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BS ISO 55000:2014

Incorporating corrigendum March 2014

Asset management

Overview, principles and terminology

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National foreword

This British Standard is the UK implementation of ISO 55000:2014.

The UK participation in its preparation was entrusted to Technical Committee SSM/1/-/2, Asset management.

A list of organizations represented on this committee can be obtained on request to its secretary.

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INTERNATIONAL STANDARD

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First edition
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2014-03-15

Asset management — Overview, principles and terminology

Gestion d'actifs — Aperçu général, principes et terminologie

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is Project Committee ISO/PC 251, *Asset management*.

This corrected version of ISO 55000:2014 incorporates the correction of the numbering of definitions 3.2.4 to 3.2.7 and corresponding cross-references.

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Introduction

0.1 Purpose

This International Standard provides an overview of asset management and asset management systems (i.e. management systems for the management of assets). It also provides the context for ISO 55001 and ISO 55002.

International cooperation in the preparation of these standards has identified common practices that can be applied to the broadest range of assets, in the broadest range of organizations, across the broadest range of cultures.

0.2 Relationship with other standards

ISO 55001, ISO 55002 and this International Standard relate to a management system for asset management, which is referred to as an "asset management system" throughout the three standards.

ISO 55001, ISO 55002 and this International Standard can be used in combination with any relevant sector or asset type-specific asset management standards and technical specifications. ISO 55001 specifies requirements for an asset management system, while the other standards detail sector-specific, asset-specific or activity-specific technical requirements or give guidance on how ISO 55001 should be interpreted and applied within a specific sector or to particular asset types.

0.3 Target audience

This International Standard is primarily intended for use by:

— those considering how to improve the realization of value for their organization from their asset base

— those involved in the establishment, implementation, maintenance and improvement of an asset management system

— those involved in the planning, design, implementation and review of asset management activities; along with service providers.

0.4 Benefits of the standards

The adoption of ISO 55001, ISO 55002 and this International Standard enables an organization to achieve its objectives through the effective and efficient management of its assets. The application of an asset management system provides assurance that those objectives can be achieved consistently and sustainably over time.

Annex A provides additional information on areas related to asset management activities.

Annex B shows the relationship between key elements of an asset management system.

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Asset management — Overview, principles and terminology

1 Scope

This International Standard provides an overview of asset management, its principles and terminology, and the expected benefits from adopting asset management.

This International Standard can be applied to all types of assets and by all types and sizes of organizations.

NOTE 1 This International Standard is intended to be used for managing physical assets in particular, but it can also be applied to other asset types.

NOTE 2 This International Standard does not provide financial, accounting or technical guidance for managing specific asset types.

NOTE 3 For the purposes of ISO 55001, ISO 55002 and this International Standard, the term "asset management system" is used to refer to a management system for asset management.

2 Asset management

2.1 General

The factors which influence the type of assets that an organization requires to achieve its objectives, and how the assets are managed, include the following:

— the nature and purpose of the organization;

— its operating context;

— its financial constraints and regulatory requirements;

— the needs and expectations of the organization and its stakeholders.

These influencing factors need to be considered when establishing, implementing, maintaining and continually improving asset management.

Effective control and governance of assets by organizations is essential to realize value through managing risk and opportunity, in order to achieve the desired balance of cost, risk and performance. The regulatory and legislative environment in which organizations operate is increasingly challenging and the inherent risks that many assets present are constantly evolving.

The fundamentals of asset management and the supporting asset management system introduced in this International Standard, when integrated into the broader governance and risk framework of an organization, can contribute tangible benefits and leverage opportunities.

Asset management translates the organization's objectives into asset-related decisions, plans and activities, using a risk based approach.

2.2 Benefits of asset management

Asset management enables an organization to realize value from assets in the achievement of its organizational objectives (see 2.5.3.4). What constitutes value will depend on these objectives, the nature and purpose of the organization and the needs and expectations of its stakeholders. Asset management

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supports the realization of value while balancing financial, environmental and social costs, risk, quality of service and performance related to assets.

The benefits of asset management can include, but are not limited to the following:

a) **improved financial performance**: improving the return on investments and reducing costs can be achieved, while preserving asset value and without sacrificing the short or long-term realization of organizational objectives;

b) **informed asset investment decisions**: enabling the organization to improve its decision making and effectively balance costs, risks, opportunities and performance;

c) **managed risk**: reducing financial losses, improving health and safety, good will and reputation, minimizing environmental and social impact, can result in reduced liabilities such as insurance premiums, fines and penalties;

d) **improved services and outputs**: assuring the performance of assets can lead to improved services or products that consistently meet or exceed the expectations of customers and stakeholders;

e) **demonstrated social responsibility**: improving the organization's ability to, for example, reduce emissions, conserve resources and adapt to climate change, enables it to demonstrate socially responsible and ethical business practices and stewardship;

f) **demonstrated compliance**: transparently conforming with legal, statutory and regulatory requirements, as well as adhering to asset management standards, policies and processes, can enable demonstration of compliance;

g) **enhanced reputation**: through improved customer satisfaction, stakeholder awareness and confidence;

h) **improved organizational sustainability**: effectively managing short and long-term effects, expenditures and performance, can improve the sustainability of operations and the organization;

i) **improved efficiency and effectiveness**: reviewing and improving processes, procedures and asset performance can improve efficiency and effectiveness, and the achievement of organizational objectives.

2.3 Assets

An asset is an item, thing or entity that has potential or actual value to an organization. The value will vary between different organizations and their stakeholders, and can be tangible or intangible, financial or non-financial.

The period from the creation of an asset to the end of its life is the asset life (see 3.2.2). An asset's life does not necessarily coincide with the period over which any one organization holds responsibility for it; instead, an asset can provide potential or actual value to one or more organizations over its asset life, and the value of the asset to an organization can change over its asset life.

An organization may choose to manage its assets as a group, rather than individually, according to its needs, and to achieve additional benefits. Such groupings of assets may be by asset types, asset systems, or asset portfolios.

2.4 Overview of asset management

2.4.1 General

An organization's top management, employees and stakeholders should implement planning, control activities (e.g. policies, processes or monitoring actions) and monitoring activities, to exploit opportunities and to reduce risks to an acceptable level.

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Asset management involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve the organizational objectives. The balancing might need to be considered over different timeframes.

Asset management enables an organization to examine the need for, and performance of, assets and asset systems at different levels. Additionally, it enables the application of analytical approaches towards managing an asset over the different stages of its life cycle (which can start with the conception of the need for the asset, through to its disposal, and includes the managing of any potential post disposal liabilities).

2.4.2 Fundamentals

Asset management is based on a set of fundamentals.

a) **Value**: Assets exist to provide value to the organization and its stakeholders.

   Asset management does not focus on the asset itself, but on the value that the asset can provide to the organization. The value (which can be tangible or intangible, financial or non-financial) will be determined by the organization and its stakeholders, in accordance with the organizational objectives.

   This includes:

   1) a clear statement of how the asset management objectives align with the organizational objectives;

   2) the use of a life cycle management approach to realize value from assets;

   3) the establishment of decision-making processes that reflect stakeholder need and define value.

b) **Alignment**: Asset management translates the organizational objectives into technical and financial decisions, plans and activities.

   Asset management decisions (technical, financial and operational) collectively enable the achievement of the organizational objectives.

   This includes:

   1) the implementation of risk-based, information-driven, planning and decision-making processes and activities that transform organizational objectives into asset management plans (see 2.5.3.4);

   2) the integration of the asset management processes with the functional management processes of the organization, such as finance, human resources, information systems, logistics and operations;

   3) the specification, design and implementation of a supporting asset management system.

c) **Leadership**: Leadership and workplace culture are determinants of realization of value.

   Leadership and commitment from all managerial levels is essential for successfully establishing, operating and improving asset management within the organization.

   This includes:

   1) clearly defined roles, responsibilities and authorities;

   2) ensuring that employees are aware, competent, and empowered;

   3) consultation with employees and stakeholders regarding asset management.

d) **Assurance**: Asset management gives assurance that assets will fulfil their required purpose.

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The need for assurance arises from the need to effectively govern an organization. Assurance applies to assets, asset management and the asset management system.

This includes:

1) developing and implementing processes that connect the required purposes and performance of the assets to the organizational objectives;

2) implementing processes for assurance of capability across all life cycle stages;

3) implementing processes for monitoring and continual improvement;

4) providing the necessary resources and competent personnel for demonstration of assurance, by undertaking asset management activities and operating the asset management system.

2.4.3 The relationship of the asset management system to asset management

An asset management system is used by the organization to direct, coordinate and control asset management activities. It can provide improved risk control and gives assurance that the asset management objectives will be achieved on a consistent basis. However, not all asset management activities can be formalized through an asset management system. For example, aspects such as leadership, culture, motivation, behaviour, which can have a significant influence on the achievement of asset management objectives, may be managed by the organization using arrangements outside the asset management system. The relationship between key asset management terms is shown in Figure 1.

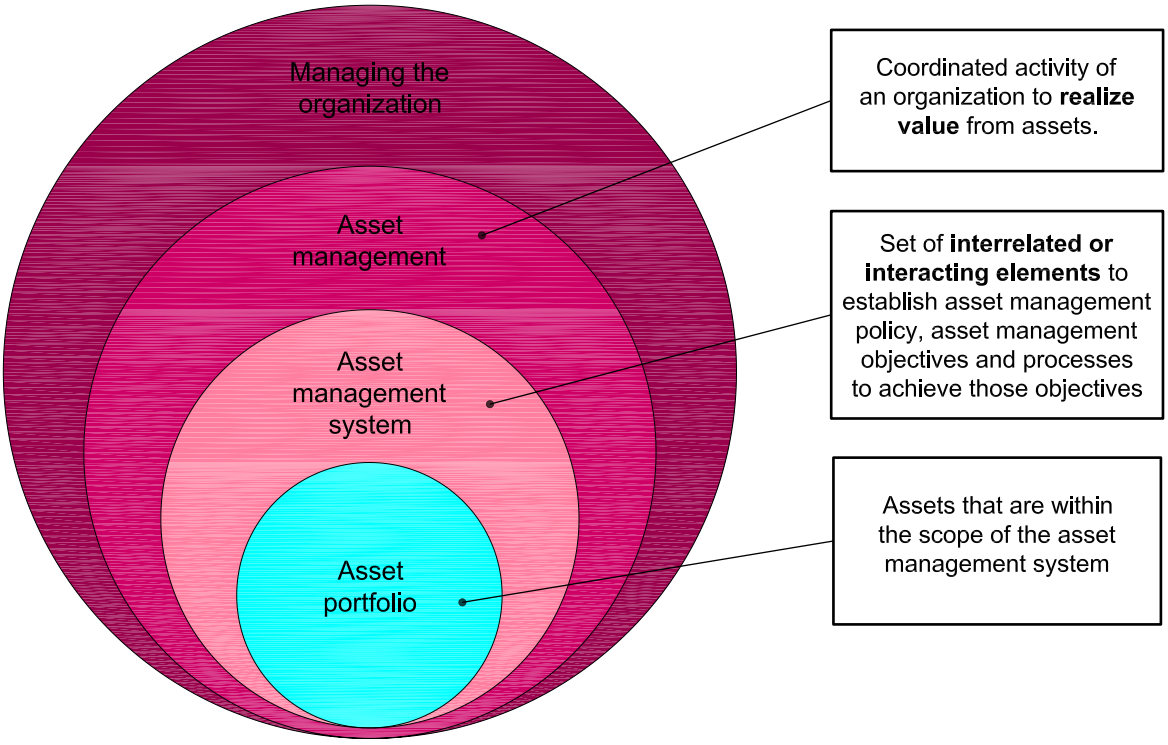

Figure 1 — Relationships between key terms

2.5 Overview of the asset management system

2.5.1 General

An asset management system is a set of interrelated and interacting elements of an organization, whose function is to establish the asset management policy and asset management objectives, and the processes, needed to achieve those objectives (see 3.4.3). In this context, the elements of the asset management

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system should be viewed as a set of tools, including policies, plans, business processes and information systems, which are integrated to give assurance that the asset management activities will be delivered.

Asset management requires accurate asset information, but an asset management system is more than a management information system. Asset management interacts with many functions of an organization. The assets themselves can also support more than one function and more than one functional unit within the organization. The asset management system provides a means for coordinating contributions from and interaction between these functional units within an organization.

The asset management plan can enable an organization to create a link, if needed, between its asset management system (such as described by ISO 55001, ISO 55002 and this International Standard) and a variety of specific, technical asset management requirements. These specific, technical requirements are given in standards both inside and outside the ISO environment, and at the international, regional or national standardization levels; such standards provide information on strategies and tactics, as well as specific design, construction, material or process requirements. The definitions given in 3.4 refer specifically to the asset management system described in this International Standard; some of these terms may be defined differently for a specific, technical standard.

The establishment of an asset management system is an important strategic decision for an organization. ISO 55001 specifies the requirements of an asset management system, but does not specify the design of the system. ISO 55002 provides guidance on the design and operation of an asset management system.

2.5.2 Benefits of an asset management system

An asset management system provides a structured approach for the development, coordination and control of activities undertaken on assets by the organization over different life cycle stages, and for aligning these activities with its organizational objectives.

a) Creating an asset management system provides benefits in itself.

   The process of implementing an asset management system can require significant time effort and expense; however, the organization does not need to wait until the entire system is fully operational to begin accruing benefits. The benefits, or quick wins, in areas such as risk reduction, opportunity identification or process improvement can be identified early in the implementation, and can be exploited to demonstrate returns and gain stronger stakeholder support.

   — Asset management is data intensive and new tools and processes are often necessary to collect, assemble, manage, analyse and use asset data. The creation and use of these tools can stimulate and improve organizational knowledge and decision making.

   — The process of creating an asset management system brings new perspectives to the organization and new ideas on value creation from the use of assets. These new perspectives can also stimulate improvements in other organizational functions, such as purchasing, finance, human resources and information technology.

   — The creation of an asset management system is usually cross-functional and based on life cycle considerations; this can provide a focal point for addressing the issues of functional integration of the organization and life cycle planning.

b) Top management benefits from new insights and cross functional integration.

   An asset management system can help in gaining an understanding of assets, their performance, the risks associated with managing assets, investment needs, and asset value as an input to decision making and organizational strategic planning.

   — Top management should recognize the need to improve communication and interaction across functions. An asset management system inherently supports this interaction. It ensures that assets are managed in an integrated manner, and asset value is improved.

   — An asset management system supports a long-term and sustainable approach to decision making.

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— An asset management system provides an ideal framework for the identification, understanding and integration of the many technical standards, codes, guidelines and best practices that affect the organization's assets, and support the implementation of asset management.

— An asset management system supports energy management, environmental management and other activities related to sustainability.

c) Financial functions benefit from improved data and linkages.

Integration of an organization's strategic asset management plan (SAMP) (see 2.5.3.4 and 3.3.2), with its long-term financial plans can enable the balancing of short-term financial needs with the needs of medium-term activity plans, and with the much longer-term plans that some assets require.

— Robust financial information, based on integrated processes between the asset management and finance functions, is an important benefit of the asset management system. The linkage of asset management information to financial information is an important contribution of the asset management system to the financial function. This interaction supports improved assessment of the financial position and funding requirements of the organization in relation to its assets.

— The organization's risk-based decision making processes can become more effective by addressing asset and financial risks together, and by balancing performance, costs and risks.

— An effective taxonomy, which may be a feature of the asset management system, can enable an integrated financial and technical view of assets and asset systems.

d) Many parts of the organization benefit from an asset management system.

An asset management system touches many parts of the organization:

— the organization's human resources function may work with its asset management system on the development of competency models, training programs and processes for coaching and mentoring; these developments benefit both functions;

— some asset data comes from control systems, which are often isolated from other information systems. Integration of this data through the asset management system can provide new asset information, leading to improved organizational decision making;

— communicating with employees, suppliers and contracted service providers about the asset management system can result in improvements in the quality of asset information; it will also increase awareness amongst individuals, inside and outside of the organization, of their role in asset management decision making and the value of the activities they are undertaking;

— the asset management system can stimulate creativity and innovation by supporting people who understand the importance of asset management and are motivated to work towards achieving the asset management objectives.

2.5.3 Elements of an asset management system

2.5.3.1 General

An asset management system impacts the whole organization, including its stakeholders and external service providers, and can use, link or integrate many of the organization's activities and functions that would otherwise be managed or operated in isolation. The process of establishing an asset management system requires a thorough understanding of each of its elements and the policies, plans and procedures that integrate them.

The asset management system requirements described in ISO 55001 are grouped in a way that is consistent with the fundamentals of asset management:

— context of the organization (ISO 55001:2014, Clause 4);

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— leadership (ISO 55001:2014, Clause 5);

— planning (ISO 55001:2014, Clause 6);

— support (ISO 55001:2014, Clause 7);

— operation (ISO 55001:2014, Clause 8);

— performance evaluation (ISO 55001:2014, Clause 9);

— improvement (ISO 55001:2014, Clause 10).

2.5.3.2 Context of the organization

When establishing or reviewing its asset management system, an organization should take into account its internal and external contexts. The external context includes the social, cultural, economic and physical environments, as well as regulatory, financial and other constraints. The internal context includes organizational culture and environment, as well as the mission, vision and values of the organization. Stakeholder inputs, concerns and expectations are also part of the context of the organization. The influences of stakeholders are key to setting rules for consistent decision making and also contribute to the setting of organizational objectives, which in turn, influence the design and scope of its asset management system.

2.5.3.3 Leadership

Top management is responsible for developing the asset management policy and asset management objectives and for aligning them with the organizational objectives. Leaders at all levels are involved in the planning, implementation and operation of the asset management system. Top management should create the vision and values that guide policy, practice and actively promote these values inside and outside the organization. Top management also defines the responsibilities, accountabilities and asset management objectives and strategies, which create the environment for the asset management system. Leaders should lend their authority to supporting the asset management system, and should ensure its alignment to other management systems within the organization through appropriate organizational design.

Top management and leaders at all levels are responsible for ensuring that appropriate resources are in place to support the asset management system. These resources include appropriate funding, adequate and competent human resources, and information technology support.

Leaders should recognize and resolve conflicts between the internal culture of the organization and the performance of its asset management system.

Top management and leaders at all levels are responsible for communicating the organization's asset management objectives and the importance of its asset management system to all employees, customers, suppliers, contractors and other stakeholders. Communication should be two-way, with leaders being open to receiving information aimed at improving the asset management system from all levels.

2.5.3.4 Planning

The organizational objectives provide the overarching context and direction to the organization's activities, including its asset management activities. The organizational objectives are generally produced from the organization's strategic level planning activities and are documented in an organizational plan (see 3.1.15).

NOTE 1 The organizational plan can be referred to by other names, e.g. the corporate plan.

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The principles by which the organization intends applying asset management to achieve its organizational objectives should be set out in an asset management policy (see 3.1.18). The approach to implementing these principles should be documented in a strategic asset management plan (SAMP) (see 3.3.2).

NOTE 2 A strategic asset management plan can be referred to by other names, e.g. an asset management strategy.

An organization's SAMP should be used to guide the setting of its asset management objectives, and to describe the role of the asset management system in meeting these objectives. This includes the structures, roles and responsibilities necessary to establish the asset management system and to operate it effectively. Stakeholder support, risk management and continuous improvement are important issues to be addressed in the establishment and operation of the asset management system. The SAMP can have a timeframe that extends beyond the organization's own business planning timeframe, requiring the asset management system to address the complete lifetimes of the assets.

The organization should also use its SAMP to guide its asset management system in the development of its asset management plans (i.e. in establishing what to do). The asset management plans themselves should define the activities to be undertaken on assets, and should have specific and measurable objectives (e.g. timeframes and the resources to be used). These objectives can provide the opportunity for alignment of operating plans with the organizational plan and any unit level business plans.

Aligning the asset management objectives with the organizational objectives, as well as linking asset reports to financial reports, can improve the organization's effectiveness and efficiency, The linking of asset reports to financial reports can also improve and clarify the assessment of the financial status and long-term funding requirements of the organization.

2.5.3.5 Support

The asset management system will require collaboration among many parts of the organization. This collaboration often involves the sharing of resources. Coordinating these resources and applying, verifying and improving their use should be objectives of the asset management system. It should also promote awareness of the asset management objectives across the whole organization.

The asset management system provides information to support the development of asset management plans and the evaluation of their effectiveness. Asset information systems can be extremely large and complex in some organizations, and there are many issues involved in collecting, verifying and consolidating asset data in order to transform it into asset information. Creating, controlling, and documenting this information is a critical function of the asset management system.

The asset management system should specify the competency requirements for personnel involved in asset management. The implementation, maintenance, evaluation and improvement of these competencies normally requires close cooperation with the organization's human resource management system. These two systems should be mutually supportive.

2.5.3.6 Operation

The organization's asset management system can enable the directing, implementation and control of its asset management activities, including those that have been outsourced. Functional policies, technical standards, plans and processes for the implementation of the asset management plans should be fed back into the design and operation of the asset management system.

Operation of the asset management system can sometimes require planned changes to asset management processes or procedures, which can introduce new risks. Risk assessment and control in the context of managing change is an important consideration in operating an asset management system.

When an organization outsources some of its asset management activities, this should not remove those outsourced activities from the control of the organization's asset management system. In situations where interacting activities are outsourced to different service providers, the responsibilities and complexity of control will be increased.

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2.5.3.7 Performance evaluation

The organization should evaluate the performance of its assets, its asset management and its asset management system. Performance measures can be direct or indirect, financial or non-financial.

Asset performance evaluation is often indirect and complex. Effective asset data management and the transformation of data to information (see 2.5.3.5) is a key to measuring asset performance. Monitoring, analysis and evaluation of this information should be a continuous process. Asset performance evaluations should be conducted on assets managed directly by the organization and on assets which are outsourced.

Asset management performance should be evaluated against whether the asset management objectives have been achieved, and if not, why not. Where applicable, any opportunities that arose from having exceeded the asset management objectives should also be examined, as well as any failure to realize them. The adequacy of the decision-making processes should be examined carefully.

The performance of the asset management system should be evaluated against any objectives set specifically for the system itself (either when it was established, or following previous evaluations). The primary purpose of evaluating the system should be to determine whether it is effective and efficient in supporting the organization's asset management. Periodic audits should be used to evaluate the performance of the asset management system; these may be complemented by self-assessments.

The results of performance evaluations should be used as inputs into management reviews.

2.5.3.8 Improvement

An organization's asset management system is likely to be complex and continually evolving to match its context, organizational objectives and its changing asset portfolio. Continual improvement is a concept that is applicable to the assets, the asset management activities and the asset management system, including those activities or processes which are outsourced.

Opportunities for improvement can be determined directly through monitoring the performance of the asset management system, and through monitoring asset performance.

Nonconformities or potential nonconformities of the asset management system can also be identified through management reviews and internal or external audits. The nonconformities require corrective action and the potential nonconformities require preventive action.

Of particular importance are asset-related incidents or emergency situations, for which emergency response planning and business continuity planning for identified risks should be addressed by the asset management system. All such incidents, including unanticipated events, should be investigated and reviewed to see if any improvements are needed to the asset management system, to prevent their recurrence and to mitigate their effects.

Improvements should be risk assessed prior to being implemented.

2.6 Integrated management systems approach

Using an integrated management systems approach allows an organization's asset management system to be built on elements of its other management systems, such as for quality, environment, health and safety, and risk management. Building on existing systems can reduce the effort and expense involved in creating and maintaining an asset management system. It can also improve integration across different disciplines and improve cross-functional coordination.

Organizations that have implemented an integrated systems approach have demonstrated the benefits of the integrated approach and shortened the time to implementation of each new system. The integrated approach, in addition to reducing cost, reduces risks and improves acceptance of each new system.

Asset management, because it touches so many parts of the organization, is a natural candidate for an integrated systems approach.

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General terms

3.1.1
audit
systematic, independent and documented *process* (3.1.19) for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled

Note 1 to entry: An audit can be an internal audit (first party) or an external audit (second party or third party), and it can be a combined or integrated audit (combining two or more disciplines).

Note 2 to entry: "Audit evidence" and "audit criteria" are defined in ISO 19011.

3.1.2
capability
<asset management> measure of capacity and the ability of an entity (system, person or *organization* (3.1.13)) to achieve its *objectives* (3.1.12)

Note 1 to entry: *Asset management* (3.3.1) capabilities include *processes* (3.1.19), resources, *competences* (3.1.3) and technologies to enable the effective and efficient development and delivery of *asset management plans* (3.3.2) and *asset life* (3.2.2) activities, and their *continual improvement* (3.1.5).

3.1.3
competence
ability to apply knowledge and skills to achieve intended results

3.1.4
conformity
fulfilment of a *requirement* (3.1.20)

3.1.5
continual improvement
recurring activity to enhance *performance* (3.1.17)

3.1.6
documented information
information required to be controlled and maintained by an *organization* (3.1.13) and the medium on which it is contained

Note 1 to entry: Documented information can be in any format and media and from any source.

Note 2 to entry: Documented information can refer to:

— the *management system* (3.4.2), including related *processes* (3.1.19);

— information created in order for the organization to operate (documentation);

— evidence of results achieved (e.g. records, key performance indicators).

3.1.7
effectiveness
extent to which planned activities are realized and planned results achieved

3.1.8
incident
unplanned event or occurrence resulting in damage or other loss

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3.1.9
monitoring
determining the status of a system, a *process* (3.1.19) or an activity

Note 1 to entry: To determine the status, there may be a need to check, supervise or critically observe.

Note 2 to entry: For the purposes of asset management, monitoring may also refer to determining the status of an asset. This is typically referred to as "condition monitoring" or "performance monitoring".

3.1.10
measurement
process (3.1.19) to determine a value

3.1.11
nonconformity
non-fulfilment of a *requirement* (3.1.20)

Note 1 to entry: Nonconformity can be any deviation from asset *management system* (3.4.2) requirements, or from relevant work standards, practices, procedures, legal requirements, etc.

3.1.12
objective
result to be achieved

Note 1 to entry: An objective can be strategic, tactical or operational.

Note 2 to entry: Objectives can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and *process* (3.1.19)).

Note 3 to entry: An objective can be expressed in other ways, e.g. as an intended outcome, a purpose, an operational criterion, an *asset management* (3.3.1) objective or by the use of other words with similar meaning (e.g. aim, goal, or target).

Note 4 to entry: In the context of *asset management systems* (3.4.3), asset management objectives are set by the *organization* (3.1.13), consistent with the *organizational objectives* (3.1.14) and asset management *policy* (3.1.18), to achieve specific measurable results.

3.1.13
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its *objectives* (3.1.12)

Note 1 to entry: The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.

3.1.14
organizational objective
overarching *objective* (3.1.12) that sets the context and direction for an *organization's* (3.1.13) activities

Note 1 to entry: Organizational objectives are established through the strategic level planning activities of the organization.

3.1.15
organizational plan
documented information (3.1.6) that specifies the programmes to achieve the *organizational objectives* (3.1.14)

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3.1.16
outsource (verb)
make an arrangement where an external *organization* (3.1.13) performs part of an organization's function or *process* (3.1.19)

Note 1 to entry: An external organization is outside the scope of the *management system* (3.4.2), although the outsourced function or process is within the scope if its activities influence the effectiveness of the *asset management system* (3.4.3).

3.1.17
performance
measureable result

Note 1 to entry: Performance can relate either to quantitative or qualitative findings.

Note 2 to entry: Performance can relate to the management of activities, *processes* (3.1.19), products (including services), systems or *organizations* (3.1.13).

Note 3 to entry: For the purposes of *asset management* (3.3.1), performance can relate to *assets* (3.2.1) in their ability to fulfil *requirements* (3.1.20) or *objectives* (3.1.12).

3.1.18
policy
intentions and direction of an *organization* (3.1.13) as formally expressed by its *top management* (3.1.23)

3.1.19
process
set of interrelated or interacting activities which transforms inputs into outputs

3.1.20
requirement
need or expectation that is stated, generally implied or obligatory

Note 1 to entry: "Generally implied" means that it is custom or common practice for the *organization* (3.1.13) and *stakeholders* (3.1.22) that the need or expectation under consideration is implied.

Note 2 to entry: A specified requirement is one that is stated, for example in *documented information* (3.1.6).

3.1.21
risk
effect of uncertainty on *objectives* (3.1.12)

Note 1 to entry: An effect is a deviation from the expected — positive and/or negative.

Note 2 to entry: Objectives can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and *process* (3.1.19)).

Note 3 to entry: Risk is often characterized by reference to potential "events" (as defined in ISO Guide 73:2009, 3.5.1.3) and "consequences" (as defined in ISO Guide 73:2009, 3.6.1.3), or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated "likelihood" (ISO Guide 73:2009, 3.6.1.1) of occurrence.

Note 5 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.

[SOURCE: ISO Guide 73:2009, 1.1]

3.1.22
stakeholder
person or *organization* (3.1.13) that can affect, be affected by, or perceive themselves to be affected by a decision or activity

Note 1 to entry: A "stakeholder" can also be referred to as an "interested party".

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3.1.23
top management
person or group of people who directs and controls an *organization* (3.1.13) at the highest level

Note 1 to entry: Top management has the power to delegate authority and provide resources within the organization.

Note 2 to entry: If the scope of the *management system* (3.4.2) covers only part of an organization, then top management refers to those who direct and control that part of the organization. If multiple *asset management systems* (3.4.3) are employed, the systems should be designed to coordinate efforts.

3.2 Terms relating to assets

3.2.1
asset
item, thing or entity that has potential or actual value to an *organization* (3.1.13)

Note 1 to entry: Value can be tangible or intangible, financial or non-financial, and includes consideration of *risks* (3.1.21) and liabilities. It can be positive or negative at different stages of the *asset life* (3.2.2).

Note 2 to entry: Physical assets usually refer to equipment, inventory and properties owned by the organization. Physical assets are the opposite of intangible assets, which are non-physical assets such as leases, brands, digital assets, use rights, licences, intellectual property rights, reputation or agreements.

Note 3 to entry: A grouping of assets referred to as an *asset system* (3.2.5) could also be considered as an asset.

3.2.2
asset life
period from *asset* (3.2.1) creation to asset end-of-life

3.2.3
life cycle
stages involved in the management of an *asset* (3.2.1)

Note 1 to entry: The naming and number of the stages and the activities under each stage usually vary in different industry sectors and are determined by the *organization* (3.1.13).

3.2.4
asset portfolio
assets (3.2.1) that are within the scope of the *asset management system* (3.4.3)

Note 1 to entry: A portfolio is typically established and assigned for managerial control purposes. Portfolios for physical hardware might be defined by category (e.g. plant, equipment, tools, land). Software portfolios might be defined by software publisher, or by platform (e.g. PC, server, mainframe).

Note 2 to entry: An asset management system can encompass multiple asset portfolios. Where multiple asset portfolios and asset management systems are employed, *asset management* (3.3.1) activities should be coordinated between the portfolios and systems.

3.2.5
asset system
set of *assets* (3.2.1) that interact or are interrelated

3.2.6
asset type
grouping of *assets* (3.2.1) having common characteristics that distinguish those assets as a group or class

EXAMPLE Physical assets, information assets, intangible assets, *critical assets* (3.2.7), enabling assets, linear assets, information and communications technology (ICT) assets, infrastructure assets, moveable assets.

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3.2.7
critical asset
asset (3.2.1) having potential to significantly impact on the achievement of the *organization's* (3.1.13) *objectives* (3.1.12)

Note 1 to entry: Assets can be safety-critical, environment-critical or *performance-critical* (3.1.17) and can relate to legal, regulatory or statutory *requirements* (3.1.20).

Note 2 to entry: Critical assets can refer to those assets necessary to provide services to critical customers.

Note 3 to entry: *Asset systems* (3.2.5) can be distinguished as being critical in a similar manner to individual assets.

3.3 Terms relating to asset management

3.3.1
asset management
coordinated activity of an *organization* (3.1.13) to realize value from *assets* (3.2.1)

Note 1 to entry: Realization of value will normally involve a balancing of costs, *risks* (3.1.21), opportunities and *performance* (3.1.17) benefits.

Note 2 to entry: Activity can also refer to the application of the elements of the *asset management system* (3.4.3).

Note 3 to entry: The term "activity" has a broad meaning and can include, for example, the approach, the planning, the plans and their implementation.

3.3.2
strategic asset management plan
SAMP
documented information (3.1.6) that specifies how *organizational objectives* (3.1.14) are to be converted into *asset management* (3.3.1)*objectives* (3.1.12), the approach for developing *asset management plans* (3.3.3), and the role of the *asset management system* (3.4.3) in supporting achievement of the asset management objectives

Note 1 to entry: A strategic asset management plan is derived from the *organizational plan* (3.1.15).

Note 2 to entry: A strategic asset management plan may be contained in, or may be a subsidiary plan of, the organizational plan.

3.3.3
asset management plan
documented information (3.1.6) that specifies the activities, resources and timescales required for an individual *asset* (3.2.1), or a grouping of assets, to achieve the *organization's* (3.1.13)*asset management* (3.3.1)*objectives* (3.1.12)

Note 1 to entry: The grouping of assets may be by *asset type* (3.2.6), asset class, *asset system* (3.2.5) or *asset portfolio* (3.2.4).

Note 2 to entry: An asset management plan is derived from the *strategic asset management plan* (3.3.2).

Note 3 to entry: An asset management plan may be contained in, or may be a subsidiary plan of, the strategic asset management plan.

3.3.4
preventive action
action to eliminate the cause of a potential *nonconformity* (3.1.11) or other undesirable potential situation

Note 1 to entry: This definition is specific to *asset management* (3.3.1) activities only.

Note 2 to entry: There can be more than one cause for a potential nonconformity.

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Note 3 to entry: Preventive action is taken to prevent occurrence and to preserve an *asset's* (3.2.1) function, whereas *corrective action* (3.4.1) is taken to prevent recurrence.

Note 4 to entry: Preventive action is normally carried out while the asset is functionally available and operable or prior to the initiation of functional failure.

Note 5 to entry: Preventive action includes the replenishment of consumables where the consumption is a functional *requirement* (3.1.19).

[SOURCE: ISO 9000:2005, 3.6.4, modified – Note 3 to entry has been modified; Notes 1, 4 and 5 have been added]

3.3.5
predictive action
action to monitor the condition of an *asset* (3.2.1) and predict the need for *preventive action* (3.3.4) or *corrective action* (3.4.1)

Note 1 to entry: Predictive action is also commonly referred to as either "condition monitoring" or "performance monitoring".

3.3.6
level of service
parameters, or combination of parameters, which reflect social, political, environmental and economic outcomes that the *organization* (3.1.13) delivers

Note 1 to entry: The parameters can include safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost and availability.

3.4 Terms relating to asset management system

3.4.1
corrective action
action to eliminate the cause of a *nonconformity* (3.1.11) and to prevent recurrence

Note 1 to entry: In the case of other undesirable outcomes, action is necessary to minimize or eliminate the causes and to reduce the impact or prevent recurrence. Such actions fall outside the concept of corrective action, in the sense of this definition.

3.4.2
management system
set of interrelated or interacting elements of an *organization* (3.1.13) to establish *policies* (3.1.18) and *objectives* (3.1.12) and *processes* (3.1.19) to achieve those objectives

Note 1 to entry: A management system can address a single discipline or several disciplines.

Note 2 to entry: The system elements include the organization's structure, roles and responsibilities, planning, operation, etc.

Note 3 to entry: The scope of a management system may include the whole of the organization, specific and identified functions of the organization, specific and identified sections of the organization, or one or more functions across a group of organizations.

3.4.3
asset management system
management system (3.4.2) for *asset management* (3.3.1) whose function is to establish the asset management *policy* (3.1.18) and asset management *objectives* (3.1.12)

Note 1 to entry: The asset management system is a subset of asset management.

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Annex A
(informative)

Information on asset management activities

Relevant asset management subject areas addressed by other published international, regional, or national standards include, but are not limited to, the following:

— data management;

— condition monitoring;

— risk management;

— quality management;

— environmental management;

— systems and software engineering;

— life cycle costing;

— dependability (availability, reliability, maintainability, maintenance support);

— configuration management;

— tero-technology;

— sustainable development;

— inspection;

— non-destructive testing;

— pressure equipment;

— financial management;

— value management;

— shock and vibration;

— acoustics;

— qualification and assessment of personnel;

— project management;

— property and property management;

— facilities management;

— equipment management;

— commissioning process;

— energy management.

Users of ISO 55001, ISO 55002 and this International Standard should also refer to such standards wherever possible, to ensure consistent delivery of asset management throughout their organization.

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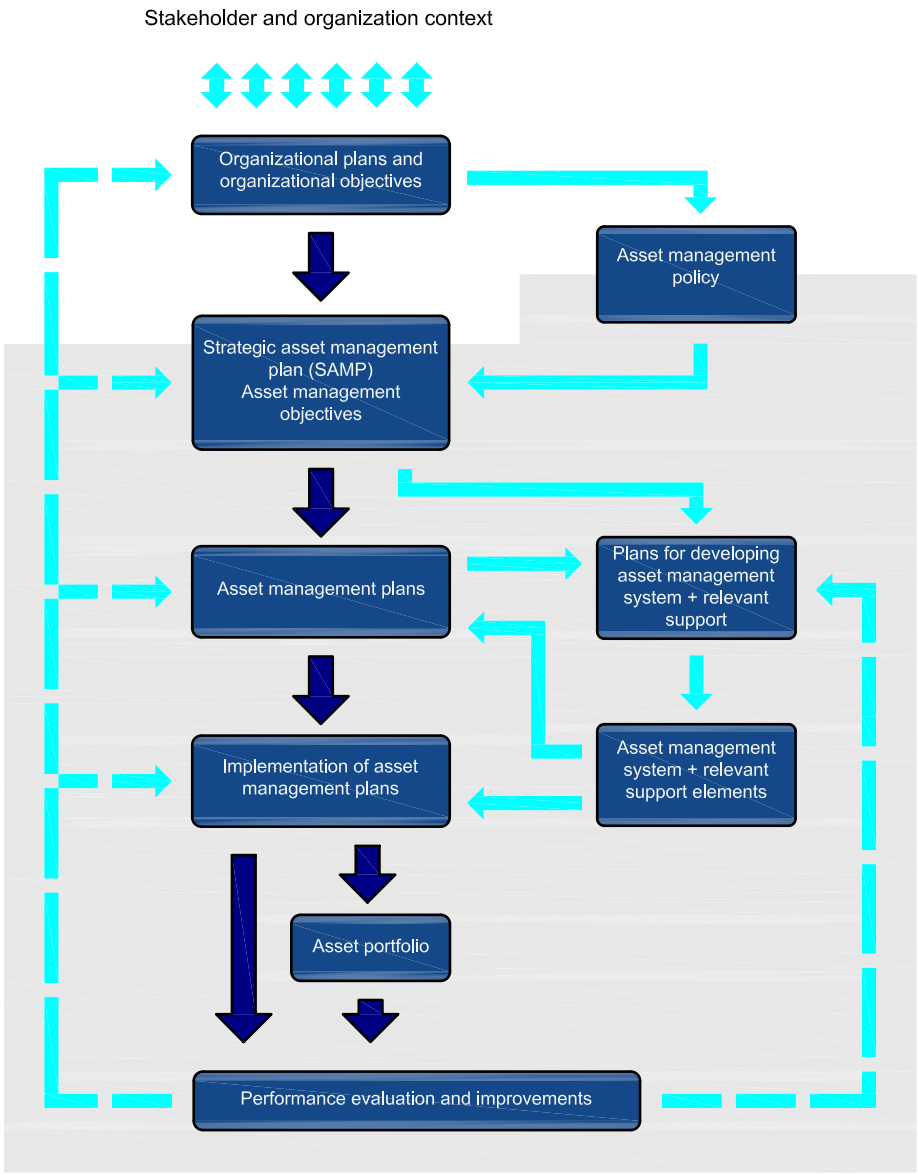
Annex B
(informative)

Relationship between key elements of an asset management system

Figure B.1 shows the relationship between key elements of an asset management system.



NOTE The grey highlighted box designates the boundary of the asset management system.

Figure B.1 — Relationship between key elements of an asset management system

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Asset management

Management systems – Requirements

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National foreword

This British Standard is the UK implementation of ISO 55001:2014. It is based on PAS 55-1:2008, which will be withdrawn on 15 January 2015.

The UK participation in its preparation was entrusted to Technical Committee SSM/1/-/2, Asset management.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is Project Committee ISO/PC 251, *Asset management*.

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Introduction

This International Standard specifies the requirements for the establishment, implementation, maintenance and improvement of a management system for asset management, referred to as an "asset management system".

This International Standard can be used by any organization. The organization determines to which of its assets this International Standard applies.

This International Standard is primarily intended for use by:

— those involved in the establishment, implementation, maintenance and improvement of an asset management system;

— those involved in delivering asset management activities and service providers;

— internal and external parties to assess the organization's ability to meet legal, regulatory and contractual requirements and the organization's own requirements.

The order in which requirements are presented in this International Standard does not reflect their importance or imply the order in which they are to be implemented.

Further guidance regarding the application of the requirements within this International Standard is provided in ISO 55002.

General information on asset management, and information on the terminology applicable to this International Standard, is provided in ISO 55000. Organizations can find that consideration of the principles will assist the development of asset management in their organization.

This International Standard applies the definition of "risk" given in ISO 31000:2009 and ISO Guide 73:2009. In addition, it uses the term "stakeholder" rather than "interested party".

This International Standard is designed to enable an organization to align and integrate its asset management system with related management system requirements.

Annex A provides additional information on areas related to asset management activities.

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Asset management — Management systems — Requirements

1 Scope

This International Standard specifies requirements for an asset management system within the context of the organization.

This International Standard can be applied to all types of assets and by all types and sizes of organizations.

NOTE 1 This International Standard is intended to be used for managing physical assets in particular, but it can also be applied to other asset types.

NOTE 2 This International Standard does not specify financial, accounting or technical requirements for managing specific asset types.

NOTE 3 For the purposes of ISO 55000, ISO 55002 and this International Standard, the term "asset management system" is used to refer to a management system for asset management.

2 Normative reference

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 55000:2014, *Asset management — Overview, principles and terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 55000 apply.

4 Context of the organization

4.1 Understanding the organization and its context

The organization shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s) of its asset management system.

Asset management objectives, included in the strategic asset management plan (SAMP), shall be aligned to, and consistent with, the organizational objectives.

4.2 Understanding the needs and expectations of stakeholders

The organization shall determine:

— the stakeholders that are relevant to the asset management system;

— the requirements and expectations of these stakeholders with respect to asset management;

— the criteria for asset management decision making;

— the stakeholder requirements for recording financial and non-financial information relevant to asset management, and for reporting on it both internally and externally.

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4.3 Determining the scope of the asset management system

The organization shall determine the boundaries and applicability of the asset management system to establish its scope. The scope shall be aligned with the SAMP and the asset management policy. When determining this scope, the organization shall consider:

— the external and internal issues referred to in 4.1;

— the requirements referred to in 4.2;

— the interaction with other management systems, if used.

The organization shall define the asset portfolio covered by the scope of the asset management system.

The scope shall be available as documented information.

4.4 Asset management system

The organization shall establish, implement, maintain and continually improve an asset management system, including the processes needed and their interactions, in accordance with the requirements of this International Standard.

The organization shall develop a SAMP which includes documentation of the role of the asset management system in supporting achievement of the asset management objectives.

5 Leadership

5.1 Leadership and commitment

Top management shall demonstrate leadership and commitment with respect to the asset management system by:

— ensuring that the asset management policy, the SAMP and asset management objectives are established and are compatible with the organizational objectives;

— ensuring the integration of the asset management system requirements into the organization's business processes;

— ensuring that the resources for the asset management system are available;

— communicating the importance of effective asset management and of conforming to the asset management system requirements;

— ensuring that the asset management system achieves its intended outcome(s);

— directing and supporting persons to contribute to the effectiveness of the asset management system;

— promoting cross-functional collaboration within the organization;

— promoting continual improvement;

— supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility;

— ensuring that the approach used for managing risk in asset management is aligned with the organization's approach for managing risk.

NOTE Reference to "business" in this International Standard can be interpreted broadly to mean those activities that are core to the purposes of the organization's existence.

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5.2 Policy

Top management shall establish an asset management policy that:

a) is appropriate to the purpose of the organization;

b) provides a framework for setting asset management objectives;

c) includes a commitment to satisfy applicable requirements;

d) includes a commitment to continual improvement of the asset management system.

The asset management policy shall:

— be consistent with the organizational plan;

— be consistent with other relevant organizational policies;

— be appropriate to the nature and scale of the organization's assets and operations;

— be available as documented information;

— be communicated within the organization;

— be available to stakeholders, as appropriate;

— be implemented and be periodically reviewed and, if required, updated.

5.3 Organizational roles, responsibilities and authorities

Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization.

Top management shall assign the responsibility and authority for:

a) establishing and updating the SAMP, including asset management objectives;

b) ensuring that the asset management system supports delivery of the SAMP;

c) ensuring that the asset management system conforms to the requirements of this International Standard;

d) ensuring the suitability, adequacy and effectiveness of the asset management system;

e) establishing and updating the asset management plan(s) (see 6.2.2);

f) reporting on the performance of the asset management system to top management.

6 Planning

6.1 Actions to address risks and opportunities for the asset management system

When planning for the asset management system, the organization shall consider the issues referred to in 4.1 and the requirements referred to in 4.2 and determine the risks and opportunities that need to be addressed to:

— give assurance that the asset management system can achieve its intended outcome(s);

— prevent, or reduce undesired effects;

— achieve continual improvement.

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The organization shall plan:

a) actions to address these risks and opportunities, taking into account how these risks and opportunities can change with time;

b) how to:

— integrate and implement the actions into its asset management system processes;

— evaluate the effectiveness of these actions.

6.2 Asset management objectives and planning to achieve them

6.2.1 Asset management objectives

The organization shall establish asset management objectives at relevant functions and levels.

When establishing its asset management objectives, the organization shall consider the requirements of relevant stakeholders and of other financial, technical, legal, regulatory and organizational requirements in the asset management planning process.

The asset management objectives shall:

— be consistent and aligned with the organizational objectives;

— be consistent with the asset management policy;

— be established and updated using asset management decision-making criteria (see 4.2);

— be established and updated as part of the SAMP;

— be measurable (if practicable);

— take into account applicable requirements;

— be monitored;

— be communicated to relevant stakeholders;

— be reviewed and updated as appropriate.

The organization shall retain documented information on the asset management objectives.

6.2.2 Planning to achieve asset management objectives

The organization shall integrate the planning to achieve asset management objectives with other organizational planning activities, including financial, human resources and other support functions.

The organization shall establish, document and maintain asset management plan(s) to achieve the asset management objectives. These asset management plan(s) shall be aligned with the asset management policy and the SAMP.

The organization shall ensure that the asset management plan(s) take(s) into account relevant requirements coming from outside the asset management system.

When planning how to achieve its asset management objectives, the organization shall determine and document:

a) the method and criteria for decision making and prioritizing of the activities and resources to achieve its asset management plan(s) and asset management objectives;

b) the processes and methods to be employed in managing its assets over their life cycles;

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c) what will be done;

d) what resources will be required;

e) who will be responsible;

f) when it will be completed;

g) how the results will be evaluated;

h) the appropriate time horizon(s) for the asset management plan(s);

i) the financial and non-financial implications of the asset management plan(s);

j) the review period for the asset management plan(s) (see 9.1);

k) actions to address risks and opportunities associated with managing the assets, taking into account how these risks and opportunities can change with time, by establishing processes for:

— identification of risks and opportunities;

— assessment of risks and opportunities;

— determining the significance of assets in achieving asset management objectives;

— implementation of the appropriate treatment, and monitoring, of risks and opportunities.

The organization shall ensure that its asset management related risks are considered in the organization's risk management approach including contingency planning.

NOTE See ISO 31000 for further guidance on risk management

7 Support

7.1 Resources

The organization shall determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the asset management system.

The organization shall provide the resources required for meeting the asset management objectives and for implementing the activities specified in the asset management plan(s).

7.2 Competence

The organization shall:

— determine the necessary competence of person(s) doing work under its control that affects its asset performance, asset management performance and asset management system performance;

— ensure that these persons are competent on the basis of appropriate education, training, or experience;

— where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken;

— retain appropriate documented information as evidence of competence;

— periodically review current and future competency needs and requirements.

NOTE Applicable actions can include, for example: the provision of training to, the mentoring of, or the re-assignment of currently employed persons; or the hiring or contracting of competent persons.

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7.3 Awareness

Persons doing work under the organization's control, who can have an impact on the achievement of the asset management objectives, shall be aware of:

— the asset management policy;

— their contribution to the effectiveness of the asset management system, including the benefits of improved asset management performance;

— their work activities, the associated risks and opportunities and how they relate to each other;

— the implications of not conforming to the asset management system requirements.

7.4 Communication

The organization shall determine the need for internal and external communications relevant to assets, asset management and the asset management system including:

— on what it will communicate;

— when to communicate;

— with whom to communicate;

— how to communicate.

7.5 Information requirements

The organization shall determine its information requirements to support its assets, asset management, asset management system and the achievement of its organizational objectives. In doing this:

a) the organization shall include consideration of:

   — the significance of the identified risks;

   — the roles and responsibilities for asset management;

   — the asset management processes, procedures and activities;

   — the exchange of information with its stakeholders, including service providers;

   — the impact of quality, availability and management of information on organizational decision making;

b) the organization shall determine:

   — the attribute requirements of identified information;

   — the quality requirements of identified information;

   — how and when information is to be collected, analysed and evaluated;

c) the organization shall specify, implement and maintain processes for managing its information;

d) the organization shall determine the requirements for alignment of financial and non-financial terminology relevant to asset management throughout the organization;

e) the organization shall ensure that there is consistency and traceability between the financial and technical data and other relevant non-financial data, to the extent required to meet its legal and regulatory requirements while considering its stakeholders' requirements and organizational objectives.

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7.6 Documented information

7.6.1 General

The organization's asset management system shall include:

— documented information as required by this International Standard;

— documented information for applicable legal and regulatory requirements;

— documented information determined by the organization as being necessary for the effectiveness of the asset management system, as specified in 7.5.

NOTE The extent of the documented information for an asset management system can differ from one organization to another due to:

— the size of organization and its type of activities, processes, products and services;

— the complexity of processes and their interactions;

— the competence of persons;

— the complexity of the asset(s).

7.6.2 Creating and updating

When creating and updating documented information the organization shall ensure appropriate:

— identification and description (e.g. a title, date, author, or reference number);

— format (e.g. language, software version, graphics) and media (e.g. paper, electronic);

— review and approval for suitability and adequacy.

7.6.3 Control of documented information

Documented information required by the asset management system and by this International Standard shall be controlled to ensure:

a) it is available and suitable for use, where and when it is needed;

b) it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity).

For the control of documented information, the organization shall address the following activities, as applicable:

— distribution, access, retrieval and use;

— storage and preservation, including preservation of legibility;

— control of changes (e.g. version control);

— retention and disposition.

Documented information of external origin determined by the organization to be necessary for the planning and operation of the asset management system shall be identified, as appropriate, and controlled.

NOTE Access implies a decision regarding the permission to view the documented information only, or the permission and authority to view and change the documented information, etc.

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