

# A structured approach supports proactive asset management

BY Mark Knight AND Doug Sinclair

Managing assets is critical to successful business outcomes, yet many companies take an ad hoc approach to the process. Implementing a formal program supported by international standards can improve decision-making, mitigate risk and reduce total cost of ownership.



Companies were managing their assets in varying ways long before the emergence of common practices. Fledgling utilities were installing infrastructure as far back as the 1880s, while manufacturing, mining and other industries were doing so by the Industrial Revolution. Today, many companies that don't have a structured asset management approach still accomplish asset management tasks in the course of the day.

In other words, most companies are — and have been — doing asset management for years. The question is whether your company is doing it in an ad hoc and reactive way or following an established structure that allows you to be proactive and optimize management of your asset infrastructure, and the benefits that come with that.

The advent of IT and the “internet of things” has brought great advancements to industries where asset management is fast becoming a core competency, such as healthcare, higher education, banking and telecommunications. In this paper, we discuss the emergence of asset management as a formal activity supported by international standards and the international alignment of core competencies. We consider the benefits of structured approaches, and we identify some of the ways companies can begin to develop an integrated approach to asset management.

## Introduction

The term “asset” has many different definitions and a Google search on “asset management” returns a variety of hits. Even so, many relate to investment and finance. Over the last several decades, the term “asset management” has become synonymous with the finance industry and the management of one's wealth or investments.

In the finance industry, managing assets and portfolios of assets is critical to achieve successful outcomes. Finance companies must proactively manage their assets and their clients' assets. It's imperative that they know whether an asset will generate long-term financial benefits for them and for their clients while maintaining a minimal acceptable level of risk.

This management principle should hold true whether the asset is intangible or tangible. Examples of intangible assets include reputation, morale, intellectual property, goodwill, etc. Yet, many business organizations own many different types of tangible assets — like property, buildings and equipment — and have no formal approaches to manage them.

Since the beginning of time, people have developed useful structures, tools and machines to support or improve their quality of life, work or business processes, or other activities. Until the last century, these structures, tools and machines (i.e., assets) typically were used until they failed and were then replaced. This began to change in the 1970s.

## Reliability-centered maintenance

The origins of asset management as a formalized discipline can be traced to 1978 when two engineers at United Airlines, Stan Nowlan and Howard Heap, published a report outlining the optimum maintenance requirements for aircraft. The U.S. Department of Defense (DOD) took notice and subsequently funded the development of the report into a textbook. The publication of the “Reliability-Centered Maintenance” (RCM) report attracted widespread attention and thus, the maintenance discipline known as RCM came to prominence. (Today, RCM is defined in the standard SAE JA1011.)

The roots of RCM go back even further, however. In recommending a switch from calendar-based maintenance intervals to condition-based maintenance practices, Nowlan and Heap quoted an FAA committee finding from 1961. The finding stated simply, “The Committee is convinced that reliability and overhaul time control are not necessarily directly associated topics.” This means it has been nearly 60 years since the dependability of time-based maintenance was first challenged.

Throughout the 1990s and early 2000s, the principles of RCM continued to gain attention, momentum and popularity, propelled largely by books, seminars and training programs developed by John Moubray. A pioneer on the topic, Moubray leveraged Nowlan and Heap's work in the aviation industry and adapted their concepts to apply to any physical asset in any industry segment. Moubray's new concepts and training techniques were later translated into several languages and spread rapidly throughout the world as RCM II.

## Formalizing asset management

In 2004, the U.K.-based Institute of Asset Management (IAM) was formed. The IAM, with several other organizations, led efforts to produce Publicly Available Specification 55 (PAS 55), one of the first standardized specifications for asset management. PAS 55 was quickly embraced by a global community looking for methods to improve how to manage assets and maximize their value. In 2008, PAS 55 underwent

a massive revision with practitioners from 50 participating organizations in 15 industry sectors and 10 different countries providing content and feedback.

This overwhelming response led to the formation of the Global Forum for Maintenance and Asset Management (GFMAM) in 2010. The GFMAM is comprised of members from many national and international asset management organizations and associations. This worldwide community provides guidance and education to global maintenance and asset management practitioners motivated to improve the lifecycle effectiveness of their assets.

Over time, through collaboration and thought leadership by both the GFMAM and IAM, early concepts of asset management were refined, classified into six primary topics and subdivided into 39 subject areas. These subject areas have been outlined in the GFMAM publication “The Asset Management Landscape” and the IAM publication “Asset Management — an anatomy.” We’ll take a look at each of the subject areas later in this paper. “Asset Management — an anatomy” also provides a good introduction to the topic and is available as a free download from the IAM.

Driven by the tremendous popularity of asset management around the globe, the International Organization for Standardization (ISO) Project Committee 251 held its first meeting in August 2010. In 2014, three new international standards were published and shared with the world:

- ISO 55000 provides an overview and defines the principles of asset management.
- ISO 55001 describes requirements for the utilization of management systems.
- ISO 55002 provides guidelines for the application of ISO 55001.

These are the standards documents that now formally define the discipline and have established asset management as a globally recognized industry practice.

## A structured approach

When we say that effective asset management requires a structured approach, what we mean is an organized, thought-out approach that enables organizations and people who deal with assets to move from ad hoc, unplanned and reactive activities to proactive, effective management of their asset infrastructure. This is best delineated by three terms that are often confused: approach, method and mechanism.



The noun “approach” is defined as “the taking of preliminary steps toward a particular result.” In our case, an approach illustrates a framework of objectives and requirements from an asset management perspective. The approach is what we need to do and it is often outlined as guidance in an industry standard.

Method refers to how (procedurally) we will put the requirements and guidelines provided by those standards into practice. Methods describe how to use the standards and where to focus our asset management efforts. As such, they may be prescribed by industry associations.

Lastly, when we refer to mechanisms, we’re talking about the execution of activities or events that yield a desired outcome. More precisely, a mechanism is the operational application of the guidance and standards in conjunction with organizational processes or methods to deliver the asset management results we seek.

It’s commonly believed that the complexity of the business will drive the complexity of the solution required and that the maturity of the organization will determine its ability to recognize and implement an appropriate solution. For instance, a very mature organization may choose a simple solution, whereas a naive organization may think a complex solution will solve all its problems, or vice versa.

Unfortunately, as pointed out by the IAM, there is no one-size-fits-all best practice in asset management. In truth, there is only good practice that is appropriate within the operating context and needs of any particular organization. What is good practice for one organization may not be good for another.

## Objectives of asset management

However, every good asset management practice has three basic requirements: Establish clear organizational objectives, align those objectives across different parts of the organization, and carefully document the entire approach. Doing so allows us to define, communicate and focus on a desired future state.

Although it's been superseded, the definition of asset management provided in PAS 55-1:2008, Section 0.1 provides one of the best descriptions that also includes simple, straightforward objectives. It states: "asset management is ... [the] 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 lifecycles for the purpose of achieving its organizational strategic plan."

Many organizations that may not have well-documented, comprehensive asset management objectives accomplish tasks that would ordinarily fall into the context of "asset management" through the course of everyday business in various departments. Simply put, your organization is doing these things anyway. By leveraging a framework and formally incorporating those work activities into an asset management program or system, you can be proactive and realize the full benefits of asset management.

## The asset management system

For many people, the phrase "asset management system" is closely associated with software or technology solutions, such as Enterprise Asset Management (EAM) tools. But the technology used to manage a physical asset, as well as its respective data and information, is only one piece of the asset management puzzle.

In ISO 55000 the term asset management system is used to refer to the approach, the method and the mechanisms as a holistic system for asset management. As such, this system may be used to guide, organize and oversee strategic and tactical asset management activities to improve decision-making, reduce total cost of ownership, mitigate risk and provide assurance that organizational asset management objectives will be achieved consistently throughout the asset life cycle.

Standards such as ISO 55000 and associations like the IAM have created well-thought-out approaches and subject-specific guidelines for various topics of asset management.

Still, some attributes that should be considered are often not addressed in an asset management system. Organizational characteristics that are part of a company's culture — such as values, leadership, behavioral paradigms and innovation — can dramatically impact the success of an asset management program and must be addressed when defining the scope of the program.

## Asset management scope

A multitude of topics are considered part of asset management. As noted earlier, it's very likely many of these topics are already being performed in some capacity by your organization. Here we'll highlight a few of the topics and consider how they can be linked together to form a framework to create more value from your assets.

Again, the IAM has organized the discipline of asset management into 39 subject areas, which are grouped into the following six categories:

- Strategy and planning
- Asset management decision-making
- Life cycle delivery
- Asset information
- Organization and people
- Risk and review

The following sections describe the subject areas covered within each of the six categories and provide insight into how tasks you are likely already performing fit into this scope.

Our intent is to demonstrate the mixture of complementary tasks that make up asset management and to show that putting an asset management program in place does not mean starting from scratch. A proactive approach to asset management starts with recognizing the work you are already doing within the 39 areas and how to leverage that work. The following discussion draws on the resources in the IAM's "Asset Management — an anatomy."

## Strategy and planning

Strategy and planning subjects align an organization's asset management activities and the outputs from its assets with its overall organizational objectives. This alignment, or line of sight, allows the individuals carrying out their day-to-day asset management activities to trace the rationale for what they are doing through the asset management plans and asset management objectives to the organizational objectives.

These activities include planning to improve an organization's asset management capabilities and the management system for asset management.

Strategy and planning sets the policies to be adopted, defines goals to be targeted and makes sure actions are aligned with organizational goals. If you are unsure how to convert organizational objectives into asset management objectives and create an approach for developing an asset management plan, a strategic asset management plan is a good first step.

### **Asset management decision-making**

Effective asset management decision-making is essential for an organization to maximize the value realized over the lives of its assets. This subject group considers the challenges faced and the approaches to decision-making for the three main stages of an asset's life: acquisition or creation, operation and maintenance, and end of life, which includes decommissioning, disposal and renewal.

Decisions made at each stage have an impact on subsequent stages. The choice of asset influences the performance, risks and maintenance requirements during its operational life and the methods and costs of decommissioning. The way it is operated and maintained influences its useful life and end-of-life complexities and costs.

Asset management decision-making can be driven by capital or expense priorities and takes into account costs over the entire asset life cycle. It must balance the costs and benefits of risks and performance of both individual assets and asset systems (groups of assets working together) or asset portfolios.

### **Life cycle delivery**

Life cycle delivery subjects implement the asset management plan(s) developed in the strategy and planning phase. Good control of the activities and associated risks to acquire, operate, maintain and dispose of assets is essential for the successful delivery of the asset management plan(s).

Organizations incur the majority of their asset-related expenditure through life cycle delivery activities. By integrating activities across the life cycle, organizations can reduce avoidable downstream costs. For example, good design, procurement and asset operation practices can reduce the level of corrective maintenance needed and increase asset reliability and availability, thereby delivering additional value at a lower cost.

Assets spend most of their life in the operations and maintenance phase of their life cycle. For some heavily capitalized industries such as utilities, this phase can be measured in decades. So, following good methods for maintenance, operation, configuration and incident response, as well as staying on top of relevant standards and legislation, is essential.

### **Asset information**

Organizations involved in the management of assets rely on asset data and information as key enablers across the breadth of asset management activities. Asset data is typically an input to asset management processes; it may be modified or created by a process and it will be an output of a process. Data and information requirements, including quality requirements, need to be identified and defined.

Typically, organizations do not have perfect, or even adequate, asset information in either the quality or quantity they require. This leads to a requirement to assess and prioritize activities to focus on areas that will provide most benefit. The asset information subject group addresses all of these concerns.

A fast-developing discipline that complements asset management is Building Information Modelling (BIM). Although some aspects of BIM originated in the building/facilities management disciplines, taking a wide definition of building to include any built asset, the concepts and approaches apply equally to other physical assets. While asset information has always been important, with the proliferation of Internet of things and high-tech sensors, managing information is becoming an increasingly critical area of asset management.

### **Organization and people**

Implementing an asset management approach is a change that leads organizations to question traditional ways of thinking and working. This can include reviews of organizational structures, roles and responsibilities and contractual relationships. Sometimes this makes the introduction of asset management thinking and practices a challenging experience for people, whether they are senior managers, staff delivering asset management activities or working in the supply chain. Effective leadership is therefore crucial for building an organization with a culture that supports the delivery of good asset management.

Subjects related to organization and people are highly interdependent and strongly influence an organization's

ability to successfully adopt and embed asset management. It is necessary to invest time and effort in them to produce the performance and behaviors that will support successful delivery of the asset management strategy and objectives. They are important for delivering the level of business integration that characterizes more mature asset management capability.

### Risk and review

Last, but by no means least, the risk and review subject group contains core activities associated with the identification, understanding and management of risk. This includes the establishment of effective feedback and review mechanisms to provide assurance that objectives are being achieved and to support the continual improvement of asset management activities. This group also provides important inputs related to strategy and planning and asset management decision-making.

Risk and review plus life cycle delivery account for 50% of the subjects within asset management, indicating the importance of these areas. Utilizing a set of leading and lagging indicators and analyzing existing data can provide useful insights into root causes of failures and performance trends that need to be addressed without adding new data.

### Conclusion

Most companies perform at least some asset management tasks in the course of their daily operations, even if they don't have a formal asset management program in place. However, taking an ad hoc approach to asset management forces you to be reactive, which limits your ability to manage your asset infrastructure efficiently, including the people who do the work.

By comparison, implementing a structured asset management approach allows you to plan ahead, anticipate challenges and optimize infrastructure management. This doesn't mean you have to start from scratch. An experienced asset management team can help you build on your existing activities to realize the full benefits of asset management, including improved decision-making, reduced total cost of ownership and risk mitigation.

### Biographies

**Mark Knight** is a principal consultant for the energy and utility industries at 1898 & Co., part of Burns & McDonnell. With more than 30 years of experience working for utility companies in the U.K. and the U.S. and as a consultant in the electric supply industry, he is focused on building comprehensive strategies that will improve business and technology solutions for our clients. Mark is chairman emeritus of the GridWise Architecture Council (GWAC). He is a member of the Institute of Asset Management has participated in several IAM teams to develop asset management guidelines.

**Doug Sinclair** is a director of business development at 1898 & Co. For more than 30 years he has specialized in strategic business and digital transformation, life cycle business process automation, data collection and management, technology adoption and interoperability. Doug's experience includes the definition, development and successful implementation of a variety of technology solutions, including enterprise resource planning, accounting and finance, facilities maintenance and asset management, Internet of things, ICS/DCS, IT/OT, building automation systems, capital life cycle management, collaborative project and construction management, GIS and BIM, document control, quality management and field data collection software applications. Doug is active with the International Facility Managers Association (IFMA) and is a member of the IFMA Information Technology Community (ITC) Strategic Advisory Board.

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