The Hub Playbook for

# Design Teams

# The Hub Playbook for Design Teams

As part of the Transforming Construction Challenge, over the past four years the Hub has worked with government and industry to create solutions that support the transformation of the sector. New tools, processes and standards will boost productivity, supporting a more innovative, safer, higher quality, more sustainable sector ready to deliver the ambitions we have for our society, environment and economy.

The Hub's programme has focused on enabling the market to succeed. We have shaped the policy and regulatory environment, helping clients and policymakers to drive added value in the decisions they take. Our outputs will enable all parts of the supply chain to respond with innovative solutions that exploit the opportunities that new digital, data-centric and manufacturing approaches can bring.

This Playbook signposts how design teams can access the Hub's outputs, and implement and embed them into their projects. This Playbook clearly articulates from a design team's perspective what each of the Hub's key outputs are, the key drivers behind their development, and the practical steps to take to accelerate and drive adoption within their organisation.

# Value Toolkit

# Value Toolkit

## What is it?

The Value Toolkit is a pioneering suite of tools that can be used to embed value-based decision making in projects across the construction and built environment sector. Value-based decision making focuses on how an investment can deliver the best outcomes and thus value, rather than focusing exclusively on delivering to the lowest possible price.

## Why do it?

The government is driving the construction industry to adopt value-based decision making through policies set out in the Construction Playbook and Transforming Infrastructure Performance Roadmap to 2030.

Both the public and private sector can apply the tools within the Value Toolkit on single projects, across programmes or at an enterprise level.

Use of the Value Toolkit will drive transformational change in the way all stakeholders in the sector are able to create better schools, hospitals, homes and buildings in the future.

The Toolkit can be used to help tackle the increasingly complex challenges our society now faces, from climate change to economic recovery in a post-pandemic world.

## The role of design teams

Due to their early engagement in projects, design teams can use the Value Toolkit to facilitate client organisations in adopting an outcome-based approach to project and project delivery. The process provides a structure and guidance to facilitate conversations around value – rather than cost – right from the very beginning. This puts environmental and social impact at the core of decision making. Equally, design teams will need to understand the Value Toolkit as it may be used by clients to assess design options.

## What practical help is available to design teams?

The priority for design teams is to understand how the value profile and value scorecards are generated, to be prepared to respond to shifting client requirements. The Construction Innovation Hub and partners across industry developed the Value Toolkit as an industry resource. It sets out a series of processes, tools and guidance and two interlinking activity streams: one covering value definition and measurement; the other through a client approach. Both are designed to evolve alongside industry and policy priorities, using continuous feedback loops to deliver insight on performance and effectiveness. Within these streams there are steps, deliverables, and decision points.

The Toolkit also provides a webapp to store the decision points and the evidence behind them, so that these are transferred at every handover point in the lifecycle of an asset. It includes training: a two-day facilitator training course; e-learning for the supply chain on how to respond if a client is using the Value Toolkit; and e-learning for commercial teams looking to understand value-based decision making. This will be supported by overarching guidance, including an overview document, and detailed handbooks.

The Value Toolkit has been created to support the implementation of the policies described in the Construction Playbook. The needs of government, clients and industry lie at the heart of the Toolkit's development and its publication follows extensive stakeholder consultation and industry involvement. The Value Toolkit stands ready to be the blueprint for the adoption of value-based decision making by current and future market players.

## What are my first steps?

Understand the process, with a focus on how value scorecards may be used to put value-based decision making at the core of assessing design options. Advocate the use of the Value Toolkit with your clients.

## Find out more about the Value Toolkit here

# Product Platform Rulebook

# Product Platform Rulebook

## What is it?

Platform construction uses product platforms as standard, repeatable assets with interoperable components. Their use can reduce cost, waste, and carbon and help the infrastructure sector better deliver the future pipeline of projects and programmes.

Platform construction will drive transformational change in the way clients think about how our schools, hospitals, homes and buildings can be created in the future.

It is designed with built-in mechanisms for continuous improvement and the opportunity for synchronisation and streamlining as both capability and capacity grow.

A product platform is a kit-of-parts, associated production processes, and the knowledge, people and relationships required to deliver all or part of construction projects using a platform approach. It provides a stable core which is configured and combined with complementary components (via defined interfaces) to suit a particular project. A product platform also includes the processes, tools and equipment required for assembly.

## Why do it?

The Rulebook has been created to support the implementation of the policies described in the Construction Playbook. It also enables the accelerated adoption of platform approaches described in Transforming Infrastructure Performance: Roadmap to 2030 (TIP). The needs of government, clients and industry lie at the heart of the Rulebook's development and its publication follows extensive stakeholder consultation and industry involvement. The Rulebook stands ready to be the blueprint for developing and implementing product platforms for current and future market players.

## The role of design teams

The Rulebook is a fundamental step forward towards creating a voluntary consensus standard that supports the construction industry, as a whole system, to develop and deploy product platforms consistently in delivering better environmental and societal outcomes through the built environment. Broadly speaking, the construction sector spans three primary domains: client, project and product. While each plays a vital role in the construction of the built environment, the way the domains interact often creates inefficiencies. In some cases, this could be addressed by the emergence of product platforms. Understanding the potential of applications of platform approaches primes design teams to play a role in addressing these inefficiencies.

## What practical help is available to design teams?

Recognising the varying familiarity readers will have with the principles of platform-based approaches, the Rulebook is structured to:

- **Educate:** to provide an introduction to the principles of product platforms
- **Empower:** to provide a framework that guides, supports and empowers those seeking to develop and/or deploy product platforms
- **Enable:** to establish rules, principles and a framework that support consistent development and deployment of product platforms, stimulating the potential for cross-platform harmonisation and cultivating market capacity to respond to an aggregated pipeline.

The Rulebook has been written to aid the full breadth of the construction value chain, in developing knowledge, understanding, application and analysis of product platforms.

## What are my first steps?

Design teams can use the Rulebook as an open access resource to educate, enable, and empower their management and staff. It outlines additional guidance, case studies and definitions. Product platform providers can use the Hub's Product Platform Maturity Assessment tool to assess the maturity of existing or developing product platforms They can work with NRM/Uniclass/others to develop a suitable system hierarchy to inform a universal classification of building elements and they can develop a suitable classification system for interfaces.

**Find out more about the Product Platform Rulebook here**

# Information Management

# Information Management

## What is it?

The Hub's Information Management project developed tools and guidance designed to support industry to adapt and thrive within an evolving digital landscape. Information management is the key to unlocking industry's potential, providing the Golden Thread that enables transformation to evolve and improve our infrastructure. The Hub-developed resources include: policies and standards; operating models, processes and tools; and a library of case studies and evidence to support business cases.

## Why do it?

The future of construction and infrastructure is focused on digital advancement. There's no winding the clock back, only forward.

The government is driving the adoption of information management through policies set out in the TIP Roadmap to 2030 (Information Management Mandate) and the application of the UK BIM Framework, and through the introduction of the National Digital Twin Programme.

Enhanced information management practices and processes will enable construction companies to help build back better and promote a green industrial revolution in the transition to Net Zero.

By applying effective information management processes, the market can benefit from greater efficiencies, improved quality and consistency, reduced costs and increased resilience and agility. Our research found that £6 of direct labour productivity gains can potentially be secured for every £1 invested in information management. Similarly, 1.6% to 18% costs savings at various stages of the asset lifecycle can potentially be secured for every £1 invested in information management.

## The role of design teams

Design teams can use information management to improve the performance and whole life outcomes from assets. Building digitally before building physically allows all stakeholders to provide meaningful feedback during the design process, leading to reductions of risk, rework and construction time – improving the efficiency of builds. In the design phase, improved visualisation and communication support collaboration between the design team and constructor so that issues can be identified early and mitigated. By working closely with clients to understand what information they will need to operate and maintain an asset, design teams can help ensure that data is handed over in the right quality and format for the Golden Thread.

## What practical help is available to design teams?

The Hub was worked in partnership with industry, government and academia to produce open-source outputs that support design teams on the transformation journey. This includes: The UK BIM Framework – a series of guidance documents for using BIM in the UK; Digital Twin Navigator – an interactive guide for considering digital twins in business cases and capital project procurement; Energy and Carbon Framework – guidance that defines operation energy and carbon dioxide emissions; information exchanges for Government Soft Landings (GSL; Local Authorities Soft Landings Navigators – an interactive navigator for implementing GSL; LEXiCON – methodology for creating and managing Product Data Templates; Information Requirements Tool – to support client information managers; and a Skills and Competency Framework – guidance to support the development of information management capabilities. All of these resources can be adapted to suit the needs of design teams.

## What are my first steps?

To build capability and capacity in information management, design teams can use the open access resource provided through the UK BIM Framework. The UK BIM Framework sets out the approach for implementing information management in the UK using the framework for managing information provided by the ISO 19650 series for Building Information Modelling (BIM). It includes:

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

The UK BIM Framework will guide and support construction companies in implementing BIM. To understand how digital twins could benefit an organisation, read our Digital Twins Journey infographic. To better understand the latest research in innovative digital solutions, see the Knowledge Base Navigator.

## Find out more about Information Management here

# Quality
# Assurance

# Quality Assurance

## What is it?

The Hub's work into quality assurance provides the guidance and tools for construction product manufacturers to deliver higher quality, safer, more sustainable outputs, whether a provider of traditional products or producer of offsite, platform-based solutions. It focuses on two main areas. Quality – CPQP offers a toolbox of resources to help manufacturers produce products and components in line with best practice quality standards, ensure legal compliance and improve the efficiency of their operations. Product verification and validation offers a clear route to product validation as part of a platform-based approach to construction. This helps ensure finished products meet all requirements set out at design stage.

## Why do it?

Our tools and guidelines set the level of quality assurance and risk assessment that should be embedded within both the design and production stages of product manufacturing. They will help businesses conform with new standards such as BS 99001 and ensure compliance with legislation, including the new Building Safety Act. The Construction Playbook and Transforming Infrastructure Performance Roadmap to 2030 both set out a vision for a manufacturing-led construction sector. CPQP is part of a suite of tools that the Hub has developed to meet these ambitions.

## The role of design teams

Design teams should specify the use of construction products that followed the processes developed by the Hub's quality assurance programmes. The CPQP framework includes the creation of a live control document. This provides an audit trail as per the requirements of the Golden Thread. In parallel, a digital tool is in development that will monitor, track and measure the CPQP process. This removes risk from the process, helping manufacturers to comply with regulations and reducing the potential for product failures and warranty issues in the future.

## What practical help is available to design teams?

The Construction Innovation Hub and partners across industry have developed the CPQP Quality Framework process that should be followed during the creation of new construction products. It includes five phases, ranging from product definition to product launch.

A Verification & Validation Guide (VV) has been designed to help constructors efficiently and effectively navigate the verification and validation processes in line with shifting regulatory landscapes. The guide focuses on the testing of components and their integration as part of a system during the product development process. It is designed to fit within the CPQP framework.

## What are my first steps?

Encourage the use of the Hub's quality assurance outputs throughout your supply chain. The Hub has created a range of resources to support Quality Assurance and Product Validation and Testing that are available open access. CPQP directly supports the Hub's Product Platform Programme. It provides practical tools for the quality assurance of product platforms developed using the guiding rules set out in the Hub's Product Platform Rulebook.

CPQP aims to ensure that quality is built into any new manufacturing processes and final products from the start and supports the creation of a live control document for the Golden Thread.

## Find out more about Quality Assurance here

UK Research and Innovation

The Construction Innovation Hub is a partnership between:

mtc
Manufacturing Technology Centre

cdbb
Centre for Digital Built Britain

bre

constructioninnovationhub.org.uk

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