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Asset management — Management systems — Requirements

Gestion d'actifs — Systèmes de management — Exigences



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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*.

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.

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.

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.

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.

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;

- 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.

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.

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.

8 Operation

8.1 Operational planning and control

The organization shall plan, implement and control the processes needed to meet requirements, and to implement the actions determined in [6.1](#), the asset management plan(s) determined in [6.2](#), and the corrective and preventive actions determined in [10.1](#) and [10.2](#) by:

- establishing criteria for the required processes;
- implementing the control of the processes in accordance with the criteria;
- keeping documented information to the extent necessary to have confidence and evidence that the processes have been carried out as planned;
- treating and monitoring risks using the approach described in [6.2.2](#).

8.2 Management of change

Risks associated with any planned change, permanent or temporary that can have an impact on achieving the asset management objectives, shall be assessed before the change is implemented.

The organization shall ensure that such risks are managed in accordance with [6.1](#) and [6.2.2](#).

The organization shall control planned changes and review the unintended consequences of changes, taking action to mitigate any adverse effects, as necessary.

8.3 Outsourcing

When the organization outsources any activities that can have an impact on the achievement of its asset management objectives, it shall assess the associated risks. The organization shall ensure that outsourced processes and activities are controlled.

The organization shall determine and document how these activities will be controlled and integrated into the organization's asset management system. The organization shall determine:

- a) the processes and activities that are to be outsourced (including the scope and boundaries of the outsourced processes and activities and their interfaces with the organization's own processes and activities);
- b) the responsibilities and authorities within the organization for managing the outsourced processes and activities;
- c) the processes and scope for the sharing of knowledge and information between the organization and its contracted service provider(s);

When outsourcing any activities, the organization shall ensure that:

- the outsourced resources meet the requirements of [7.2](#), [7.3](#) and [7.6](#);
- the performance of the outsourced activities is monitored in accordance with [9.1](#).

9 Performance evaluation

9.1 Monitoring, measurement, analysis and evaluation

The organization shall determine:

- a) what needs to be monitored and measured;

- b) the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results;
- c) when the monitoring and measuring shall be performed;
- d) when the results from monitoring and measurement shall be analysed and evaluated.

The organization shall evaluate and report on

- the asset performance;
- the asset management performance, including financial and non-financial performance;
- the effectiveness of the asset management system.

The organization shall evaluate and report on the effectiveness of the processes for managing risks and opportunities.

The organization shall retain appropriate documented information as evidence of the results of monitoring, measurement, analysis and evaluation.

The organization shall ensure that its monitoring and measurement enables it to meet the requirements of [4.2](#).

9.2 Internal audit

9.2.1 The organization shall conduct internal audits at planned intervals to provide information to assist in the determination on whether the asset management system:

- a) conforms to:
 - the organization's own requirements for its asset management system;
 - the requirements of this International Standard;
- b) is effectively implemented and maintained.

9.2.2 The organization shall:

- a) plan, establish, implement and maintain an audit programme(s), including the frequency, methods, responsibilities, planning requirements and reporting. The audit programme(s) shall take into consideration the importance of the processes concerned and the results of previous audits;
- b) define the audit criteria and scope for each audit;
- c) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;
- d) ensure that the results of the audits are reported to relevant management; and
- e) retain documented information as evidence of the results of the implementation of the audit programme and the audit results.

9.3 Management review

Top management shall review the organization's asset management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.

The management review shall include consideration of:

- a) the status of actions from previous management reviews;
- b) changes in external and internal issues that are relevant to the asset management system;

- c) information on the asset management performance, including trends in:
 - nonconformities and corrective actions;
 - monitoring and measurement results;
 - audit results;
- d) asset management activity;
- e) opportunities for continual improvement;
- f) changes in the profile of risks and opportunities.

The outputs of the management review shall include decisions related to continual improvement opportunities and any need for changes (see [8.2](#)) to the asset management system.

The organization shall retain documented information as evidence of the results of management reviews.

10 Improvement

10.1 Nonconformity and corrective action

When a nonconformity or incident occurs in its assets, asset management or asset management system the organization shall:

- a) react to the nonconformity or incident, and, as applicable:
 - take action to control and correct it;
 - deal with the consequences;
- b) evaluate the need for action to eliminate the causes of the nonconformity or incident, in order that it does not occur or recur elsewhere, by:
 - reviewing the nonconformity or incident;
 - determining the causes of nonconformity or incident;
 - determining if similar nonconformities exist, or could potentially occur;
- c) implement any action needed;
- d) review the effectiveness of any corrective action taken; and
- e) make changes (see [8.2](#)) to the asset management system, if necessary.

Corrective actions shall be appropriate to the effects of the nonconformities or incident encountered.

The organization shall retain documented information as evidence of:

- the nature of the nonconformities or incident and any subsequent actions taken;
- the results of any corrective action.

10.2 Preventive action

The organization shall establish processes to proactively identify potential failures in asset performance and evaluate the need for preventive action.

When a potential failure is identified the organization shall apply the requirements of [10.1](#).

10.3 Continual improvement

The organization shall continually improve the suitability, adequacy and effectiveness of its asset management and the asset management system.

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 55000, ISO 55002 and this International Standard should also refer to such standards wherever possible, to ensure consistent delivery of asset management throughout their organization.

Bibliography

- [1] ISO 9000, *Quality management systems — Fundamentals and vocabulary*
- [2] ISO 9001, *Quality management systems — Requirements*
- [3] ISO 9004, *Managing for the sustained success of an organization — A quality management approach*
- [4] ISO 14001, *Environmental management systems — Requirements with guidance for use*
- [5] ISO 14224, *Petroleum, petrochemical and natural gas industries — Collection and exchange of reliability and maintenance data for equipment*
- [6] ISO 15663-1, *Petroleum and natural gas industries — Life cycle costing — Part 1: Methodology*
- [7] ISO 15686-2, *Buildings and constructed assets — Service life planning — Part 2: Service life prediction procedures*
- [8] ISO 17359, *Condition monitoring and diagnostics of machines — General guidelines*
- [9] ISO 19011, *Guidelines for auditing management systems*
- [10] ISO 20815, *Petroleum, petrochemical and natural gas industries — Production assurance and reliability management*
- [11] ISO 21500, *Guidance on project management*
- [12] ISO 22301, *Societal security — Business continuity management systems — Requirements*
- [13] ISO 31000:2009, *Risk management — Principles and guidelines*
- [14] ISO 37500, *Guidance on outsourcing¹⁾*
- [15] ISO 55002:2014, *Asset management — Management systems — Guidelines on the application of ISO 55001*
- [16] ISO Guide 73:2009, *Risk management — Vocabulary*
- [17] ISO/IEC 15288, *Systems and software engineering — System life cycle processes*
- [18] ISO/IEC 19770-1, *Information technology — Software asset management — Part 1: Processes and tiered assessment of conformance*
- [19] IEC 31010, *Risk management — Risk assessment techniques*
- [20] IEC 60300-1, *Dependability management — Part 1: Dependability management systems*
- [21] *International Infrastructure Management Manual, International Infrastructure Management Manual, Version 4.0 2011*, ISBN 0-473-10685-X, produced by NAMS New Zealand Inc. and the Institute of Public Works Engineering Australia (IPWEA)
- [22] ASTM E2132, *Standard Practice for Inventory Verification: Electronic and Physical Inventory of Assets*
- [23] ASTM E 2279, *Standard Practice for Establishing the Guiding Principles of Property Management*
- [24] ASTM E 2608, *Standard Practice for Equipment Control Matrix (ECM)*
- [25] BSI PAS 55, *Asset Management — Part 1: Specification for the optimized management of physical assets*

1) Under preparation.

- [26] NEN NTA 8120, *Assetmanagement — Eisen aan een veiligheids-, kwaliteits- en capaciteitsmanagementsysteem voor het elektriciteits- en gasnetbeheer (Asset management for electricity and gas networks)*
- [27] *Engineering Asset Management an Insurance Perspective* by Ian Barnard, ISBN: 9870982516300, Reliabilityweb.com
- [28] *Physical Asset Management Handbook* 4th Edition by John S. Mitchell, ISBN: 9780985361938, <http://Reliabilityweb.com>
- [29] *Making Common Sense Common Practice, Models for Operational Excellence*, 4th Edition by Ron Moore, P.E., ISBN: 9780983874188, <http://Reliabilityweb.com>
- [30] *Maintenance Work Management Processes (Maintenance Strategy Series)* by Terry Wireman, ISBN: 9780983225867
- [31] *Maintenance & Reliability Best Practices* 2nd Edition by Ramesh Gulati, Publisher: Industrial Press, ISBN 970831134341