base for a utility is both its greatest strength and its greatest challenge. Utilities must continue to improve performance from existing assets, while adapting to difficult-to-predict operational changes. Whether it is distribution equipment designed for one-way flow to customers that must now adapt to a two-way flow of electricity, or power plants that must now cycle to accommodate increased intermittent renewable generation, utilities must start to manage their assets differently.

But differently in what way? Most utilities have adopted enterprise asset management products, such as the IBM® Maximo® Asset Management solution, and developed strategies, processes and tools that are finely tuned to the traditional utility environment. There are decades of institutional experience built into these systems, processes and people. The goal is to make the best use of all of these investments while adapting to operate optimally in this new, dynamic world.

Ten year trends in the energy and utilities industry

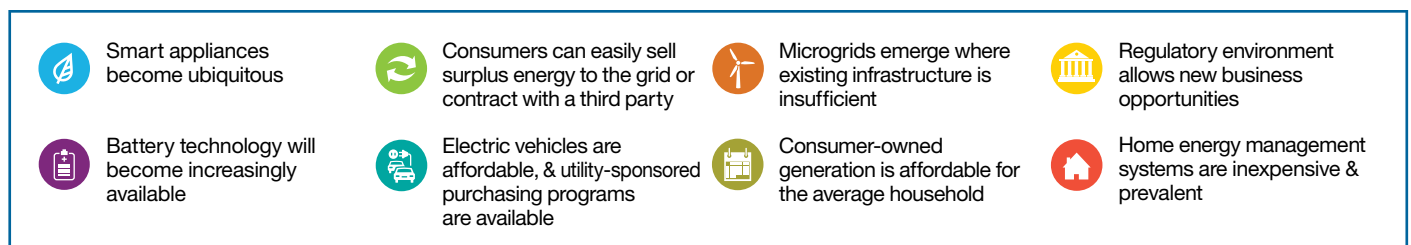


Figure 1. Ten-year trends in the energy and utilities industry

Smart lifecycle management: Increasing return on asset investment

Most discussions of asset management center on the Operate and Maintain portions of the lifecycle (marked in dark blue in Figure 2). However, driving increased return on asset investment requires one to look beyond just this part of the lifecycle. In an environment where constant change is the new normal, utilities will look to close the loop on the lifecycle of their assets by feeding operational and maintenance learnings back to requirements and planning. They will interact with the manufacturing ecosystem to influence asset design and construction, and automate the handover of information to operations from the construction process.

Original equipment manufacturers are not standing still in the marketplace either. There is a movement towards “product as a service,” evidenced by mining equipment manufacturers selling the material moved by their equipment, or jet engine manufacturers selling thrust by the hour, where the manufacturers maintain ownership and responsibility for the assets. Utilities could use this trend to their advantage, but this would require an asset management strategy that extends beyond operations and maintenance. It would be a strategy that takes the entire lifecycle of an asset into account, including those portions that reside within other companies.

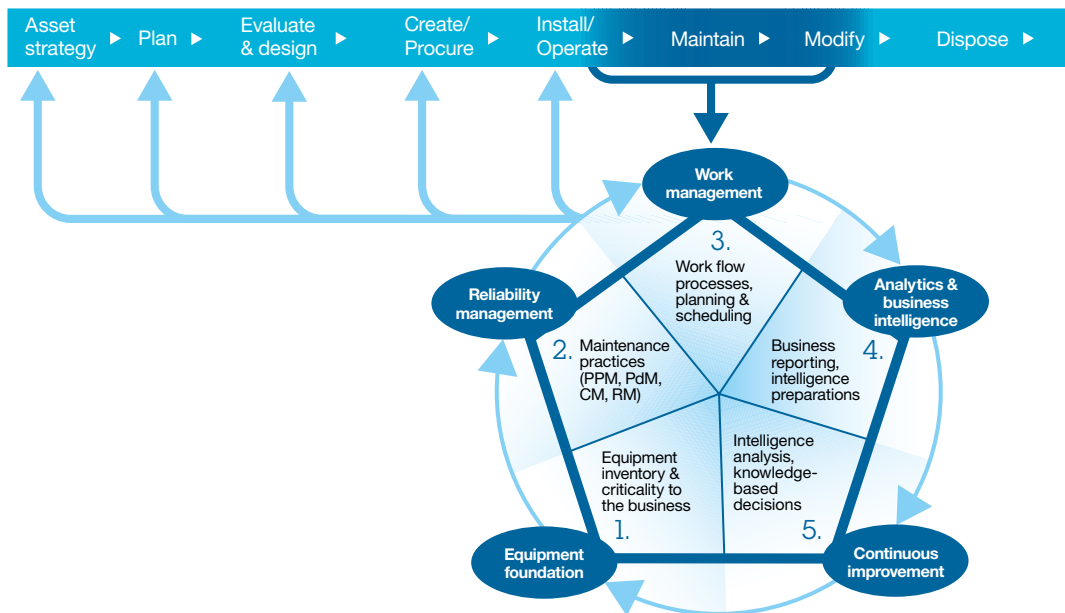


Figure 2. Lifecycle asset management

The common thread throughout the asset lifecycle is information, as shown in Figure 3. Many asset-intensive industries are beginning to understand the importance of managing and using asset information. In the oil and gas industry, for example, the concept of a main information contractor is becoming common, elevating the importance of asset information up to the same level as traditional construction and operational domains. This is important, as there are traditionally several information silos throughout the asset lifecycle that need to be bridged in order to unlock the full value of this information throughout the life of the asset.

Although the early stages of the asset lifecycle tend to be dominated by product lifecycle management tools and processes, and the latter stages managed by enterprise asset management systems, this line is blurring as asset-intensive companies are realizing the value of deeper integration between these traditionally separated domains.

Enterprise asset management

An enterprise asset management system is key to a utility's ability to comprehensively manage its physical assets. The IBM Maximo Asset Management solution is a comprehensive system for managing physical assets on a common platform in asset-intensive industries. It offers built-in mobile access and mapping, crew management and analytical insight.

The Maximo Asset Management solution allows organizations to share and enforce best practices, inventory, resources and personnel. It helps manage virtually all types of assets, including plant, production, infrastructure, facilities, transportation and communications. It is available as an on-premises or software as a service (SaaS) offering.

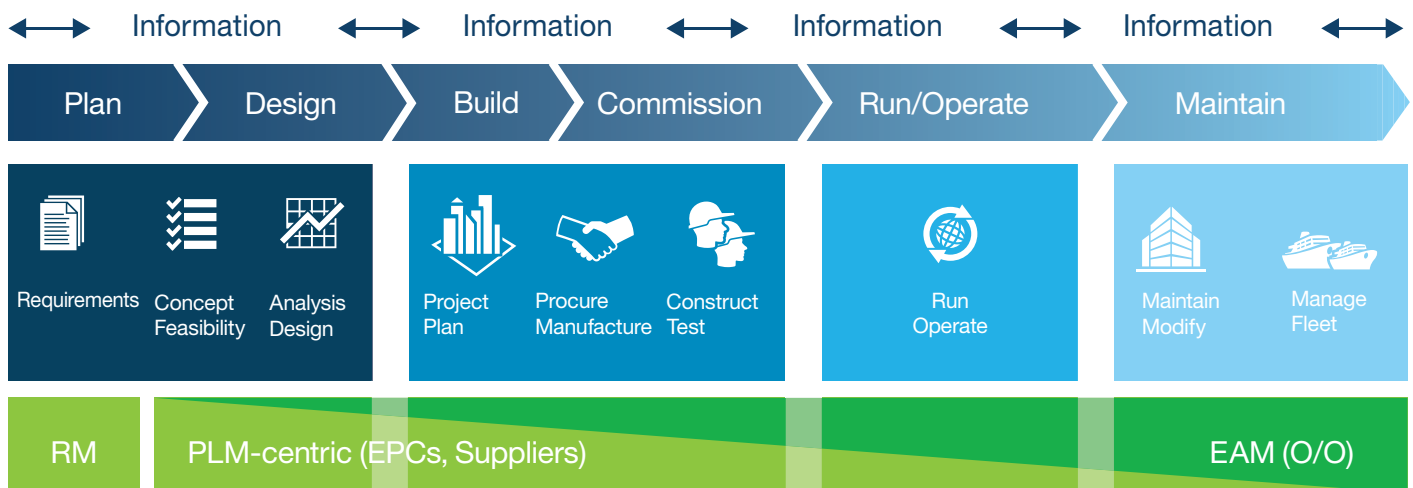


Figure 3. Information in the asset lifecycle

The Maximo Asset Management solution includes six management modules in an enhanced service-oriented architecture:

- **Asset management.** Achieve the control you need to more efficiently track and manage asset and location data throughout the asset lifecycle.
- **Work management.** Manage both planned and unplanned work activities, from initial request through completion and recording of actuals.
- **Service management.** Define service offerings, establish service level agreements (SLAs), and more proactively monitor service level delivery and implement escalation procedures.
- **Contract management.** Gain complete support for purchase, lease, rental, warranty, labor rate, software, master, blanket and user-defined contracts.
- **Inventory management.** Know the details of asset-related inventory and its usage including what, when, where, how many and how valuable.
- **Procurement management.** Support virtually all the phases of enterprise-wide procurement such as direct purchasing and inventory replenishment.

Integrating asset management into the organization with ISO 55000

ISO 55000 provides a framework for integrating a company’s asset management strategy both across the asset lifecycle and up and down the organization, as shown in Figure 5.

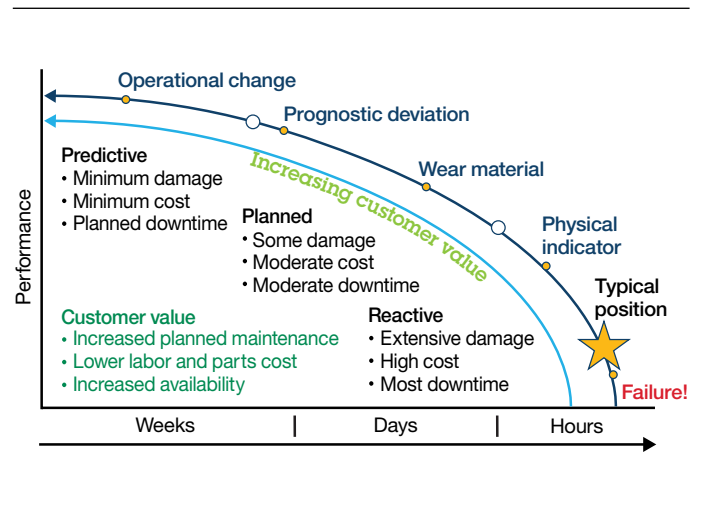


Figure 4. Opportunities to increase asset performance

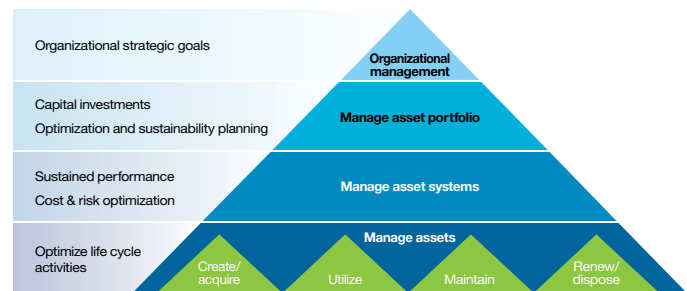


Figure 5. ISO 55000 framework



Figure 6. Key areas of the ISO 55000 standard

The IBM Maximo Enterprise Asset Management system supports the various areas of the ISO 55000 standard, as shown in Figure 6:

- Enables a natural alignment with ISO 55000, allowing easy implementation of its tenets:
 - Improve customer service, increase return on assets, enable greater compliance, improve asset performance and reduce risk in a shorter time period.
 - Provide better visibility and control of all required information to better align with the organization's overall business goals and objectives.
- Supports full maintenance management requirements:
 - Combine reactive, preventive and planned maintenance with materials and service management.
- Supports asset risk management such as asset reliability, service and performance management:
 - Use Maximo key performance indicators (KPIs) and metrics such as mean time to repair (MTTR) and mean time between failure (MTBF) to address these issues.

- Supports infrastructure management such as utilities and facilities management:
 - Apply Maximo's spatial and linear asset management, facilities and integrated workplace management capabilities to improve infrastructure management.
- Supports IT asset management:
 - Manage today's complex assets and integrate requirements from shop floor to the corporate office.

Adapting analytics for use with enterprise asset management

Regulatory and market changes are putting a premium on an organization's ability to adapt to new opportunities. At the same time, utilities are expected to continue to deliver utility level availability and reliability. Advanced analytics platforms, such as the IBM Insights Foundation for Energy software solution, are purpose-built to make use of decades of experience and data while providing a foundation for new insights that can allow a utility to respond to changes in the business environment. Analytics capabilities like those in the Insights Foundations for Energy solution provide science-based methods to glean insights that can enable more mature asset management strategies.

The Insights Foundation for Energy solution provides a 360-degree view of assets from the individual component level to the entire system. Built-in asset analytics provide insights for enabling predictive maintenance, measuring asset status and assessing risk and consequences in real time. The combination of data integration and visualization with advanced analytics enables better decision making about maintenance, repairs and use.

Figure 4 highlights the opportunities that exist to increase asset performance prior to asset failure. Although reactive maintenance might be the best asset management strategy for non-critical, inexpensive assets, most assets of interest to utilities do not fall into this category. By using the wealth of information about your critical assets, from historical data to unstructured maintenance records, data sheets and system operational history, more maintenance can be planned and even prevented, while minimizing unexpected failures and operational disruptions.

With advanced analytics platforms such as the Insights Foundation for Energy solution, you can:

- Search thousands of maintenance logs and identify important observations logged by the maintenance team.
- Predict which parts are likely to fail in the near future and have inventory available when an asset is scheduled for maintenance.
- Identify the characteristics that tend to increase operational cost and downtime over the life of a system.
- Replace those parts that have not yet failed and avoid further unscheduled downtime.
- Predict which characteristics lead to a greater frequency of failures.

Real benefits of advanced asset management

There are both quantitative and qualitative benefits to moving up the asset management maturity curve. Figure 7 gives examples from several asset-intensive industries of average savings and efficiencies that can be expected in a variety of areas, such as labor and asset costs and use, inventory and equipment purchases, warranty and quality.

In addition to firm cost savings and efficiency improvements, companies can also expect to see improvements in:

- **Preserving asset value.** Extend the value of assets without sacrificing the short-term or long-term organizational objectives with science-based maintenance policies and whole asset lifecycle optimization.
- **Informed asset investment decisions.** Improve decision making and balance costs, risks, opportunities and performance to manage assets better.
- **Managing risk.** Reduce financial losses, improve health and safety, good will and reputation, and minimize environmental and social impact to reduce liabilities such as insurance premiums, fines and penalties.
- **Improving services and outputs.** Assure the performance of assets to improve services or products that consistently meet or exceed the expectations of customers and stakeholders.

- **Demonstrating social responsibility.** Improve the organization's ability to demonstrate socially responsible and ethical business practices and stewardship
- **Demonstrating compliance.** Conform with legal, statutory and regulatory requirements, and adhere to asset management standards, policies and processes to demonstrate compliance.
- **Enhanced reputation.** Demonstrate social responsibility and ethical stewardship to improve customer satisfaction, stakeholder awareness and confidence.
- **Improving organizational sustainability.** Manage short-term and long-term effects, expenditures and performance to improve the sustainability of operations and the organization.
- **Improving efficiency and effectiveness.** Review and improve processes, procedures and asset performance to improve efficiency and effectiveness, and achieve organizational objectives.

Business scenarios	ROI points	Examples
Labor utilization	↑ 10-20%	A major US railroad saved USD 5 million by better tracking labor to specific work
Asset utilization	↑ 3-5%	A large OEM reduced overhaul process time from 56 days to 21 days
Equipment purchases	↓ 3-5%	A fleet management company saved USD 9.5 million by meeting 100% availability with less investment
Warranty recoveries	↑ 10-50%	A consumer products company with a medium size fleet increased warranty recovery 50%
Inventory needs	↓ 20-30%	A large passenger railroad was able to identify USD 18 million in excess or obsolete inventory
Inventory carrying costs	↓ 5-20%	A railroad saved USD 18 million impacting financing, insurance, handling, overhead, and so forth
Material costs	↓ 10-50%	A rail maintenance service company reduced costs 20% by optimizing material purchases
Purchasing labor	↓ 10-50%	A fleet management company reduced purchasing staff by 20%

Figure 7. Examples of average savings and efficiencies from various industries

For more information

To learn more about managing the asset lifecycle for energy and utility companies, please contact your IBM representative or IBM Business Partner, or visit the following website:

ibm.com/energy

Additionally, IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. We provide full lifecycle management of IT products and services, from acquisition to disposition.

For more information, visit: ibm.com/financing



© Copyright IBM Corporation 2016

Route 100
Somers, NY 10589

Produced in the United States of America
January 2016

IBM, the IBM logo, ibm.com, and Maximo are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at ibm.com/legal/copytrade.shtml

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

It is the user’s responsibility to evaluate and verify the operation of any other products or programs with IBM products and programs.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED “AS IS” WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

The client is responsible for ensuring compliance with laws and regulations applicable to it. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the client is in compliance with any law or regulation.



Please Recycle
