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BIM & Digital Technologies: the latest legal and contractual developments

27 January 2022

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Agenda

- Introduction & the UK BIM Framework
- ISO 19650-3 & the new compliant Protocol
- Data: the golden thread & the gold standard
- Smart legal contracts – update
- Conclusion: the importance of data

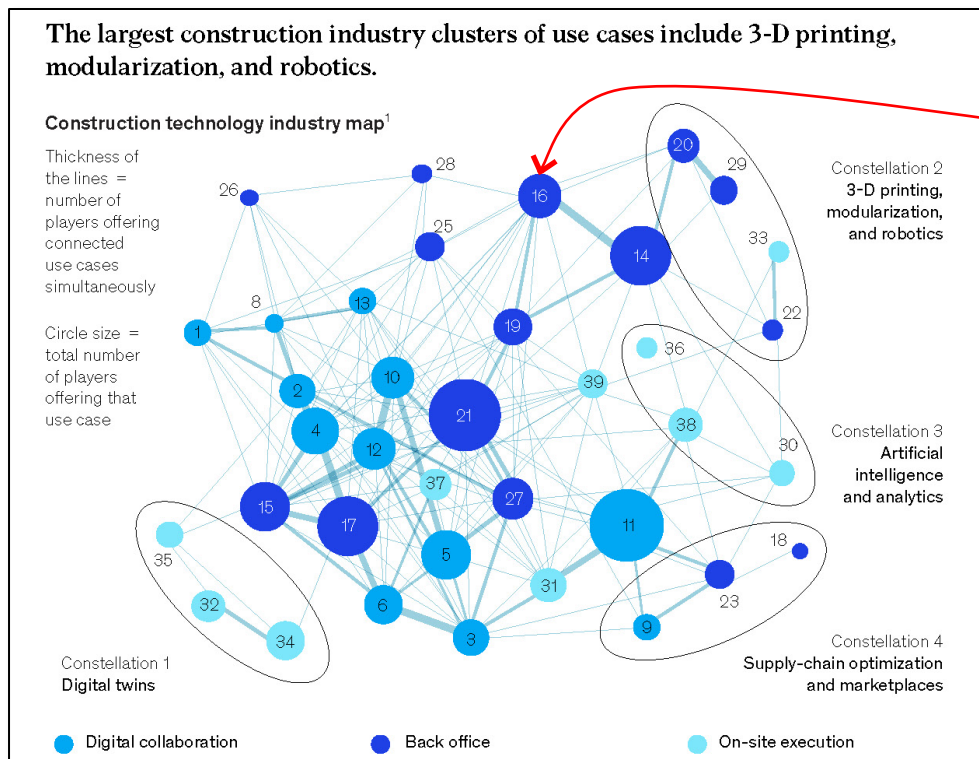
Introduction

- Today is **not** about: “*what is BIM?*”
- For that see:

The screenshot shows a web browser displaying the Fenwick Elliott website. The URL is <https://www.fenwickelliott.com/research-insight/webinars-podcasts/bim-digital-transformation>. The page features the Fenwick Elliott logo and navigation menus for 'Research & insight', 'Events', 'News', 'About us', 'Blog', 'Services', 'Experience', 'International', 'Team', and 'Contact'. The main content area is titled 'BIM & Digital Transformation in the Construction Industry: An Update' and dated 'Thursday, 25 February 2021'. It includes a summary of the webinar and a link to download the slides in PDF format. A video player is embedded, showing the webinar title and date. On the right side, there is a 'Key contacts' section listing Jeremy Glover, Stacy Sinclair, and Mark Pantry, each with their telephone number, email address, and LinkedIn profile link. At the bottom right, there is a 'Fenwick Elliott LLP' logo and a 'YouTube' icon.

Introduction

- But it is about “process”
- And it is but one piece...



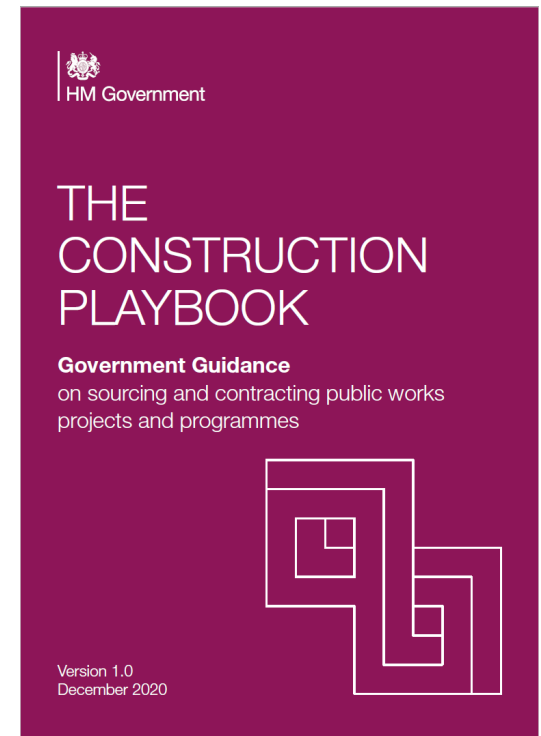
BIM

***Rise of the platform era:
The next chapter in
construction technology,***
October 2020, McKinsey

The Construction Playbook

Contracting authorities are expected to use:

‘the UK BIM Framework to standardise the approach to generating and classifying data, data security and data exchange, and to support adoption of the Information Management Framework and the creation of the National Digital Twin’ (p.11), in order to ‘enable secure, resilient data sharing across organisations and sectors’ (p.20).



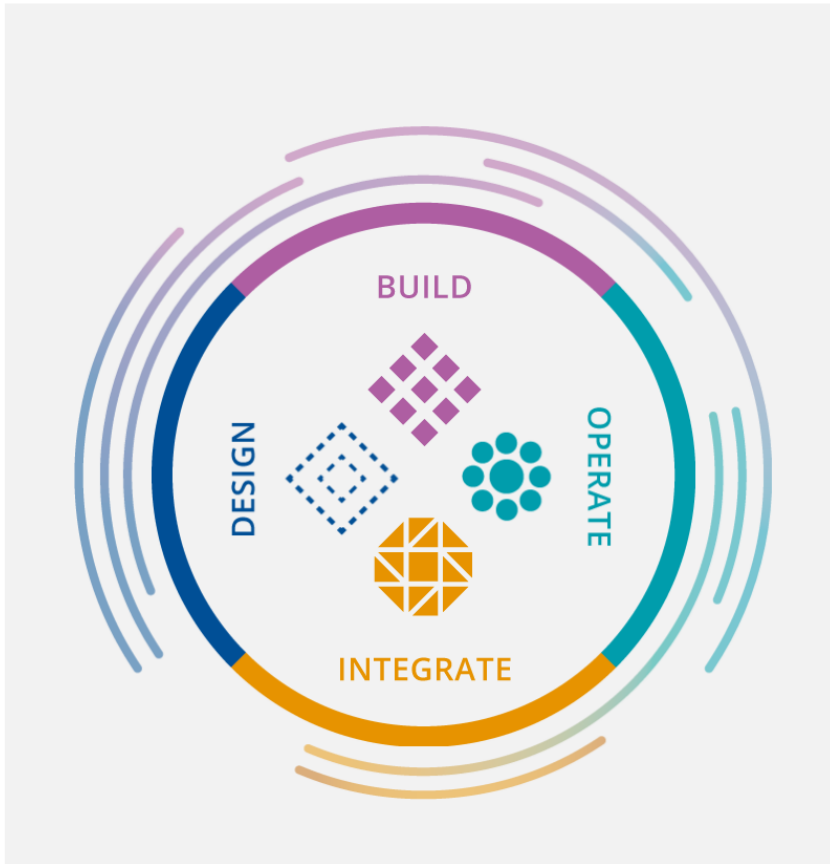
Enabling BIM: UK BIM Framework

www.ukbimframework.org

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The BIM Process



Design – Deploy digital techniques to design better performing buildings, homes and infrastructure. Use good practice, secure by default, information management to get data right from the start.

Build – Exploit new and emerging digital construction and manufacturing technologies, processes and techniques. Secure, shared information, enabling clients, design teams, construction teams and the supply chain to work more closely together to improve safety, quality and productivity during construction.

Operate – Use real time information to transform the performance of the built environment and its social and economic infrastructure. Smart asset management to predict and avoid disruption of services. Digitalisation of existing assets and infrastructure.

Integrate – Understand how spaces and services can improve citizen quality of life. Feed that information in to the design and build of our economic and social infrastructure and the operation and integration of services they deliver.

Please click on the interactive graphic on the left to view the related standards for each step of the BIM Process.

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Enabling BIM: UK BIM Framework

www.ukbimframework.org

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The approach for implementing BIM in the UK using the framework to manage information provided by the BS EN ISO 19650 series. Including:

- the published standards called upon to implement BIM in the UK
- the UK BIM Guidance Framework
- useful links to other resources

UK BIM FRAMEWORK

bsi.

cdbb
Centre for Digital Built Britain

UKBIM
ALLIANCE
Enabling Digital Transformation

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BS EN ISO 19650 – Standards

www.ukbimframework.org/guidance/

BS EN ISO 19650-1: 2018

- Part 1: Concepts and principles

BS EN ISO 19650-2: 2018
incorporating corrigendum
February 2021

- Part 2: Delivery phase of the assets

BS EN ISO 19650-3:2020

- Part 3: Operational phase of the assets

BS EN ISO 19650-5:2020

- Part 5: Security-minded approach to information management

PD 19650-0: 2019

- Transition guidance to BS EN ISO 19650

BS 1192-4:2014

- Part 4: Fulfilling employer's information exchange requirements using COBie – code of practice

PAS 1192-6:2018

- Specification for collaborative sharing and use of structured Health and Safety information using BIM

BS 8536-1:2015

- Briefing for design and construction Part 1: Code of practice for facilities management (Buildings infrastructure)

BS 8536-2:2016

- Briefing for design and construction Part 2: Code of practice for asset management (Linear and geographical infrastructure)

Enabling BIM: BS EN ISO 19650

- Applicable to assets and projects of all sizes and complexity, but apply proportionately and appropriately

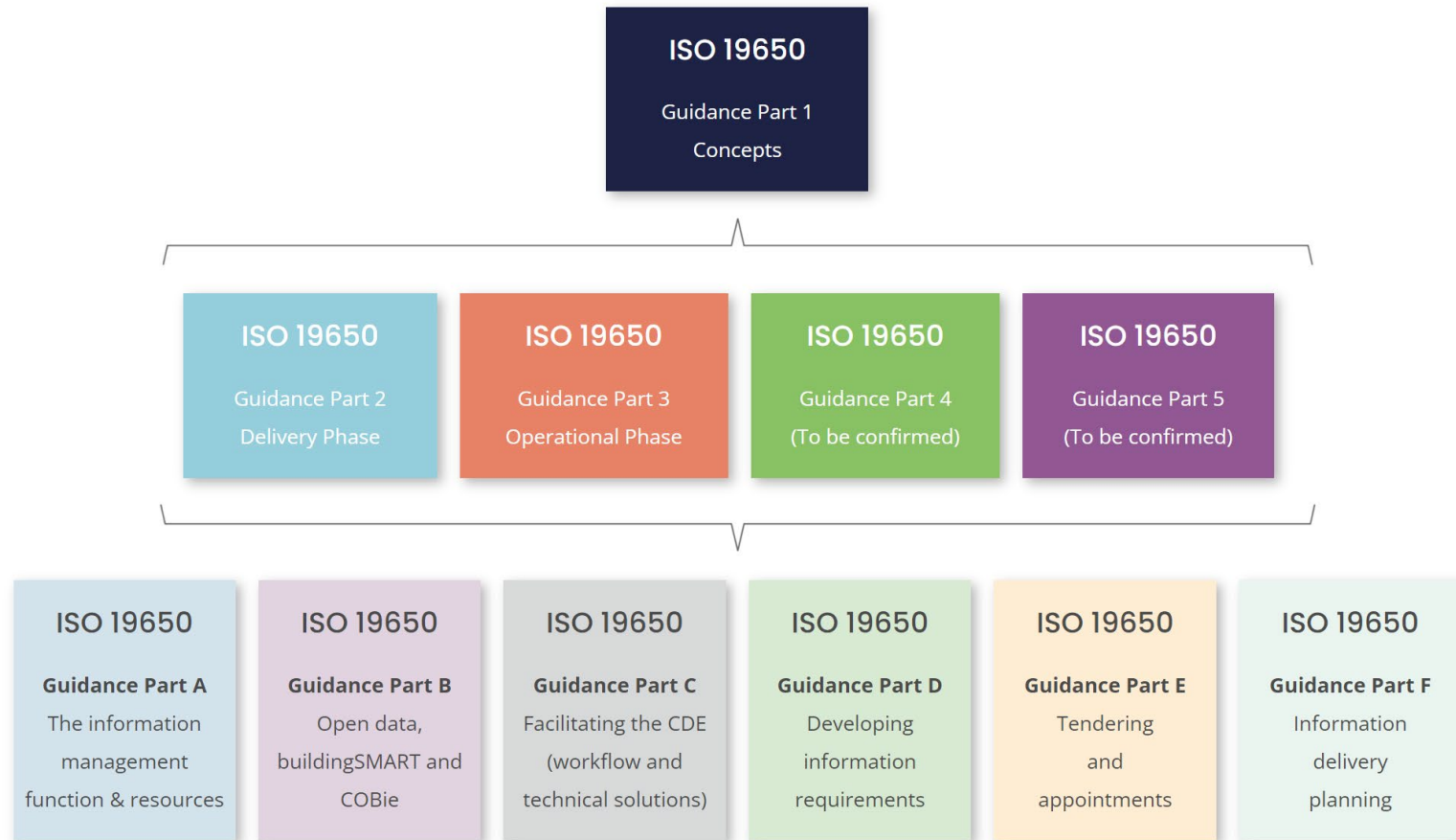
BS EN ISO 19650 Series	
19650 – Part 1	Concepts, principles and recommendations on how to manage building information
19650 – Part 2	Specific requirements for information management during delivery phase
19650 – Part 3	Specific requirement for information management during the operational phase
19650 – Part 5	Requirements for the security -minded management of sensitive information
PD-19650 – 0	Transition Guidance

BS EN ISO 19650 - Guidance

www.ukbimframework.org/guidance/

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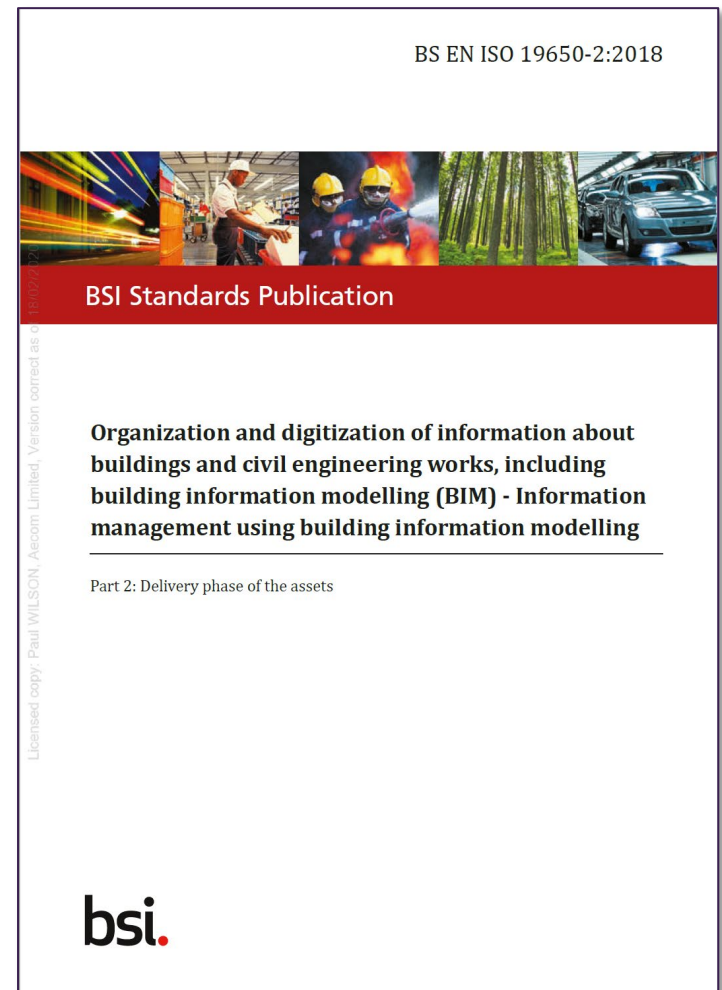
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Enabling BIM: BS EN ISO 19650

- Series of international standards
- Management of information
- Defines processes, principles and requirements for the effective management of information during delivery and operational phase of assets when BIM is used
- Based on UK 1192 series

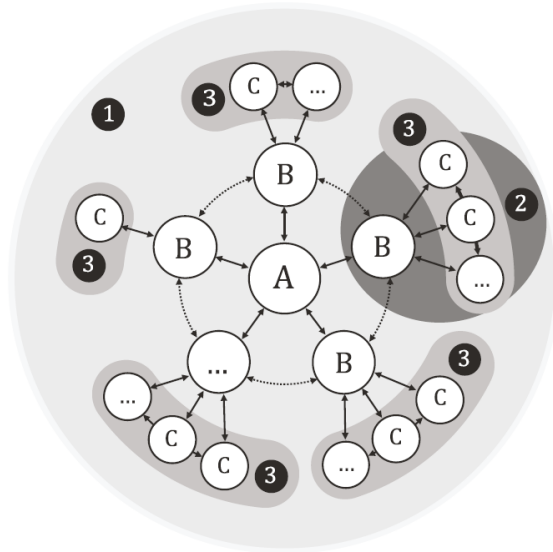


Enabling BIM: BS EN ISO 19650

- ISO 19650 Part 2 and Part 3 define the requirements for the delivery and operational phases, respectively.
- National Forewords and Annexes defined the standards and requirements which must be met in a particular region.
 - Aims to work globally for different cultures and different jurisdictions, where standards and processes are inherently different.
 - Example: Part 2 requires information to be classified. The UK National Annex states Uniclass 2015. This of course may be different in different countries.

Enabling BIM: BS EN ISO 19650

- **Terminology:** Appointing Party, Lead Appointed Party, Appointed Party



Key

A appointing party

B lead appointed party

C appointed party

... variable amount

1 project team

2 illustration of a delivery team

3 task team(s)

↔ information requirements and information exchange

⇔ information coordination

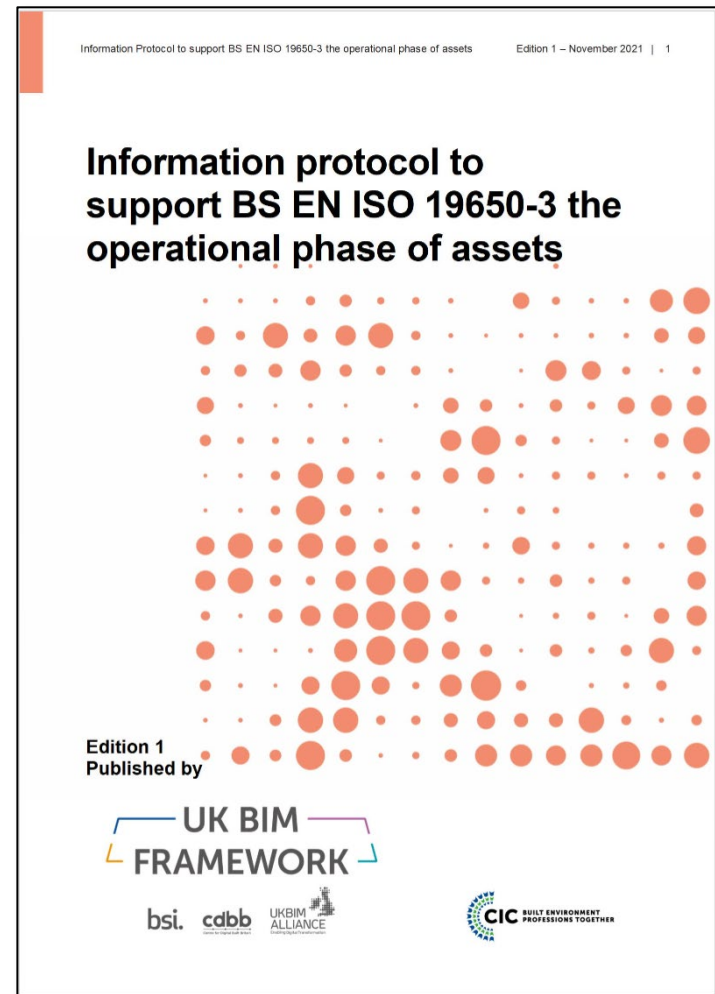
Information Protocol – Part 2 (delivery)

- BS EN ISO 19650-2:2018 requires an Information Protocol
- The only protocol designed to work the with BS EN ISO 19650.
- Building on the CIC BIM Protocol



Information Protocol – Part 3 (operation)

- BS EN ISO 19650-3:2020 requires an Information Protocol



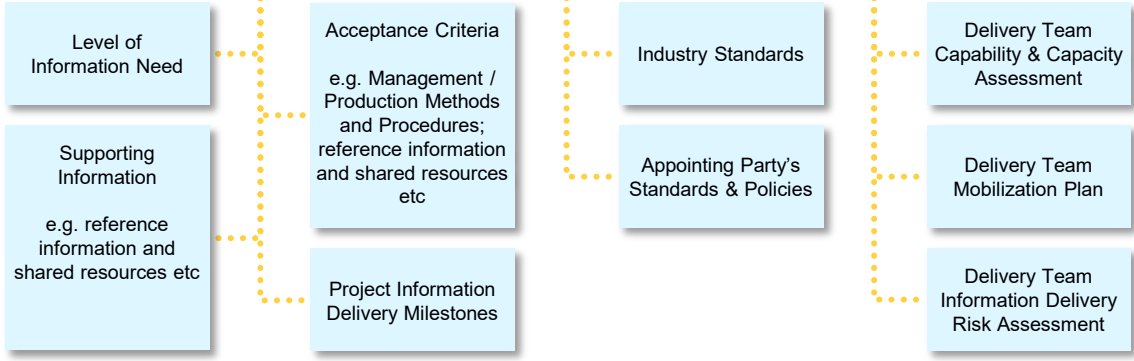
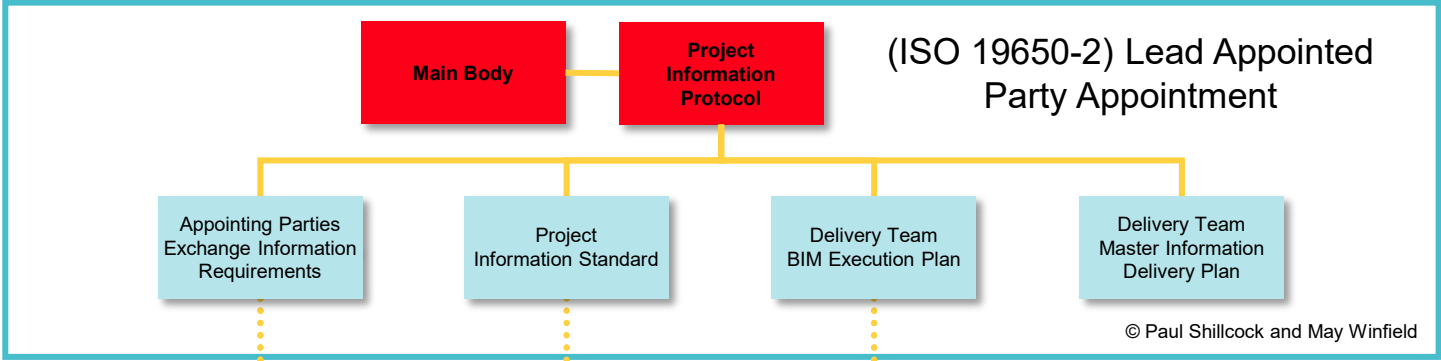
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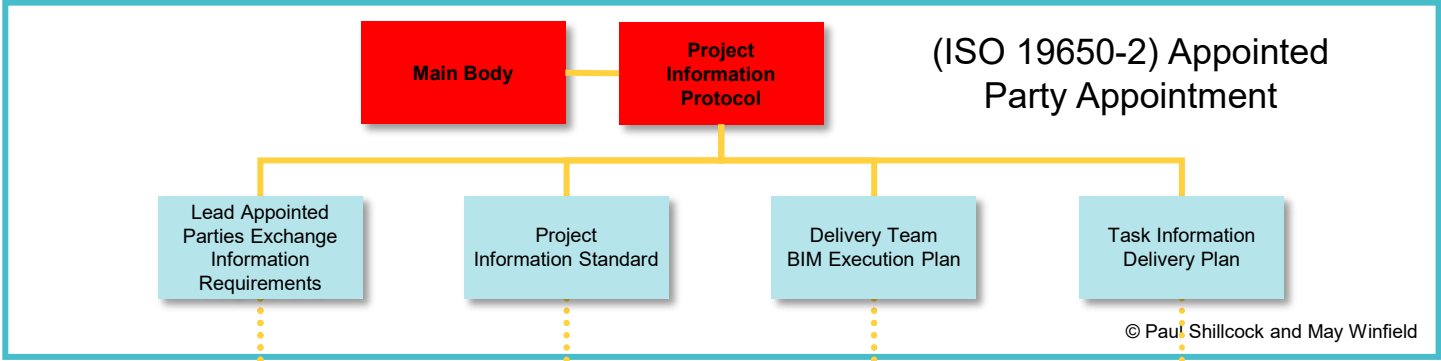
ISO19650-3 Compliant Protocol





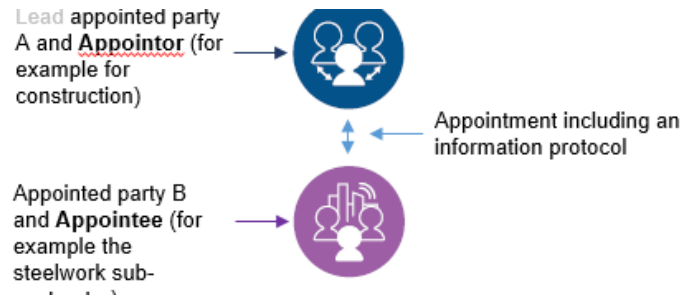
Appointment Documents	Referenced Documents	<p>The purpose of this diagram is to show the relationship between the various information management documents within an appointment and is not intended to be legal guidance.</p> <p>Not all contracts have schedules; for example the schedules contents would be contained in NEC3/4 Z-clauses and Works Information/Scope instead. Legal advice should always be sought when preparing appointments.</p>
Appointment Schedules	Appended ————— Referenced	

Note: This presentation is not legal advice & specialist advice should be obtained on any matters



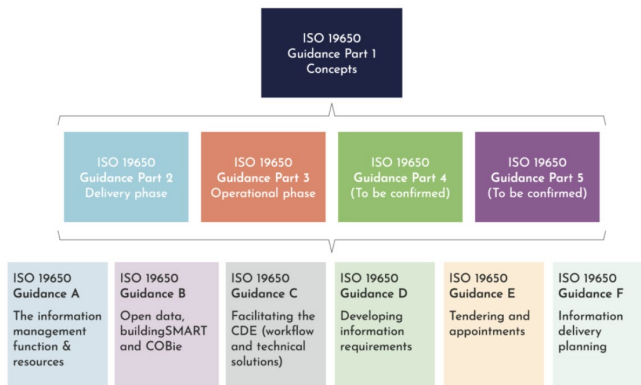
© Paul Shillcock and May Winfield

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Appointment Schedules	Appended ———— Referenced	



Read available Guidance!

<https://ukbimframework.org/standards-guidance/>



3.5.2 Master information delivery plan vs detailed responsibility matrix

The detailed responsibility matrix supports the production of the TIDPs and MIDP. It informs the scope requirements of each task team so that they can adequately define their outputs as part of their TIDP.

For example, a detailed responsibility matrix may define that the "above ground drainage" information is the responsibility of the drainage contractor but the "below ground drainage" is the responsibility of a civil engineer. This communicates to the drainage contractor that their scope is above ground drainage only. When this drainage contractor develops their TIDP to detail out the specific deliverables such as "drainage layout plans", they will be doing this just for above ground drainage. The MIDP compiled by the lead

Information management according to BS EN ISO 19650

Guidance Part F About information delivery planning



Edition 1
Published by

UK BIM FRAMEWORK

bsi. cabb UKBIM ALLIANCE

Retrievable information within files-based TIDP

Information Container Name	Information Container Description
All party wall interface detail	Detail of the north party wall at a scale of 1:20
Partition plan for the whole first floor	Plan defining partition types and acoustic ratings
Fire strategy for the first floor	Fire strategy defining wall and door fire ratings, equipment and escape routes

Figure 13: Non-file-based TIDP approach

3.3 High level responsibility matrix contents

As part of their tender response, the prospective lead appointed party filters out the information deliverables they expect to fulfil in consideration of the appointing party's exchange information requirements. This ensures there is no overlap with other delivery teams and clarifies what, at high level, they expect to deliver. For example, a main contractor who is tendering for construction works, and has some contractor design portion works within their scope, needs to make it clear where their scope starts and ends, especially if there is some overlap with another lead appointed party.

The structure of the high level responsibility matrix is often determined by the agreed container breakdown structure as noted in section 3.1 but now includes the WHO.

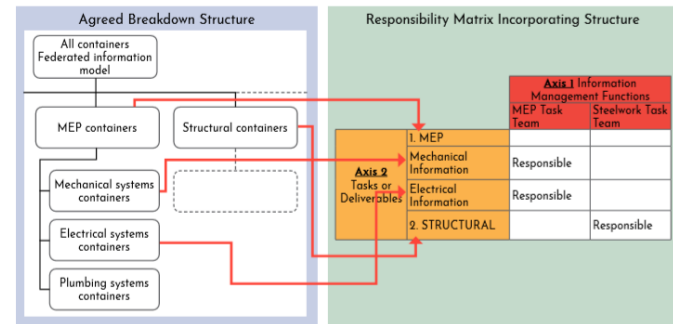


Figure 5: Example of a high-level responsibility matrix incorporating agreed breakdown structure

File-based TIDP

Information Container Name (File ID)	Information Container Description
HC101-SSI-ZZ-DR-A-0001	Party Wall Interface Detail
HC101-SSI-ZZ-DR-A-0002	Partition Setting Out Plan - First Floor
HC101-SSI-ZZ-DR-A-0003	Fire Strategy Layout - First Floor

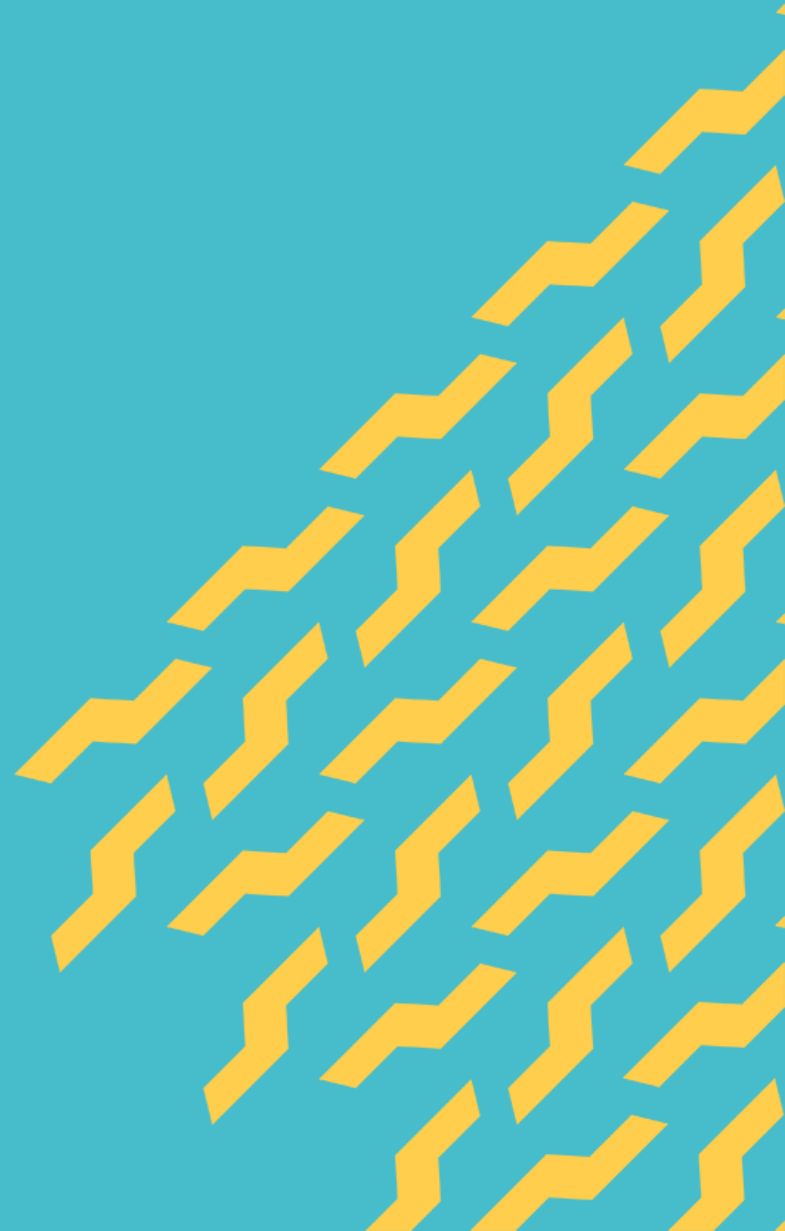
Figure 12: File-based-only approach to listing information containers within a TIDP

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The ISO19650-3



Overview of the ISO 19650-3 information management process

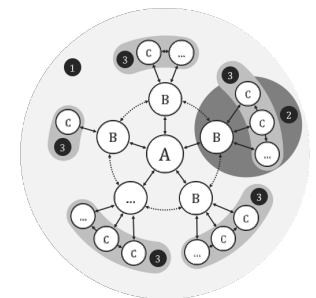
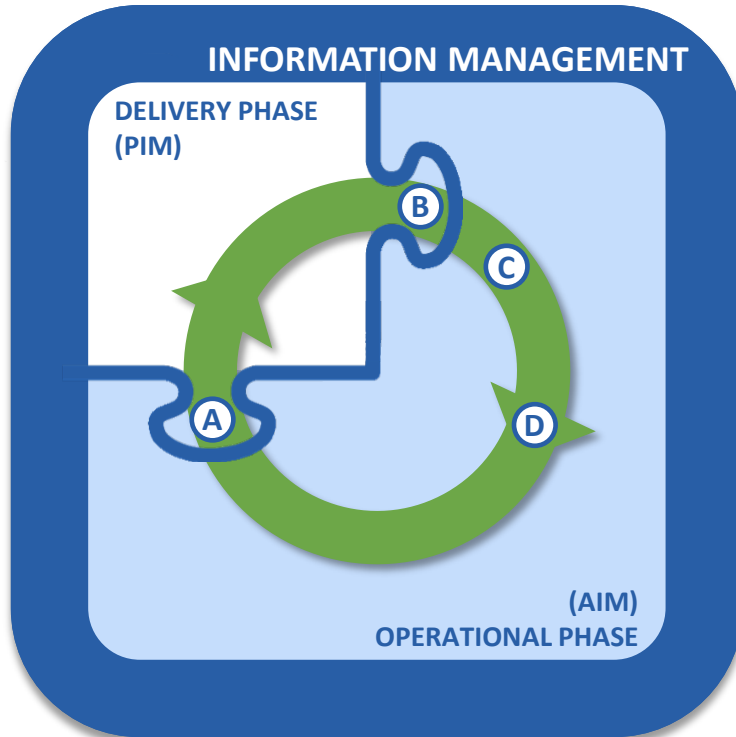
The operational phase of the asset life cycle

Information generated during day-to-day asset management activities (D)

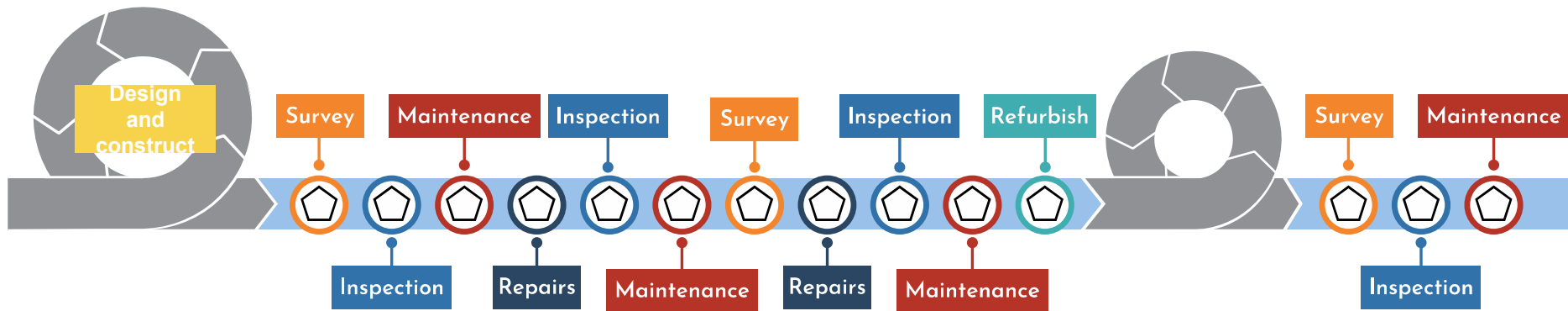
Help to brief a new project (A)

Receive handover information from a project (B)

Appointing, lead appointed and appointed parties



Process depends on the types of trigger event affecting the asset during its life



Foreseeable
trigger events

Unforeseeable
or not planned-
for trigger events

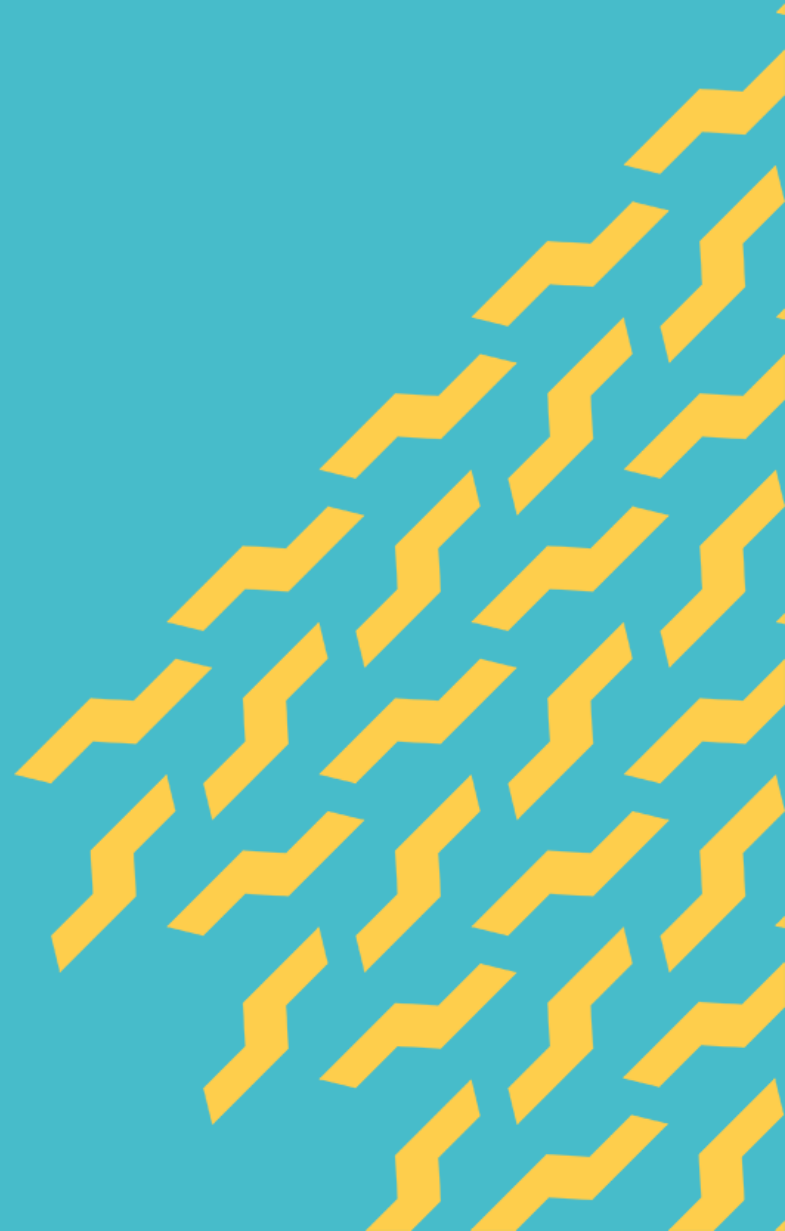
New project
(delivery phase)
using ISO
19650-2

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The Protocols



Simplifying Search for Definitions and Documents

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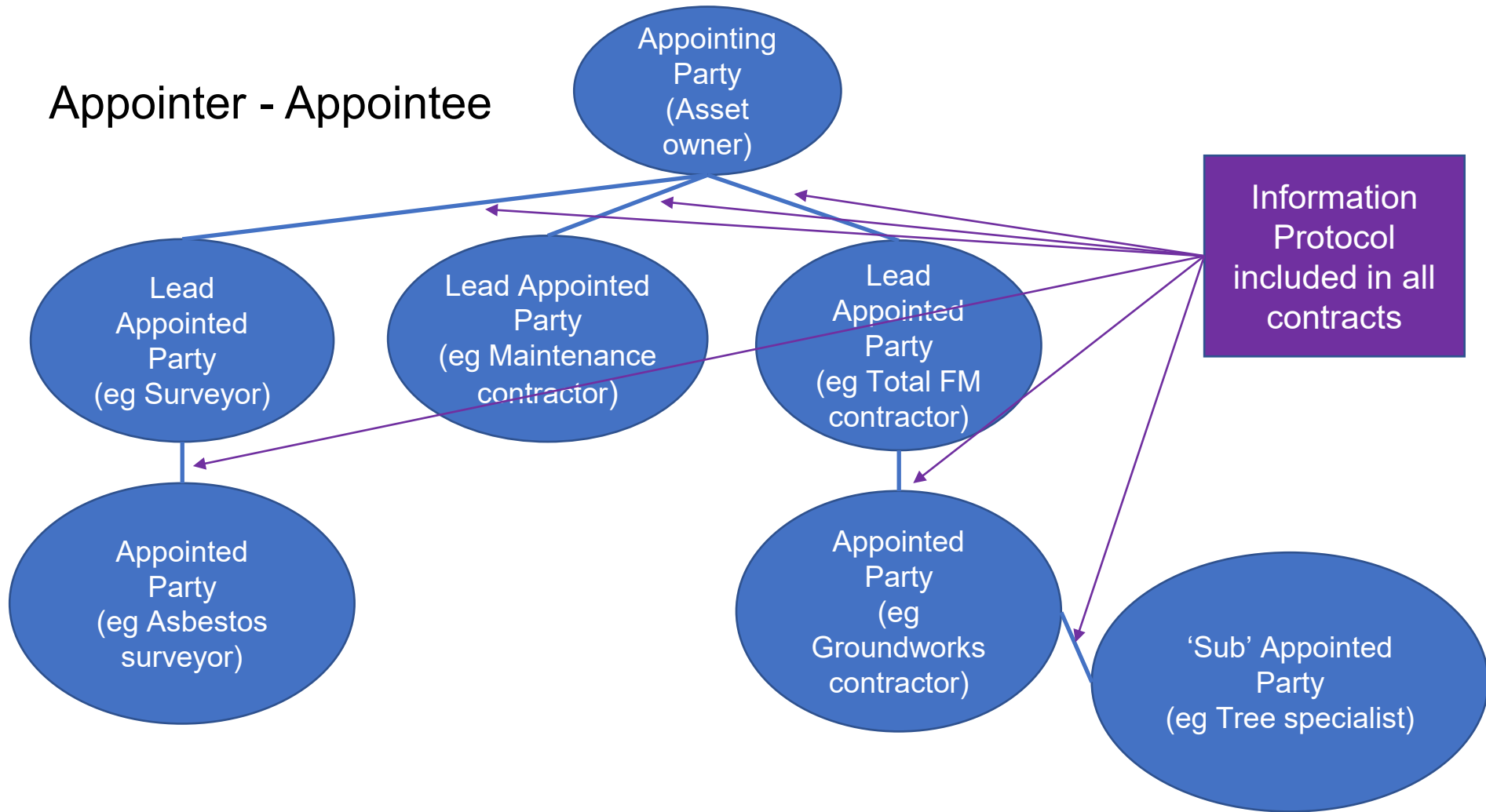
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- One Protocol for all parties/contracts
- One location list for documents = Information Particulars
- “According to the UK BIM Framework” defined

Note: This presentation is not legal advice & specialist advice should be obtained on any matters

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Appointer - Appointee



Information Particulars

Who and What

All documents relevant
to the Parties

Some may not be
relevant (e.g. TIDP)

Update/Complete over
time

Parties Terminology: Are You *A* or *B* AND Are you *C*, *D* or *E*

A. Appointor (doing the appointing/paying)

B. Appointee (getting appointed/paid)

C. Appointing Party

D. Lead Appointed Party

E. Appointed Party

Appointment-agnostic

Good for standard forms,
bespoke, two-party, alliancing and
multi-party

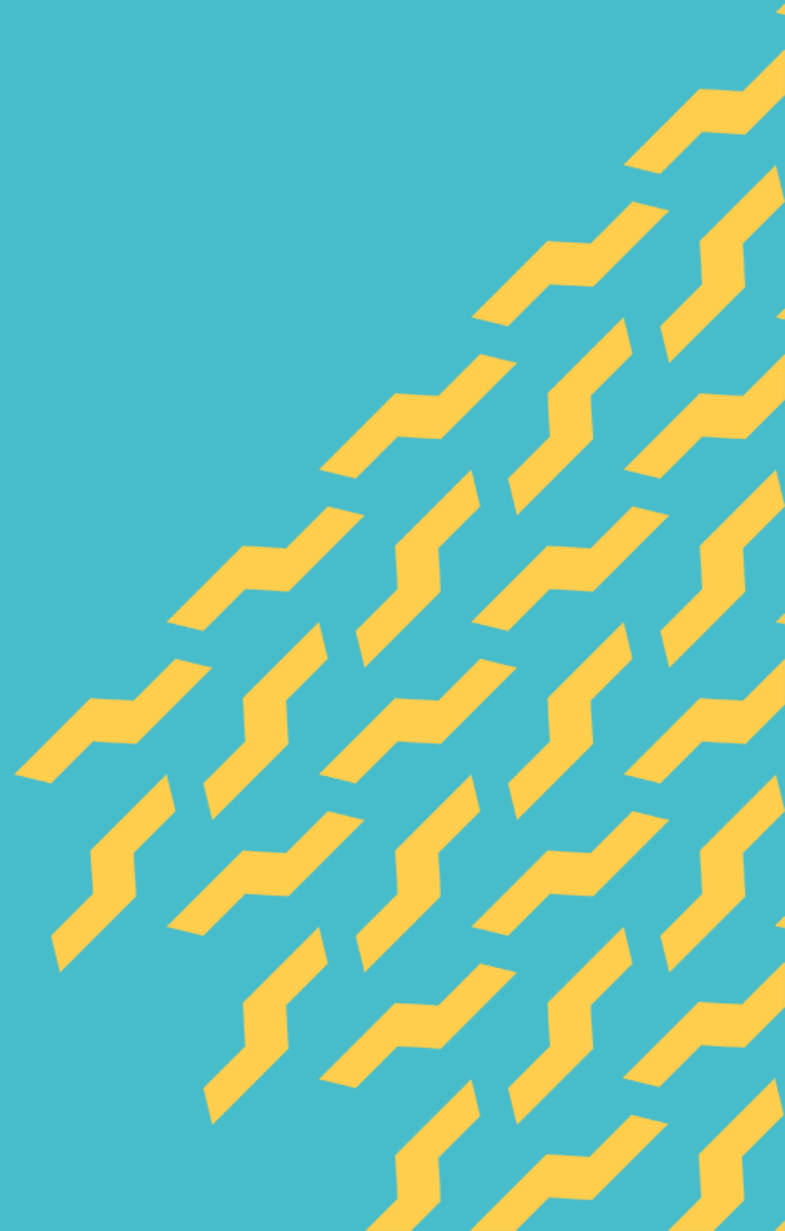
See Guidance: One simple clause to ensure clarity if used for a multi-party appointment

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The ISO19650-3 Compliant Protocol



Some Key differences with the ISO19650-2 compliant information protocol

- “Trigger Event Schedule” and Trigger clauses inserted
- “High Level Responsibility Matrix” deleted
- Design Team becomes Delivery Team
- “Project” Information becomes “Asset” Information (e.g. Asset Information Standard)
- New definitions, e.g. “Asset” and “Organisational Information Requirements”

1 Interpretation = The legal bit

2 Co-ordination and Conflicts = Coordinating information and resolving conflicting information (collaborate to resolve, unless your agreement specifies otherwise)

3 Appointing Party specific obligations (including security requirements)

Clauses 3.2-3.4: Trigger Events

Appointing Party identifies and records Foreseeable Trigger Events in the Trigger Event Schedule.

When trigger event occurs, Appointing Party decides whether to apply BS EN ISO19650-2:2018 (taking into account a specified list of issues).

If:

the Appointing Party decides that BS EN ISO19650-2:2018 applies to the trigger event; and

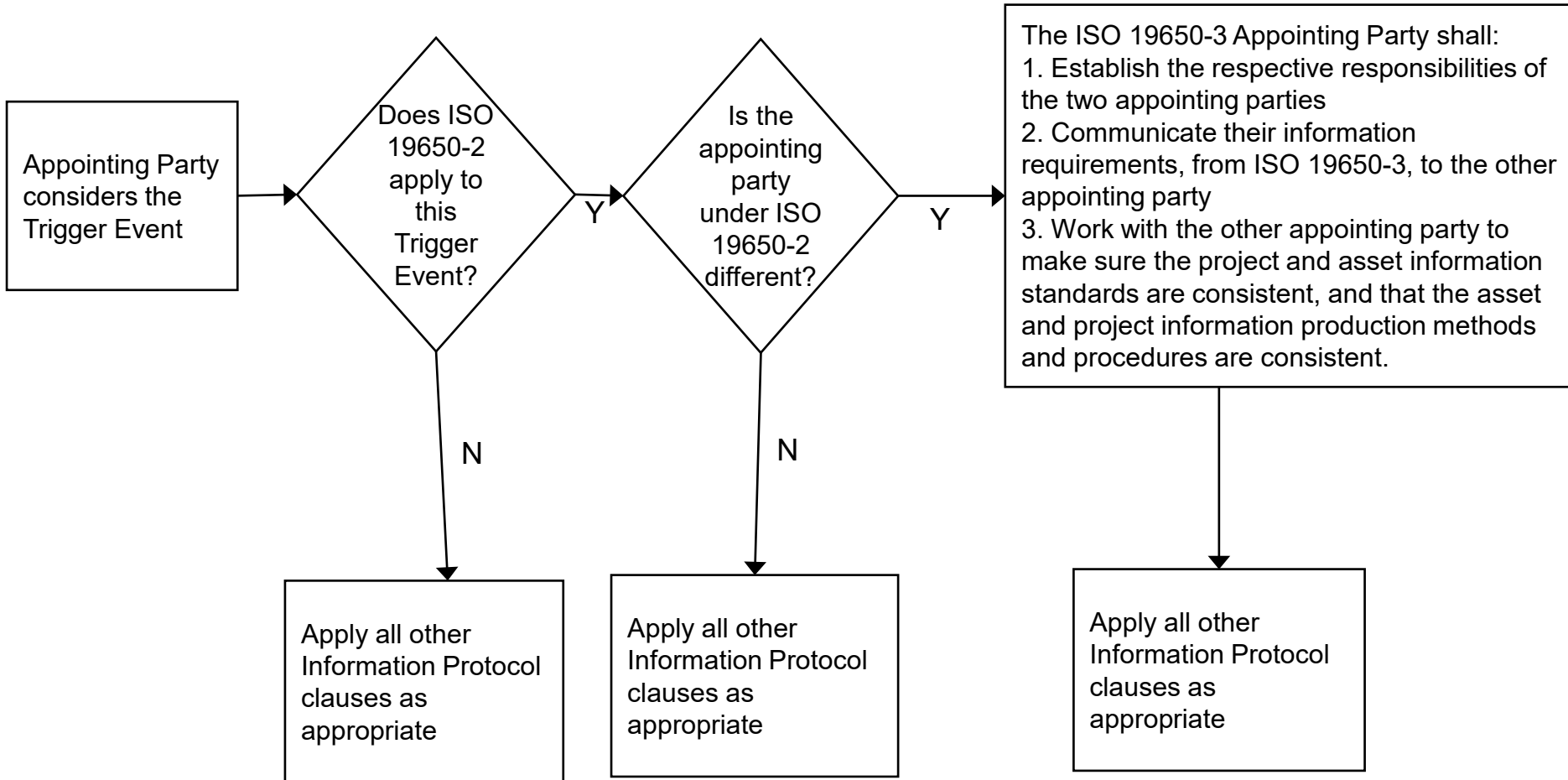
the Appointing Party is not the BS EN ISO 19650-2:2018 defined appointing party for the trigger event; then

the Appointing Party must carry out 3 specified activities.



Interaction between ISO 19650-2 and ISO 19650-3

Flowchart of Information Protocol clauses 3.3 and 3.4



1 Interpretation = The legal bit

2 Co-ordination and Conflicts = Coordinating information and resolving conflicting information (collaborate to resolve, unless your agreement specifies otherwise)

3 Appointing Party specific obligations (including security requirements)

4 Everyone's obligations

- Appointor or Appointee
- 4.3 Lead Appointed Party has one extra specific duty (for the Risk Register)

5 CDE

Appointor or Appointee

5.3 and 5.4 Appointing Party has extra duties

6 Management of Information

Appointor or Appointee

6.1 Appointing Party has extra duties

6.2.4(a), 6.3.2 and 6.3.4 Lead Appointed Party has extra duties

7 Level of Information Need = Agree one if you haven't already

8 Use of Information = GDPR and copyright (unless your agreement has clauses)

9 Transfer of Information = Deliver necessary information to each other

- Appointor or Appointee
- 9.3 and 9.4 Lead Appointed Party has extra duties

10 Liability = Only liability for permitted Purpose of the Models, Materials, proprietary work in them

11 Security = Compliant with BS EN ISO 19650-5

12 Termination = What clauses enforceable after termination (= more legal bits)

So Now What?

Read it – ask questions (*not just on Twitter*)

Use it –tell others

And If Using it... Complete the information particulars

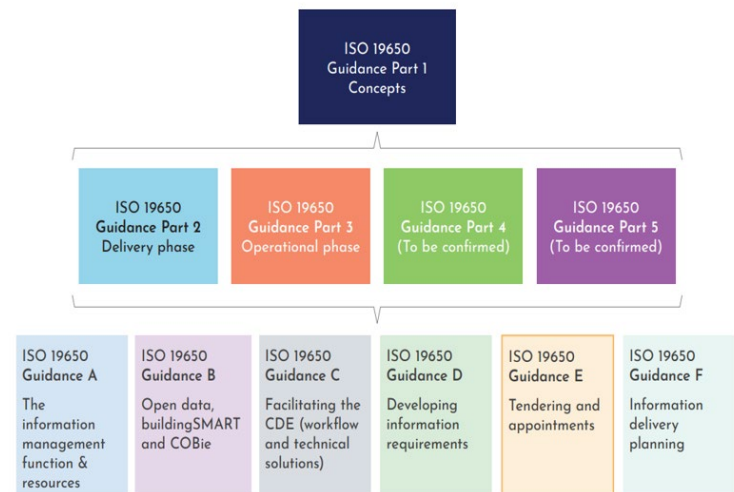
Resources

ISO19650-compliant Information Protocols:
<https://www.ukbimframework.org/resources>

Accompanying Guidance to the Information
Protocols: <https://www.ukbimframework.org/wp-content/uploads/2021/02/Guidance-Part-E-Tendering-and-appointments-Edition-2.pdf>

buildingSMART Asset Management White
Paper:
<https://www.buildingsmart-international-publishes-asset-management-white-paper/>

Plain Language Legal Questions, Appendix to
Winfield Rock Report:
<https://www.ukbimalliance.org/wp-content/uploads/2018/11/The-Winfield-Rock-Report.pdf>



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The golden thread & the gold standard



What do we mean by operations?

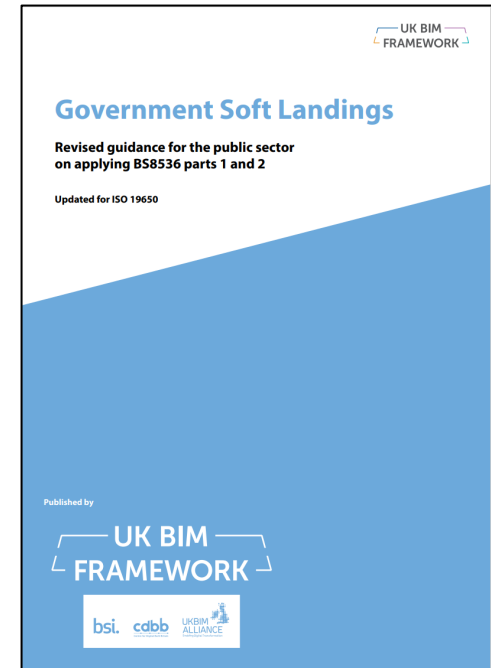
- Maintenance and repair;
- Security;
- Monitoring: energy management;
- Hazardous waste management through to recycling;
- Communications;
- Business continuity – emergency planning.

Government Soft Landings

- Potential amendments in the UK are likely to align the contract with the UK Government Soft Landings approach to completion & performance reviews post-completion (for up to 3-years);

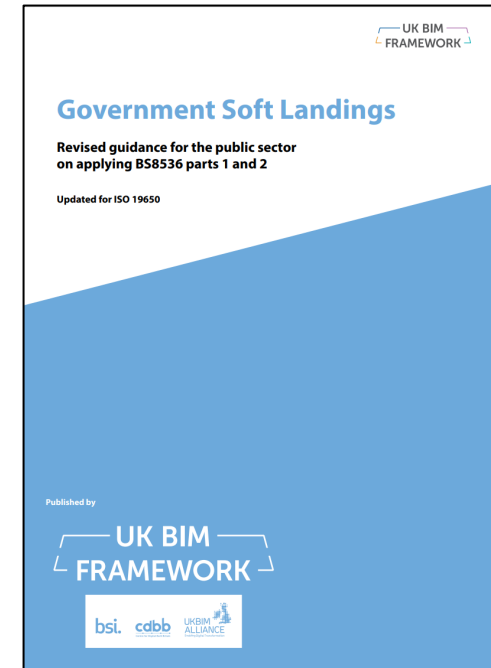
- “Soft landings”:

“process for the graduated handover of a new or refurbished facility/facility, where a defined period of aftercare by the design and construction team is an owner’s requirement that is planned and developed from the outset of the project”



Government Soft Landings

- The scope and principles of the GSL includes a smooth transition from construction into handover and close out and then into facility operation;
- A smooth transition of data and information contained in the Project Information Model to that required for facility operation in the form of the Asset Information Model;
- GSL requires the definition of target performance outcomes at the outset of the project.



Contractual Obligations

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- **Chancery Lane Project: Climate Contract Playbook**
A series of clauses that could be used in a variety of commercial situations, not just construction.

<https://chancerylaneproject.org/>



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Potential contract issues: Chancery Lane Project

- **[Tristan's clause]:** introduces a formal 'Carbon Budget' alongside the traditional Financial Budget for construction projects to incentivise industry participants to reduce GHG Emissions across the project lifecycle through the selection of more sustainable materials and construction processes;
- **[Francis' clause]:** imposes contractual obligations in respect of the usage of materials and waste management to ensure consequential GHGs are minimised.

Chancery Lane Project's Climate Contract Playbook: JCT

- **New Clause: EPC Obligation**

“the specific obligation imposed in the Employer’s Requirements requiring the Contractor to achieve an EPC “A” rating in respect of [certain parts of] the Works [as identified therein].”

- When assessing whether practical completion of a section or the works has been achieved, the Employer’s Agent is not to issue a certificate until the “EPC Obligation” has been met or an alternative agreement reached with the Employer;
- If the EPC Obligation cannot be met then the Contractor is required to undertake remedial works, including retrofitting, to achieve the EPC Obligations or improve the energy performance of the works provided that such remedial works (which are at the Contractor’s cost) do not exceed a percentage (initially proposed at 10%) of the Contract Sum.

The Construction Playbook, Figure 4

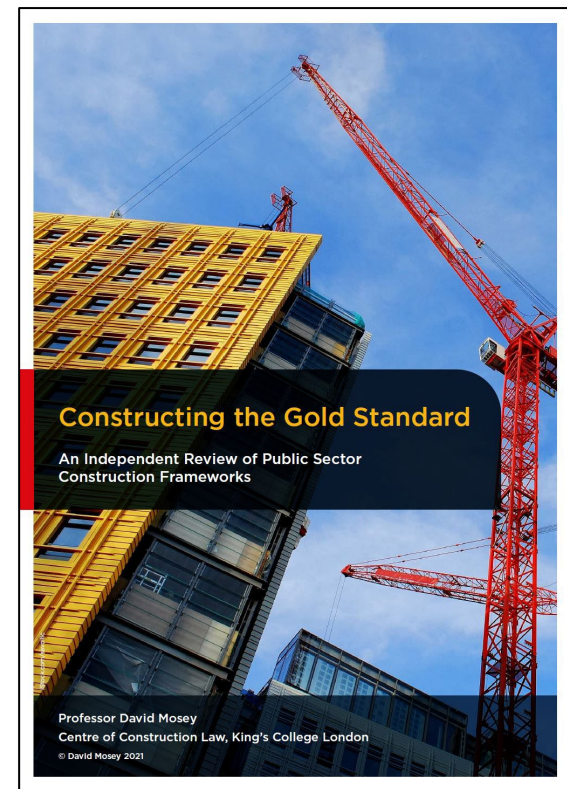
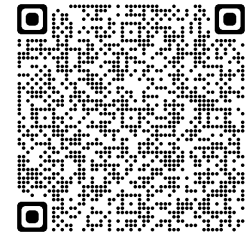
Roles and responsibilities across the 14 key policies

	Key policy areas													
Functions	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Commercial Pipelines														
Market health and capability assessments														
Portfolios and longer term contracting														
Harmonise, digitise and rationalise demand														
Further embed digital technologies														
Early supply chain involvement														
Outcome-based approach														
Benchmarking and Should Cost Models														
Delivery model assessments														
Effective contracting														
Risk allocation														
Payment mechanism and pricing approach														
Assessing the economic and financial standing of suppliers														
Resolution planning														
Commercial	O	O	O	J-O	K	O	K	J-O	K	J-O	J-O	J-O	J-O	O
Finance	U	U	U	U	A	A	A	J-O	U	U	K	K	J-O	K
Programme and operations including Project Delivery, Digital, Property, HR	K	U	K	J-O	O	K	K	U	J-O	K	J-O	J-O	U	U
Policy	A	A	K	K	K	U	O	U	K	U	U	U	A	A
Legal	Legal need awareness of the legal obligations throughout the project or programme lifecycle													
Other functions including Audit, Comms, Security	Other functions will depend on individual projects													

Constructing the Gold Standard

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- Independent review of Public Sector Construction Frameworks;
- Makes 24 recommendations, to be met by both developers and the public sector;
- Concern “effectiveness of construction frameworks is hampered by duplication, inconsistency and adversarial practices, wasting large amounts of money and impeding essential progress;”
- Aim to help guarantee projects have improved efficiency and innovation, increased safety standards, a focus on net zero carbon and social value targets.



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Information

ISO19650-1:2018 states that:

“collaboration between the participants involved in the construction projects and in asset management is pivotal to the efficient delivery and operation of assets’ and that a significant outcome from collaboration is ‘the potential to communicate, re-use and share information efficiently and to reduce the risk of loss, contradiction or misinterpretation”.

Constructing the Gold Standard

Recommendation 12:

Create a whole life golden thread of asset information using BIM and other digital technologies integrated under a framework alliance contract.

(Pass that golden thread of building information from the design team to the facility operator via the contractor.)

Gold Standard Recommendation 12

Framework contracts can describe how digital technologies enabled and supported through specific provisions governing:

- The impact of digital information on the timing of agreed framework activities;
- The use of digital technologies for call-off;
- Mutual intellectual property rights among clients, managers, suppliers and supply chain members;
- Reliance on digital information by clients, managers and suppliers;
- Responsibility for managing digital information;
- Links between the digital information used for the design, construction and operation of framework projects and programmes of work.

Gold Standard Recommendation 12

Importance of digital integration:

- Ensure stronger commitment to shared objectives and collective self-regulation, as well as to improved transparency and efficiency, creating the ability to share digital information on mutually agreed terms;
- Enable collective decision-making so that the outcomes from the digital technologies used on different projects are drawn together and applied more effectively;
- Enable value-adding digital activities and processes, stating who works with whom and at what level of responsibility;
- Clarify the whole life operational impact of digital information on the repair, maintenance and operation of completed framework projects.

Gold Standard Recommendation 12 - Conclusions

Try and consider:

- How the framework can deliver client outcomes by standardising the approach to generating and classifying data, data security and data exchange;
- How performance, sustainability and value for money of projects and programmes can be improved through the effective retention and management of the 'golden thread' of building information being passed on from the design team to the facility operator via the contractor;
- **How a common framework of standards and protocols** will enable secure, resilient data sharing across organisations and sectors.

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Smart Legal Contracts - Update



Smart Contracts | Smart Clauses

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- For further information:

The screenshot shows a web browser window with the URL <https://www.fenwickelliott.com/research-insight/webinars-podcasts/smart-contracts-ai-construction>. The page features the Fenwick Elliott logo and navigation menus for 'Research & insight', 'Events', 'News', 'About us', 'Blog', and a search icon. Below the navigation, there are links for 'Services', 'Experience', 'International', 'Team', and 'Contact'. The main content area includes a breadcrumb trail: 'Home / Research & insight / Past webinars and podcasts / Smart Contracts & AI in Construction', the date 'Thursday, 8 April 2021', and the title 'Smart Contracts & AI in Construction'. A paragraph of text describes the webinar, mentioning Dr Stacy Sinclair and Rebecca Keating. A link is provided for a PDF copy of the webinar slides. On the right side, there is a 'Key contact' section for Stacy Sinclair, including her phone number, email, and LinkedIn profile. At the bottom of the page, there is a video player for the webinar, with a thumbnail showing the title 'Smart Contracts & AI in Construction' and the date '8 April 2021'. The video player also includes a 'Watch on YouTube' button and a 'Watch Later' button.

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Thursday, 8 April 2021

Smart Contracts & AI in Construction

Partner and Head of Technology & Innovation [Dr Stacy Sinclair](#) joins Rebecca Keating, barrister at 4 Pump Court, to discuss smart contracts. What are they? What legal issues do you need to consider? Is there a place for them, as part of the digital transformation of the construction and energy industries? And what is the potential impact of AI/machine learning?

[Click here for a copy of the webinar slides in PDF format](#)

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FENWICK ELLIOTT Smart Contracts & AI in Construction

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Smart Contracts | Smart Clauses

a legally binding contract in which some or all of the contractual obligations are defined in and/or performed automatically by a computer program.

(Law Commission)

money + snack selection = snack dispensed

(Nick Szabo)

If X occurs, then execute Y

weather data + contract conditions met = CE

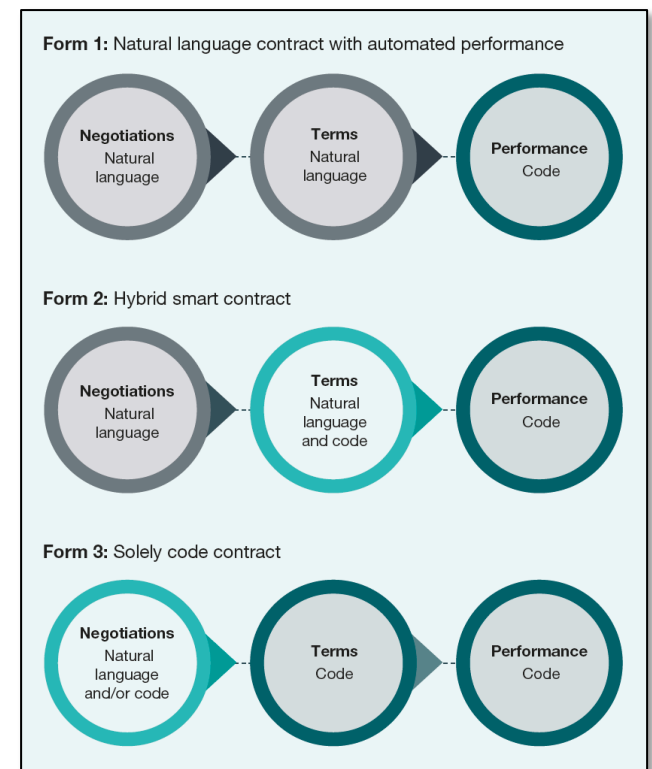
delivery made to site = direct payment

(Oversimplified examples)

Smart Contracts | Smart Clauses

- What does it look like?
 - Natural language contract with automatic performance by code
 - Hybrid contract
 - Contract recorded solely in code

(Law Commission Smart Legal Contracts)



- The two main features of smart legal contracts:
 - some or all of the contractual obligations under the contract are performed automatically by a computer program (“automaticity”); and
 - the contract is legally enforceable.

(Law Commission Smart Legal Contracts)

Smart Contracts - Update

- 25 November 2021: Law Commission published their advice on smart contracts.
- **Concluded:**
 - *“the current legal framework in England and Wales is clearly able to facilitate and support the use of smart legal contracts, without the need for statutory law reform”*; and
 - *“current legal principles can apply to smart legal contracts in much the same way as they do to traditional contracts, albeit with an incremental and principled development of the common law in specific contexts”*; and
 - *“although some types of smart legal contract may give rise to novel legal issues and factual scenarios, existing legal principles can accommodate them.”*

Smart Contracts - Update

- See **Appendix 1:** List of issues
 - *make clear the role of the code – specify if the code is intended both to define contractual obligations as well as to perform them, or only to perform them.*
 - *allocate risk in relation to, and to provide for (amongst other things):*
 - *a malfunctioning oracle or inaccurate data inputs;*
 - *external events beyond the parties' control which may affect performance of the code, such as system upgrades;*
 - *bugs and coding errors in the code; and*
 - *any potential mistakes that may arise due to the parties holding certain beliefs or assumptions about how the code will perform.*
 - *include choice of court and choice of law clauses in their smart legal contract, either in a separate natural language agreement, or by way of comments in the code.*

The Weather Ledger (Digital Catapult) Update

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- IoT and distributed ledger technology to automate the execution of weather-related clauses in standard NEC contracts.
- Sensors are used on site, data and databases collected and connected.
- Not automation of the entire of the contract, but rather elements of the weather-related clauses using blockchain and smart contract technology.
- Aimed to minimise the administrative burden and (non-intuitive) subjectivity in making weather compensation event claims.
- Report now available (May 2021)



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Conclusion: the importance of data



The importance of data

A focus on the process / the whole life-cycle

- Golden thread, the Gold standard, Government Soft Landings, ISO 19650, Asset Information Protocol, etc
- Framework of standards and protocols driving towards better outcomes, performance, efficiency, value for money, transparency, etc

The importance of data

Access to data

- ***Trant Engineering Limited v Mott MacDonald Limited*** (2017)

Right to use/access the data / database

- ***77m Limited v Ordnance Survey Limited*** (2019)
- ***Software Solutions Ltd v 365 Health and Wellbeing Ltd*** (2021)
- ***Lloyd v Google*** (2021)

Purpose & expectations

- ***Premier Engineering (Lincoln) Limited v MW High Tech Projects UK Limited*** (2020)

The importance of data

- Getting it right at the outset:
 - Alignment of the contract and the procurement route with the expectations for technology and collaboration.
 - Alignment of mindsets & expectations (it's about people and collaboration at the end of the day) – and embed with contractual documentation.
 - Early communication and involvement of the legal team – not simply a rubber-stamping exercise.
 - The importance of clarity and consistency in contracts (including smart contracts!) – documenting what has been agreed.

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Thank you.
Questions?

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