

## Asset Management - Asset Management Systems - Requirements

*Gestion d'actifs — Systems de management — Exigences*

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80 **Foreword**

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

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

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

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

98 For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and  
 99 expressions related to conformity assessment, as well as information about ISO's adherence to the  
 100 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

102 This text has been prepared using the harmonized structure (i.e. identical clause numbers, clause titles,  
 103 text and common terms and core definitions) intended to enhance alignment among MSS and to  
 104 facilitate their implementation for organizations that need to meet the requirements of two or more  
 105 such standards.

106 Text taken from the harmonized structure is highlighted in the text of Clauses 1 to 10 by the use of blue  
 107 font. Discipline-specific text is given in black. Strikeout is used to show agreed deletions within the HS  
 108 text. The use of blue text and strikeout is only to facilitate analysis and will not be incorporated after the  
 109 Draft International Standard stage of development for this document.

110 This document was prepared by Technical Committee ISO/TC 251, *Asset management*.

111 This second edition of ISO 55001 cancels and replaces ISO 55001:2014, which has been technically  
 112 revised.

113 The main changes compared to ISO 55001:2014 are as follows:

114 — *<to be inserted later>*

115 Any feedback or questions on this document should be directed to the user's national standards body. A  
 116 complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

117

118

119 **Introduction** *(to be reviewed and updated by WG6 later)*

120 This document specifies the requirements for the establishment, implementation, maintenance and  
121 improvement of a management system for asset management, referred to as an “asset management  
122 system”.

123 This document can be used by any organization. The organization determines to which of its assets this  
124 document applies.

125 This document is primarily intended for use by:

- 126 — those involved in the establishment, implementation, maintenance and improvement of an asset  
127 management system;
- 128 — those involved in delivering asset management activities and service providers;
- 129 — internal and external parties to assess the organization’s ability to meet legal, regulatory and  
130 contractual requirements and the organization’s own requirements.

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

133 Further guidance regarding the application of the requirements within this document is provided in  
134 ISO 55002.

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

138 This document uses the term “stakeholder” rather than “interested party”.

139 This document is designed to enable an organization to align and integrate its asset management  
140 system with related management system requirements.

141 ISO/TC 251 maintains a website that provides additional information about asset management and on  
142 the documents it produces. This can be found at: <https://committee.iso.org/home/tc251>

## 143 **Asset Management - Asset Management Systems - Requirements**

### 144 **1 Scope**

145 This document specifies requirements for an asset management system within the context of the  
146 organization.

147 This document can be applied to all types of assets and by all types and sizes of organizations.

148 NOTE 1 This document does not specify financial, accounting or technical requirements for managing specific  
149 asset types.

150 NOTE 2 For the purposes of ISO 55000, ISO 55002 and this document, the term “asset management system” is  
151 used to refer to a management system for asset management.

### 152 **2 Normative reference**

153 The following documents are referred to in the text in such a way that some or all of their content  
154 constitutes requirements of this document. For dated references, only the edition cited applies. For  
155 dated references, only the edition cited applies. For undated references, the latest edition of the  
156 referenced document (including any amendments) applies.

157 ISO 55000:202x, *Asset management — Overview, principles and terminology*

### 158 **3 Terms and definitions**

159 For the purposes of this document, the terms and definitions given in ISO 55000 apply as well as the  
160 following.

161 ISO and IEC maintain terminological databases for use in standardization at the following addresses:

162 — ISO Online Browsing Platform: available at <http://www.iso.org/obp>

163 — IEC Electropedia: available at <http://www.electropedia.org>

#### 164 **3.1**

#### **organization**

166 person or group of people that has its own functions with responsibilities, authorities and relationships  
167 to achieve its *objectives* (3.6)

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

171 Note 2 to entry: If the organization is part of a larger entity, the term “organization” refers only to the part of the  
172 larger entity that is within the scope of the asset *management system* (3.4).

173 Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system  
174 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives. It has been modified  
175 by the addition of Note 2 to entry.

- 176  
177  
178 **3.2**  
179 **stakeholder**  
180 interested party  
181 person or *organization* (3.1) that can affect, be affected by, or perceive itself to be affected by a decision  
182 or activity
- 183 Note 1 to entry: In this document the term “stakeholder” is used instead of “interested party”.  
184 Note 2 to entry: This constitutes one of the common terms and core definitions for ISO management system  
185 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives. It has been modified  
186 by the addition of Note 1 to entry.
- 187 **3.3**  
188 **top management**  
189 person or group of people who directs and controls an *organization* (3.1) at the highest level  
190 Note 1 to entry: Top management has the power to delegate authority and provide resources within the  
191 organization.  
192 Note 2 to entry: If the scope of the *management system* (3.4) covers only part of an organization, then top  
193 management refers to those who direct and control that part of the organization.  
194 Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system  
195 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.
- 196 **3.4**  
197 **management system**  
198 set of interrelated or interacting elements of an *organization* (3.1) to establish *policies* (3.5) and  
199 *objectives* (3.6), as well as *processes* (3.8) to achieve those objectives  
200 Note 1 to entry: A management system can address a single discipline or several disciplines.  
201 Note 2 to entry: The management system elements include the organization’s structure, roles and responsibilities,  
202 planning and operation.  
203 Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system  
204 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.
- 205 **3.5**  
206 **policy**  
207 intentions and direction of an *organization* (3.1) as formally expressed by its *top management* (3.3)  
208 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
209 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.
- 210 **3.6**  
211 **objective**  
212 result to be achieved  
213 Note 1 to entry: An objective can be strategic, tactical, or operational.  
214 Note 2 to entry: Objectives can relate to different disciplines (such as finance, health and safety, and environment).  
215 They can be, for example, organization-wide or specific to a project, product or *process* (3.9).  
216 Note 3 to entry: An objective can be expressed in other ways, e.g. as an intended result, as a purpose, as an  
217 operational criterion, as an asset management objective or by the use of other words with similar meaning (e.g.  
218 aim, goal, or target).  
219 Note 4 to entry: In the context of asset *management systems* (3.4), asset management objectives are set by the  
220 *organization* (3.1), consistent with the asset management *policy* (3.5), to achieve specific results.

221 Note 5 to entry: This constitutes one of the common terms and core definitions for ISO management system  
 222 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

223 **3.7**

224 **risk**

225 **effect of uncertainty**

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

227 **Note 2 to entry:** Uncertainty is the state, even partial, of deficiency of information related to, understanding or  
 228 knowledge of, an event, its consequence, or likelihood.

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

231 **Note 4 to entry:** Risk is often expressed in terms of a combination of the consequences of an event (including  
 232 changes in circumstances) and the associated likelihood (as defined in ISO Guide 73) of occurrence.

233

234

235 **3.7**

236 **risk**

237 the potential for the occurrence of a negative unplanned outcome or result

238

239 Note 1 to entry: One source of risk can be the effect of uncertainty

240

241 Note 2 to entry: Risk is often characterized by reference to potential “events” (as defined in ISO Guide 73:2009,  
 242 3.5.1.3) and “consequences” (as defined in ISO Guide 73:2009, 3.6.1.3), or a combination of these.

243

244 Note 3 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including  
 245 changes in circumstances) and the associated “likelihood” (ISO Guide 73:2009, 3.6.1.1) of occurrence.

246

247 **3.8**

248 **opportunity**

249 circumstance or set of circumstances that can lead to improvement of performance, exceed original  
 250 objectives and/or intended results, pursue additional objectives, or achieve continual improvement

251 **3.9**

252 **process**

253 **set of interrelated or interacting activities that uses or transforms inputs to deliver a result**

254 Note 1 to entry: Whether the result of a process is called an output, a product or a service depends on the context  
 255 of the reference.

256 Note 2 to entry: This constitutes one of the common terms and core definitions for ISO management system  
 257 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives. It has been modified  
 258 by the addition of Note 1 to entry.

259 **3.10**

260 **competence**

261 **ability to apply knowledge and skills to achieve intended results**

262 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
 263 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

264 **3.11**

265 **documented information**

266 **information required to be controlled and maintained by an organization (3.1) and the medium on  
 267 which it is contained**

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

269 Note 2 to entry: Documented information can refer to:

- 270 a) the *management system* (3.4), including related *processes* (3.9);  
271 b) information created in order for the organization to operate (documentation);  
272 c) evidence of results achieved (records).

273 Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system  
274 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

275 **3.12**

276 **performance**

277 **measurable result**

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

279 Note 2 to entry: Performance can relate to managing activities, *processes* (3.9), products, services, systems or  
280 organizations (3.1).

281 Note 3 to entry: For the purposes of asset management, performance can relate to assets in their ability to fulfil  
282 requirements (3.15) or *objectives* (3.6).

283 Note 4 to entry: This constitutes one of the common terms and core definitions for ISO management system  
284 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives. It has been modified  
285 by the addition of Note 3 to entry.

286 **3.13**

287 **continual improvement**

288 recurring activity to enhance *performance* (3.12)

289 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
290 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

291 **3.14**

292 **effectiveness**

293 extent to which planned activities are realized and planned results are achieved

294 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
295 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

296 **3.15**

297 **requirement**

298 need or expectation that is stated, generally implied or obligatory

299 Note 1 to entry: "Generally implied" means that it is custom or common practice for the *organization* (3.1) and  
300 *stakeholders* (3.2) that the need or expectation under consideration is implied.

301 Note 2 to entry: A specified requirement is one that is stated, e.g. in *documented information* (3.11).

302 Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system  
303 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

304 **3.16**

305 **conformity**

306 fulfilment of a *requirement* (3.15)

307 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
308 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

309 **3.17**

310 **nonconformity**

311    ***non-fulfilment of a requirement*** (3.15)

312 Note 1 to entry: Nonconformity can be any deviation from asset management system requirements (e.g. from  
 313 relevant work standards, practices, procedures, legal requirements), or any failure of an asset to meet or perform  
 314 to specification.

315 Note 2 to entry: This constitutes one of the common terms and core definitions for ISO management system  
 316 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives. It has been modified  
 317 by the addition of Note 1 to entry.

318    ***3.18 corrective action***

319    ***action to eliminate the cause(s) of a nonconformity*** (3.17) and to prevent recurrence

321 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
 322 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

323    ***3.19 preventive action***

325    ***action to eliminate the cause of a potential nonconformity*** (3.17) or other undesirable potential situation

326 Note 1 to entry: There can be more than one cause for a potential nonconformity.

327 Note 2 to entry: Preventive action is taken to prevent occurrence and to preserve an asset's function whereas  
 328 corrective action is taken to prevent recurrence.

329 Note 3 to entry: Preventive action is normally carried out while the asset is functionally available and operable or  
 330 prior to the initiation of functional failure.

331 Note 4 to entry: Preventive action includes the replenishment of consumables where the consumption is a  
 332 functional requirement.

333    ***3.20 predictive action***

335    ***action to predict the need for preventive action*** (3.19) or ***corrective action*** (3.18)

336 Note 1 to entry: Predictive actions are undertaken in the present to predict the probability, location, time, rate of  
 337 change and severity of future events and to develop decisions and actions in the current timeframe that are to be  
 338 undertaken in the future.

339 Note 2 to entry: Predictive action is also commonly referred to as either "condition monitoring" or "performance  
 340 monitoring".

341    ***3.21 audit***

343    ***systematic and independent process*** (3.9) for obtaining evidence and evaluating it objectively to  
 344 determine the extent to which the audit criteria are fulfilled

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

347 Note 2 to entry: An internal audit is conducted by the organization (3.1) itself, or by an external party on its behalf.

348 Note 3 to entry: "Audit evidence" and "audit criteria" are defined in ISO 19011.

349 Note 4 to entry: This constitutes one of the common terms and core definitions for ISO management system  
 350 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

351    ***3.22 measurement***

353    ***process*** (3.9) to determine a value

354 Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system  
355 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives.

356 **3.23**

357 **monitoring**

358 determining the status of a system, a *process* (3.9) or an activity

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

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

362 Note 3 to entry: This constitutes one of the common terms and core definitions for ISO management system  
363 standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives. It has been modified  
364 by the addition of Note 2 to entry.

365 **3.24**

366 **asset life**

367 period from asset creation to asset end-of-life

368 **3.25**

369 **life cycle**

370 stages involved in the management of an asset during its life

371 Note 1 to entry: Each stage identifies different activities and processes.

372 Note 2 to entry: The naming of the stages and the activities under each stage usually vary in different industry  
373 sectors and are determined by the organization. An example of the naming of the stages is: conception of need,  
374 design, construct, use and maintain, renovate, disposal.

375 **3.26**

376 **life cycle management**

377 applying asset management over the *life cycle* (3.25) of assets

378 **3.27**

379 **knowledge**

380 human or organizational asset enabling effective decisions and action in context

381 Note 1 to entry: knowledge in this context is specific to the asset management activities of the organization; it is  
382 generally gained by experience of the past and new insights into the future.

383 [SOURCE: ISO 30401:2018, 3.25, modified - Notes to entry 1, 2 and 3 have been deleted and a new Note  
384 1 to entry has been added]

385 **3.28**

386 **knowledge management**

387 combination of processes, actions, methodologies and solutions that enable the creation, maintenance,  
388 distribution and access to organizational knowledge

## 389 **4 Context of the organization**

### 390 **4.1 Understanding the organization and its context**

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

393    **4.2 Understanding the needs and expectations of interested parties stakeholders**

394    The organization shall determine:

- 395    a) the interested parties stakeholders that are relevant to the asset management system;
- 396    b) the relevant requirements and expectations of these interested parties stakeholders;
- 397    c) which of these requirements will be addressed through the asset management system and the  
398       degree to which they will be addressed; diverted
- 399    d) the criteria for asset management decision making derived from these requirements and, where  
400       appropriate, identification of underpinning assumptions;
- 401    e) the stakeholder requirements for aligning financial and non-financial information relevant to asset  
402       management, and for communicating on it both internally and externally.

403    The organization shall consider the impacts of assets and asset management activities upon  
404       stakeholders, as well as for their significance to itself. Such impacts can be positive or negative,  
405       financial or non-financial, and shall be considered in the determination of value criteria to be used in  
406       decision-making, in prioritization of resources and activities, and in performance monitoring.

407    NOTE Impacts upon stakeholders can include, but not be limited to, cost, risk, performance, safety, capital value  
408       revenue, environmental impact, reputation, quality, sustainability and compliance.

409    **4.3 Determining the scope of the asset management system**

410    The organization shall determine the boundaries and applicability of the asset management system to  
411       establish its scope.

412    When determining this scope, the organization shall consider:

- 413    a) the external and internal issues referred to in 4.1;
- 414    b) the requirements referred to in 4.2;
- 415    c) the interaction with other management systems, if used.

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

417    The scope, including details of the asset portfolio covered, shall be available as documented  
418       information.

419    **4.4 Asset management system**

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

423    The asset management system shall be used to realise, assure and optimise value.

424 **4.5 Asset management decision-making**

425 **4.5.1 General**

426 The organization shall determine the criteria for asset management decision making and, where  
427 appropriate, identification of underpinning assumptions.

428 The organisation shall establish and apply a framework for asset management decision-making taking  
429 into account:

- 430 a) the context and external and internal issues (see 4.1);
- 431 b) the stakeholder requirements and expectations (see 4.2);
- 432 c) the scope of the asset management system (see 4.3);
- 433 d) the range of decisions to be made about assets, asset management activities, asset management  
434 capabilities and the asset management system.

435 **4.5.2 Framework**

436 The framework shall give details of the documented information needed for the processes to be used  
437 when making asset management decisions. These processes, and the methods and tools used to support  
438 them, shall be appropriate for:

- 439 a) the potential impact of the decisions;
- 440 b) the complexity of the decisions (including the number of stakeholders who can be affected and the  
441 uncertainty in available information);
- 442 c) the urgency or time available for making the decisions.

443 **4.5.3 Processes**

444 The processes used for making asset management decisions shall enable the organization to:

- 445 a) consider the value obtainable over the asset life cycle or other horizon that includes all positive and  
446 negative impacts on stakeholders;
- 447 b) consider risks and opportunities and how these may change with time;
- 448 c) consider any non-negotiable constraints;
- 449 d) handle uncertainty in information (for example, through sensitivity analysis);
- 450 e) maintain documented information and transparency in the inputs, assumptions, processes,  
451 conclusions and support methods used;
- 452 f) consider and mitigate potential sources of bias;
- 453 g) be timely, considering of the consequences of delay in making a decision;
- 454 h) include consultation with affected stakeholders and consensus-building for the acceptance of  
455 decision results;

- 456 i) include consistent criteria for the approval and authorization of decisions;
- 457 j) determine and optimise any conflicting objectives and trade-offs to select the combination that  
458 yields greatest value.

459 **4.6 Strategic asset management plan**

460 **4.6.1 General**

- 461 The organization shall develop a strategic asset management plan (SAMP). The SAMP shall:
- 462 a) be aligned with the scope (see 4.3) and the asset management policy (see 5.2);
- 463 b) support the purpose of the organization and delivery of its products and services;
- 464 c) ensure that the asset management objectives align and are consistent with the organizational  
465 objectives;
- 466 d) provide an integrated framework for planning, prioritizing and decision-making for the  
467 implementation of all asset management activities, to ensure their coordination and alignment;
- 468 e) have a timeframe that is sufficiently long to address the life of the assets which could extend beyond  
469 the organization's period of responsibility where there are residual liabilities or own business  
470 planning timeframe.

471 The SAMP shall be available as documented information.

472 In developing the SAMP, the organization shall ensure that the work plans and financial plans are  
473 aligned (see 4.2 and 7.6). Where differences are needed due to differing standards and regulatory  
474 requirements, these shall be detailed in the SAMP and be communicated.

475 **4.6.2 Asset management plans**

476 The SAMP shall define the required set of asset management plans (AMPs) needed to manage the  
477 individual subsets of assets within the asset portfolio and their relationship. The rationale and criteria  
478 used to develop this structure shall be defined in the SAMP.

479 The organization shall ensure that the SAMP provides guidance for the application of life cycle  
480 management activities and AMPs provide evidence of applied life cycle management activities.

481 **4.6.3 Setting the objectives and the long-term approach**

482 The SAMP shall include details of how the organization will:

- 483 a) establish the asset management objectives for the asset portfolio as a whole, aligned with the  
484 organizational objectives, while considering its issues (see 4.1), the stakeholder requirements (see  
485 4.2), and the risks and opportunities (see 6.1);
- 486 b) establish the value criteria and the decision-making framework (see 4.6);
- 487 c) specify the approach for achieving the asset management objectives and optimising value to the  
488 organization, while considering the future demand, typical lifespan of assets, the period of  
489 responsibility of the organization and any residual liabilities beyond this period;

- 490 d) cascade the portfolio-level asset management objectives to asset management objectives to be  
 491 delivered by the identified AMPs and relate to required performance targets for asset systems and  
 492 individual assets.

493 **4.6.4 Portfolio-level plan**

494 The SAMP shall include details of a high-level plan of the actions and activities needed for the  
 495 achievement of the asset management objectives covering the following:

- 496 a) the future demand on the asset portfolio, asset systems and individual assets considering the  
 497 initiatives in the organizational plan; overall capability, performance, challenges, risks and  
 498 opportunities relative to the future demand;
- 499 b) the asset portfolio-level plan, the associated financial plan, and outline of the critical capabilities of  
 500 the organization and resources (human, financial, other) needed to achieve the asset management  
 501 objectives;
- 502 c) risks, opportunities, assumptions, issues and dependencies in delivering the SAMP (see 6.1).

503 **4.6.5 Asset management system improvement**

504 The SAMP shall include details of the plan for creating or improving the asset management system (see  
 505 9.3.3). The plan shall indicate the improvements needed to deliver the SAMP and the supporting AMP(s),  
 506 including the improvements needed in the processes, information, information and communications  
 507 technology (I.C.T.) systems, resources, organization of roles and responsibilities, and supply-chain  
 508 arrangements.

509 **5 Leadership**

510 **5.1 Leadership and commitment**

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

- 513 a) ensuring the establishment and alignment of asset management decision-making criteria with  
 514 organizational objectives;
- 515 b) ensuring that the asset management policy, the SAMP and asset management objectives are  
 516 established and are compatible with the strategic direction of the organization organizational  
 517 objectives;
- 518 c) engaging with the organisation's relevant stakeholders to determine their perception of the value  
 519 delivered by the organization;
- 520 d) ensuring the integration of the asset management system requirements into the organization's  
 521 business processes, including the integration of life cycle management;
- 522 e) ensuring that the resources for the asset management system are available;
- 523 f) communicating the importance of effective asset management and of conforming to the asset  
 524 management system requirements, including the importance of using life cycle management to  
 525 realize value from assets to the organization throughout their life cycle stages;

- 526 g) ensuring that the asset management system achieves its intended result(s);
- 527 h) directing and supporting persons to contribute to the effectiveness of the asset management  
528 system;
- 529 i) ensuring cross-functional collaboration within the organization;
- 530 j) **promoting continual improvement**, including defining and communicating, at specified intervals:
  - 531 — the actions to improve the suitability, adequacy and effectiveness of its the asset management  
532 system;
  - 533 — the results yielded from actions for improvement taken in the previous interval;
- 534 k) supporting other relevant roles to demonstrate their leadership as it applies to their areas of  
535 responsibility;
- 536 l) ensuring that the approach used for managing risks associated with asset management considers  
537 relevant elements of the organization's overall risk-management approach and ensuring risks can  
538 be assessed and prioritized using common decision making criteria;
- 539 m) ensuring that the approach for pursuing opportunities considers relevant elements of the  
540 organisation's approach to business development and innovation.

541 **NOTE** Reference to “business” in this document can be interpreted broadly to mean those activities that are  
542 core to the purposes of the organization’s existence.

## 5.2 Asset management policy

544 Top management shall establish an asset management policy that:

- 545 a) is appropriate to the purpose of the organization;
- 546 b) provides a framework for setting asset management objectives;
- 547 c) includes a commitment to meet applicable requirements;
- 548 d) ensures the adoption of the asset management principles described in ISO 55000;
- 549 e) **includes a commitment to continual improvement of the asset management system.**

550 **The asset management policy shall:**

- 551 — be consistent with the organizational plan;
- 552 — be consistent with other relevant organizational policies;
- 553 — be appropriate to the nature and scale of the organization’s assets and operations;
- 554 — **be available as documented information;**
- 555 — **be communicated within the organization;**
- 556 — **be available to interested parties stakeholders, as appropriate;**

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

558 **5.3 Organizational roles, responsibilities and authorities**

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

561 Top management shall assign the responsibility and authority for:

- 562 a) establishing and updating the SAMP, including asset management objectives;
- 563 b) making asset management decisions in accordance with the decision-making framework;
- 564 c) ensuring that the asset management system supports delivery of the SAMP;
- 565 d) ensuring that the asset management system conforms to the requirements of this document;
- 566 e) ensuring the suitability, adequacy and effectiveness of the asset management system;
- 567 f) establishing and updating the asset management plan(s) (see 6.2.2);
- 568 h) reporting on the performance of the assets, asset management and the asset management system  
569 to top management.

570 **6 Planning**

571 **6.1 Actions to address risks and opportunities**

572 **6.1.1 General**

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

- 576 a) give assurance that assets, asset management and the asset management system can achieve their  
577 intended result(s);
- 578 b) prevent, or reduce undesired effects (avoid losses of value);
- 579 c) achieve continual improvement (add value).

580 **6.1.2 Actions to address risk**

581 The organization shall establish processes for the assessment of risks, including:

- 582 — identification of risks;
- 583 — analysis of risks;
- 584 — evaluation of risks;
- 585 — determining the criticality of assets in achieving asset management objectives;

586 — consider alternatives and decide on preferred options to treat risk.

587 **The organization shall plan:**

588 a) **actions to address**, treat, monitor and communicate asset management related **risks**, taking into  
589 account how these risks can change with time;

590 b) **how to:**

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

592 — evaluate the effectiveness of these actions.

593 NOTE See ISO 55002, Annex E "Risk management in the context of ISO 55001" for further guidance.

#### 594 **6.1.3 Actions to address opportunities**

595 The organisation shall establish processes to:

596 — identify, gather, collect or capture opportunities;

598 — decide on the opportunities to be addressed to improve performance, exceed original objectives and  
599 intended results, pursue additional objectives or achieve continual improvement of the assets, asset  
600 management and the asset management system.

601 NOTE Opportunities can be identified from analysis of issues under 4.1 and stakeholder requirements under  
602 4.2 and deviations from expected intended results, cause analysis, review of unplanned events, innovation,  
603 continual improvements, audit findings (internal or external) or management review.

604 **The organization shall plan:**

605 a) **actions to address the opportunities** that have been decided on, taking into account how these  
606 opportunities can change with time;

607 b) **how to:**

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

609 — evaluate the effectiveness of these actions.

### 610 **6.2 Asset management objectives and planning to achieve them**

#### 611 **6.2.1 Asset management objectives**

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

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

616 **The asset management objectives shall:**

617 a) be consistent and aligned with the organizational objectives;

618 b) be determined to optimise value;

- 619 c) be consistent with the asset management policy;
- 620 d) be established and updated using asset management decision-making criteria (see 4.5.1);
- 621 e) be established and updated as part of the SAMP;
- 622 f) be measurable (if practicable);
- 623 g) take into account applicable requirements;
- 624 h) be monitored;
- 625 i) be communicated to relevant stakeholders;
- 626 j) be reviewed and updated as appropriate;
- 627 k) be available as documented information.

#### 628 6.2.2 Planning to achieve asset management objectives

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

632 The organization shall establish and maintain asset management plan(s) to achieve the asset  
633 management objectives. These asset management plan(s) shall be aligned with the asset management  
634 policy and the SAMP, and be made available as documented information

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

637 When planning how to achieve its asset management objectives, the organization shall determine and  
638 make available in documented information:

- 639 a) details of any decisions taken and their anticipated value consequences;
- 640 b) the assumptions, methods and criteria used for decision-making and for prioritization of the  
641 activities and resources to achieve its asset management plan(s) and asset management objectives;
- 642 c) the processes and methods to be employed in managing its assets over their life cycles;
- 643 d) what will be done;
- 644 e) what resources will be required;
- 645 f) who will be responsible;
- 646 g) when it will be completed;
- 647 h) how the results will be evaluated;
- 648 i) the appropriate time horizon(s) for the asset management plan(s);
- 649 j) the financial and non-financial implications of the asset management plan(s);

- 650 k) the review period for the asset management plan(s) (see 9.1);  
 651 l) actions to address risks and opportunities associated with managing the assets, taking into account  
 652 how these risks and opportunities can change with time (see 6.1),  
 653 The organization shall ensure that its risks are considered in the organization's risk management  
 654 approach including contingency planning.

### 655 **6.3 Planning of changes**

656 When the organization determines the need for changes to the asset management system, the changes  
 657 shall be carried out in a planned manner and contribute to the on-going optimization of value.

658 The organization shall determine the changes required to move to a future state while taking advantage  
 659 of opportunities and managing its risks.

## 660 **7 Support**

### 661 **7.1 Resources**

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

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

666 The organization shall evaluate the acceptability of increased risks in case of inadequate resourcing.

### 667 **7.2 Competence**

668 The organization shall:

- 669 a) determine the necessary competence of person(s) doing work under its control that affects its asset  
 670 performance, asset management performance and asset management system performance;
- 671 b) ensure that these persons are competent on the basis of appropriate education, training, or  
 672 experience;
- 673 c) where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness  
 674 of the actions taken;
- 675 d) periodically review current and future competency needs and requirements.

676 The organization shall undertake a skills assessment at appropriate frequency to validate that required  
 677 skills are still appropriate and available.

678 Appropriate documented information shall be available as evidence of competence.

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

681 **7.3 Awareness**

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

- 684 a) the asset management policy;  
685 b) their contribution and responsibility to the effectiveness of the asset management system, including  
686 the benefits of improved asset management performance;  
687 c) their work activities, the associated risks and opportunities and how they relate to each other;  
688 d) the implications of not conforming to the asset management system requirements.

689 The organization shall evaluate the effectiveness of activities used to ensure awareness of asset  
690 management.

691 **7.4 Communication**

692 The organization shall determine the need for internal communications (both top down and bottom  
693 up), external communications and engagement relevant to assets, asset management and the asset  
694 management system including:

- 695 a) on what it will communicate;  
696 b) when to communicate;  
697 c) with whom to communicate;  
698 d) how to communicate.

699 The organization shall evaluate the effectiveness of its communications.

700 The organization shall consult internal and external stakeholders when determining its need for  
701 communications, and when evaluating their effectiveness.

702 Appropriate documented information shall be available as evidence of the communications needed and  
703 on their effectiveness.

704 **7.5 Documented information**

705 **7.5.1 General**

706 The organization's asset management system shall include:

- 707 a) documented information as required by this document;  
708 b) documented information for applicable legal and regulatory requirements;  
709 c) documented information determined by the organization as being necessary for the effectiveness of  
710 the asset management system (see 7.6).

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

- 713 — the size of organization and its type of activities, processes, products and services;
- 714 — the complexity of processes and their interactions;
- 715 — the competence of persons;
- 716 — the volume, diversity, complexity and criticality of the asset(s) and asset system(s).

717 **7.5.2 Creating and updating documented information**

- 718 When creating and updating documented information the organization shall ensure appropriate:
- 719 a) identification and description (e.g. a title, date, author, or reference number);
- 720 b) format (e.g. language, software version, graphics) and media (e.g. paper, electronic);
- 721 c) review and approval for suitability and adequacy.

722 **7.5.3 Control of documented information**

723 Documented information required by the asset management system and by this document shall be  
724 controlled to ensure:

- 725 a) it is available and suitable for use, where and when it is needed;
- 726 b) it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity);

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

- 729 — distribution, access, retrieval and use;
- 730 — arrangements for sharing information with external stakeholders and service providers (see also  
731 8.4), including the use of and contribution to open sources of data and information';
- 732 — the need to manage and improve information quality, including undertaking information audits,  
733 measurement, and reporting on information quality;

734 NOTE 1 Guidance on the definition, measurement and management of information quality can be found in  
735 the documents on data quality produced by ISO/TC 184/SC 4, e.g. ISO/TS 8000-1.

- 736 — storage and preservation, including preservation of legibility;
- 737 — control of changes (e.g. version control);
- 738 — retention and disposition.

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

742 NOTE 2 Access can imply a decision regarding the permission to view the documented information only, or the  
743 permission and authority to view and change the documented information.

## 7.6 Information requirements

The organization shall determine the information requirements needed to support its asset management activities and to achieve the asset management objectives. In doing this the organization shall:

- a) develop a plan for the identification, collection, integration, quality improvement, and utilization of information considering:
  - the products and services supported by the organization's assets;
  - the significance of determined risks;
  - the potential benefits of determined opportunities;
  - the roles and responsibilities for asset management;
  - how the information will be specified, modelled, organized and stored;
  - the asset management processes and activities;
  - the need for ensuring alignment and consistency in information when managed through different information systems;
  - the exchange of information with its stakeholders, including external service providers (see 8.4);
  - the use of and contribution to open sources of date and information;
  - the impact of quality and availability of information on decision-making;

- b) determine the information about assets required for asset management activities such as decision-making, planning, life cycle management, risk management, performance reporting and determining legal and regulatory requirements;

NOTE 1 For constructed assets, reference can be made to ISO 19650-1 and the related documents on building information modelling (BIM) produced by ISO/TC 59/SC13 for guidance in determining and specifying information requirements.

- c) determine information specifications to enable consistent definition of attributes, units of measurement, criticality, quality, and source for the different types of information;
- d) ensure alignment, consistency and traceability of information and terminology between the financial and non-financial functions within the organization; where differences are needed, for example in the recording of assets and recognition of their value, due to differing standards and regulatory requirements, this shall be made available as documented information and communicated;

NOTE 2 Guidance on the alignment of financial and non-financial information can be found in ISO/TS 55010.

- e) ensure alignment, consistency and structure of information and terminology to enable seamless integration where information is managed through different information systems;

NOTE 3 Structuring of information can relate to, for example, asset classification, asset hierarchy, spatial modelling, graphical modelling.

780 **7.7 Knowledge**

781 The knowledge related to asset management shall be applied to create value to the organization  
 782 through effective knowledge management. The organization shall determine the knowledge needs for  
 783 asset management.

784 The organization shall put in place processes for retaining existing knowledge, acquiring new  
 785 knowledge, utilizing available knowledge, and handling outdated and invalid knowledge and ensure  
 786 that knowledge is readily accessible at the time of decision-making.

787 When addressing changing needs and trends, the organization shall consider its current knowledge and  
 788 determine how to update, develop, acquire, or access any necessary additional knowledge.

789 NOTE 1 Asset management knowledge can be based on:

- 790 a) internal sources (e.g. intellectual property; knowledge gained from experience; lessons learned from failures  
 791 and successful initiatives; capturing and sharing undocumented knowledge and experience; the results of  
 792 improvements in processes, products and services); reference may be made to ISO 30401 for additional  
 793 guidance;
- 794 b) external sources (e.g. standards; books, academia; conferences; gathering knowledge from customers,  
 795 collaborators or external providers).

796 NOTE 2 Where an organization has established a formal knowledge management system, the knowledge related  
 797 to asset management can be managed as part of that system.

798 **8 Operation**

799 **8.1 Operational planning and control**

800 The organization shall plan, implement and control the processes needed to meet requirements, and to  
 801 implement the actions determined in Clause 6, the asset management plan(s) determined in 6.2, and  
 802 actions determined in Clause 10 by:

- 803 a) establishing criteria for the required processes;
- 804 b) implementing the control of the processes in accordance with the criteria;
- 805 c) treating and monitoring risks using the approach specified in 6.1.2;
- 806 d) implementing and monitoring opportunities using the approach described in 6.1.3.

807 Documented information shall be available to the extent necessary to have confidence that the  
 808 processes have been carried out as planned.

809 **8.2 Life cycle activities**

810 The organization shall establish, implement, and maintain processes for control of the life cycle  
 811 activities within the scope of 4.3 to:

- 812 — develop specifications for the asset(s), either for their procurement, or for their design, build,  
 813 installation or commissioning;
- 814 — operate, maintain, improve and renew the asset(s), and to dispose of them appropriately when  
 815 the need for them is over;

816 — ensure the life cycle activities are managed by competent people at every stage.

817 The processes for the control of life cycle activities shall:

- 818 a) ensure that operations and activities are carried out under specified conditions;
- 819 b) be consistent with the asset management policy, the SAMP and asset management objectives;
- 820 c) ensure that cost, risk, opportunities and performance are controlled across the asset life cycle  
821 stages.

### 822 **8.3 Management of change**

823 The organization shall ensure that opportunities from change are managed in accordance with 6.1.1,  
824 6.1.3 and 6.3.

825 The organization shall assess the risks associated with any planned change that can have an impact on  
826 achieving the asset management objectives, before the change is implemented, and irrespective of  
827 whether the change is intended to be permanent or temporary

828 The organization shall ensure that such risks are addressed in accordance with 6.1.1 and 6.1.2.

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

### 831 **8.4 External service providers**

832 When the organization outsources any activities that can have an impact on the achievement of its asset  
833 management objectives, it shall assess the associated risks. **The organization shall ensure that  
834 externally provided processes, products, services or activities, that are relevant to the asset  
835 management system are controlled.**

836 The organization shall determine and make available documented information on how these activities  
837 will be controlled and integrated into the organization's asset management system. The organization  
838 shall determine:

- 839 a) the processes and activities that are to be outsourced (including the scope and boundaries of the  
840 outsourced processes and activities, as well as on their interfaces with the organization's own  
841 processes and activities);
- 842 b) the responsibilities and authorities within the organization for managing the outsourced processes  
843 and activities;
- 844 c) the processes and scope for the sharing of knowledge and information between the organization  
845 and its external service provider(s).

846 When outsourcing any activities, the organization shall ensure that:

- 847 — the outsourced activities meet the requirements of 7.2, 7.3 and 7.6;
- 848 — the performance of the outsourced activities is monitored in accordance with 9.1;
- 849 — the processes of the external service provider(s) are aligned with the asset management system.

850 **9 Performance evaluation**

851 **9.1 Monitoring, measurement, analysis and evaluation**

852 The organization shall determine:

- 853 a) what needs to be monitored and measured;
- 854 b) the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results;
- 855 c) when the monitoring and measuring shall be performed;
- 856 d) when the results from monitoring and measurement shall be analysed and evaluated.

858 The organization shall evaluate and report to relevant internal and external stakeholders on:

- 859 — the performance of the assets, asset management, and the effectiveness of the asset management system;
- 860 — their contributions to delivery of organizational objectives and to the optimization of value;
- 862 — the long-term effect on asset management performance and risks from predictions on asset status.

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

865 Documented information shall be available as evidence of the results of monitoring, measurement, 866 analysis and evaluation.

867 The organization shall ensure that its monitoring and measurement enables it to meet stakeholder 868 requirements (see 4.2).

869 **9.2 Internal audit**

870 **9.2.1 General**

871 The organization shall conduct internal audits at planned intervals to provide information to assist in 872 the determination on whether the asset management system:

- 873 a) conforms to:
  - 874 — the organization's own requirements for its asset management system;
  - 875 — the requirements of this document;
- 876 b) is effectively implemented and maintained.

877 **9.2.2 Internal audit programme**

878 The organization shall:

- 879 a) plan, establish, implement and maintain (an) audit programme(s), including the frequency, 880 methods, responsibilities, planning requirements and reporting. When establishing the internal

881 audit programme(s) the organization shall consider the importance of the processes concerned and  
882 the results of previous audits;

- 883 b) define the audit criteria and scope for each audit;  
884 c) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;  
885 d) ensure that the results of the audits are reported to relevant management.

886 Documented information shall be available as evidence of the results of the implementation of the audit  
887 programme and the audit results.

## 888 **9.3 Management review**

### 889 **9.3.1 General**

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

### 892 **9.3.2 Management review inputs**

893 The management review shall include:

- 894 a) the status of actions from previous management reviews;  
895 b) changes in external and internal issues that are relevant to the asset management system;  
896 c) changes in needs and expectations of stakeholders that are relevant to the asset management  
897 system;  
898 d) information on the asset management performance, including trends in:  
899 — nonconformities and corrective actions;  
900 — monitoring and measurement results;  
901 — audit results;  
902 e) asset management decision-making;  
903 f) opportunities for continual improvement;  
904 g) changes in the profile of risks;  
905 h) changes in the potential of opportunities;  
906 i) evaluation of the effectiveness of the decision-making criteria and processes in enabling achieving  
908 the objectives.

### 909 **9.3.3 Management review results**

910 The results of the management review shall include decisions related to continual improvement  
911 opportunities and any need for changes (see 8.3) to the asset management system.

912 Documented information shall be available as evidence of the results of management reviews.

## 913 **10 Improvement**

### 914 **10.1 Continual improvement**

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

### 917 **10.2 Nonconformity and corrective action**

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

920 a) react to the nonconformity or incident, and as applicable:

921 — take action to control and correct it;

922 — deal with the consequences;

923 b) evaluate the need for action and available options to eliminate the cause(s) of the nonconformity or  
924 incident, in order that it does not recur or occur or recur elsewhere, by:

925 — reviewing the nonconformity or incident;

926 — determining the causes of nonconformity or incident;

927 — determining if similar nonconformities exist, or can potentially occur;

928 c) implement any action needed;

929 d) review the effectiveness of any corrective action taken; and

930 e) make changes (see 8.3) to the asset management system, if necessary.

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

932 Documented information shall be available as evidence of:

933 — the nature of the nonconformities or incident and any subsequent actions taken;

934 — the results of any corrective action.

### 935 **10.3 Predictive action**

936 The organization shall establish processes to predict the need for preventive and corrective action and  
937 other asset life interventions. In developing the predictive monitoring activities, the organisation shall  
938 consider the need to determine:

939 a) potential asset failures;

940 b) the effective life of assets;

- 941    c) the optimal intervention points for maintenance, renewal, replacement and disposal of assets;  
942    d) the inputs needed to determine the relationship of asset condition to performance and cost;  
943    e) the inputs needed to determine asset depreciation and value.

944 When a potential failure is determined the organization shall take relevant actions (see 10.2) and  
945 integrate these actions in asset management planning (see 6.2).

946

947

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