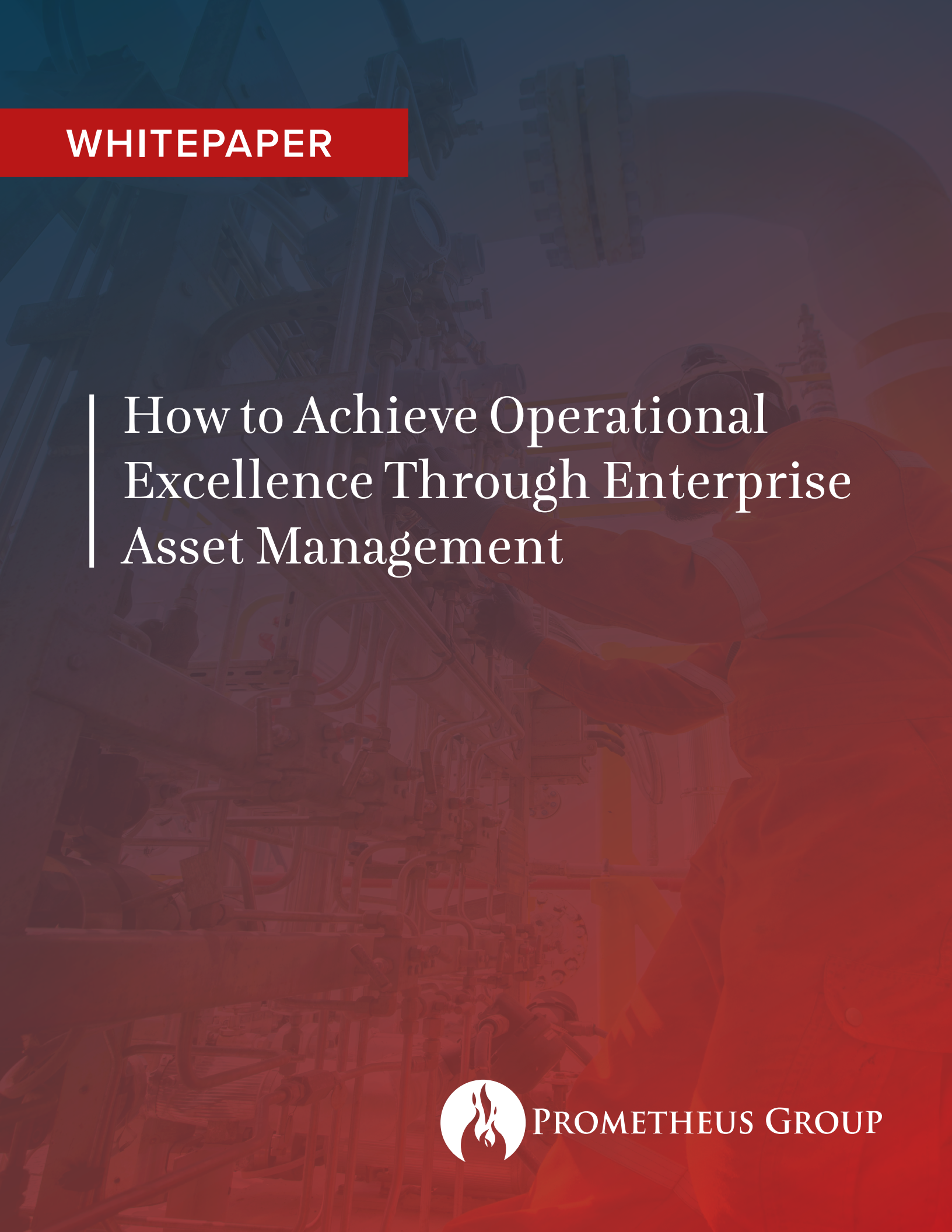
WHITEPAPER

How to Achieve Operational Excellence Through Enterprise Asset Management



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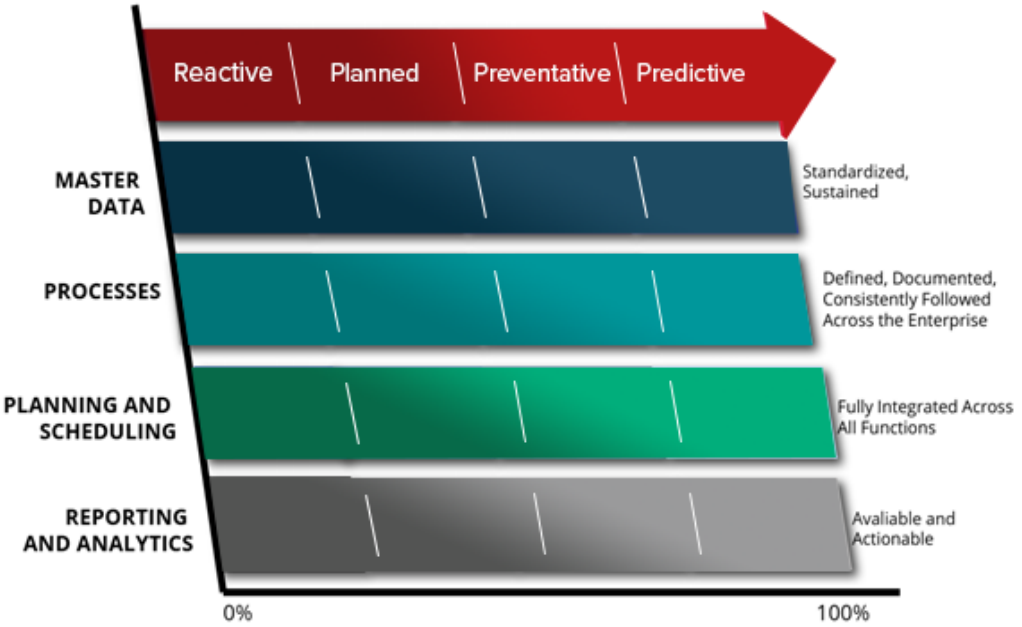
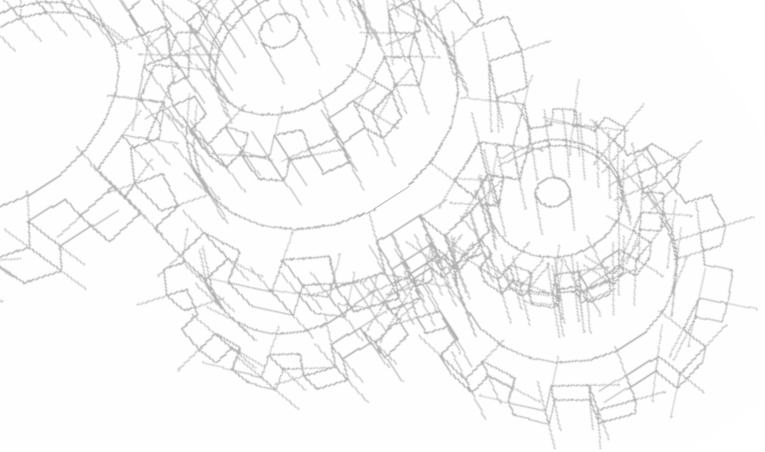
Operational excellence is a philosophy of continuous improvement in the workplace and executing business strategy to increase competitive advantage. More specific definitions often include details such as increasing productivity or value to customers or shareholders. What does that really mean in a production environment? Achieving this desired state means an organization must have actionable plans that include directives for individual and collective contributions.

Companies in asset-intensive industries intuitively know that enterprise asset management (EAM) is a cornerstone of operational excellence. Top performing organizations have a comprehensive inclusion of EAM-related processes at the strategic level and they facilitate execution at the individual level. Having the right technology, people, and processes in place for asset management can have a tremendous impact on top and bottom-line results.

Efficient and effective execution requires preventive maintenance planning and the effective scheduling of all maintenance work, supported by work management technology and processes. Achieving operational excellence requires the organization to move from a reactive maintenance model to one that focuses more on preventive or even predictive techniques.





Results include greatly improved equipment reliability and significantly extended equipment life. Improved reliability lowers operational risk, increases productivity, and decreases downtime. This ultimately reduces costs and contributes to improved value to customers by way of product availability. Extending equipment life also reduces costs by allowing the organization to delay capital expenditures to replace equipment. These results are consistent with all broad and narrow definitions of operational excellence.

Journey to Operational Excellence

It is important to identify where your organization is on the path from reactive to predictive maintenance management. Many models exist that detail the characteristics of the stages of maturity.

For simplicity, we will summarize these into three key categories: reactive, planned/preventive, and proactive/predictive.

Reactive organizations perform limited planning and scheduling. They do not have documented standards, tend to schedule at a work order level, have little or no tracking of maintenance plans in compliance, and lack actionable insights and analytics. They usually do not have standardized data or a plan for master data governance. Implications of this model include reduced reliability and availability, increased downtime, decreased wrench time, decreased productivity, and increased reactive costs. Various studies indicate reactive work orders can cost as much as three to five times more than planned work orders.

Organizations that operate at a **planned/preventive** stage generally schedule at a task level with an increasing focus on preventive work orders. They have doumented processes and follow them most of the time. These organizations usually see a greater linkage between maintenance plans and compliance. They also may have a view of data — although it is not necessarily actionable — and perform occasional data clean up. At a preventive maintenance stage, the organization easily identifies required maintenance as well as regular maintenance services and events such as shutdowns.

An organization that has reached a **proactive** stage or is moving toward an increasingly **predictive** model is characterized by complete scheduling including tasks, materials, and tools. These organizations use standardized and documented processes that are consistently followed. They show a tight linkage between the maintenance plan and compliance, indicated by an integrated approach to planning, scheduling, and work management. They have a system that provides actionable analytics and insights, along with ongoing, sustained master data governance. Taken together, these lead to optimized levels of asset availability, reliability, and overall equipment effectiveness (OEE).

Understanding your current state and evaluating it against your desired situation will help you understand exactly where you need to begin your next step in the journey to operational excellence.

Build and Strengthen the Foundation

Standardization is critical to accelerating your progress from one stage to the next, regardless of where you find yourself on the continuum of reactive to predictive. This includes defining, standardizing, documenting, and following processes across all sites as well as having standardized master data within your systems. A report by consultant firm CGI notes that the place to start is by defining your approach and ensuring it is aligned with the overall business strategy. [1]

Many organizations have defined and documented their key processes. These may have been identified as best practices during an implementation or through ongoing efforts to improve operations. Ideally, the processes are then consistently followed across the enterprise allowing the organization to continually measure and improve performance.

[1] https://www.cgi.com/sites/default/files/files_uk/articles/implementing_enterprise_asset_management_

Unfortunately, simply defining or documenting standardized processes or implementing standardized systems is not enough. Benefits are never fully realized without strong user adoption. There is no value for the organization if individuals cannot see the benefit of following the processes or if they cannot easily use the systems provided.

An easy-to-use system is required to increase user adoption. Additionally, data within the systems must be standardized, accurate, accessible, and timely. The right combination for success includes data that resides within a system on a single platform that provides visibility to all users, and an easy-to-use tool to access and apply the data. It is imperative to success that all data remain within the ERP, EAM, or CMMS system.

Third-party software that requires data to be extracted from the system, manipulated, and imported back into the original system should be eliminated. This approach inherently increases the risk of error and results in multiple versions of the truth. Additionally, these types of solutions typically involve investment in middleware and hardware that could be better spent on other value-added items.

An Integrated Approach

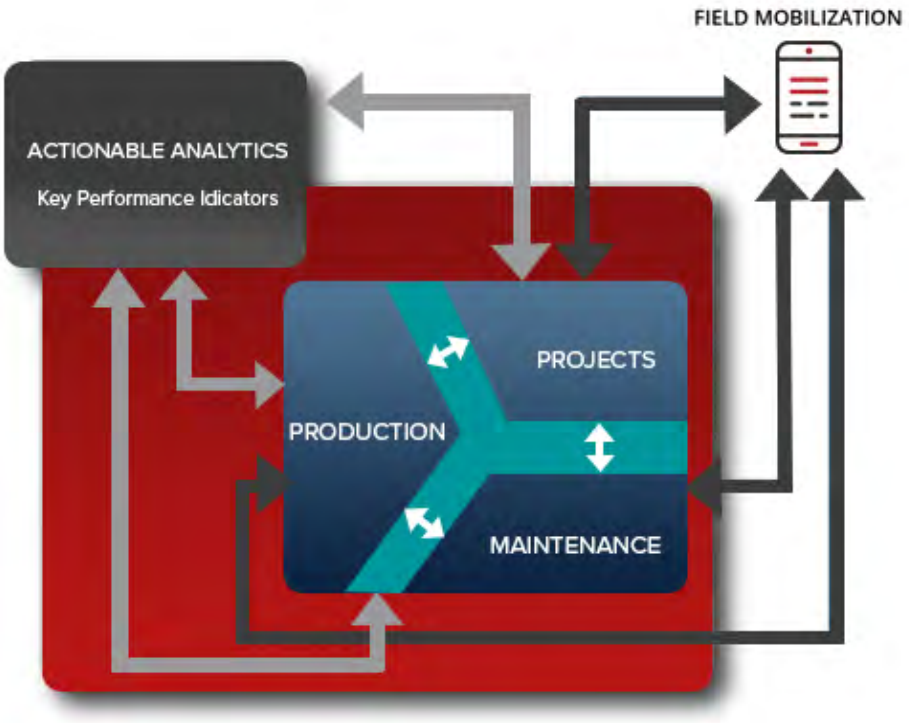
With standardized processes, systems, and data in place, the organization can employ an integrated approach to operational execution across multiple disciplines. Asset management is then optimized. Everyone has access and visibility to the same data and systems, whether they're planning and scheduling preventive and routine maintenance, developing predictive maintenance strategy, managing shutdowns and other capital projects, or planning and scheduling production orders.

This facilitates vastly improved communication across operations, projects, and maintenance. All aspects of the maintenance process build upon one another. Visibility into all aspects of the process makes it possible to align the organization, track work and resources, and measure successes and failures.

Planning and Scheduling

Planners manage the "what and how." Schedulers manage the "who and when." In both cases, they are best able to do their jobs when they have direct access to accurate data related to materials, equipment, permits, resources, and craftspeople. They must maximize uptime and equipment reliability given available resources and they must establish practices that reduce reactive maintenance.

A well-executed planning and scheduling process increases wrench time. With the right information and communication in place, all necessary safety measures will have been taken, tools and materials will be available, and work packages and instructions will be ready when the craftsperson arrives at the job. The organization accelerates its progress through the stages from reactive to predictive as wrench time improves through better planning and scheduling.



Materials Management

The necessary materials for any given job must be available at the right time and in the right place. This is often a challenge for asset-intensive organizations. A study by the Society of Petroleum Engineers indicates that on average, maintenance, repair, and operations (MRO) storehouses and supply chains are both lacking critical equipment spares and are overstocked by 20 percent.[2] This indicates that critical parts may not be available when a failure occurs, further extending downtime and reducing wrench time as craftspeople are delayed in completing jobs. Moreover, capital invested in inventory cannot be redirected to other needed areas. Companies may also need to pay taxes on inventory that sits idle.

Poor materials management may be the result of mistakes, lack of processes, bad data, or an inability to easily access information. With complete visibility into material assets, companies can make smarter decisions such as how much inventory to purchase and when to retire materials and equipment. Furthermore, full visibility of in-house inventory enables the reallocation of materials and tools from previous work orders to future work orders. Control over these variables allows companies to reduce downtime by protecting maintenance time and keeping craft personnel productive.

Actionable Analytics

Continuous improvement occurs only when good measurement and reporting systems are in place. While ERP, EAM, and CMMS systems are often implemented with many canned reports, these are rarely enough to meet all the needs of the organization. Information should be readily and easily available. This enables employees at all levels to evaluate their performance at a particular moment in time as well as over time.

When employees and departments can easily view actual results against plan on a frequent and regular basis, adjustments can be quickly made to increase their output to meet goals and to ensure greater compliance. Additionally, when data used for reporting remains within the system, decision-making at all levels of the organization is based upon real-time and accurate information. Business analytics that better facilitate reliability reporting — a challenge for many maintenance organizations — are essential for the progression to a preventive or predictive stage. All this starts with asset management data that are globalized, harmonized, and simplified.

[3] https://www.gartner.com/smarterwithgartner/how-to-stop-data-quality-undermining-your-business/

Master Data

Master data plays a primary role in achieving operational excellence. A Gartner survey concluded that the average enterprise loses around $15 million annually due to poor data quality.[3] Clean, consistent master data within the ERP, EAM, or CMMS is critical for effective planning, scheduling, projects, operations, and decision-making.

A holistic approach to master data is highly recommended. This involves steps to initially cleanse and harmonize the data, enforce standards during cleansing and governance, ensure data integrity is an ongoing discipline, and enable continuous governance to drive asset optimization for competitive advantage. A standard hierarchy is required for the functional locations, equipment, and materials. The value of a structured hierarchy in these areas is enhanced by implementing an ISO standard approach to identifying and managing equipment classes and characteristics. Effectiveness of reliability analysis across the enterprise is improved greatly by implementing a system based on ISO standards for failure codes, damage codes, cause codes, and activity costs.

Data consistency compounds the value of reliability analysis and the impact of continuous improvement programs. A strong relationship exists between a consistent approach to master data governance and a single system that ensures effective planning, scheduling, and work execution across a variety of enterprise asset management processes. When executed consistently on an enterprise-wide basis, leveraging harmonized master data drives powerful business analytics enabling operational excellence.

Mobilization

Mobile technology has become more economical and easier to use. The right solution will also offer seamless integration with existing systems. Mobility should be considered an important component of an organization's pursuit of operational excellence. This is particularly true for asset intensive manufacturers who have vast facilities and/or large field operations.

The ability for data to be entered at the time and place work occurs — and for information relative to work orders to be communicated immediately to those in the field — can contribute to significant improvement in efficiency across a maintenance organization. Additionally, a user interface on a mobile device configured for an individual's role will enable that person to easily navigate and update the ERP, EAM, or CMMS system without needing specific training on the system itself. It is also important that the mobile devices be connected directly to data that reside in the ERP, EAM, or CMMS system versus using third-party middleware or a separate platform. This is true for the same reasons mentioned previously (i.e., reduced risk of error and avoiding multiple versions of the truth). It also reduces the need for additional investment in hardware or software to support the mobilization of your system.

Operational Excellence is Achievable

As enterprises globalize, harmonize, and simplify key processes, best practices emerge. These then can be institutionalized, which amplifies their impact. This enables data collection to drive actionable analytics, providing consistent transparency and visibility across all sites globally. Everything comes together to drive scale economies in labor and operations, supporting deployment of best practices that optimize assets to drive competitive advantage. It also enhances important areas such as safety, return on assets, reliability, customer satisfaction, and shareholder value.
This provides an incredible boost to efforts focused on understanding how to define, measure, and improve performance across everything from daily work processes to reliability analysis.

Practical technology that is easy to implement and use unlocks the potential for operational excellence. Provide your organization with the right technology framework, and everyone throughout the organization will be quick to embrace it. This is because it improves their day-to-day experience while driving strategic value.
The Prometheus Platform offers configurable, end-to-end asset management in real time, on any device, online or offline. Our solutions offer seamless integration with your ERP, CMMS, or EAM, delivering a powerful, simplified user experience at every level of your organization.

To learn more about features and functionality, visit our website and review our Prometheus Platform section.

LEARN MORE

About Prometheus Group

Prometheus Group is a leading global provider of comprehensive and intuitive enterprise asset management software solutions that work within ERP systems and span the full work management life cycle for both maintenance and operations. Developed jointly with end users, Prometheus software enhances the customer experience for planning, scheduling, and executing work for both routine maintenance and shutdowns and turnarounds, all while protecting the workforce with safety solutions and electronic permit to work. Our straight-forward functionality, graphical visualization, and simple processes enable customers to increase productivity, reduce costs, and improve reporting. For more information, please visit www.prometheusgroup.com.