BSI Standards Publication

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling

Part 3: Operational phase of the assets

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National foreword

This British Standard is the UK implementation of EN ISO 19650-3:2020. It is identical to ISO 19650-3:2020.

The technical content of this BS EN ISO 19650-3 is intended as a replacement for content found in PAS 1192-3:2014, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/555, Construction design, modelling and data exchange.

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

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

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Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling - Part 3: Operational phase of the assets (ISO 19650-3:2020)

Organisation et numérisation des informations relatives aux bâtiments et ouvrages de génie civil y compris modélisation des informations de la construction (BIM) - Gestion de l'information par la modélisation des informations de la construction - Partie 3: Phase d'exploitation des actifs (ISO 19650-3:2020)

Organisation von Informationen zu Bauwerken - Informationsmanagement mit Bauwerksinformationsmodellierung - Teil 3: Betriebsphase der Assets (ISO 19650-3:2020)

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European foreword

This document (EN ISO 19650-3:2020) has been prepared by Technical Committee ISO/TC 59 "Buildings and civil engineering works" in collaboration with Technical Committee CEN/TC 442 "Building Information Modelling (BIM)" the secretariat of which is held by SN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2021, and conflicting national standards shall be withdrawn at the latest by February 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 19650-3:2020 has been approved by CEN as EN ISO 19650-3:2020 without any modification.

Contents

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).

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

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

This document was prepared by ISO/TC 59, *Buildings and civil engineering works*, SC 13, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 442, *Building Information Modelling (BIM)*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 19650 series can be found on the ISO website.

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

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Introduction

0.1 Purpose and application

This document is designed to enable an appointing party (such as an asset owner, asset operator or outsourced asset management provider) to establish their requirements for information during the operational phase of an asset. This document is also designed to enable them to provide the appropriate collaborative environment to fulfil commercial goals. Within this environment, multiple appointed parties can produce information in an effective and efficient manner.

This document is primarily intended for use by the following:

— those involved in the management of an asset and facility (see 0.2);

— those involved in the specification of appointments and the facilitation of collaborative working during the entire life cycle of an asset;

— those involved in delivering asset management and facility management during the operational phase of an asset (see 0.2); and

— those involved in specifying the information required for operational purposes that needs to be captured during the delivery phase of an asset.

If this document is being applied in relation to a particular asset then this should be reflected in the relevant appointments.

This document is applicable to assets of all sizes and all levels of complexity. This includes portfolios of buildings, campuses, infrastructure networks, individual buildings and pieces of infrastructure such as roads, bridges, footpaths, streetlights, water pipes or sewers. The requirements in this document should be applied in a way that is proportionate and appropriate to the scale and complexity of the asset.

Continuity of information management over the lifetime of an asset is important and it is recommended that all feasible steps (including transfer of the asset information model) are taken to ensure this whenever an asset is transferred from one owner to another.

Figure 1 shows the application of information management during the operational phase (shaded) in conjunction with the delivery phase (unshaded apart from points A and B where information is transferred). Figure 1 also shows how information management according to the ISO 19650 series takes place within the context of asset and project management which itself takes place within the context of organizational management. ISO 9001, ISO 55000 and ISO 21500, indicated in Figure 1, are not requirements for applying this document.
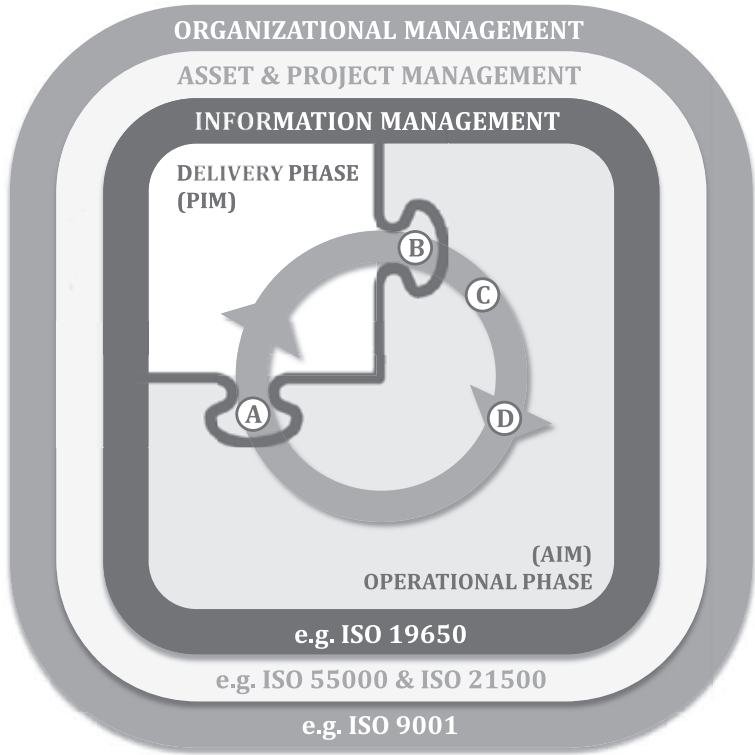
Key

AIM   asset information model

PIM   project information model

A   start of delivery phase — transfer of relevant information from AIM to PIM

B   start of operational phase — transfer of relevant information from PIM to AIM

C   post-occupancy/implementation evaluation or performance review

D   trigger events during the operational phase

NOTE   Information can be transferred between PIM and AIM during the delivery phase as well as at points A and B.

Figure 1 — Scope of this document

The concepts and principles from ISO 19650-1, concerning different forms of information requirements, have been applied in this document. The application of these concepts and principles has been tailored to respond to the particular nature of asset management activities. In support of this, a simplified illustration of the progression of information requirements is shown in Figure 2.
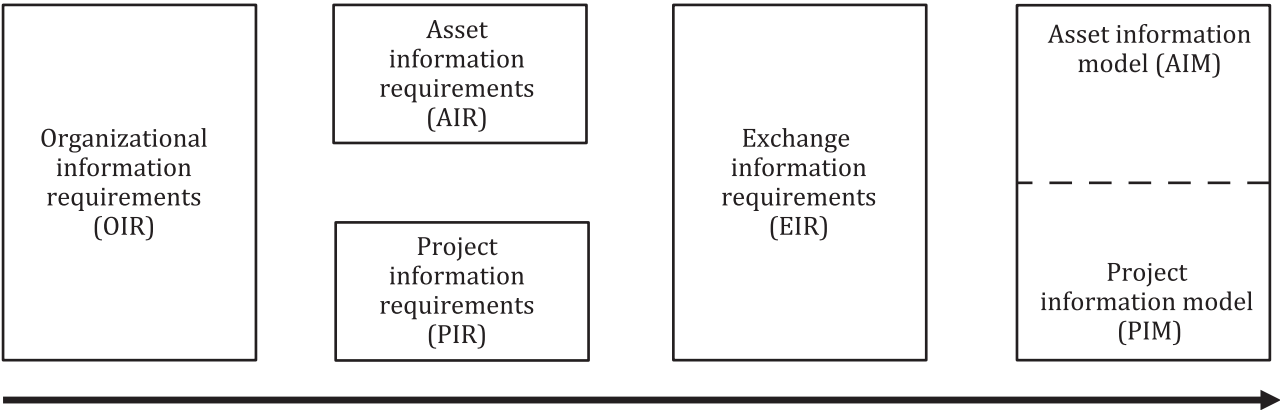
Figure 2 — Simplified illustration of the progression of information requirements

The information management process specified in this document can be applied to trigger events that are foreseen and scheduled in advance as well as to trigger events that are not scheduled in advance or cannot be foreseen. These two types of trigger event differ in terms of when the preparatory activities of identifying and appointing the lead appointed party can take place.

Examples of the first type of trigger event are: annual maintenance tasks, strategic estate reviews and call-off arrangements for common-place repairs. For this type of trigger event, it is possible and sensible to select and appoint the lead appointed party well before any of these trigger events takes place.

For the second type of trigger event there are two distinct scenarios. The first is the deliberate decision to initiate a project such as the construction of a bridge or underpass. Here, the information management process could follow either ISO 19650-2 or this document. The decision will depend on the scale and complexity and the requirements on those involved are stated in 4.2. The second scenario includes trigger events that are so rare or unpredictable that having appointments in place can be inappropriate or not possible. The selection and appointment occur after the trigger event takes place. Examples include unexpected breakdowns of equipment, accidents and extreme floods.

Finally, there is the separate situation of an asset being acquired from an existing owner, where information is exchanged as part of the transaction.

All these situations are catered for in the arrangement of Clause 5. Annex A provides guidance to support some of the requirements contained in Clause 5. Clause 5 also includes illustrations of the breakdown of each step in the information management process and a reminder of where each step comes in the overall process, in Figures 5 to 12.

0.2 Asset management and facility management

Asset management and facility management have developed as two distinct management disciplines, despite both of them being concerned with managing the physical assets and services of an organization. Asset management and facility management have developed their own standards and language of preferred terms.

This document recognizes that both asset management and facility management play their own part in the lifecycle of an asset, but for simplicity the main body of this document use the term asset management to cover both disciplines.

0.3 Use of phrase "shall consider"

This document makes use of the phrase "shall consider", particularly in Clause 5. This phrase is used to introduce a list of items that the person in question needs to think about carefully in connection with the primary requirement described in the subclause. The amount of thought involved, the time taken to complete it, and the need for supporting evidence will depend on the complexity of the asset, the experience of the person(s) involved, and the requirements of any national policy on building information modelling. On a relatively small or straightforward asset, it can be possible to complete, or dismiss as not relevant, some of these "shall consider" items very quickly.

One way to help identify which of the "shall consider" statements are relevant can be to review each statement and create templates for assets of different sizes and complexity.

0.4 National annex with relevant national standards

There are several standards required for the successful implementation of this document, relating to specific regions or countries, that are currently not suitable for inclusion within an international standard. As such, national standards bodies are encouraged to compile and document the standards, relevant to the region or country they represent, within a national annex. National annexes can also provide localized guidance and advice on how to implement this document for assets and trigger events of varying complexity.

0.5 Relationship with other standards

The concepts and principles relating to the application of the requirements within this document are provided in ISO 19650-1. Requirements for a security-minded approach to managing asset information are provided in ISO 19650-5.

For those occasions when the operational phase of an asset leads into a delivery phase, the requirements provided in ISO 19650-2 should be used in conjunction with this document.

General information on a management system for asset management, including terminology applicable to asset management, can be found in ISO 55000. General information on a management system for facility management can be found in ISO 41001 and ISO 41011.

Consideration of the concepts and principles contained within both ISO 19650-1 and ISO 55000 can assist appointing parties with the implementation of the requirements of this document and the development of asset management in their organization.

0.6 Benefits of this document

The aim of this document is to support all parties towards achieving their business objectives through effective and efficient production, use and management of information during the operational and end of life phases of assets where building information modelling is used.

International cooperation in the preparation of this document has identified a common information management process that can be applied to the broadest range of assets. This applies to the broadest range of organizations, across the broadest range of cultures, under the broadest range of appointment routes.

The benefits of the information management process should be kept under review during the operational phase of the asset life cycle and this should be done through regular formal reviews of the costs and benefits of the entire process to all parties.

0.7 Interfaces between parties and teams for the purpose of information management

For the purpose of this document, Figure 3 shows the interfaces between parties and teams with respect to information management in the operational phase and should not be seen as indicating contractual relationships.

The appointing party referred to in Figure 3 can be the owner of the asset, the operator of the asset (for example through a long-term concession agreement), or the outsourced asset or facility manager (typically appointed for a period of several years).

Delivery teams for the operational phase typically join and leave the asset/facility management and operation team at any appropriate time during the life cycle of the asset. Where information is produced by a task team within the appointing party's organization, for example a maintenance department, that task team should still comply with the requirements of this document as an appointed party or as a lead appointed party.

Figure 3 shows that delivery teams for asset management and operation activities can be of varying size and complexity and can include different numbers of task teams. Where multiple delivery teams are appointed at the same time, the appointing party can require them to coordinate their production of information with each other.
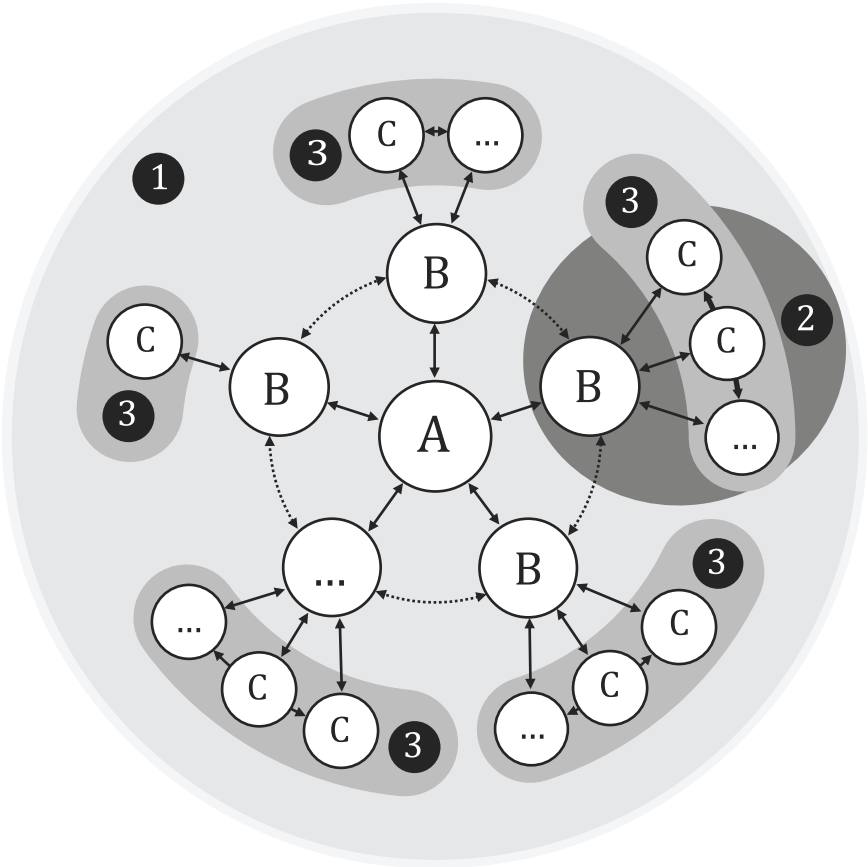
Key

A	appointing party
B	lead appointed party
C	appointed party
…	variable amount
1	asset/facility management and operation team
2	illustration of a delivery team
3	task teams

⬌ information requirements and information exchange

◄··► information coordination between lead appointed parties if required by appointing party

Figure 3 — Interface between parties and teams for the purpose of information management

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling —

Part 3:
Operational phase of the assets

1   Scope

This document specifies requirements for information management, in the form of a management process, within the context of the operational phase of assets and the exchanges of information within it, using building information modelling.

This document can be applied to all types of assets and by organizations of all types and sizes involved in the operational phase of assets.

The requirements in this document can be achieved through direct actions carried out by the organization in question or can be delegated to another party.

2   Normative references

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

ISO 12006-2, *Building construction — Organization of information about construction works — Part 2: Framework for classification*

ISO 19650-1:2018, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 1: Concepts and principles*

ISO 19650-2, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 2: Delivery phase of the assets*

ISO 19650-5, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 5: Security-minded approach to information management*

3   Terms, definitions, and symbols

3.1   Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19650-1 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

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

3.1.1
asset management
coordinated activity of an organization to realize value from assets

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

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

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

[SOURCE: ISO 55000:2014, 3.3.1, modified — In Note 3 to entry, "the plans and their implementation" have been replaced by "the execution and implementation of a plan".]

3.1.2
facility management
facilities management
organizational function which integrates people, place and process within the built environment with the purpose of improving the quality of life of people and the productivity of the core business

[SOURCE: ISO 41011:2017, 3.1.1, modified — The abbreviated term "FM" has been removed.]

3.2 Symbols for process diagrams

start

trigger event

end

collapsed sub-process

decision

NOTE The symbols used within this document have been adapted from symbols defined within ISO/IEC 19510.

4 Information management associated with the operational phase of assets

4.1 Information management process associated with the operational phase of assets

The information management process (Figure 4) shall be applied throughout the operational phase of each asset identified through the use of 5.1.3, and in the case of an existing asset shall be applied to all legacy information relating to that asset.

The information management process shall operate within or link with such enterprise systems or organizational functions as necessary to optimize its implementation.
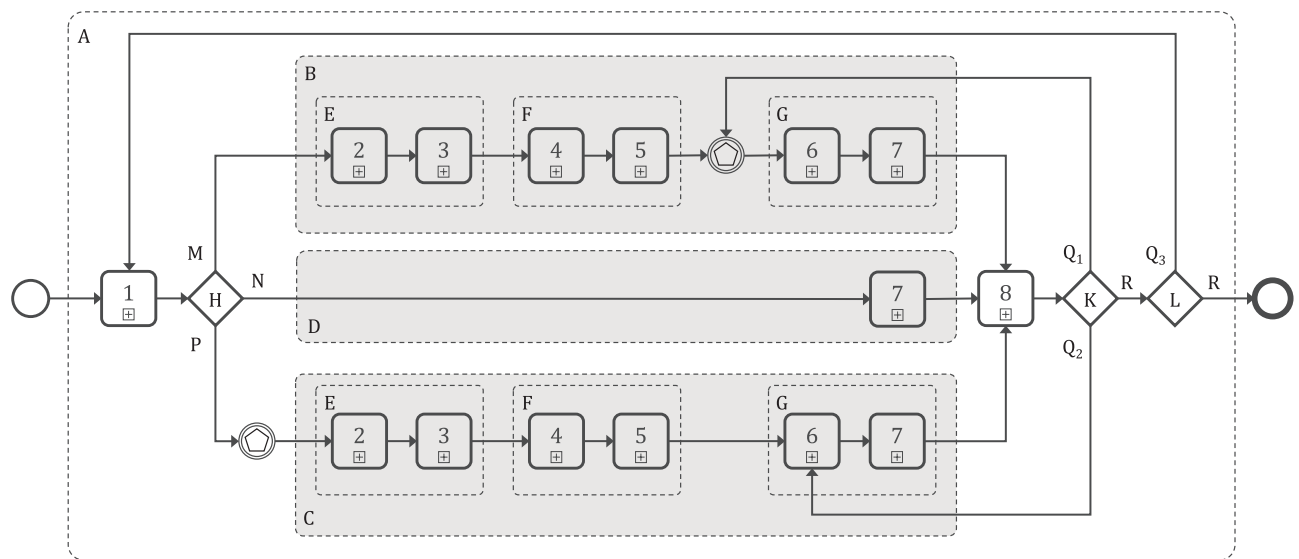
Key

Information management activities		Activity groupings	Decision points, questions and actions

Information management activities

1 assessment and need

2 invitation to tender/request to provide service

3 response to invitation to tender/ request to provide service

4 appointment

5 mobilization

6 production of information

7 information model acceptance by appointing party

8 AIM aggregation

Activity groupings

A activities undertaken during the operational phase of assets

B activities undertaken for each appointment made before trigger event

C activities undertaken for each appointment made after trigger event or delivery phase using ISO 19650-2

D activities undertaken when acquiring an asset

E activities undertaken during the procurement stage (of each appointment)

F activities undertaken during the information planning stage (of each appointment)

G activities undertaken during the information production stage (of each appointment)

Decision points, questions and actions

H type of trigger event providing information

K continuation of the appointment

L continuation of this information management process

M via an appointment made before a trigger event

N received from another appointing party/asset owner

P via an appointment made after a trigger event or delivery phase using ISO 19650-2

Q_1 yes — lead appointed party waits for next trigger event

Q_2 yes — lead appointed party progresses to next delivery milestone

Q_3 yes — appointing party still has responsibility for the asset

R no

NOTE 1   This process is intended to reduce the quantity of information to be reconciled at step 8 and reduces the effort of doing so.

NOTE 2   There can be several lead appointed parties responding to the same trigger event — see A.3 for examples of trigger events.

NOTE 3   Activities identified by C can apply during the operational or the delivery phases of the lifecycle. Activities identified by B and D apply during the operational phase of the lifecycle.

NOTE 4   Sub-processes within the information management activities 1 to 8 are shown in Figures 5 to 12.

Figure 4 — Information management process to support the operational phase of assets

4.2 Relationship between this document and ISO 19650-2

The appointing party in this document shall decide whether the requirements of ISO 19650-2 apply to particular trigger events and/or in relation to particular assets. In doing this, the appointing party shall consider:

— the scale and complexity of the asset(s);

— the scale and complexity of the response to the trigger event(s); and

— the scale and complexity of the delivery team(s) appointed as part of the response to the trigger event(s).

If it is decided that ISO 19650-2 does apply, and the appointing party in ISO 19650-2 is different from the appointing party in this document, then these two appointing parties shall:

— ensure that their respective responsibilities within ISO 19650-2 and this document are clearly established and communicated to each other; and

— ensure that information requirements from the appointing party in this document are specified to all relevant lead appointed parties appointed under ISO 19650-2.

Where both ISO 19650-2 and this document are being applied, there should be consistency between the asset information standard and the project's information standard, and between the asset information production methods and procedures and the project's information production methods and procedures.

5 Information management process to support the operational phase of assets

5.1 Information management process — assessment and need

5.1.1 Appoint individuals to undertake the information management function

The appointing party shall nominate individuals from within its organization to undertake the information management function.

Alternatively, the appointing party can appoint a prospective lead appointed party or a third party to undertake all or part of the information management function. In which case the appointing party shall establish a scope of services for that appointment.

In doing this, the appointing party shall consider the tasks that the prospective lead appointed party or third party shall be responsible for.

In all cases, the appointing party shall consider the capability and capacity of any individuals or organizations being nominated or appointed to undertake the information management function.

5.1.2 Establish organizational information requirements

The appointing party shall identify any existing organizational information requirements (OIR) or establish, document and maintain its OIR, see Figure 2, to meet the needs of its organizational functions and its asset management system.

NOTE 1   OIR can be derived from the appointing party itself and from its stakeholders (for example the asset owner when the appointing party is the asset operator).

NOTE 2   OIR can include, or be derived from, existing information requirements.

NOTE 3   Some typical activities that can give rise to OIR are listed in A.2.

5.1.3 Identify the assets for which information shall be managed

The appointing party shall identify those assets where management of asset information can provide net benefit, including assets that are planned to be built or acquired. In doing this, the appointing party shall consider:

— the ownership of the assets and the information associated with them;

— any asset breakdown structure being used by the appointing party;

— the impact of each asset on the efficiency of the business operation;

— the impact of each asset on the effectiveness of the business operation;

— the criticality of each asset for key business operations; and

— the condition of each asset.

NOTE 1   The assessment of net benefit includes both costs and benefits. This assessment can be on the basis of organizational criteria including, but not limited to, financial analysis, risk to health and safety, risk of environmental damage, risk to corporate and personal reputation, the resources required to capture and maintain information for each asset, the anticipated resources required to capture asset information retrospectively.

NOTE 2   For some organizations these considerations can be taken into account in the OIR (see 5.1.2).

5.1.4 Establish the asset information requirements

For each asset identified in 5.1.3, the appointing party shall establish the asset information requirements (AIR), see Figure 2, necessary to enable it to meet its OIR. The AIR shall include requirements from all relevant interested parties, including departments within the appointing party and interested third-party organizations such as local authorities or regulators. In doing this, the appointing party shall consider:

— the purpose(s) for which asset information needs to be managed as an effective organizational resource, see ISO 55000;

— the ownership of the assets and the information associated with them;

— information required across groups of assets as well as for individual assets; and

— where an ISO 55001 asset management system is in place, the impact of its asset management strategy and plans.

NOTE 1   Some example AIR are listed in A.4.

NOTE 2   Where an ISO 55001 asset management system is in place, "appointing party" is synonymous with the term "organization" in ISO 55001.

5.1.5 Identify the foreseeable trigger events for which information shall be managed

The appointing party shall identify and record foreseeable trigger events, representing those events during the operational phase when new or updated information concerning an asset will be generated or required.

NOTE 1   Some example trigger events are suggested in A.3. More than one trigger event can occur at the same time.

NOTE 2   Different types of asset, particularly at system or equipment level, can be subject to identical or similar trigger events. However, the asset management response and the asset information generated or updated can be different in each case.

NOTE 3   Some trigger events can be identified independently from the assets, for example severe weather or geological activities. Once the assets have been identified it is possible that other trigger events will become apparent.

5.1.6   Establish the asset information standard

The appointing party shall establish any specific information standards required by the appointing party's organization within the asset information standard.

In doing this, the appointing party shall consider:

a)   the exchange of information

   — within the appointing party's organization;

   — between the appointing party and external stakeholders;

   — between the appointing party and lead appointed parties specifically appointed through ISO 19650-2;

   — between the prospective lead appointed party and the appointing party;

   — between prospective lead appointed parties in the same asset management and operation team; and

   — between interdependent or successive asset management and operation teams;

b)   the means of structuring information and classifying information (in accordance with the framework in ISO 12006-2);

c)   the method of assignment for level of information need;

d)   the use of information for any future delivery phase associated with the asset; and

e)   the use of information during the operational phase.

5.1.7   Establish the asset information production methods and procedures

The appointing party shall establish any specific information production methods and procedures required by their organization within the asset information production methods and procedures.

In doing this, the appointing party shall consider:

a)   the capture of existing asset information;

b)   the generation, review or approval of new information;

c)   the security of information; and

d)   the delivery of information to the appointing party, including the format to be used such that information exchange is compatible with the systems and processes already operated by the appointing party.

5.1.8   Establish the reference information and shared resources

The appointing party shall establish the reference information and resources that they intend to share with the prospective lead appointed parties during the tender process and during the appointment, using open data standards whenever possible to avoid interoperability issues.

NOTE 1   Reference information can come from a range of sources, for example from the appointing party itself, from adjacent asset owners such as utility companies, from external providers, or from public sources.

NOTE 2   Shared resources can include templates for information generated to manage the information management process itself (for example a master information delivery plan), templates for information containers (for example data sets or documents), style libraries or object libraries.

5.1.9   Establish the common data environment

The appointing party shall establish the common data environment (CDE) in accordance with ISO 19650-1:2018, Clause 12. This shall be a combination of workflow and information storage solutions, to support the information management process for the asset(s).

The CDE shall enable:

a)   each information container to have a unique ID, based on an agreed and documented convention;

b)   each information container to have the following attributes assigned:

— status;

— revision;

— classification (in accordance with the framework established in ISO 12006-2);

c)   information containers to transition between states;

d)   a journal of information transactions, recording name of user, date and time when information containers transition between states; and

e)   controlled access at the information container level.

5.1.10   Establish links to enterprise systems

If existing enterprise systems are used to store asset information then the appointing party shall establish or adapt information quality and information security processes within those systems to ensure they comply with the requirements of this document, irrespective of where or how the information is stored.

NOTE 1   Existing enterprise systems can be outside the direct control of the appointing party.

NOTE 2   Examples of enterprise systems that can be linked into the AIM are given in A.5.

5.1.11   Establish the asset information model

The appointing party shall establish or review and adapt as necessary the asset information model (AIM) to hold all information specified in AIR related to the asset or assets identified in 5.1.3. The AIM shall be a federated information model which can include contents from different information providers (appointed parties).

In doing this, the appointing party shall consider:

a)   the suitability of existing information systems;

b)   the ability to integrate or link information from a project information model at any time during a project;

c)   any legal requirements relating to storage of information (and particularly personal information);

d)   the ability of the AIM to separate information being used for analysis and reporting from information being updated by asset delivery teams; and

e)   the need for a security-minded approach to the design and operation of the AIM including the appropriate requirements from ISO 19650-5 and the management activities agreed as a result of applying ISO 19650-5.

NOTE 1   The AIM can be held across any combination of new and existing enterprise systems provided that these are appropriately linked and the contents of the AIM are controlled using the common data environment (CDE) workflow described in ISO 19650-1.

NOTE 2   There are many ways of creating and structuring the AIM. This document does not specify or preclude the use of particular storage technologies, provided that such technologies support the CDE workflow.

5.1.12 Establish processes to maintain the AIM

The appointing party shall establish or follow existing suitable processes to maintain the AIM for as long as is appropriate. These shall include processes to:

— allocate tasks for the production, maintenance, retention, transmission, access to, assurance and archiving of information;

— transfer AIM maintenance requirements and/or ownership of the AIM when there is a change of asset owner or appointing party;

— establish the content, meaning, format and medium for representation, retention, transmission and retrieval of information;

— establish version control, check integrity and verify information against AIR and update the AIM as appropriate;

— improve information quality to support organizational objectives;

— archive or dispose of obsolete, unreliable or unwanted information;

— archive the AIM, in part or in whole, at decommissioning/end of life;

— ensure the AIM complies with requirements for security as described in ISO 19650-5;

— store information in such a way that it is safe, readily retrievable and use preventative maintenance to protect it from physical and technological deterioration or obsolescence; and

— maintain the agreed level of alignment between the contents of the AIM and the state of the physical asset.

NOTE 1   The appropriate period for maintaining the AIM can be based on an expected period of ownership, the length of an occupancy agreement, the period of an operating agreement, or the length of an asset management agreement. The period can also be constrained by strategic, contractual, statutory, legal, regulatory, health and safety, environmental, social as well as fiscal constraints.

NOTE 2   The agreed level of alignment can be defined in terms of the time interval between changes occurring to the asset and those changes being reflected in the AIM.

5.1.13 Establish the asset information protocol

The appointing party shall establish the asset information protocol to set out the rights and obligations of the appointing party and the appointed parties in relation to the AIM, and shall incorporate the information protocol into all appointments.

In doing this, the appointing party shall consider:

— obligations relating to the management or production of information, including use of the CDE;

— any warranties or liabilities associated with the AIM;

— background and foreground intellectual property rights relating to the AIM;

— the use of reference information and shared resources;

— the use of information during the appointment, including any associated licensing terms; and

— the re-use of information following the appointment or in the event of termination.

5.1.14 Activities for assessment and need

Activities for assessment and need are shown in Figure 5.
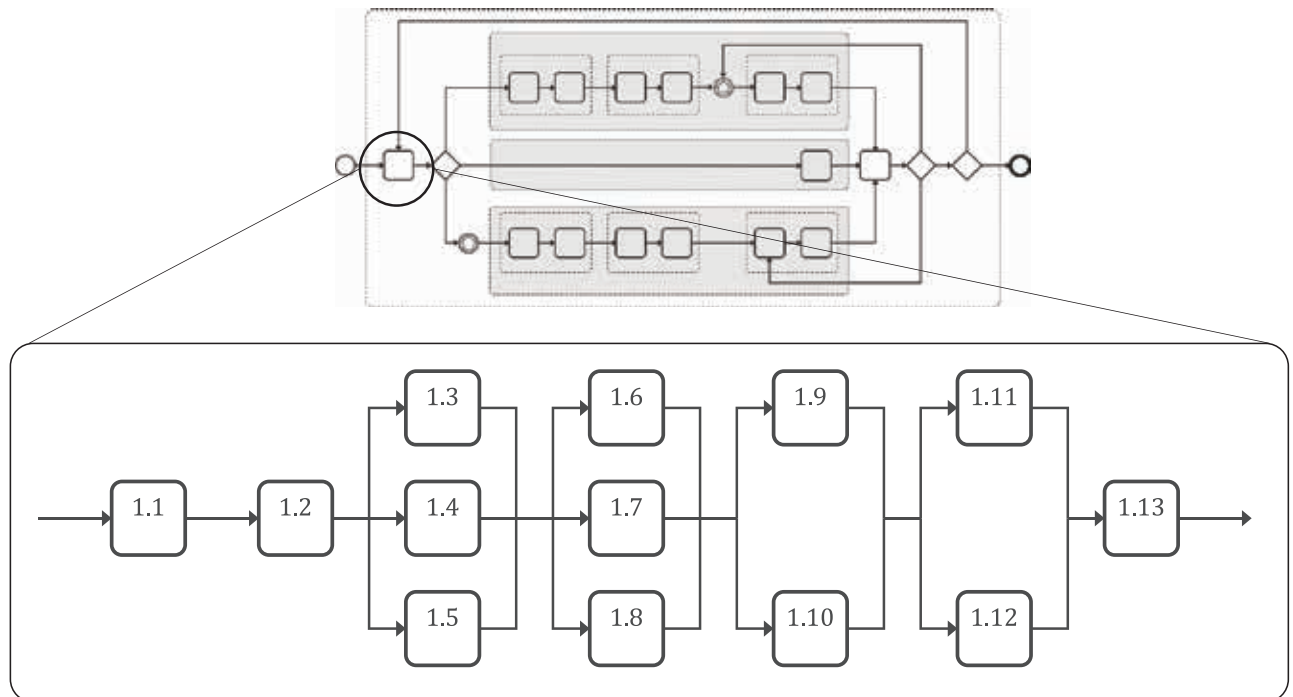
Key

1.1 appoint individuals to undertake the information management function
1.2 establish organizational information requirements
1.3 identify assets for which information shall be managed
1.4 identify the asset information requirements
1.5 identify the foreseeable trigger events for which information shall be managed
1.6 establish the asset information standard
1.7 establish the asset information production methods and procedures
1.8 establish the reference information and shared resources
1.9 establish the common data environment
1.10 establish links to enterprise systems
1.11 establish the asset information model
1.12 establish processes to maintain the AIM
1.13 establish the asset information protocol

Figure 5 — Information management process — Assessment and need

5.2 Information management process — Invitation to tender/request to provide service

5.2.1 Decide the type of activity providing information

The appointing party shall appoint a lead appointed party in relation to each trigger event during the operational phase, including trigger events not originally identified during 5.1.5. This decision affects whether the information management process follows branch M, N or P in Figure 4.

The method of appointment shall be proportionate to the scale and complexity of the asset management activities required to respond to the trigger event and shall take account of any specific procurement processes the appointing party needs to follow.

NOTE 1   The appointment requirements related to asset information can be incorporated into the appointment process for overall asset management activities.

NOTE 2   Where a request to provide service is made rather than a formal tendering process (for example to appoint an in-house team), the requirement in 5.2.5 can be adapted accordingly.

5.2.2   Establish the appointing party's exchange information requirements

For each appointment and trigger event, the appointing party shall establish the exchange information requirements for this document [EIR (ISO 19650-3)] necessary to enable it to meet its AIR, and therefore to meet the appropriate OIR.

In doing this, the appointing party shall:

a)   establish any security-minded considerations identified through ISO 19650-5;

b)   establish the information to be captured during the response to the trigger event, consistent with any definition of level of information need (see ISO 19650-1:2018, 11.2);

c)   establish the timing and frequency of information exchange during the appointment; and

d)   establish the acceptance criteria for each information requirement, and in doing so shall consider:

— the asset information standard,

— the asset information production methods and procedures, and

— the use of reference information or shared resources provided by the appointing party.

NOTE 1   This includes the trigger events identified in 5.1.5. In these cases, preparation of the EIR (ISO 19650-3) in advance of the trigger event happening means that the appointment of the lead appointed party or lead appointed parties is not delayed. This is important in the case of trigger events that are likely to require an emergency response, such as foreseeable breakdowns of critical equipment.

NOTE 2   This subclause is particularly important where the response to the trigger event initiates a new-build or substantial refurbishment project.

5.2.3   Assemble reference information and shared resources

The appointing party shall assemble the reference information or shared resources that they intend to provide to the prospective lead appointed party during the tender process or as part of the appointment.

In doing this, the appointing party shall consider:

— reference information or shared resources identified in 5.1.8;

— information produced during previous appointments; and

— the status code associated with the information, as described in ISO 19650-1:2018, 12.1.

5.2.4   Establish response requirements and evaluation criteria

The appointing party shall establish its evaluation criteria for responses received from prospective lead appointed parties.

In doing this, the appointing party shall consider:

— the complexity of the information requirements;

— the alignment of the BIM execution plan with the asset information standard, the asset information production methods and procedures, the asset information protocol and the EIR (ISO 19650-3); and

— the levels of capability and capacity expected to be provided in the delivery team.

5.2.5 Compile information for the invitation to tender/request to provide service

The appointing party shall compile the information to be included in the invitation to tender or in the request to provide service. In doing this, the appointing party shall consider:

— the EIR (ISO 19650-3);

— the relevant reference information and shared resources;

— the response requirements and evaluation criteria;

— the asset information standard;

— the asset information production methods and procedures; and

— the asset information protocol.

5.2.6 Activities for invitation to tender/request to provide service

Activities for invitation to tender/request to provide service are shown in Figure 6.
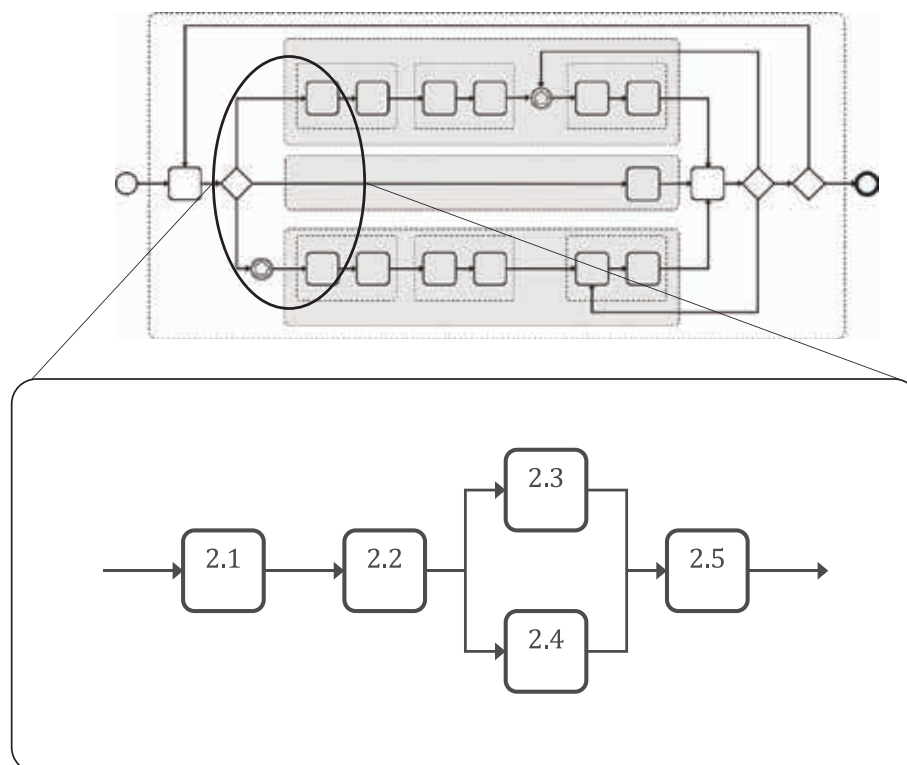
Key

2.1 decide the type of activity providing information
2.2 establish the appointing party's EIR (ISO 19650-3)
2.3 assemble reference information and shared resources
2.4 establish response requirements and evaluation criteria
2.5 compile information for the invitation to tender/request to provide service

Figure 6 — Information management process — Invitation to tender/request to provide service

5.3 Information management process — Response to invitation to tender/request to provide service

5.3.1 Nominate individuals to undertake the information management function

The prospective lead appointed party shall nominate individuals from within its organization to undertake the information management function on behalf of its delivery team.

Alternatively, the prospective lead appointed party can appoint a prospective appointed party or a third party to undertake all or part of the information management function. In which case the prospective lead appointed party shall establish a scope of services for that appointment.

In doing this, the prospective lead appointed party shall consider:

— the tasks that the prospective appointed party or third party shall be responsible for; and

— the capability and capacity of any individuals or organizations being nominated or appointed to undertake the information management function.

5.3.2 Establish the delivery team's (pre-appointment) BIM execution plan

The prospective lead appointed party shall establish the delivery team's (pre-appointment) BIM execution plan, to describe its approach and the resources required to achieve the requirements in the EIR (ISO 19650-3).

In doing this, the prospective lead appointed party shall consider:

— the resources required for the information management function;

— the timing, quantity and scope of information exchanges required by the appointing party;

— any requirement to federate information with other lead appointed parties; and

— the prospective lead appointed party's plan to appoint other appointed parties as task teams within their delivery team in the operational phase, including the need to pass some EIR (ISO 19650-3) to these appointed parties.

NOTE 1   The appointing party can specify the format for this description of approach and can provide guidance or templates to prospective lead appointed parties.

NOTE 2   The prospective lead appointed party can add some of its own information requirements to any EIR (ISO 19650-3) passed on to an appointed party (see 5.4.3).

5.3.3 Assess task team capability and capacity

Each task team shall undertake an assessment of their capability and capacity to deliver information in accordance with the EIR (ISO 19650-3) and the delivery team's information delivery plan.

In doing this, each task team shall consider:

— its capability and capacity to manage information, based on the relevant experience and training of task team members with the asset information standard, and number of such task team members;

— its capability and capacity to produce information, based on the relevant experience and training of task team members with the asset information production methods and procedures, and the number of such task team members; and

— the availability of information technology (IT) within the task team, based on software and hardware requirements set out either in the EIR (ISO 19650-3) or the delivery team's information delivery plan.

5.3.4 Establish the delivery team's capability and capacity

The prospective lead appointed party shall establish the delivery team's capability and capacity by aggregating the assessments provided by each task team.

5.3.5 Establish the delivery team's mobilization plan

The prospective lead appointed party shall establish the delivery team's mobilization plan, to be implemented during mobilization (see 5.5).

In doing this, the prospective lead appointed party shall consider the delivery team's approach, timescales and responsibilities for:

— testing and documenting the information production methods and procedures;

— testing information exchange between task teams;

— testing information exchange with the appointing party;

— testing the CDE solution and access to shared information and resources;

— procuring, implementing, configuring and testing additional software, hardware and IT infrastructure;

— developing additional shared resources to be used by the delivery team;

— undertaking education and/or training to develop the required capability within the delivery team;

— recruiting additional task teams or members of task teams to achieve the required capacity within the delivery team; and

— supporting new members (organizations or individuals) that join the delivery team during the appointment.

5.3.6 Establish the delivery team's risk register

The prospective lead appointed party shall establish the delivery team's risk register in relation to production and delivery of information.

In doing this, the prospective lead appointed party shall consider:

— assumptions made by the delivery team in its BIM execution plan;

— the clarity of the appointing party's EIR (ISO 19650-3); and

— the requirements of the asset information standard and the asset information production methods and procedures.

NOTE   The delivery team's risk register can be incorporated within other risk registers used during the appointment.
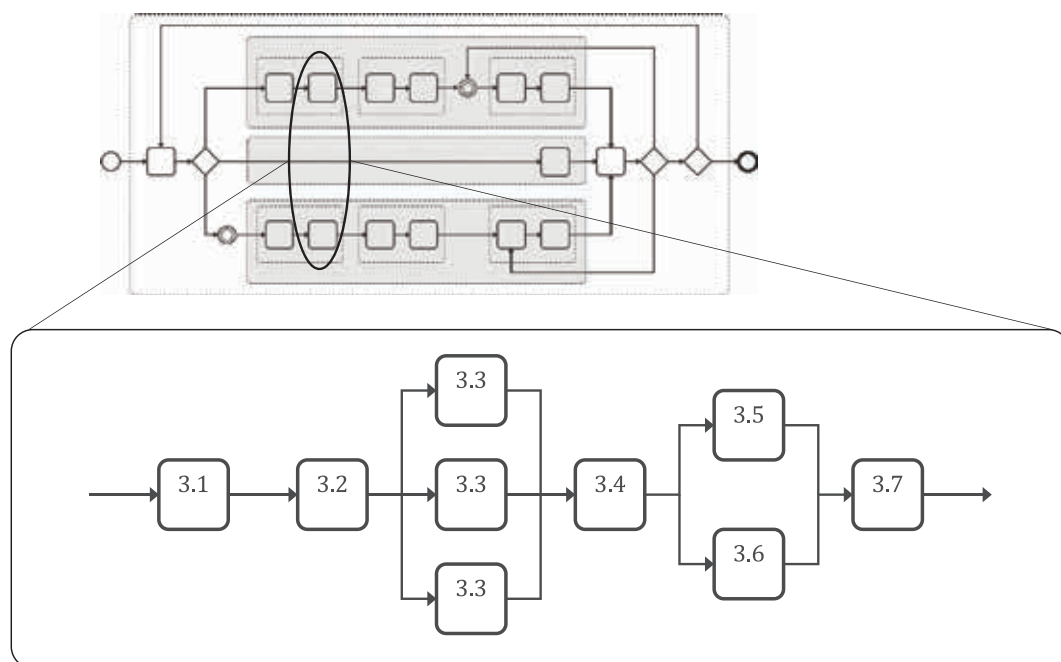
5.3.7 Compile the delivery team's response

The prospective lead appointed party shall compile the following items (where available) into the delivery team's response:

— (pre-appointment) BIM execution plan (5.3.2);

— capability and capacity assessments (5.3.4);

— mobilization plan (5.3.5); and

— risk register (5.3.6).

5.3.8 Activities for response to invitation to tender/request to provide service

Activities for response to invitation to tender/request to provide service are shown in Figure 7.

Key

3.1   nominate individuals to undertake information management function

3.2   establish the delivery team's (pre-appointment) BIM execution plan

3.3   assess task team capability and capacity

3.4   establish the delivery team's capability and capacity

3.5   establish the delivery team's mobilization plan

3.6   establish the delivery team's risk register

3.7   compile the delivery team's response

Figure 7 — Information management process — Response to invitation to tender/request to provide service

5.4   Information management process — Appointment

5.4.1   Confirm the delivery team's BIM execution plan

The lead appointed party shall review and confirm the BIM execution plan prepared in 5.3.2, in consultation with each task team. This shall include a review and confirmation of the resources (both human and technical) to be deployed during the appointment, and testing of the technical approach to be used during information exchange.

The lead appointed party shall communicate the BIM execution plan to all appointed parties, shall keep it under review during the lead appointed party's appointment and shall update and recirculate it as necessary.

5.4.2 Establish the delivery team's detailed responsibility matrix

The lead appointed party shall establish a detailed responsibility matrix, to confirm the information to be produced, when the information is to be exchanged with whom, and which task team is responsible for its production. In doing this, the lead appointed party shall consider:

— the information delivery milestones;

— the capability and capacity across the delivery team;

— the asset information production methods and procedures;

— the elements of information container breakdown structure allocated to each task team; and

— the task team dependencies within the information production process.

5.4.3 Establish the lead appointed party's EIR (ISO 19650-3)

Where a delivery team in the operational phase includes other appointed parties as task teams, the lead appointed party shall issue to them appropriate EIR (ISO 19650-3) and the associated considerations as described in 5.2.2.

NOTE   See 0.5 and Figure 3 for an explanation of the relationship between a lead appointed party and any other appointed parties in a delivery team.

5.4.4 Establish the task information delivery plan(s)

Each task team shall establish, and maintain throughout its appointment, a task information delivery plan (TIDP).

In doing this, each task team shall consider:

— the asset management information delivery milestones;

— the task team's responsibilities within the detailed responsibility matrix;

— the lead appointed party's EIR (ISO 19650-3);

— the availability of reference information and shared resources within the delivery team; and

— the time the task team will need to produce its information.

The TIDP shall list and identify for each information container:

— the unique ID and title;

— the predecessors or dependencies;

— the level of information need;

— the estimated production duration;

— the information author responsible for its production; and

— the delivery milestone(s).

5.4.5 Establish the master information delivery plan

The lead appointed party shall aggregate the TIDP from each task team to establish the delivery team's master information delivery plan (MIDP), inform each task team of any changes required to its TIDP, and add or update any risks in the delivery team's risk register informing the appointing party as required.

In doing this, the lead appointed party shall consider:

— the responsibilities assigned in the detailed responsibility matrix;

— the information predecessors and dependencies between task teams and any changes to TIDPs required as a result;

— the time needed for the lead appointed party to review and authorize information being delivered; and

— the time needed for the appointing party to review and accept information being delivered.

5.4.6 Complete lead appointed party's appointment

The appointing party shall appoint each lead appointed party, allowing sufficient time for the lead appointed party to mobilize before information production needs to start.

In doing this, the appointing party shall consider the capability and capacity of each prospective lead appointed party according to its pre-existing evaluation criteria (5.2.4).

NOTE   Assessment of capability and capacity is an important activity to ensure that each delivery team, led by a lead appointed party, is able to deliver effective management of information.

The appointing party shall ensure that the following are included in the completed appointment documents for the lead appointed party and managed using change control:

— the appointing party's EIR (ISO 19650-3);

— the asset information standard (including any agreed additions or amendments);

— the asset information production methods and procedures (including any agreed additions or amendments);

— the asset information protocol (including any agreed additions or amendments);

— the delivery team's BIM execution plan; and

— the delivery team's MIDP.

5.4.7 Complete appointed party's appointment

The lead appointed party shall appoint each appointed party, allowing sufficient time for the appointed party to mobilize before information production needs to start.

In doing this, the lead appointed party shall ensure that the following are included in the completed appointment documents for the appointed party and managed using change control:

— the lead appointed party's EIR (ISO 19650-3);

— the asset information standard (including any agreed additions or amendments);

— the asset information production methods and procedures (including any agreed additions or amendments);

— the asset information protocol (including any agreed additions or amendments);

— the delivery team's BIM execution plan; and

— the relevant TIDP.

5.4.8 Activities for appointment

Activities for appointment are shown in Figure 8.
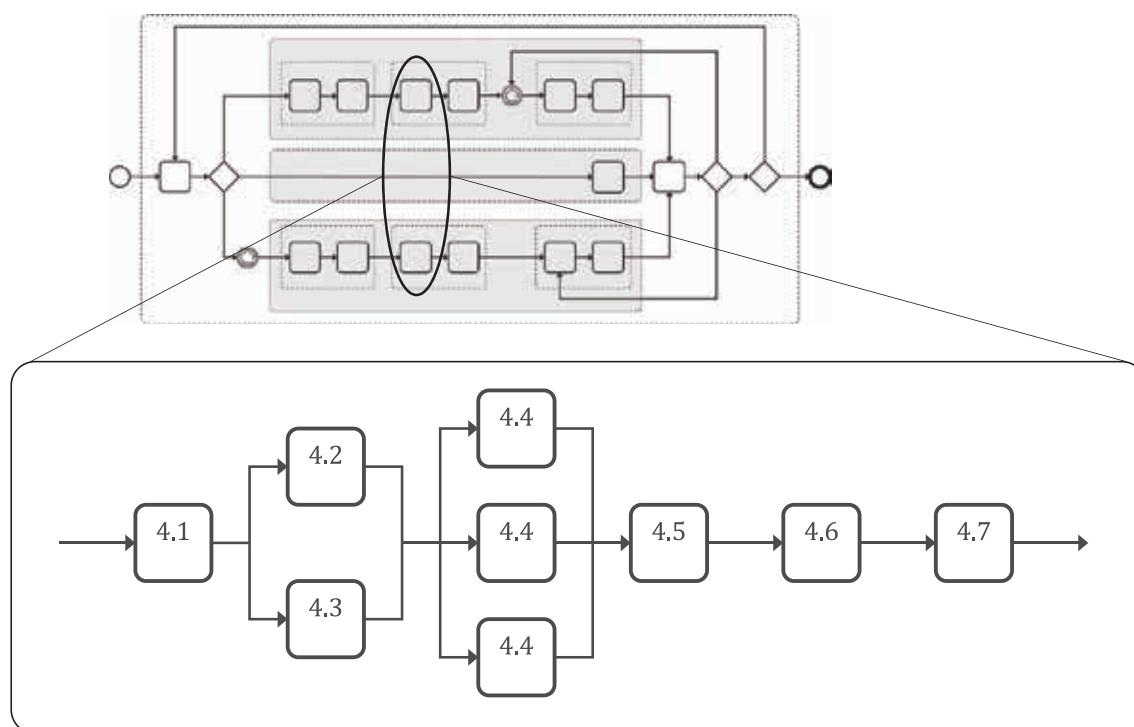
Key

4.1 confirm the delivery team's BIM execution plan

4.2 establish the delivery team's detailed responsibility matrix

4.3 establish the lead appointed party's EIR (ISO 19650-3)

4.4 establish the task information delivery plans(s)

4.5 establish the master information delivery plan

4.6 complete lead appointed party's appointment

4.7 complete appointed party's appointment

Figure 8 — Information management process — Appointment

5.5 Information management process — Mobilization

5.5.1 Mobilize resources

The lead appointed party shall mobilize the resources, as set out in the delivery team's mobilization plan. In doing this, the lead appointed party shall confirm the resources across the delivery team, and in doing this shall consider the approach towards training and education across the delivery team.

5.5.2 Mobilize information technology

The lead appointed party shall mobilize the information technology, as set out in the delivery team's mobilization plan. In doing this, the lead appointed party shall:

— procure, implement, configure and test software, hardware and IT infrastructure (as required);

— test the use of the appointing party's CDE;

— test the information exchange between task teams; and

— test the information exchange with the appointing party.

5.5.3 Test the asset information production methods and procedures

The lead appointed party shall test the asset information production methods and procedures, as set out in the delivery team's mobilization plan. In doing this, the lead appointed party shall:

— test and document the asset information production methods and procedures;

— validate the proposed information container breakdown structure as workable and refine if necessary;

— develop shared resources to be used by the delivery team as necessary; and

— communicate the asset information production methods and procedures to all task teams within their delivery team.

5.5.4 Maintain resources in readiness for a trigger event

The lead appointed party shall ensure that all resources (both human and technical) as specified in 5.5.1 to 5.5.3, will remain in readiness for the occurrence of any trigger event covered by the appointment.

5.5.5 Activities for mobilization

Activities for mobilization are shown in Figure 9.
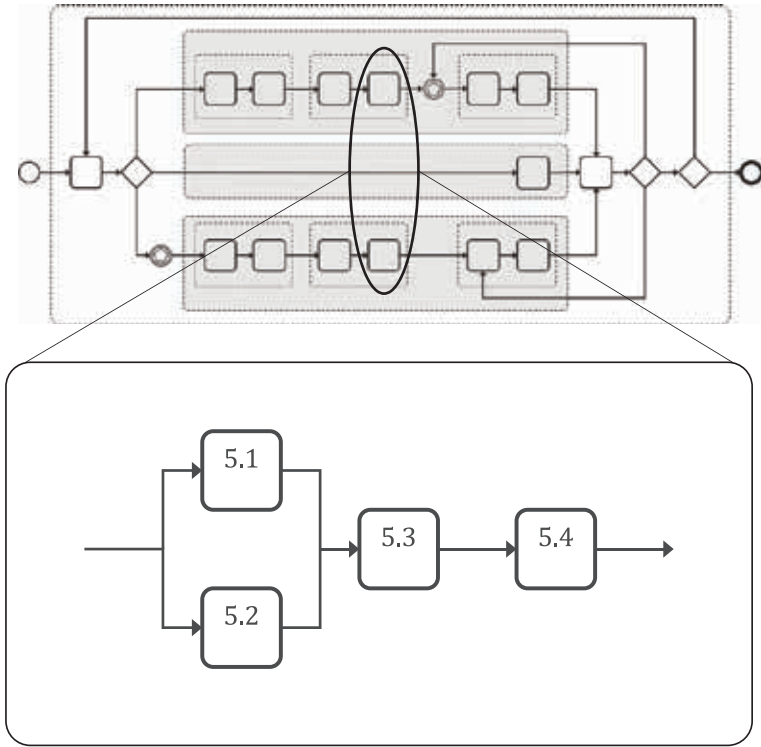
Key

5.1 mobilize resources

5.2 mobilize information technology

5.3 test the asset information production methods and procedures

5.4 maintain resources in readiness for a trigger event

Figure 9 — Information management process — Mobilization

5.6 Information management process — Production of information

5.6.1 Check availability of reference information and shared resources

Each task team shall check that they have access to the relevant reference information and shared resources, within the CDE, before they generate information. If they do not have access, they shall inform the lead appointed party as soon as practicable and assess the potential impact on their TIDP.

5.6.2 Generate information

Each task team shall generate information, in the work in progress state, in accordance with their TIDP.

In doing this, the task team shall:

a) generate information that:

— complies with the asset information standard, and

— is in accordance with the asset information production methods and procedures;

b) not generate information that:

— exceeds the required level of information need,

— extends beyond the allocated element of the information container breakdown structure, and

— duplicates information generated by other task teams;

c) coordinate and cross reference all information with information shared with the appropriate suitability within the CDE.

In the event of a coordination issue, the relevant task teams shall collaborate to identify a possible resolution. If a resolution cannot be found the task teams shall notify the lead appointed party.

5.6.3 Undertake quality assurance check

Each task team shall undertake a quality assurance check of each information container, in accordance with the asset information production methods and procedures and with the asset information standard.

Once the check is complete, the task team shall:

a) if the check is successful:

— mark the information container as checked,

— record the outcome of the check; or

b) if the check is unsuccessful:

— reject the information container, and

— inform the information author of the outcome and corrective action required.

NOTE 1   Some of these checks can be automated within the CDE.

NOTE 2   A quality assurance check does not check the accuracy or appropriateness of the information within the information container and is not a replacement for review and approval (5.6.4).

5.6.4 Review information and approve for sharing

Each task team shall review the information within each information container before sharing the information container within the CDE.

In doing this, the task team shall consider:

— the EIR (ISO 19650-3) issued to them by the lead appointed party;

— the required level of information need; and

— the extent of information needed for coordination by other task teams.

Once the review is complete, the task team shall:

a) if the review is successful:

— assign the status code to indicate the permitted uses (suitability) of the information in the information container,

— approve the information container for sharing; and

— mark the information container as being in the shared state; or

b) if the review is unsuccessful:

— record why the review was unsuccessful,

— record any amendments for the task team to complete, and

— reject the information container.

5.6.5 Review information model

To facilitate the continuous coordination of information across each element of its information model, the delivery team shall undertake an information model review, in accordance with the asset information production methods and procedures and the asset information standard.

In doing this, the delivery team shall consider:

— the EIR (ISO 19650-3) and acceptance criteria issued to the lead appointed party by the appointing party;

— the EIR (ISO 19650-3) and acceptance criteria issued to the task teams by the lead appointed party; and

— the information containers listed within the delivery team's MIDP.

5.6.6 Authorize information model for delivery to the appointing party

To enable a decision to authorize the delivery of the delivery team's information model to the appointing party, the lead appointed party shall review the information model in accordance with the asset information production methods and procedures and the asset information standard.

In doing this, the lead appointed party shall consider the same items as were considered by the task teams in 5.6.4 and by the delivery team in 5.6.5.

Once the review is complete, the lead appointed party shall:

a) if the review is successful:

— authorize the delivery team's information model, and

— instruct each task team to mark their information containers within the CDE as suitable for appointing party acceptance; or

b) if the review is unsuccessful:

— record why the review was unsuccessful,

— reject the information model, and

— instruct task teams to amend the relevant information containers and resubmit the information model for lead appointed party authorization.

Partial authorization of the delivery team's information model can lead to coordination issues and it is recommended that the lead appointed party either authorizes or rejects the whole delivery team information model.

5.6.7 Activities for production of information

Activities for production of information are shown in Figure 10.
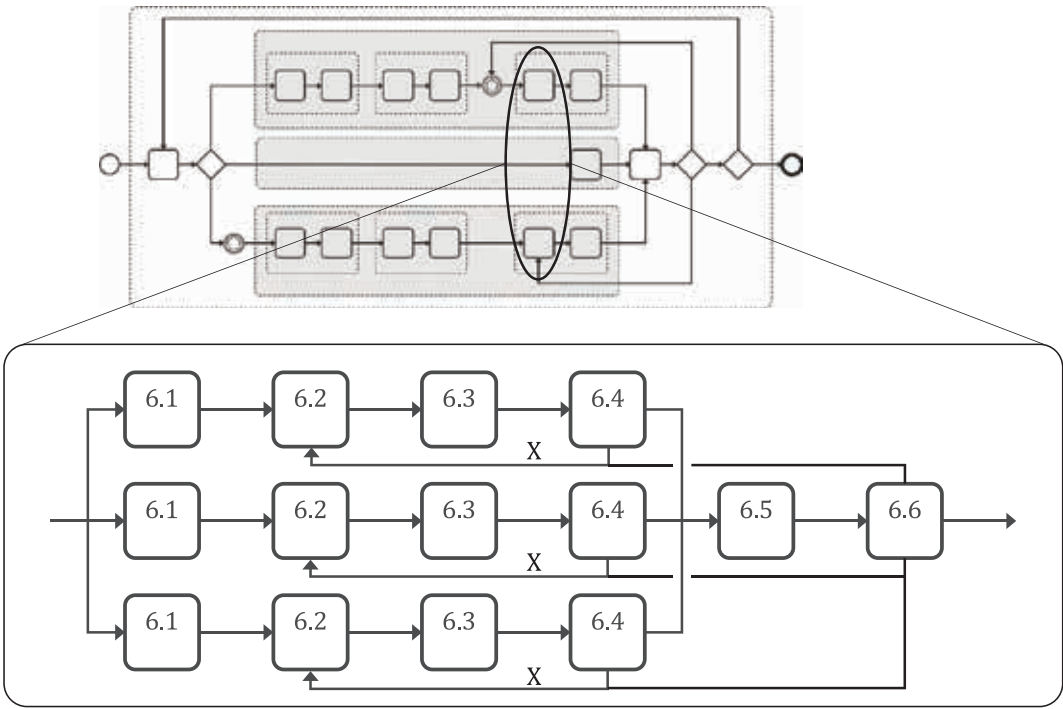
Key

6.1   check availability of reference information and shared resources

6.2   generate information

6.3   undertake quality assurance check

6.4   review information and approve for sharing

6.5   review information model

6.6   authorize information model for delivery to the appointing party

X   new information container revision

Figure 10 — Information management process — Production of information

5.7 Information management process — Information model acceptance by appointing party

5.7.1 Submit information model for appointing party acceptance

If the process follows branches M or P in Figure 4 the lead appointed party shall submit the delivery team's information model for appointing party acceptance within the CDE.

If the process follows branch N in Figure 4 the appointing party shall receive the information model from the other appointing party or asset owner.

5.7.2 Review and accept the information model

The appointing party shall review the information model received in 5.7.1 in accordance with the asset information production methods and procedures.

In doing this, the appointing party shall consider:

— its AIR (particularly for a process that follows branch N in Figure 4);

— its EIR (ISO 19650-3) and acceptance criteria issued to the lead appointed party (for a process that follows branches M or P in Figure 4);

— the delivery team's MIDP (for a process that has followed branches M or P in Figure 4);

— the level of information need identified as a result of 5.1.6 and 5.4.4; and

— delivery of information against the above.

Once the review is complete, the appointing party shall:

a) if the review is successful:

   — accept the information model as a deliverable within the CDE, and either

   — instruct the lead appointed party to mark each information container in the information model as being in the published state (for a process that follows branches M or P in Figure 4), or

   — mark each information container in the information model as being in the published state (for a process that follows branch N in Figure 4); or

b) if the review is unsuccessful:

   — record why the review was unsuccessful,

   — reject the information model, and either

   — instruct the lead appointed party to amend the information model and resubmit it for appointing party acceptance (for a process that follows branches M or P in Figure 4), or

   — identify the changes required in the information model and either request the other appointing party/asset owner to make those changes or make the changes itself (for a process that follows branch N in Figure 4).

Partial acceptance of an information model can lead to coordination issues and it is recommended that the appointing party either accepts or rejects the whole information model submitted by the delivery team or received from the other appointing party/asset owner.

5.7.3 Activities for information model acceptance by appointing party

Activities for information model acceptance by appointing party are shown in Figure 11.
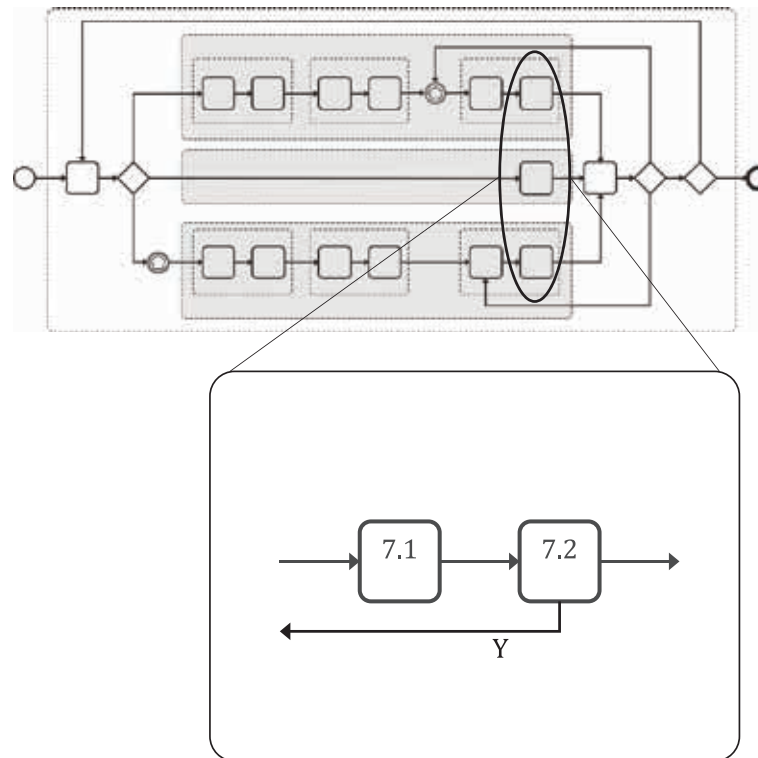
Key

7.1 submit information model for appointing party acceptance

7.2 review and accept the information model

Y information model rejected by appointing party

Figure 11 — Information management process — Information model acceptance by appointing party

5.8 Information management process — AIM aggregation

5.8.1 Aggregate an accepted information model into the AIM

The appointing party shall be responsible for the process to incorporate an accepted information model into its AIM and reconcile that information with the existing contents of the AIM, irrespective of its source. This shall include a process to incorporate the accepted information model into its existing enterprise systems, where appropriate.

5.8.2 Review and continue maintenance of the AIM

The appointing party shall review whether the AIM continues to fulfil the requirements of 5.1.11 and is being maintained according to 5.1.12. If either of these is not met, then the appointing party shall implement appropriate mitigating measures.

5.8.3 Activities for AIM aggregation

Activities for AIM aggregation are shown in Figure 12.
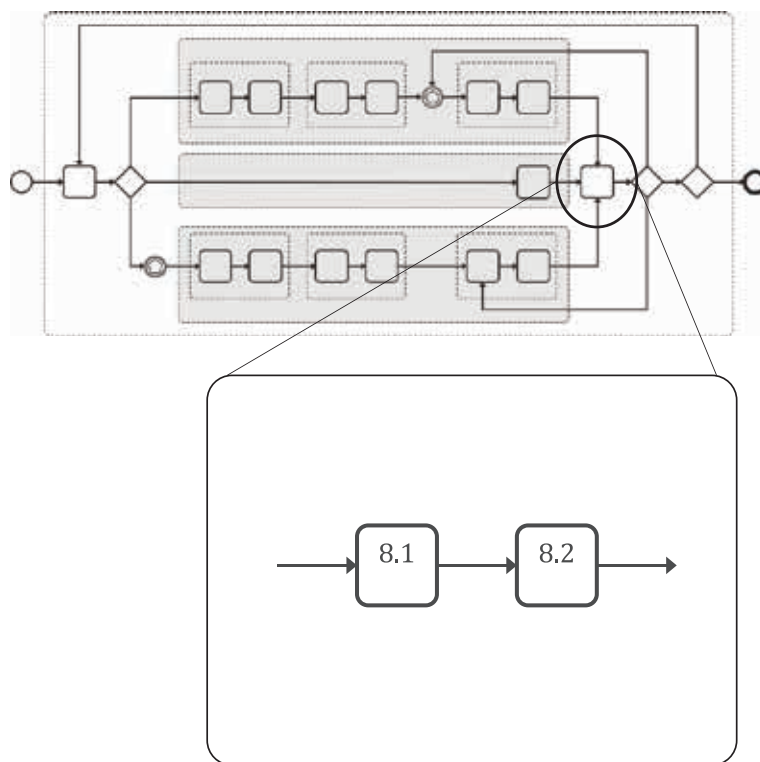
Key

8.1   aggregate an accepted information model into the AIM

8.2   review and continue maintenance of the AIM

Figure 12 — Information management process — AIM aggregation

Annex A
(informative)

Guidance related to the information management process

A.1   General

This annex contains guidance to support some of the requirements contained in Clause 5. The lists in A.2 to A.5 are only examples of activities, events, information requirements and systems and should not be considered as comprehensive or complete. Appointing parties should use these examples to inform the development of their information requirements. Additional guidance is also contained in ISO 55002.

A.2   Examples of activities requiring asset information and example organizational information requirements

A wide range of organizational activities, including asset management and facility management activities, can lead to the organizational information requirements (OIR) mentioned in 5.1.2. These can be grouped according to whether they are strategic, tactical or operational. Doing so can help identify both the frequency at which information will be required and the types of stakeholders who require it. Organizational views on which activities belong to which group (strategic, tactical, operational) can differ, so the following examples have not been grouped:

— asset accounting, activity costing, forecasting;

— planning and budgeting;

— demand management and customer expectation policy;

— capital investment and life cycle costing;

— innovation and change management;

— interfacing with regulatory bodies;

— publication of asset information for use by the public;

— asset operation or utilization;

— asset modifications, refurbishment, replacement, reuse/redeployment, disposal, recycling;

— spares, materials and purchasing;

— data, information and knowledge management;

— contractor and supplier management;

— human resources, skills development and competencies;

— maintenance, inspection, condition and performance monitoring;

— contingency planning and emergencies;

— energy efficiency and environmental aspects, for example renewable resources, recycling, waste management, air purity, hygiene;

— risk assessment and management; and

— safety, health and environmental management.

The following are example OIR, which can also be grouped according to whether they are strategic, tactical or operational.

Information to support:

— the financial benefits of planned improvement activities;

— a means to predict the performance of the asset to support operational decision making;

— the operational and financial impact of asset unavailability or failure;

— the life cycle cost comparisons of alternative capital investments;

— expiry dates of warranties;

— an assessment of the end of an asset's economic life, for example when the asset related expenditure exceeds the associated income;

— quality targets for the performance of assets;

— service levels for asset management and facility management;

— the cost of specific activities (activity-based costing), for example the total cost of maintaining a specific asset/asset system;

— asset replacement values;

— financial analysis of planned income and expenditure;

— the financial and resource impact of deviating from plans that can result in a change in asset availability or performance (for example what is the financial impact of deferring the maintenance of a specific generator by six months?);

— overall financial performance; and

— identification, assessment and control of asset related risks.

NOTE   In the context of OIR, the term "organizational" relates to an organization and not to the act of organizing something.

A.3   Example trigger events

The types of trigger events for which the information management process should be operated will be established by the appointing party (5.1.5). Examples of trigger events include:

— the organization's decision to manage information relating to an existing asset according to this document;

— performance evaluation of an asset, including failure trends from similar components used elsewhere and experience-based learning and feedback from asset performance;

— inspection of an asset;

— maintenance work on an asset, whether planned or reactive;

— minor works on an asset, such as minor repairs, component replacements or minor upgrades;

— initiating a project to deliver a new asset;

— major works on an existing asset such as major repairs, refurbishments or major upgrades;

— creation of a new asset;

— asset replacement;

— end-of-life works, such as decommissioning, demolition or deactivation and preservation;

— planning for and, where appropriate, implementing an emergency response;

— risk assessment of an asset;

— change in value of an asset;

— change in regulations applying to an asset;

— change in information demanded by an appropriate regulator;

— change in organizational requirements relating to the asset, for example change of operating parameters or conditions;

— change in ownership of an asset;

— change in operator of an asset; and

— change in maintainer of an asset.

NOTE   As stated in 4.2, it is possible for the information management response to a trigger event to involve ISO 19650-2 as well as this document.

A.4   Examples of information that can be required within an AIM

A.4.1   Managerial information

The following are examples of information that can be required within an AIM to support managerial OIR:

— unique asset identifiers;

— locations of the assets, possibly using spatial referencing or geographical information systems;

— spatial data relating to assets, for example pavement areas, room sizes;

— warranties and guarantee periods;

— access planning and work schedules;

— historical record of proactive and reactive maintenance tasks performed;

— future schedule of maintenance and inspection tasks including details of overdue tasks, and including details of the maintenance organization and details of qualifications/certifications required to carry out each task;

— asset related standards, process(es) and procedure(s);

— the presence of any hazardous contents or waste;

— details of asset destination at end of current life;

— details of emergency plans including responsibilities and contact details; and

— details of historical asset failures, causes and consequences (if known).

A.4.2 Technical information

The following are examples of information that can be required within an AIM to support technical OIR:

— engineering data and design parameters;

— details of technical dependencies and interdependencies of assets;

— commissioning dates and data; and

— operational data including performance characteristics and design limits.

A.4.3 Legal information

The following are examples of information that can be required within an AIM to support legal OIR:

— details of ownership and maintenance demarcation where assets interface across a system or network of assets;

— work instructions together with diagrams and reporting requirements, legal obligations such as health and safety file information, and safety/environmental considerations;

— asset related contractual information; and

— task risk assessments and control measures.

A.4.4 Commercial information

The following are examples of information that can be required within an AIM to support commercial OIR:

— descriptions of assets and the asset systems they serve;

— functions of assets, including any interdependencies to the activities that require them;

— vendor data (details of the organization that supplied the asset) including asset lead time;

— the condition and duty of assets including intensity of use;

— key performance indicators;

— condition and performance targets or standards;

— criteria of non-conformance and the actions to be taken;

— the criticality of assets and spaces to the organization; and

— identities and levels of spares held, inter-changeability, specifications and storage locations.

A.4.5 Financial information

The following are examples of information that can be required within an AIM to support financial OIR:

— whole life costs of asset deployment including cost of historical and planned maintenance tasks;

— operating costs;

— downtime impact;

— current asset replacement value; and

— original purchase/leasing costs.

A.5 Linked enterprise systems

The nature and extent of existing systems that the appointing party chooses to link in to the AIM (see 5.1.11) can vary. Examples of functionality provided by enterprise systems include:

— document management;

— work/programme planning and scheduling;

— computer aided facilities management and asset management;

— enterprise resource planning;

— materials management and spares inventory;

— purchasing;

— supplier relationship management;

— customer relationship management;

— accounting and financial planning;

— asset utilization;

— property management;

— engineering design and modelling;

— performance reporting;

— condition monitoring;

— geographical information systems (GIS) and spatial analysis toolkits (for the analysis of GIS data);

— asset possession/shutdown/outage planning;

— supervisory control and data acquisition (SCADA);

— knowledge management; and

— staff location, scheduling and despatch.

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