

Information management according to BS EN ISO 19650

Guidance Part 2: Processes for Project Delivery

Published by





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Message from the UK BIM Alliance Chair



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. This first edition is something of a test to see how to help you navigate through the detail of the processes specified in the standard. 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 all clauses in ISO 19650-2, but also will focus on key themes which we believe present the most difficulties in implementation - including Information Requirements, Common Data Environment 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 first release 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.

This first release of Part 2: Processes for Project Delivery has focused on providing guidance for the different parties that are mentioned throughout ISO 19650 - the appointing party, the lead appointed party and the appointed party. These provide navigation routes through the guidance that will be developed in more detail in future releases, as clause-specific guidance is added.

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 common data environment, 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 October 2019 and late January 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

This guidance represents the collaborative efforts of the following people and organisations:

Editors

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

Contributors

Andy Boutle	Kier
Nigel Davies	Evolve Consultancy
Paul Dodd	Scottish Futures Trust
Stephen Holmes	Cadventure Ltd
Emma Hooper	Bond Bryan
John Ford	Galliford Try
Michael Hudson	Flanagan Lawrence
Simon Lewis	Womble Bond Dickinson
David Philp	Centre for Digital Built Britain
Dan Rossiter	British Standards Institution
Casey Rutland	Royal Haskoning DHV
Paul Shillcock	Operam
Ryan Tennyson	Scottish Futures Trust
Sonia Zahiroddiny	HS2
May Winfield	Buro Happold

Production

Pam Bhandal	PB Marketing Consultants + CDBB
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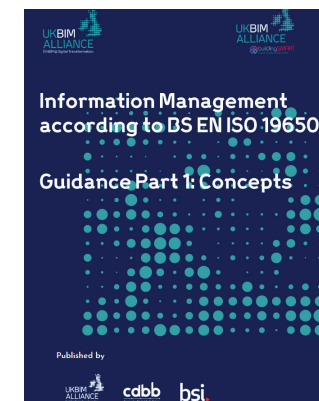
About BS EN ISO 19650

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.



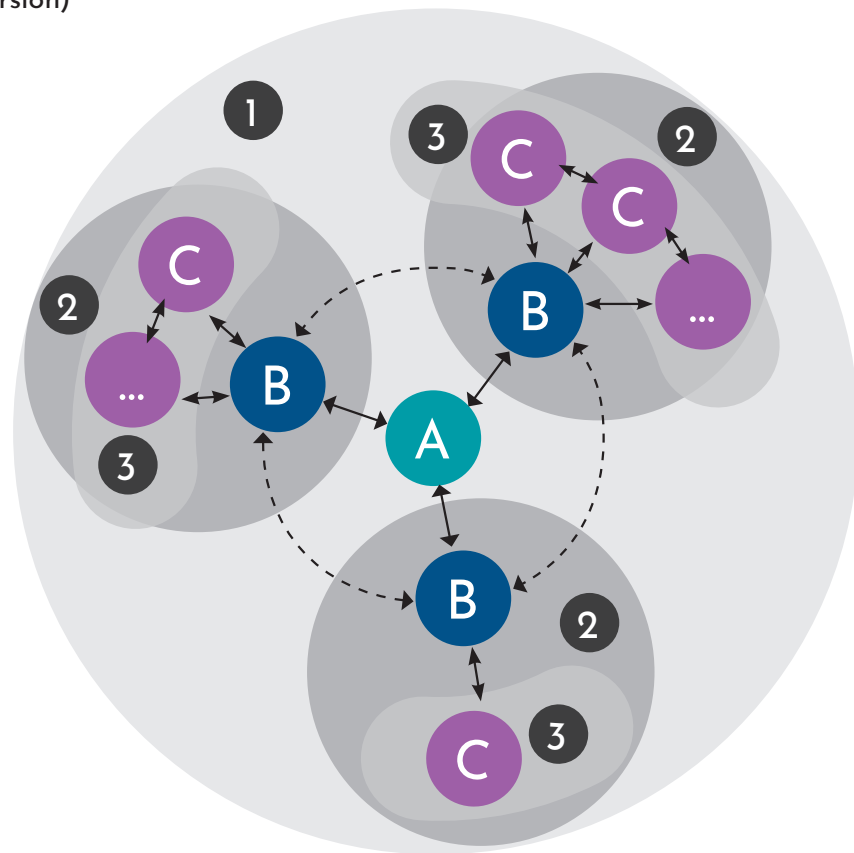
Understanding your role and the team context

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.

Interfaces between parties and teams (simplified version)



- Key:**
- A Appointing Party
 - B Lead Appointed Party
 - C Appointed Party
 - 1 Project Team
 - 2 Delivery Team
 - 3 Task Team

Image reproduced with permission from BSI

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

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

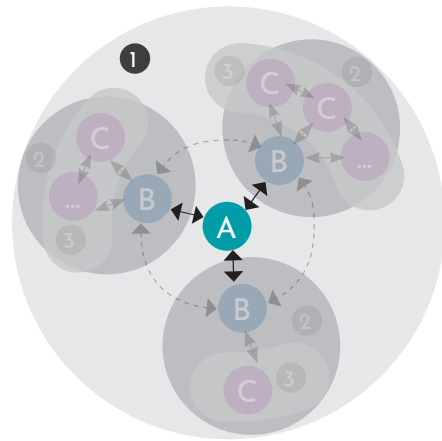
Activities set out in ISO 19650-2 clauses 5.1 and 5.8 relate to a project as a whole. Activities set out in clauses 5.2 to 5.7 are repeated for each piece of work the appointing party (client) tenders (be it for consultants, contractors and/or specialists). The colours represent parties that are active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

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

- Go to page 8 for the 'Appointing Party' section if you are a client or you are managing information on behalf of a client.
- Go to page 10 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 18 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 22 for the 'Process Summary'.

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

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.

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.

Appointing Party

Activity focus:

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

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

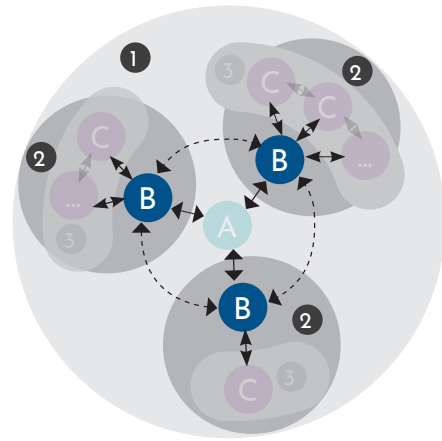
For your actions as the appointing party refer to clauses:

- 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

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:

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).

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:

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 proactive 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.

Lead Appointed Party

Activity focus:

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

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

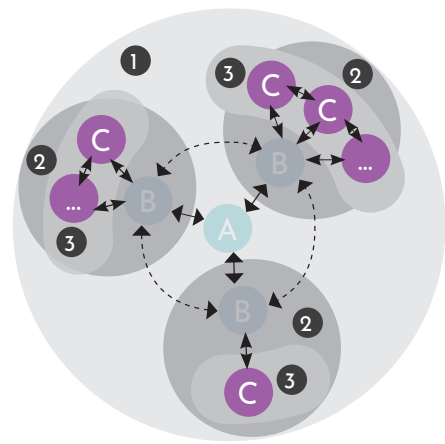
For your primary actions as the lead appointed party refer to clauses:

- 5.3.1 Nominate individuals to undertake the information management function¹
- 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
- 5.8.4 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

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:

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			✓

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:

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
- 5.6.5 Information model review
- 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

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

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).

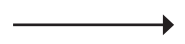
The following pages show the process in each stage in more detail.

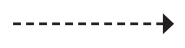
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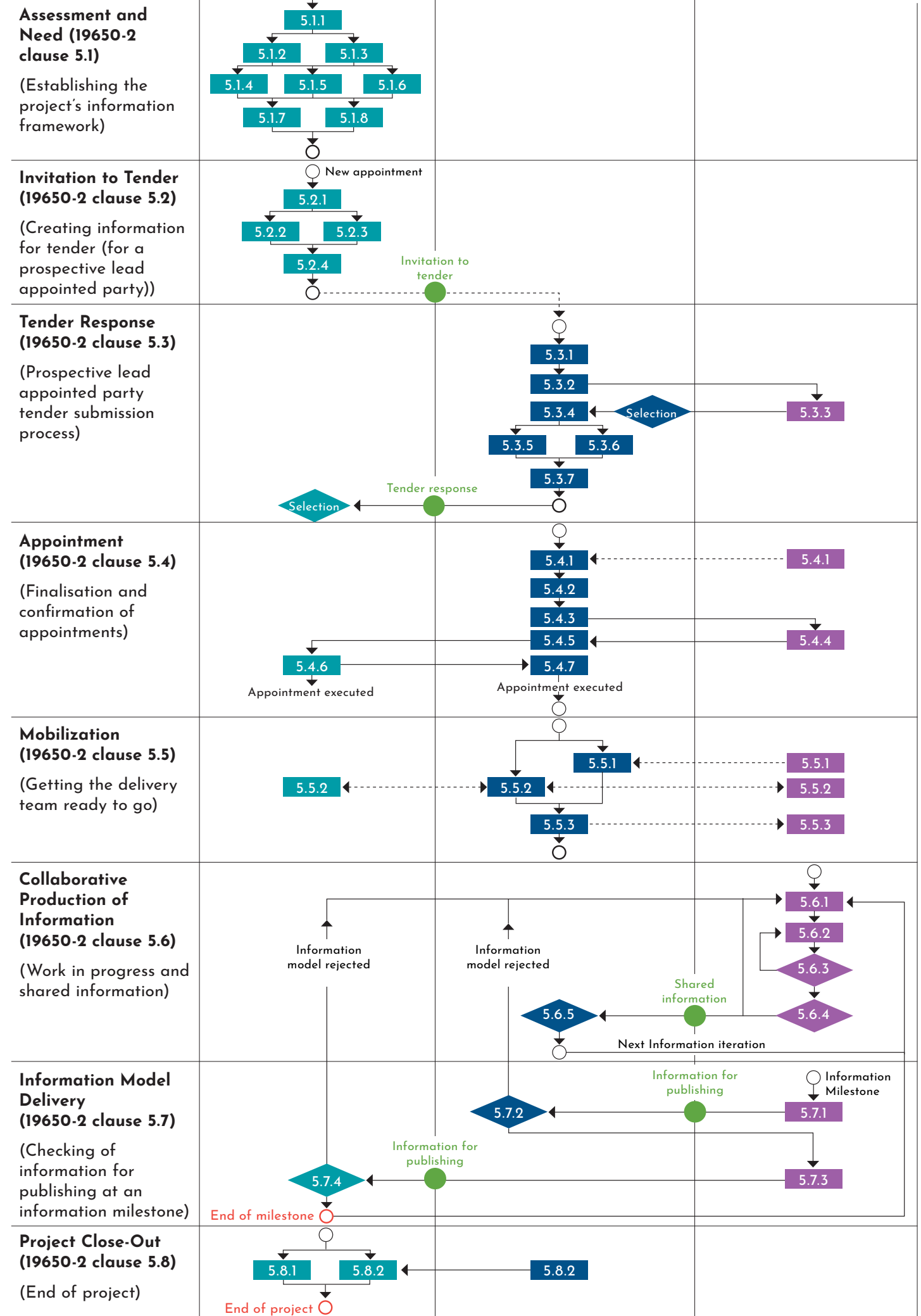
 Activity to be undertaken

 Decision point

 Information exchange

 Sequence flow

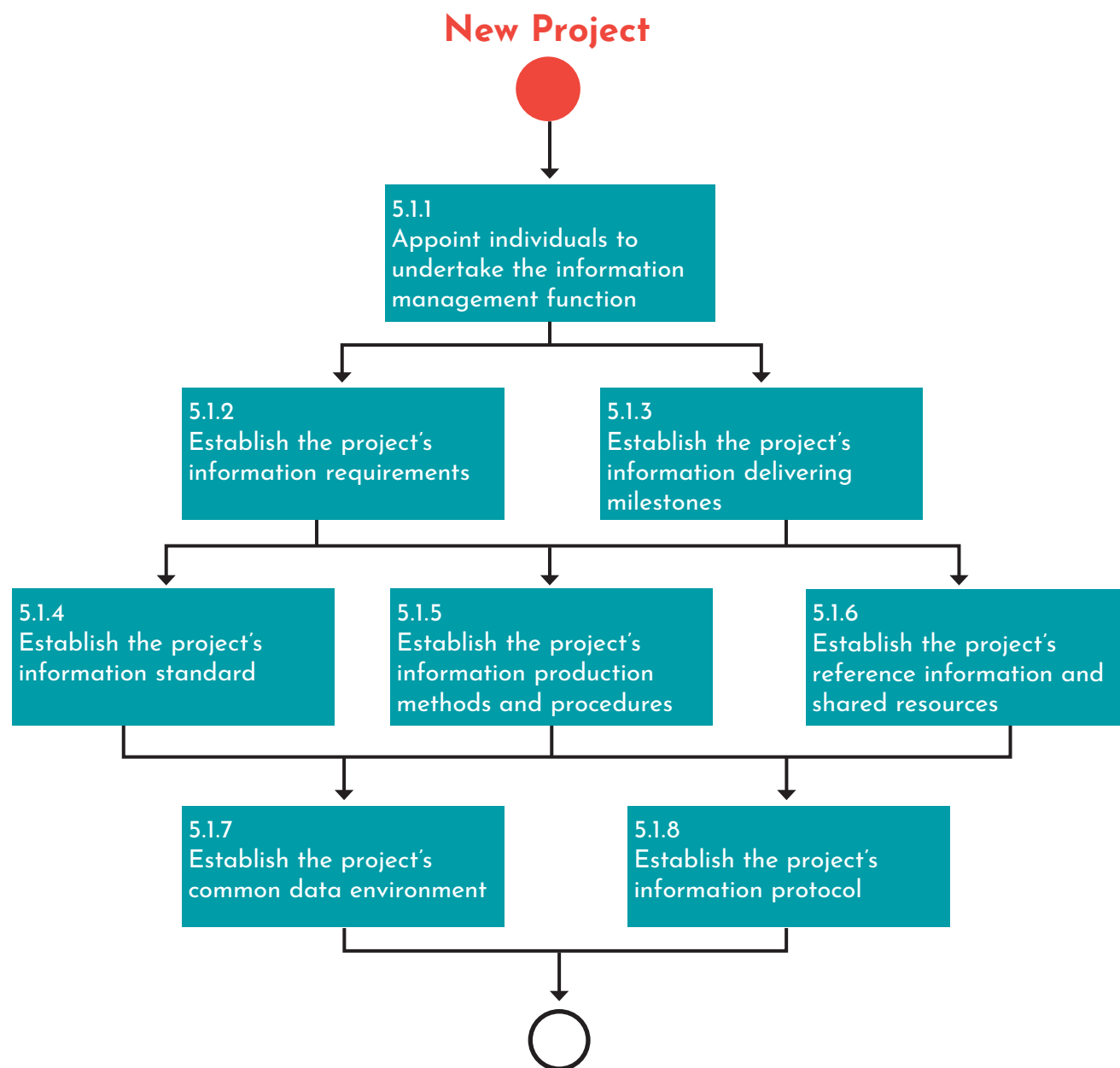
 May contribute to or be informed of



Information Management Process

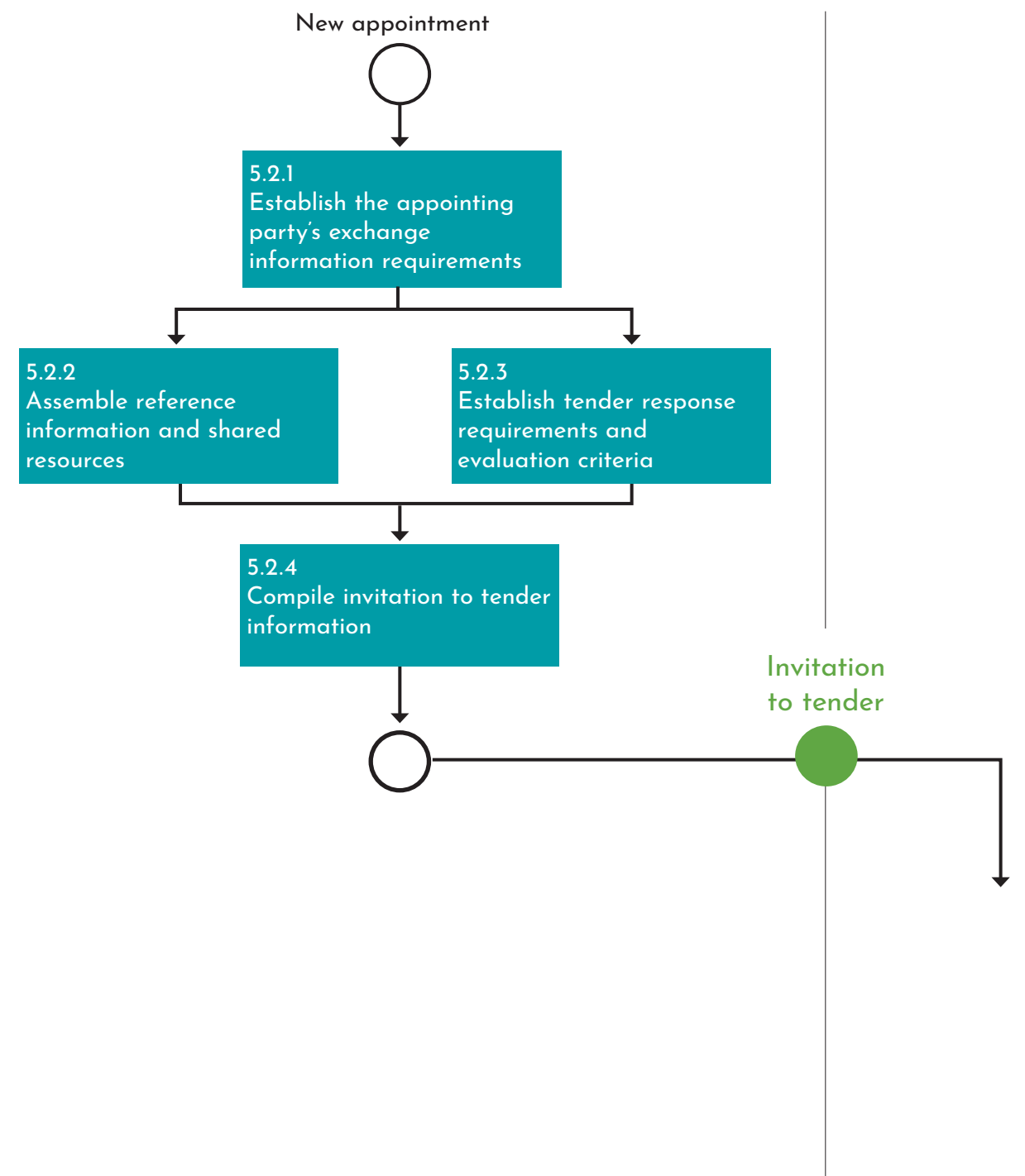
Assessment and Need (19650-2 clause 5.1)

(Establishing the project's information framework)



Invitation to Tender (19650-2 clause 5.2)

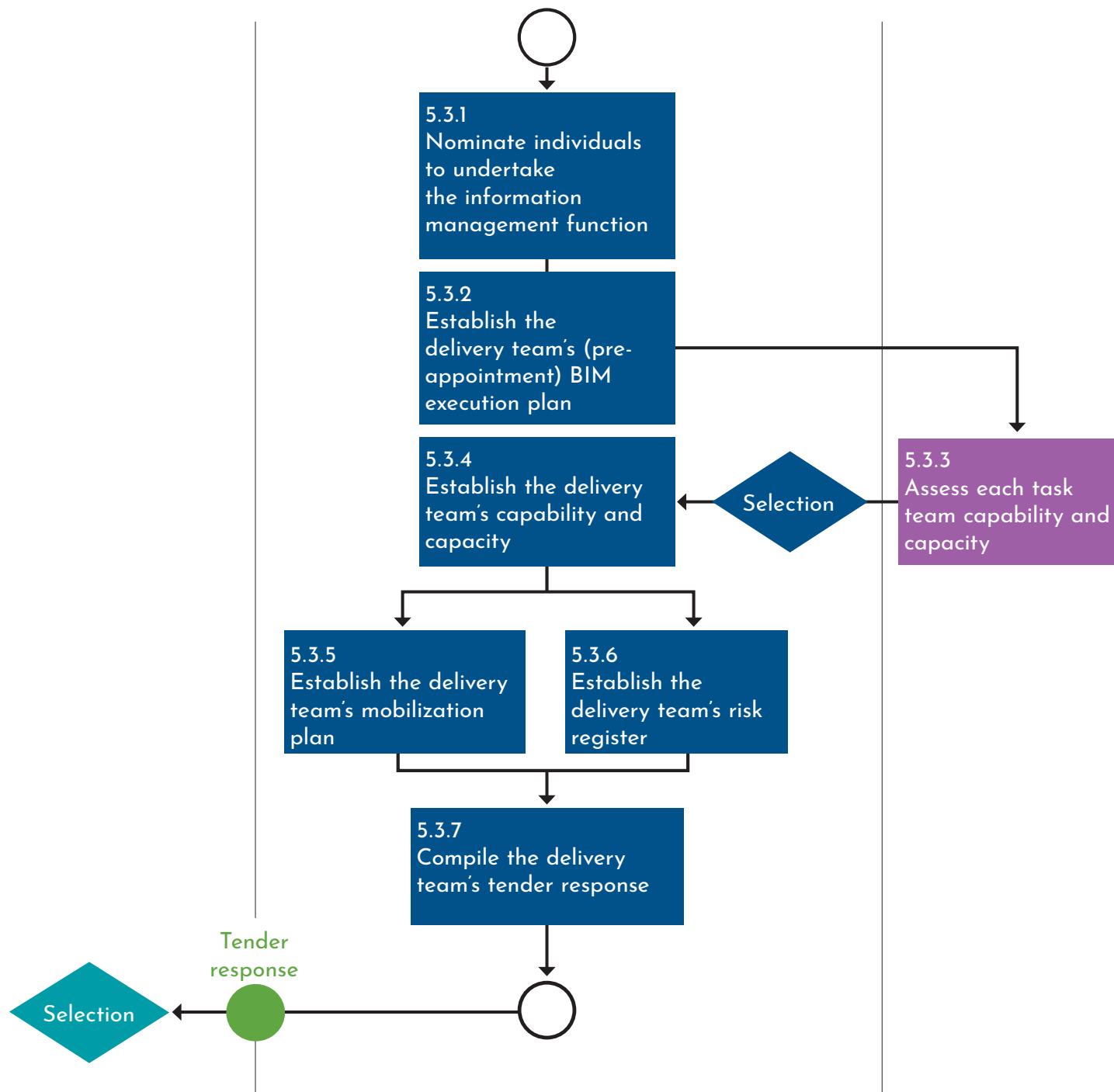
(Creating information for tender (for a prospective lead appointed party))



Information Management Process

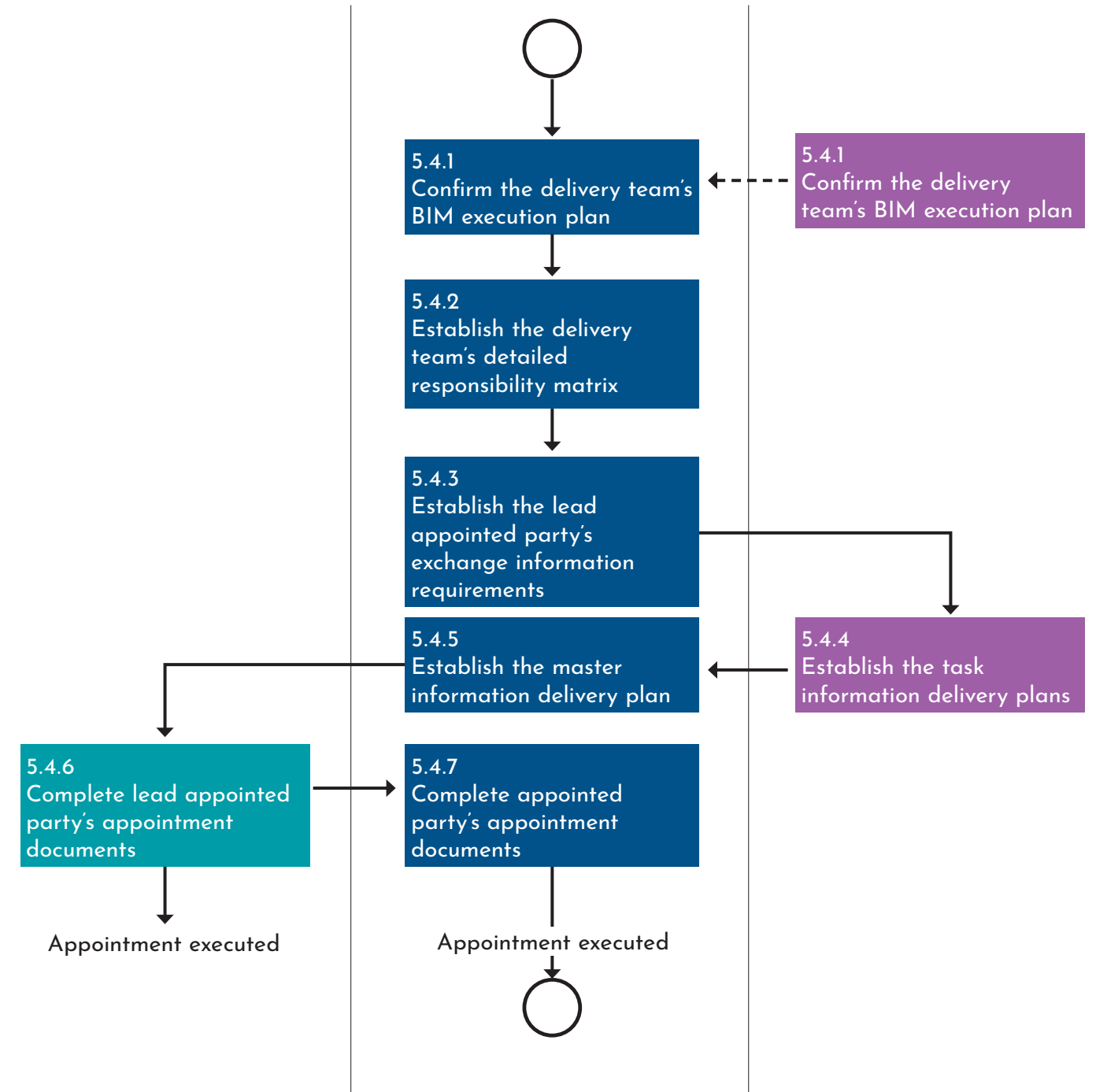
Tender Response (19650-2 clause 5.3)

(Prospective lead appointed party tender submission process)



Appointment (19650-2 clause 5.4)

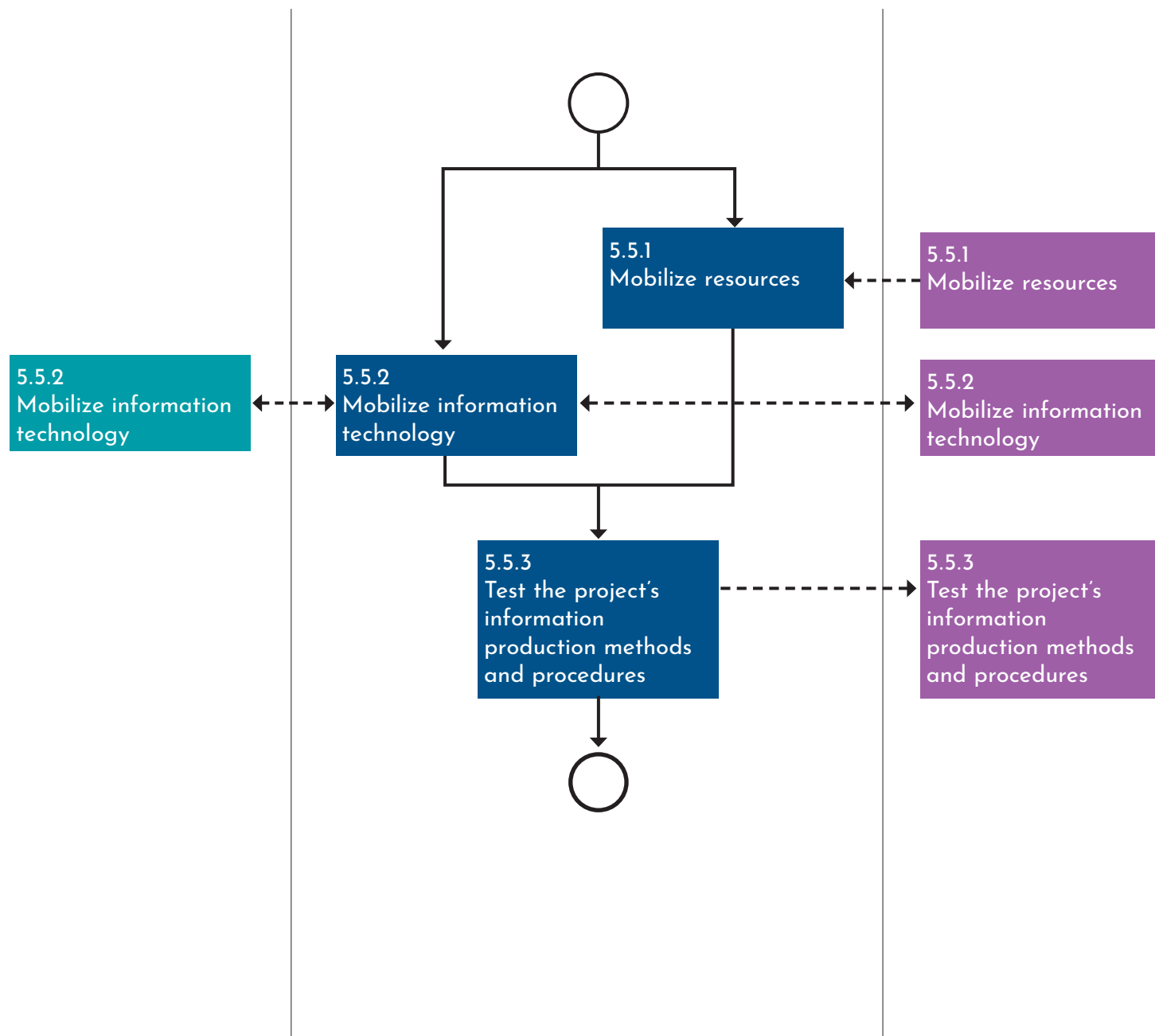
(Finalisation and confirmation of appointments)



Information Management Process

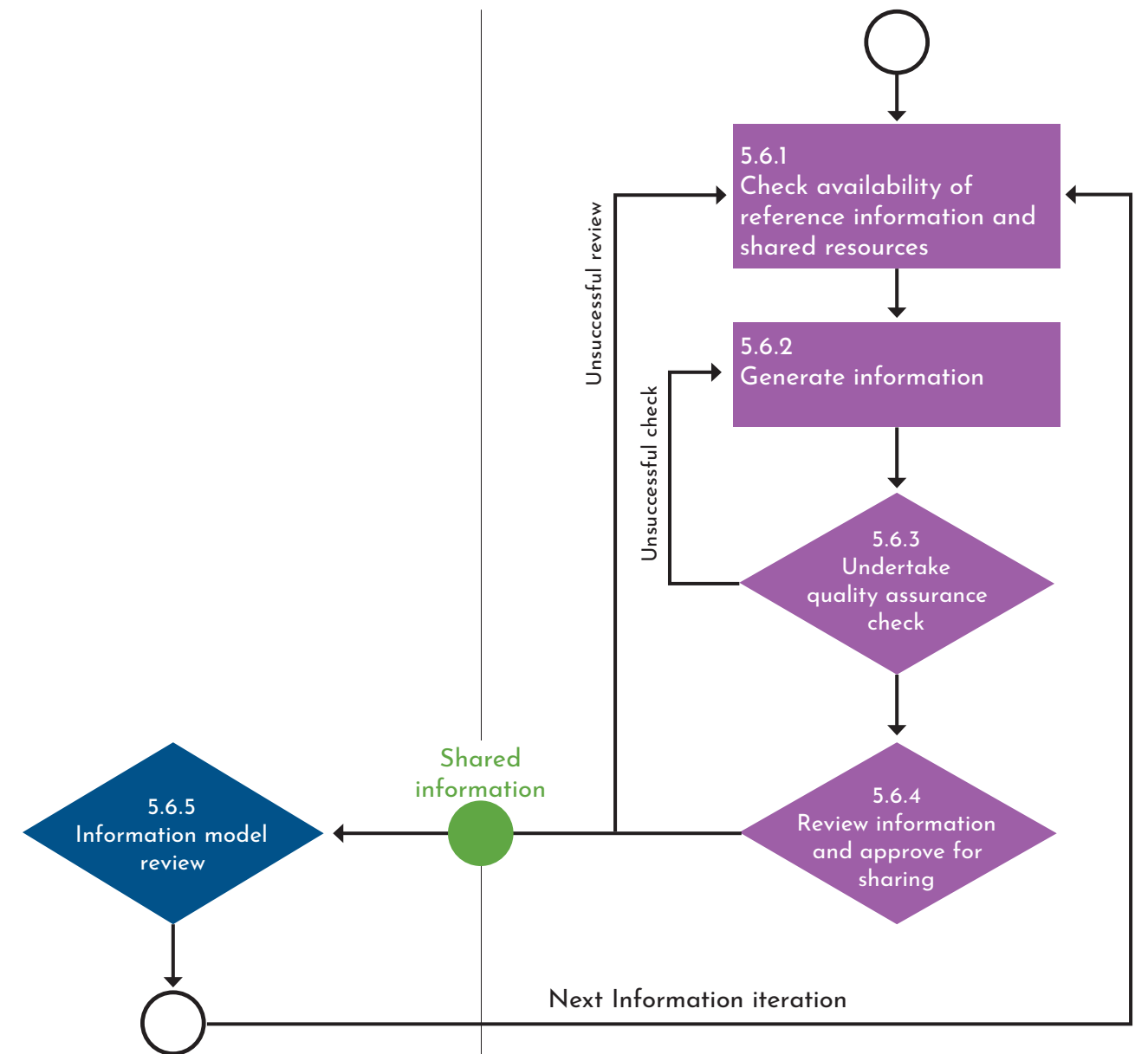
Mobilization (19650-2 clause 5.5)

(Getting the delivery team ready to go)



Collaborative Production of Information (19650-2 clause 5.6)

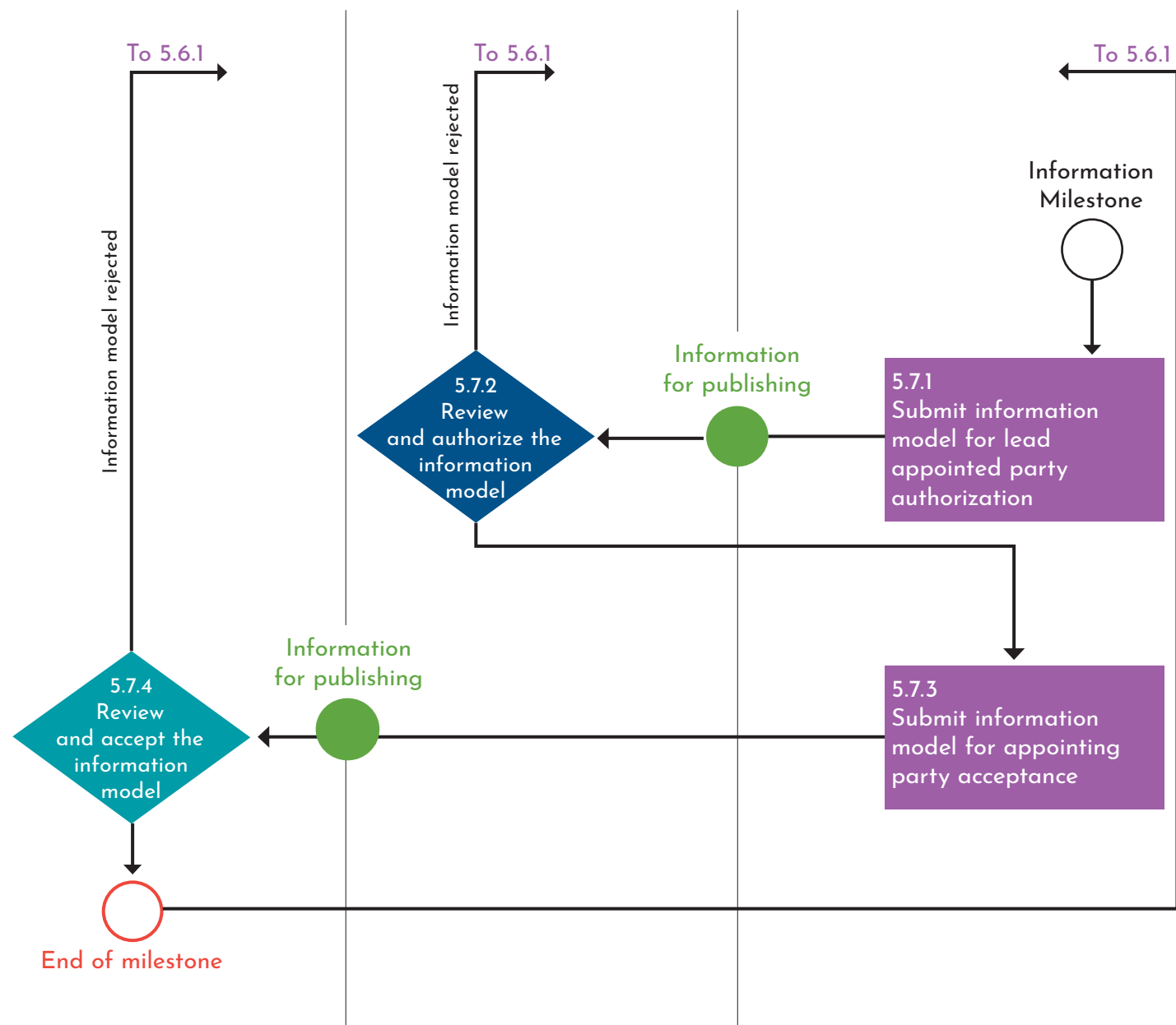
(Work in progress and shared information)



Information Management Process

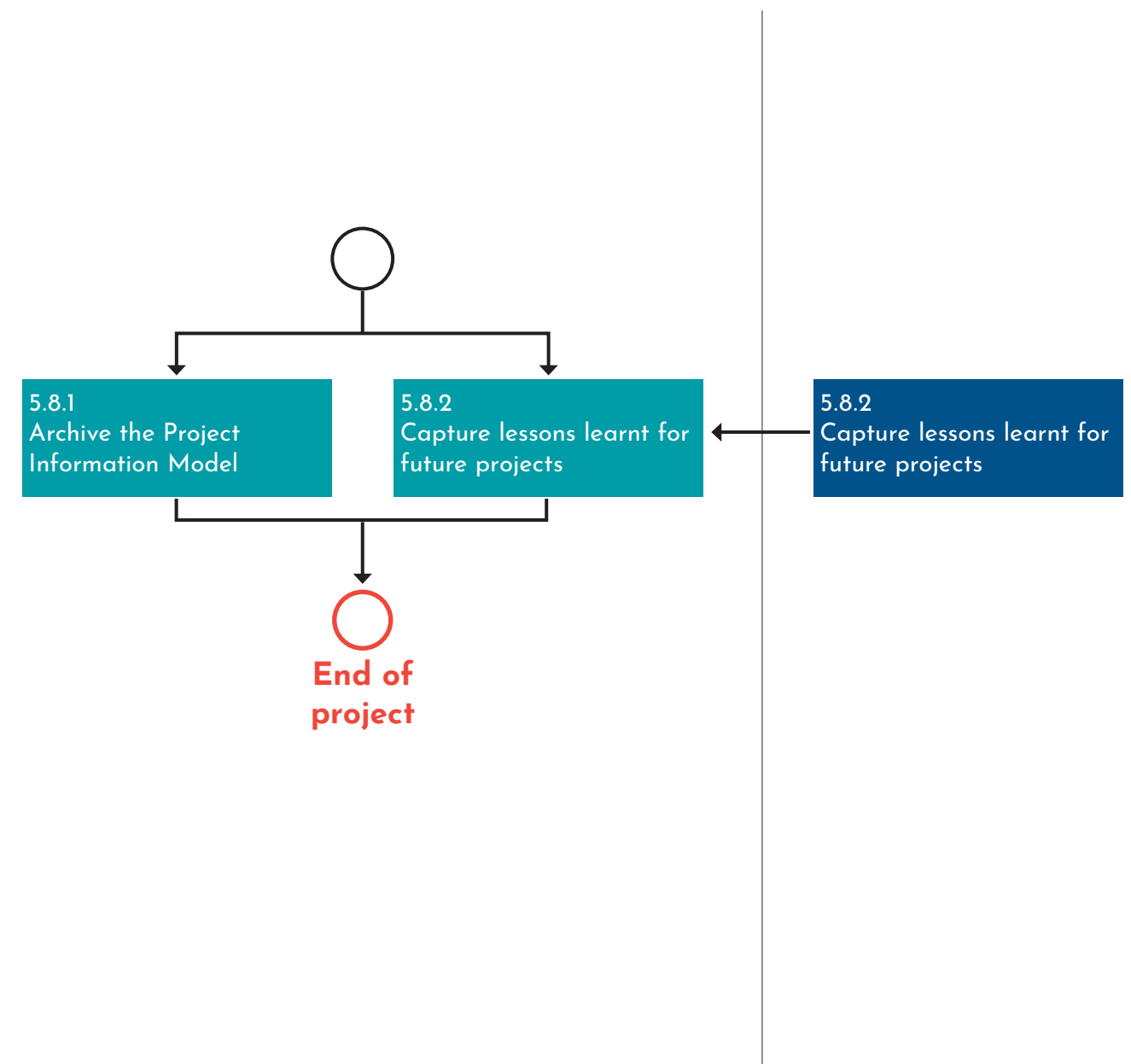
Information Model Delivery (19650-2 clause 5.7)

(Checking of information for publishing at an information milestone)



Project Close-Out (19650-2 clause 5.8)

(End of project)



Summary

The first edition of this process-level guidance has provided an insight into the activities needed and outputs generated by each of the parties identified in ISO 19650-2.

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

