Information management according to BS EN ISO 19650

Guidance Part 2:
Processes for Project Delivery

Edition 2

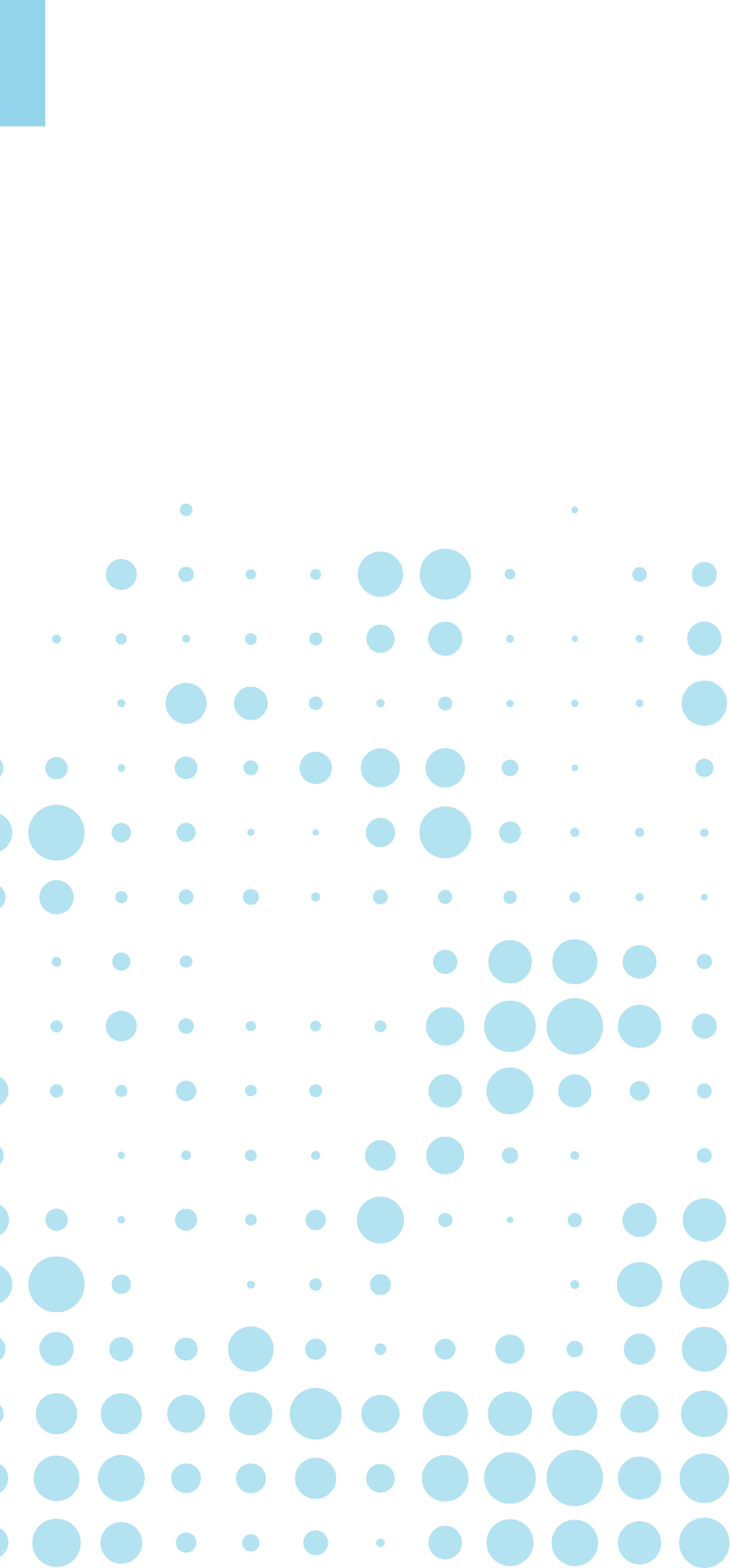Published by

UK BIM FRAMEWORK

bsi. cdbb UKBIM ALLIANCE
Centre for Digital Built Britain   Enabling Digital Transformation

Editions

Edition 1	July 2019	First release
Edition 2	October 2019	Update includes: About the common data environment (CDE) ISO 19650-2 clause 5: analysis and activities (covering clauses 5.1, 5.2, 5.3, 5.4, 5.8)

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Message from the UK BIM Alliance Chair

Author: Dr Anne Kemp OBE
Chair - UK BIM Alliance

Preparing this Guidance Framework is becoming a labour of love – or otherwise! – for many of the team. I think we are all learning as we go along, and I very much hope that, in doing so, we are able to help you on your own journey in implementing the ISO 19650 series.

There is no question that this Part 2: Process Guidance will evolve. The first edition was something of a test to see how to help you navigate through the detail of the processes specified in the standard. This second edition introduces more detailed guidance around the common data environment and the activities associated with ISO 19650-2 clause 5. It's invaluable having the original authors involved – but even more so having end users testing and challenging how this is presented and explained.

And we are keen to get your feedback! This is an open process, and you really are encouraged to get involved – it is open to all.

We are concerned that you may be disappointed that this Guidance doesn't yet go far enough. Let me assure you that we are hard at work already on the next release, which will include coverage across the remaining activities within ISO 19650-2 clause 5 and will focus on key themes which we believe present the most difficulties in implementation – including Information Requirements, and Level of Information Need. We are committing to three monthly updates to ensure we continue to make progress as fast as possible, and to reflect your feedback as soon as possible.

We are also keen to hear from you on the handbooks, tools and templates that you believe need to be developed to help – as we will work to provide these in collaboration with others going forward, to hang off the Guidance Framework.

I can't thank enough the many people involved in developing the Guidance Framework for all that they are doing. I don't exaggerate when I say this is one of the most richly rewarding activities I've been involved with – true collaboration across industry in action.

Finally, the unsung heroes of the piece, David Churcher and – in particular – Sarah Davidson. Sarah - your focus and determination in driving this forward, I know David will agree, are awesome.

As BSI, CDBB and UK BIM Alliance, we are urging the industry to get behind this Framework and discourage development of multiple "interpretations" of how to implement ISO 19650. We particularly welcome the support of CIC in allowing the release of an updated Protocol, authored by Andrew Croft, May Winfield and Simon Lewis, owned by CIC, but forming a critical part of the Guidance Framework. Our sincere thanks to CIC for this.

It is incredibly heartening that so many want to lean in to help advance the industry as a whole. I do hope that this inspires the younger generations that this really is an industry to come and work for. It really is richly rewarding.

Foreword

This is the second edition of the UK's Guidance Part 2: Processes for Project Delivery, supporting BS EN ISO 19650 Parts 1 and 2. It has been written to help individuals and organisations in the UK to understand the details of building information modelling (BIM) according to ISO 19650 and it complements the Guidance Part 1: Concepts that was first published in April 2019.

Additional navigation routes will also be added in future releases. These are likely to be focused on carrying out particular information management activities (such as defining information requirements, assembling or responding to an invitation to tender), or explaining key information management themes (such as, the information protocol or the BIM Execution Plan).

This structure to the guidance has been developed over several months, by the contributors and editors, to make the guidance as useful as possible to practitioners. The subsequent releases will be issued at 3-monthly intervals (late January 2020 and late April 2020, with potential for more updates thereafter).

As with the Concepts guidance, we invite comment and feedback on this Processes guidance at:

guidancefeedback@ukbimalliance.org

Acknowledgments

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About BS EN ISO 19650

The BS EN ISO 19650 series of standards (herein after referred to as the ISO 19650 series) supersede some of the existing British Standards and Publicly Available Specifications related to building information modelling (BIM). The ISO 19650 standards are part of a landscape, or ecosystem, of national and international standards supporting information management processes and technical solutions.

The ISO 19650 series considers all information whether it's a construction programme, a record of a meeting, a geometrical model or a contract administration certificate.

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 and 2, and a UK National Annex in ISO 19650 Part 2.

This Guidance Framework is being developed particularly to support implementation of the ISO 19650 series in the UK.
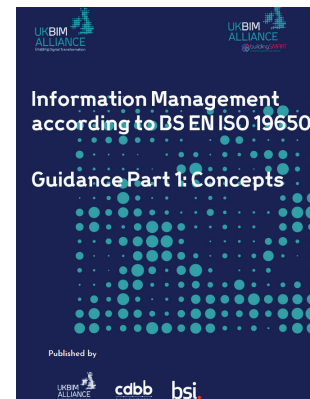
Abbreviations and acronyms

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

Table 1: Abbreviations and acronyms

Abbreviation or acronym	Term
AIR	Asset information requirements
BEP	BIM execution plan
BIM	Building information modelling
CDE	Common data environment
CIC	Construction Industry Council
EDMS	Electronic document management system
EIR	Exchange information requirements
ICT	Information, communication, technology
IT	Information technology
MIDP	Master information delivery plan
PIR	Project information requirements
TIDP	Task information delivery plan
WIP	Work in progress

1.0 About ISO 19650 parties and teams

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1.1 Understanding your role and the team context

This guidance is written so that you can read it from start to finish or you can navigate through it to understand the activities that are particularly relevant to your role within a project team.

The ISO 19650 series refers to the Appointing Party, Lead Appointed Party and Appointed Party and the Project Team, Delivery Team and Task Team. ISO 19650-2 Figure 2 shows the interface between these parties and teams in terms of information management. A colour coded, simplified version of this image, reproduced with permission from BSI, features in this guidance to provide context to the parties, teams and activities.

Figure 1: Interfaces between parties and teams

Key:

- (A) Appointing Party
- (B) Lead Appointed Party
- (C) Appointed Party
- (1) Project Team
- (2) Delivery Team
- (3) Task Team(s)
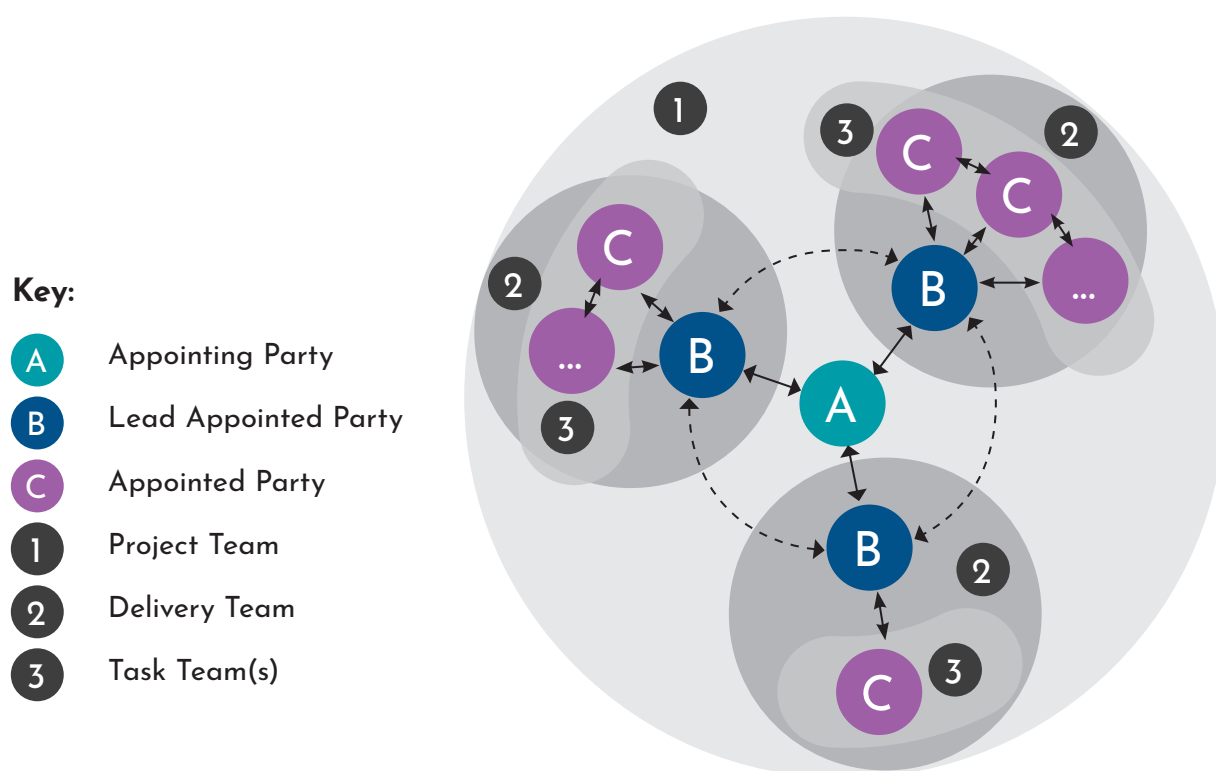
Simplified version of ISO 19650-2 Figure 2
Image reproduced with permission from BSI

The activities are set out in ISO 19650-2 clause 5 and cover eight stages as follows

Table 2: Activities and stages

Per Project

5.1 Assessment and need	5.2 Invitation to tender	5.3 Tender response	5.4 Appointment	5.5 Mobilization	5.6 Collaborative production of information	5.7 Information model delivery	5.8 Project close-out

Procurement   Planning   Production

Per Lead Appointed Party Appointment

Activities set out in ISO 19650-2 clauses 5.1 and 5.8 relate to a project as a whole. Activities set out in clauses 5.2 to 5.7 are repeated for each piece of work the appointing party (client) tenders (be it for consultants, contractors and/ or specialists). The colours represent parties that are active within each stage.

If you want to go directly to the activities relevant to you then:

Go to page 10 for the 'Appointing Party' section if you are a client or you are managing information on behalf of a client.

Go to page 14 for the 'Lead Appointed Party' section if you are you tendering to be/are responsible for co-ordinating information between the delivery team and the appointing party (client).

Go to page 20 for the 'Appointed Party/Task Team' section if you are tendering for/appointed to a project generally.

If you want to see the flow of activities between all the parties then go to page 71 for the 'Process Summary'.

1.2 Appointing Party
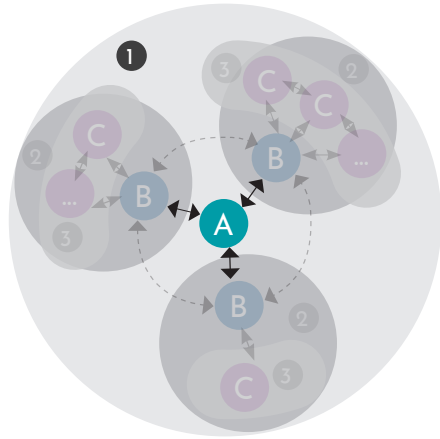
If you are a client or are managing information on behalf of a client this means that you are fulfilling the role of the 'Appointing Party' – you are effectively the party 'owning' the appointment/project in the context of the ISO 19650 series.

As appointing party you are a member of the Project Team.

Your activities and outputs can be summarised as:

Firstly – to make sure that your information management function is fulfilled by people within your organisation or people acting on your behalf or a combination of both.

Then wherever the ISO 19650 series refers to the 'Appointing Party' this means the organisation(s) fulfilling the client's information management function.

Going forward then, in respect of the whole project and before any invitations to tender are issued, your activities as appointing party are to:

- Establish the project's information requirements, information delivery milestones and information standards

- Identify specific procedures for the production of information including its generation, delivery and secure management

- Identify existing information and/or resources that are relevant to the delivery teams you will be appointing to this project

- Establish the project's information protocol for incorporation into all project appointments

You will also need to establish a common data environment (CDE) to support the project and the collaborative production of information. You may wish to appoint a third party to host, manage or support the CDE.

Then for each separate piece of work you are sending out to tender, you need to establish your information requirements. Your outputs in compiling each tender package should consider, and where appropriate include:

- Exchange information requirements

- Existing information and resources that are relevant to the tendering opportunity

- Details of how the tender will be evaluated

- Overall project requirements for information delivery, standards and processes

- The project's information protocol

It is up to you to determine how these project level and appointment specific resources are assembled into the tender and appointment package for a lead appointed party

In the process of confirming an appointment (of the lead appointed party for example the main contractor) you will both need to agree any changes to the information standards and they should inform you of any risks/issues which could impact project information delivery milestones. The appointment documents should then include information and information requirements relevant to the appointment. This is a process/activity that is repeated for each confirmed appointment.

Table 3: Information management components of the lead appointed party's appointment

Lead appointed party's appointment will document the:		Prepared by: **Appointing party**	Prepared by: **Lead appointed party**
Project level	Information standard	✓	
	Information production methods and procedures	✓	
	Information protocol	✓	
Appointment level	Exchange information requirements	✓	
	BIM execution plan		✓
	Master information delivery plan		✓

As appointing party and throughout the project you will review each delivery team's information model against your information requirements and accept or reject as appropriate.

As the project nears close out and the project information model is completed, you'll archive the information containers. You'll also capture lessons learned with each lead appointed party.

Keep reading...

1.2 Appointing Party

Activity focus:

The intensity of your activities as appointing party is as follows:

Table 4: Appointing party activity focus

5.1 Assessment and need (project)	**High**
5.2 Invitation to tender (appointment)	**High**
5.3 Tender response (appointment)	**Low**
5.4 Appointment	**Medium**
5.5 Mobilization	**Low**
5.6 Collaborative production of information	**Low**
5.7 Information model delivery	**Medium**
5.8 Project close-out	**High**

Relevant clauses to be aware of

For your actions as the appointing party refer to clauses:

5.1.1	Appoint individuals to undertake the information management function
5.1.2	Establish the project's information requirements
5.1.3	Establish the project's information delivery milestone
5.1.4	Establish the project's information delivery standard
5.1.5	Establish the project's information production methods and procedures
5.1.6	Establish the project's reference information and shared resources
5.1.7	Establish the project's common data environment
5.1.8	Establish the project's information protocol
5.2.1	Establish the appointing party's exchange information requirements
5.2.2	Assemble reference information and shared resources
5.2.3	Establish tender response requirements and evaluation criteria
5.2.4	Compile invitation to tender information
5.4.6	Complete lead appointed party's appointment documents
5.7.4	Review and accept the information model
5.8.1	Archive the project information model
5.8.2	Compile lessons learnt for future projects

You should also be aware of the following clauses which are relevant because they require you to be informed or to contribute to a process:

5.4.1   Confirm the delivery team's BIM execution plan

5.4.5   Establish the master information delivery plan

5.5.2   Mobilize information technology

1.3 Lead Appointed Party
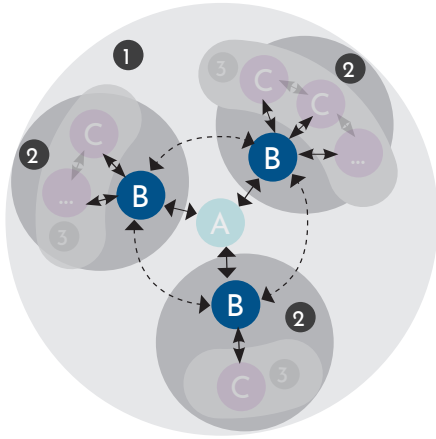
If you are responsible for co-ordinating information between the delivery team that you are part of and the appointing party (client) this means that you are fulfilling the role of the 'lead appointed party' in the context of the ISO 19650 series.

You are a member of both the Project Team and a Delivery Team.

Reference to the lead appointed party

The ISO 19650 series refers to the lead appointed party in two ways:

1. The prospective lead appointed party i.e. a party tendering for the role of lead appointed party

2. Lead appointed party i.e. a party who is confirmed in that role

Your key activities and outputs as a prospective lead appointed party are:

Firstly - to make sure that your information management function is fulfilled by people within your organisation or people acting on your behalf or a combination of both.

Then wherever the ISO 19650 series refers to the 'Prospective Lead Appointed Party' or 'Lead Appointed Party' this means the organisation(s) fulfilling your information management function.

Going forward then, in response to the invitation to tender, and in collaboration with the prospective members of your delivery team you:

• Establish the BIM execution plan

• Summarise the delivery team's capability and capacity to manage and produce information

• Establish the delivery team's mobilization plan, thinking about team-wide approach, responsibilities and required timescales

• Create a risk register to deal with risks associated with timely delivery of information

The outputs from these activities should form part of your overall tender response.

In order to finalise your appointment as a lead appointed party:

Your completed appointment documents will comprise:

Table 5: Information management components of the lead appointed party's appointment

Lead appointed party's appointment will document the:		Prepared by: **Appointing party**	Prepared by: **Lead appointed party**
Project level	Information standard	✓	
	Information production methods and procedures	✓	
	Information protocol	✓	
Appointment level	Exchange information requirements	✓	
	BIM execution plan		✓
	Master information delivery plan		✓

Your first activity at this point is to update and confirm the BIM execution plan in collaboration with each (to be) appointed party. Any required additions or amendments to the project's information standard, its production methods and procedures, and its information protocol will need to be agreed with the appointing party. The BIM execution plan will have contained a high level responsibility matrix and this now needs to be separately refined, developed and sufficiently detailed to identify what information is to be produced, when and by whom (i.e. which task team).

As lead appointed party you may have your own information requirements in addition to those provided to you by the appointing party. A key activity at this stage is therefore articulating these combined exchange information requirements relevant to each prospective appointed party within your delivery team so that each has clear direction about what is required of them.

You are also responsible for compiling the master information delivery plan through the collation of the task information delivery plans generated by each task team (as a lead appointed party you may also have to undertake task team activities so you may have your own task information delivery plan).

Keep reading...

1.3 Lead Appointed Party

Once you are appointed as lead appointed party

You will need to compile appointment documents for each (to be) appointed party. These should be tailored so that you include the task team exchange information requirements and task information delivery plans that are relevant to the appointment alongside the delivery team's BIM execution plan and the agreed project level documents as presented below:

Table 6: Information management components of the appointed party's appointment

Appointed party's appointment will document the:		Prepared by: **Appointing party**	Prepared by: **Lead appointed party**	Prepared by: **Appointed party / task team**
Project level	Information standard	✅		
	Information production methods and procedures	✅		
	Information protocol	✅		
Delivery team level	BIM execution plan		✅	
Appointment level	Exchange information requirements		✅	
	Task information delivery plan			✅

You then need to mobilize resources. This means getting people within the delivery team suitably trained with technology and processes in place, tested and up and running. The project's common data environment is fundamental to successful information based activities and as lead appointed party you should be made aware of any issues task teams experience with its operation, or with the information/resources accessed through it. Only then is the delivery team in a position to generate, assure, review and authorize information for sharing.

As lead appointed party you have the pro-active role of managing the progression of the delivery team's information model.

A key activity at the end of each milestone is authorizing each task team's information model to ensure that it meets the project's information standard, the BIM execution plan and the exchange information requirements assigned to the task team. An information model which is found to be non-compliant (in any aspect) should be rejected with the associated task team(s) being advised to amend their information accordingly.

The delivery team's information model authorized by you is then reviewed by the appointing party. Rejection of an information model will be communicated by the appointing party to you which you will then need to resolve with the relevant task team. Acceptance of an information model triggers your ability to co-ordinate the information model with other delivery teams' information models.

This process should repeat and continue throughout your appointment.

Another activity of the lead appointed party is to capture lessons learned, in collaboration with the appointing party - ideally throughout your appointment, as opposed to just at the end of it.

Keep reading...

1.3 Lead Appointed Party

Activity focus:

The intensity of your activities as lead appointed party is as follows:

Table 7: Lead appointed party activity focus

5.1 Assessment and need (project)	**Nil**
5.2 Invitation to tender (appointment)	**Nil**
5.3 Tender response (appointment)	**High**
5.4 Appointment	**High**
5.5 Mobilization	**High**
5.6 Collaborative production of information	**High**
5.7 Information model delivery	**High**
5.8 Project close-out	**Medium**

For your primary actions as the lead appointed party refer to clauses:

5.3.1 Nominate individuals to undertake the information management function

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

5.3.4 Establish the delivery team's capability and capacity

5.3.5 Establish the proposed delivery team's mobilization plan

5.3.6 Establish the delivery team's risk register

5.3.7 Compile the delivery team's tender response

5.4.1 Confirm the delivery team's BIM execution plan

5.4.2 Establish the delivery team's BIM execution plan

5.4.3 Establish the lead appointed party's exchange information requirements

5.4.5 Establish the master information delivery plan

5.4.7 Complete appointed party's appointment documents

5.5.1 Mobilize resources

5.5.2 Mobilize information technology

5.5.3 Test the project's information production methods and procedures

5.6.5 Information model review

5.7.2 Review and authorize the information model

5.8.2 Compile lessons learnt for future projects

You should also be aware of the following clauses which are relevant because they require you to be informed or to contribute to a process:

5.3.3   Assess task team capability and capacity

5.6.1   Check the availability of reference information and shared resources

5.6.2   Generate information

5.7.1   Submit information model for lead appointed party acceptance

5.7.3   Submit information model for appointing party acceptance

5.7.4   Review and accept information model

1.4 Appointed Party / Task Team
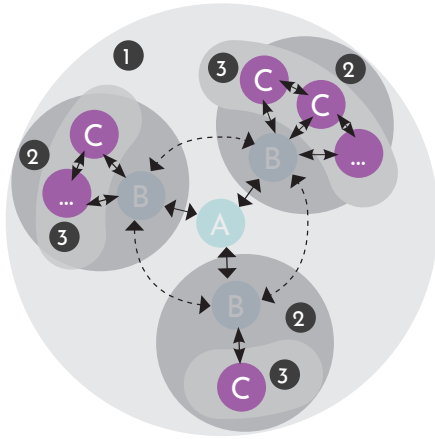
If you are tendering for or appointed to a project generally this means that you are fulfilling the role of an 'appointed party' in the context of the ISO 19650 series. You are a member of both the Project Team and a Delivery Team.

Your organisation may include a number of task teams within it.

Reference to appointed party and task team

In ISO 19650-2, most of the requirements below the level of lead appointed party are directed at a task team. There is a lot of flexibility within ISO 19650 regarding the relationship between appointed parties and task teams – in some cases each task team might be a separate appointed party, in other cases an appointed party might include a number of task teams, and in yet more cases a task team might include a number of appointed parties.

To keep things simple in this guidance we are considering the standard to have the same impact on an appointed party and a task team.

Although some ISO 19650 requirements arise before the appointed party/task team is appointed, the standard does not use the term "prospective appointed party", but we do use this term in the guidance.

Your key activity as a prospective appointed party/task team is to:

Assess your capability and capacity. There are three aspects of capability and capacity to be considered.

1. Capability and capacity to manage information – do you have experience of the standards and do you have enough human resource to do this on this project.
2. Capability and capacity to produce information – do you have experience of the methods and procedures and do you have enough human resource to do this on this project.
3. Availability of IT – do you have the appropriate hardware, software and support, in sufficient quantities for the project.

In order to finalise your appointment as an appointed party/task team:

You help the lead appointed party to confirm the delivery team's BIM execution plan. Any required additions or amendments to the project's information standard, production methods and procedures, and information protocol will need to be agreed with the appointing party. The BIM execution plan will have contained a high level responsibility matrix and this now needs to be separately refined, developed and sufficiently detailed to identify what information is to be produced, when and by whom (i.e. which task team).

The information requirements included in your appointment might be a combination of: those issued to or originating from the lead appointed party. From your perspective it does not matter which requirements originate with whom, as they all need to be addressed in the task information delivery plan(s) that you establish in collaboration with the appointed parties across the task team(s). These plans are then made available to the lead appointed party for them to compile the master information delivery plan.

Your completed appointment documents will comprise:

Table 8: Information management components of the appointed party's appointment

Appointed party's appointment will document the:		Prepared by: **Appointing party**	Prepared by: **Lead appointed party**	Prepared by: **Appointed party / task team**
Project level	Information standard	✓		
	Information production methods and procedures	✓		
	Information protocol	✓		
Delivery team level	BIM execution plan		✓	
Appointment level	Exchange information requirements		✓	
	Task information delivery plan			✓

Keep reading...

1.4 Appointed Party / Task Team

Once you are appointed as an appointed party/task team

You work closely with the lead appointed party to mobilize the team resources (personnel and IT) and to participate in training and education where this is necessary to fill knowledge and skills gaps.

You collaboratively generate your information in compliance with the information standard, information production methods and procedures, using the appointing party's reference information and shared resources. To generate appropriate information you will need to understand the project definitions around level of information need, the container breakdown structure and an outline of what information is being produced by other appointed parties/task teams which impacts on your own activities.

You check the information containers that you produce to make sure they are in accordance with the project information production methods and procedures, and against the project information standard. Any non-compliance needs to be addressed by the party who originated the information. Once the procedural aspects of the information container have been checked, you check the contents of the information container to make sure that it meets the information requirements and is in accordance with the level of information need.

You then take part in a delivery team-wide review of the information model. The process of checking your own information and team-wide review can be repeated many times during the production of information leading up to delivery of the information model to the appointing party. At each point of this iterative process, you have to make the agreed changes to your information containers.

When your information model is ready to be delivered, you submit it to the lead appointed party for their review and authorization. If your information is rejected then you make the agreed changes and resubmit.

Once your information has been authorized by the lead appointed party, you submit your information for appointing party review and acceptance. If your information is rejected then this will come back to you via the lead appointed party to be amended and resubmitted.

Activity focus:

The intensity of your activities as appointed party / task team is as follows:

Table 9: Appointed party /task team activity focus

5.1 Assessment and need (project)	**Nil**
5.2 Invitation to tender (appointment)	**Nil**
5.3 Tender response (appointment)	**Medium**
5.4 Appointment	**Medium**
5.5 Mobilization	**Medium**
5.6 Collaborative production of information	**High**
5.7 Information model delivery	**High**
5.8 Project close-out	**Nil**

For your primary actions as an appointed party/task team refer to clauses:

5.3.3	Assess task team capability and capacity
5.4.4	Establish the task information delivery plan
5.6.1	Check availability of reference information
5.6.2	Generate information
5.6.3	Complete quality assurance check
5.6.4	Review information and approve for sharing
5.7.1	Submit information model for lead appointed party authorization
5.7.3	Submit information model for appointing party acceptance

You should also be aware of the following clauses which are relevant because they require you to be informed or to contribute to a process:

5.3.2	Establish the delivery team's (pre-appointment) BIM execution plan
5.4.1	Confirm the delivery team's BIM execution plan
5.4.2	Establish the delivery team's detailed responsibility matrix
5.4.5	Establish the master information delivery plan
5.5.1	Mobilize resources
5.5.2	Mobilize information technology
5.5.3	Test the project's information production methods and procedures
5.6.5	Information model review
5.7.2	Review and authorize the information model
5.7.4	Review and accept the information model

2.0 About the common data environment (CDE)

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Galliford Try

2.1 Introduction

The ISO 19650 Part 1 Concepts guidance available at the UK BIM Framework website explains how the CDE is a combination of technical solutions and process workflows.

A CDE solution could be software, or it could be another form of tool. If information is exchanged by a non-digital solution (for example, a postal service) and/or stored in an organised hard-copy cabinet (which may, for example, be required on a sensitive project where digital methods are not permitted), then this can also be described as a CDE solution that can be supported by workflows.

It is more usual though, for digital solutions like electronic document management systems (EDMS) to play a big part in implementing CDE solutions and workflows. But, it must be recognised that many different technologies can be used within a single workflow.

ISO 19650-2 envisages that a CDE is provided and managed by the appointing party (or a third party acting on their behalf), for the management of all information containers that are developed and exchanged with the appointing party throughout the life of the project from each delivery team. This is referred to in ISO 19650-2 as the project CDE.

However, ISO 19650-2 also envisages that delivery teams may implement their own (distributed) CDEs as well (but not instead of the project CDE). This guidance contains examples of this scenario, which can introduce complexities into the management of information.

2.2 Components of the CDE

There is a potential misconception that the CDE is more about technology and less about workflows. In fact, it is fundamental that workflows are developed first and solutions are selected to facilitate the workflow.

It may also be understood that single technology solutions dominate project information management. This is not the case and many solutions exist to deal with different types of project information. There may, for example, be document management tools for design files, contract management tools that manage commercial information, email management tools for correspondences and mobile based tools for site quality data. Each solution may have multiple and different workflows ensuring that information is carefully planned, shared, stored, managed and retrieved and that it is timely, correct, complete, and consistent.

There are various components of the CDE that this guidance will cover to provide context for the reader in understanding the language of the ISO 19650 series. These include:

- Information States (see section 2.2.1)
- Classification of information containers using metadata assignment (see section 2.4)
- Revision control using metadata assignment (see section 2.5)
- Permitted use of information using metadata assignment (see section 2.6)

2.2.1 Information container states

As an information container develops, it exists in various states. Figure 1 (ISO 19650-1 Figure 10) illustrates these states as part of an information container workflow. This figure is a simplification of the actual process and information containers can go through different workflows, potentially using multiple solutions, as noted elsewhere in this guidance.

SHARED
Information approved for sharing with other appropriate task teams and delivery teams or with the appointing party

CHECK/ REVIEW/ APPROVE

WORK IN PROGRESS
Information being developed by its originator or task team, not visible to or accessible by anyone else

Task Team
Task Team
Task Team

REVIEW/ AUTHORIZE

PUBLISHED
Information authorized for use in more detailed design, for construction or for asset management

ARCHIVE
Journal of information transactions, providing an audit trail of information container development

Figure 2: CDE concept as demonstrated in ISO 19650-1 Figure 10

Did you know...

...that information container states occur in most information production processes including emails which are often invisible. For example, if you start to write an email, this is Work in Progress. Your email tool may also auto Archive your emails as you progress. Perhaps your email needs to be approved by your manager before you hit send due to its sensitivity. When you do hit send and Share your email, the recipient may accept it and ask you to distribute it to a wider audience thus Publishing it. All whilst yours and the recipient's email tools continuously Archive each step of the email trail.

Emails and other correspondence related to project delivery can be managed via the CDE. The selection of the appropriate items to be managed in this way could be a project specific or a delivery team specific decision. It is suggested that correspondence with a contractual implication is always managed via the CDE.

2.2.2 Metadata

It is important to establish what is meant by metadata as the ISO 19650 series offers no formal definition. Metadata is defined as "A set of data that describes and gives information about other data" (Oxford Dictionary, 2019).

To put this into context, the information container unique ID (see ISO 19650-2 National Annex), can be thought of as metadata because it "describes and gives information about other data". However, ISO 19650-2 require additional metadata to be assigned but it should not be part of the unique ID.

The ISO 19650 series makes it clear that authors keep strict control of their information throughout its development. It is recommended that this is achieved by the author using metadata assignment. This communicates what version the information container is at and the purpose for which it can be used.

ISO 19650-1 clause 12.1 recommends the following metadata assignment to information containers within a CDE:

• A revision code
• A status code

ISO 19650-2 clause 5.1.7 then requires that the CDE enables assignment of these codes plus the assignment of:

• A classification code

The scope of the metadata assignment may expand beyond the recommendations and requirements of the ISO 19650 series.

2.3 Information container management through metadata assignment

2.3.1 Metadata management through CDE Solutions

CDE solutions on the market today offer varying degrees of metadata assignment capability.

Figure 3 illustrates how a CDE solution, in this case a cloud based EDMS can have many different metadata assignments against the information container. Note that this figure extends metadata beyond ISO 19650-2 requirements.

Container Name	Description	Status	Revision	Author	Submittal Date	Container Classificaiton
7001-BBH-ZZ-ZZ-DR-A-00301	First Floor Plan	S3	P04	Joe Blogs	12/11/2017	PM_40_30 : Design information
7001-BBH-ZZ-ZZ-DR-A-00312	West Elevation	A3	C06	Joe Blogs	12/11/2017	PM_40_30 : Design information

Container Name / ID Field   **Additional Container Metadata Assignments**

Figure 3: An example of a range of metadata that can be assigned in a cloud based CDE solution

2.3.2 Transition of metadata between CDE Solutions

The requirement for metadata creates the challenge of how the metadata can be transferred between CDE solutions. Appointing parties, lead appointed parties and appointed parties could all have their own CDE solutions that make up the project CDE. It is important that these solutions work efficiently together while information is being developed and exchanged as part of the CDE workflow. These solutions however, may not interface with one another perfectly, making automated transfer of metadata impossible.

In the email analogy used in section 2.2.1, almost all email tool providers have adopted a standard exchange protocol (for example, POP) to allow emails to flow seamlessly no matter what tool/solution is used to send or receive them.

There isn't currently, however, a standard exchange protocol adopted by our industry. This means that some thought has to go into

how a single information container and its metadata can be transferred from one system to another. In reality this is often a manual process which requires re-registration of metadata for each information container in the receiving system.

Figure 4 illustrates how two different CDE solutions are required to work together as part of the project`s CDE workflow. Each solution manages information containers differently.

CDE solution 1 (a distributed CDE) is managed by the lead appointed party for its delivery team. CDE solution 1 manages information containers as a single group regardless of type. It uses metadata assignments to enable the user to filter information containers accordingly. For example, a user can filter using the status code to provide a more focused view of all the stored information containers

CDE Solution 1

Container Name	Description	Status	Revision	Author	Submittal Date	Container Classification
7001-BBH-ZZ-01-DR-A-00011	First Floor Plan	S4	P04	Joe Blogs	12/11/2017	PM_40_40_01 : 2D plan drawings
7001-BBH-ZZ-ZZ-DR-A-00312	West Elevation	A3	C06	Joe Blogs	12/11/2017	PM_40_40_27 : Elevation drawings
7001-BBH-30-ZZ-M3-A-00001	Landscaping	S1	P22	Joe Blogs	12/11/2017	PM_30_30_45 : Landscape model

🚫 Not required or incapable of transitioning

PM_30_30 : Environment Information

PM_40_40 : Design Drawings

Plans

Elevations

Number	Revision	Purpose	Issue Date	NEW
7001-BBH-ZZ-01-DR-A-00011	P04	S4 - For Stage Approval	13/11/2017	

CDE Solution 2

Figure 4: Illustration of two different CDE solutions where metadata assignment must transfer

CDE solution 2 is a project CDE managed by the appointing party and it manages information with a mix of folder structures and metadata assignments.

Before transferring an information container from CDE solution 1 to CDE solution 2 it is critical to agree how the metadata can be retained or accommodated during the transfer process.

For example, CDE solution 2 does not allow for a dedicated classification metadata field. As a result, the appointing party has accommodated the classification metadata field via a folder name. This kind of approach can result in most of the metadata being transferred manually (because it has to be typed or pre-selected at the time of exchange). Care should be taken that folder structures complement the metadata rather than duplicate it.

Although Figures 3 and 4 provide examples using drawings and models, metadata assignment is relevant to all information containers regardless of their type.

2.4 Classification through metadata assignment

2.4.1 Information container classification

ISO 19650-2 clause 5.1.7 requires that information containers be assigned classification metadata in accordance to ISO 12006-2. Uniclass 2015 is compliant with ISO 12006-2 and is the preferred classification system in the UK. It is referenced in the ISO 19650-2 National Annex. Uniclass 2015 contains multiple classification tables which can be used to classify different types of information containers.

The appointing party defines the classification method in the project's information standard (if they have a specific preference). This would indicate which of the Uniclass 2015 tables are used for classifying information containers. If the appointing party does not have a preference then the lead appointed party would define requirements. It is important to ensure no other metadata or element of the unique ID is duplicated through the classification.

2.4.2 Assigning metadata within CDE solutions

Assigning classification metadata to information containers within a CDE solution requires consideration of:

1. How to identify the information container and/or its contents

2. How to transfer information containers between whichever CDE solutions are being used

Figure 4 illustrates how classification information can be transferred between two CDE solutions that approach the use of metadata differently.

A drawback of the CDE solution 2 approach, is the manual creation of (potentially) many folders. But if implemented correctly, it gives the benefit of a consistent assigned classification that allows each user to filter information containers consistently. For example, by "PM_40_40 Design drawings".

ISO 19650-2 does not provide further details about classification, but it is important that classification is used beneficially to indicate the contents of the information container not the type of information container (as this is dealt with by the Type field in the information container unique ID – see ISO 19650-2 National Annex clauses NA.2.2 and NA.3.6).

It is also important to be aware that:

1. Uniclass 2015 is a developing resource, which is subject to regular updates. The granularity of classification available may not be consistent for all information containers and may change over the lifetime of a project

2. Uniclass 2015 comprises a number of classification tables. The classification used should be appropriate to the information container it is being assigned to

2.5 Revision control through metadata assignment

As information containers are developed it is important to keep track of the changes between previous and current revisions and versions. It is equally important to also keep track of which revision and version is shared with whom.

ISO 19650-1 recommends that the information container revision system should follow an agreed standard. ISO 19650-2 National Annex provides a system (refer to National Annex clause NA.4.3) as shown by Figure 5.

Revision metadata made up of three components

See ISO 19650-2 National Annex

P 01.01

Letter prefix can only be P or C.

P represents Preliminary (non-contractual) information containers.

C represents Contractual information containers

Two numeric integer values, representing the primary revision that will eventually be shared with other task teams in the delivery team

Two numeric integer values following a decimal point, representing the WIP version of the primary revision

Figure 5: Explanation of the 19650-2 National Annex revision system

2.5.1 *Revision control during Work in Progress (WIP)*

Revision management for WIP information containers enables the author to manage their work and avoid losing information during its development. Figure 6 illustrates the benefits of revision management. The scenarios shown in Figure 6 demonstrate that when revision control is adopted during WIP, the author has clear oversight of how their information has evolved and can revert to an earlier version if required.
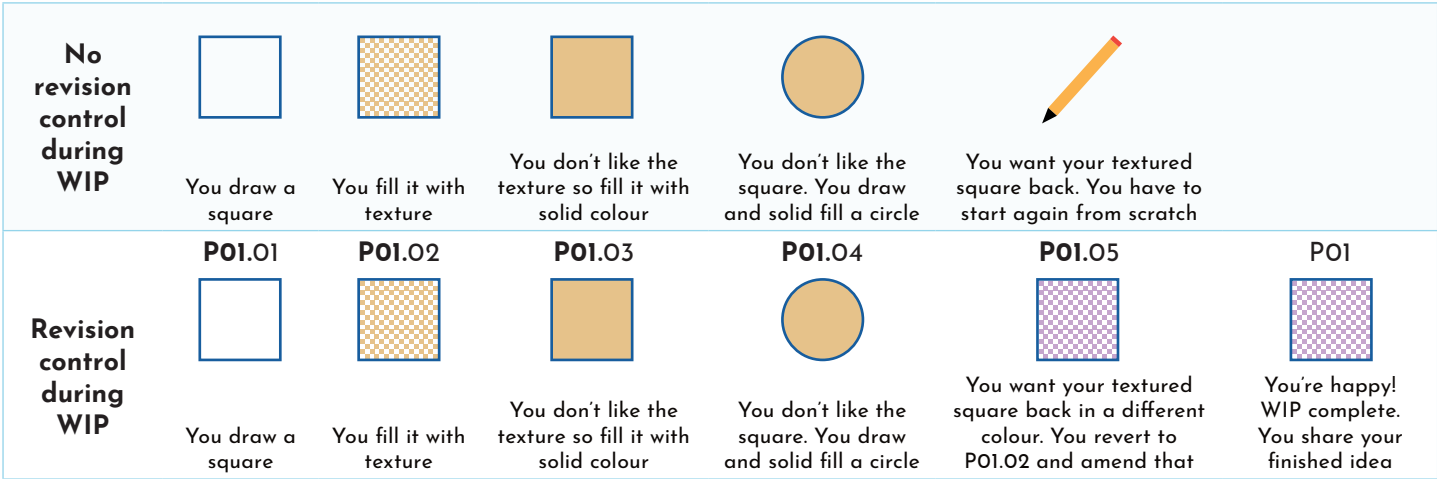
Figure 6: Illustration of the benefits of having a WIP version control using the 19650-2 National Annex approach

2.5.2 Revision control of Shared information

Figure 5 identifies the Shared state revisions as a two digit integer (shown in the purple text box). This tracks the revision that is being shared outside of the author's task team.

It is important that the revision system consistently accommodates this iterative approach of multiple WIP and Shared revisions for a single information container.

Figure 7 shows the process beyond the first pass of WIP and Shared information by illustrating a further two iterations of information development.

P01.01   P01.02   P01.03   P01.04   P01.05   P01   Shared

WIP   WIP   WIP   WIP   WIP   WIP   Shared for non-contractual
                                                           purpose e.g. for comment

Decision to change / develop futher

P02.01   P02.02   P02.03   P02   Shared

WIP   WIP   WIP   Shared for non-contractual
                                         purpose e.g. for comment

Decision to change / develop futher

P03.01   P03.02   P03   Shared

WIP   WIP   Shared for non-contractual
                              purpose e.g. for approval
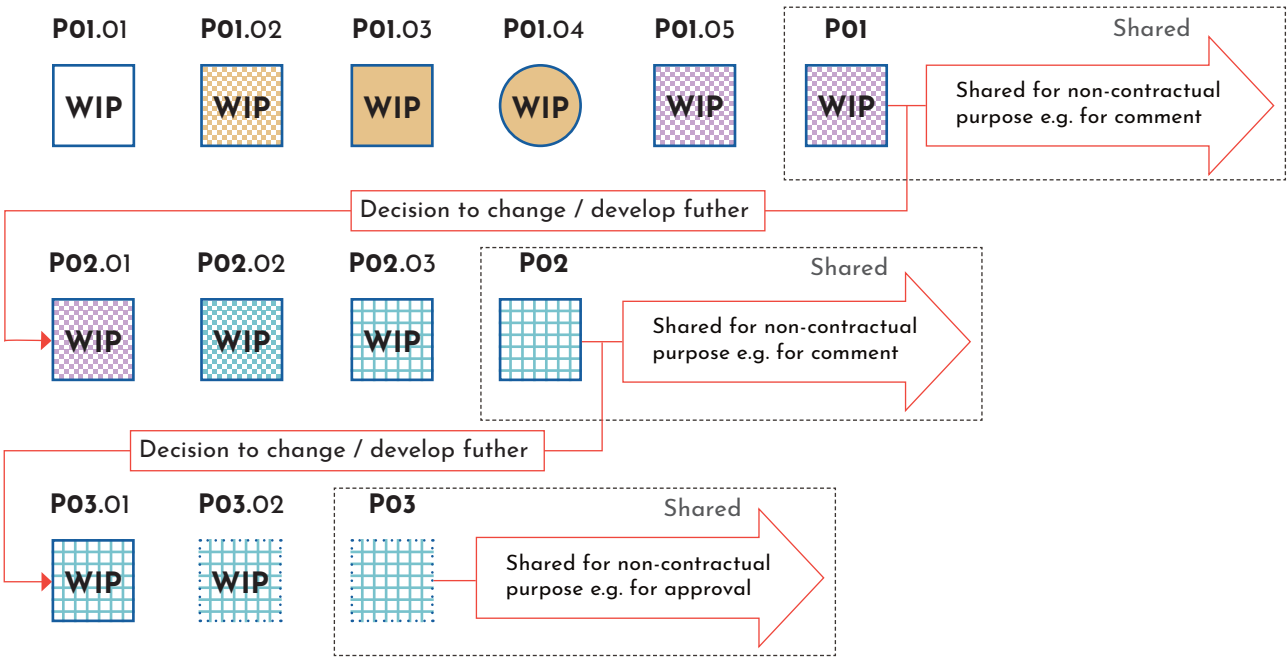
Figure 7: Demonstration of WIP revisions using ISO 19650-2 National Annex approach

2.5.3 Revision control of Published information containers

Published (contractual) information is information that has been authorized by the lead appointed party and then accepted by the appointing party. An information container is recognisable as Published through the C prefix in its revision code (see National Annex clause NA4.3 and this guidance Figure 8). This helps recipients of an information container to clearly distinguish between preliminary (P) and published (C) contents.

Note that some information container types may never reach the Published state. For example, structural geometrical models often used only for coordination purposes may remain preliminary. However, other information container types, including those generated from the structured geometrical models for example, 2D drawings and schedules may indeed be needed for appointment and contract purposes.
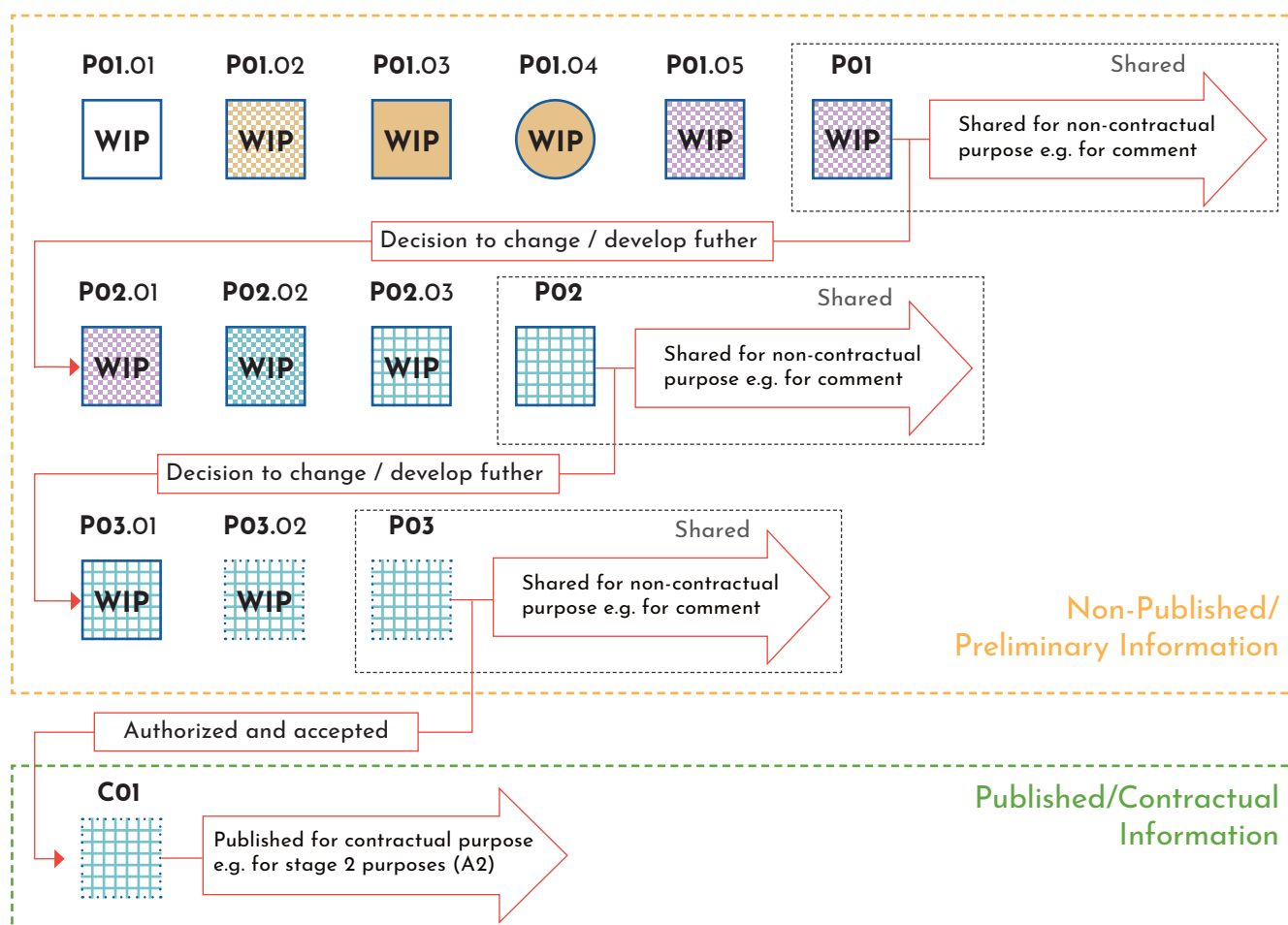
Figure 8: Illustration of how revision metadata distinguishes between different states

2.6 Status allocation through metadata assignment

2.6.1 Status codes

The ISO 19650 series identifies that an information container should be assigned a status code as metadata to show the permitted use of the information container (*see* ISO 19650-1 clause 12.1).

The reason for assigning a status code is to:

1. Make it clear to the recipient what the information container should be used for, and by extension, what it should not be used for.

   Example 1: An information container with the status code S3 (refer to Figure 8) informs recipients that it is only suitable for review and comment.

   Example 2: An information container with the status An (where the "n" represents a project stage) informs the recipient that it has been authorized and accepted to be used for whatever stage of the project the "n" represents. If "n" represents Stage 2 (Concept) thus making the status code A2, this indicates to others that the information container is part of the accepted concept design. This would become part of the reference information for stage 3 WIP.

2. Make it clear where in the CDE workflow the information resides.

   For example, information containers with S1 or S2 metadata are in the Shared state, whereas information containers with A4, A5 or A6 metadata are in the Published state. This avoids the need to create physical segregations within the CDE solution using folders or other types of dedicated areas that can fragment the CDE workflow.

2.6.2 UK defined standard status codes

The ISO 19650-2 National Annex provides standardised status codes for metadata assignment. Each code in Table 10 has a corresponding description to inform others. There is also a revision guideline for authors when allocating status codes. For example, an information container that is currently being reviewed (status code S3) should not be used for contractual purposes such as procuring materials, agreeing contract costs or constructing the works

Table 10: ISO 19650-2 Table NA.1 - Status codes for information containers within a CDE

Code	Description	Revision
Work in progress (WIP)		
S0	Initial status	Preliminary revision and version
Shared (non-contractual)		
S1	Suitable for coordination	Preliminary revision
S2	Suitable for information	Preliminary revision
S3	Suitable for review and comment	Preliminary revision
S4	Suitable for stage approval	Preliminary revision
S5	Withdrawn*	N/A
S6	Suitable for PIM authorization	Preliminary revision
S7	Suitable for AIM authorization	Preliminary revision
Published (contractual)		
A1, A*n*, etc.	Authorized and accepted	Contractual revision
B1, B*n*, etc.	Partial sign-off (with comments)	Preliminary revision
Published (for AIM acceptance)		
CR	As constructed record document	Contractual revision

* Status code S5 is no longer used and has been withdrawn

2.6.3 *Status codes driving CDE workflow*

Figure 9 and Table 11 illustrate how status codes drive information container development and exchange as part of the CDE workflow in line with clause 5.6 and 5.7 of ISO 19650-2. This particular illustration relates to Stage 3 in the plan of work, and shows:

- How the ISO 19650-2 clauses apply iteratively for each information container in reality
- How information containers can cycle through the WIP and Shared states several times before they become Published
- How the status code tells the recipient what action is required
- How this task team, appointed at Stage 3, create their information in a geometrical model, which is coordinated with other geometrical models and/or their renditions

- How the coordinated information is then exported from its native format as a drawing ready for comment
- How, after comments are received, the native information must be updated as WIP before the drawing is reissued
- How the authorization and acceptance of the reissued drawing must occur before it becomes Published information.

For simplicity, Figure 9 indicates the progression of a drawing from its native geometrical model to authorization and acceptance. In reality, all of the information containers needed to satisfy the information exchange, as defined in the information exchange requirements, would move through a similar process (one such information container would be the geometrical model that has generated the drawing referred to).
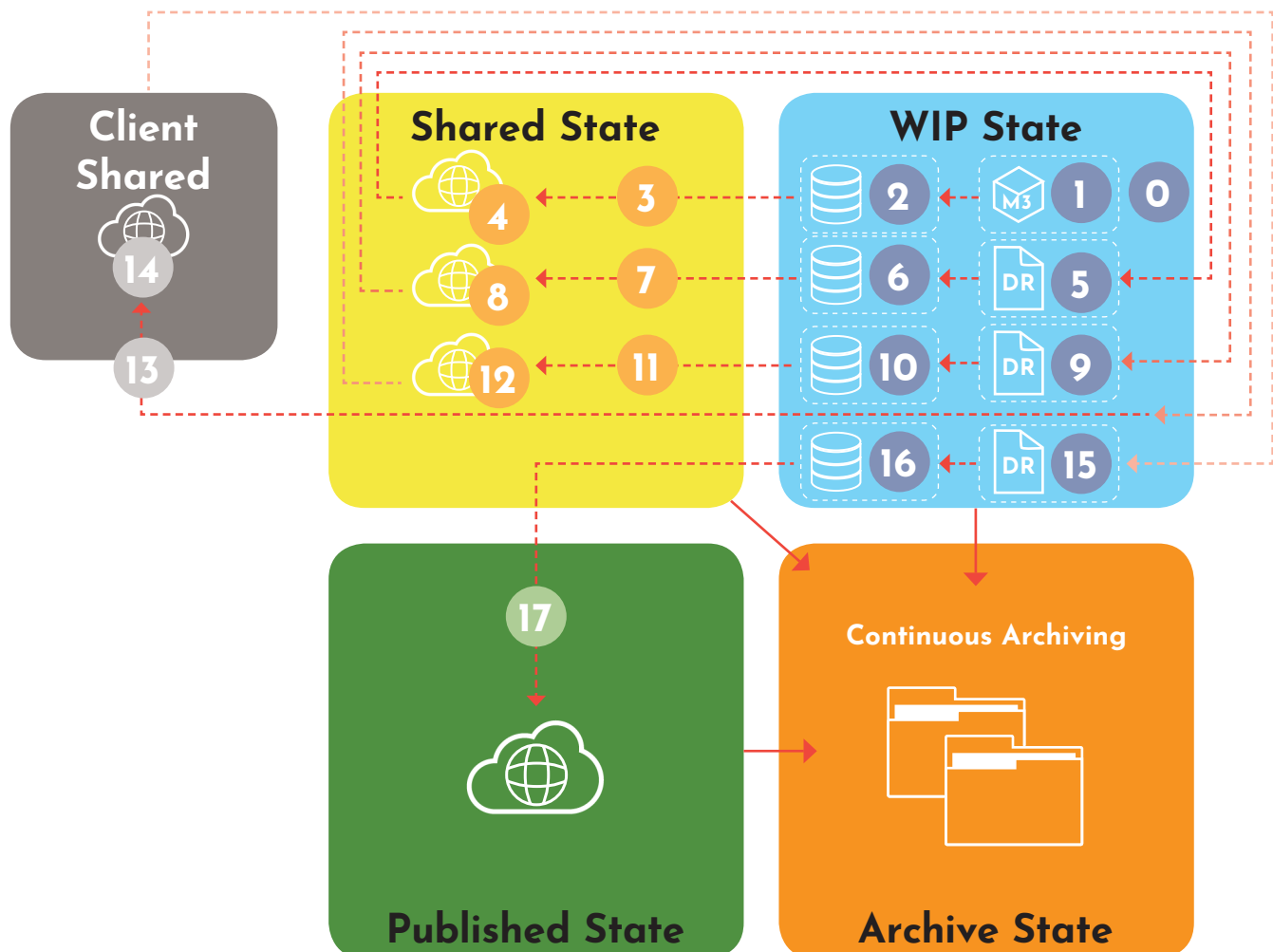
Figure 9: Illustration of an information container transitioning between states

Table 11: Example of the iterative development of an information container

Step	Details	State	Revision	Status	ISO clause
0	Collate and review all necessary information ready for start of Stage 3.	WIP	-	-	5.6.1
1	Information production commences, using other referenced sources for coordination purposes.	WIP	-	-	5.6.2
2	Several WIP iterations of a geometrical model by the author which are saved to a local CDE solution and assigned a metadata status S0. The geometrical model undergoes a quality assurance check within the task team to review the container (not its contents) against the project information standard.	WIP	P01.05	S0	5.6.3
3	The contents of the geometrical model go through a final review within the task team. The geometrical model in its native or in an open format is assigned an S1 status, suitable for coordination only, and released for sharing. The task team has decided not to export documents/drawings from the geometrical model until the coordination review is complete.	Shared	P01	S1	5.6.4
4	The geometrical model is shared via the CDE solution managed by the lead appointed party. The delivery team review the model alongside other information containers to "facilitate the continuous coordination of the information across each element of the information model".	Shared	P01	S1	5.6.5
5	Following the review, the authoring task team updates the geometrical model in the WIP state, based on feedback from the delivery team following their coordination review. The geometrical model is also refined and developed to allow a general arrangement drawing sheet to be exported.	WIP	P02.01	S0	5.6.2
Drawing exported from geometrical design model. **The revision and status columns now track the metadata of the drawing not the geometrical model**				
6	The drawing is assigned a metadata status S0 and saved to a local CDE solution with a metadata revision P01.01 until such time as it passes its quality assurance checks within the task team.	WIP	P01.01	S0	5.6.3
7	The contents of the drawing go through a final completeness and coherency review by the manager of the task team. The drawing is assigned status S3, suitable for review and comment. As this drawing is not being issued for coordination purposes but for comment, the drawing is shared directly with the lead appointed party.	Shared	P01	S3	5.6.4
8	The drawing, along with any other supporting information, is reviewed by the lead appointed party to ensure it is compliant with project requirements. The lead appointed party comments and instructs the task team to update and reissue for authorization.	Shared	P01	S3	5.6.5

Step	Details	State	Revision	Status	ISO clause
9	Following the review, the authoring task team update the geometrical model in the WIP state based on the drawing comments from the lead appointed party. The drawing is re-exported.	WIP	P02.01	S0	5.6.2
10	The drawing is assigned a metadata status S0 and saved to a local CDE solution with a metadata revision P02.01 until it passes its quality assurance checks within the task team.	WIP	P02.01	S0	5.6.3
11	The contents of the drawing go through a final completeness and coherency review by the manager of the task team. The drawing is assigned an S6 status, suitable for Information model authorization (PIM in relation to capital stage, refer to ISO definition). The drawing is shared directly with the lead appointed party	Shared	P02	S6	5.6.4 5.7.1
12	The lead appointed party reviews the drawing along with any other information issued as part of the information model against the appointment requirements. The lead appointed party is satisfied and authorizes the task team to issue to the appointing party for acceptance. To save time, the lead appointed party may seek permission from the task team to issue directly to the appointing party on their behalf. This can be done so long as the permission is given and the CDE records and manages the process. This may remove the need for step 13 and would also remove the need for the S4 status in 14	Shared	P02	S6	5.7.2
13	Following authorization, the drawing requires no physical update so no WIP effort is required. The drawing is re-issued with status S4, noting the drawing meets the stage requirements and the task team requests that it be accepted by the appointing party. If the physical drawing came with the status metadata physically printed on the drawing, then a WIP effort would be required to amend the drawing contents to make this update.	Client Shared	P02	S4	5.7.3
14	The appointing party reviews the drawing along with any other information issued as part of the information model against the appointment requirement. The appointing party is satisfied and accepts that the information meets stage requirements. The task team is permitted to publish the information container.	Client Shared	P02	S4	5.7.4
15	Following appointing party acceptance, the authoring task team update the geometrical model in the WIP state to change the preliminary revision to a contractual revision. The drawing is re-exported and contains a physical contractual revision so the CDE solution used by the task team will record the drawing as P03.01.	WIP	P03.01	S0	5.6.2
16	The drawing is assigned a metadata status S0 and saved to a local CDE solution with a metadata revision P03.01 until it passes its quality assurance checks within the task team to confirm that the contractual revision has been made correctly.	WIP	P03.01	S0	5.6.3
17	The contents of the drawing go through a final completeness and coherency review by the manager of the task team. The drawing is then approved and the revision updated to reflect a contractual revision. The drawing is assigned status A3 denoting that it has been authorized and accepted as suitable for stage 3 purposes and published onto the CDE for the project team to use. The appointing party will keep a record of this along with all other information that forms the completed stage 3 project information model.	Published	C01	A3	5.7.4

Although this process appears lengthy, it illustrates the application of the ISO clauses through iterative information container development. In reality, efficiencies can be found to streamline the process through intelligent use of the workflows that some CDE solutions provide.

2.6.4 Examples of status codes

Table 12 provides insight into when some of the status codes maybe used in certain situations. These codes are referenced in the National Annex (ISO 19650-2 Table NA.1). As stated in ISO 19650-2 clause NA.4.2 Note 2, the codes can be expanded (or by the same principle, excluded) to suit specific project requirements providing the required codes are documented in the project's information standard and agreed.

Table 12: Application of status codes

S0	Assigned by task teams to identify information containers as Work in Progress and not yet suitable to be Shared outside the task team.
S1	Assigned by task teams to limit the information container's use to coordination activities only by its recipients. Information containers assigned this status should only be used to understand or advance their own deliverables in a coordinated manner. It is likely to be assigned to a geometrical information container but it is important to understand that S1 can be assigned to any information container.
S2	Assigned by task teams to limit the information container`s use for any specific activity by its recipients. This status denotes that the author is providing it for information only to help others in certain situations. For example, reference information provided by the appointing party such as a dilapidations report would be given this status code. Another example would be an email file containing site photos.
S3	Assigned by task teams to limit the information container`s use to commenting and review activities only by its recipients. Information containers assigned this status should only be used to review their contents against the information requirements or to provide feedback on their development. For example, an outline proposal to solve a technical design problem during Concept stage.
S4	Assigned by task teams to limit the information container`s use to stage approval activities only by its recipients. The outcome of the review following this status should be the acceptance of the information container that it meets stage requirements.
S5	This status code is not used in the National Annex
S6	Assigned by task teams to limit the information container`s use to the lead appointed party's authorization of the project information model (*see* ISO 19650-2 clauses 5.7.1 and 5.7.2). The information should not be used for contractual purposes, for example, construction until the project information model that it forms part of has been authorized by the lead appointed party and accepted by the appointing party. If the project information model is rejected but the information container itself does not require amendment its status will remain at S6 until the project information model is authorized. If the project information model is rejected and the information container requires amendment then it is assigned the S0 status until it can be shared again. Note that a project information model could be a single information container or it could be multiple information containers depending on the exchange information requirements.
S7	Assigned by task teams to limit the information container`s use to authorization activities for Stage 6 (Handover) only by its recipients. The outcome of this status should be the authorization of the information model that it meets the requirements for handover to facilities and asset management teams.
A0 - A*n*	Assigned by task teams to represent the Stage the authorized and accepted information container relates to in accordance with the task information delivery plan. For example A1 would represent an authorized and accepted information container generated in Stage 1, A2 would represent Stage 2 and so on
CR	Assigned by task teams to represent an information container that has been authorized and accepted and was previously assigned an S7 status.

2.7 Checklist of actions/key points to consider

ISO 19650-2 clause references are shown in brackets.

✓ Has any project-specific expansion of the standard status codes and revision system been defined in the project's information standard by the appointing party (5.1.4) and has that been reviewed or amended (and agreed with the appointing party) to suit delivery requirements by each lead appointed party (5.3.2, 5.4.1)?

✓ Has a classification system been defined in the project's information standard by the appointing party (5.1.4) and has that been reviewed or amended (and agreed with the appointing party) to suit delivery requirements by the lead appointed party (5.3.2, 5.4.1)?

✓ Has an information container ID codification standard been defined in the project information standard by the appointing party (5.1.4) and has that been reviewed or amended (and agreed with the appointing party) to suit delivery requirements by the lead appointed party (5.3.2, 5.4.1)?

   ✓ Does the codification standard define how model renditions/exports are to be given different container names? For example, IFC step files should be named differently from their native source geometrical models and PDF files should be named differently from their native 2D drawing equivalents (so that no two containers have the same time). Note that each time the native information container is updated, associated exports should also be updated (as far as they are impacted by the update of the native information container). This requires the author of the information container to pay careful attention to a) exporting associated updates and b) ensuring there is an audit trail of updates to the native information container and its exported information containers.

✓ Have all the potential CDE solutions been reviewed to ensure they support the agreed metadata assignment (5.1.5, 5.5.2)?

✓ Have security considerations been considered when selecting the potential CDE solution(s) to ensure that access permissions can be set at an individual and organizational level (5.1.5, 5.3.2, 5.5.2)?

✓ If multiple CDE solutions are being used to implement the CDE workflow, some of which maybe owned or managed by different organizations, has the CDE workflow been reviewed to ensure information containers pass seamlessly through each CDE solution (5.5.2)?

   ✓ Have the CDE solutions been tested to ensure metadata assignments can be transferred between them?

   ✓ Has it been agreed how information containers will be transferred between solutions manually or automatically?

✓ Has a clear CDE workflow been implemented and documented for how each type of information container will be developed> checked> shared> authorized> accepted> published> archived? (associated with Clause 5.5.2)

✓ Has the project got a clear documented set of standard methods and procedures for how metadata assignments defined in the information standard shall will be assigned to the information containers (Clause 5.5.3)?

   ✓ Has it been confirmed which tables/sets of the classification system shall be applied to which types of information/information container?

   ✓ Has it been confirmed what each status code means and its constraints for use?

   ✓ Has it been confirmed how new project specific codes will be generated, agreed and documented?

   ✓ Has it been made clear how each metadata assignment is made in (each of) the CDE solution(s)?

3.0 ISO 19650-2 clause 5: analysis and activities

Authors: Please see Acknowledgments on page 5

5.1 Assessment and need

Clause: 5.1.1 Appoint individuals to undertake the information management function	
The primary party active within the clause: Appointing party	**Insight:** The appointing party is responsible for identifying and engaging one or more individuals (from within their organization or from a third party) to undertake the information management function in respect of the project.
Contributing parties to the clause: n/a	The scope of the information management function to be undertaken by the individual(s) is also determined by the appointing party. Collectively this scope covers all of the appointing party's activities as described in ISO 19650-2.
When the activity within the clause should be carried out: As early as possible	It is important that whoever undertakes the information management function has the appropriate knowledge and skills required. A lead appointed party could in theory, carry out some or all of the information management function. It is suggested that an individual (or individuals) carrying out the information management function on behalf of the appointing party should not be carrying out the lead appointed party's own information management function.
The level of the activity: Project	The Information Management Assignment Matrix in ISO 19650-2 Annex A offers a template for clarifying which activities will be undertaken by the individual(s) engaged to undertake the information management function. Note: Where there is limited knowledge and capability internally, it may be preferable to appoint a third party in an advisory role to support the information management function. Ownership should however remain with individuals within the appointing party's organisation who understand the business operating model and desired outcomes

Summary of activities within the clause:

- Consider the scope of the information management function
- Determine how the scope will be resourced
- Complete the information management assignment matrix to appropriately allocate appointing party responsibilities and activities
- Where the information management function is to be delivered by a third party or a lead appointed party, ensure that the scope of their appointment suitably reflects the activities and responsibilities assigned to them

ISO 19650-2 related clauses

5.1 Information management process – Assessment and need
5.2 Information management process – Invitation to tender
5.3.1 Nominate individuals to undertake the information management function
5.4.1 (e) Confirm the delivery team's BIM execution plan
5.4.5 Establish the master information delivery plan
5.4.6 Complete lead appointed party's appointment documents
5.5.2 Mobilize information technology
5.7.4 Review and accept the information model
5.8 Information management process – Project close-out
Annex A

Clause: 5.1.2 Establish the project's information requirements

The primary party active within the clause: Appointing party	**Insight:** Project information requirements (PIR) are defined by the appointing party. They identify the information needed to satisfy strategic objectives at key decision points during a design and construction project. They inform the exchange information requirements (EIR), which are appointment, not project based. It is important that PIR are appropriately defined since they are fundamental to the robustness of the EIR and the delivery of the information needed. Note that the PIR are not expressed in tender or appointment content.
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	During the project the appointing party needs to understand: a. The purposes for which information is required. For example to support the organization or the asset to function or to enable the design and construction project to progress to the next stage b. The information which will be required for those purposes
The level of the activity: Project	The way that the information is identified might depend on the knowledge of the appointing party and the nature of the decisions that are to be made. The appointing party may know precisely what information is required but equally they might not.
Summary of activities within the clause (as appropriate) • Reflect on ISO 19650-1 clause 5.4 (not clause 5.3 as suggested in clause 5.1.2) • Consider the points as set out in ISO 19650-2 clause 5.1.2 • Conclude which points are relevant • Generate text to reflect content for each relevant consideration	For example if a key decision to progress to the next stage is related to whether construction can be completed by a specific date, the PIR might identify that construction programme information is required for board review. Alternatively, if the decision to progress to the next stage is related to a broader area, say: the safe construction and operation of the asset, then the PIR might identify that information is needed to demonstrate that the design is safe to construct and operate.
	Clause 5.1.2 lists seven points of consideration for establishing project information requirements:
	1. The project scope *Basic information about the project.*
	2. The intended purpose for which the information will be used by the appointing party *The reasons why information is required by the appointing party during the project. A list of possible purposes is set out in ISO 19650-1 clause 5.1.*
	3. The project plan of work *How the project will be broken down into stages or intervals.*
	4. The intended procurement route *How appointments/contracts will be structured, the relationships between parties and the rules that govern a project.*
	5. The number of key decision points throughout the project *The points during a project where the appointing party requires information to make informed decisions.*
	6. The decisions that the appointing party needs to make at each key decision point *Decisions that an appointing party may be required to make during a project to achieved the desired outcomes, ensure project progression and/or to feed back into wider organisation strategies.*
	7. The questions to which the appointing party needs answers, to make informed decisions *These questions provide a check to ensure that decisions can be made using the information provided.*
	If the appointing party concludes that some of these points are not relevant or do not aid beneficial communication of the PIR then there is no requirement to do anything beyond 'consider' and document that no further action is needed.

ISO 19650-2 related clauses:

5.1.3 Establish the project's information delivery milestones

5.1.4 Establish the project's information standard

5.1.5 Establish the project's information production methods and procedures

5.2.1 Establish the appointing party's exchange information requirements

Clause: 5.1.3 Establish the project's information delivery milestones

The primary party active within the clause: Appointing party	**Insight:** Information delivery milestones are defined to determine when information models will be exchanged from the delivery team to the appointing party and/or between delivery teams.
Contributing parties to the clause: n/a	Clause 5.1.3 identifies four key considerations for determining information delivery milestones. They require the appointing party to think about the information needed for their own purposes plus information delivery obligations they might have themselves. The latter is particularly relevant where a programme of works is being
When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment	delivered, where a project might consist of separate enabling works and construction contracts or where a traditional procurement approach is adopted.
The level of the activity: Project	Information delivery milestones should be programmed such that they support key decision points and project progression. However, given the point at which milestones are determined they are unlikely to be date specific. It may be appropriate to position the milestones within or at the end of project stages.

Summary of activities within the clause (as appropriate)

n/a

ISO 19650-2 related clauses

5.2.1 Establish the appointing party's exchange information requirements

5.2.4 Compile invitation to tender information

5.3.6 Establish the delivery team's risk register

5.4.2 Establish the delivery team's detailed responsibility matrix

5.4.3 Establish the lead appointed party's exchange information requirements

5.4.4 Establish the task information delivery plan(s)

5.4.5 Establish the master information delivery plan

5.5.1 Mobilize resources

Clause: 5.1.4 Establish the project's information standard

The primary party active within the clause: Appointing party	**Insight:** When establishing the information standard, the appointing party considers: *Exchange of Information:* What standardized elements for exchanging information have been established for the project.
Contributing parties to the clause: n/a	For example, the information standard may establish project-specific codes to support the national annex information container naming convention and the permitted values for metadata fields. It may also specify the naming and numbering systems for elements such as: Components, Types, Systems, Storeys, and Spaces.
When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment	*Structuring and classification of Information:* What work breakdown structures and classification system(s) have been established for the project. For example, the information standard may establish a work breakdown structure based on a classification system (such as Uniclass 2015), a schedule of packages, or other criteria.
The level of the activity: Project	*Method of specifying level of information need:* What method of describing the level of information need has been established for the project.
	For example, the information standard may establish that the NBS level of definition convention shall be used. In which case it will likely either cross-reference to an external source or include the textual description and an associated code for each level of detail and level of information.
	Use of information during the operational phase: What standardised elements for operational use have been established for the project.
	For example, the information standard may establish additional information that should be incorporated such as the use of NRM3 codes in addition to Uniclass 2015 classification.
	It should be noted that as the information standard is project-specific, some of the established information standards may not be applicable depending on the nature of the appointment.
	For example, additional handover information may be included within the information standard which are not relevant for an appointment to produce a concept design.
	Remember that the information standard is set out at a project rather than appointment level. Its amalgamation with the information production methods and procedures may prove beneficial as both are project-specific and often used in tandem (unlike the exchange information requirements, which is an appointment specific resource).

Summary of activities within the clause (as appropriate):
n/a

ISO 19650-2 related clauses:
5.3.2 Establish the appointing party's exchange information requirements
5.2.4 Compile invitation to tender information
5.3.6 Establish the delivery team's risk register
5.4.1 Confirm the delivery team's BIM execution plan
5.4.3 Establish the lead appointed party's exchange information requirements
5.4.6 Complete lead appointed party's appointment documents
5.4.7 Complete appointed party's appointment documents
5.6.2 Generate information
5.6.3 Undertake quality assurance check

Clause: 5.1.5 Establish the project's information production methods and procedures

The primary party active within the clause: Appointing party	**Insight:** When establishing the information production methods and procedures, the appointing party considers: *Capture of existing asset information:* How existing information will be captured.
Contributing parties to the clause: n/a	For example, the information production methods and procedures may establish what properties need to be captured about existing asset information, the permitted values, or measurement units. It may also specify which information container(s) this information is captured within.
When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment	*Generation, review or approval of new information:* How information is produced, reviewed or approved. For example, the information production methods and procedures may establish that information should be produced within a specified software application. It may also specify how to review information by providing a procedure or a specific workflow to be followed.
The level of the activity: Project	*Security or distribution of information:* How to implement specific security requirements or how to share information. For example, the information production methods and procedures may establish that additional meta-data relating to a security rating should be applied to all information containers. It may also specify the common data environment (CDE) solution to be used for the distribution of information. *Delivery of information to the appointing party:* How information is provided to the appointing party. For example, the information production methods and procedures may establish what procedure to follow when delivering information such as whether additional checks are required or if an additional CDE solution is to be used. It should be noted that as the information production methods and procedures are project-specific, some of the established production methods and procedures may not all apply to all appointed parties. For example, additional handover procedures may be included within the information production methods and procedures which are not relevant for an appointment to produce a concept design. Remember that the information production methods and procedures are set out at project rather than appointment level. Its amalgamation with the standard may prove beneficial as both are project-specific and often used in tandem (unlike the exchange information requirements, which is an appointment specific resource).

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.2.1 Establish the appointing party's exchange information requirements
5.2.4 Compile the invitation to tender information
5.3.2 Establish the delivery team's (pre-appointment) BIM Execution plan
5.6.2 Generate information
5.6.3 Undertake quality assurance check
5.6.4 Review information and approve for sharing
5.6.5 Information model review
5.7.4 Review and accept the information model
5.8.1 Archive the project information model

Clause: 5.1.6 Establish the project's reference information and shared resources

The primary party active within the clause: Appointing party	**Insight:** The appointing party considers existing reference information and shared resources to support tender of all appointed parties.
Contributing parties to the clause: n/a	Reference information could be relevant to the overall project, such as Ordnance Survey mapping or information relating to adjacent assets and/or utilities owned by other organisations. Reference information could also be selected information from the existing Asset Information Model, such as low-temperature hot water and chilled water schematics or layouts to be used in an office refurbishment project.
When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment	In addition, reference information may include the information delivered during a preceding appointment, usually by a different delivery team. For example, performance specifications prepared by the appointing party's design team for tendering a design and build contract. It is possible for a prospective lead appointed party to receive reference information that it produced itself in a previous appointment, for example a masterplan produced by multi-disciplinary practice X would be reference information for the subsequent design development package that the same practice is bidding for along with a number of other practices.
The level of the activity: Project	Not providing reference information means that prospective lead appointed parties are likely to either include costs to generate it themselves, or include a risk allowance in their pricing, or both. Alternatively, in ignorance, they may proceed on the basis of incomplete reference information which may ultimately impact the quality of their deliverable, through no fault of their own. These are the kinds of unnecessary costs and pitfalls that information management according to the ISO 19650 series is intended to avoid.
	Shared resources can take many forms, such as document templates, 3D object libraries or custom line styles and clause 5.1.6 provides examples.
	To provide a practical illustration the client might provide a template for the BIM Execution Plan, to be used by all prospective lead appointed parties, to make sure that this part of each tender submission is structured in the same way and can be consistently evaluated.
	Finally, an important consideration for both reference information and shared information is the use of open data standards.

Summary of activities within the clause (as appropriate):
n/a

ISO 19650-2 related clauses:
5.2.1 (c) Establish the appointing party's exchange information requirements
5.2.2 Assemble reference information and shared resources
5.2.4 Compile invitation to tender information
5.4.3 Establish the lead appointed party's exchange information requirements
5.6.1 Check availability of reference information and shared resources

Clause: 5.1.7 Establish the project's common data environment

The primary party active within the clause: Appointing party	**Insight:** Before any information can be exchanged between the appointing party and their delivery team(s), a set of workflows and exchange solutions must be agreed and implemented that form the common data environment (CDE). A workflow may for example, include the approval process and timescales, a solution maybe a file management system.
Contributing parties to the clause: n/a	The appointing party is accountable for ensuring this CDE is implemented, configured and supported throughout the project. They may delegate this to a third party but it should be in place to enable tender information to be shared (and therefore before issuing tender information to any prospective lead appointed party). It is therefore not practical to delegate this activity to a prospective lead appointed party at this stage.
When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment	It is however, acceptable to transition hosting, managing and supporting of the CDE to a lead appointed party after appointment but "transitioning" is the operative word as it must be functional before transitioning.
The level of the activity: Project	When implementing the CDE, it must enable: • Each information container to have a unique ID, based upon an agreed and documented convention comprised of fields separated by a delimiter
Summary of activities within the clause (as appropriate): • Appointing party to determine whether they have the in-house capability to deliver a CDE solution or whether it has to be delivered by a third party • Configure the CDE to implement the project's information standard and information methods and procedures	For example: ensuring the chosen CDE solution is configured in line with the UK National Annex clauses NA.2 and NA.3 contained in ISO 19650-2 • Each field to be assigned a value from an agreed and documented codification standard For example: the CDE solution helps users find information quickly like model files by searching for the Type M3 or CR (refer to National Annex clause NA.3.6 contained in ISO 19650-2) • Each information container to have the following attributes assigned; 1) status 2) revision 3) classification Note: the CDE solution allows additional data to be tagged to information containers beyond the information container unique ID to assist the project team in their understanding of what is the latest information and how it can be used • The ability for information containers to transition between states and the recording of the name of user and date when information container revisions transition between each state Note: the CDE workflow can keep a detailed audit trail of each information container's content, status and revision activity. This can also provide clarity about what and when sign off is required before a transition can take place. • Controlled access at an information container level For example: the CDE solution and workflow can allow configuration that restricts access to information containers that have not reached a sufficient level of maturity or are too sensitive for specific organizations or individuals to have access to them

ISO 19650-2 related clauses:
5.1.4 Establish the project's information standard
5.1.5 Establish the project's information production methods and procedures
5.1.8 Establish the project's information protocol
5.2.2 Assemble reference information and shared resources
5.6.1 Check availability of reference information and shared resources
5.6.2 Generate information
5.6.3 Undertake quality assurance check
5.6.4 Review information and approve for sharing
5.7.1 Submit and authorize the information model
5.7.3 Submit information model for appointing party acceptance
5.7.4 Review and accept the information model
5.8.1 Archive the project information model
National Annex

Clause: 5.1.8 Establish the project's information protocol

The primary party active within the clause: Appointing party	**Insight:** Each appointment must contain an information protocol, i.e. all lead appointed party's appointments and all appointed parties' appointments.
Contributing parties to the clause: n/a	The lead appointed party's appointment will contain the project's information protocol, and this will be included in the appointed party's appointment documents with any appropriate differences to reflect each appointment. Note that the standard form protocols currently available (such as the CIC BIM Protocol 2nd Edition), are not compliant with the ISO 19650 series and will need to be amended to be compliant if they are used.
When the activity within the clause should be carried out: Before tendering the first lead appointed party appointment	An information protocol that is compliant with BS EN ISO 19650 series is in the process of being finalised. In the meantime, reference can be made to Annex C of the BS EN ISO19650 Guidance Part 1: Concepts, which contains guidance and suggestions on aligning existing standard form protocols with the BS EN ISO 19650 series.
The level of the activity: Project	

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.2.4 Compile invitation to tender information

5.3.6 Establish the delivery team's risk register

5.4.6 Complete lead appoint party's appointment documents

5.4.7 Complete appointed party's appointment documents

5.2 Invitation to tender

Clause: 5.2.1 Establish the appointing party's exchange information requirements

The primary party active within the clause: Appointing party	**Insight:** Comprehensive and properly managed exchange information requirements (EIR) are fundamental to successful information management. They provide the framework for each and every delivery team active within a project.
Contributing parties to the clause: n/a	Each EIR is a specification detailing the information required by the appointing party for all information exchanges with a lead appointed party.
When the activity within the clause should be carried out: Before tendering a lead appointed party appointment	There are several activities in clause 5.2.1 which the appointing party needs to work through to ensure each EIR is fully defined. Each EIR is derived from the project information requirements (PIR) (which includes the organizational information requirements) and the asset information requirements (AIR).
The level of the activity: Appointment	Once the PIR and the AIR are identified, they are broken-down to a more granular level as EIR relative to the lead appointed party's scope of works, and each information requirement is associated with a level of information need. This enables the appropriate facets of information to be defined. In addition, the EIR establishes information exchange dates relative to delivery milestones to ensure information is delivered at the right time.

Each EIR is appointment specific and included within invitation to tender documentation. An EIR is read in conjunction with the project's information standard and information production methods and procedures (see ISO 19650-1 clause 5.5).

> For example: as part of the PIR (see insight clause 5.1.2) one of the purposes for information is to support the ongoing progression of the project. Within the EIR the appointing party identifies that the information required is a construction programme report which summarises where the programme is ahead/ behind schedule in PDF format.

> For example: from the AIR the appointing party requires asset information for maintenance purposes which will feed into their facilities management system. For this they specify in the EIR the exact information required against the relevant asset(s) which enables it to be imported into their system.

During project delivery each EIR provides the mechanism for reviewing and accepting information models for the duration of the associated lead appointed party appointment.

Summary of activities within the clause (as appropriate):
n/a

ISO 19650-2 related clauses:
5.1.2 Establish the project's information requirements
5.1.3 Establish the project's information delivery milestones
5.1.4 Establish the project's information standard
5.1.5 Establish the project's information production methods and procedures
5.2.3 Establish tender response requirements and evaluation criteria
5.2.4 Compile invitation to tender information
5.3.2 Establish the delivery team's (pre-appointment) BIM execution plan
5.3.3 Assess task team capability and capacity
5.3.6 Establish the delivery team's risk register
5.4.3 Establish the lead appointed party's exchange information requirements
5.5.1 Mobilize resources
5.7.2 Review and authorize the information model
5.7.4 Review and accept the information model

Clause: 5.2.2 Assemble reference information and shared resources

The primary party active within the clause: Appointing party	**Insight:** Reference information and shared resources should be provided in appropriate information containers via the project's common data environment (CDE).
Contributing parties to the clause: n/a	During the tender process, access to these information containers by prospective lead appointed parties has to be managed by the appointing party. This is to make sure that prospective lead appointed parties do not have inappropriate access to any other information being shared by existing delivery teams on the project. The information containers in the CDE should have status codes (to identify the permitted use of the information), revision codes and classification codes to help prospective lead appointed parties use them correctly.
When the activity within the clause should be carried out: Before tendering each lead appointed party appointment	
The level of the activity: Appointment	

Summary of activities within the clause (as appropriate)

- Upload reference information and shared resources to the CDE in accordance with the project's information standard and production methods and procedures and give prospective lead appointed parties appropriate access and permissions to that content
- Revoke CDE access for prospective lead appointed parties who are not successful in their tender response.

ISO 19650-2 related clauses

5.1.6 Establish the project's reference information and shared resources

5.6.1 Check availability of reference information and shared resources

Clause: 5.2.3 Establish tender response requirements and evaluation criteria

The primary party active within the clause: Appointing party	**Insight:** The appointing party determines the minimum requirements that the prospective lead appointed party is to meet and communicate in their tender response. At the same time, the appointing party establishes how they will evaluate the effectiveness with which these minimum requirements are addressed in tender responses received. This provides the prospective lead appointed party with a degree of direction about what they should detail in their tender response and enables consistent and fair evaluation of tenders received. Key considerations are likely to be:
Contributing parties to the clause: n/a	• The required content of the (pre-appointment) BIM execution plan For example: does the BIM execution plan sufficiently detail the delivery team's proposed federation strategy, is it feasible and practical?
When the activity within the clause should be carried out: Before tendering each lead appointed party appointment	• The competency, capability and capacity of the prospective lead appointed party to deliver the information requirements For example: does the prospective lead appointed party have suitable skills to manage and deliver the information requirements and crucially are the people with those skills available for the duration of the appointment?
The level of the activity: Appointment	• How the project delivery team will be mobilized, thinking about getting resources and technology ready to go. The appointing party will want to establish that the lead appointed party has a mobilization plan in place to get the delivery team up and running so that information can be produced in a co-ordinated and collaborative manner in support of the delivery team's programme. The appointing party will also want to establish that delivery will not begin until the plan has been fully enacted. • The prospective lead appointed party's consideration of information delivery risk. This is communicated via a risk register, compiled by the prospective lead appointed party in respect of the delivery team. Minimum requirements might take the form of questions to be addressed in the tender response. For example: please explain how you will manage and mitigate risk associated with information delivery? Ensure use of appointment specific questions that are relevant to the appointment within the context of the project, and the scope of works to be undertaken by the delivery team. Evaluation criteria should be measurable.

Summary of activities within the clause (as appropriate):
• Establish minimum requirements to be addressed within the prospective lead appointed party's tender response
• Identify how the tender response will be evaluated

ISO 19650-2 related clauses:
5.2.3 Compile invitation to tender information

Clause: 5.2.4 Compile invitation to tender information	
The primary party active within the clause: Appointment	**Insight:** The tender contents for information management should be combined with other tender information being issued to the same prospective lead appointed party, such as technical specifications for the works and the requirements for completing technical proposals.
Contributing parties to the clause: n/a	
When the activity within the clause should be carried out: Before tendering each lead appointed party appointment	
The level of the activity: Appointment	

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.2.1 Establish the appointing party's exchange information requirements

5.2.2 Assemble reference information and shared resources

5.2.3 Establish the tender response requirements and evaluation criteria

5.1.3 Establish the project's information delivery milestones

5.1.4 Establish the project's information standard

5.1.5 Establish the project's information production methods and procedures

5.1.8 Establish the project's information protocol

5.3.7 Compile the delivery team's tender response

5.3 Tender response

Clause: 5.3.1 Nominate individuals to undertake the information management function	
The primary party active within the clause: Prospective lead appointed party [please note there is a typographical error in paragraph 3, which should refer to the lead appointed party not the appointing party] **Contributing parties to the clause:** n/a **When the activity within the clause should be carried out:** During tender response **The level of the activity:** Appointment	**Insight:** Clause 5.3.1 is the appointment level equivalent of clause 5.1.1 (the project-wide appointment of individuals to undertake the information management function). This part of the information management function describes the activities and tasks undertaken within a delivery team. The activities making up the information management function vary in complexity and effort. Therefore, it may be appropriate to break down more demanding activities into tasks so more than one individual can be nominated with responsibility for the delivery of the activity. It is important that the individuals nominated have the appropriate knowledge and skills required to undertake the activities assigned. The aim should be to upskill and self-deliver wherever possible to ensure information management capabilities mature within organizations. However, this clause does allow for a lead appointed party to appoint another organisation (an appointed party or a third party) to do this on their behalf. If the prospective lead appointed party has already been appointed by the appointing party to undertake some or all of its information management function, then the potential conflict of interest has to be avoided, for example by employing different individuals.

Summary of activities within the clause (as appropriate):
n/a

ISO 19650-2 related clauses:
5.1.1 Appoint individuals to undertake the information management function (project level)
5.3.2 Establish the delivery team's (pre-appointment) BIM execution plan
5.3.4 Establish the delivery team's capability and capacity
5.3.5 Establish the delivery team's mobilization plan
5.3.6 Establish the delivery team's risk register
5.3.7 Compile the delivery team's tender response

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

The primary party active within the clause: Prospective lead appointed party	**Insight:** The BIM execution plan is defined in ISO 19650-2 clause 3.1.3.1. The (pre-appointment) BIM execution plan is established by a prospective lead appointed party on behalf of the delivery team and is included in their tender response. The provision of the (pre-appointment) BIM execution plan is a requirement of ISO 19650-2.
Contributing parties to the clause: n/a	Clause 5.3.2 identifies seven areas that the prospective lead appointed party should consider in establishing their (pre-appointment) BIM execution plan. However, it is important to understand what the appointing party expects the (pre-appointment) BIM execution plan to contain and to cover this accordingly. Note that the appointing party may have their own BIM execution plan template, which should comply with ISO 19650-2. Assuming this is the case, this template should be made available as part of the invitation to tender documentation.
When the activity within the clause should be carried out: Any prospective appointed parties that are known at this time	Establishing the (pre-appointment) BIM execution plan should involve collaboration with prospective appointed parties (anticipated members of the delivery team) where known, so that it reflects what the delivery team as a whole will do, not simply what the lead appointed party will do, or would like prospective appointed parties to do.
The level of the activity: Appointment	The (pre-appointment) BIM execution plan provides an opportunity for the prospective lead appointed party to identify additions and/or amendments to the project's production methods and procedures and its information standard. This might be needed so that: • Information can be effectively generated, reviewed, approved, authorised and exchanged by the different parties involved, and • Distribution and delivery of information is secure and effective

Summary of activities within the clause (as appropriate):
- Understand the appointing party's minimum requirements for the (pre-appointment) BIM execution plan and how it will be evaluated
- Establish if the appointing party has a BIM execution plan template that should be populated
- Check the project's production methods and procedures and its information standard. Identify any required additions or amendments
- Consider the contents requirements as set out in ISO 19650-2 clause 5.3.2
- Collaborate with prospective appointed parties so that the contents of the (pre-appointment) BIM execution plan reasonably reflects what the delivery team will do
- Populate the BIM execution plan

ISO 19650-2 related clauses:
5.1.6 (b)Establish the project's reference information and shared resources
5.2.3 Establish tender response requirements and evaluation criteria
5.3.3 Assess task team capability and capacity
5.3.7 Compile the delivery team's tender response
5.4.1 Confirm the delivery team's BIM execution plan

Clause: 5.3.3 Assess task team capability and capacity

The primary party active within the clause:	Insight:
Prospective task team(s)/ appointed parties	When assessing their capability and capacity, each task team shall consider:
	The task team's capability and capacity to manage information
Contributing parties to the clause:	For example: the BIM execution plan's information delivery strategy identifies the use of a specific software package to manage information. Do the members of the task team have experience in managing their information using this software?
n/a	The task team's capability and capacity to produce information
When the activity within the clause should be carried out:	For example: the project's information production methods and procedures describe several production methods including space, object type and object component naming conventions. Do the members of the task team have experience in producing their information following these methods?
During (or prior to) preparation of the tender response	The availability of IT within the task team
The level of the activity:	For example: can the hardware, software and IT infrastructure available to the task team meet the information delivery strategy? If not, the task team would need to describe how they intend to meet the information delivery strategy.
Appointment	It is important to accurately assess task team capability and capacity and to be able to provide evidence if necessary.
	In addition, while ISO 19650-2 identifies this as a task team activity, task teams can seek certification as a means of demonstrating capability through an independent third party.

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.3.4 Establish the delivery team's capability and capacity

Clause: 5.3.4 Establish the delivery team's capability and capacity

The primary party active within the clause: Prospective lead appointed party	**Insight:** There is no Insight for this clause
Contributing parties to the clause: Prospective task teams/ appointed parties	
When the activity within the clause should be carried out: During preparation of the tender response	
The level of the activity: Appointment	

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.3.3 Assess task team capability and capacity

5.4.2 Establish the delivery team's detailed responsibility matrix

5.5.1 Mobilize resources

Clause: 5.3.5 Establish the delivery team's mobilization plan

The primary party active within the clause: Prospective lead appointed party	**Insight:** The mobilization plan serves two purposes: 1. It informs the appointing party of the lead appointed party's approach to information management mobilization. 2. It is a tool for the Lead Appointed Party to sufficiently plan out their mobilization phase for information management after appointment. The mobilization plan may take different forms for example: a schedule, a table or even a gantt chart. ISO 19650-2 requires the lead appointed party to consider 11 elements covering testing of information exchange and delivery, common data environments, other software and hardware requirements and training and education. The plan may include:
Contributing parties to the clause: Prospective task teams/ appointed parties	
When the activity within the clause should be carried out: During preparation of the tender response	
The level of the activity: Appointment	• Ensuring export file formats are consistent and coherent. • Testing that the delivery team's common data environment (CDE) solutions perform as expected and that all appointed parties and task teams can access the CDE appropriately. • Testing that project CDE solutions perform as expected and that all key parties can access it as required. Project CDE solutions should also support all CDE workflows including ensuring acceptance mechanisms work as anticipated • Testing how information containers may manually or automatically exchange between solutions depending on workflow to reduce review waiting times • Ensuring site office ICT infrastructure including network lines are in place to allow site staff to access information. • Producing information management plans or guides to help users operate the CDE solutions • Educating the delivery team on the project goals and the journey to get there and training the delivery team on the use of any mandatory solutions being provided by the appointing party • Recruiting of members that play a vital role in the management of information including document/design managers and consultants • Supporting individuals and organizations that join the delivery team during the appointment For example – the mobilization plan could describe a series of information management workshops with new appointed parties as part of their project induction

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.4.1 Confirm the delivery team's BIM execution plan

5.5.1 Mobilize resources

5.5.2 Mobilize information technology

5.5.3 Test the project's information production methods and procedures

Clause: 5.3.6 Establish the delivery team's risk register

The primary party active within the clause: Prospective lead appointed party	**Insight:** ISO 19650-2 sets out the criteria for the prospective lead appointed party to include in their delivery team's risk register. For example: the appointing party could specify submission of a sub selection of red risks from the delivery team's risk register. The appointing party may wish to share their current perceived risks that are relevant to delivery as part of the invitation to tender.
Contributing parties to the clause: Prospective task teams/ appointed parties	Note that all parties may have internal risk registers that highlight their own perceived risks. These may have additional risks listed relevant to that party's internal operations and risk management.
When the activity within the clause should be carried out: During preparation of the tender response	For example, a lead appointed party may have a corporate risk register that outlines the commercial risks of delivering a common data environment (CDE) and committing to service level agreements. This aspect could be reflected in the delivery team's risk register.
The level of the activity: Appointment	It is suggested that an integrated risk register is generated which includes the information management risks alongside other appointment related risks.

Risks to consider including in the delivery team's risk register could, for example, include the following:

Assumptions

1. Existence, gaps and adequacy of the EIR received, and the steps needed to address these concerns.
2. Impact of roles and responsibilities for information management and how appointing party information requirements are being captured.
3. Information related risks should be integrated into a single risk register. For example, the BEP should not feature a supplementary risk register.

Milestones

1. Consider whether there is sufficient capability and capacity to meet the delivery milestones.
2. Consider project specific procurement risks. Such as the procurement lead times of telecommunications for project sites.

Information Protocol

1. Consider whether the rights and responsibilities in the protocol are acceptable from legal and commercial perspectives.
2. Existence, gaps and adequacy of the protocol addressing elements listed in clause 5.1.8.

Information Delivery Strategy

1. Consider whether an appropriate CDE has been established and its capability to deliver the information delivery strategy
2. That all relevant documentation has been agreed by the delivery team and appointing party and communicated to all task teams as appropriate
3. That the level of information need is defined and agreed for each information exchange requirement
4. Impact of the information model federation strategy and its configuration within the CDE
5. Consider whether the mobilization phase includes all configured production templates is undertaken, tested and confirmed.

Clause: 5.3.6 Establish the delivery team's risk register	

	Insight continued:
	
	 Methods, Procedures and Information Standards
	 1. Consider the proposed methods and procedures against existing organization/ internal procedures.
	 2. Consider the impact of any deviations from existing processes.
	 3. Consider whether the proposed methods and procedures are feasible and achievable.
	 4. Assess whether the appointment / invitation to tender manages change appropriately, including ongoing amendment to appointment information management documentation.
	 5. Consider whether compliance criteria are measurable.
	
	 Mobilization, capability and capacity
	
	 1. Assess the impact of communication of the mobilization plan.
	 2. Ensure consideration for lead times is included in mobilization, for example:
	      a. CDE procurement
	      b. Internet connections / Internet service provision
	      c. System configuration
	      d. Training providers
	      e. CDE testing
	 3. Assess the impact of a negative outcome from testing information production methods and procedures.
	
	 The actual list will depend on the specific requirements of the appointment.

Summary of activities within the clause (as appropriate):
- Identify and assess risks associated with information management and information production
- Decide how to combine information management risks with the other risks being identified

ISO 19650-2 related clauses:

5.3.7 Compile the delivery team's tender response

5.4.5 Establish the master information delivery plan

Clause: 5.3.7 Compile the delivery team's tender response	
The primary party active within the clause: Prospective lead appointed party	**Insight:** There is no Insight for this clause
Contributing parties to the clause: n/a	
When the activity within the clause should be carried out: During preparation of the tender response	
The level of the activity: Appointment	
Summary of activities within the clause (as appropriate): n/a	
ISO 19650-2 related clauses 5.2.4 Compile invitation to tender information 5.3.2 Establish the delivery team's (pre-appointment) BIM execution plan 5.3.4 Establish the delivery team's capability and capacity 5.3.5 Establish the delivery team's mobilization plan 5.3.6 Establish the delivery team's risk register	

5.4 Appointment

Clause: 5.4.1 Confirm the delivery team's BIM execution plan

The primary party active within the clause: Lead appointed party	**Insight:** The BIM execution plan should be developed and agreed with each appointed party, both those known to the lead appointed party and those that will be appointed during the delivery team's work. This is to ensure that it reflects their activities, their use of IT and that they can work in accordance with the overall delivery team requirements.
Contributing parties to the clause: Appointing party and appointed parties	Development of content may also require engagement with the appointing party to agree any necessary additions or amendments to the project's information standard or the project's information production methods and procedures.
When the activity within the clause should be carried out: During completion of the appointment	Note that the language of this clause is different from clause 5.3.2 (pre-appointment BIM execution plan). Clause 5.3.2 lists items to be 'considered', but clause 5.4.1 lists items that the lead appointed party 'shall' do. Some of the items are 'as required', and this means: check what was in the (pre-appointment) BIM execution plan and update it if the information no longer reflects the current/planned delivery team approach.
The level of the activity: Appointment	It is also important to make sure the BIM execution plan meets the minimum content requirements of the appointing party and fits into their template (clauses 5.1.6 (b) and 5.2.4) if they have one.
	A BIM execution plan is likely to evolve over the life of the delivery team as additional parties are appointed. The lead appointed party is responsible for maintaining the delivery team's BIM execution plan so that it continues to represent the team's information management approach. As the BIM execution plan is an appointment (contract) document it will need to be subject to a process of formal change control with changes agreed with the appointing party and the appointed parties.
	A key recommendation is that the BIM execution plan is simple and concise so that it can be easily understood, implemented, assured and maintained.

Summary of activities within the clause (as appropriate):

- Reference back to the (pre-appointment) BIM execution plan. Reflect on the content and any feedback from the appointing party generated through the tender evaluation process and change as necessary
- Check the project's information standard
- Collaborate with appointed parties to ensure you collectively agree on the:
  - information delivery strategy
  - responsibility matrix,
  - the information standard, and the
  - proposed information production methods and procedures

At this point you should also confirm IT proposals

- Engage with the appointing party to agree any additions or amendments to the project's information standard or information production methods and procedures
- Update the information delivery strategy and high-level responsibility matrix as required
- Submit to the appointing party for inclusion in the appointment documents

ISO 19650-2 related clauses:

5.1.6(b) Establish the project's reference information and shared resources

5.2.3 Establish tender response requirements and evaluation criteria

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

5.3.7 Compile the delivery team's tender response

5.4.6 Complete lead appointed party's appointment documents

5.4.7 Complete appointed party's appointment documents

Clause: 5.4.2 Establish the delivery team's detailed responsibility matrix

The primary party active within the clause: Lead appointed party	**Insight:** Produced from the initial high-level responsibility matrix, a detailed responsibility matrix identifies: What information is to be produced; For example: the detailed responsibility matrix may identify, based on the information container breakdown structure, that information about doors should be provided and quantify how much information is required When the information is to be exchanged and with whom; For example: the detailed responsibility matrix may identify which delivery milestone this information is needed by; taking into account any dependencies identified by the delivery team. Which task team is responsible for its production. For example: the detailed responsibility matrix may show that "ABC Architects" is responsible for providing this information. Whilst preparing the detailed responsibility matrix, it is important to bear in mind that the task information delivery plans and master information delivery plan are governed by the rules set by the matrix, but will be working at an information container level.
Contributing parties to the clause: Appointed parties	
When the activity within the clause should be carried out: During completion of the appointment	
The level of the activity: Appointment	

Summary of activities within the clause (as appropriate):
n/a

ISO 19650-2 related clauses:
5.4.4 Establish the task information delivery plan(s)
5.4.5 Establish the master information delivery plan

Clause: 5.4.3 Establish the lead appointed party's exchange information requirements

The primary party active within the clause: Lead appointed party	**Insight:** The lead appointed party should define a set of exchange information requirements (EIR) for each appointment it makes just like the appointing party does (*see* ISO 19650-2, 5.2.1). Each EIR should detail the information required by the lead appointed party from the appointed party. This may include relevant aspects of appointing party's EIR, creating a cascade throughout the supply chain. These are detailed requirements and should be defined around the concept of the level of information need to ensure all facets of information are captured.
Contributing parties to the clause: n/a	
When the activity within the clause should be carried out: During completion of the appointment	For example: a tier 1 contractor manages programme and cost; therefore, they may require specific information from certain sub-contractors to enable them to carry out these tasks.
The level of the activity: Appointment	In addition, the appointing party may require asset information for maintenance purposes which will be delivered by certain sub-contractors.
	This information is included within the lead appointed party's exchange information requirements and hence the tender information for the relevant sub-contractors.
	During project delivery the exchange information requirements provide the mechanism for the lead appointed party to authorize information models.

Summary of activities within the clause (as appropriate):

Clause 5.4.3 provides step by step detail of activities required

ISO 19650-2 related clauses:

5.2.1 Establish the appointing party's exchange information requirements

5.3.3 Assess task team capability and capacity

5.4.1 Confirm the delivery team's BIM execution plan

5.4.2 Establish the delivery team's detailed responsibility matrix

5.4.4 Establish the task information delivery plan(s)

5.4.7 Complete appointed party's appointment documents

5.5.1 Mobilize resources

5.5.2 Mobilize technology

5.6.4 Review information and approve for sharing

5.7.2 Review and authorize the information model

Clause: 5.4.4 Establish the task information delivery plan(s)

The primary party active within the clause: Appointed party	**Insight:** A Task Information Delivery Plan (TIDP) is a detailed plan for how a particular task team is going to deliver the information it has been asked to provide (models, documents, schedules, calculations, and so on).
Contributing parties to the clause: n/a	There is no prescribed format for the TIDP. It lends itself to being produced as a table, or in a spreadsheet, database or even in an annotated Gantt chart.
When the activity within the clause should be carried out: During completion of and then throughout the appointment	A TIDP has certain minimum contents, defined in ISO 19650-2 clause 5.4.4 paragraph 3. These details are provided for each information container that the task team will be delivering. Because of this, a TIDP could be a lengthy resource, with details covering the "what", and the potential multiple "when's", if information containers are to be shared repeatedly during their development.
The level of the activity: Appointment	The purpose of doing this activity from the task team's perspective is to enable them to clarify what they will and will not deliver as part of their scope and what information will need to be exchanged between them and other task teams to allow timely coordination and progress across the delivery team.

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.4.2 Establish the delivery team's detailed responsibility matrix

5.4.5 Establish the master information delivery plan

Clause: 5.4.5 Establish the master information delivery plan

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 completion of and then throughout the appointment **The level of the activity:** Appointment	**Insight:** The master information delivery plan (MIDP) is the compilation of all the task information delivery plans (TIDPs) within a delivery team. Its purpose is to allow the lead appointed party to check the delivery plans across different task teams, to make sure these fit with the overall delivery team schedule of activities and to make sure that any related deliverables are in the right logical sequence. There is no minimum list of contents for an MIDP provided in ISO 19650-2. However, as an MIDP is a collation of TIDPs then the contents list of a TIDP is a good starting point. Whilst the information author responsible for an information container production is specified, the task team actually responsible for each information container could also be a valuable feature to add to the MIDP contents list. A delivery team's MIDP has to be kept up to date with any changes in the individual TIDPs that form part of it. It should also be updated to include additional TIDPs from new appointed parties/task teams joining the delivery team.

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.4.2 Establish the delivery team's detailed responsibility matrix

5.4.4 Establish the task information delivery plan(s)

Clause: 5.4.6 Complete lead appointed party's appointment documents

The primary party active within the clause: Appointed party	**Insight:** It is important that each of the five resources listed are included within the lead appointed party's appointment documents. The appointing party may find it helpful to clarify to its legal representatives preparing the appointment that some of the resource content may changing/evolve throughout the appointment so this can be incorporated correctly within the appointment documents.
Contributing parties to the clause: Lead appointed party	
When the activity within the clause should be carried out: During completion of the appointment	
The level of the activity: Appointment	

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.2.1 Establish the appointing party's exchange information requirements

5.1.4 Establish the project's information standard

5.1.8 Establish the project's information protocol

5.4.1 Confirm the delivery team's BIM execution plan

5.4.5 Establish the master information delivery plan

Clause: 5.4.7 Complete appointed party's appointment documents	
The primary party active within the clause: Lead appointed party	**Insight:** It is important that each of the five resources listed are included within the appointed party's appointment documents. The information protocol contained in the appointed party's appointment documents will usually be the same as that in the lead appointed party's appointment documents, with any relevant changes to reflect their particular appointment.
Contributing parties to the clause: Appointed party	
When the activity within the clause should be carried out: During completion of the appointment	
The level of the activity: Appointment	

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

5.4.3 Establish the lead appointed party's exchange information requirements
5.1.4 Establish the project's information standard
5.1.8 Establish the project's information protocol
5.4.1 Confirm the delivery team's BIM execution plan
5.4.4 Establish the task information delivery plan

5.5 Mobilization

5.5.1 Mobilize resources

5.5.2 Mobilize information technology

5.5.3 Test the project's information production methods and procedures

Insight text will be included in Guidance Part 2 third edition (Q1 2020)

5.6 Collaborative production of information

5.6.1 Check availability of reference information and shared resources

5.6.2 Generate information

5.6.3 Undertaken quality assurance check

5.6.4 Review information and approve for sharing

5.6.5 Information model review

Insight text will be included in Guidance Part 2 third edition (Q1 2020)

5.7 Information model delivery

5.7.1 Submit information model for lead appointed party authorization

5.7.2 Review and authorize the information model

5.7.3 Submit information model for appointing party acceptance

5.7.4 Review and accept the information model

Insight text will be included in Guidance Part 2 third edition (Q1 2020)

5.8 Project close-out

Clause: 5.8.1 Archive the project information model	
The primary party active within the clause: Appointing party	**Insight:** Although individual information containers are added to the common data environment archive during information production, this particular requirement relates to archiving the whole project information model as part of project close-out. This is to ensure that there is a definitive final version of the project information model available in case it needs to be referred to by the appointing party after the project has been completed.
Contributing parties to the clause: n/a	
When the activity within the clause should be carried out: At project close-out	
The level of the activity: Project	
Summary of activities within the clause (as appropriate): n/a	
ISO 19650-2 related clauses: n/a	

Clause: 5.8.2 Capture lessons learned for future projects

The primary party active within the clause: Appointed party	**Insight:** The opportunity to capture, store and disseminate lessons learned from one project to the next (and from one appointment to the next), supports continuous improvement of the briefing, delivery and operational outcomes of future projects. Although this is noted as a project close-out activity, capture of lessons learned might also improve processes within the duration of an appointment.
Contributing parties to the clause: Lead appointed party	It is paramount that sufficient time and resources are allowed to identify, record and understand the implications of these lessons. A robust process will ensure information collected is appropriately structured and in a consistent format to enable analysis, storage and onward utilisation.
When the activity within the clause should be carried out: Throughout the project, but particularly at close-out	Capture of lessons learned is also an activity referenced in the BS 8536 series (which remains within the UK BIM Framework), as part of soft landings. Soft landings provide a structured methodology whereby lessons can be captured.
The level of the activity: Project and appointment	The key objective of capturing lessons learned is to support future projects from briefing through to the operational stages. Therefore, consideration should be made to engage with stakeholders across the project life cycle to best inform the lessons and in doing so future projects. Through a soft landings approach, the implementation of suitably developed Post Project Evaluations (PPE) and Post Occupancy Evaluations (POE) provide the platform upon which project lessons can be captured from a variety of project stakeholders (Design Team, FM Teams, Contractor, user etc).
	It is equally important that the obligations to actively participant within the lessons learned process are clearly embedded within stakeholders appointments. The project stakeholders should be engaged and encouraged to contribute to the lessons learned, considering what was done well, what could have been done better and areas for further consideration. Both quantitative and qualitative information may be collected and suitable provisions for the analysis and dissemination of this information should also be considered within the organisation. Typical assessment criteria that may be considered within a lessons learned exercise include:-
	• Assess if the project/investment delivered the required outcomes. • Assess any pre-determined performance metrics. • Did the project delivery meet required budget and programme? • Did the procurement process satisfy all parties? • Did the information management process deliver its required outcomes? • What is the asset users' feedback? • What are the final commercial costs for the project for benchmark purposes? • Does the operational asset perform as designed? • What were the social benefits/values delivered by the project? • What was the carbon impact of the investment?
	The list is not exhaustive but provides examples criteria to be considered. Defining the criteria at the outset for the project will best support the delivery team meet these project outcomes.

Summary of activities within the clause (as appropriate):

n/a

ISO 19650-2 related clauses:

n/a

4.0 Information Management Process Summary

The summary provides a helicopter view of the processes according to ISO 19650-2 (although it should be noted that it doesn't indicate every possible instance of involvement across the parties).

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

Key:

Activity to be undertaken

Decision point

Information exchange

Sequence flow
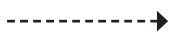
May contribute to or be informed of

	Appointing party	**Lead appointed party**	**Appointed party**

Assessment and Need (19650-2 clause 5.1)

(Establishing the project's information framework)

● New Project

5.1.1

5.1.2   5.1.3

5.1.4   5.1.5   5.1.6

5.1.7   5.1.8

Invitation to Tender (19650-2 clause 5.2)

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

○ New appointment

5.2.1

5.2.2   5.2.3

5.2.4

Invitation to tender ●

Tender Response (19650-2 clause 5.3)

(Prospective lead appointed party tender submission process)

5.3.1

5.3.2

5.3.4   ◆ Selection   5.3.3

5.3.5   5.3.6

5.3.7

◆ Selection   Tender response ●

Appointment (19650-2 clause 5.4)

(Finalisation and confirmation of appointments)

5.4.1   5.4.1   5.4.1

5.4.2

5.4.3

5.4.5   5.4.4

5.4.6   5.4.7

Appointment executed   Appointment executed

Mobilization (19650-2 clause 5.5)

(Getting the delivery team ready to go)

5.5.1   5.5.1

5.5.2   5.5.2   5.5.2

5.5.3   5.5.3

Collaborative Production of Information (19650-2 clause 5.6)

(Work in progress and shared information)

Information model rejected   Information model rejected

5.6.1

5.6.2

5.6.3

◆ 5.6.5   Shared information ●   ◆ 5.6.4

◆ 5.6.5

Next Information iteration

Information Model Delivery (19650-2 clause 5.7)

(Checking of information for publishing at an information milestone)

Information for publishing   ○ Information Milestone

◆ 5.7.2   ●   5.7.1

Information for publishing

◆ 5.7.4   ●   5.7.3

End of milestone ○

Project Close-Out (19650-2 clause 5.8)

(End of project)

5.8.1   5.8.2   5.8.2

End of project ○

Assessment and Need (19650-2 clause 5.1)

(Establishing the project's information framework)

👤 Appointing party

New Project

```
5.1.1
Appoint individuals to
undertake the information
management function
```

```
5.1.2
Establish the project's
information requirements
```

```
5.1.3
Establish the project's
information delivering
milestones
```

```
5.1.4
Establish the project's
information standard
```

```
5.1.5
Establish the project's
information production
methods and procedures
```

```
5.1.6
Establish the project's
reference information and
shared resources
```

```
5.1.7
Establish the project's
common data environment
```

```
5.1.8
Establish the project's
information protocol
```

Invitation to Tender (19650-2 clause 5.2)

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

👤 Appointing party

New appointment

5.2.1
Establish the appointing party's exchange information requirements

5.2.2
Assemble reference information and shared resources

5.2.3
Establish tender response requirements and evaluation criteria

5.2.4
Compile invitation to tender information

Invitation to tender

Tender Response (19650-2 clause 5.3)

(Prospective lead appointed party tender submission process)

👤 **Appointing party**   👥 **Lead appointed party**   📶 **Appointed party**

5.3.1
Nominate individuals to undertake the information management function

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

5.3.4
Establish the delivery team's capability and capacity

Selection

5.3.3
Assess each task team capability and capacity

5.3.5
Establish the delivery team's mobilization plan

5.3.6
Establish the delivery team's risk register

5.3.7
Compile the delivery team's tender response

Tender response

Selection

Appointment (19650-2 clause 5.4)

(Finalisation and confirmation of appointments)

Appointing party   **Lead appointed party**   **Appointed party**

5.4.1
Confirm the delivery team's BIM execution plan

5.4.1
Confirm the delivery team's BIM execution plan

5.4.1
Confirm the delivery team's BIM execution plan

5.4.2
Establish the delivery team's detailed responsibility matrix

5.4.3
Establish the lead appointed party's exchange information requirements

5.4.5
Establish the master information delivery plan

5.4.4
Establish the task information delivery plans

5.4.6
Complete lead appointed party's appointment documents

5.4.7
Complete appointed party's appointment documents
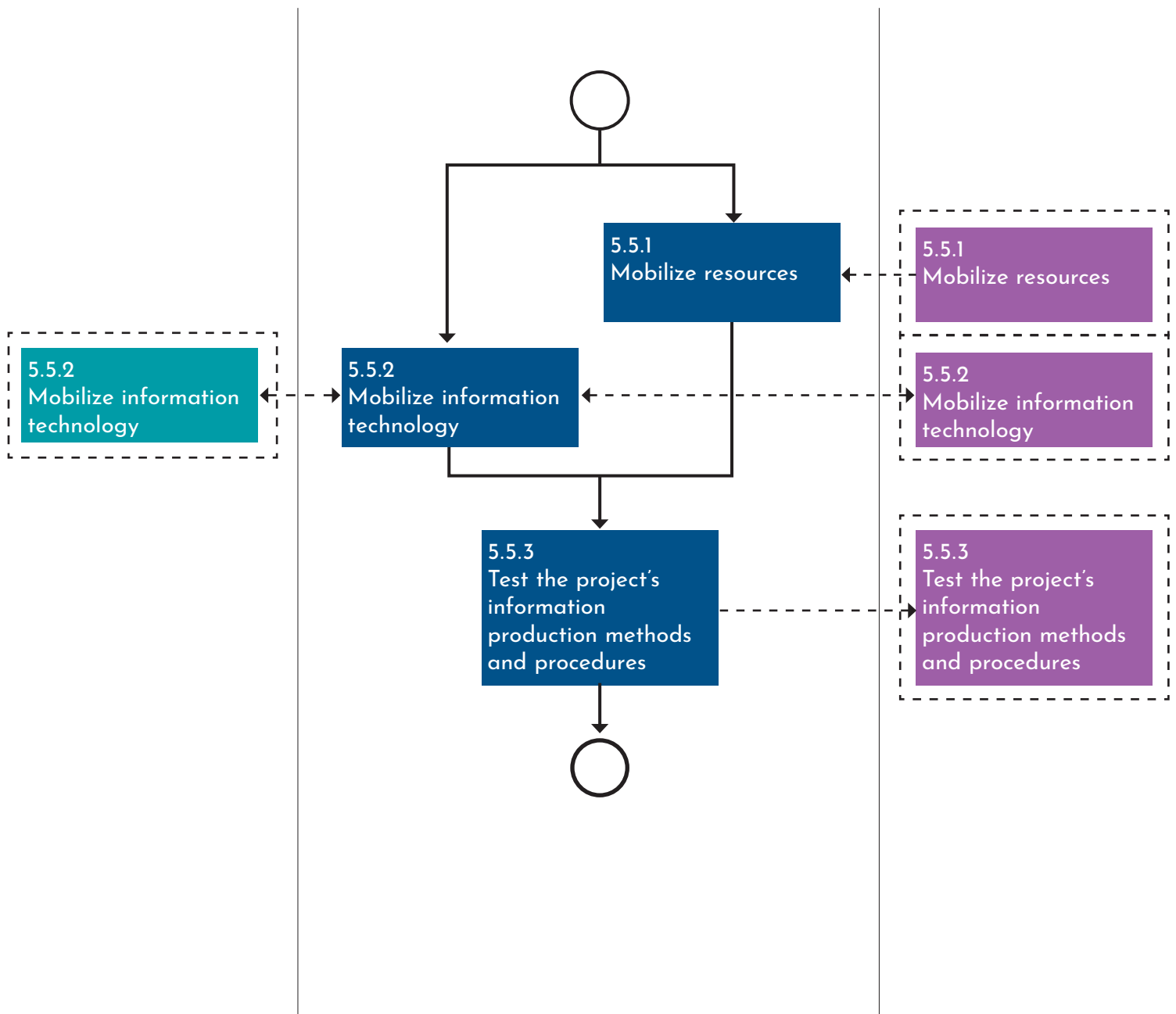
Appointment executed

Appointment executed

Mobilization (19650-2 clause 5.5)

(Getting the delivery team ready to go)

Appointing party   Lead appointed party   Appointed party

	5.5.1 Mobilize resources	**5.5.1** Mobilize resources
5.5.2 Mobilize information technology	**5.5.2** Mobilize information technology	**5.5.2** Mobilize information technology
	5.5.3 Test the project's information production methods and procedures	**5.5.3** Test the project's information production methods and procedures

Collaborative Production of Information (19650-2 clause 5.6)

(Work in progress and shared information)

Lead appointed party

Appointed party

5.6.1
Check availability of reference information and shared resources

5.6.2
Generate information

5.6.3
Undertake quality assurance check

5.6.4
Review information and approve for sharing

5.6.5
Information model review

Unsuccessful review

Unsuccessful check

Shared information
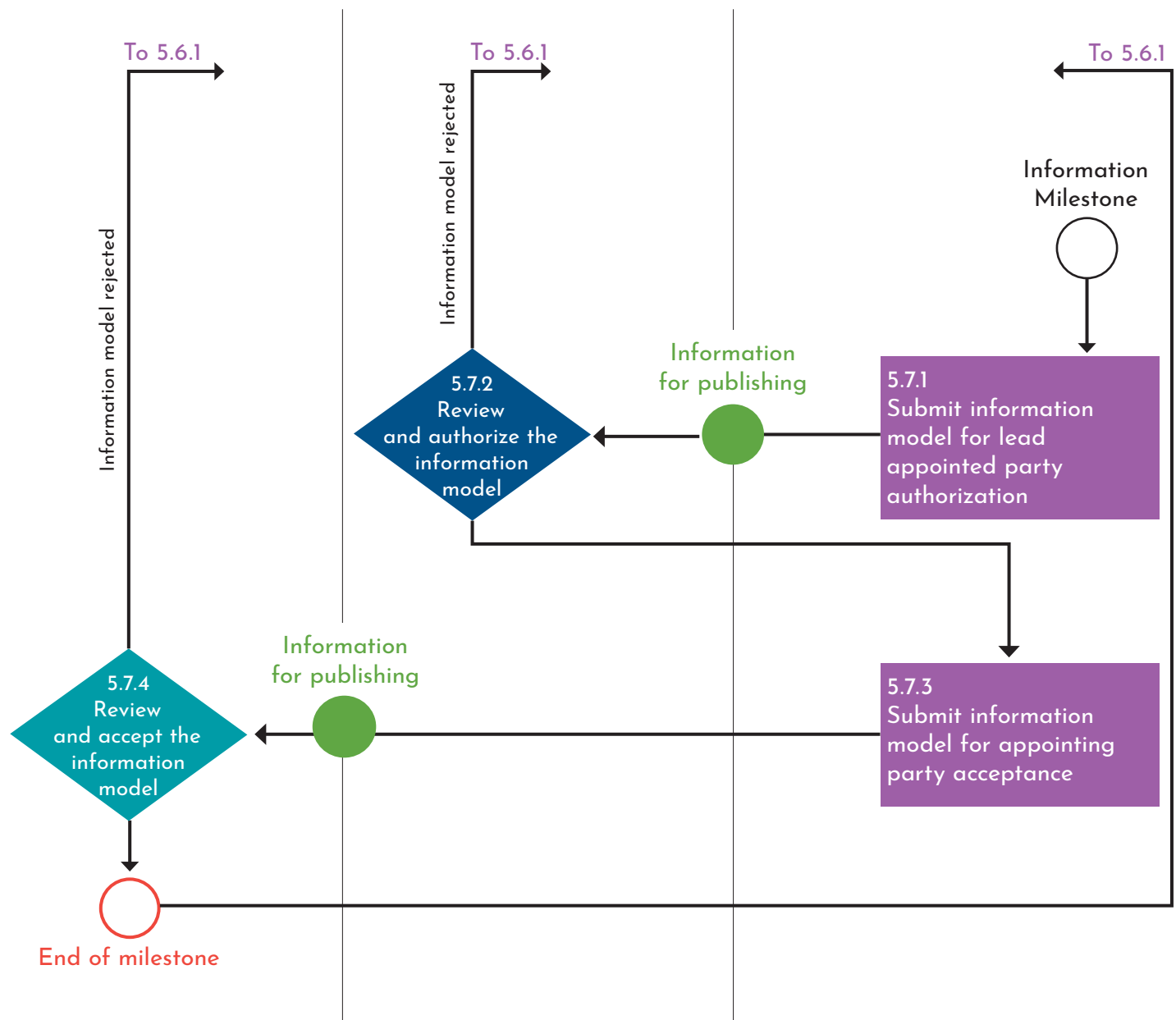
5.6.5
Information model review

Next Information iteration

Information Model Delivery (19650-2 clause 5.7)

(Checking of information for publishing at an information milestone)
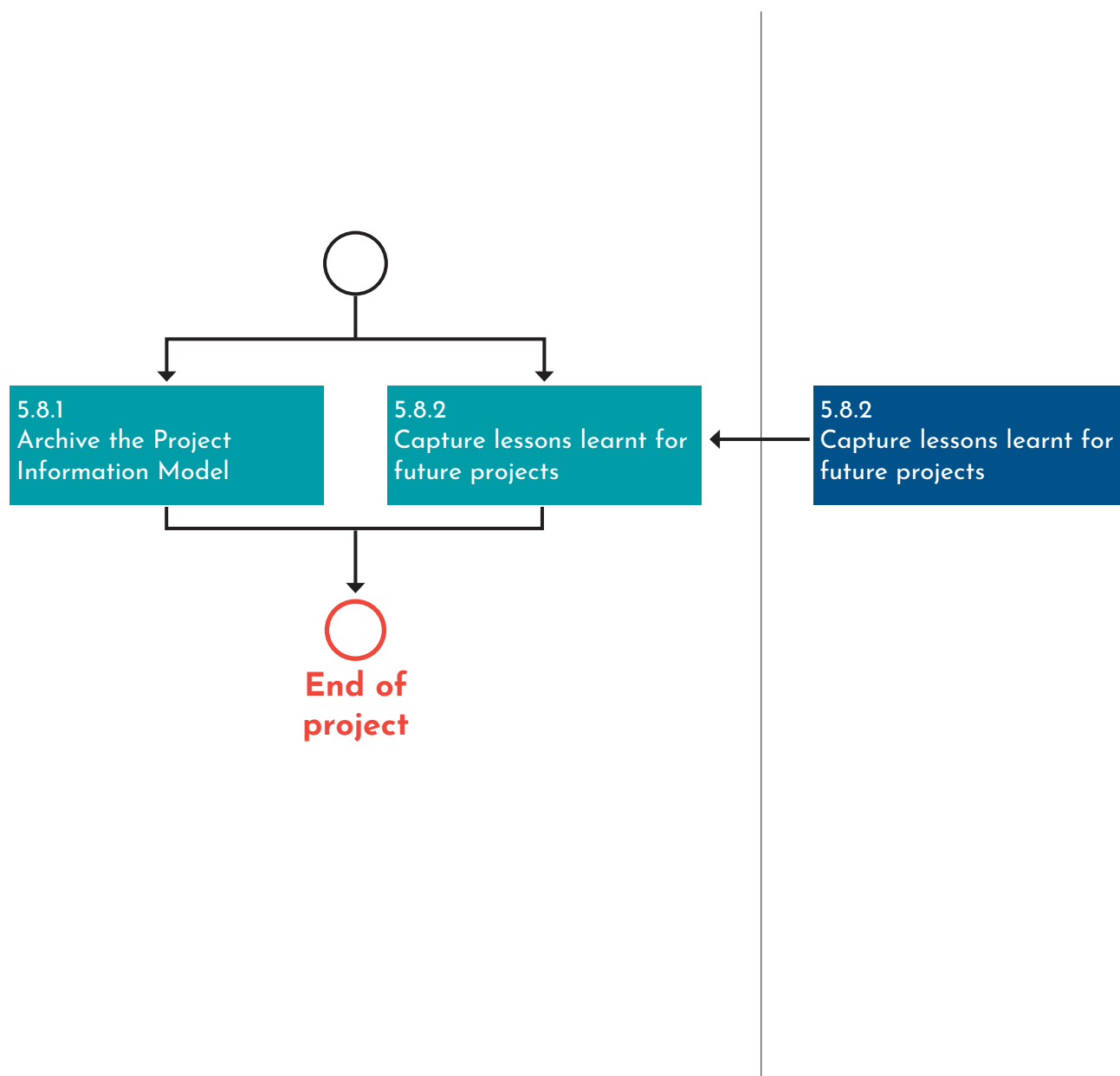
👤 **Appointing party**   👥 **Lead appointed party**   👥 **Appointed party**

To 5.6.1   To 5.6.1   To 5.6.1

Information model rejected

Information model rejected

Information Milestone

Information for publishing

5.7.2 Review and authorize the information model

5.7.1 Submit information model for lead appointed party authorization

5.7.4 Review and accept the information model

Information for publishing

5.7.3 Submit information model for appointing party acceptance

End of milestone

Project Close-Out (19650-2 clause 5.8)

(End of project)

👤 Appointing party

👥 Lead appointed party

| 5.8.1 Archive the Project Information Model | 5.8.2 Capture lessons learnt for future projects | 5.8.2 Capture lessons learnt for future projects |

End of project

5.0 Summary

The second edition of this process-level guidance has provided further insight into the CDE plus the activities associated with ISO 19650-2 clause 5.

It should be referred to by practitioners and those implementing the ISO 19650 series across a project, within an appointment or within an organisation.

As noted in the Concepts guidance, the ISO 19650 series is still very new, albeit based on former UK standards. As experience of implementing the standard is gained over the coming months and years, this guidance will be updated to reflect both this experience and any comments/feedback received from users. It will also develop to provide insight into the information management themes within the ISO 19650 series.

Please do let us have your feedback by emailing us at guidancefeedback@ukbimalliance.org.

Don't forget that you can get to the ISO 19650 standards at

And Guidance Part 1: Concepts at
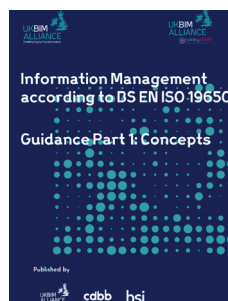
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UK BIM FRAMEWORK

bsi.   cdbb   UKBIM ALLIANCE

CONSTRUCTION INNOVATION HUB

INDUSTRIAL STRATEGY | UK Research and Innovation