ISO 55000: Why Do We Need a New Standard for Asset Management

With the expected introduction of the International Organization for Standardization (ISO) 55000 in early 2014, replacing the existing British Standards Institute (BSI) Publicly Available Specification (PAS) 55, many organizations are questioning the value of obtaining compliance with these standards. Why do we need a new standard for asset management?

Current Gaps in Asset Management
Many organizations currently struggle with their asset management strategy. One source of frustration is the “solution” that most software vendors position as the system supporting asset management. These solutions are very IT and finance-centric. Most asset managers, and the personnel operating and maintaining the assets, know very little of the full capabilities of their software solution. As a result, they cannot leverage the invaluable information contained within it to manage their assets more effectively throughout their life cycle. It is typical for vendors to show the value proposition of asset management solutions by using a maturity model such as that depicted in Figure 1.

Figure 1 – IBM Asset Management Maturity Model

This whitepaper examines why so many organizations struggle with their asset management strategy, explains the need for a new standard, describes the core elements of developing an organization-level policy and provides guidance on successfully implementing the changes to the organization.
These maturity models tend to focus on maintenance and shift the perception of it from being a cost to being a source of value. Influencing design during the early phases is critical because of the impact maintenance decisions will have on total cost of ownership. If we look at the typical asset life cycle, as depicted in Figure 2, the Maintain phase occurs very late in the asset’s life, after many decisions have been made that determine the total cost of ownership. Asset management, maintenance, and other considerations must be taken seriously early on or the asset is doomed to suffer chronic reliability problems and higher costs during the Maintain phase.

Figure 2 – Asset Life Cycle

As a matter of fact, analysis has revealed that by the time Commissioning is complete as much as 95% of the asset's life cycle costs are already pre-determined, as depicted in Figure 3. This is despite spending only a relatively small percentage of the asset's actual cumulative Total Cost of Ownership (TCO). It is also important to remember that a significant amount of an organization’s funds are expended on information management software purchase, implementation and upgrades. The earlier phases are when an asset has the most opportunity to impact these changes and establish the organizational framework for future life cycle cost savings.

Figure 3 – Phased Impact to Total Cost of Ownership
Because of the high associated cost of change after an asset has become fully operational, a very small percentage of the total cost of ownership can be impacted once the asset enters the Maintain phase of its life cycle. Fundamentally, this is why so many organizations struggle with optimizing their asset management strategy. Without a focus on asset management – providing value to an organization through assets that the organization has a responsibility for – from the Concept through the Commission phases, the overall return on net assets throughout the life cycle will be significantly sub-optimized.

Compounding the problem of having a limited ability to impact Total Cost of Ownership (TCO) during the Maintain phase is the significant investment that organizations often make in software packages that cannot solve the inherent problems. Without addressing the root cause of the problem – the lack of a comprehensive asset management strategy – software cannot achieve the promised return on investment (ROI). The end result is a negative impact on the bottom line.

The Need for a New Asset Management Standard
So why is asset management important enough now for an international standard? First, let's review the background for the new standard. The Institute of Asset Management (IAM) and the British Standards Institute (BSI) collaborated on a specification for asset management that was released in 2004 and then significantly updated in 2008: Publicly Available Specification (PAS) 55 part 1 and part 2. This specification was widely adopted in the United Kingdom and Australia but was not widely adopted in other parts of the world.

Some significant asset-related failures brought asset management to the forefront of public and political attention, creating the momentum for an international standard. The International Organization for Standards (ISO) stood up Technical Committee (TC) 251 and charged it with developing the ISO 55000 series of standards for asset management. This technical committee’s first task was to identify and then document the need for such a standard. The committee concluded that a number of factors necessitated developing a standard. The committee found that risk awareness has become a significant concern among business executives and government officials. The world has suffered from major industrial disasters, the financial crisis and recession, and continued global instability caused by civil unrest and economic duress of certain nations. There is a need for an element of stability and this standard intends to be a leveling force for international trade.

Composition of the New Asset Management Standard
The new standard is composed of three parts:

- ISO 55000 - Overview, Principles and Terminology
- ISO 55001 - Requirements
- ISO 55002 - Guidelines on the Application of ISO 55001

All prior management systems (governed by ISO 72:2001, Guidelines for the Justification and Development of Management System Standards) contained six common elements:

- Policy
- Planning
- Implementation and Operation
- Performance Assessment
- Improvement
- Management Review

During the development of ISO 55000, a new ISO structure for management system elements was created. This model builds upon the traditional Shewhart cycle (Plan – Do – Check – Act or PDCA for short) that is the basis for continuous improvement in management systems. Organizational structure and the leadership that ties value creation as revenue and profit generation to the physical asset portfolio are key additions to the improvement of the previous ISO 72:2001 model. So the new standard describes the management system for asset management; it does not describe the implementation strategy for the management of assets. Much like BSI PAS 55, it gives you the “what” relating to the requirements and guidelines, but not the “how”.

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Implementing an Asset Management System
For an organization that does not currently have one in place, implementing an asset management system is a holistic business transformation. It includes a technology component due to the various information technology software packages used in the day-to-day management of assets and the interfaces to the general business ledger and balance sheets. The project plan must structure an implementation that links the organization’s strategic plan and business objectives to the physical asset portfolio by creating an asset management policy that covers the areas contained within the dotted lines below in Figure 5.

Figure 5 – Creating the Asset Management Policy
An organization’s strategic plan aligns the major stakeholders to true north, sets the milestones to accomplish and puts the measures in place to evaluate the effectiveness of the execution. Most organizations would struggle with an answer if asked to explain how their management of assets supports their strategic plan.

The business objectives must be reasonable, achievable and concrete. This means that each objective must be quantitative, use time constraints, and be understood throughout the organization.

The asset management policy is the vital link that ties the business objectives to the physical asset portfolio. It specifies the methodology for leveraging these assets throughout their life cycle to achieve these objectives. The policy also defines the governance for the asset management system and defines the components required to comply with the ISO standard. At a minimum, it defines:

- The Organization
- Leadership
- Planning
- Support
- Operation
- Performance Evaluation
- Improvement

It is important to understand that an organization’s optimal value creation depends on the ability of the asset owners, operators and maintainers to provide the greatest asset utilization at the lowest total cost of ownership. This will yield the greatest return on net assets and return to shareholders. To create this optimal value, the risks must be clearly identified and mitigated. The organizational structure to support these controls is considered an investment in creating greater value, not a cost. The Reliability Excellence® model in Figure 6 illustrates the structured stair-step approach to a holistic business transformation. Leadership is critical in ensuring the foundational elements of management commitment and partnerships between the various departments within the organization.

![Figure 6 – Reliability Excellence Model](image)

The model provides the 29 elements that are assessed and then reinforced, including who is responsible and accountable for each step in the process. The required supporting personnel and who to inform is also addressed. Along with the Reliability Excellence model, implementing an asset management system must include establishing infrastructure that supports the plan-do-check-act methodology of the ISO standard. This four-phase Risk-based Asset Management® implementation model is represented in Figure 7. This infrastructure is the fundamental piece of a traditional IT and finance-centric installation of software used to manage asset information as discussed earlier. Gaps identified from this and the Reliability Excellence model above will provide the tasks necessary to close the gaps as part of the implementation master plan.
Most organizations’ asset management strategy is focused on the last two phases of this model and very little attention is paid in the first two. It is easy to see in this model how ineffective this is because it fails to identify the relationships of the assets used to create value and where the asset-related risks lie. This makes it impossible to develop the controls to mitigate this risk or to evaluate the effectiveness of these controls in reducing the risk to the business.

Making the Implementation Plan a Success
Because implementing an asset management system is holistic business transformation and therefore requires a significant amount and complexity of change, a formal change management plan is needed to make implementing an asset management strategy a success.

Prosci® is the world leader in change management best practices and research. Their methodology has become one of the most widely used approaches for managing the people side of change in corporations and government. From their research, Prosci has identified three critical success factors for an implementation plan for complex change.
In the 2012 Prosci Best Practices in Change Management Benchmarking Report, Prosci has found that active and visible executive sponsorship is the number one contributor to success. The key traits in a successful Sponsor are as follows:

- Hold the team accountable for results
- Is involved in critical decision making
- Removes barriers or obstacles
- Is visible to employees
- Is accessible to the project team
- Attends status meetings
- Leads the steering committee
- Builds support with other business leaders

Also, the lack of management support is the major reason for project failures. For the Project Management side of the triangle to be successful, these elements need to be in place:

- Clearly defined and achievable goals
- Detailed plan of action and milestones with resourcing and work breakdown structure
- Scope aggressively protected
- Documented communication plan
- Formal risk management plan

The remaining item in Prosci’s Project Change Triangle is the Change Management Plan. In Prosci’s analysis of data from 327 companies undergoing major change projects, they found that the number one obstacle to success for major change projects is employee resistance and the ineffective management of the people side of change. For this reason, the plan needs to address both the individual and the organizational change for implementing the asset management system. First, individual change is addressed by adopting the Prosci ADKAR® Model, which is an acronym for Awareness, Desire, Knowledge, Ability and Reinforcement®. This model and accompanying tools provide adoption of the project by the employees by showing what’s in it for them and providing the necessary coaching to close gaps. Leading with education is fundamental to this methodology and will also be a key component of the master plan for implementation. Organizationally the Prosci® Change Management Process includes Preparing for Change, Managing Change and Reinforcing Change™. These activities provide the following critical success factors in your change management plan:

- Connect change management to the business results
- Develop a formal plan to mitigate negative consequences
- Relate change management to financial improvement
- Address both the individual and organizational change
- Build change competency into the organization

With all three factors considered in our Prosci® Project Change Triangle™, we can develop the components of our plan outlined below in Figure 9.

Figure 9 – Components of Implementation Project Plan

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Master planning is a key component to ensure success. The result is a master plan that is integrated with all the other corporate initiatives and includes the tasks, resources, schedule, and deliverables required to implement the asset management system. The plan also identifies implementation costs (internal, incremental costs and the necessary external resources and support) and includes benefits tracking, key measurements and methods, and comparative scales.

The Benefits of Implementing an ISO 55000-Compliant Asset Management System

Once the organization has developed and implemented an asset management system, integrated it into the other business systems, and adopted the system as part of the corporate DNA, it will then start to realize the benefits of the holistic transformation. This system provides the means to make asset-related risks to the value stream apparent and provides the continuous improvement methodology to link the business key performance indicators (KPI) to the metrics used in asset management. The result will be a culture aligned to true north with an integrated systems approach to manage the physical asset portfolio throughout the life cycle from Concept to Decommissioning while realizing the benefits listed in Figure 10.

**Figure 10 – Asset Management Benefits Realized**

- **Increased Availability**
  - Reduced planned and unplanned outages
  - Increased/reliable capacity sales

- **Reduced Labor Costs**
  - OT reduction
  - Contractor reduction

- **Reduced Material Cost**
  - Reduced usage
  - Reduced inventory

- **Improved Regulatory Compliance**
  - Safety and environmental

- **Reduced Injuries**
  - Planned and scheduled work

- **Capital Project Avoidance**
  - Extended life cycle
  - Fewer replacements

- **Sustainable Culture Change**
  - Operations-owned reliability
  - Institutionalized