Enable Asset Management Systems with Integrated Enterprise Information Solutions
Using Technology to Support ISO 55000 Standards for Asset Management
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Corporations spend billions to design, buy, operate, and decommission production equipment and other physical assets. In many cases, managing these assets to get the most value from them is critical to business success. And as a result, such assets are under the ever-watchful eyes of top management, shareholders, and regulators. But how can you be confident that your asset management practices are maximizing return on assets consistently and sustainably?
The Mission-Critical Role of an Asset Management System

BOOST RETURN ON ASSETS, COMPETITIVENESS, AND SUSTAINABILITY
Manufacturers and companies in asset-intensive industries must adapt to continuous change and find innovative ways to compete in global markets – all while getting the most value from their investments in assets. Technological innovations can play a vital role in achieving this goal – for example, by helping companies optimize their operational processes and build new services and business models.

For example, in the area of asset management, operational excellence requires processes and collaborations that span organizational and geographic boundaries – all enabled by the right technology infrastructure. At the same time, as companies gain greater awareness of sustainability issues, they need to manage environment, health, and safety performance and asset-related risks with more precision than ever before. This is best achieved when asset management is supported by an IT-enabled asset management system that closely aligns with asset management standards and best practices.

Guidelines such as the Publicly Available Specification (PAS) 55 were a first step toward helping companies put structured, good-practice-based discipline around their asset management capabilities to optimize asset uptime, reliability, and overall performance. This discipline is being embedded into organizational strategies, corporate governance, and day-to-day activities, helping companies gain more value from their assets and increase the sustainability of their enterprise. PAS 55 was widely recognized as a framework for achieving good asset management practices across industries and regions, laying the foundation for the ISO 55000 suite of standards, which was published in January 2014.

Compliance with ISO 55000 can help companies gain a competitive advantage through more-effective management of valuable corporate assets.
The ISO 55000 Standards for Asset Management

The ISO 55000 set of standards reflects a growing understanding – on a global scale – of the importance of asset management as a driver of profitability. It also shows an understanding of operational risks and safety issues when asset management is not handled in a holistic manner. The guidelines consist of three documents, as summarized in the following table.

ISO Standards Documents

<table>
<thead>
<tr>
<th>Name/Number</th>
<th>Overview</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ISO 55000 Asset Management</td>
<td>Overview – principles and terminology</td>
<td>Provides an overview of asset management, its principles and terminology, and the expected benefits from adopting an asset management system</td>
</tr>
<tr>
<td>ISO 55001 Asset Management</td>
<td>Management systems: requirements</td>
<td>Specifies requirements for an asset management system within the context of the organization</td>
</tr>
<tr>
<td>ISO 55002 Asset Management</td>
<td>Management systems: guidelines for the application of ISO 55001</td>
<td>Offers guidance for the application of an asset management system, in accordance with the requirements of ISO 55001</td>
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</table>

Note: The descriptions are taken from the official ISO Web site: www.iso.org/iso/catalogue_detail?csnumber=55088.

Whereas the focus of the family of ISO 55000 standards is on a management system for physical assets, the standards themselves can apply to any asset that has a real or potential value. As noted in the standards, “Physical assets usually refer to equipment, inventory, and properties owned by the organization. Physical assets are the opposite of intangible assets, which are nonphysical assets such as leases, brands, digital assets, use rights, licenses, intellectual property rights, reputation, or agreements” (§3.2.1).
THE BENEFITS OF MEETING ISO 55000 STANDARDS
So why would companies want to achieve compliance with ISO 55000? First, it can help them gain a competitive advantage through more-effective management of valuable corporate assets. For example, following ISO 55000 standards can result in new cost savings, higher profitability, and better customer service. These benefits are the result of:
- Greater alignment between departmental processes, resources, and functional contributions across the enterprise
- Full transparency provided by a comprehensive audit trail
- More-informed, consistent decisions based on insights into data and how it is used
- Improved planning, especially for capital expenditures
- Consistent, prioritized risk management
- Workforce engagement through effective leadership, communications, and cross-disciplinary teamwork

At the same time, meeting these standards can facilitate compliance with industry and other regulatory standards. This is due to the fact that ISO 55000 coexists with other related management system standards such as ISO 9001 for quality management systems and ISO 14001 for environmental management systems. All of these requirements are inextricably linked because effective asset management demands an integrated, cross-enterprise approach. Addressing only parts of ISO 55000 in isolation – even if these parts are handled optimally – means that the business misses out on the primary benefits of implementing this management standard.

“Modern business needs [to] now demand an integrated business-focused approach to how assets are managed. The intent of the ISO 55000 series of standards is to deliver a good practice asset management framework so that all societies can gain the full benefit from their investment in assets.”

Peter Kohler, Asset Management Body of Knowledge Commissioner, Asset Management Council; Capability Partners – Founder and Director
The Scope and Key Principles of ISO 55000

ISO 55000 looks at asset management from an interdisciplinary and cross-departmental point of view. In the set of three standards documents, asset management is defined as “coordinated activity of an organization to realize value from assets” (§3.3.1). As illustrated in Figure 1, which is based on the ISO 55000:2014 standard document, this means managing an asset portfolio comprising discrete physical or other types of assets in an integrated and optimized way – within the context of managing an entire corporation. This all happens along the entire asset lifecycle, from creating or acquiring the asset and using and maintaining it to renewing or decommissioning it.

EMBRACE THE FUNDAMENTALS
At the highest level, the series of ISO 55000 standards encourage companies to embrace the following principles when managing their assets:

• **Value**: They can realize the value from asset investments – tangible or intangible, financial or nonfinancial – based on the organizational objectives of their respective organization.

• **Alignment**: They can translate their organizational objectives into asset management plans within the context of related enterprise processes supported by an asset management system.

• **Leadership**: They can improve asset management within a common management practice approach along the asset lifecycle and take an enterprise-wide approach by embedding asset management processes into other enterprise processes. They can also account for concepts not directly linked to the performance of assets, such as corporate culture and leadership style.

• **Assurance**: They can rely on asset management as a way to have fully functional assets based on effective governance processes.
TAKE AN INTEGRATED APPROACH

ISO 55000 is based on the idea that companies must take an integrated approach to asset management, as this integration enables ever-higher levels of asset optimization. While it applies to all types of assets, the main targets are physical assets embedded within the overall business context of running a corporation. Other asset categories, such as financial assets, human assets, information assets, and intangible assets, are essential parts of an enterprise and need to integrate with the activities and practices being used to manage physical assets.

Logically, this kind of cross-departmental integration requires IT enablers. While ISO 55000 isn’t a certification of software applications, it does identify the need to include cross-departmental and integrated approaches to information management, decision making, performance monitoring, risk management, and communications (see Figure 2). So ISO 55000 will force every company to take a hard look at its existing business processes and practices from an integration point of view. And in doing so, it can help drive management to realize the benefits other firms are experiencing by following a standards-based asset management approach (respectively, PAS 55 in the past and ISO 55000 since 2014).

At the same time, ISO 55000 highlights the need for links between business priorities and practical, day-to-day activities. These links help ensure that people perform tasks the right way every time to maximize return on assets.

CENTRALIZE AND SYSTEMATIZE ASSET MANAGEMENT

ISO 55000 does not mandate that companies deploy certain software products. But it does set goals for governance and control that are best achieved by deploying an enterprise application that can centralize information and systematize and automate processes supporting the entire asset lifecycle.

An enterprise asset management application can provide an integrated information system capable of supporting the planning, designing, and building of asset systems and networks, as well as ongoing operations and monitoring. And it can do this while simultaneously considering environmental, health, and safety concerns. As a result, asset management becomes an integral part of product, service, and demand networks – be it in discrete or process manufacturing or in industries such as utilities, mining, or oil and gas.
What Are the Implications of ISO 55000 for Asset Management Software?

Given the integrated, holistic approach to asset management demanded by the ISO 55000 standards, companies will succeed best by taking a systematic, IT-enabled approach to asset management. An asset management organization can certainly be run using paper-based records, spreadsheets, and disparate systems and achieve some of the benefits outlined in ISO 55000. But it will achieve far greater efficiency by deploying a single, centralized asset registry and automated system that updates information in real time and enables all departments to work from a single source of truth. These departments may include finance, inventory management, production, procurement, customer service management, risk management, and human resources.

In essence, companies in manufacturing and other asset-intensive industries need to:

- Constantly design and innovate sustainable product offerings
- Manage a demand-driven business planning approach
- Implement responsive supply planning
- Produce products using agile manufacturing automation
- Deliver products along an efficient logistics network

And such companies need to do all this while constantly monitoring networks along the value chain for real-time visibility and compliance insights. While not all asset-intensive industries are manufacturing centric with the respective business processes to manage, all industries rely on operational excellence in asset management and environment, health, and safety to operate their corporation.

The benefits of having up-to-date data at everyone’s fingertips, rather than in a file drawer at another site, should not be underestimated – including significant financial savings. Imagine having the most recent asset management strategies, the latest key performance indicator figures, all unit costs, and historical maintenance or performance information accessible at all times.

An asset management organization will achieve far greater efficiency by deploying a single, centralized asset registry and automated system that updates information in real time and enables all departments to work from a single source of truth.
The goal of the ISO 55000 standards is to establish effective asset management within an organization – with the ultimate objective of enabling people to manage risk, cost, and performance. Integrated SAP® solutions can act as a technology platform on which organizations can implement a comprehensive asset management system that supports this goal. Once deployed, these applications can support the integrated enterprise processes needed to operationalize systematic, IT-enabled asset management.

ASSET MANAGEMENT AT ITS FINEST
The SAP Enterprise Asset Management (SAP EAM) solution, when implemented with other SAP applications, is designed to support every aspect of an ISO 55000 compliance initiative. At a high level, SAP solutions can help organizations manage and operate assets – from a few hundred pieces of equipment to complex asset networks with millions of assets. Leveraging broad, integrated functionality, the solutions support asset operations and maintenance activities such as preventive and predictive maintenance, maintenance cost budgeting, maintenance execution with enterprise mobility solutions, and work-clearance management. And as a result, organizations can:

• Manage physical assets across their lifecycle, from initial purchase to end of life
• Experience real-time visibility of asset performance and maintenance
• Improve efficiency with integrated project management and centralized information management
• Maximize investment by controlling specifications procurement
• Improve financial reporting and analysis by capturing all maintenance-related expenditures
• Increase production through improved procurement practices and better maintenance management
The solutions provide software functionality that supports enterprise asset management processes, which work together to:

- **Reduce the risk of failure, delays, and overruns** – by helping companies set the right priorities, effectively plan and monitor projects, collaborate with contractors more closely, and react to issues earlier
- **Optimize project portfolio performance** – by helping people manage projects more effectively and enforcing project governance enterprise-wide
- **Lower overall project costs** – by enabling better use of critical resources and better monitoring of budgets versus actuals throughout project execution
- **Lay the foundation for successful operations** – by collecting and maintaining the best possible information for operations, maintenance, and purchasing

Once the software is deployed, companies can:

- Maximize return on physical assets by supporting integrated asset management processes and collaboration across all related business areas, such as finance; HR; risk; environment, health, and safety; and compliance
- Improve overall equipment effectiveness by providing asset intelligence and a holistic view of performance, risks, and expenditures throughout an asset’s lifecycle – insight needed to drive efficient utilization of assets
- Manage asset-related risks by delivering continuous and proactive operational risk management to support instant decisions and minimize disruption

“In recent years, Ausgrid has implemented new processes to improve the way we manage our assets and produce a better outcome. Ausgrid realized the importance of understanding the condition of its aging assets and using this information to make future investment decisions. The implementation of the SAP Enterprise Asset Management solution was a cornerstone of our success.”

John Hardwick, Group Executive Network Strategy, Networks NSW
COMPLEMENTARY, INTEGRATED SAP SOLUTIONS
It’s important to note that meeting the ISO 55000 standards requires more than just a stand-alone asset management application. The scope of the standard is enterprise-wide, so other asset categories, such as financial assets, human assets, information assets, and intangible assets, must be integrated with the activities and practices being used to manage physical assets.

ISO 55001 Requirements and SAP® Software

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**SAP ENTERPRISE ASSET MANAGEMENT SOLUTION: BUSINESS PROCESSES AND SCENARIOS**

Portfolio and project management
- Capital portfolio management
- Capital project management
- Monitoring capital investments

Asset network
- Asset information collaboration
- Asset information governance
- Predictive maintenance and service
- Plan-driven procurement

**CONTINGENT WORKFORCE AND SERVICES PROCUREMENT**

Asset operations and maintenance
- Asset strategy and performance
- Maintenance planning and scheduling
- Maintenance execution
- Mobile asset management

The broader set of SAP solutions can support these other business areas – and do so in an integrated manner. These solutions integrate with SAP EAM to enable an asset management system that meets requirements as outlined in chapters 4–10 in ISO 55001:2014. The following table summarizes how SAP software relates to the various ISO 55001 requirements.
## ISO 55001 Requirements and SAP® Software

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<td><img src="" alt="Table with ISO 55001 requirements and SAP software compatibility" /></td>
</tr>
</tbody>
</table>

### Environment, health, and safety
- Incident management
- Environment, health, and safety compliance and risk management
- Environmental emissions management
- Management of change
- Maintenance safety and permit to work

### Financial management

### Human capital management

### Supplier relationship management

### Supply chain management

### Collaboration

### BUSINESS ANALYTICS
- Business intelligence
- Data warehousing
- Predictive analytics
- Enterprise information management
- Enterprise performance management
- Governance, risk, and compliance
- Sustainability

### TECHNOLOGY
- Cloud
- Big Data
- Mobile platform
Many organizations are under pressure to reduce IT costs while increasing the flexibility and sustainability of their core business software and systems. To meet this need, SAP delivers one of the broadest portfolios of cloud-based solutions, giving customers the ability to drive innovation and agility within their businesses. Cloud solutions from SAP integrate with on-premise solutions and eliminate the need for major IT investments; this makes them ideally suited for small and midsize organizations and the subsidiary networks of large corporations seeking to harness the Internet of Things (IoT) and optimize asset management.

These SAP solutions are needed more than ever as IoT adoption accelerates thanks to reductions in the size and prices of sensors, greater adoption of Big Data initiatives and predictive analytics, and the assignment of IP addresses for objects. And it’s estimated that there will be 50 billion to 75 billion connected devices by 2020.* This rapid adoption of mobile devices – combined with the IoT – is transforming how asset management is conducted. In many industries, solitary technicians no longer roam plants and production sites with clipboards, manually writing down readings from machinery gauges and requesting maintenance. Instead, the IoT is connecting people, machines, and things and enabling a bidirectional flow of information for real-time decision making. This continuously generated, data-driven intelligence from the IoT ecosystem is helping companies optimize business processes and automate operations and maintenance.

Software such as the SAP Predictive Maintenance and Service solution can help asset management practitioners analyze vast amounts of asset-related data flowing from various sources and combine it with the latest back-end transactional data. And by harnessing the predictive capabilities of the software, companies can increase operational efficiency by anticipating and addressing pending equipment failures. This will ultimately allow them to lower or even eliminate asset downtime.

Leveraging broad, integrated functionality, SAP solutions support preventive and predictive maintenance, maintenance cost budgeting, maintenance execution with mobile solutions, and work-clearance management.

CLOSING THOUGHTS
From an asset management and company perspective, staying competitive and providing excellent customer service is of incredible value. But this requires access to relevant and real-time asset lifecycle information at any time, regardless of asset location or ownership. On-premise and cloud applications working together – and combined with asset-specific content and orchestrated by a cloud platform – form the basis of any asset intelligence initiative.

Looking ahead, the future of asset management relies on a network-based asset management solution orchestrated by an IoT platform that brings together the manufacturers, services and logistics providers, and operators of the world. This network will be the key to maximizing asset value, increasing asset uptime, and improving customer service.

LEARN MORE
Implementing asset management is a journey, and it requires the right governance and management approach to deliver exceptional results with real business benefits. To learn more about how to use asset management to create value for your organization by applying SAP solutions within the framework of ISO 55000 standards, call your SAP representative today. Or visit us online at www.sap.com/eam.