

#TCNPLUS

CREATING A MOVEMENT FOR CHANGE

TRANSFORMING CONSTRUCTION NETWORK PLUS
CONFERENCE 2019



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CREATING OUR PROJECTS: LEARNING FROM A CHANGING ENVIRONMENT



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LEARNING LESSONS FROM BEST PRACTICE – REFLECTIONS FROM MAJOR PROJECTS

JOHN PELTON MBE

Programme director

Jacobs

#TCNPlus

Learning lessons from best practice – reflections from major projects

- Major ~~Projects~~ Programmes are all about:
 - Outcomes – vision led
 - Leadership
 - Collaboration
- A melting pot for innovation – scale, challenge, ambition
- A focus for scrutiny against cost and time – value?
 - Governance
 - Controls
 - Commercials

Learning lessons from best practice

– Can we do better?

- High level Governance - OK provided:
 - Competent organisational **capability**
 - Collaboration
 - Able to own the vision / benefits and lead
- Commercial models:
 - Integration – Project 13
 - Incentivisation
 - Collaboration (again!)
- Digital:
 - Contracting for data
 - Build the operator/asset owner
 - Digital twin but related to the benefits

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PUSHING FORWARDS ON DIGITAL TRANSFORMATION – WHAT LIES AHEAD?

DR ANNE KEMP

Chair, UK BIM Alliance

#TCNPlus

Projects - Infrastructure



Birmingham Airport



RAF Marham



Starcross and Cockwood



Take the first fundamental step in the journey to digital transformation

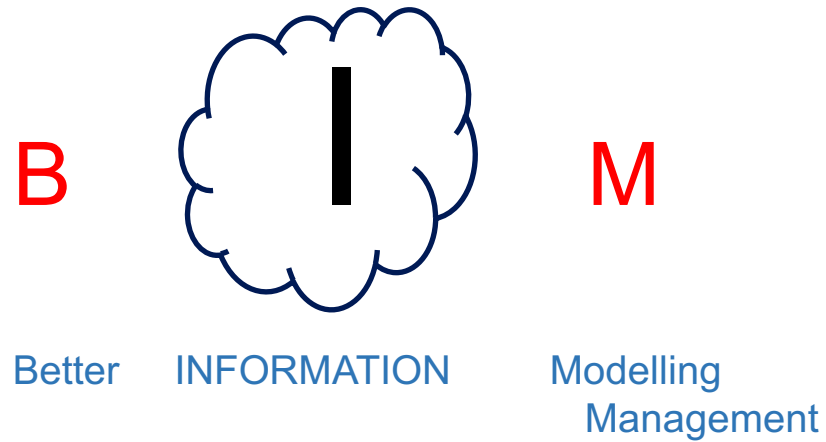
- ✓ Trusted independent leadership
- ✓ Mobilising the community
- ✓ Enabling practical implementation
- ✓ Common understanding, common approach, one voice



The coming of age of “BIM”

The background is a solid dark blue. On the left side, there are three concentric, light blue diamond shapes. On the right side, there are four parallel, light green diagonal lines extending from the bottom right towards the top right.

It's all about information



With the lowest common denominator being digital data **Liberated** Data



‘BIM is the **purposeful management of information** through the **whole life cycle** of an infrastructure project, not just for a building, and not just during design and construction. It is **starting with the end in mind** - the intent and context for that piece of asset, and how it will be **integrated, operated and maintained**.’



Future Direction of BIM

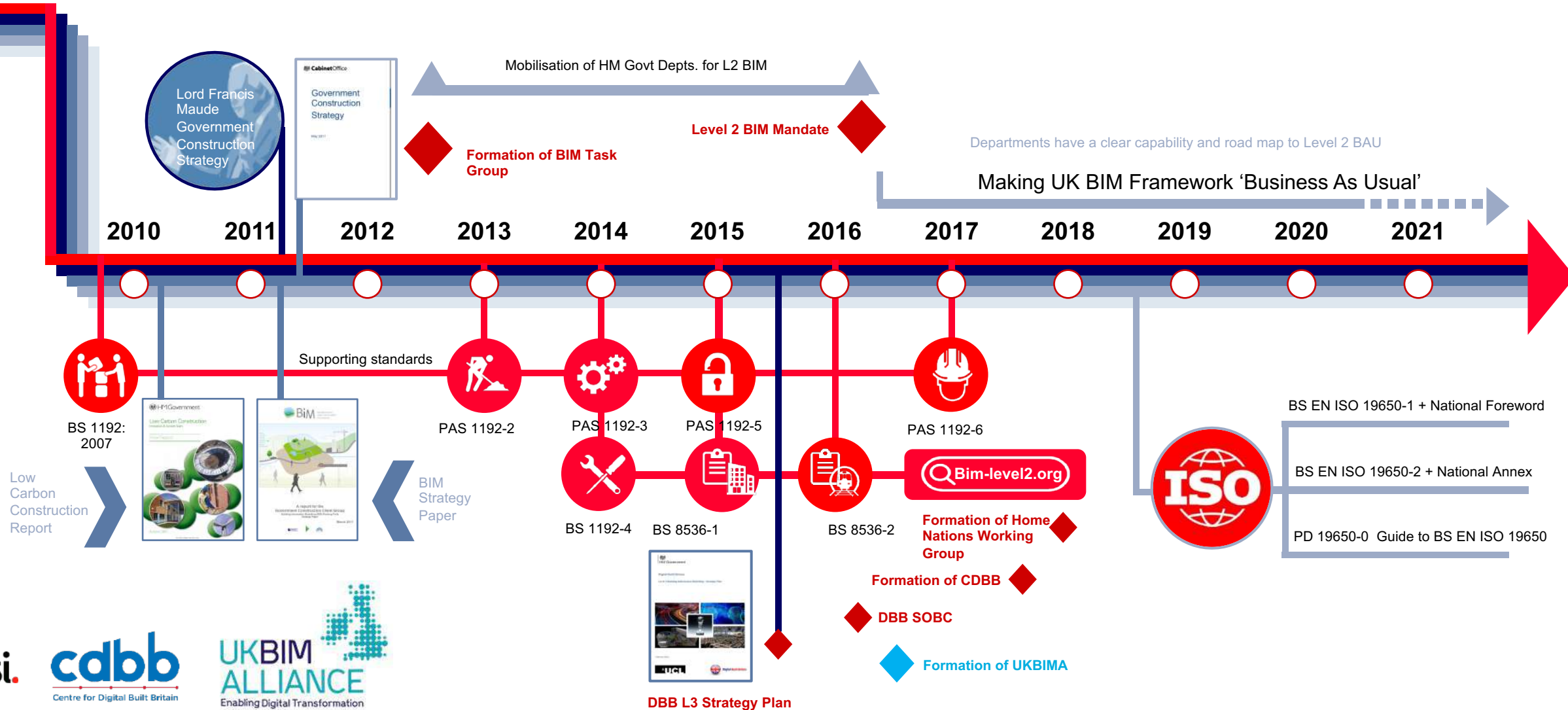
..... *Realising Digital Transformation*

- This is what the BIM movement was set up for. To develop approach to digital transformation, which allows us to understand and have control over the shift from analogue to digital
- How to demonstrate semi-automated and then automated processes in scalable way
- To develop open, shareable standards which allow for checkable, repeatable, improvable processes.

Standardisation

Timeline

15



Information management according to ISO 19650: The UK BIM Framework

The published UK BS/PAS 1192 Series



From January 2019, was superseded by:



PD 19650-0
Transitional Guidance

bsi.

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What if I'm already using the 1192 standards?

Information management according to ISO 19650: The UK BIM Framework

From January 2019



From 2020 (TBC)



ISO 19650 Guidance Documents



What about the other 1192 standards?



Information management according to ISO 19650

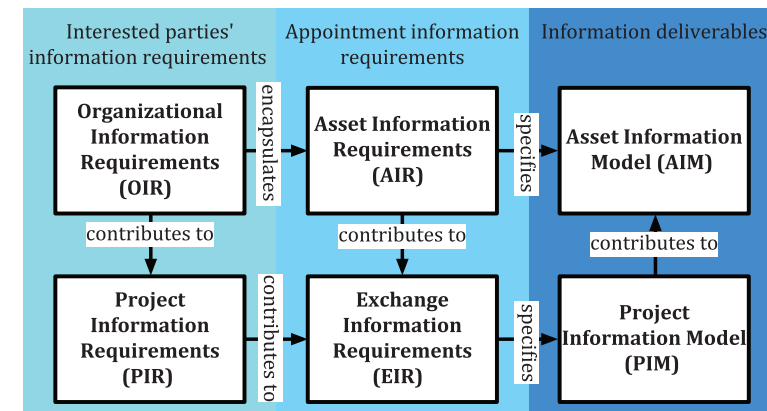
Table 1 — Information management perspectives

Perspective	Purpose	Example deliverables
Asset owner's perspective	To establish and maintain the purpose of the asset or project. To make the strategic business decisions.	Business plan Strategic asset portfolio review Life cycle cost analysis
Asset user's perspective	To identify the true requirements of the user and make sure the asset solution has the right qualities and capacities.	Project brief AIM PIM Product documentation
Project delivery or asset management perspective	To plan and organize the work, mobilize the right resources, coordinate and control development.	Plans, for example BIM Execution Plans Organizational charts Function definitions
Society's perspective	To make sure the community's interest is taken care of during the asset life cycle (planning, delivery and operation).	Political decisions Area plans Building permits, concessions

NOTE The example deliverables are relevant to the point of view of each perspective and do not indicate ownership of the deliverables or who does the work to produce the deliverables.



Lifecycle information principles



Information management according to ISO 19650

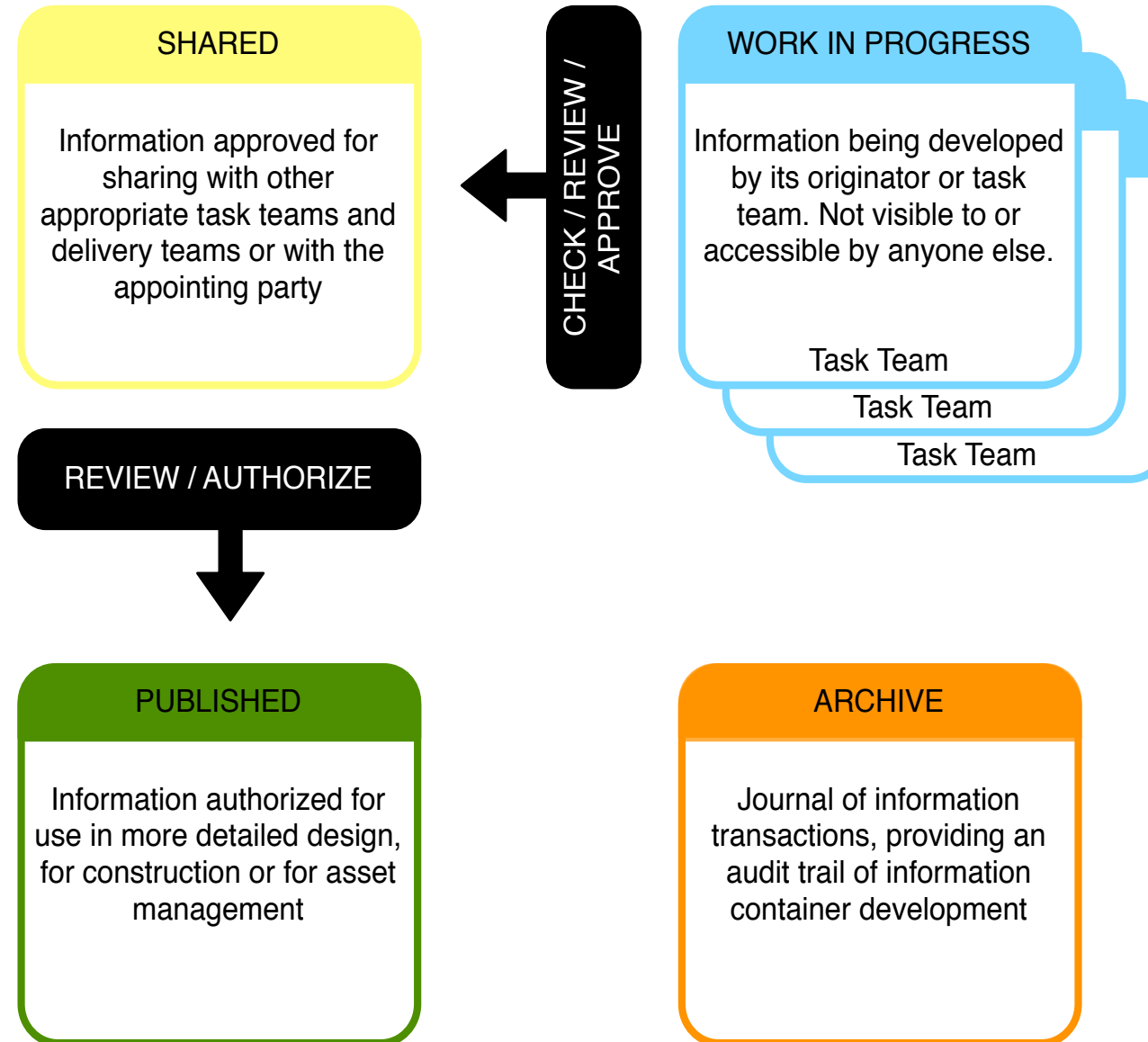


Figure 12:

**Common Data
Environment concept**

Information management according to ISO 19650

A modular appointment-based approach

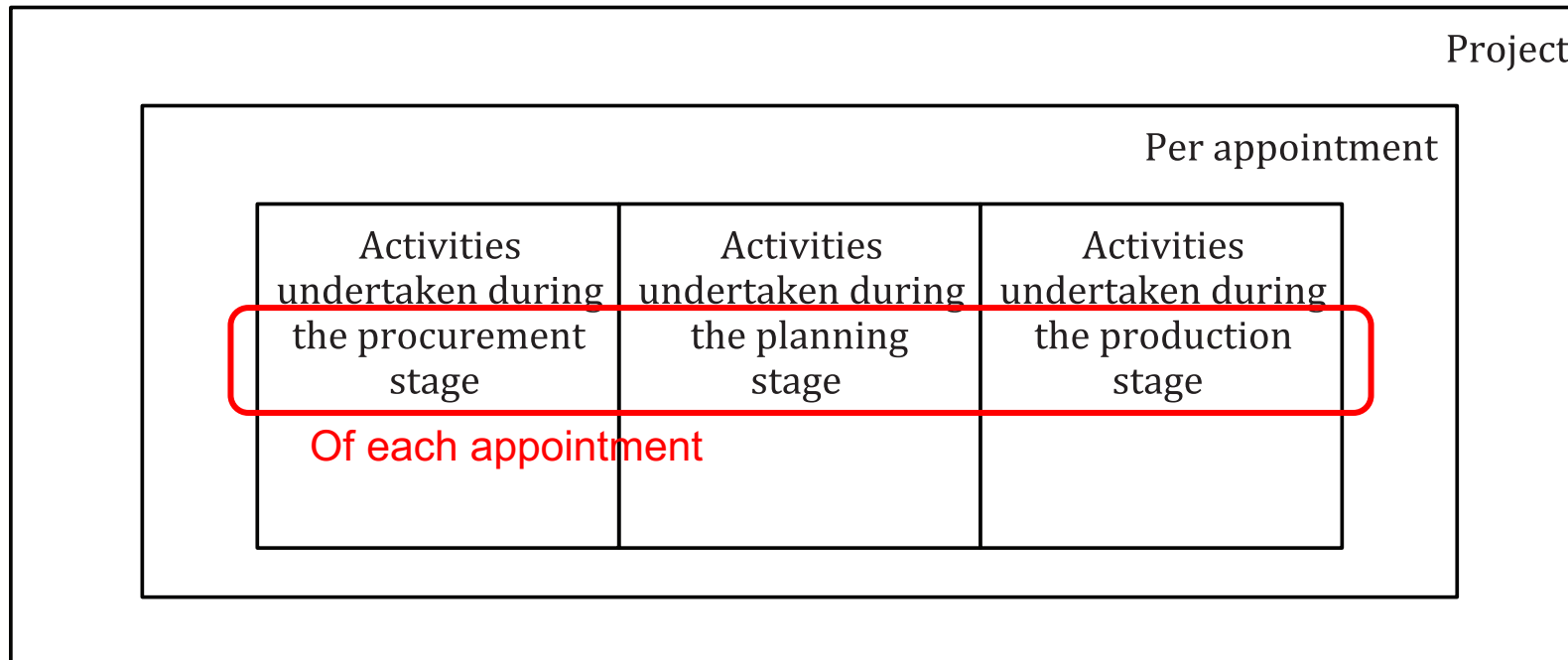
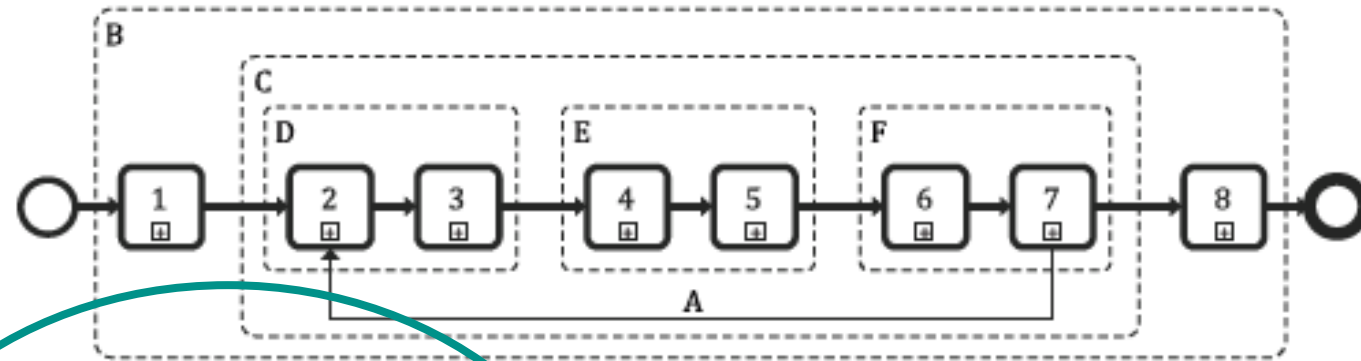


Figure 5 — Illustration of the sub-division of processes

Information management according to ISO 19650

ISO 19650-2
Figure 3

The information management process (Figure 3) shall be applied throughout the delivery phase for each appointment, regardless of project stage.



Activities

- 1 assessment and need
- 2 invitation to tender
- 3 tender response
- 4 appointment
- 5 mobilization
- 6 collaborative production of information
- 7 information model delivery
- 8 project close-out (end of delivery phase)

- A information model progressed by subsequent delivery team(s) for each appointment
- B activities undertaken per project
- C activities undertaken per appointment
- D activities undertaken during the procurement stage (of each appointment)
- E activities undertaken during the information planning stage (of each appointment)
- F activities undertaken during the information production stage (of each appointment)

Figure 3 Information management process during the delivery phase of assets

Implementation

Information management according to the ISO 19650 series

UK BIM Framework: Guidance



Collaborative team effort

Authoring
group

Focus
group

Feedback

UKBIM
ALLIANCE
Enabling Digital Transformation

cdbb
Centre for Digital Built Britain

bsi.

Information management according to the ISO 19650 series

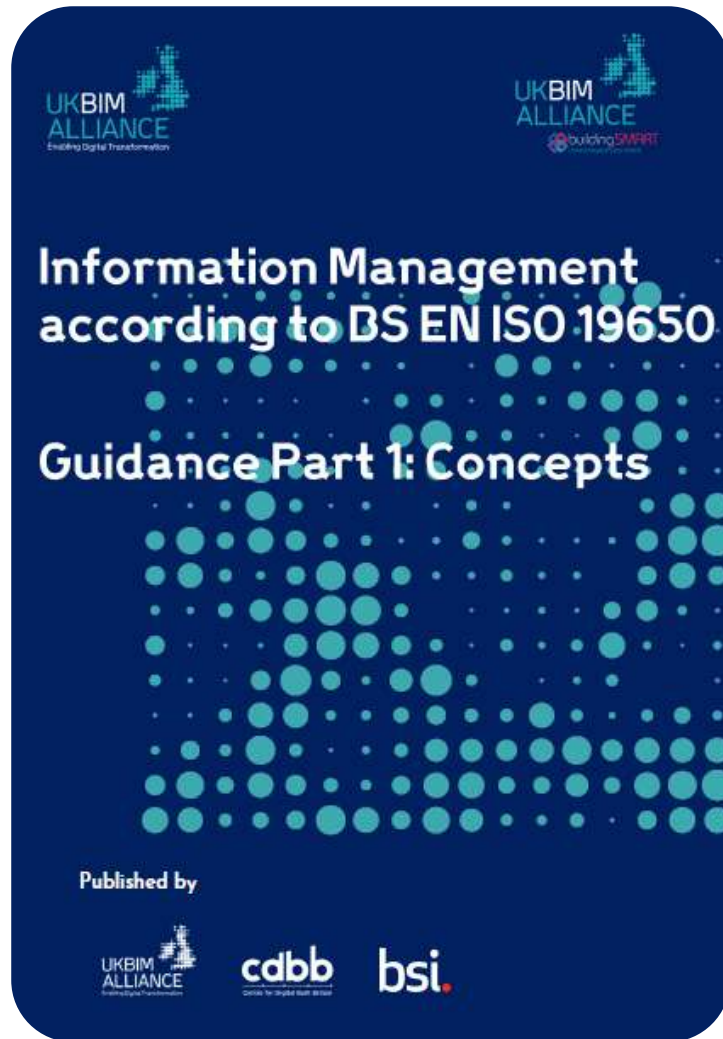
UK BIM Framework: Guidance

Summary:

- Guidance is developing to support each released standard within the ISO 19650 series
- Guidance will take the form of multiple editions to reflect the incremental development plus action against edits and feedback
- Guidance is available free of charge via the UK BIM Alliance, CDBB and BSi – it will soon be available via a UK BIM Framework website
- Your participation is welcomed:
 - You can participate in development of guidance content and/or review
 - Please let us have your feedback on released guidance

Information management according to the ISO 19650 series

UK BIM Framework: Guidance



Part 1: Concepts

1st edition released April 2019

- High level principles of implementation
- Target audience – new users
- Information requirements and delivery
- The National Annex
- Legal and contractual guidance note

2nd edition released July 2019

- Edits
- Feedback

guidancefeedback@ukbimalliance.org

Free download at www.ukbimalliance.org

Information management according to the ISO 19650 series

UK BIM Framework: Guidance

**Information management
according to BS EN ISO 19650**

**Guidance Part 2:
Processes for Project Delivery**

Published by



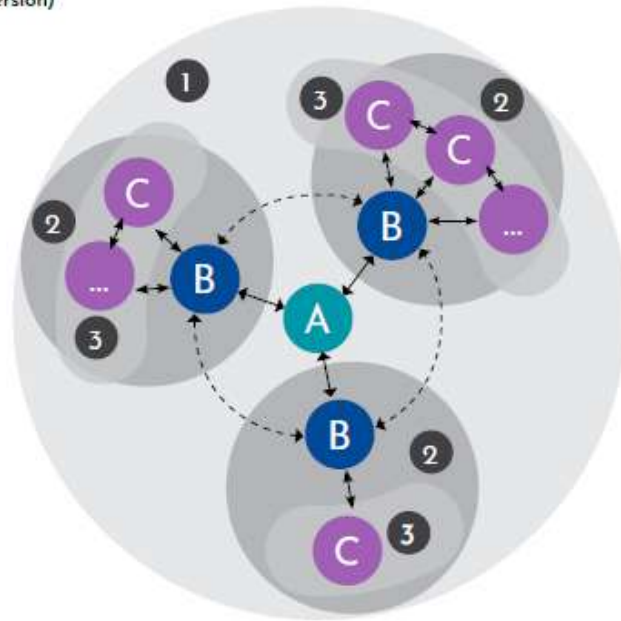
Part 2 processes for project delivery Approach:

- ✓ Incremental release
- ✓ Interactive easy to navigate version + pdf download
- ✓ Different routes of navigation
 - ✓ You can read start to finish, or
 - ✓ Navigate through the guidance depending on the what party you are, what activity you want to understand about, what theme you want to learn more about

Information management according to the ISO 19650 series

UK BIM Framework: Guidance

Interfaces between parties and teams
(simplified version)



Key:

- | | |
|-------------------------------|------------------------|
| A Appointing Party | 1 Project Team |
| B Lead Appointed Party | 2 Delivery Team |
| C Appointed Party | 3 Task Team |

Image reproduced with permission from BSI

1st edition released July 2019

Your key activities and outputs

The clauses that you need to be aware of

Your activity profile

guidancefeedback@ukbimalliance.org

Information management according to the ISO 19650 series

UK BIM Framework: Guidance

22 | Guidance Part 2: Processes for Project Delivery

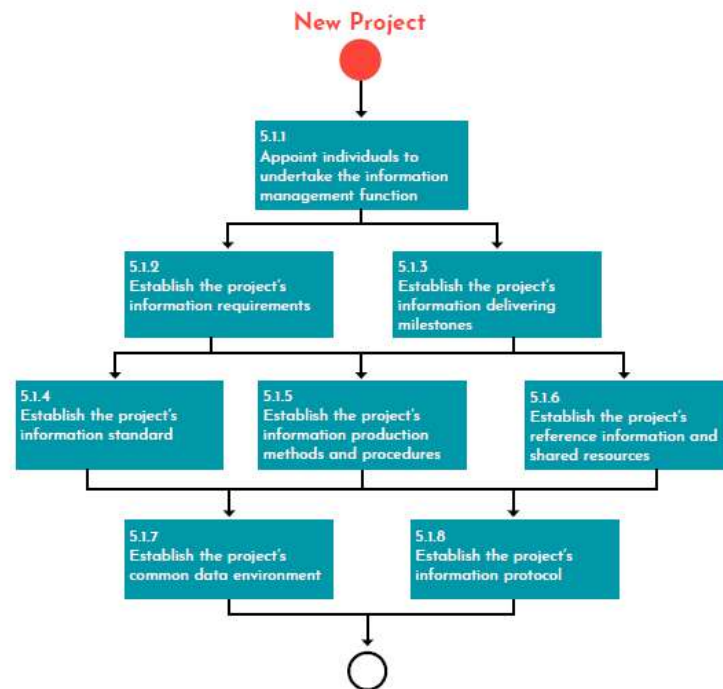
What type of party are you?



Information Management Process Summary

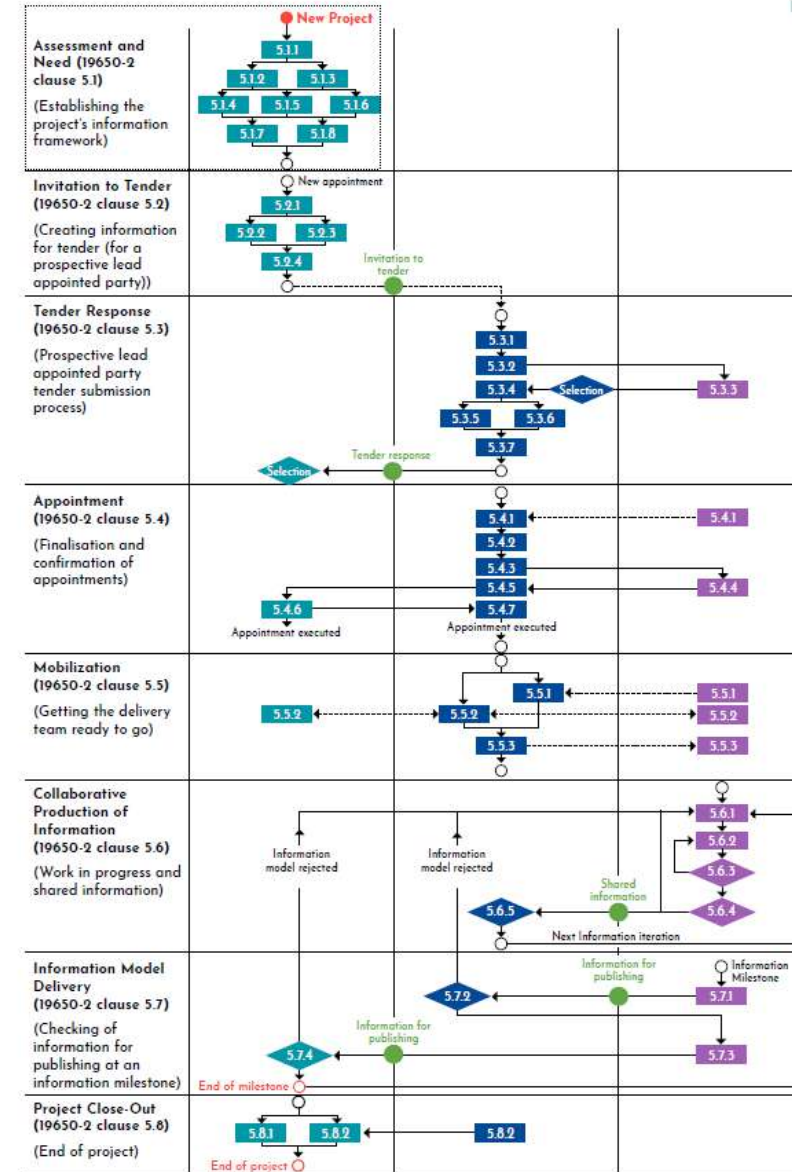
Assessment and Need (19650-2 clause 5.1)

(Establishing the project's information framework)



Next step

23



How to Get Involved

- Slack: <http://bit.ly/joinUKBIMAslack>
- Twitter: @UKBIMAlliance
- Email: info@ukbimalliance.org
- Newsletter: <http://bit.ly/UKBIMAnewsletterSignup>
- Website: www.ukbimalliance.org



Digital BIM at Atkins

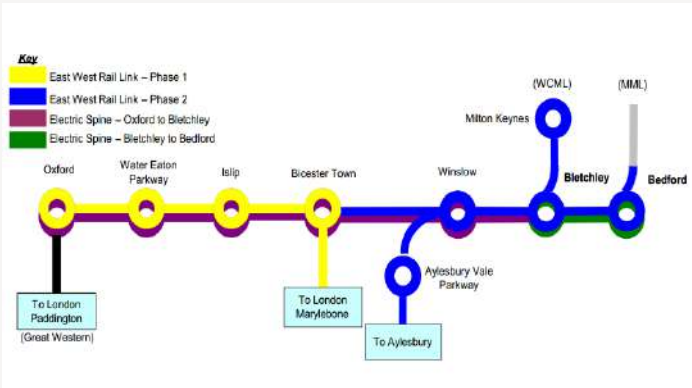
Projects - Transportation



M25 Junction 25



Croydon Area Redevelopment Scheme



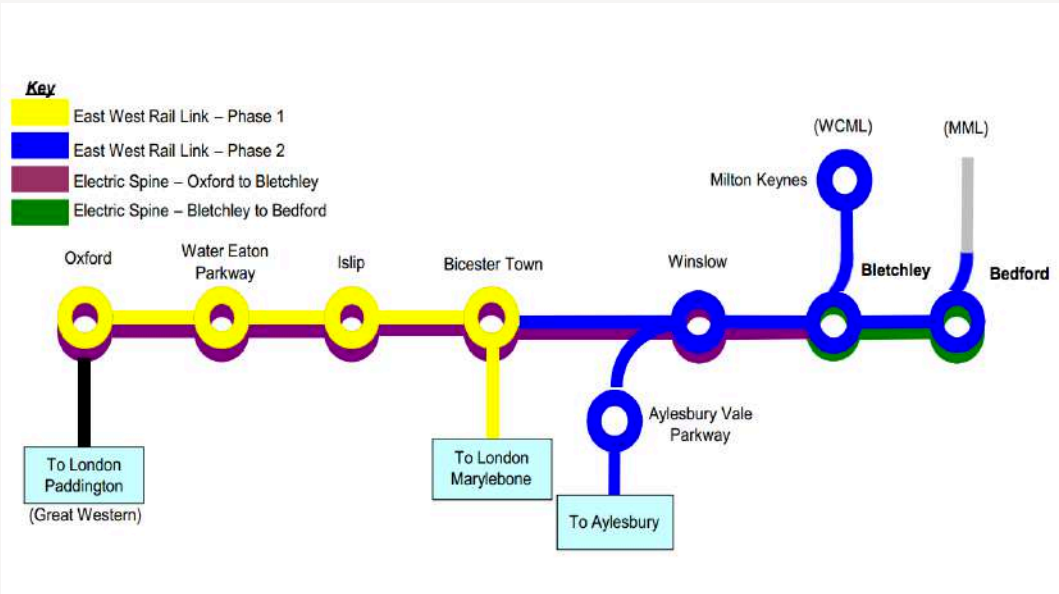
East West Rail (EWR)



Projects – ADS&T



Heathrow Digital backbone



East West Rail (EWR)



Data Governance Framework

SNC Lavalin (Global)

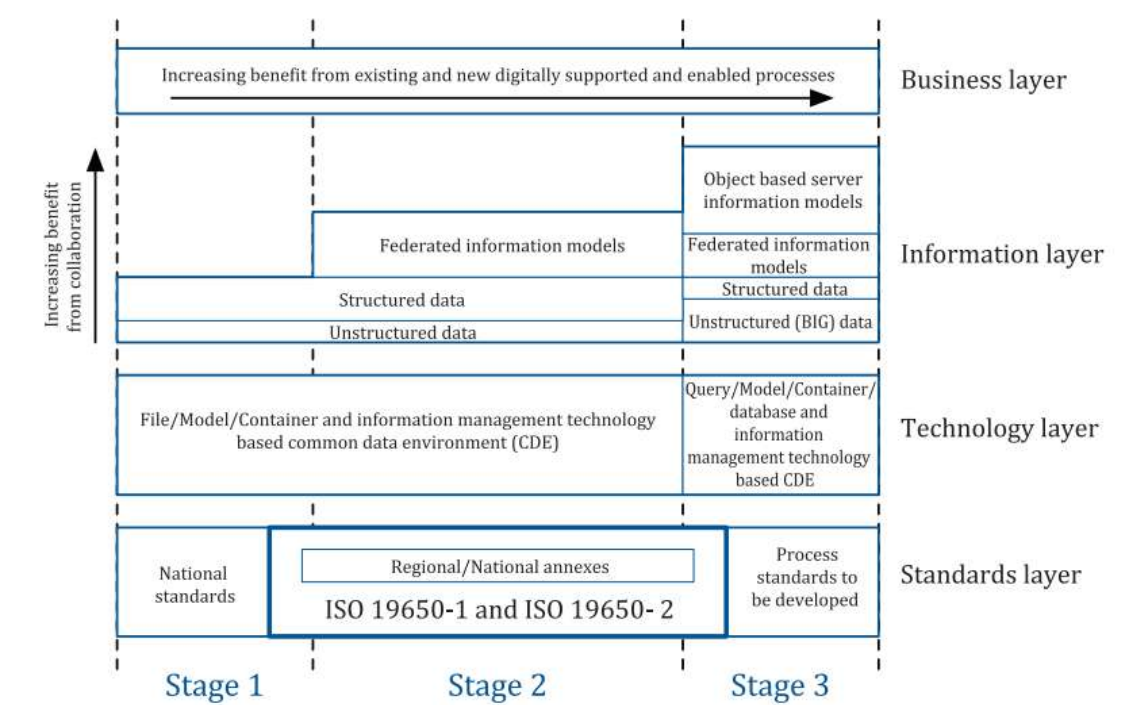
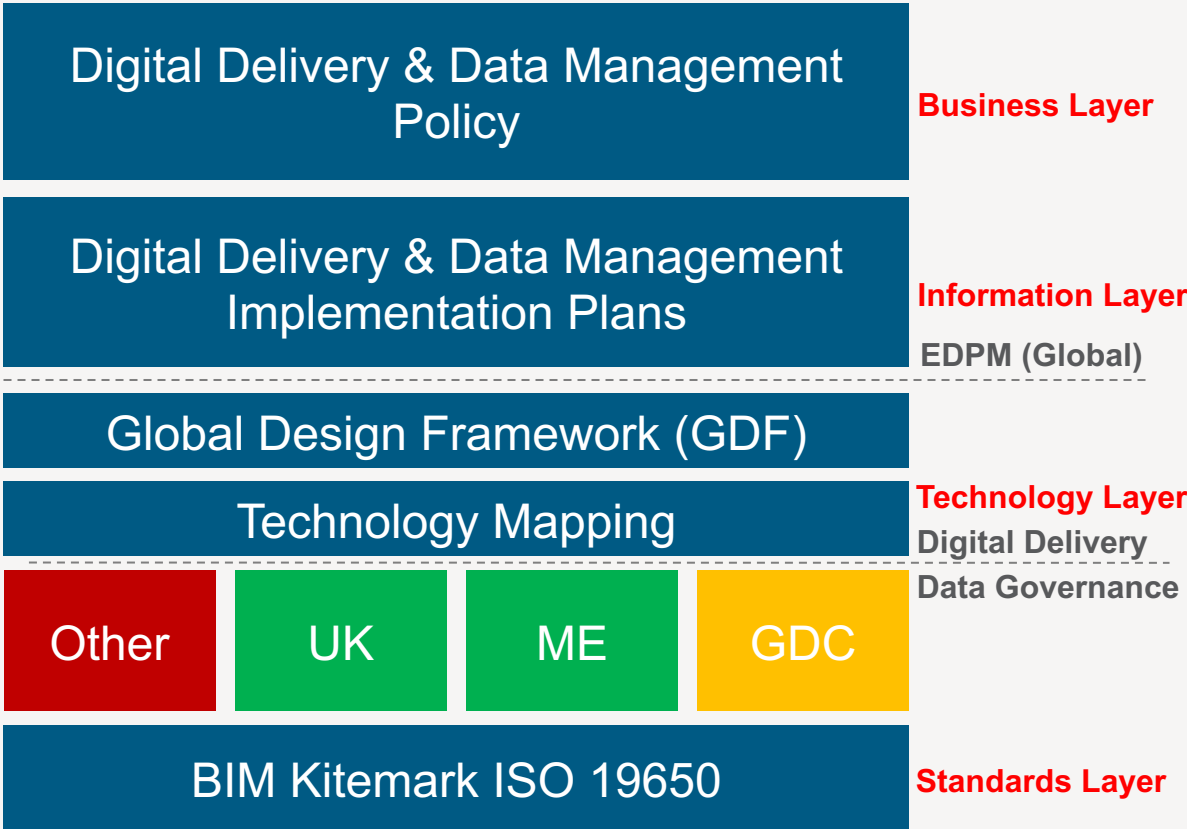
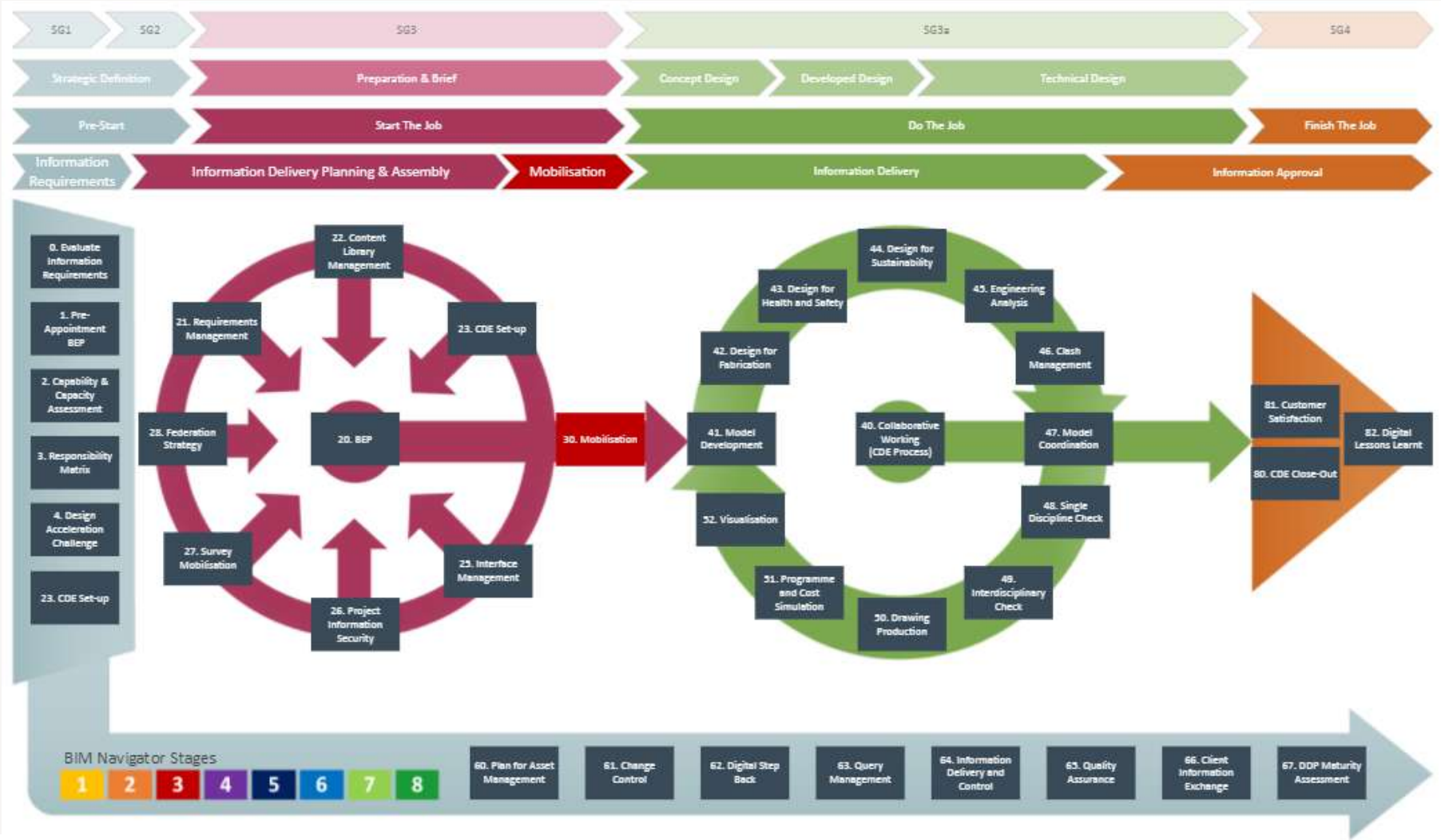
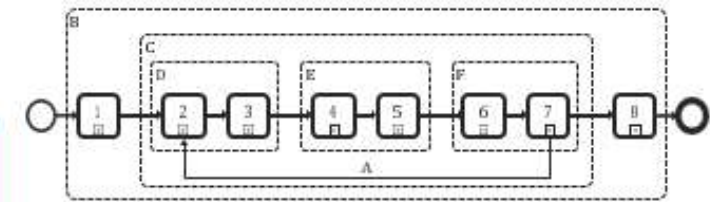
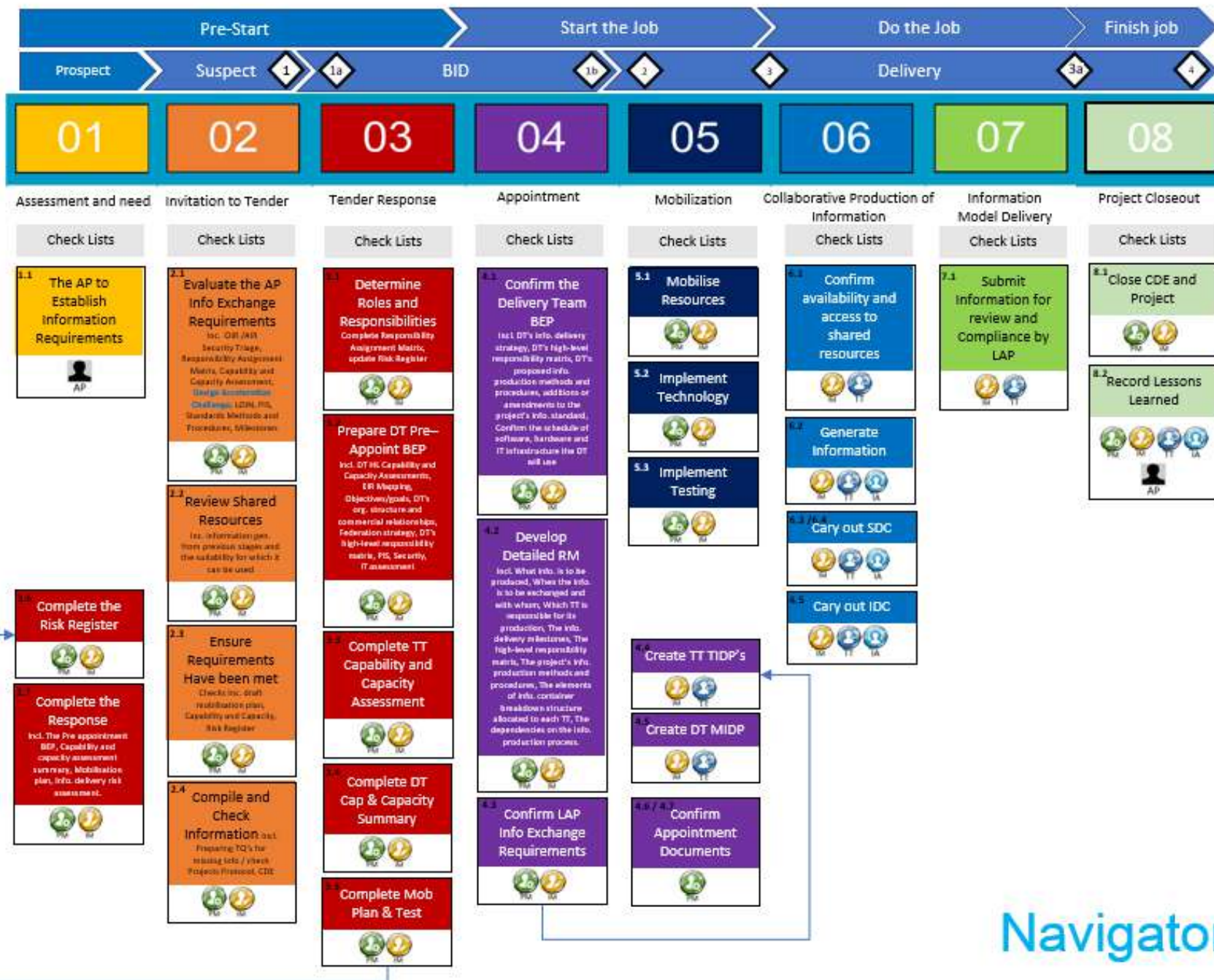


Figure 1 — A perspective on stages of maturity of analogue and digital information management

GDF Platform Development





Meeting the
Kitemark schemes in accordance with BIM
level 2 (PAS 1192:2 PAS 1192:3 PAS
1192:5 S1192:2007 BS1192:4)



Navigator 2 ISO19650 canvas

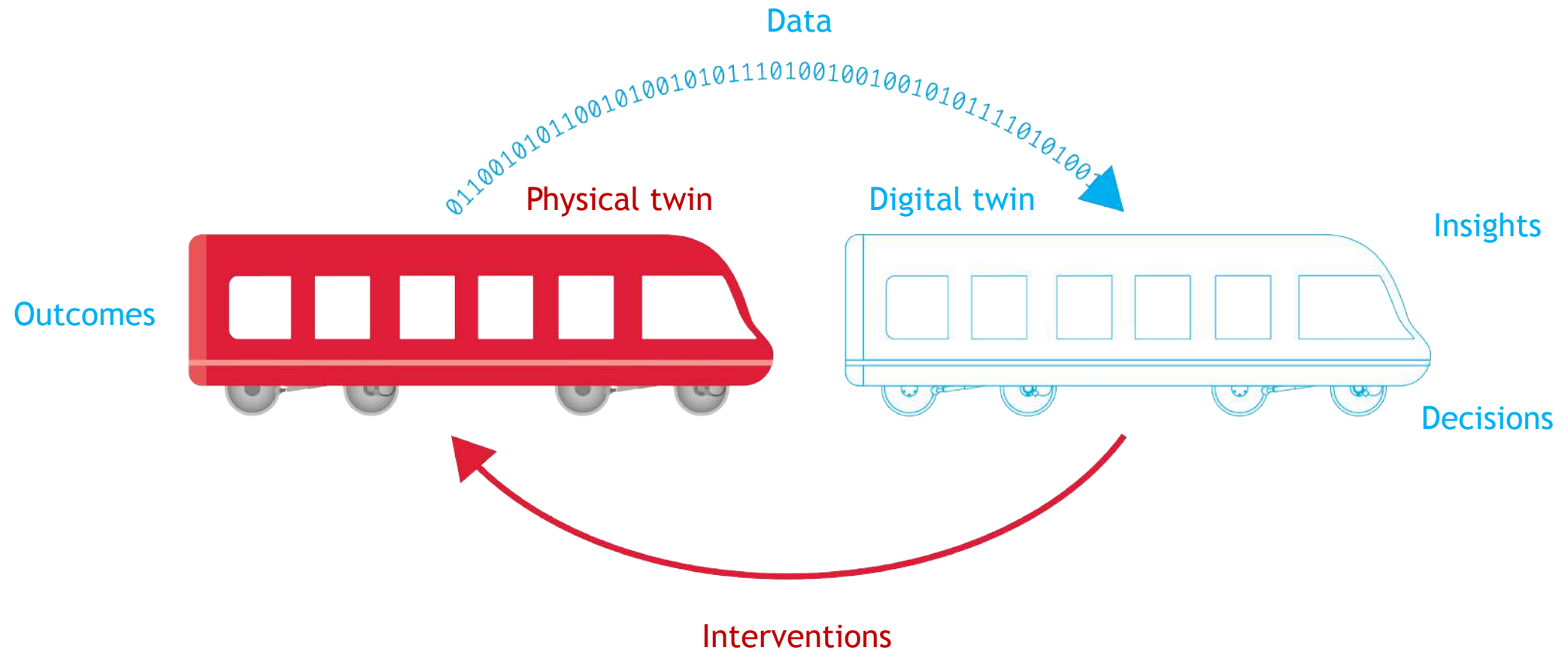
National Digital Twin – An ecosystem of connected digital twins enabling better decisions faster across the built environment

Benefits of the National Digital Twin

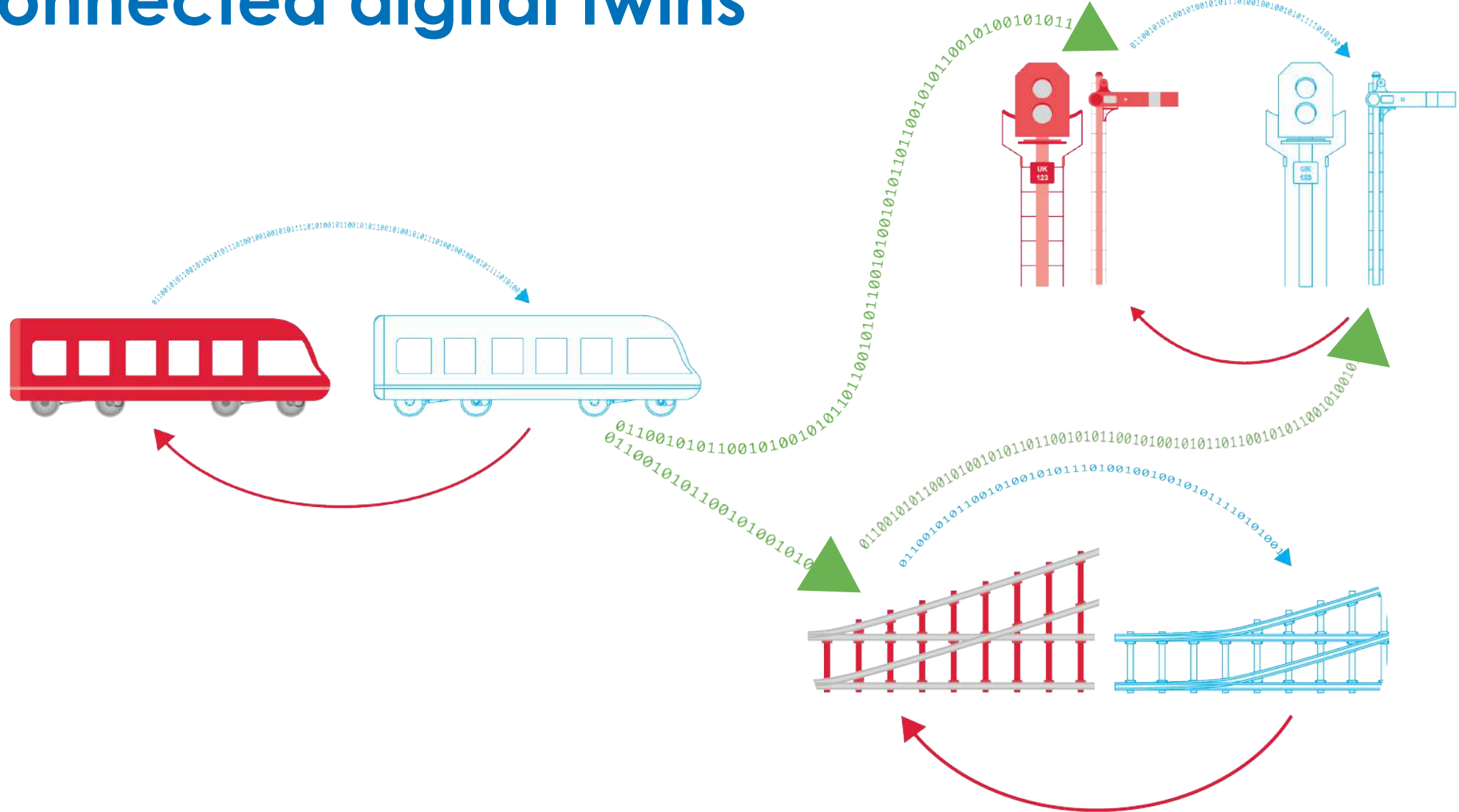
Better outcomes for the public per whole-life pound

- **Benefits to society:** Improved stakeholder engagement. Better outcomes for the ultimate customers (the public – taxpayers/bill payers/fare payers/voters). Improved customer satisfaction and experience through higher-performing infrastructure and the services it provides.
- **Benefits to the economy:** Improved national productivity from higher-performing and resilient infrastructure operating as a system. Improved measurement of outcomes. Better outcomes per whole-life pound. Improved information security and thereby personnel, physical and cyber security.
- **Benefits to business:** New markets, new services, new business models, new entrants. Improved business efficiency from higher-performing infrastructure. Improved delivery efficiency, benefiting the whole construction value chain – investors, owners, asset managers, contractors, consultants, suppliers. Reduced uncertainty and better risk management.
- **Benefits to the environment:** Less disruption and waste. More reuse and greater resource efficiency – a key enabler of the circular economy in the built environment.

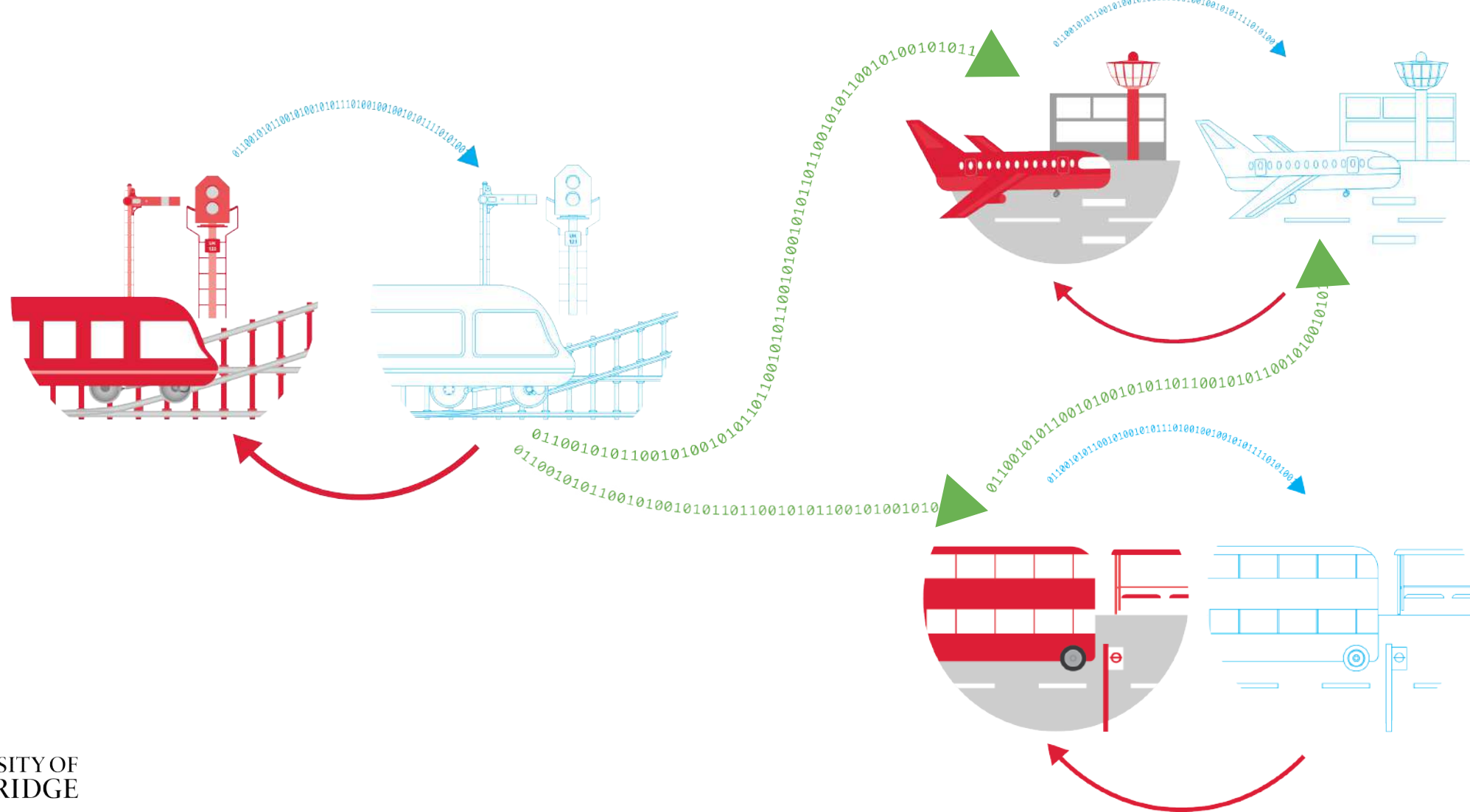
Digital twins



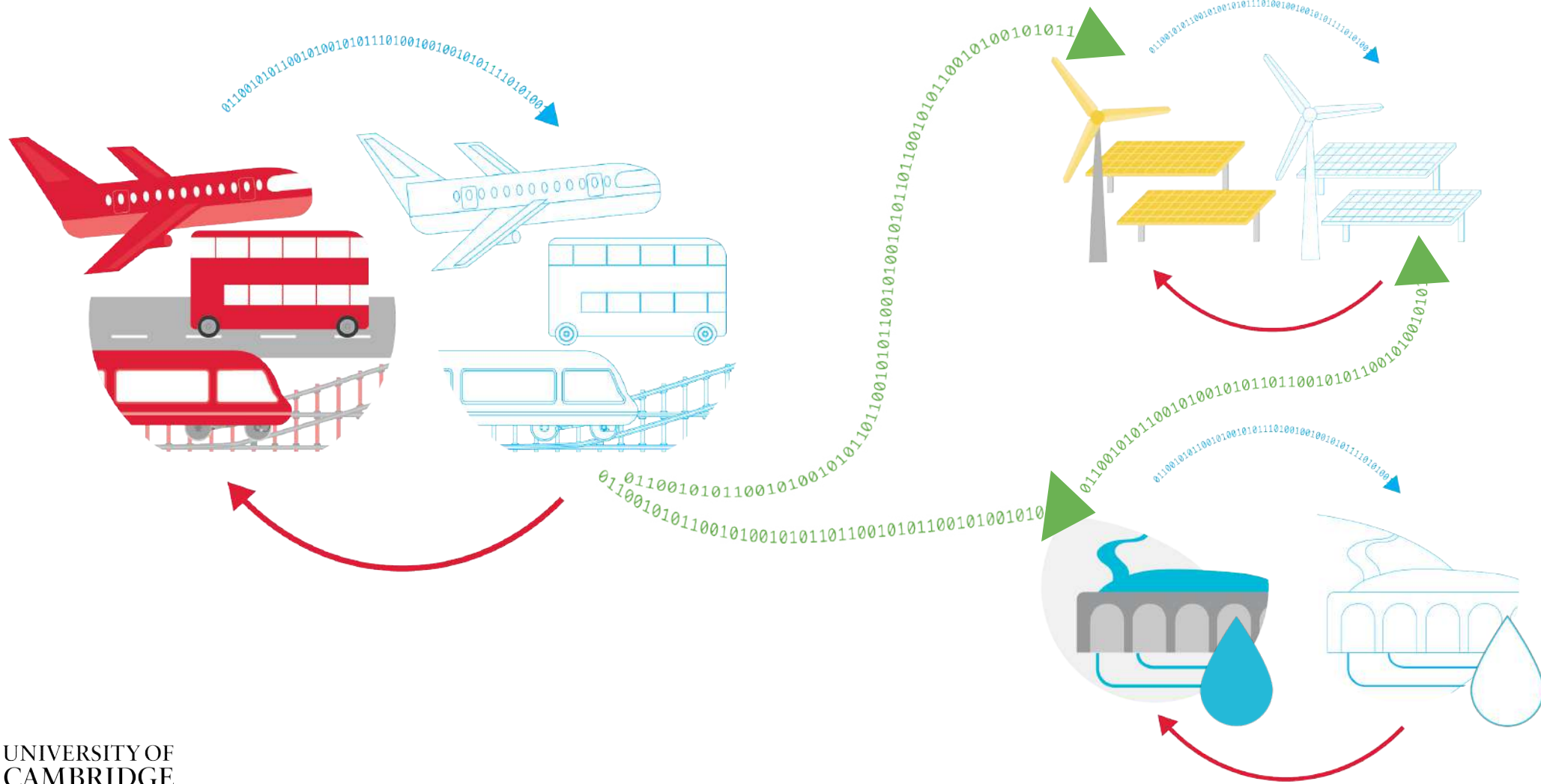
Connected digital twins



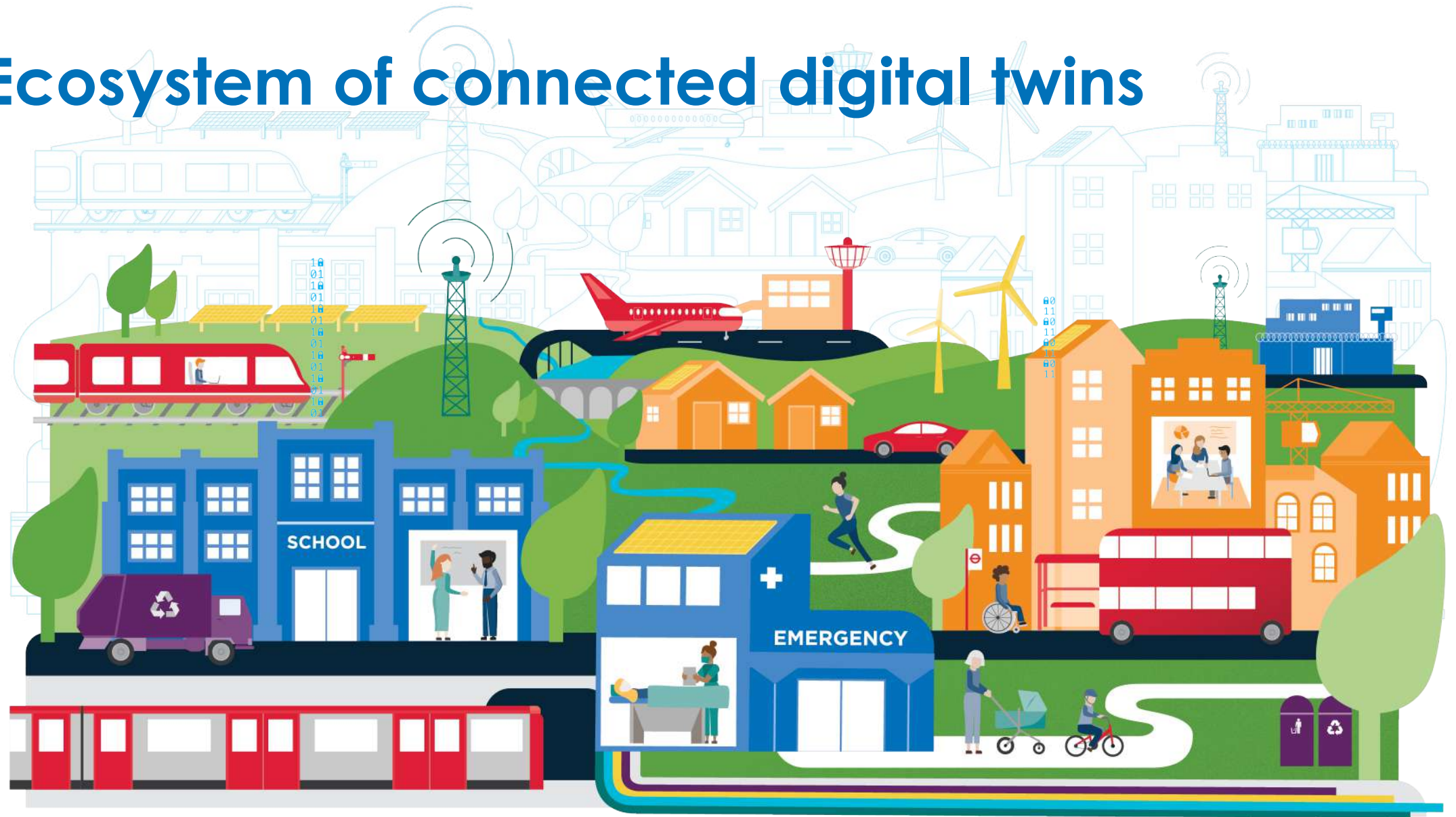
Ecosystem of connected digital twins



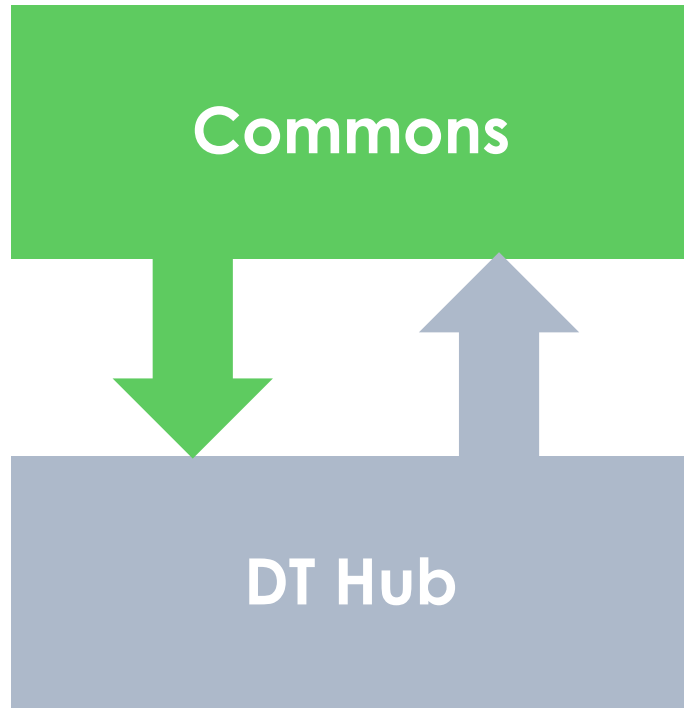
Ecosystem of connected digital twins



Ecosystem of connected digital twins



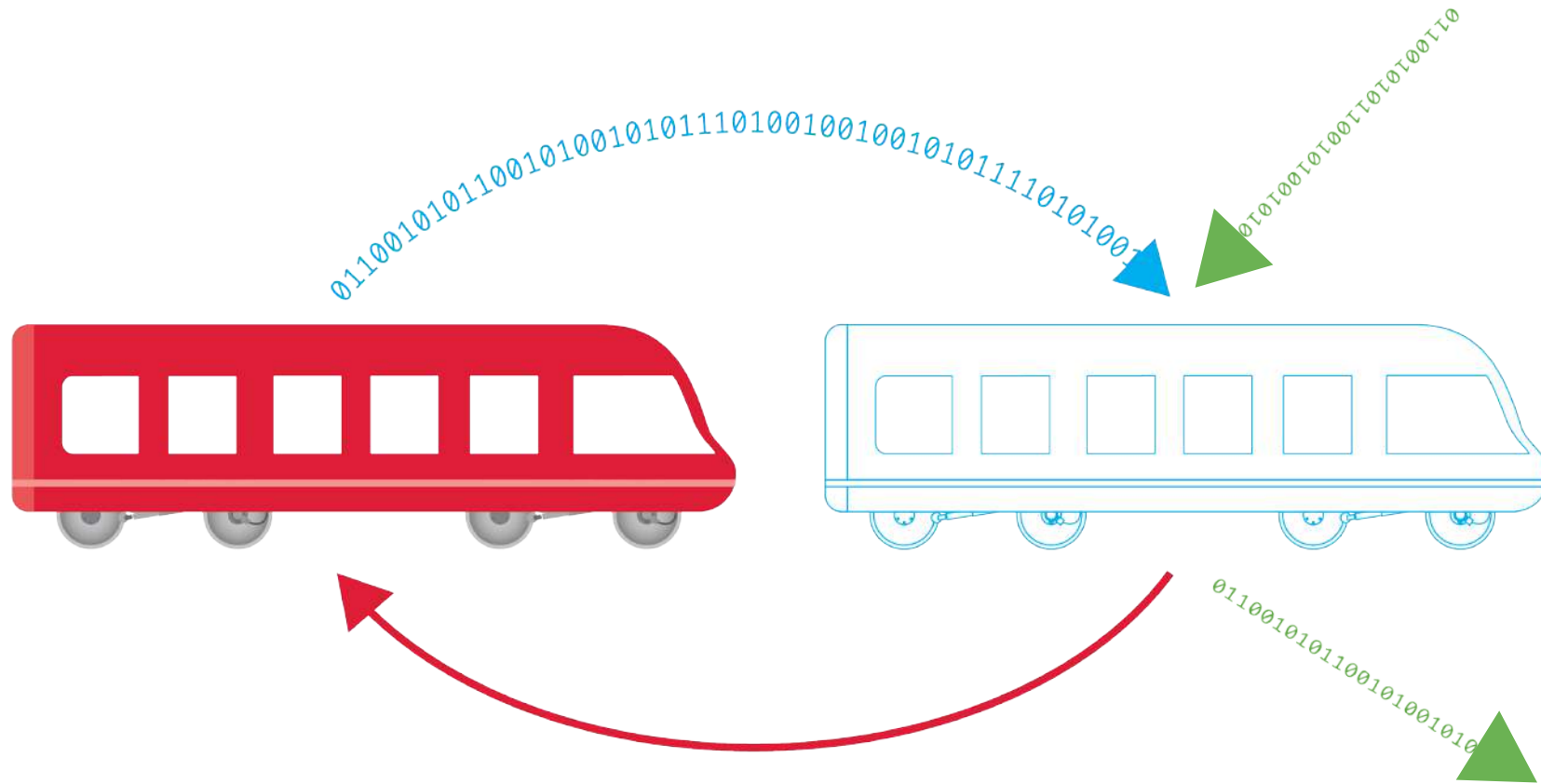
The emerging approach



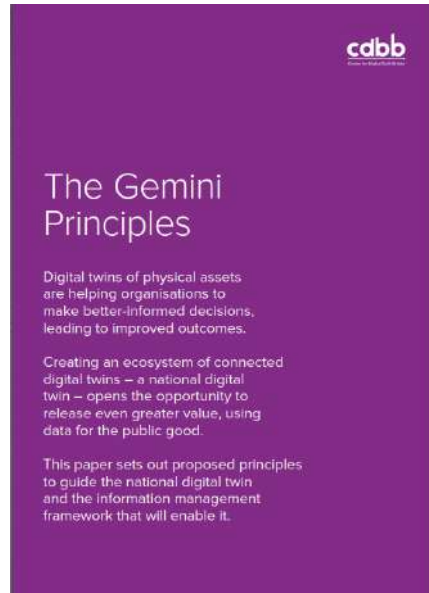
A national resource, held in common, that unlocks effective information management across the industry; the minimum necessary open standards/methodologies; expert led – the “ministry of all the talents”

Collaborative, web-enabled, learning community that learns by doing; captures and shares emerging best practice; turns experience into guidance and guidance into standards; practitioner led – those who own or are developing digital twins.

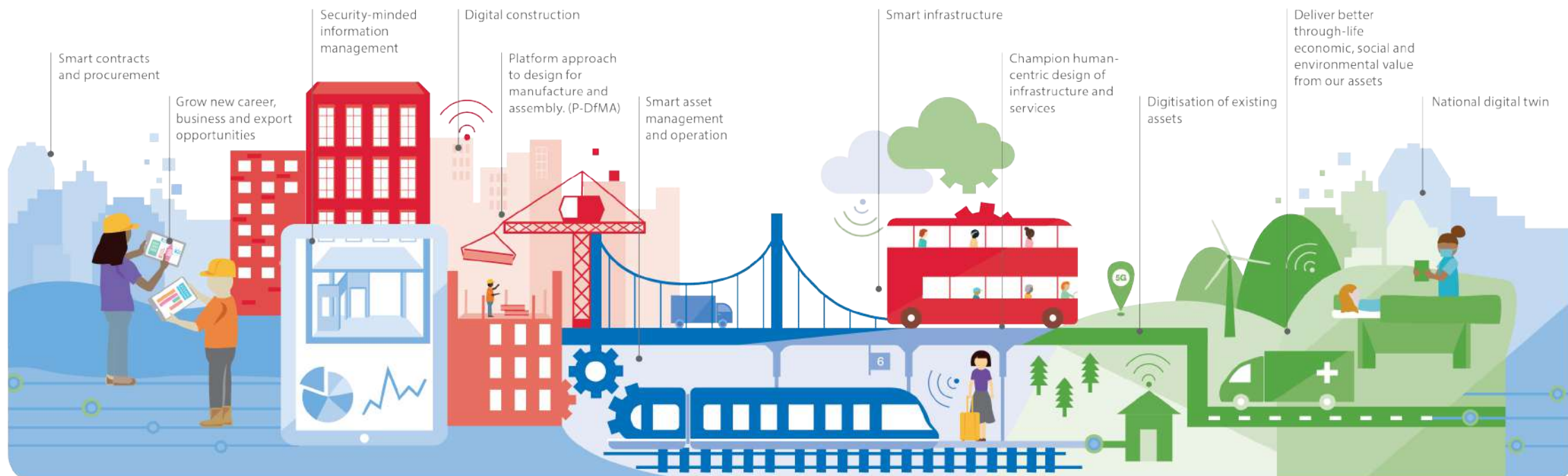
Connectable digital twins



Guided by the Gemini Principles



This is Digital Built Britain



Design

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

Build

Exploit new and emerging digital construction, information management, and manufacturing technologies and techniques to improve safety, quality and productivity during construction.

Operate

Use effective information management to transform the performance of the built environment and the services it delivers.

Integrate

Understand how the built environment can improve citizens' quality of life and use that information to drive the design and build of our economic and social infrastructure and the operation and integration of the services they deliver.



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Thank you

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BOOSTING PERFORMANCE THROUGH SYSTEMIC INNOVATION

DAVID ADAMS

Technical Director, Melius Homes

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*The opportunity to
achieve significant
improvements in
building
performance*

*An unexpressed desire can
only be met through luck*

'2050 Homes'

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REMOURBAN EU
Horizon 2020
Lighthouse project
Nottingham Demo
Site

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Observations

- Owners of homes don't require performance outcomes
- Fair demonstration of performance is complicated
- Most home retrofits don't involve an architect
- If an architect is involved their brief is often little more than a illustration
- If you ask for details they often don't have the competency or time allocation to provide them
- 'System solutions' have to be integrated into an existing structure which is often where the problems start
- Partial retrofit increases the number of interfaces with the existing home – more corners, edges and interactions
- Individual elements typically sub optimise to 'appear' lower cost
- No 'one' knows the answer
- Retrofit builders rarely refer to detail drawings
- Craft workforce never(?) refer to drawings and always(?) have their own way (which is better)
- Even if you do assess the property comprehensively, often it isn't what you expected when you open it up....
- People live in homes not robots
- Clients take a long time to procure and are always in a rush to complete
- Thinking takes time and costs money
-

*If you always do what you've
always done
you'll always get what you've
always got*

*Simplify building performance
– do all the work at once...*

> Desirable, warm, affordable
homes for life

*Energie
Sprong
uk*

Energiesprong business case

> The offer



AFFORDABLE

Financed from energy & maintenance savings



DESIGN

Looks & feels good – desirable product



NON-INTRUSIVE

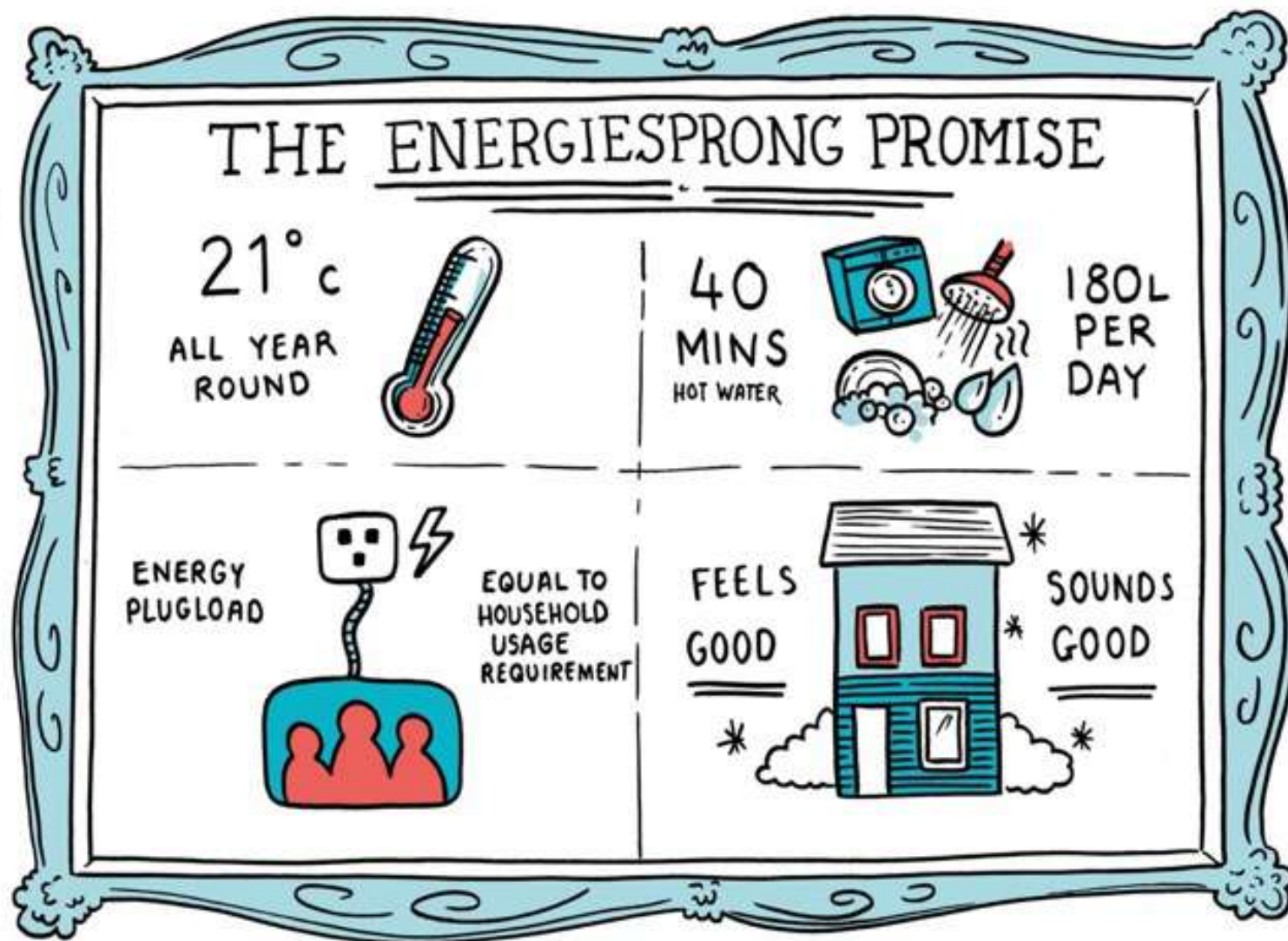
Refurbishment within one week



ASSURED QUALITY

30+ years performance guaranteed

Energie
Sprong



> 2050 'ENERGIESPRONG' Retrofit Homes



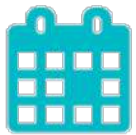
ASSURED QUALITY

30+ years energy performance warranty



AFFORDABLE

Financeable from energy & lifecycle cost savings (guaranteed)



NON-INTRUSIVE

Refurbishment within days not weeks



DESIGN

Improve look & feel – desirable product

















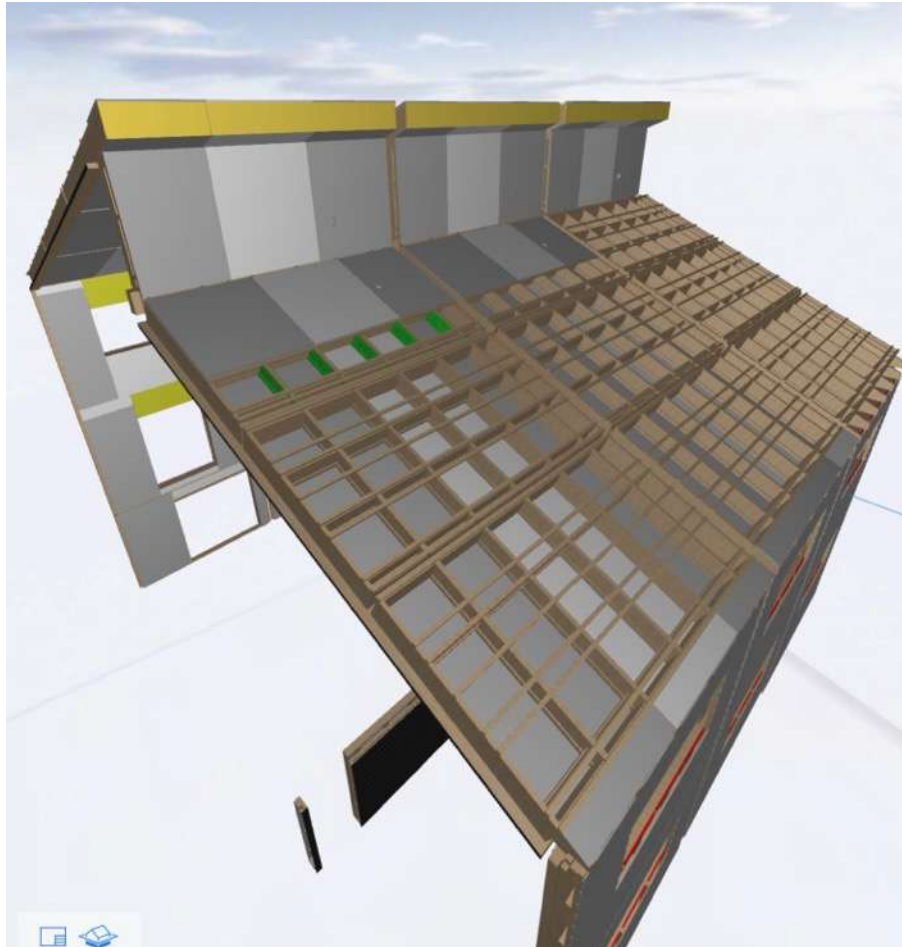
Lessons from the Energiesprong 2050 pilot homes



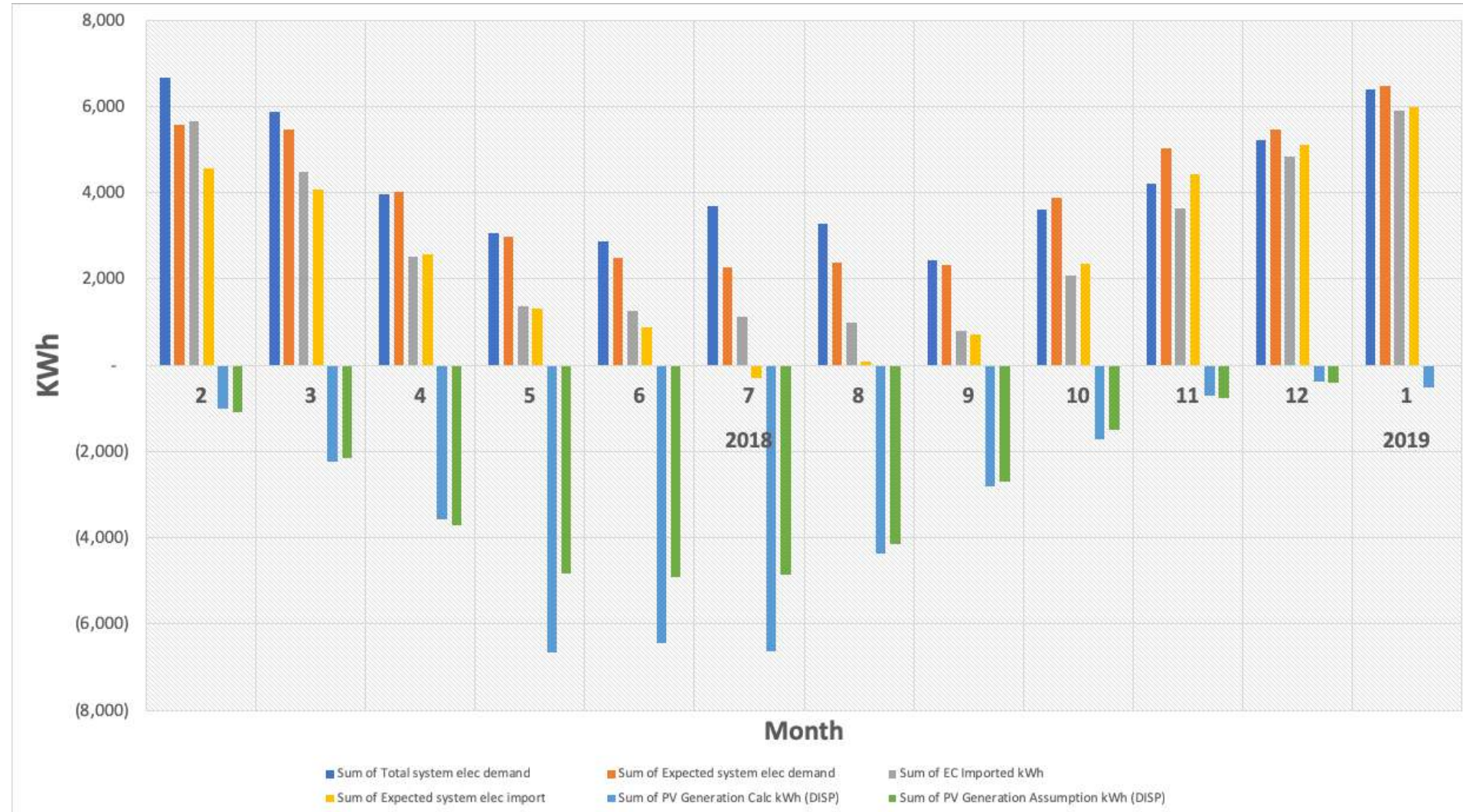
Materials



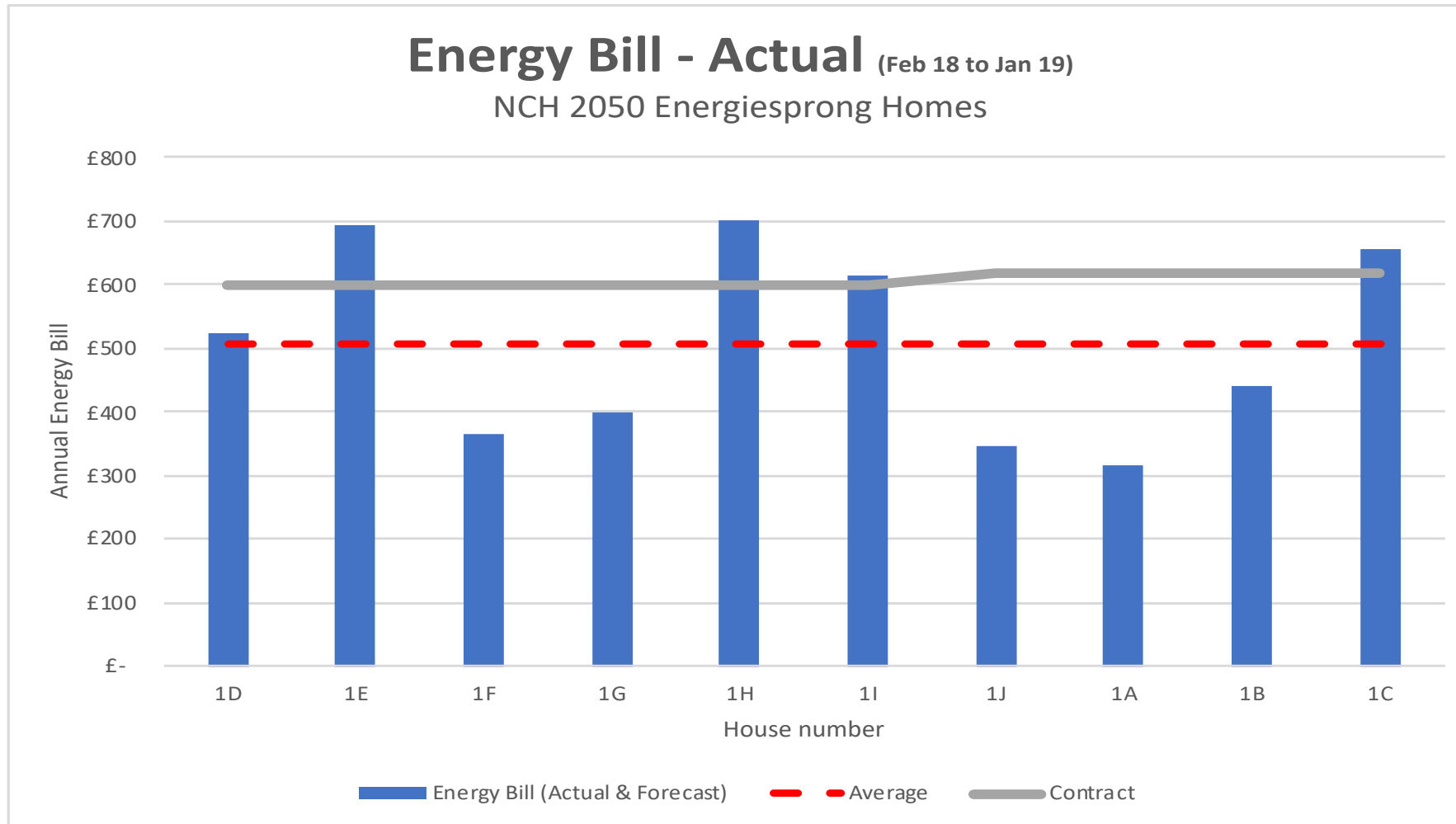
Quality



Performance



Performance



Performance



It's cheaper, a lot cheaper, its made a lot of difference!



I can see out without being on my tippe-toes!!



Looks a lot nicer than it did before, it's definitely warmer in my house!



I couldn't understand how a low temperature heating system would keep the house warm, but it does!





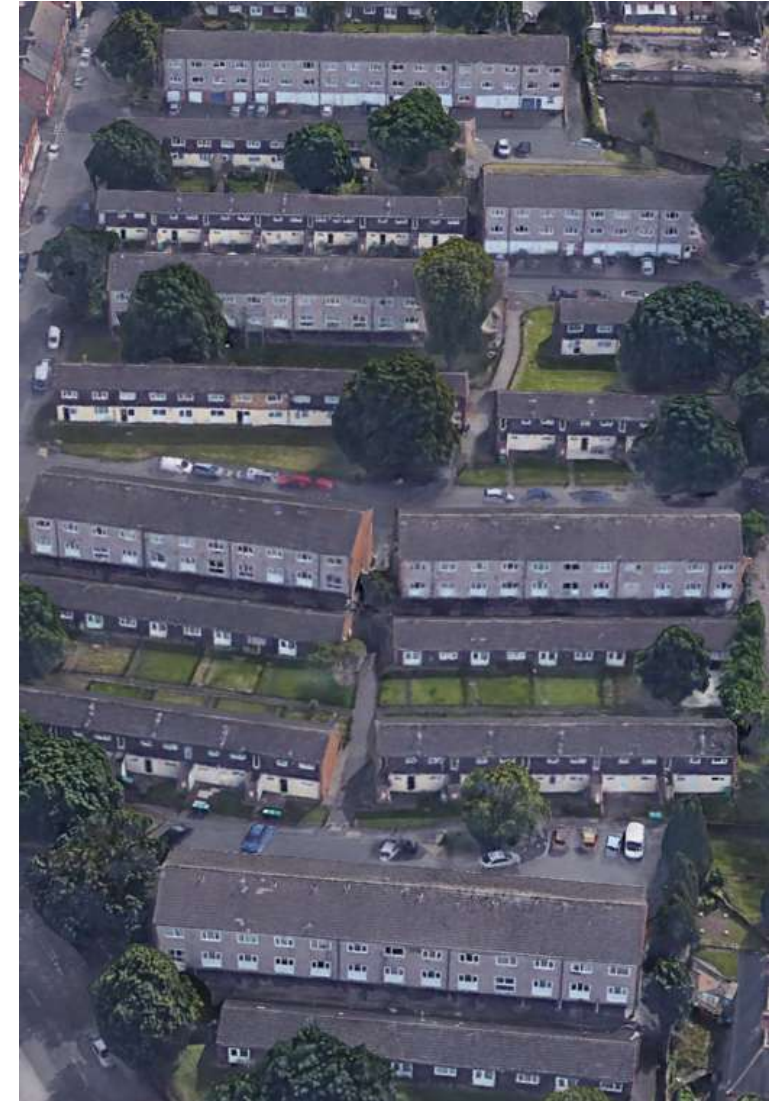
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