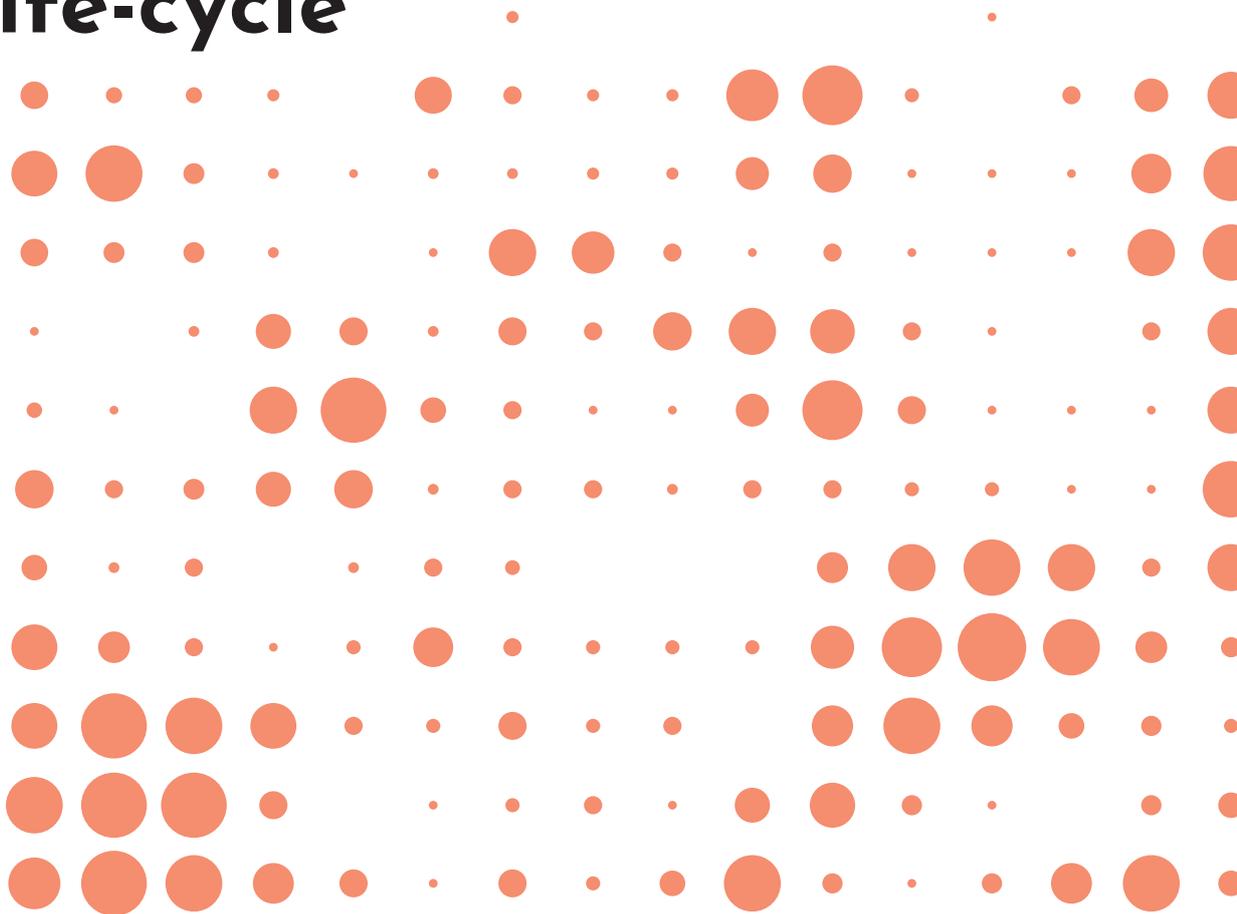


Information management according to BS EN ISO 19650

Guidance Part 3

Operational phase of the asset life-cycle



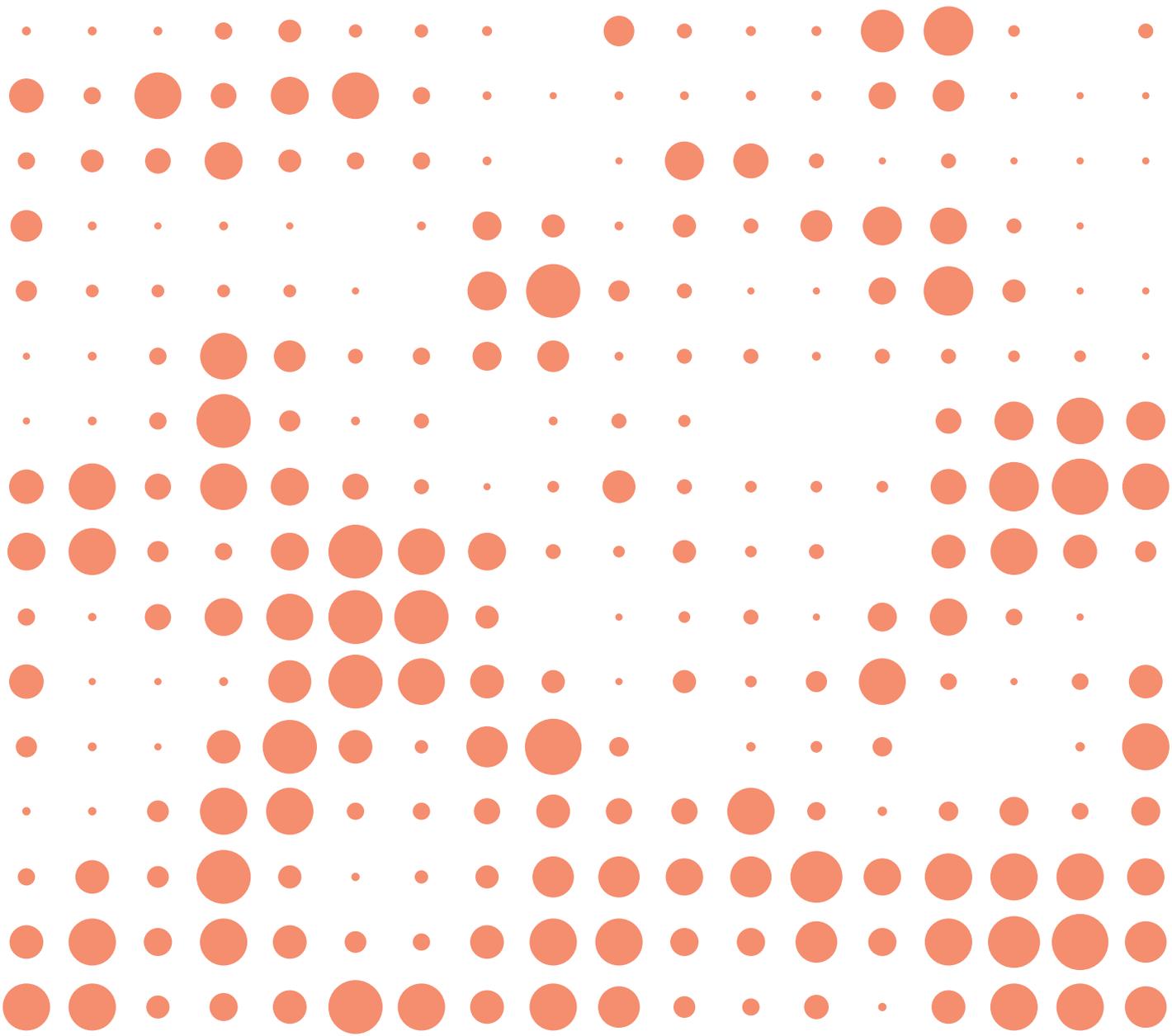
Edition 2
Published by

UK BIM
FRAMEWORK

bsi.

cdbb
Centre for Digital Built Britain

UKBIM
ALLIANCE
Enabling Digital Transformation



Editions

Edition 1 September 2020

Edition 2 February 2021

Updates include:
Major rewrite and extension of subjects covered

Nothing in this guidance constitutes legal advice or gives rise to a solicitor/client relationship. Specialist legal advice should be taken in relation to specific circumstances.

The contents of this guidance are for general information purposes only.

Permission to reproduce extracts from the ISO 19650 series is granted by BSI Standards Limited (BSI) and the copyright in figures 2 and 3 used in this report belongs to BSI. No other use of this material is permitted.

British Standards can be obtained in PDF or hard copy formats from the BSI online shop: <http://www.bsigroup.com/Shop> or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com

Any data or analysis from this guidance must be reported accurately and not used in a misleading context. If using any information from this report, then its source and date of publication must be acknowledged.

Table of contents

Message from the UK BIM Alliance Chair	3
Acknowledgments	4
About BS EN ISO 19650	5
About this guidance document	6
Abbreviations and acronyms	7
1.0 Introduction	8
2.0 The information management context for ISO 19650-3	9
2.1 Managing information during the operational phase of assets and facilities	9
2.2 How ISO 19650-3 reflects the concepts and principles of ISO 19650-1	12
3.0 Parties and responsibilities	14
3.1 Introduction	14
3.2 Parties	15
3.3 Responsibilities	18
3.3.1 Assessment and need for information	19
3.3.2 Tender stage and mobilization	20
3.3.3 Asset Information handover and aggregation	20
4.0 Explaining the information management flowchart	21
4.1 The flowchart	21
4.2 Trigger events	23
4.3 Proportionality	24
5.0 Use cases for ISO 19650-3	25
6.0 Example application of ISO 19650-3 to a specific trigger event	27
6.1 Target audience	27
6.2 Definition and categorization of trigger events in the operational phase of an asset	27
6.3 Categories of Trigger Events in the asset lifecycle	29
6.4 Worked example: Commissioning a survey to determine the extent of a refurbishment	30
6.4.1 Scenario	30
6.4.2 Applying the clauses of ISO 19650-3	31
7.0 Integrating information delivered through ISO 19650-3 into existing systems	33
8.0 ISO 19650-3 clause 5: insight	35
9.0 Information management process summary	48
10.0 Summary	58

List of figures

Figure 1: ISO 19650 guidance framework	6
Figure 2: Information management during the life-cycle of an asset [SOURCE: ISO 19650-3 Figure 1]	10
Figure 3: Interfaces between parties and teams for information management	15
Figure 4(a): Simple party relationships/appointments	17
Figure 4(b): Multiple external appointed party relationships/appointments	17
Figure 4(c): Mixed internal/external appointed party relationships/appointments	17
Figure 5: Information management process flowchart from ISO 19650-3	21
Figure 6: Illustration of use cases for applying ISO 19650-3 process	26
Figure 7: Trigger events during the operational phase of the life cycle	28
Figure 8: Example trigger events grouped by theme	29
Figure 9: A staged approach to Integrating ISO 19650-3 into existing information systems	34

List of tables

Table 1: Abbreviations and acronyms	7
Table 2: New responsibilities in ISO 19650-3 compared to ISO 19650-2	18
Table 3: Survey trigger example of ISO 19650-3 activities	31
Table 4: Where to find insight text for ISO 19650-3 clauses	35

Message from the UK BIM Alliance Chair

Author: Dr Anne Kemp OBE
Chair - UK BIM Alliance



The UK BIM Framework provides the fundamental step towards digital transformation of the UK's built environment industry. The Framework is based on the ISO 19650 series, which first developed out of the UK's former BIM Level 2, but incorporates and anticipates global and future digital perspectives.

The UK BIM Framework embraces and assists in the implementation of the standards for managing information for the whole life of assets of the built environment. The Framework anticipates the potential for integration across portfolios. The Framework provides extensive Guidance which continues to be developed, including the addition of supplementary tools and materials to enable a firm basis for the evolving National Digital Twin Programme.

This Guidance has been developed to help industry to implement the concepts and principles of the ISO 19650 series upon which the UK BIM Framework is based. It has been continually updated to keep track of the publication of the different parts of ISO 19650, and to reflect lessons learnt as further experience is gained in its implementation.

The key parts of ISO 19650 are now all in place, allowing us to realize information management throughout the whole life of built environment assets. It provides for traditional ways of working entailing exchange of information via files, but also caters for shifts towards data exchange. The key is being specific about what information is required and how it is to be delivered. This needs forethought around what should be

the "end in mind" and consideration from an organizational, whole life perspective. This then informs the detailed requirements right down to appointment level.

The work behind developing this Guidance has been considerable. I would like to thank Sarah Davidson and David Churcher for their tireless commitment in continuing to bring this work together - I so enjoy working with you both. Secondly, I would like to thank the many authors who have contributed so generously to the writing of the Guidance - and been so patient in the criticisms and changes that have been required of them. Finally, I would like to thank the many people who have spared time to review and feedback on the Guidance - the Focus Groups in particular, but also those who have contacted us separately. Without this feedback we would not be able to incorporate the wide-ranging experience and testing which is occurring around the industry.

We welcome your continued feedback and shared experiences. You can provide this via guidancefeedback@ukbimframework.org.

Acknowledgments

This guidance represents the collaborative efforts of the following people and organizations

Editors

David Churcher	Hitherwood Consulting Ltd
Sarah Davidson	University of Nottingham
Anne Kemp	Atkins

Author

David Churcher	Hitherwood Consulting Ltd
Sarah Davidson	University of Nottingham
Javed Edahtally	Public Health England
Andy Green	Atkins
Stephen Holmes	CADventure
Chloe Obi	Bouygues UK
Shahida Rajabdeen	Faithful+Gould
Julian Schwarzenbach	DPA Data Advantage
Graeme Tappenden	Lingwell Consulting Ltd
Ryan Tennyson	Scottish Futures Trust
Jarek Wityk	Winters Electrical Services Ltd

Contributors to section 6

Neil Chatfield	Defra
Martin Geach	Atkins
Louise Hynes	Government Property Agency
David May	Sententia Consulting Ltd
Gary Rogers	Faithful+Gould
Graeme Tappenden	Lingwell Consulting Ltd
Mark Thorneloe	HMRC
Paul Waterson	DIO

Reviewer

Craig Wootton	University of Sheffield
---------------	-------------------------

Production

Centre for Digital Built Britain

About BS EN ISO 19650

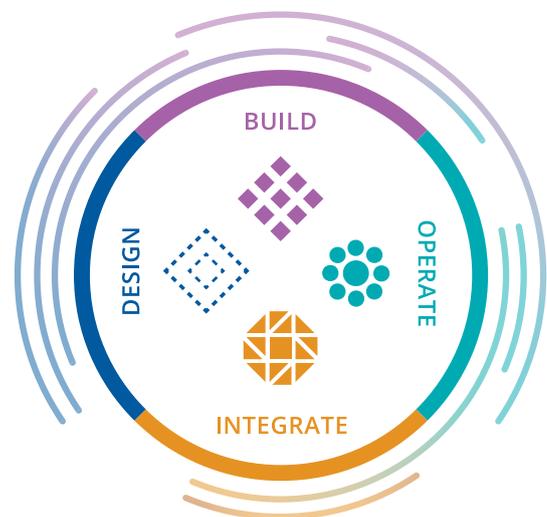
The BS EN ISO 19650 series of standards (herein after referred to as the ISO 19650 series) is an international standard of good practice. It defines information management principles and requirements within a broader context of digital transformation in the disciplines and sectors of the built environment (including construction and asset management industries). Its implementation in the UK is supported by UK National Forewords in ISO 19650 Parts 1, 2, and 3, and a UK National Annex in ISO 19650 Part 2.

The ISO 19650 series replaces some of the existing British Standards and Publicly Available Specifications relating to information management using building information modelling (BIM). It is part of a landscape, or ecosystem, of national and international standards supporting information management processes and technical solutions. It considers all information whether it is a construction programme, a record of a meeting, a geometrical model or a contract administration certificate.

Building information modelling (BIM) plays a key part in the management of information because it provides a methodology that helps us to structure information so that technology can process it.

Structuring information using industry standards helps to improve interoperability. This means that information can be joined-up by both people and technology, which then enables us to extract more valuable knowledge from it. Using the same information structures throughout industry generates consistency, repetition and predictability. This brings real efficiency gains for businesses and provides the data architecture for the connected future.

Standards within the ISO 19650 series are available at www.bsigroup.com. Visit www.ukbimframework.org to see how the ISO 19650 standards plus other standards within the UK BIM Framework map to the design, build, operate and integrate process.



About this guidance document

The guidance framework supports the UK implementation of the ISO 19650 series. This guidance document (guidance part 3) sits within an overall guidance framework as shown in Figure 1.

As with all guidance supporting the UK BIM Framework, we invite comment and feedback on this guidance part 3 at guidancefeedback@ukbimframework.org

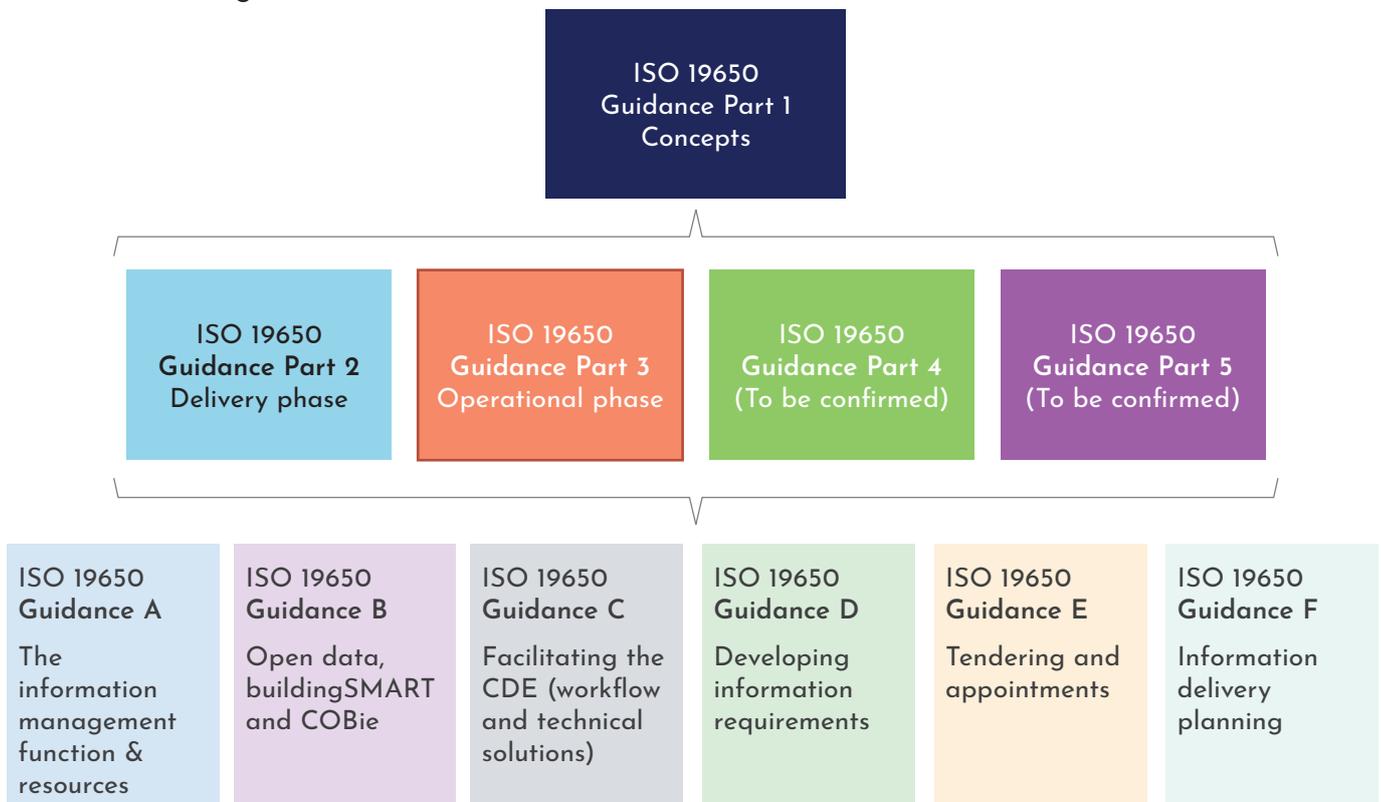


Figure 1: ISO 19650 guidance framework

Guidance part 3 is written to support the implementation of BS EN ISO 19650-3, which sets out the information management process for the operational phase of the asset life-cycle.

This guidance is designed to be read by those responsible for owning, operating and maintaining infrastructure and building assets. Much of the content is standalone but some elements refer to Guidance part 2. There are also some references to the Guidance parts A to F.

In particular, the guidance explains different use cases when the ISO 19650 Part 3 information management process can be

applied, and the different organizational roles involved in implementing the ISO. It explains the flowchart of process steps, describes an example of applying the process to a particular trigger event (survey) and explains how information delivered as a result of the process can be incorporated into existing information systems. There is some insight to certain ISO 19650 Part 3 clauses, focusing on those that are completely new compared to ISO 19650 Part 2, and detailed flowcharts of the ISO 19650 Part 3 process.

Accompanying this guidance document is a separate flowchart of the whole process that can be printed on a single sheet at A3.

Abbreviations and acronyms

This guidance includes a number of abbreviations and acronyms as set out in Table 1.

Table 1: Abbreviations and acronyms

Abbreviation or acronym	Term
AIM	Asset information model
AIR	Asset information requirements
BIM	Building information modelling
CDE	Common data environment
CAFM	Computer aided facility management
EIR	Exchange information requirements
IFC	Industry foundation classes
O&M	Operations and maintenance
OIR	Organizational information requirements
PIM	Project information model
PIR	Project information requirements
SAMP	Strategic Asset Management Plan

1.0 Introduction

This document is the second edition of guidance for BS EN ISO 19650-3 (referred to here as ISO 19650-3) and is part of the UK BIM Framework Guidance suite. It provides guidance on the roles and responsibilities involved in implementing ISO 19650-3, the situations when it can be applied and the details of the information management process. It also gives some detailed guidance on applying the process to a particular trigger event (maintenance) and on incorporating information delivered through ISO 19650-3 into existing information systems.

Now that ISO 19650-3 has been published, it means there is a wholly international set of standards defining the information management process throughout the life-cycle of an asset (delivery phase and operational phase).

ISO 19650-3 sets out the requirements for information management using building information modelling (BIM) during the operational phase of an asset's life. This means it is designed to be applied during the period an asset is in use and when an asset needs to be managed even if it is not being used, for example if it has been mothballed. The primary users of ISO 19650-3 are therefore expected to be asset managers and facilities managers, and the teams and contractors that work for them. The standard will also be helpful to those delivering capital projects to design and construct new assets, as it will help them understand why they are asked to produce operational information as part of their work.

ISO 19650-3 is written in the form of a specification and its main clauses set out things that have to be done or achieved. The text uses the word "shall" to convey each requirement. In line with many specifications there is very little guidance in the standard on how the requirements could be satisfied - that is left up to each organization implementing the standard. However, this is where the UK BIM Framework Guidance comes in, to provide a baseline for users of the standard when putting it into practice.

Transition from PAS 1192-3

In the UK, ISO 19650-3 has replaced PAS 1192-3, which had been available since 2014. Many asset owners/operators have become familiar with its requirements and they should be reassured that all the key principles from the PAS have been brought forward into the ISO.

BSI has published a short transition document to help organizations make the change from PAS 1192-3 to ISO 19650-3 and it is not the intention of this guidance document to replicate that transition guidance. It is recommended that the [BSI transition guidance](#) is read alongside this document.

2.0 The information management context for ISO 19650-3

2.1 Managing information during the operational phase of assets and facilities

Information in the context of asset management requires the specification, production, exchanging, checking and approval of information. Information should be structured and consistent and, where possible, support predictable and repeatable outcomes. Information should be seen as a valuable asset in its own right, and with its own performance criteria. Performance can be economic by measuring its link to a return on investment or reduction of liability, and can also relate to its relevance to support the asset management process.

Asset management is defined in ISO 55000 as “coordinated activity of an organization to realize value from assets”. An asset is defined as an “item, thing or entity that has potential or actual value to an organization”. Asset management covers all types of assets, including buildings and facilities, which in ISO 55000 are collectively known as an asset portfolio. Asset management covers all parts of the asset lifecycle for the asset portfolio including the operational phase, which is defined in ISO 19650-1 as “part of the life cycle, during which an asset is used, operated and maintained”. The operational phase refers to the time when assets are delivering value to the organization and usually will not be undergoing construction, extension or major changes. There will, however, usually be a continuous stream of minor changes taking place as a result of inspections, maintenance and replacement of small-scale components. The ISO 55000 asset lifecycle includes create or acquire, operate and maintain, and dispose or replace.

The ISO 19650 series supports asset management and defines the approaches to information that comprise both project activities in part 2 and, in part 3, operational phase activities of assets. ISO 19650-3 Figure 1 illustrates the relationship between the two sets of standards and the relationship between delivery phase activities (defined in ISO 19650-2) and operational phase activities (defined in ISO 19650-3). This is shown in Figure 2 below.



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 2: Information management during the life-cycle of an asset
[SOURCE: ISO 19650-3 Figure 1]

The ISO 55000 series defines a management system for the management of assets and portfolios of assets over the life of those assets. In managing assets, a variety of activities take place where asset information is a critical enabler. ISO 55001 clause 7.5 c) states “the organization shall specify, implement and maintain processes for managing its information” but the standard does not define the approaches to achieve this outcome. Developing a Strategic Asset Management Plan (SAMP) with its long-term intervention plan is an activity that is highly reliant on data since it will not be realistic to survey every asset each time the plan is being developed or revised.

Information about assets will be required for at least as long as the life of an asset or facility. For example, design information developed prior to asset construction may be essential to the refurbishment or safe demolition of the asset many years in the future. Therefore, information needs to be available, accessible and readable in the future. The ISO 8000 series of standards specifies a range of approaches to support the effective management of data quality by an organization.

The adoption of information management approaches as defined in the ISO 19650 series significantly increases the quantity and quality of digital information about assets, known as digitization, and, if linked dynamically to the physical asset, can be referred to as a 'digital twin'.

Asset owners with large portfolios of assets and infrastructure are likely to have many assets and facilities which are simultaneously at different stages in their asset lifecycles. For example, around 90% of the assets of a utility may be in the operational phase, whilst only around 10% are involved in the project phase (construction, refurbishment or end of life activities). During each phase, information will be being created, but will also act as a key enabler.

Facility managers may operate a portfolio of buildings which have similar requirements or perhaps may only be interested in a single building. In either case, these may be in the operational phase, or be in a project phase prior to entering the operational phase. In all cases, the asset owner should recognize the need to manage the information about the facilities for current and future owners and stakeholders of the building(s).

The supply chain involved in asset management activities has a responsibility in supporting the asset owners and delivering the information requirements specified for their appointment. BS 8536-1 and BS 8536-2 provide guidance which helps asset owners to define information requirements which support whole-life activities. Providing information is a key part of asset interventions and requirements for the provision and use of asset information should be defined contractually. Asset owners/operators should make sure their contracts and work instructions include these requirements for information alongside the technical specification of the works themselves.

The availability of complete, current, accurate and trusted information about an asset or facility will deliver benefits across various phases of the asset lifecycle:

- During project phase activities, supported by ISO 19650-2;
- During steady state operation and maintenance activities;
- When planning and delivering reactive interventions which could range from a simple component replacement, through to responding to major incidents and supporting the business continuity plans of the asset owners;
- When developing or revising Strategic Asset Management Plans;
- When planning future asset interventions;
- When selling or transferring the asset to new owners; and
- At end of life to support safe, cost effective asset decommissioning and disposal.

2.2 How ISO 19650-3 reflects the concepts and principles of ISO 19650-1

ISO 19650-3 defines the information management process through a series of eight steps with loops and branches defined by questions and decisions. Figure 5 in this guidance reproduces the process flowchart and some of the details in it are explained in section 4.

The process as a whole reflects the concepts and principles from ISO 19650-1. This means that it includes the following features:

1. The **information management** process **is to be applied in a way that is proportionate** to the scale and complexity of the asset owner/operator, the asset(s) in question, the trigger events that occur in relation to the asset, the works required to respond to the trigger events, and the information required as a result of the work done.
2. Information **deliverables are produced in response to information requirements** which themselves are developed from a clear set of information purposes
3. **Information delivery has to be planned** in advance, starting during the tender process (for external contracts) or internal works negotiation and then continuing into a mobilization period before the technical work itself is started
4. The **capacity and capability** of delivery teams to comply with ISO 19650-3 **are taken into account** when making appointments
5. Information **deliverables are produced using an agreed asset information standard and** in accordance with **agreed methods and procedures**. This includes producing information deliverables to an agreed amount of detail, as defined through the level of information need framework
6. Information deliverables are collated into **information models that are exchanged between delivery teams** (asset/facility contractors) **and the appointing party** (asset owner/operator), and may then be passed on to other stakeholders such as a regulator
7. **Information production** and review, including authorization and acceptance, **uses the common data environment (CDE) workflow** and whatever CDE solutions the various parties wish to apply
8. **Information models** from various delivery teams **are federated to generate the asset information model**, that can then be **used throughout the asset's operational life** for analysis, reporting or other uses that satisfy the information purposes
9. The **asset information model needs to be maintained** during the operational life of the asset so that it continues to represent the state and condition of the asset.

All of these features will be familiar to users of ISO 19650-2 since the underlying concepts and principles are also all reflected in that standard.

Like most standards, ISO 19650-3 is a voluntary document. By itself it conveys no obligation to use it. But following the approaches defined in ISO 19650-3 should increase the efficiency and effectiveness of information management processes and support the objectives of all parties, particularly the appointing party (asset owner/operator).

The obligation to use ISO 19650-3 has to be created. This could be through it being included or cited in a contract between an asset owner/operator and an external contractor. It could also be through adoption of an organizational policy covering the departments and staff that act as asset owner/operator and as works teams/internal contractors.

3.0 Parties and responsibilities

3.1 Introduction

Effective information management is central to any asset management strategy; therefore, to manage and operate their assets successfully, owners/ operators need to clearly understand and specify what their exact information requirements are and the delivery of those.

Asset information deliverables also support and inform an owner/organization's asset management system, the approach outlined in ISO 55000. This approach should direct, coordinate, and control related management activities to deliver key organizational objectives such as statutory compliance, and value-based benefits during an asset's lifecycle. An information management strategy and aligned delivery processes can therefore unlock greater insights, efficiency gains, and exponential value for the client organization and its supply chain partners.

ISO 19650-3 establishes an information management process for asset owners/ operators (referred to as "appointing party") to plan and procure their asset information requirements across different and varying portfolios, assets, delivery process pathways and associated trigger events.

The ISO 19650-3 information management process further establishes a range of set activities to be undertaken by delivery teams (each consisting of a lead appointed party and one or more appointed parties) during the information planning and production stages. This consistent approach improves delivery teams' collaboration and integration, particularly when new or updated asset information deliverables are being produced, shared, and coordinated simultaneously on the same, or across several projects and scenarios.

3.2 Parties

ISO 19650-3, section 0.5, Figure 3 (below) shows the principal parties and their relational interfaces in the operational phase. This is consistent with the organizational diagram within ISO 19650-2 (Figure 2) which indicates the same parties, relationships, and interfaces during the project delivery phase.

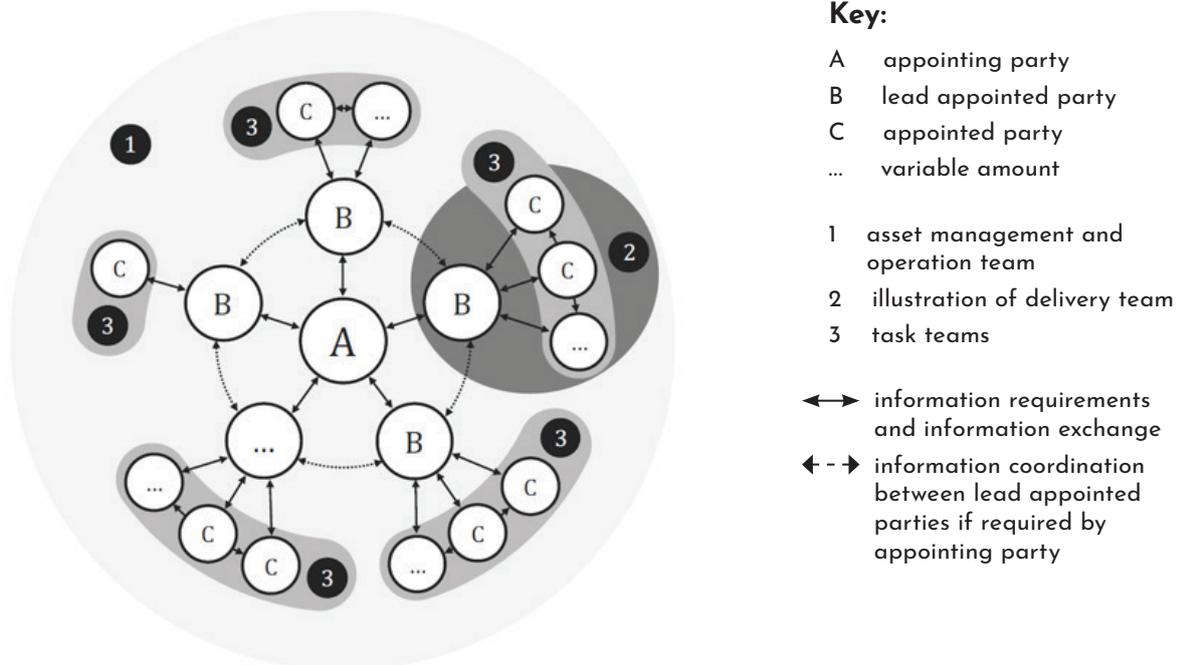


Figure 3: Interfaces between parties and teams for information management

Whilst organizations and individuals fulfilling these principal party positions may change between phases, the information management function, standard, and processes remain constant, supporting the migration and evolution of the information model across the asset's lifecycle. For example, companies appointed to deliver maintenance services in the operations phase may be replaced when contract periods end and are re-tendered, or new engineering consultants may be appointed to design new or replacement ventilation systems as part of planned renovation or refurbishment works.

A simple explanation of the ISO 19650-3 parties, relationships, and their typical real-world personas follows:

The (asset-related) appointing party is the organization requiring and receiving the asset information. They can be the property/asset owner, an estates department, an internal asset management team, or an outsourced operator / asset manager (usually on a medium-to-long term contract from the legal asset owner). They have authority and responsibility for the long-term operations and management of the asset or asset portfolio, and they ensure the required asset information is correctly specified, received, and maintained to support the whole asset lifecycle. The appointing party prepares a set of information management resources to define the quality of information and the processes and protocols governing its production and ownership.

A lead appointed party is directly appointed by the appointing party to manage the delivery of a specific set of asset-related information. This title only applies to information management according to the ISO 19650 standards. The same organization or team will almost certainly also be delivering the technical services, or functions that generate the required information (see appointed party, below) or outcome which includes the delivery of (asset-related) information requirements. For example, a lead appointed party can be an in-house maintenance team carrying out periodical statutory or routine maintenance checks, or an external contractor appointed to replace a faulty plant item or install a new lift or fire alarm system. In the case of a small in-house maintenance job this might involve just one maintenance engineer as lead appointed party answering to an individual asset manager as appointing party. The overall process is the same but clearly it is applied in a proportionate way - see [section 4.3](#).

An appointed party is appointed by the lead appointed party to generate and deliver a specific set of asset-related information. This information relates to the appointed party's particular technical sub-services, sub-functions or works which includes the delivery

of (asset-related) information requirements. The distinction between a lead appointed party and an appointed party is that a lead appointed party is only concerned with managing the information process in their team whereas the appointed parties carry out the technical work and generate the associated information. An appointed party's outputs feed into or forms part of their lead appointed party's overall deliverables to the appointing party (asset owner/ operator).

These relationships are illustrated in the following examples and in Figure 4.

Example 1: As part of a periodic condition survey contract of a whole building, a service contractor may carry out all the work themselves, in which case they are the lead appointed party and the only appointed party - see Figure 4(a).

Example 2: The service contractor from Example 1 may do most of the work themselves but also appoint a specialist company to conduct an intrusive survey of known asbestos - see Figure 4(b).

Example 3: An in-house asset manager (representing the asset owner) may appoint an in-house survey team to carry out the survey, in which case the survey team is also both lead appointed party and an appointed party. The in-house team sub-contracts the specialist asbestos survey to an external specialist, who is also an appointed party - see Figure 4(c).



Figure 4(a): Simple party relationships/appointments

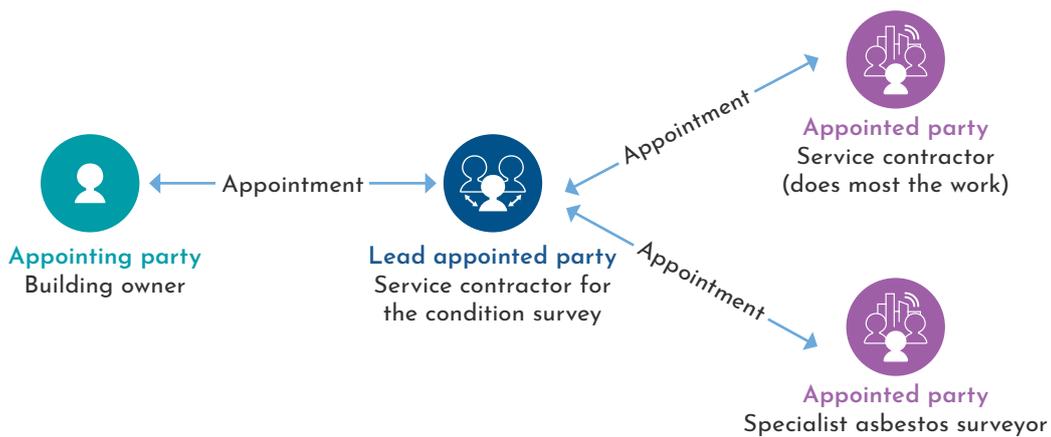


Figure 4(b): Multiple external appointed party relationships/appointments

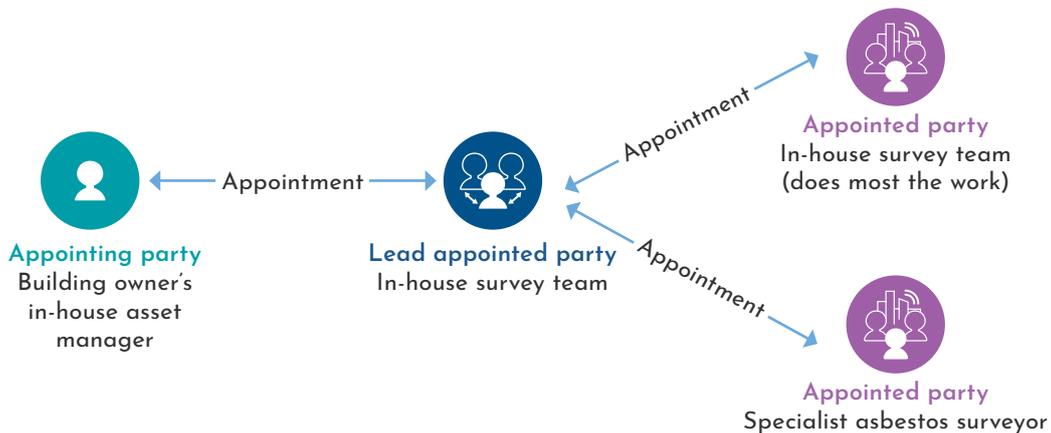


Figure 4(c): Mixed internal/external appointed party relationships/appointments

Different real-world scenarios, e.g., the type/ number of physical assets, their owner, how they are managed, and the procurement approach will generate different organizational arrangements of appointing party, lead appointed party/ies and appointed party/ies.

3.3 Responsibilities

The UK BIM Framework Guidance part 2, sections 1.3, 1.4 and 1.5 explain the activities and outputs which each appointing party, lead appointed party and appointed party should fulfil when adopting ISO 19650-2, the delivery phase of assets. Many of these activities and outputs are repeated and relevant in ISO 19650-3, the operational phase of the asset lifecycle. However, there are several principal differences and responsibilities which are summarized in Table 2 and the following subsections. Detailed insights for each of the clauses in Table 2 are given in [section 8](#).

Table 2: New responsibilities in ISO 19650-3 compared to ISO 19650-2

ISO 19650-3 clause	Responsibility
5.1.2 (establish organizational information requirements)	Appointing party
5.1.3 (identify assets for which information shall be managed)	Appointing party
5.1.4 (establish asset information requirements)	Appointing party
5.1.5 (identify foreseeable trigger events for which information shall be managed)	Appointing party
5.1.10 (establish links to enterprise systems)	Appointing party
5.1.11 (establish asset information model)	Appointing party
5.1.12 (establish processes to maintain asset information model)	Appointing party
5.2.1 (decide type of activity providing information)	Appointing party
5.5.4 (maintain resources in readiness for a trigger event)	Lead appointed party
5.8.1 (aggregate an accepted information model into the asset information model)	Appointing party
5.8.2 (review and continue maintenance of the asset information model)	Appointing party

3.3.1 Assessment and need for information

The appointing party is responsible for defining their organizational information requirements (OIR) which identify what information is needed to satisfy and support the delivery of agreed strategic objectives within the organization. For example, an estates department could have OIR regarding the completeness of statutory compliance records for risk analysis or insurance purposes.

Identification of OIR will enable an asset owner/ operator to identify their priority assets and what associated information is required and needs to be managed. This will inform the establishment of the asset information requirements (AIR) which the asset owner/operator/departments or other stakeholders will need to operate, monitor, and manage specific systems and assets. For example, an in-house asset management team may require assets and spatial locations to be named or tagged using a unique identification code or naming convention, for onward linking or importing into an existing enterprise management system (e.g., EDMS, CAFM).

The AIR will change and refresh as parts of the physical asset and their systems adapt, update, or are replaced during the operational lifecycle. For example, replacing a gas-fired heating system with a mixture of renewable technologies will affect the information that is required to manage the new systems and this will lead to a replacement set of AIR. The appointing party is responsible for ensuring the OIR and AIR are fully aligned and kept up to date in line with their needs. The AIR should be structured in a way which is easily apportioned and assignable to the relevant lead appointed party at each invitation to tender stage. This ensures there is clarity of scope in terms of:

- information required
- how it is delivered / exchanged (exchange information requirements)
- the ability to procure a more accurate and comparable tender cost returns from the prospective contractors
- helping to avoid the risk of downstream duplication or overlap of information during production.

Further OIR and AIR guidance is available in section 8 (insight for [clauses 5.1.2](#) and [5.1.4](#)) and in [Guidance Part D](#).

Through the establishment and upkeep of the AIR, an appointing party can identify and collate a series of foreseeable trigger events which will occur over an asset's lifecycle. Each trigger can represent a single or repeating planned event with associated actionable task(s) and new or updated information requirements. For example, following a boiler service an actionable task could be the update of the logbook, or during a period of mothballing or building vacancy the actionable task could be to perform legionella tests on a school water system. Further trigger event guidance is available in [sections 4.2, 6](#) and [8](#) (insight for [clause 5.1.5](#)).

ISO19650-3 is applicable to assets of all sizes and all levels of complexity, many of which will be existing buildings and pieces of infrastructure. It is likely many existing assets will be using existing enterprise systems to store and manage asset information, and it may not be feasible to set up a new or centralized information management system when adopting this standard. It is the appointing party's responsibility to ensure any new or continued use of existing systems can support the requirements of ISO 19650-3, and can be maintained accordingly. This is critical to establish the asset information model and ensure its long-term integrity across one or many enterprise information systems. Further guidance is available in [sections 7](#) and [8](#) (insight for [clauses 5.1.10](#)).

However, where the assets are relatively simple and the appointing party's requirements are relatively straightforward, it need not be complicated or expensive to establish the different sets of information requirements, to incorporate the exchange information requirements into relevant contracts and to configure existing information systems to be able to hold any new pieces of information that are deemed necessary. A simple approach can satisfy the requirements of ISO 19650-3 - complexity is certainly not a requirement.

3.3.2 Tender stage and mobilization

The appointing party (asset owner/ operator) is responsible for appointing a lead appointed party in relation to one or more trigger events. This may be through a formal tender process, especially where external contractors are involved, but may also be through internal appointments such as through works orders or instructions. It is also possible to make term-appointments with call-off arrangements for each discrete piece of work. It is important to note if in-house teams are appointed or assigned to provide trigger related services the same level of responsibilities and process should be applied.

Where trigger events are foreseeable, the information management process and asset information requirements can be pre-defined and lead appointed party(s) appointed in advance of the needed works. The frequency of trigger events may vary according to asset, work order type, or contractual/ statutory requirements. During long or inactive periods, the lead appointed parties should either remain mobilized or provide assurance of their ability to mobilize when required, and have the necessary resources in place to complete scheduled or planned trigger events.

In instances where unforeseen or unplanned trigger event occur, the appointing party will need to instigate a process to appoint an appropriate lead appointed party(s). Again, it is important to note if in-house teams are appointed or assigned to provide trigger related services the same level of responsibilities and process still should be applied. Further guidance is available in [section 8](#) (insight for [clause 5.2.1](#)).

3.3.3 Asset Information handover and aggregation

The appointing party (asset owner/ operator) is responsible for the final review and acceptance of all asset information delivered by each lead appointed party, and the onward update or replacement of existing asset information content within the relevant enterprise system(s). The precise legal responsibilities and liabilities around acceptance of information need to be explained in the contract governing the appointment, including what happens if information appears to be complete but later turns out not to be. ISO 19650-3 requires that an information protocol is incorporated into all appointments to cover these aspects. The same requirement in ISO 19650-2 has given rise to the publication of a standard information protocol that is appropriate for design and construction contracts. No equivalent protocol for Part 3 has been written as yet, but the [Part 2 protocol](#) could be consulted to give an indication of what might be needed.

The appointing party is responsible for the central or linked enterprise system(s) which support/host the AIM. The system(s) must enable the AIM to be structured and maintained properly, and to continue to fulfil its overall purpose. Further guidance is available in [section 8](#) (insight for [clauses 5.8.1](#) and [5.8.2](#)).

4.0 Explaining the information management flowchart

(ISO 19650-3 Figure 4)

4.1 The flowchart

ISO 19650-3 is structured around the management process for operational information and this is shown as a flowchart in the standard. This flowchart is used as the basis of Figure 5. In the standard there is an extensive key to this flowchart, but instead of reproducing that here the key features are indicated in the figure and described in the bullet points below.

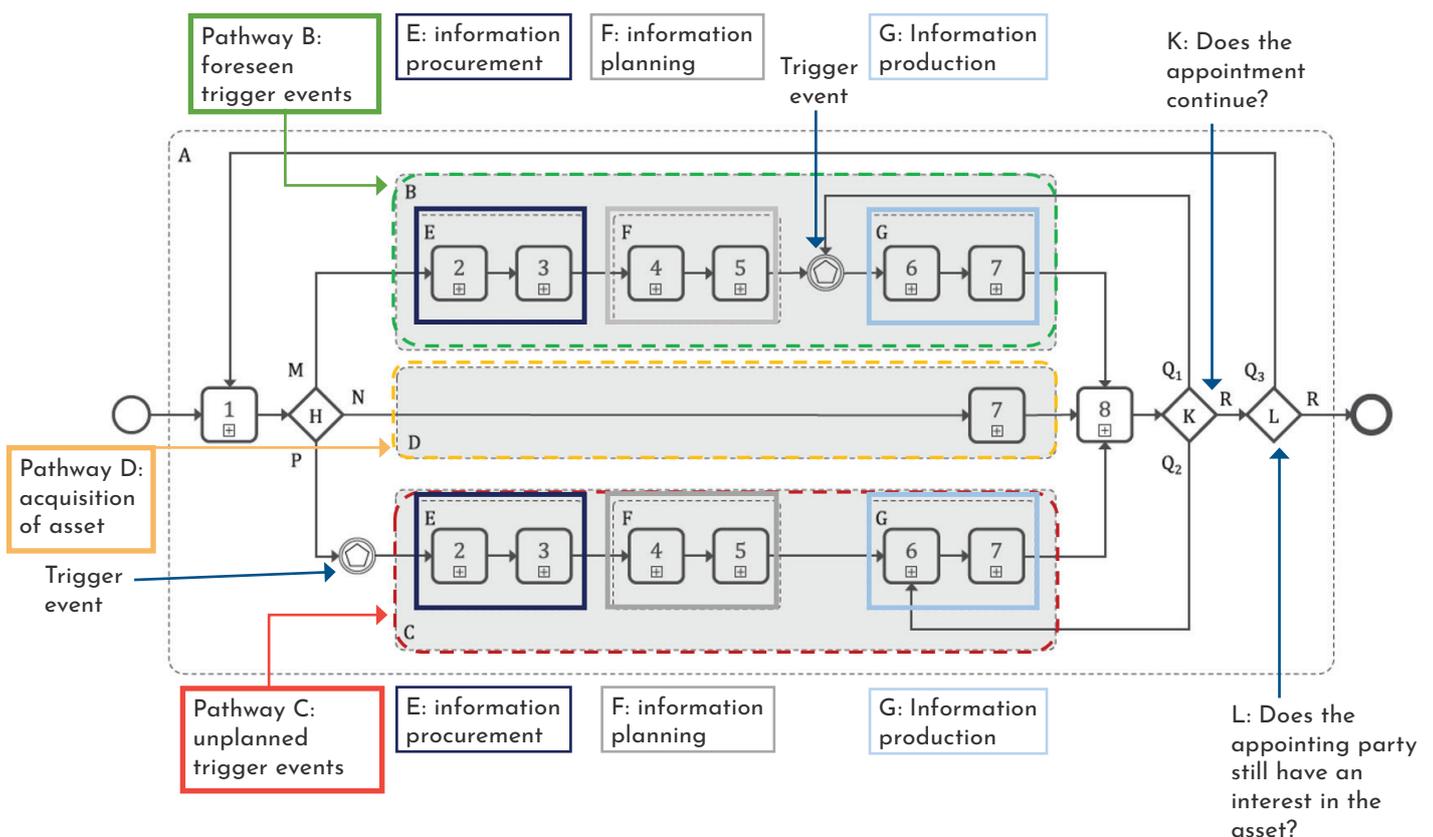


Figure 5: Information management process flowchart from ISO 19650-3

The key elements of the flowchart are as follows:

- The process comprises eight steps, numbered 1 to 8, and the requirements at each step are contained in the corresponding sub-clause of ISO 19650-3 clause 5 (for example, step 1 is covered by clause 5.1)
- Step 1 of the process is where the appointing party (asset owner/operator) prepares for the rest of the information management process. This includes assessing what information they need at organizational and asset levels, and preparing all the supporting resources for the process such as the asset information standard and establishing the common data environment
- Step 1 leads to three different pathways, shown as shaded boxes labelled B, C and D.
 - Which of these pathways is followed depends on the nature of each life-cycle event giving rise to new or updated asset information.
 - These events are called trigger events and are depicted in pathways B and C by a circle enclosing a pentagon.
 - The pathways are split because there are fundamental differences in the approach to information management, primarily around whether procurement and mobilization can be done ahead of the trigger event taking place or not
- Within the pathways B and C, the process is broken into 3 sub-groups labelled E, F and G.
 - Sub-group E is about procurement - of a tier 1 contractor or an in-house team to be responsible for some information deliverables (lead appointed party). ISO 19650-3 covers information procurement activities in clauses 5.2 and 5.3
 - Sub-group F is about planning - the mobilization of the appointed contractor or in-house team and the appointment of any further parties within the delivery team (appointed parties). ISO 19650-3 covers information planning activities in clauses 5.4 and 5.5
 - Sub-group G is about production - when information is produced by appointed parties, reviewed by a lead appointed party and ultimately accepted by the asset owner/operator (appointing party). ISO 19650-3 covers information production activities in clauses 5.6 and 5.7
 - These sub-groups of activities reflect the overall philosophy described in ISO 19650 Part 1 and mirrors the approach taken in ISO 19650 Part 2 for information management on projects
- The process has feedback loops at points K and L.
 - Point K tests whether the appointment will continue following acceptance of a particular set of information deliverables from the supplier (lead appointed party/delivery team). This could be because a trigger event is complex enough to involve a series of information exchange points (such as the design and then installation of an emergency roof). Or because it is a call-off appointment responding to a repeated trigger event where each has its own information exchange (such as a 5-year contract to conduct yearly inspections).
 - Point L tests whether the asset owner/operator still has an interest in the asset and therefore whether the whole information management process should continue.

4.2 Trigger events

Trigger events are one of the key concepts for managing asset information according to ISO 19650-3. These are the events taking place during the life-cycle of the asset that have an effect on the asset and give rise to new or updated information being needed by the appointing party (asset owner/operator). They provide the overall tempo for the information management process, in the same way that plan of work stages do during a project. There are many different trigger events that can occur - some of them will arise on all or most assets such as planned maintenance of commonplace elements or equipment. Others will be very specific to the asset in question such as undermining of foundations for a structure near an eroding coastline.

By their nature, some of these trigger events can be foreseen and scheduled or otherwise planned for in advance of them happening, for example regular maintenance or inspections. These are the trigger events that drive pathway B in the information management process (see [Figure 5](#)). Planning for these trigger events means the appointing party (asset owner/operator) going through the procurement activities for information, and also for the works, (sub-group E) and the lead appointed party (contractor or in-house team) going through their mobilization activities (sub-group F) before the trigger event takes place. This means that when the trigger event occurs the delivery team is already appointed and ready to go, and can start immediately with their technical tasks and production of information (sub-group G).

[PROCURE] then [PLAN] then [TRIGGER]
then [PRODUCE]

Other trigger events are acts of God, or random occurrences, or so infrequent or unpredictable that it is impractical to plan for them in advance, for example a lightning strike or an increase in customer demand requiring an additional production facility. These are the trigger events that drive pathway C in the information management process (see [Figure 5](#)). They include new delivery phase activities (new projects) to create new assets or refurbish/remodel

existing assets. When the trigger event does happen, the appointing party has to start from the beginning of the procurement process (sub-group E), the lead appointed party and delivery team have to go through the mobilization activities (sub-group F) before they can start their technical work and start producing information (sub-group G). This means there will of necessity be some delay between the trigger event occurring and the technical response work starting.

[TRIGGER] then [PROCURE] then [PLAN]
then [PRODUCE]

The third pathway, D in [Figure 5](#), is driven by the acquisition of an asset that is currently owned by another organization. For example, the purchase or leasing of a site or an existing building. This is a particular kind of trigger event because the contractual relationship between the buyer and seller is fundamentally different from the client-supplier relationship created for the other types of trigger. During asset acquisition, the buyer may have little ability to insist on the supply of certain pieces of information as part of the purchase. It might be possible to negotiate this as part of the price paid, or for the acquirer to commission their own due-diligence information.

4.3 Proportionality

Although the flowchart in Figure 5 looks complicated, and each of the process steps contains a series of required actions, the ISO 19650-3 information management process is to be applied in a way that is proportionate and appropriate to the scale and complexity of the asset portfolio as well as the scale and complexity of the asset management responses to trigger events. Proportionality is demonstrated through the following examples:

Example 1: In preparing for their overall approach to information management in step 1, an appointing party (asset owner/operator) might decide only to apply ISO 19650-3 to its most critical assets, such as only to its production and warehouse facilities and not to its administrative offices, or only to life safety systems rather than all systems in a building. This would be part of the considerations in response to ISO 19650-3 clause 5.1.3.

Example 2: In procuring a new lead appointed party (asset contractor) to carry out a condition survey, an appointing party (asset owner/operator) could conclude that none of its existing reference information or resources are relevant and do not need to be included in the tender pack compiled for this appointment. This simplifies the paperwork of the procurement process.

Example 3: An in-house asset manager acting as appointing party and appointing an in-house works team to do small-scale work and information delivery will still need to go through the same information management process steps. But at each step the details that need to be defined or the resources that need to be created will be much simpler or might not be relevant and so can be legitimately excluded. The cost of implementing the process will ultimately have to be balanced against the benefit of having the intended information. Unless there is a statutory requirement to be met, this balance of cost versus value has to be made by the appointing party (asset owner/operator).

Some of the specific tasks in ISO 19650-3, such as the lead appointed party preparing the delivery team's BIM execution plan, are deliberately scaled down from their equivalents in ISO 19650 Part 2. If more detail is warranted by the situation then this can either be specified by the appointing party in their acceptance criteria for the tender response or volunteered by the prospective contractor/in-house team (lead appointed party) in their pre-appointment BEP.

Proportionality also needs to be applied to the organizational and asset information requirements that are developed by the asset owner/operator (appointing party). Each information requirement must be able to be traced back to a purpose, so that the appointing party is clear that it is only asking for information to be produced that it really does need. This is part of the lean thinking that underpins a systematic approach to information management, and the result should be sets of exchange information requirements for each lead appointed party that focus on the information that really has value to the appointing party. Different asset owners/operators will have different ideas of what information is of value to them - there is no single set of right or wrong answers to this question because the idea of value can mean such different things to different organizations. Even if a particular asset owner/operator draws on the work of similar types of organization (such as one local authority learning from others), they should still approach the development of their information requirements with a critical eye.

Much more explanation about determining appropriate information requirements is given in [Guidance D](#).

5.0 Use cases for ISO 19650-3

This section illustrates three out of the potentially infinite number of Use Cases that could be used across different asset owners triggered by different situations. Adoption and use of ISO 19650-3 allows the appointing party (asset owner/operator) to adopt a proportionate approach based upon the costs and benefits of implementation.

Use Case 1. A single asset/building/facility that moves from the project phase (defined in ISO 19650-2) to the operational phase (defined in ISO 19650-3).

This begins before the project is started, with definition of what information is needed to manage and maintain the asset/building/facility. This information is collected during the project delivery where it forms part of the project information model (PIM). Effective transfer of this information from the PIM into the asset information model (AIM) without loss of meaning or accessibility provides a range of benefits:

- Reduced uncertainty about actual assets and systems enabling more effective intervention planning;
- Reduced safety risks due to staff making unwelcome 'discoveries', such as previous alterations to assets that had not been recorded, whilst undertaking asset interventions;
- Quicker and more effective development of planned maintenance schedules to ensure that they are active on asset handover. This would reduce the risk of failures and the risk of reducing asset life through insufficient or incorrect early maintenance. This would also reduce the risk of invalidating a warranty by not following the manufacturer's requirements;
- More effective and quicker planning and response to unplanned incidents, such as fire/ flood/ damage through availability of more reliable information.

Use Case 2. For portfolios of assets, progressively moving to follow UK BIM Framework principles on a site-by-site basis.

This is triggered when projects/interventions are undertaken on more than a predefined proportion of the assets on the site. This prevents 'small' projects/interventions, such as replacement of windows, requiring the digitization and surveying of a whole building.

Where the above threshold is passed, this use case would involve digitizing all assets, documents and information for the site based on the Asset Information Requirements (AIR). In addition to the benefits detailed in Use Case 1 above, further benefits would be:

- Increasing the proportion of digital information across an organization's asset stock faster than if digital information about assets was only collected through Use Case 1;
- Increased understanding of the extent to which assets across whole sites/ facilities are following UK BIM framework principles;
- Easier and closer relationship with facilities management activities facilitated through, for example, asset tagging and information maintenance linked to FM contracts.

Use Case 3. For portfolios of assets, applying UK BIM Framework principles to selected asset/site types by surveying existing assets, digitizing drawings and records.

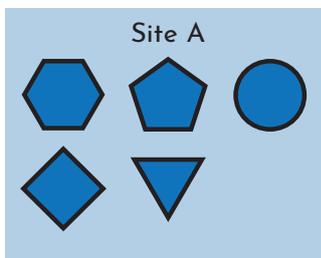
For example, digitizing all air handling units or digitizing all sub-station sites >50kV. This Use Case could be applied alongside Use Case 2 or independently. In addition to the benefits detailed in Use Case 1 above, further benefits would be:

- Increasing the proportion of digital information across an organization's asset stock faster than if digital information about assets was only collected through Use Case 1;
- Increased understanding of the extent to which assets across whole sites/ facilities are following UK BIM framework principles;

- Enables change in process/ maintenance regimes for a complete asset/ site type perhaps including standardized planning and activities, common tooling, optimized training and reduced variability in approach leading to greater efficiencies and improved asset outcomes.

These Use Cases are illustrated in Figure 6. In the figure, assets on six different sites are represented by geometrical shapes. Those that are subject to work following trigger events have a bold outline. In Use Case 2, on Sites A, D and F some assets are subject to projects/work that is above the predefined proportion for digitizing the whole site. In Use Case 3 the pentagon asset has been selected for survey and digitization. This affects sites A, B and D but only that specific asset on each site is digitized.

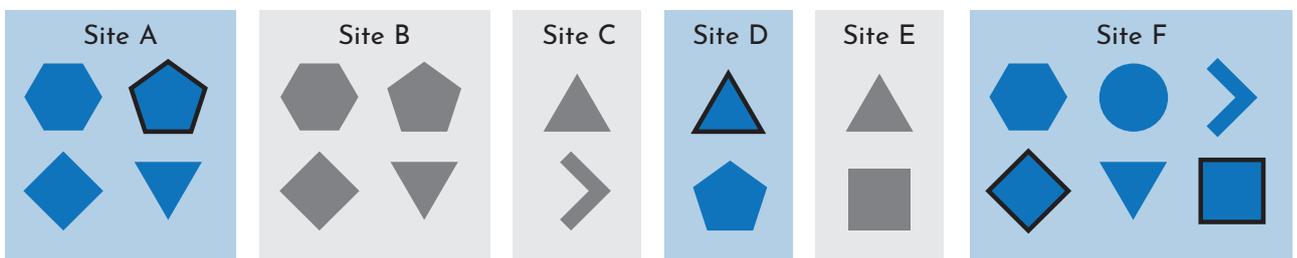
Use Case 1



Key

- Shapes represent different asset types
- Blue fill represents digitized assets
- Grey fill represents assets not digitized
- Bold outline represents assets with planned interventions

Use Case 2



Use Case 3

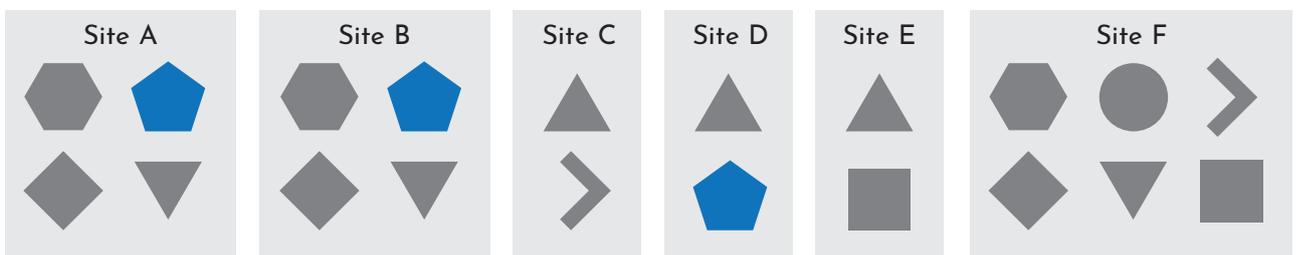


Figure 6: Illustration of use cases for applying ISO 19650-3 process

6.0 Example application of ISO 19650-3 to a specific trigger event

6.1 Target audience

This section is particularly for individuals working within or on behalf of an appointing party (asset owner/operator) to apply ISO 19650 to operational phase trigger events and to establish the exchange information requirements for those trigger events. Where recommendations are made for specific trigger events, these are intended to represent 'good practice'.

This section provides clarity on typical trigger events and provides an example of taking one trigger event through the requirements of ISO 19650-3.

6.2 Definition and categorization of trigger events in the operational phase of an asset

ISO 19650-3 clause 5.1.5 highlights trigger events as those events during the operational phase when new or updated information concerning an asset will be generated or required.

Clause 0.1 of ISO 19650-3 highlights that there are 2 main types of trigger event:

1. Those that are foreseeable and for which advanced planning is sensible
2. Those that are either unforeseeable or which can be foreseen but where advanced planning is not a sensible use of time or resources.

Depending on the nature of a trigger event, preparatory activities can differ.

Some example trigger events are suggested in ISO 19650-3 Appendix A.3. It is important to understand that more than one trigger event can occur at the same time. Similarly, 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 might be different in each case. For example, many items of equipment will need maintenance trigger events, but the nature of the maintenance will be specific to each type of equipment.

In addition, 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.

Figure 7 is a simplified illustration of one arrangement of trigger events for an asset in its operational phase. The grey loops at the left-hand end and towards the right of the figure represent an initial delivery phase (project) and a refurbishment. At these points, information management is according to ISO 19650-2. The period between the project and refurbishment shows a sequence of different types of trigger event. The details of these trigger events will be specific to the type of asset and to the particular asset itself. For example, road bridges will tend to have trigger events in common and Tower Bridge in London will have some specific trigger events because of its location, design, age and so on.

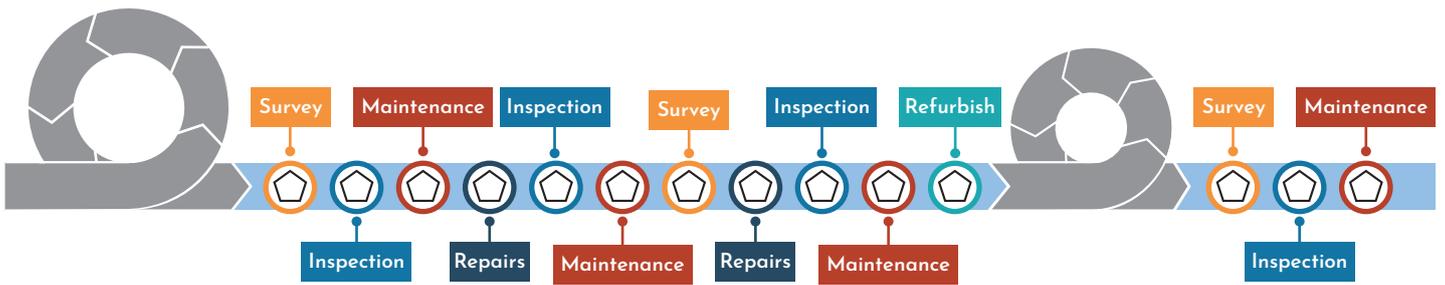


Figure 7: Trigger events during the operational phase of the life cycle

6.3 Categories of Trigger Events in the asset lifecycle

Although there are many possible trigger events, they can be grouped largely under four main headings, as shown in Figure 8. The lists of specific trigger events in Figure 8 are not exhaustive, and are included to indicate the range of possible trigger events that might need to be considered

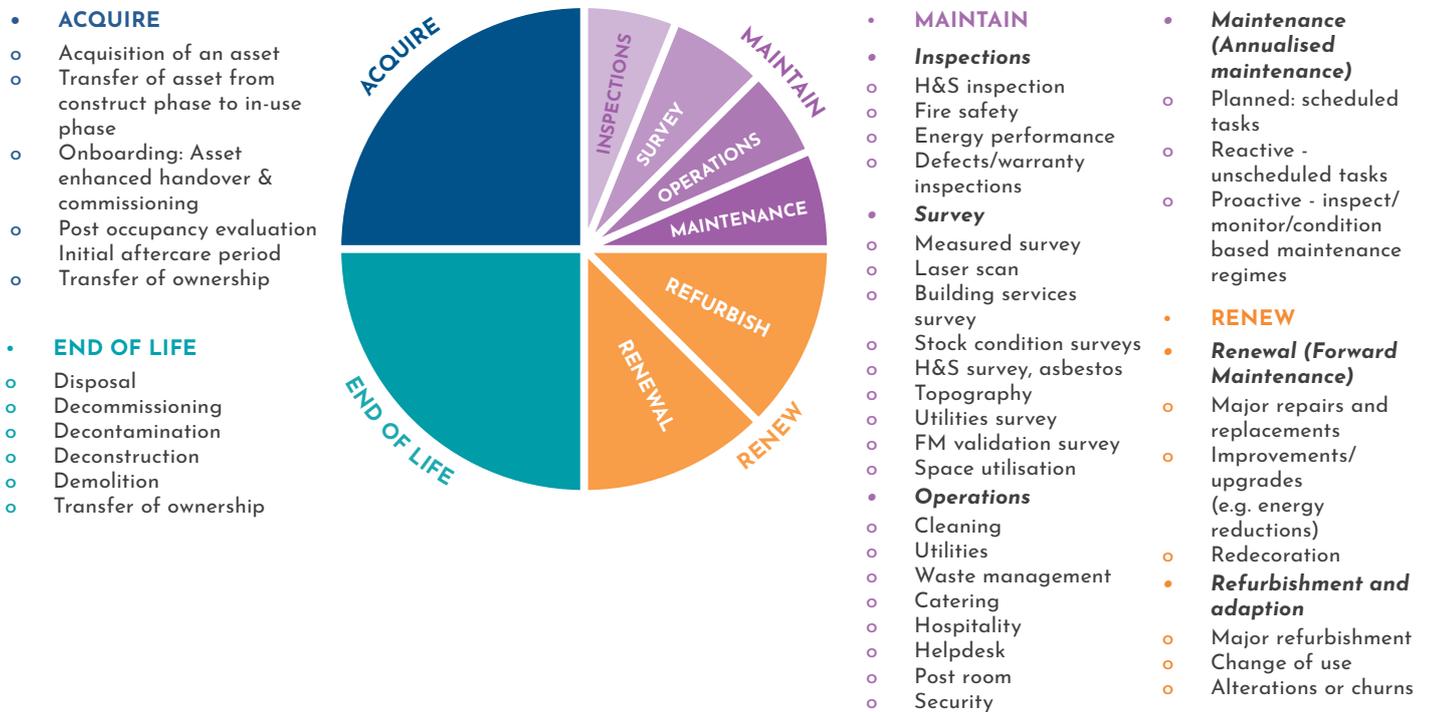


Figure 8: Example trigger events grouped by theme

6.4 Worked example: Commissioning a survey to determine the extent of a refurbishment

The section highlights the information management process associated with survey activities in preparation to refurbish the asset within the context of the scenario outlined below. This particular trigger is classed as an unforeseeable trigger, as it is not part of a long-term schedule of asset activities. It is hoped to include an example of a foreseeable trigger (such as a regular maintenance activity) in a future update of this guidance.

6.4.1 Scenario

- Organization X has a large asset portfolio consisting of both buildings and infrastructure.
- Organization X is keen to digitize their built asset portfolio in a staggered manner and utilize the organization's central repository (CDE) embracing ISO 19650 principles.
- Previous survey work has highlighted that investment is required in the strategic regional centre. The anticipated remaining building life of the regional centre is 30 years. The outline business case to refurbish the regional centre has been approved with an objective to continue using the building as a regional centre.
- Organization X now needs to procure a single supplier to undertake detailed surveys to support the full business case for the refurbishment of the existing building. These surveys will include building services, structural integrity, asset condition, and point cloud. The principal deliverable will be an information model that incorporates survey information. Due to poor existing legacy asset data, survey outputs will provide accurate validated data to inform the briefing stage of the refurbishment.
- The regional centre is currently occupied and staff decant commences 8 weeks prior to the start of refurbishment works.
- Organization X has an asset management system and computer aided facilities management system (CAFM) for managing their asset portfolio.

6.4.2 Applying the clauses of ISO 19650-3

This section is to be read in conjunction with ISO 19650-3. The guidance in Table 3 presents key aspects tailored to the survey appointment in the context of the scenario outlined above.

Table 3: Survey trigger example of ISO 19650-3 activities

ISO 19650-3 clause	ISO 19650-3 sub-clause	Activities/commentary
5.1 Assessment and need	5.1.2 (OIR)	Identify the OIRs relevant to survey outputs. For example: "To have accurate and complete survey information in advance of any project".
	5.1.3 (Relevant assets)	Identify critical assets in the regional centre based on existing information held by the operations team.
	5.1.4 (AIR)	Specify the information required for each critical asset to support the OIR. Note: clearly identify that the survey is non-intrusive and there will be limited data collection for elements with restricted access (such as behind walls). Identify the methodology for assets with limited information availability.
	5.1.5 (Triggers)	The foreseeable trigger event is the refurbishment of a regional centre. Information collected as part of the survey will be managed during subsequent trigger events including maintenance, fabric/equipment repair, room reconfiguration.
	5.1.6, 5.1.10 (Information standard and Enterprise systems)	Highlight the use of survey information collected: information about system/component assets that require renewal will be used by the design team to inform new design strategies while information on existing system/components assets that will remain in situ will be used by maintenance and operations teams. State the building services survey, structural survey, measured survey, utilities and asset condition information is to be incorporated in an information model and aligned to the defined level of information need. Capture existing enterprise system requirements (CDE, CAFM, etc.) to specify the asset taxonomies, location hierarchy, classifications to inform the asset information standard. The information standard should also set out survey accuracy bands, tolerances, coordinate grid and datum requirements and format of deliverables.
	5.1.7, 5.1.8 (Methods and procedures, and Reference information)	Clearly identify that there is poor quality legacy information about the regional centre and validation of legacy information is therefore required. Where information does not exist within legacy, the survey team will be required to collect information in line with the specification in the information standard. One key area for consideration is the interoperability of outputs for onward use such as exchange between survey packages, so the information production procedures will encourage use of open standards where possible. Data collection templates, object library definition to be shared with prospective surveying tenderers.
	5.1.11 (Establish AIM)	Clearly state that survey outputs will be federated to create the refurbishment information model (where existing system/component assets are retained as part of the refurbishment). Methodology for aggregating the information into any existing AIM needs to be defined.

ISO 19650-3 clause	ISO 19650-3 sub-clause	Activities/commentary
5.2 Invitation to tender/request to provide service	5.2.2 (EIR)	As part of the exchange information requirements for this trigger event it is essential to specify the level of information need for each asset category whilst considering the availability of information on asset with restricted accessibility.
	5.2.3, 5.2.5 (Assemble reference information and Compile tender information)	Include the information compiled as part of 5.1.8
	5.2.4 (Response requirements)	Given that refurbishment designs will rely on survey outputs and deliverables, it is essential that evaluation criteria for the surveying appointment cover the tenderer's experience of refurbishment projects and their information-based risks. As the survey work has to be completed within X weeks, clear capacity to deliver the required information must be shown.
5.3 Response to tender/request to provide service	5.3.2 (BEP)	Assess the proposed methodology to meet the exchange information requirements.
	5.3.3 (Capability and capacity)	Assess tenderers' capability and capacity based on the criteria set within 5.2.4.
5.4 Appointment	5.4.6 (Complete appointment)	Consider any changes to the asset information standard and the information production methods and procedures that have been proposed by the selected survey organization. Incorporate any agreed updates to these in the appointment documents.
5.5 Mobilization		Make sure that the appointment of the surveyor is finalized so that there is enough time for mobilization activities before the survey work itself needs to start.
5.6 Production of information		<i>This clause has no specific activities or commentary for the appointing party. However, it is essential that the information standard (see 5.1.6) and the EIR (see 5.2.2) are specific on the data requirements for each type of object to be collected by the survey and the exchange format expected. Ideally this should be through the provision of detailed data collection templates and object library definitions and in a recognized open standard such as BS1192-4. .</i>
5.7 Information model acceptance	5.7.2 (Accept information model)	It is essential to undertake quality assurance checks on each information container and the object data provided. Assurance checks could use automated computerized verification against the information standard and EIR and should take place before the information exchange is contractually accepted. Utilize the review comment and accept workflow within the CDE to aid quality assurance checks.
5.8 AIM aggregation	5.8.1 (Aggregate AIM)	Given poor quality legacy information, survey outputs serve as the most up to date validated data set for the regional centre. Update enterprise systems with the survey deliverables to ensure any updates are federated within the new information model for the regional centre.
	5.8.2 (Review AIM)	Compile an AIM maintenance methodology that would support the future activities associated with the refurbishment of the regional centre.

7.0 Integrating information delivered through ISO 19650-3 into existing systems

ISO 19650-3 clause 5.1.10 allows for existing systems to be used to store delivered asset information. It also notes that these systems can be outside the direct control of the appointing party (asset owner/operator).

The process of importing information into existing live line-of-business systems should be considered carefully, irrespective of whether this information comes from a live project (delivery phase) or an operational activity (such as a maintenance trigger event). Importing partial, corrupted, or poorly identified or structured information is a high business risk. Manual update of enterprise systems is also not scalable and prone to error.

To avoid or reduce these risks, it is recommended that a multi staged semi-automated approach is adopted.

An example of this is shown in Figure 9 and proposes that:

- The information received should be stored in an immutable 'system of record',
- A combination of manual validation and automated verification processes should be used to confirm that the information received is acceptable prior to any system integration.
- Accepted information should be extracted, transformed and loaded¹ into an interim staging repository,
- System integration should be profiled separately for each existing system from the assured repository.

It is recommended that the process to extract, transform and load the accepted and assured information into an interim repository is separated from the enterprise integration process. There may be any number of target enterprise systems to integrate and this approach enables each system integration to be profiled and carried out separately. This delivers a scalable and controlled approach with the option to roll back to an earlier position with full audit trail.

While this may appear complex, attempts at direct integration have often failed in practice leading to significant loss of potential benefit from the whole information management process. Similarly, a manual approach would be overwhelmed.

Experience with UK Government Departments and Agencies has shown that the staged approach can be justified by significant improvements in information quality and completeness, and reduced latency (lag) in integrating the information through an automated process. This also minimizes mundane, unreliable and unscalable manual handling of information.

Further work to provide more detailed information on this approach is underway.

¹ This is often shortened to ETL

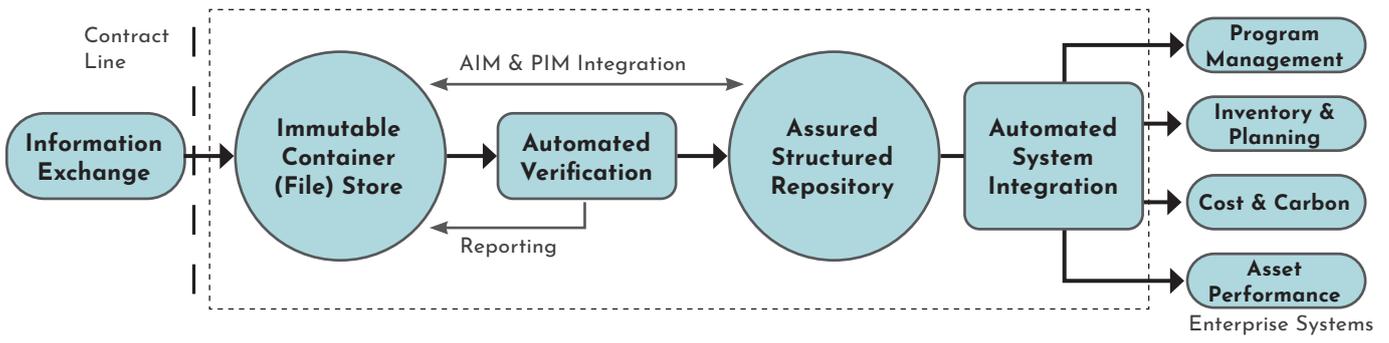


Figure 9: A staged approach to Integrating ISO 19650-3 into existing information systems

8.0 ISO 19650-3 clause 5: insight

This section of the guidance provides some additional insight into certain parts of clause 5, which as a whole defines the information management process. Many of the detailed clauses are recognizably similar to those in ISO 19650-2 and some initial insight on these can be gained from [ISO 19650 Guidance Part 2](#), section 2. Table 4 lists all the parts of clause 5 and shows whether insight can be found in this section or whether the nearest insight currently available is in Guidance Part 2.

Table 4: Where to find insight text for ISO 19650-3 clauses

ISO 19650-3 clause	Location of insight
5.1.1 (appointing party information management function)	Guidance Part 2, clause 5.1.1
5.1.2 (establish organizational information requirements)	This guidance - see below
5.1.3 (identify assets for which information shall be managed)	This guidance - see below
5.1.4 (establish asset information requirements)	This guidance - see below
5.1.5 (identify foreseeable trigger events for which information shall be managed)	This guidance - see below
5.1.6 (asset information standard)	Guidance Part 2, clause 5.1.4
5.1.7 (asset information production methods and procedures)	Guidance Part 2, clause 5.1.5
5.1.8 (establish reference information and shared resources)	Guidance Part 2, clause 5.1.6
5.1.9 (common data environment)	Guidance Part 2, clause 5.1.7
5.1.10 (establish links to enterprise systems)	This guidance - see below
5.1.11 (establish asset information model)	This guidance - see below
5.1.12 (establish processes to maintain asset information model)	This guidance - see below
5.1.13 (asset information protocol)	Guidance Part 2, clause 5.1.8
5.2.1 (decide type of activity providing information)	This guidance - see below
5.2.2 (appointing party's exchange information requirements)	Guidance Part 2, clause 5.2.1
5.2.3 (assemble reference information and shared resources)	Guidance Part 2, clause 5.2.2
5.2.4 (response requirements and evaluation criteria)	Guidance Part 2, clause 5.2.3
5.2.5 (compile invitation to tender/request to provide service)	Guidance Part 2, clause 5.2.4
5.3.1 (lead appointed party information management function)	Guidance Part 2, clause 5.3.1

ISO 19650-3 clause	Location of insight
5.3.2 (establish pre-appointment BIM execution plan)	Guidance Part 2, clause 5.3.2
5.3.3 (task team capability and capacity)	Guidance Part 2, clause 5.3.3
5.3.4 (delivery team capability and capacity)	Guidance Part 2, clause 5.3.4
5.3.5 (delivery team mobilization plan)	Guidance Part 2, clause 5.3.5
5.3.6 (delivery team risk register)	Guidance Part 2, clause 5.3.6
5.3.7 (compile delivery team response)	Guidance Part 2, clause 5.3.7
5.4.1 (confirm BIM execution plan)	Guidance Part 2, clause 5.4.1
5.4.2 (detailed responsibility matrix)	Guidance Part 2, clause 5.4.2
5.4.3 (lead appointed party's EIR)	Guidance Part 2, clause 5.4.3
5.4.4 (task information delivery plans)	Guidance Part 2, clause 5.4.4
5.4.5 (master information delivery plan)	Guidance Part 2, clause 5.4.5
5.4.6 (complete lead appointed party's appointment)	Guidance Part 2, clause 5.4.6
5.4.7 (complete appointed party's appointment)	Guidance Part 2, clause 5.4.7
5.5.1 (mobilize resources)	Guidance Part 2, clause 5.5.1
5.5.2 (mobilize information technology)	Guidance Part 2, clause 5.5.2
5.5.3 (test asset information production methods and procedures)	Guidance Part 2, clause 5.5.3
5.5.4 (maintain resources in readiness for a trigger event)	This guidance - see below
5.6.1 (availability of reference information and shared resources)	Guidance Part 2, clause 5.6.1
5.6.2 (generate information)	Guidance Part 2, clause 5.6.2
5.6.3 (quality assurance check)	Guidance Part 2, clause 5.6.3
5.6.4 (approve information for sharing)	Guidance Part 2, clause 5.6.4
5.6.5 (review information model)	Guidance Part 2, clause 5.6.5
5.6.6 (authorize information model for delivery to appointing party)	Guidance Part 2, clause 5.7.2
5.7.1 (submit information model for appointing party acceptance)	Guidance Part 2, clause 5.7.3
5.7.2 (review and accept information model)	Guidance Part 2, clause 5.7.4
5.8.1 (aggregate an accepted information model into the asset information model)	This guidance - see below
5.8.2 (review and continue maintenance of the asset information model)	This guidance - see below

The rest of this section focuses on the clauses that are different from those in ISO 19650-2, as these are particularly focused just on information management during asset and facility operation.

Clause: 5.1.2 Establish organizational information requirements

See ISO 19650 guidance D to understand more about information requirements

<p>The primary party active within the clause: Appointing party</p>	<p>Insight: Organizational information requirements (OIR) are defined by the appointing party (asset owner/operator). They identify the information needed to satisfy strategic objectives within the organization. OIR in general, do not have to be related to assets or asset performance (for example, a commercial business might have an OIR around filing its statutory accounts), but the asset related OIR are the focus of ISO 19650-3.</p>
<p>Contributing parties to the clause: n/a</p>	
<p>When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment</p>	<p>OIR are likely to come from a range of departments across the organization, not just the facilities or asset management team. OIR represent the high-level information those departments need to feed in to their own activities. They can also come from external stakeholders such as shareholders, lenders or regulators.</p>
<p>The level of the activity: Portfolio or asset level</p>	<p>Example 1: The marketing department of a hotel chain could require information (OIR) about the condition of public spaces (such as reception areas, restaurants, bars) across all hotels in the chain.</p>
<p>Summary of activities within the clause (as appropriate)</p> <ol style="list-style-type: none"> 1. Consult with departments within the business and with external stakeholders, to understand what information supports their responsibilities. 2. Collate these information needs into a set of OIR. 3. Identify those that are specifically concerned with how the organization uses its built assets. 	<p>Example 2: A bank lending money to the hotel chain could require information (OIR) about the average annual occupancy of the hotel rooms and the function suites across all hotels in the chain.</p> <p>Where the appointing party is managing a portfolio of assets, then OIR can be across the whole portfolio, or related to a group of similar assets (for example pumping stations for a water utility). They can also relate to a single asset, but must still be linked to strategic objectives within the organization.</p>

Clause: 5.1.3 Identify assets for which information shall be managed

The primary party active within the clause:

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

Before tendering the first lead appointed party appointment

The level of the activity:

Asset or portfolio

Insight:

An essential activity is to identify assets for which information is to be managed. However, there is no requirement for an appointing party (asset owner or operator) to apply the ISO 19650-3 process to every asset it owns or operates. So, this clause enables the appointing party to identify its priorities (in mind of the costs and benefits associated with management of information). There are six considerations listed in clause 5.1.3, but the appointing party can introduce additional considerations if it wishes:

1. Ownership of assets (the appointing party might wish to exclude assets that are leased rather than owned, or vice versa)
2. Asset breakdown structure (the appointing party might wish to focus on particular asset classes, for example mains water pipes over 50 years old)
3. Asset impact on business efficiency (the appointing party might wish to focus on assets with the highest maintenance costs)
4. Asset impact on business effectiveness (the appointing party might wish to focus on assets where breakdown causes disruption to business operations, such as the automated warehouse)
5. Asset criticality for key operations - this is similar but even more critical to business operation, for example the data centre
6. Asset condition (the appointing party might wish to focus on assets which are known to be in the worst condition)

Some of these considerations may be deemed not applicable and should be recorded as such.

Summary of activities within the clause (as appropriate)

- Reflect on the complete set of built assets that the organization owns or operates.
- Establish and document why some assets might be excluded from the ISO 19650-3 information management process.
- Use the remaining list of assets as the focus for the information management process going forward.

Clause: 5.1.4 Establish asset information requirements**The primary party active within the clause:**

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

Before tendering the first lead appointed party appointment

The level of the activity:

Asset or portfolio

Insight:

Asset information requirements (AIR) are established by the appointing party (asset owner or operator). They set out the asset-specific information needed for the assets identified in clause 5.1.3. Information need might be driven by departments or teams within the organization or external bodies. It could also be prescribed through legislation.

AIR are developed from the OIR and are typically at the level of an individual asset, but could also be defined for a group of similar assets.

Example 1: A hotel group operating brands at different price points/quality levels could have separate AIR related to the condition of public spaces for each brand in the overall portfolio. This could be extended to the individual hotels within each brand. The AIR would be tailored to the facilities and public areas provided at each hotel or across each brand.

Example 2: A water and sewerage utility would have separate AIR for its different asset classes (pumping stations, treatment works, pipeline networks, reservoirs, administrative offices, etc).

The difference between OIR and AIR is that OIR are focused on the overall organization whereas AIR are focused on a specific asset or group of assets.

Summary of activities within the clause (as appropriate):

- For each asset identified at clause 5.1.3, consult with departments within the business and with external stakeholders, to understand what information relating to each asset supports their responsibilities.
- Collate these information needs into a set of AIR for each asset.

Note: There may be a number of common elements across all the sets of AIR, but also some elements that are specific to one particular asset

Clause: 5.1.5 Identify foreseeable trigger events for which information shall be managed

The primary party active within the clause:

Appointing party

Insight:

Once the AIR have been established the next activity is to consider foreseeable trigger events.

Contributing parties to the clause:

n/a

A trigger event is one that occurs to an asset or affects it in some way. It triggers the requirement for new or updated information relating to the asset, in line with its AIR. A foreseeable trigger event is one which can be planned in advance (and which it is sensible to plan for, based on its likelihood of occurring and impact on the organization).

When the activity within the clause should be carried out:

Before tendering the first lead appointed party appointment

It is sensible to consider separate trigger events as they are likely to instigate an appointment (and many of the ISO 19650-3 requirements apply at the appointment level). A trigger event might be a series of separate actions, such as regular maintenance of a component during its lifetime, or it could represent a one-off action such as initial condition survey after acquiring an asset from its former owner.

The level of the activity:

Asset or portfolio

Example 1: Yearly lift inspections and maintenance. This could be across a whole building/asset or could be for a sub-set of all lifts (such as passenger lifts) if other lifts are inspected at different frequency.

Example 2: Flood response survey. For a retail chain, this trigger event would only apply to the stores (assets) that are in a known flood-risk area. The timing of any particular flood cannot be known, but the asset owner has judged that it is sufficiently likely that the planning and on-boarding of an appropriate survey team is worthwhile, given the rapid turnaround that would be needed in the event of an actual flood occurring.

Some examples of trigger events are given in ISO 19650-3 Annex A.3, but these are quite high-level and it is likely that a much more detailed breakdown of trigger events would be needed.

Summary of activities within the clause (as appropriate):

- Define or obtain a list of commonplace trigger events, that will or are likely to apply to each asset from clause 5.1.3.
- Think about particular trigger events that apply to specific assets, perhaps because of where they are located, what function they fulfil, or what components they contain.
- Document the trigger events and decide which of them will be planned for in advance, and which will be responded to only when they arise.

Clause: 5.1.10 Establish links to enterprise systems**The primary party active within the clause:**

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

Before tendering the first lead appointed party appointment

The level of the activity:

Asset or portfolio

Insight:

It is likely that existing enterprise information systems will be used to store some of the information being collected in response to the information requirements. It may even be possible to store all the information in existing systems rather than creating new information systems from scratch to do this.

Where there are existing systems, they need to be checked to make sure that they can support the requirements of ISO 19650-3. This might mean that they have to enable the common data environment functionality described in clause 5.1.9, or that they support the workflows set out in clauses 5.6 and 5.7 around how information is reviewed and by whom.

It is important that this is done so that the integrity of the whole asset information model (AIM), which is stored across these enterprise systems, can be guaranteed. It is this guarantee of integrity that creates a lot of the value of the AIM to the asset owner/operator.

There are some examples of enterprise systems that might exist prior to the appointing party implementing ISO 19650-3 in Annex A.5. Of course, the precise nature of which systems exist for a particular asset owner/operator will depend on their development history as well as which industry sector(s) they operate in.

Summary of activities within the clause (as appropriate):

- Document the existing enterprise systems that already, or have potential to, hold information identified in the AIRs
- Investigate if and how each enterprise system needs alteration to make sure it meets the quality requirements and workflow requirements of the ISO 19650-3 process. Enterprise systems that cannot be adapted to comply with ISO 19650-3 should not be used to hold any part of the asset information model. Where this is the case the scope of the asset information model (and consequently the scope of the AIR) might need to be reduced. Alternatively, new information systems might be required to take their place.

Clause: 5.1.11 Establish the asset information model

The primary party active within the clause:

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

Before tendering the first lead appointed party appointment

The level of the activity:

Asset or portfolio

Insight:

The asset information model (AIM) is the information generated via the information management process that provides long-term benefit to the appointing party (asset owner or operator). The outcomes from having the AIM are the more detailed or complete or faster analyses that contribute to better decision-making within the asset owner/operator organization and its stakeholders.

The AIM may need to be established from scratch, or may incorporate some existing information systems. Clause 5.1.11 requires that the appointing party makes sure that any existing AIM can accommodate new information models generated through the ISO 19650-3 process. The appointing party should also consider if the existing AIM requires adaption where it is to be the source of reference information for the work being done by the appointed parties.

The scope of the contents of the AIM is determined by the AIR for the selected assets.

The workflows for getting new or updated information into the AIM are governed by the CDE workflow and the details in ISO 19650-3 clauses 5.6 and 5.7. Any specific requirements around the structure or procedures associated with the AIM should be explained to the lead appointed parties and their delivery teams through the asset information standard and the asset information production methods and procedures.

Summary of activities within the clause (as appropriate):

- Review the contents of the AIRs created for all the assets selected for information management.
- Devise the information structure suitable for all the information that is expected to be delivered in response to the AIR.
- Set up the structure for the AIM and the rules governing access to it and its use.

Clause: 5.1.12 Establish processes to maintain the asset information model

The primary party active within the clause:

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

Before tendering the first lead appointed party appointment

The level of the activity:

Asset or portfolio

Insight:

Creation or establishment of the asset information model (AIM) is covered in clause 5.1.11. But once the AIM is established, it has to be maintained to make sure it continues to reflect the state of the physical asset.

One key decision to be made by the appointing party (asset owner/operator) is to determine how much time lag is acceptable before changes in the physical asset are reflected in the AIM. There might be different answers to this question for different assets or asset classes, or even different parts of a built asset. This helps focus the resources required to update the AIM to where there are needed most.

For example, a water authority might require instantaneous recording of movement gauges on a reservoir dam in order to have the earliest possible warning of potential failure. They might also require monthly AIM updates in relation to condition of the buildings on a treatment works site.

This clause in ISO 19650-3 includes a list of 10 mandatory areas that the AIM maintenance processes have to cover. These include making sure the AIM continues to satisfy security requirements, and that AIM ownership and maintenance responsibility is transferred when there is a change of ownership of the corresponding asset.

The period for which the AIM needs to be maintained is not specified directly in ISO 19650-3. Instead, the clause talks about this being done for "as long as is appropriate". Note 1 to this clause explains how this can be interpreted to reflect the period over which the appointing party has an interest in the asset, including that it can be affected by legislation or contractual agreements.

Summary of activities within the clause (as appropriate):

- Document the maintenance processes for the AIM, following the topics listed in this ISO 19650-3 clause.
- Determine the permissible time lag between alignment of the asset information model with the state of the physical asset.

Clause: 5.2.1 Decide the type of activity providing information

The primary party active within the clause:

Appointing party

Insight:

This clause is about assessing the type of trigger event that is being responded to, and appointing a lead appointed party in each case.

Contributing parties to the clause:

n/a

For trigger events that are foreseeable, and have been identified from clause 5.1.5, the information management process can immediately proceed with the invitation to tender, tender response, appointment and mobilization activities. This ensures that the delivery teams are on board and ready to respond as soon as one of these trigger events takes place.

When the activity within the clause should be carried out:

As part of tendering for any lead appointed parties related to a particular trigger event

For trigger events that are not foreseeable, or for which forward planning is not deemed sensible, it is not until the trigger event happens that the information management process starts with the invitation to tender activities. It will then proceed step by step.

The level of the activity:

Appointment

Whether it is sensible to plan for a foreseeable trigger event will depend on a range of factors, including the likely delay until it occurs, the necessity of a speedy response, and the cost of the planning process. Depending on the outcome, a foreseeable trigger event might still be treated as though it cannot be planned for in advance.

Note that the method of appointment should be proportionate to the asset management activities to respond to the trigger event.

Summary of activities within the clause (as appropriate):

- For each trigger event that takes place during the operational phase of the asset life-cycle, decide whether the delivery team can be procured and can do its detailed planning in advance of the trigger event happening.
- If so, follow activities in clauses 5.2 through to 5.5 in each case to procure, appoint and mobilize each delivery team.
- If not then when that trigger event happens, start with activities from clause 5.2.2 onwards.

Clause: 5.5.4 Maintain resources in readiness for a trigger event

The primary party active within the clause:

Lead appointed party

Contributing parties to the clause:

Appointed parties

When the activity within the clause should be carried out:

During mobilization and periodically between trigger events

The level of the activity:

Appointment

Insight:

This clause is part of the mobilization activities. It is particularly aimed at trigger events that have been planned for in advance - the foreseeable trigger event. In these cases, there might be a long period of time between the appointment of a lead appointed party and the occurrence of the relevant trigger event. If this happens then the lead appointed party needs to keep all their resources on standby for when the trigger event does occur.

This clause also applies where the appointment is for a periodic trigger event, such as an inspection every year for five years. The appointing party does not expect the lead appointed party to go through the full appointment and mobilization activities before each inspection, but instead to keep the team and their resources ready to do their work.

If there have been material changes in the team, its capabilities or capacities between one instance of the trigger event and the next then these will need to be discussed with the appointing party. This may result in an update of the confirmed BIM execution plan, or the asset information production methods and procedures, or the asset information standard. Any of these would need to be agreed with the appointing party (asset owner/operator).

Summary of activities within the clause (as appropriate):

- Be aware of which trigger events you and your delivery team is on standby to respond to.
- Regularly review your delivery team personnel, technology and other resources to make sure they are still suitable for addressing the EIR provided by the asset owner/operator. Then update your confirmed BIM execution plan if necessary.

Clause: 5.8.1 Aggregate an accepted information model into the asset information model

The primary party active within the clause:

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

After an information model has been accepted by the appointing party

The level of the activity:

Appointment

Insight:

This clause is where the appointing party takes active ownership of the information that has been delivered by a lead appointed party and their delivery team, by incorporating it into the asset information model.

The lead appointed party has authorized the submission of information deliverables, in the form of an information model, to the appointing party. The appointing party has reviewed the information model and accepted it. The deliverables are therefore deemed to satisfy the exchange information requirements (EIR (ISO 19650-3)). At this point the appointing party can then incorporate the information model into the asset information model (AIM).

Aggregating the information model involves the asset owner/operator (appointing party) incorporating the information containers into the AIM. This may require adding the information containers into the appropriate enterprise systems or using the information containers to update existing contents in the enterprise systems.

It is helpful if as much of this work can be automated as possible, but there might still be manual tasks to be completed. ISO 19650-3 presumes that these activities are carried out correctly and the necessary checks are in place to ensure this. It does not specify what processes and checks have to be applied.

Summary of activities within the clause (as appropriate):

- Have a clear approach and procedure(s) for incorporating newly accepted information into any existing enterprise information systems
- Consider the different procedures that might be needed for different types of information and/or information going into different enterprise systems
- Check manual incorporation of information into existing systems.
- Periodically audit automated incorporation of information to make sure the algorithms are functioning correctly.

Clause: 5.8.2 Review and continue maintenance of the asset information model

The primary party active within the clause:

Appointing party

Contributing parties to the clause:

n/a

When the activity within the clause should be carried out:

As part of the close-out of accepted information being incorporated into the AIM

The level of the activity:

Appointment

Insight:

This clause represents the end of one pass through the information management process at an appointment level. It is the opportunity for the appointing party to ask themselves whether the AIM is still fulfilling its purpose(s) and is being maintained in accordance with the agreed procedures. If either of these is not the case, then mitigation measures need to be put in place.

Example 1: This clause could trigger a reassessment of the asset information requirements (AIR). If new AIR are now identified then this could lead to changes in the EIR (ISO 19650-3) that have been used to appoint existing lead appointed parties. These changes would have knock-on effects on the structure of the AIM

Example 2: This clause could trigger an assessment of the maintenance processes, and it might be concluded that the alignment frequency of the AIM to the state of the asset is either too high (more expensive than necessary) or too low (leading to use of outdated information).

This clause is particularly helpful after an acquisition trigger event as it provides an excellent opportunity to review the quality and quantity of information received as part of that transaction. This enables the appointing party (asset owner/operator) to plan how any deficiencies are to be made good.

Summary of activities within the clause (as appropriate):

- Review the performance of the information management process and the quality of the AIM
- Consider whether changes to the information management resources (different types of requirements, information standard, information production methods and procedures, protocol, etc) are needed.

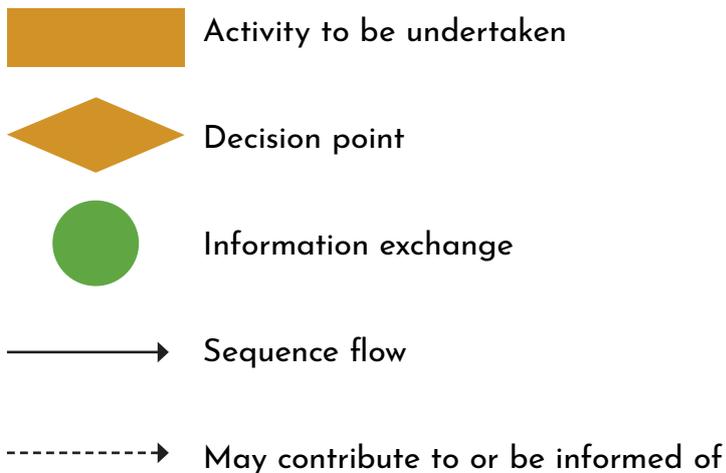
9.0 Information management process summary

The summary provides a helicopter view of the processes according to ISO 19650-3 (although it should be noted that it does not indicate every possible instance of involvement across the parties).

The following pages show the process in each stage in more detail.

A more detailed process map is separately available at www.ukbimframework.org.

Key:



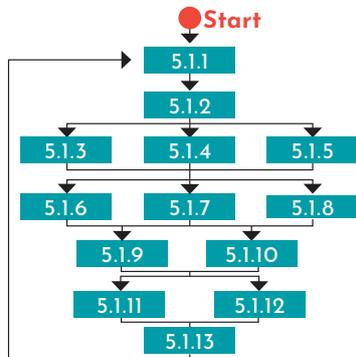
* 5.6.5 - See ISO 19650 Guidance C to understand the CDE in detail

Appointing party

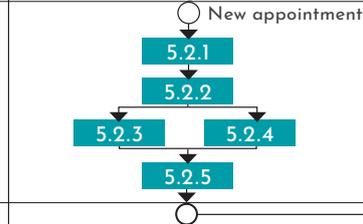
Lead appointed party

Appointed party

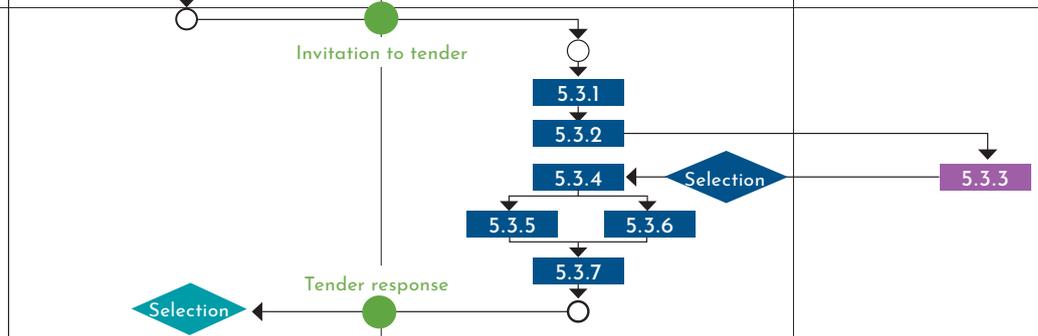
Assessment and Need (19650-3 clause 5.1)
(Establishing the information framework)



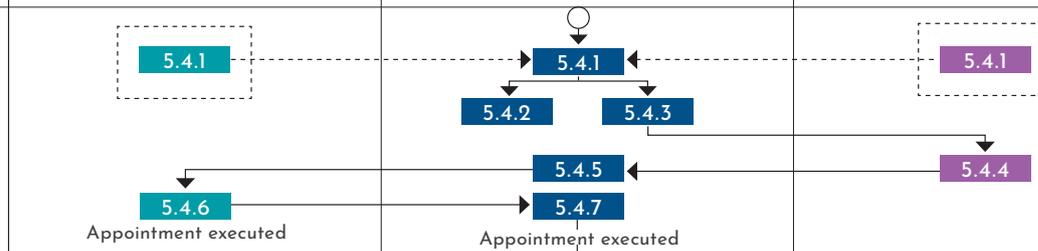
Invitation to Tender (19650-3 clause 5.2)
(Creating information for tender (for a prospective lead appointed party))



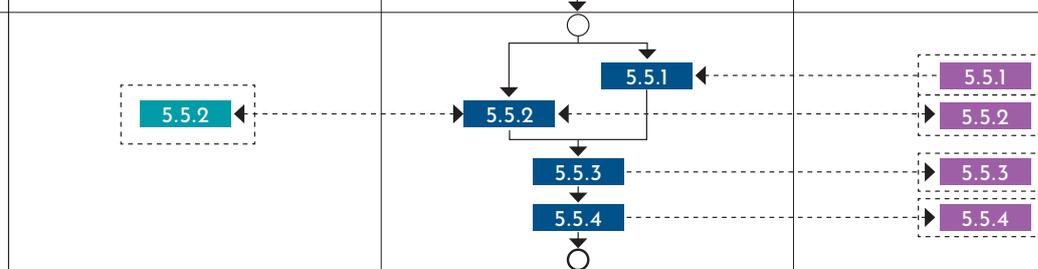
Tender Response (19650-3 clause 5.3)
(Prospective lead appointed party tender submission process)



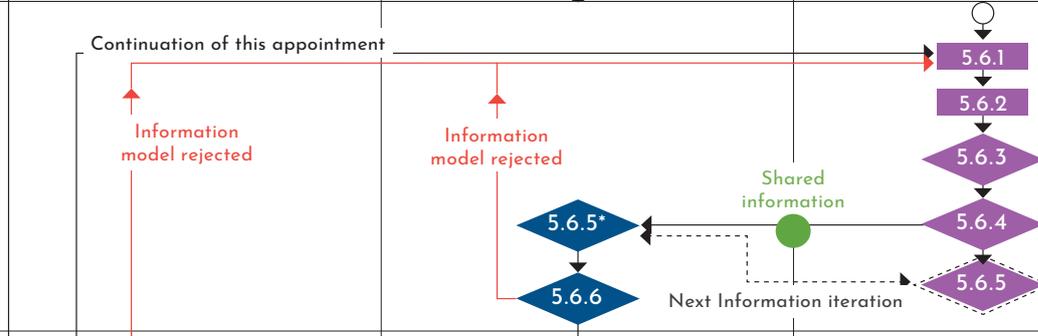
Appointment (19650-3 clause 5.4)
(Finalization and confirmation of appointments)



Mobilization (19650-3 clause 5.5)
(Getting the delivery team ready to go)



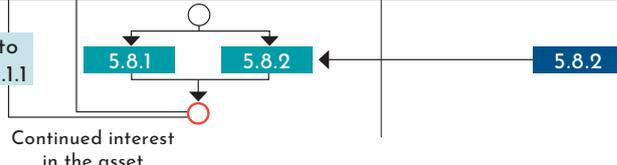
Production of Information (19650-3 clause 5.6)
(Work in progress and shared information)



Information Model Acceptance (19650-3 clause 5.7)
(Reviewing and accepting the information model)



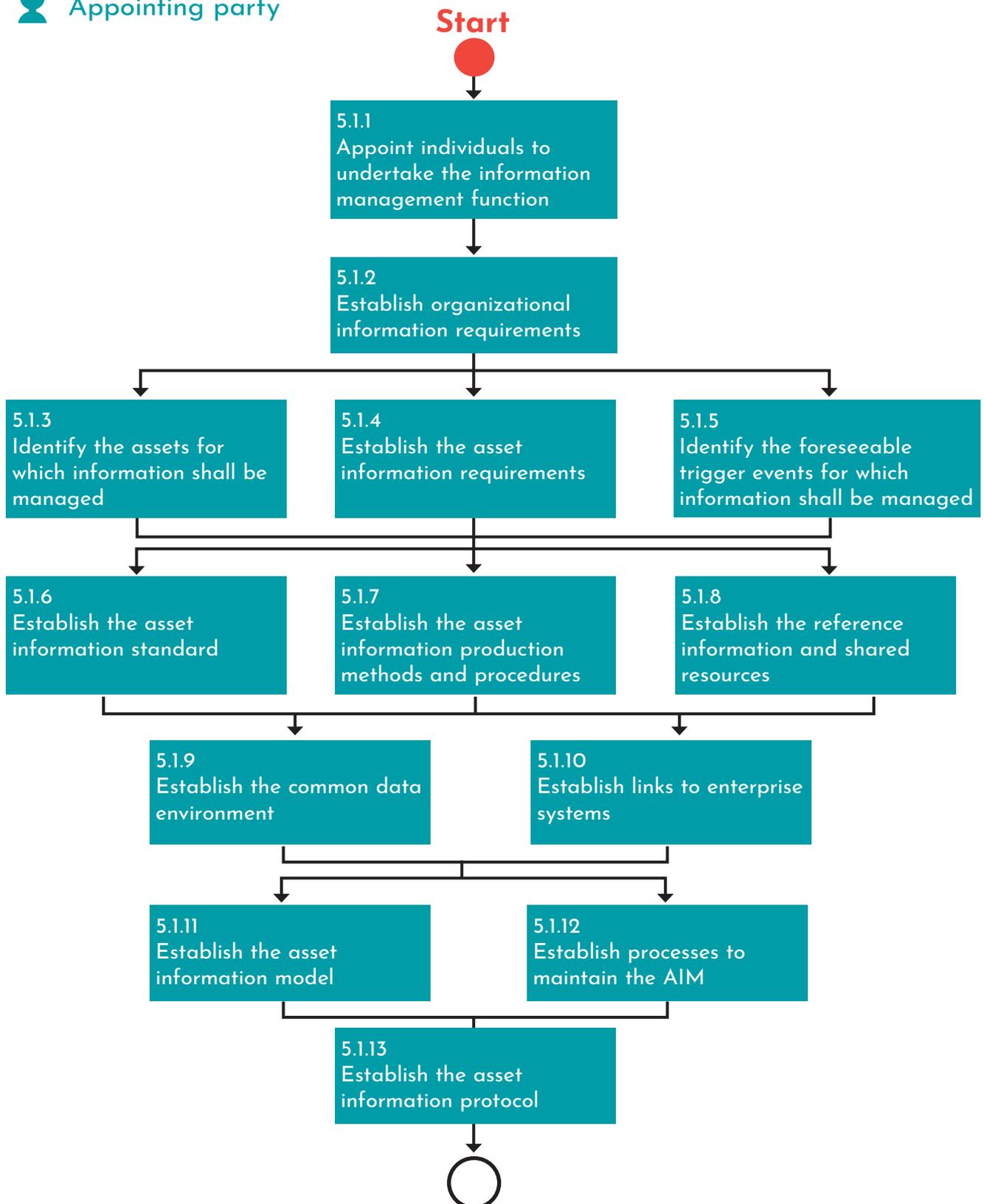
AIM Aggregation (19650-3 clause 5.8)
(Incorporating the accepted information model)



Assessment and Need (ISO 19650-3 clause 5.1)

(Establishing the information framework)

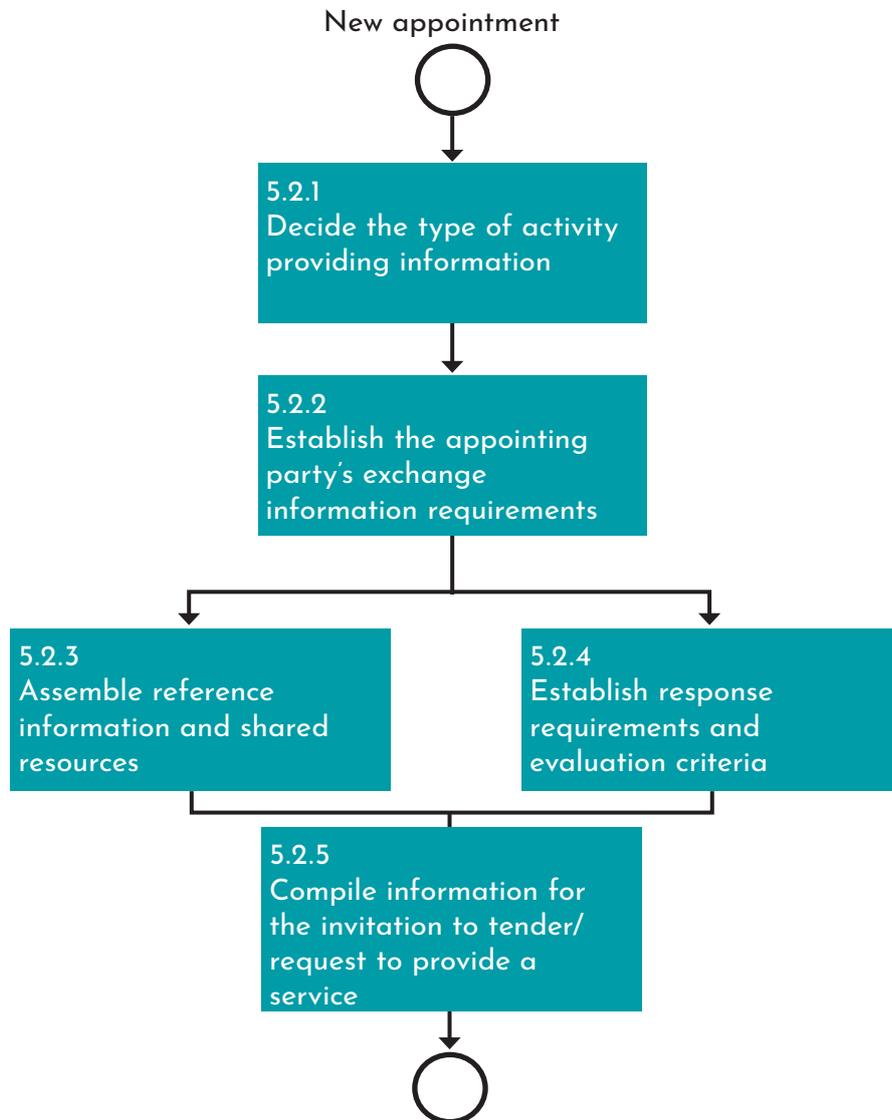
 Appointing party



Invitation to tender/request to provide service (ISO 19650-3 clause 5.2)

(Creating information for tender (for a prospective lead appointed party))

 Appointing party



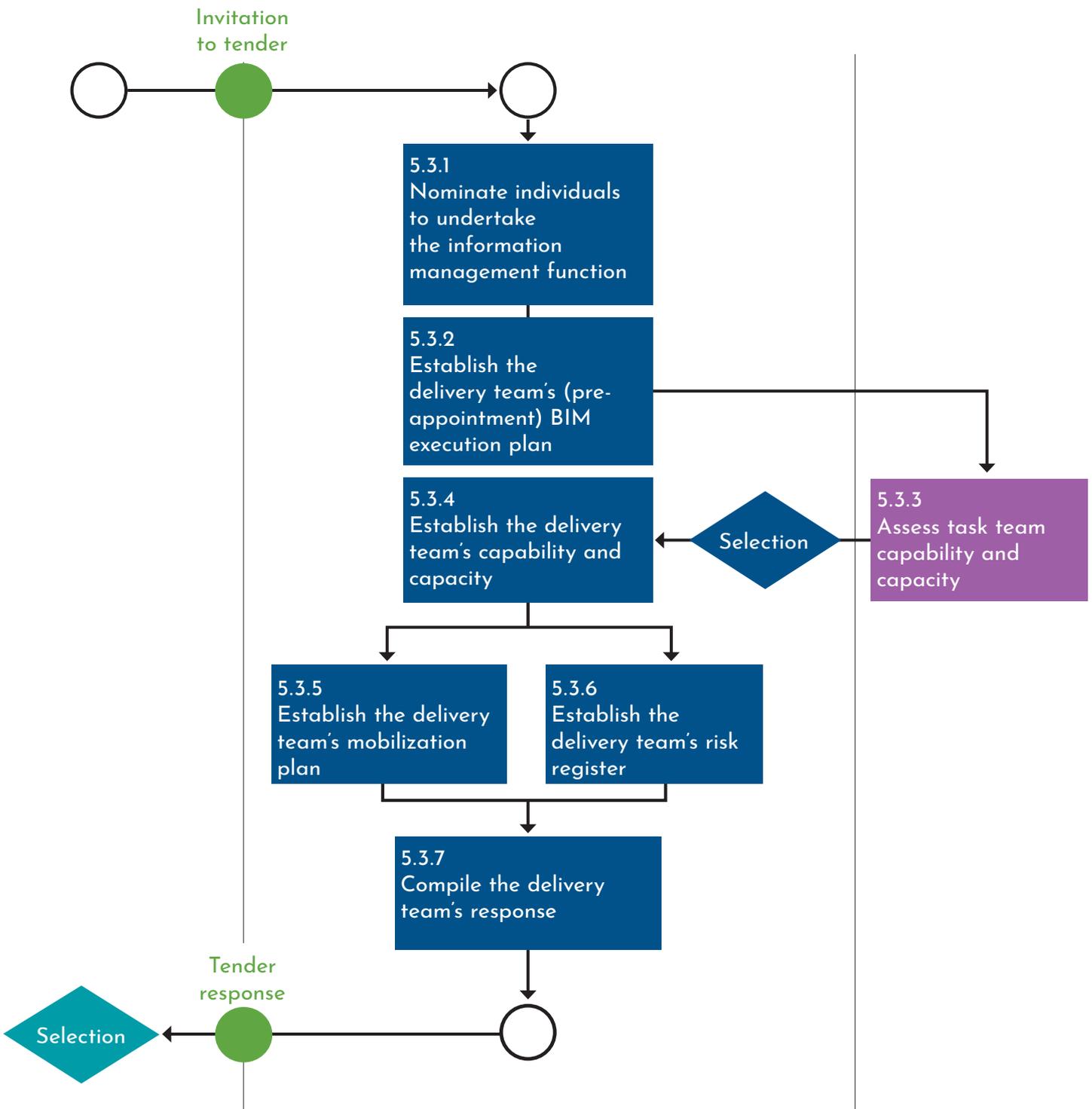
Response to invitation to tender/request to provide a service (ISO 19650-3 clause 5.3)

(Prospective lead appointed party tender submission process)

 Appointing party

 Lead appointed party

 Appointed party



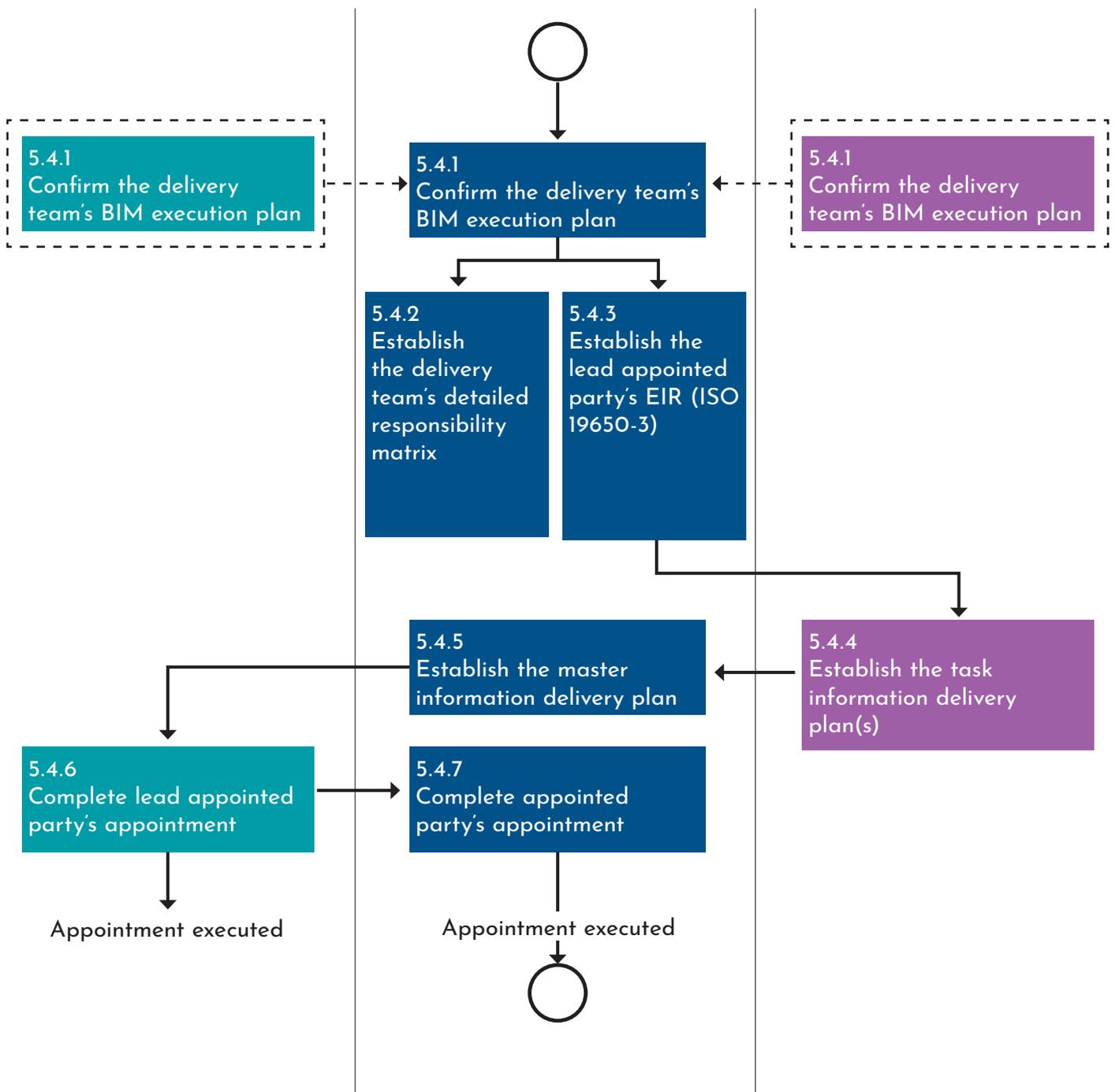
Appointment (ISO 19650-3 clause 5.4)

(Finalization and confirmation of appointments)

 **Appointing party**

 **Lead appointed party**

 **Appointed party**



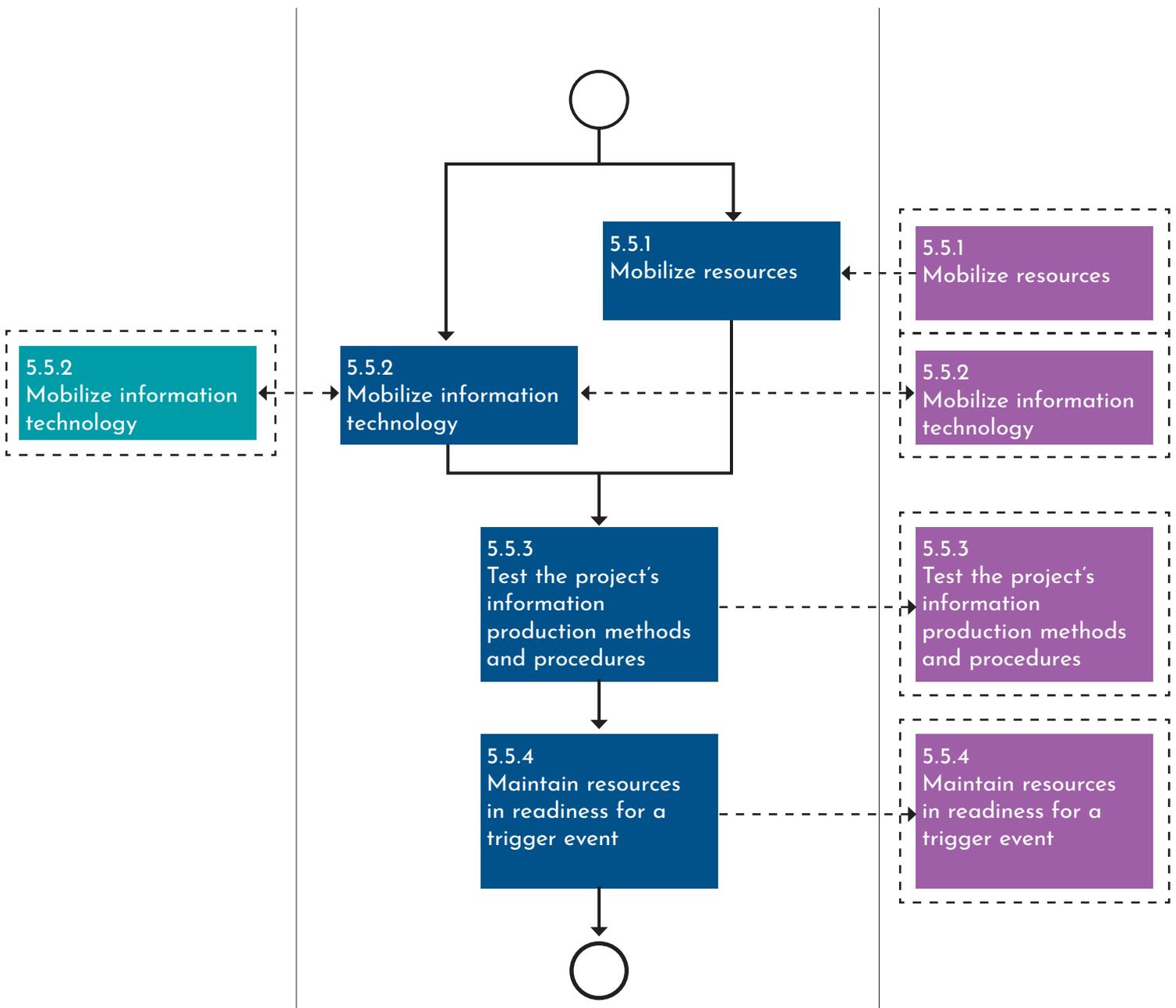
Mobilization (ISO 19650-3 clause 5.5)

(Getting the delivery team ready to go)

 Appointing party

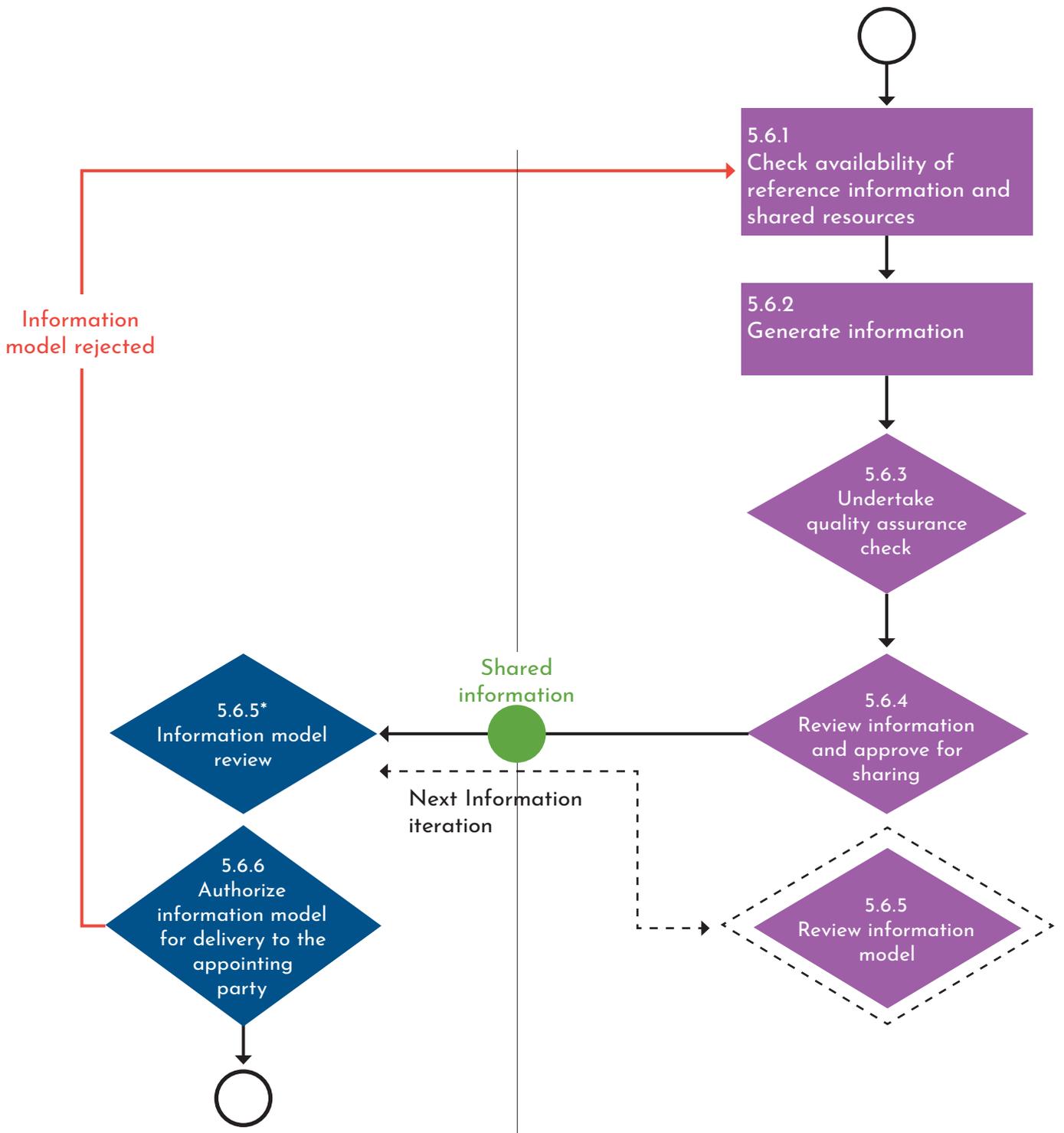
 Lead appointed party

 Appointed party



Production of information (ISO 19650-3 clause 5.6)

(Work in progress and shared information)



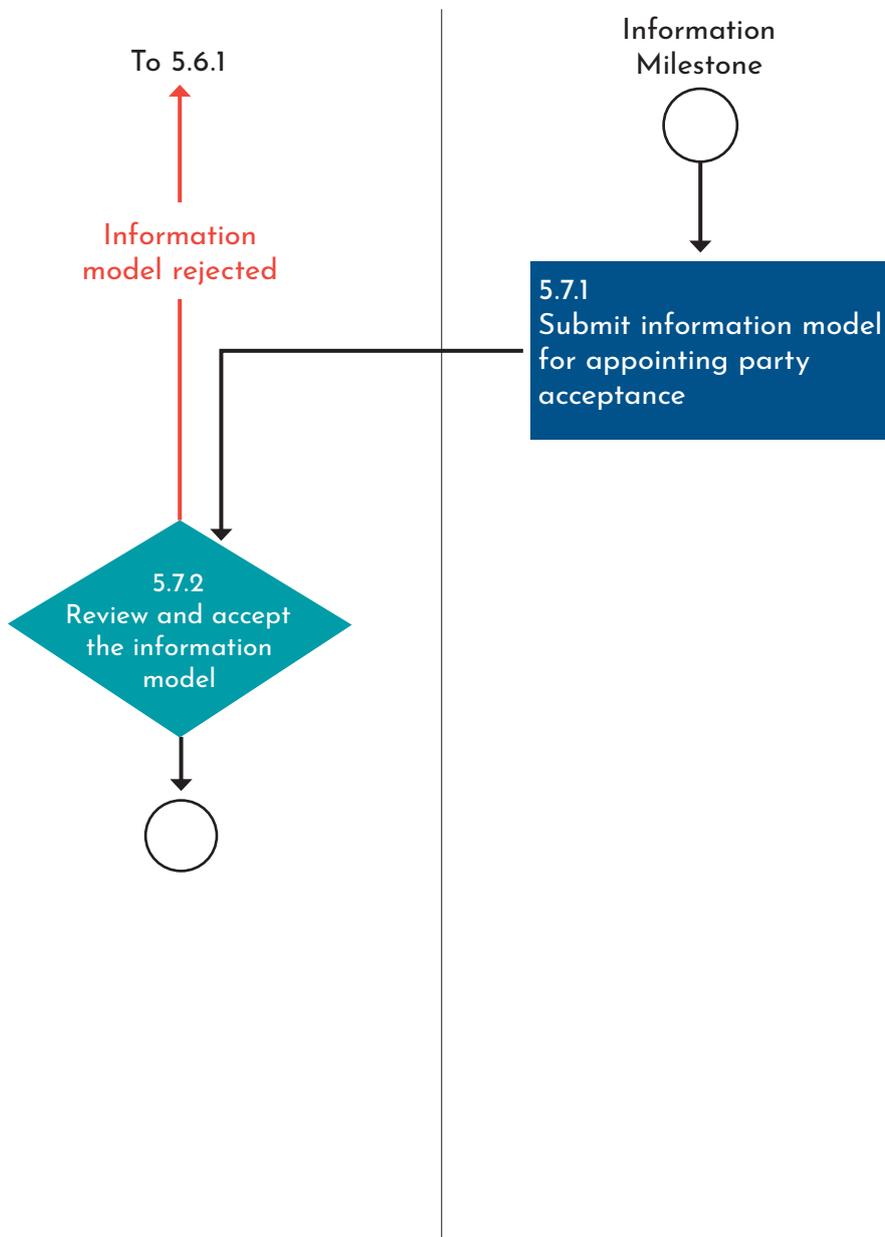
* 5.6.5 - See ISO 19650 Guidance C to understand the CDE in detail

Information model acceptance by appointing party (ISO 19650-3 clause 5.7)

(Reviewing and accepting the information model)

 Appointing party

 Lead appointed party

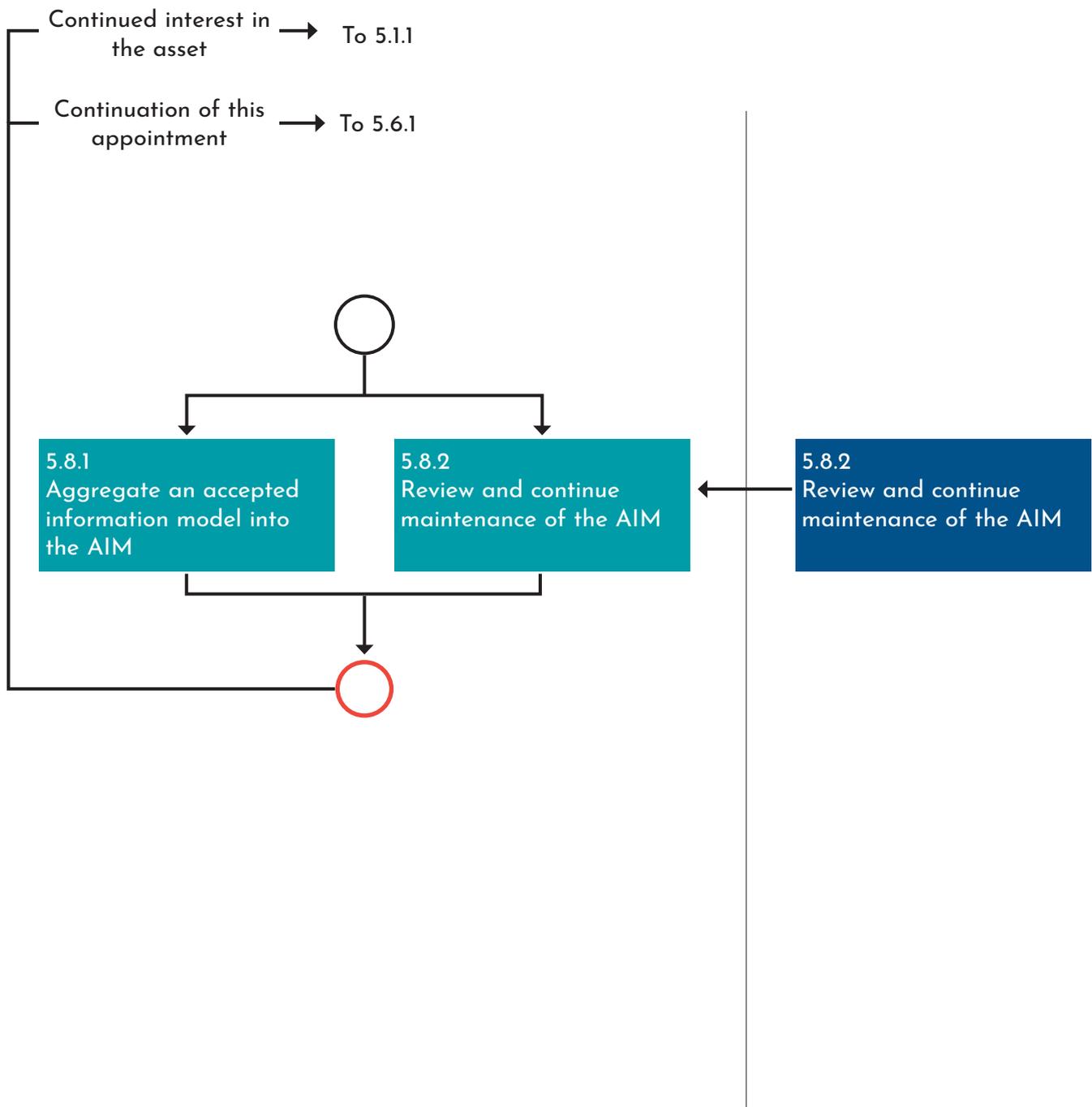


AIM aggregation (ISO 19650-3 clause 5.8)

(Incorporating the accepted information model)

 Appointing party

 Lead appointed party



10.0 Summary

ISO 19650 guidance part 3 has provided an explanation about the parties, teams, responsibilities and activities involved in the processes associated with the operational phase of assets. It has also delved into aspects including trigger events and the integration of information into existing systems.

It should be referred to by practitioners and those implementing the ISO 19650 series during the operational phase.

We are keen to receive your feedback about this guidance and you can provide this to us by emailing guidancefeedback@ukbimframework.org.

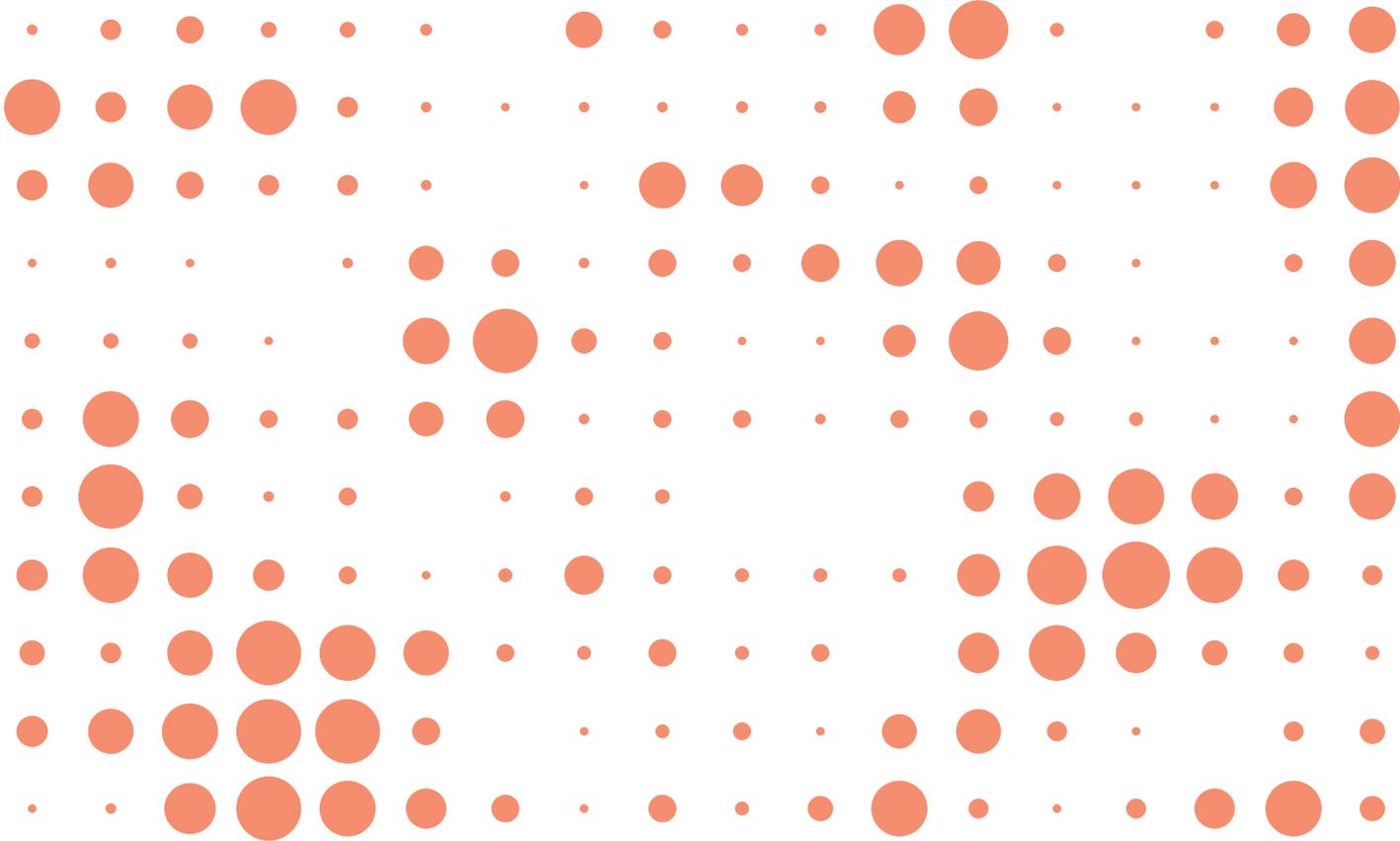
Engage with the UK BIM Framework

✉ info@ukbimframework.org

🐦 @UKBIMFramework

🌐 <https://ukbimframework.org/>

in UKBIMFramework



UK BIM FRAMEWORK

bsi.

cdbb
Centre for Digital Built Britain

UKBIM
ALLIANCE
Enabling Digital Transformation

The Centre for Digital Built Britain is part of the Construction Innovation Hub programme, funded by UK Research and Innovation through the Industrial Strategy Challenge Fund.

