CONSTRUCTION INNOVATION HUB

INDUSTRIAL STRATEGY

UK Research and Innovation

Construction Innovation Hub

A UK government and industry collaborative programme to transform construction

Introduction

The Importance of BIM for the Construction Innovation Hub

Dr Steven Yeomans, Head of Digital Construction

Dr Yeomans is the Head of Digital Construction for BRE in the Construction Innovation Hub. He is also a Steering Group member of the PAS 14191:2020 Built environment – Operation of interconnected construction data dictionaries. Steven has experience in BIM, digital construction, research, teaching, consultancy and innovation. His specialised knowledge and papers cover the application of digital ways of working, BIM, cloud-systems and information management for improved business, communication and collaboration.

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Who we are - our Mission

Our mission is to be a catalyst for transforming the UK construction sector through manufacturing technologies and digital ways of working – boosting productivity, exports and asset performance to benefit society

…Bringing together world class expertise

CONSTRUCTION INNOVATION HUB

mtc Manufacturing Technology Centre

- Platform Construction System
- Standardised Component Sets
- Process Engineering Solutions
- Government Department Discovery and Analysis
- Physical Demonstrators
- Quality Management

bre

- Engagement and Skills
- Demonstration, Testing and Validation
- Built Environment Performance
- Digital Product Data and Building Regulations

cdbb Centre for Digital Built Britain

- Digital Transformation across Asset Lifecycle
- Asset Management and Digital Twins
- Contracting and Business Models for the Digitally Enabled Built Environment
- Impact Assessment
- Driving Change and Growth

Hub Programme: four core themes

CONSTRUCTION INNOVATION HUB

COVID-19 & sector recovery

Uncertain environment

- Temporary suspension of operations
- Impact on supply chains
- Increased health and safety measures
- Financial difficulties

Front line role in creating vital infrastructure

- Unprecedented speed when delivering NHS Nightingale hospitals and additional intensive care for the country

Putting transformation at the heart of sector recovery

- Post-COVID19 recovery must be rooted firmly in **new and better ways of doing things**
- We must continue and accelerate the journey of transformation begun under the Construction Sector Deal; there can be no going back to **‘business as usual’**
- Short-term, transferring emerging technologies and processes into projects will **mitigate the productivity impacts of social distancing**
- Long-term, reducing dependence on site labour and building integrated supply chains supported by new partnerships and procurement models will build **greater resilience** in construction
- Moreover, embedding new processes around **procurement and delivery** will drive greater productivity, predictability, resilience and ultimately create greater value

Accelerating our programme: Platform Design Solution

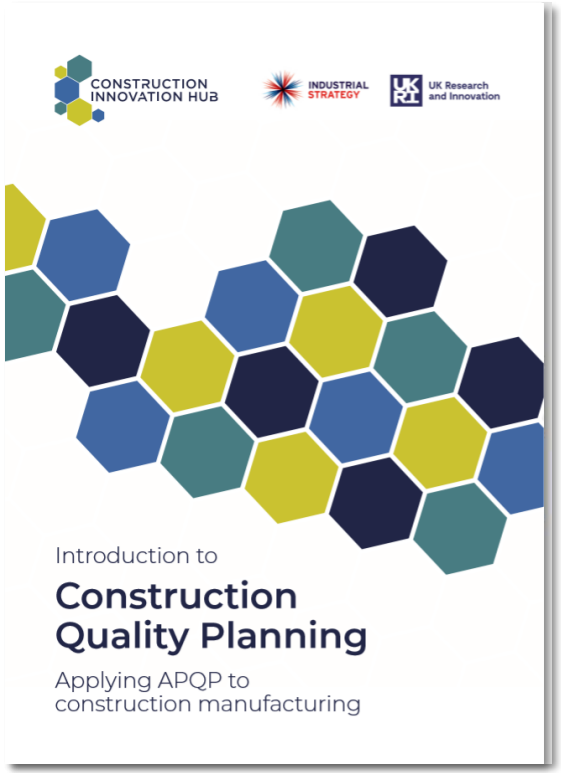
MANUFACTURING

Our approach builds on IPA's call for evidence on P-DfMA and will prototype a technical solution that can drive a sector-wide transformation

Working with industry, we will develop, a prototype **platform-based, manufacturing approach** for buildings which includes:

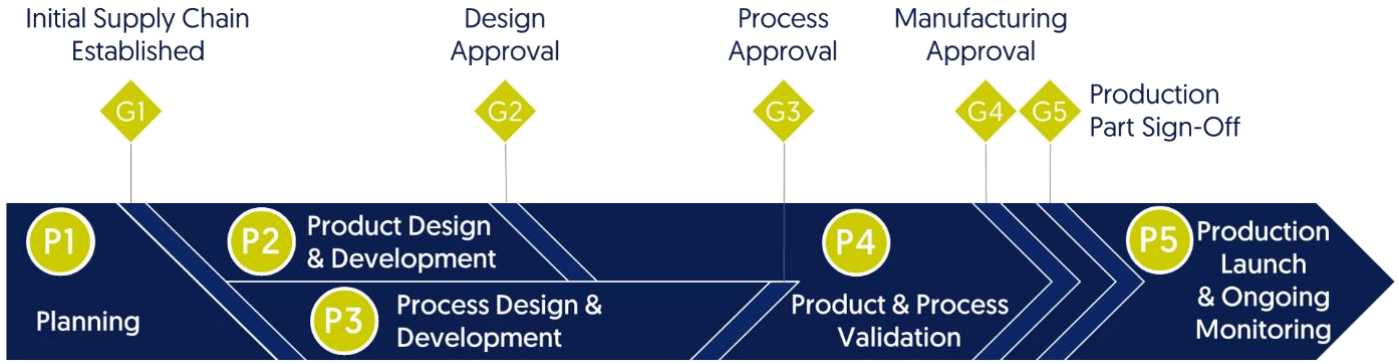
- **Integrated assemblies, interface standards and rules** that enable buildings to be created from a kit of parts
- "Offsite" needs **physical standardisation**
- "Manufacturing" requires **process standardisation**

Accelerating our programme: Construction Quality Planning (CQP)



Consultation now open
18 May to 31 July 2020
https://bit.ly/CQPConsultation

- Construction Quality Planning (CQP) is an adaptation of Advanced Product Quality Planning (APQP), a well proven quality management system used extensively across manufacturing environments.
- CQP has been developed for those enterprises that will feed construction with new products for offsite builds. Using CQP will ensure that parts conform to the fit, form, and function needed to deliver consistent high quality products and therefore buildings.



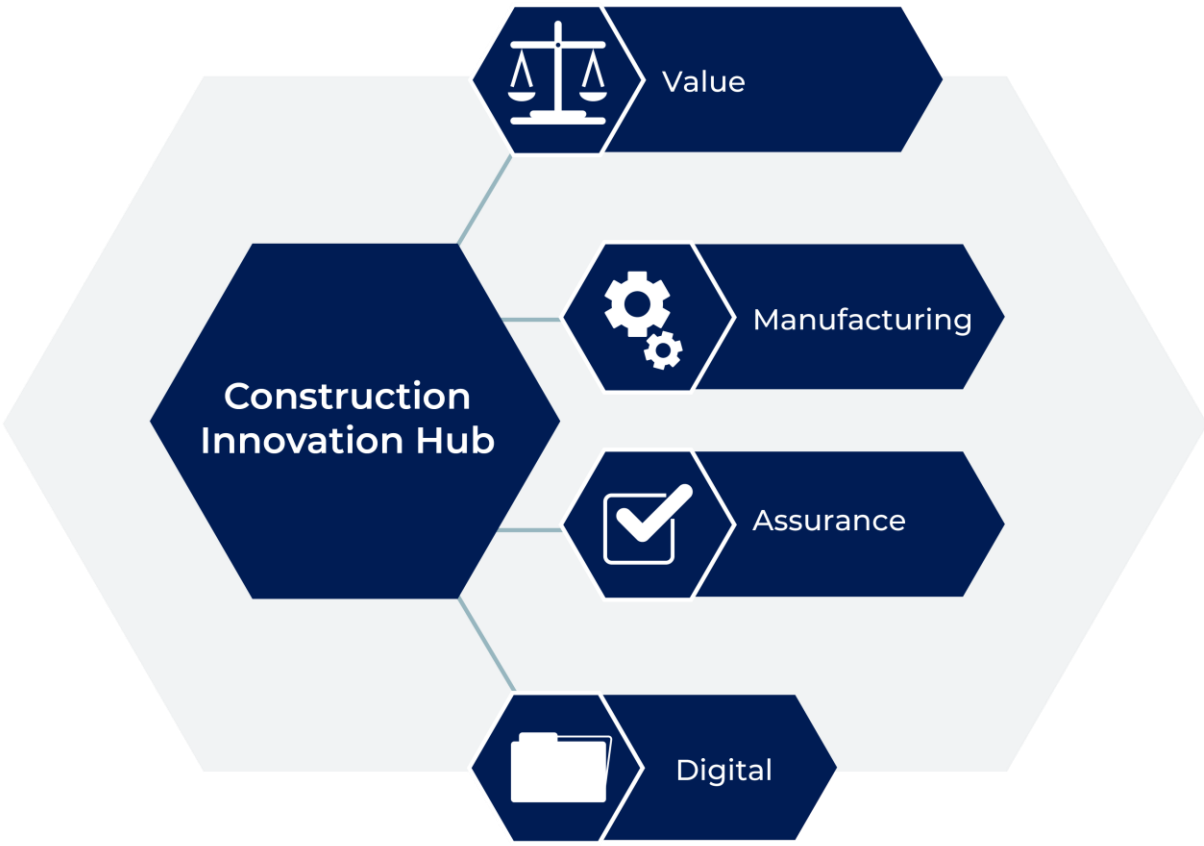
Enabling Framework

We must recognise that having a technical solution for platform-based manufacture will not alone deliver true transformation

We also need to develop frameworks for:

- **Value**
- **Assurance**
- **Digital**

And all this needs to embed security and security-mindedness



Accelerating our programme: Value Framework

VALUE

We will develop a Value Framework for government, clients and industry, to inform investment decisions, procurement, incentivisation and more.

This will be underpinned by:

- Consistent **benchmarks, metrics and data**
- A **Procuring for Value system** to help clients work with their advisers, consultants and contractors to optimise value
- An understanding of the **commercial and business models** which enable value-based decision making
- An outline of the **skills, capacity and capabilities** that are needed

Accelerating our programme: Assurance Framework

ASSURANCE

We will develop an Assurance Framework – an approach to provide confidence that products, materials, sub-assemblies meet performance and safety criteria

This will be underpinned by:

- **Testing and certification** of components and systems, both physical and digital
- Development and demonstration of **performance criteria**
- Assurance of suppliers, including **capability and quality processes**
- Work with **financial institutions,** to ensure that access to finance, guarantees and insurance-based products, supports wider roll out

Accelerating our programme: Digital Framework

DIGITAL

We will develop a Digital Framework – to set out what data is required to support decision making and performance measurement, and how it should be structured, shared and secured

This will be underpinned by:

- The next phase of **BIM standards**
- An **international programme** which ensures the UK cements its world-leading position
- Work with government and the National Infrastructure Commission to drive development of a **National Digital Twin**

Digital Framework activity

Digital eco-system of platform approach
Support its development

- Digital framework: scope information requirements and develop digital ecosystem
- FDM Seed: development of seed of the foundation data model for IMF

Information Management

Build capacity and capability for whole-life information management & security mindedness to become ‘business as usual’

- Interoperability: address barriers to BIM information interoperability
- UK BIM Framework: supporting the development and promoting its adoption
- Guidance & tools: Government Soft Landings, & Information Management
- Digital built environment: including digital twins, digitalisation of existing assets

Digital Framework activity

Economy
Development of the supporting to market processes and evidence base

- Digital ways of working: changing the way in which people, businesses and services interact in the market
- Value of BIM: report on the economic value of BIM, and case studies

Research
Research at the University of Cambridge and its partners

- Projects: Facilitating the digitisation of off-site manufacturing, West Cambridge Digital Twin, and Satellite technology for infrastructure monitoring

Digitising
Standardisation of product data and its use

- Product Data: develop information requirements for the platform programme and products

Digital Framework Outputs

- Digital eco-system definition
- Digital transformation roadmap
- Digital Twin Proof of Concept
- BIM tools & information requirements
- Economic Benefits of BIM
- ISO 19650-3 Operational phase of the assets guidance
- Information management maturity & benefits tools
- Interoperability report
- Standardised Product Data
- Smart Buildings Guidance

Turning our vision of a transformed sector into reality

By accelerating our programme at this critical time, we are developing a technical solution, backed by an enabling framework, which will ensure:

Value is created for government, clients and businesses alike

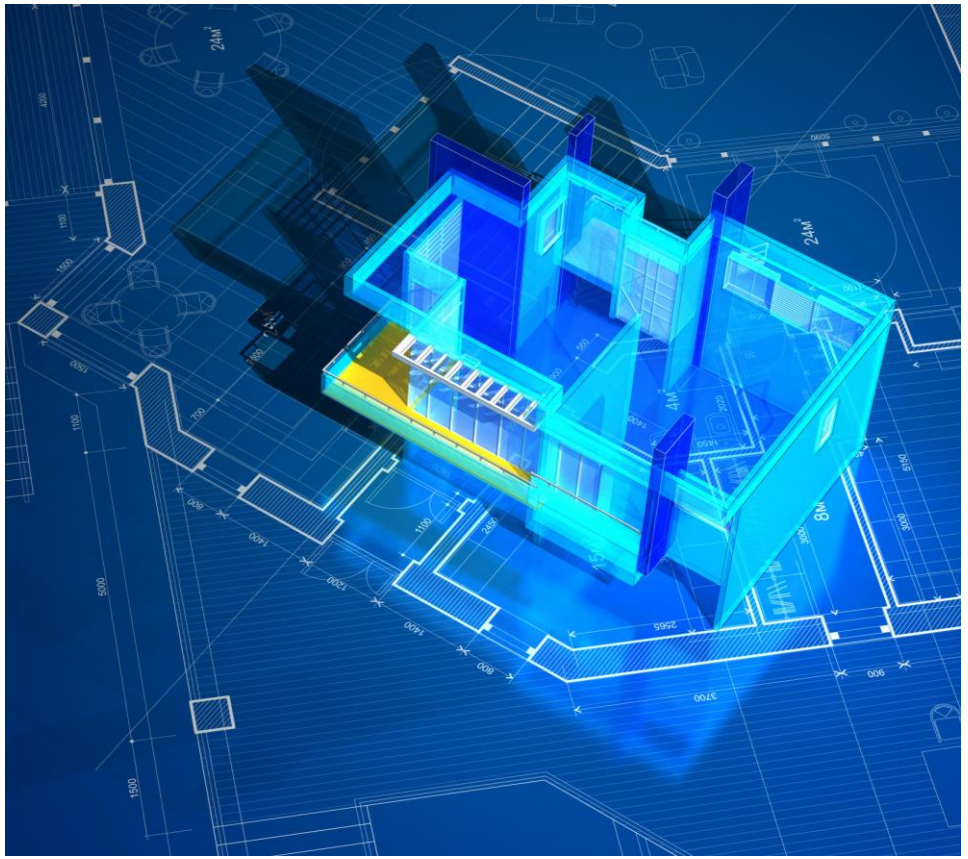
Better social, environmental and economic outcomes

Sustainable transformation of the sector can be achieved

Better future outcome

The Hub programme will create future buildings that:

- Are higher quality and safer in creation and use, saving time and money
- Use data and digital solutions to optimise performance over whole life, delivering more for society, users and owners
- Use less energy, create less waste and carbon
- Enable new, diverse skills and talent to be attracted to the sector
- Support UK businesses to innovate, thrive and grow



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