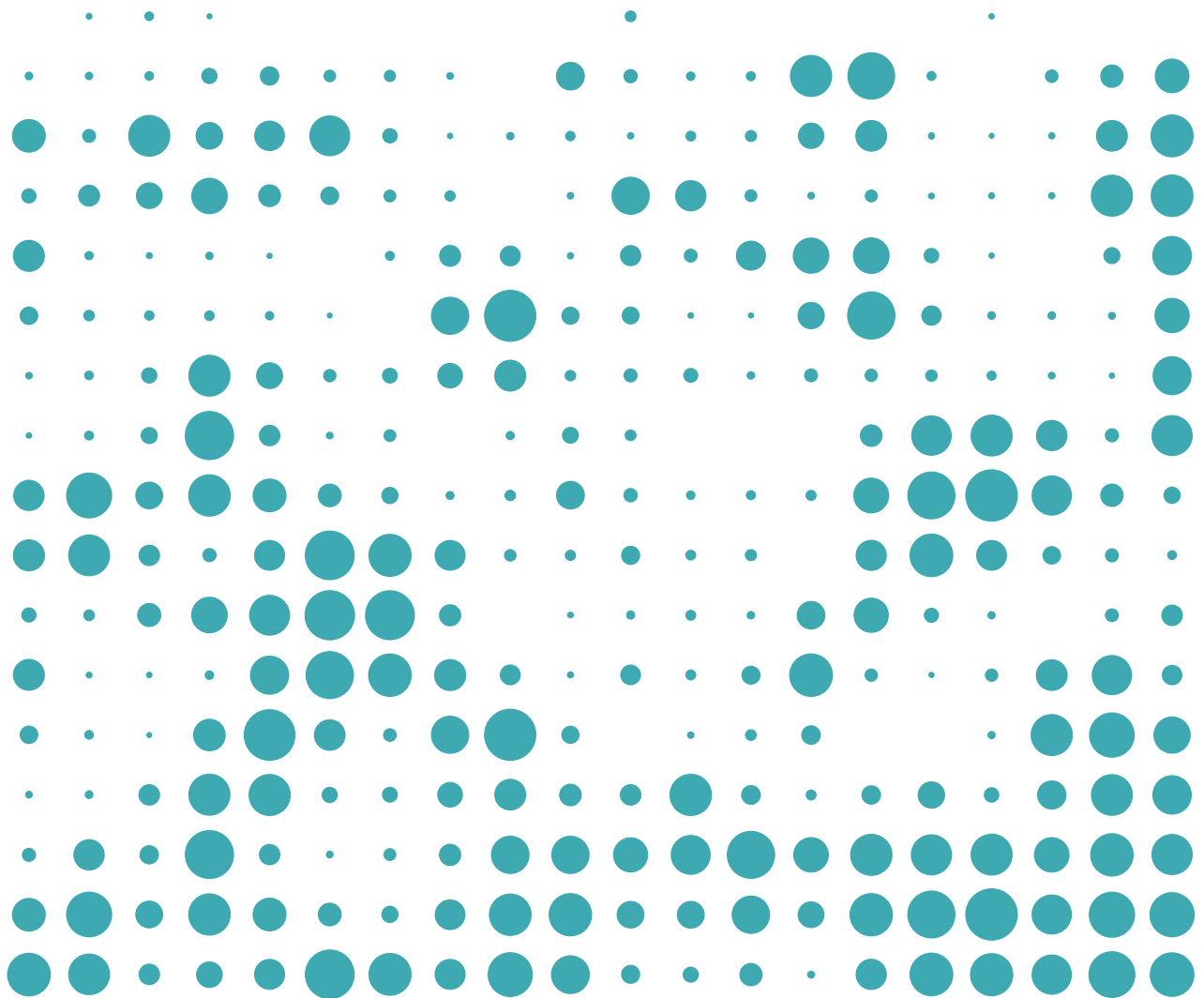


BIM and Digital Twins

UK BIM Alliance Positioning Statement



CONTENTS

Context.....	3
What is BIM?	3
What is a digital twin?.....	4
Where does one stop and the other begin?	4
UK BIM Alliance Contact Details	5

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1. CONTEXT

The UK BIM Alliance has prepared this 'position statement' on digital twins to clarify the relationship between BIM and digital twins, to complement discussions in various work groups within the National Digital Twin (NDT) programme by the Centre for Digital Built Britain (CDBB)

With discussions taking place around the world on this important topic, the UK BIM Alliance thought it best to formally publish a positioning statement as a 'go to' resource for anyone partaking in the various discussions.

2. WHAT IS BIM?

As the UK BIM Alliance, we view BIM as Better Information Management. In that regard BIM according to the BS EN ISO 19650 suite, is the **PROCESS** of delivering relevant data about built environment assets through their lifecycle in a structured, secure and consistent manner. This will enable the "use of a shared digital representation of a built asset to facilitate design, construction and operation processes to form a reliable basis for decisions". In the UK, the BS EN ISO 19650 suite has been made available as part of the UK BIM Framework (www.ukbimframework.org), which also includes guidance on its implementation.

The suite of documents defines a combined CAPEX and OPEX process that enables the management and use of information through the whole life of assets, summarised here through the following high level and simplified activities:

- Client considers the use case and purpose for a particular trigger event (which may be operational (e.g. planned, or reactive maintenance), or may be a new development project).
- Client defines what information is needed and to what standards (incl. cyber/physical security).
- Client appoints the team(s) at appropriate time with the relevant contract amendments to cater for data as a deliverable including acceptance criteria.
- Team plans the information delivery.
- Team delivers the information.
- Information is verified and validated.
- Accepted information is handed over to the client as a set of information containers forming the information model for this appointment, which can then be used to support the originally determine decisions/purpose.
- The client ensures that future CAPEX project information, and further OPEX information is combined on an ongoing basis, and as appropriate, into the overall integrated information model(s) for the asset, through the entire lifetime of the asset.
- The integrated information model(s) continue(s) to be used and updated during refurb or demolition.

3. WHAT IS A DIGITAL TWIN?

CDBB published the Gemini Principles in 2019 and defines a single digital twin as either:

Digital Twin 1:

A dynamic model of an asset, with input of current performance data from the physical twin via live data flows from sensors; feedback into the physical twin via real-time control.

Digital Twin 2:

A static strategic planning model of a system, with input of long-term condition data from the physical twin via corporate systems; feedback into the physical twin via the capital investment process.

And the National Digital Twin?

The CDBB National Digital Twin programme aims to create an ecosystem of digital twins, opening the opportunity to release even greater value, using data or the public good.

If the NDT is primarily a UK Government proposition to enable a greater understanding of the UK infrastructure, then by its very nature, it will (most of the time) include built assets in one form or another. Leaders of the NDT programme have therefore stated that BIM is a necessary foundation of a built environment digital twin.

The differentiation between digital twins and the current 'typical' static BIM deliverables (structured data in the form of reports, databases, drawings, specifications, surveys, models, calculations etc – i.e. the Information Model), is therefore **the addition of dynamic 'right-time' data.**

4. WHERE DOES ONE STOP AND THE OTHER BEGIN?

The distinction between the two as described above is important but not necessarily that clear-cut as the BS EN ISO19650 process can also be used to procure a digital twin.

Revisiting Section 2, the process of defining the use case, the information requirements and procuring the team to deliver the information to the required standards is very much required for digital twins. Indeed, the UK BIM Alliance would recommend that the BS EN ISO 19650 'process' **can and should** be used to procure a digital twin 'output'.

The reason we take this standpoint is to provide clarity and avoid client disappointment when they are presented with a static dataset when perhaps their expectation was that a 'fully' dynamic and 'real-time' representation would be provided.

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