
Platform Programme: The Road to the Rulebook

Construction Innovation Hub

December 2021



The Construction Innovation Hub

Funded by Government in 2018 with £72 million from UK Research and Innovation’s Industrial Strategy Challenge Fund, the Construction Innovation Hub (the Hub) brings together world-class expertise from BRE, the Centre for Digital Built Britain (CDBB) at the University of Cambridge and the Manufacturing Technology Centre (MTC) working with government and industry partners.

We believe that collective innovation can catalyse the change needed for our built environment to deliver better outcomes for current and future generations.

The Hub is transforming construction delivery. Our Platform Programme is adapting proven manufacturing processes for construction applications, to develop rules and approaches to improve productivity and performance in delivering our built environment through a platform approach.

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Key Terms and Definitions

Term	Definition or source description
Platform Programme	Overarching tag for all Hub programme work relating to platforms.
Platform	A term that is widely used but with consistent elements including: a set of low variety core assets (i.e. components, processes, knowledge, people and relationships); a complementary set of peripheral components that exhibit high variety; and stable interfaces that acts as a bridge between the stable core and variable peripherals. (Source – Network Plus digest)
Product Platform	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. A product platform 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.
Kit of Parts	A collection of repeatable, standardised building components that are pre-engineered and designed to create a variety of assemblies which define part or all of a finished building.
Component	A constituent part of a building (or other built asset) which is manufactured as an independent unit that can be joined or blended with other components to form a more complex item. Generally, components are ‘self-contained’ and sourced from a single supplier, typically the complete unit provided by that supplier rather than its constituent parts. (Source - designingbuildings.co.uk)
Assembly	A combination of components .
Product Platform Rulebook	Rules, requirements and a guide to the development of all product platforms in construction.
Product Platform Development Framework	A common framework to support the development of product platforms . The framework sets out a series of activities across three stages (Demand, Develop, Deploy) covering the identification of market demand through the development of a product platform to its eventual deployment on multiple projects. The Product Platform Development Framework is governed by the Product Platform Rulebook .
Demand	The use of product platforms requires aggregation of demand across a range of assets – typically where there are high volumes of similar features – and an ability to rationalise design requirements. This is done away from the project environment and is critical to establishing requirements and providing confidence to the supply chain that the solutions they develop will have a market.

(As referenced within the Product Platform Development Framework)

Term	Definition or source description
Develop	It is expected that there will be multiple product platforms serving different market segments and client requirements (and hence deliver different performance and value). The process through which product platforms are developed is not widely understood or consistent in construction. The product platform rulebook will set out this process, ensuring different product platforms use the same language, share the same data, and thus allow for comparison, ease of configuration, and levels of interoperability/interchange. The Hub is also working with existing product platform providers to identify early opportunities for standardisation and interoperability. As part of the develop stage, all product platforms will produce a Product Platform Definition and Product Platform Specification in line with the Product Platform Rulebook .
Product Platform Definition	Rules which define the boundaries of a particular product platform , developed using the Product Platform Rulebook and defining key drivers, objectives, requirements and architecture.
Product Platform Specification	The component , interface and production specifications for a particular product platform , developed using the Product Platform Rulebook and based on the rules set out in the Product Platform Definition .
Deploy	The development of product platforms happens away from the project environment and hence is not undertaken in relation to the requirements of one specific asset. The deployment of product platforms on projects therefore relies on how well the requirements collected during the develop stage reflect the specific needs of that project (and the flexibility of the product platform). Once a product platform is developed, a significant proportion of design is replaced by ‘configuration’ of these standardised components and assemblies , although an element of bespoke design is always likely to be required. A Product Platform Deployment Manual will be produced for each particular product platform using the Product Platform Rulebook .
Product Platform Deployment Manual	The manual for deploying a specific product platform in a project setting, including configuration, ordering, supply chain management, assembly and how complementary components interface to form all or part of a finished building.
Harmonise, Digitise and Rationalise	The Construction Playbook states that “Contracting authorities should seek opportunities to collaborate in order to develop and adopt shared requirements and common standards. This should be done to enable standardised and interoperable components from a variety of suppliers to be used across a range of public works. This will create a more resilient pipeline and drive efficiencies, innovation and productivity in the sector.”

(As referenced within the Product Platform Development Framework)

(As referenced within the Product Platform Rulebook)

(As referenced within the Product Platform Rulebook)

(As referenced within the Project Platform Development Framework)

(As referenced within the Product Platform Rulebook)

(As referenced within the Construction Playbook and TIP Roadmap to 2030)

Executive Summary

The Construction Innovation Hub committed to develop a rulebook of open access guidance, key processes and approaches to enable the market to develop product platforms and deliver infrastructure via a platform approach.

This supports the policies laid out in the *Construction Playbook* and *Transforming Infrastructure Performance – Roadmap to 2030* which signposts a future mandate for the adoption of platform approaches across Public Sector projects.

To support the early development of the **Product Platform Rulebook**, seven consultation workshops were held in April and May 2021 involving 124 stakeholders across the built environment client base and supply chain. Four main questions were posed:

- What is your understanding of platforms?
- How might the Rulebook deliver benefits and what are the blockers to adoption?
- Who owns the Rulebook?
- To what extent should the Rulebook outline closed/open system concepts, interface requirements and kit of parts definitions?

The intelligence gathered during the workshops and through engagement with our programme industry partners has supported the creation of a **Product Platform Development Framework** which sets out the activities that need to be undertaken from the identification of market demand through development of a product platform and its eventual deployment on multiple projects.

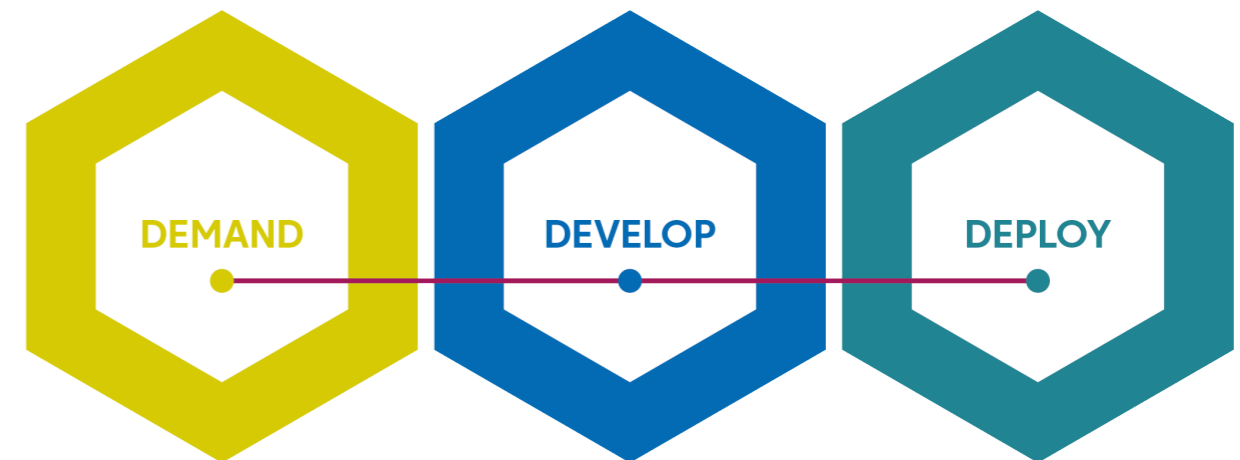
In addition the Hub has developed a layered structure to the **Product Platform Rulebook**, recognising the different facets which need to be addressed.

The structure of the **Product Platform Rulebook** is:

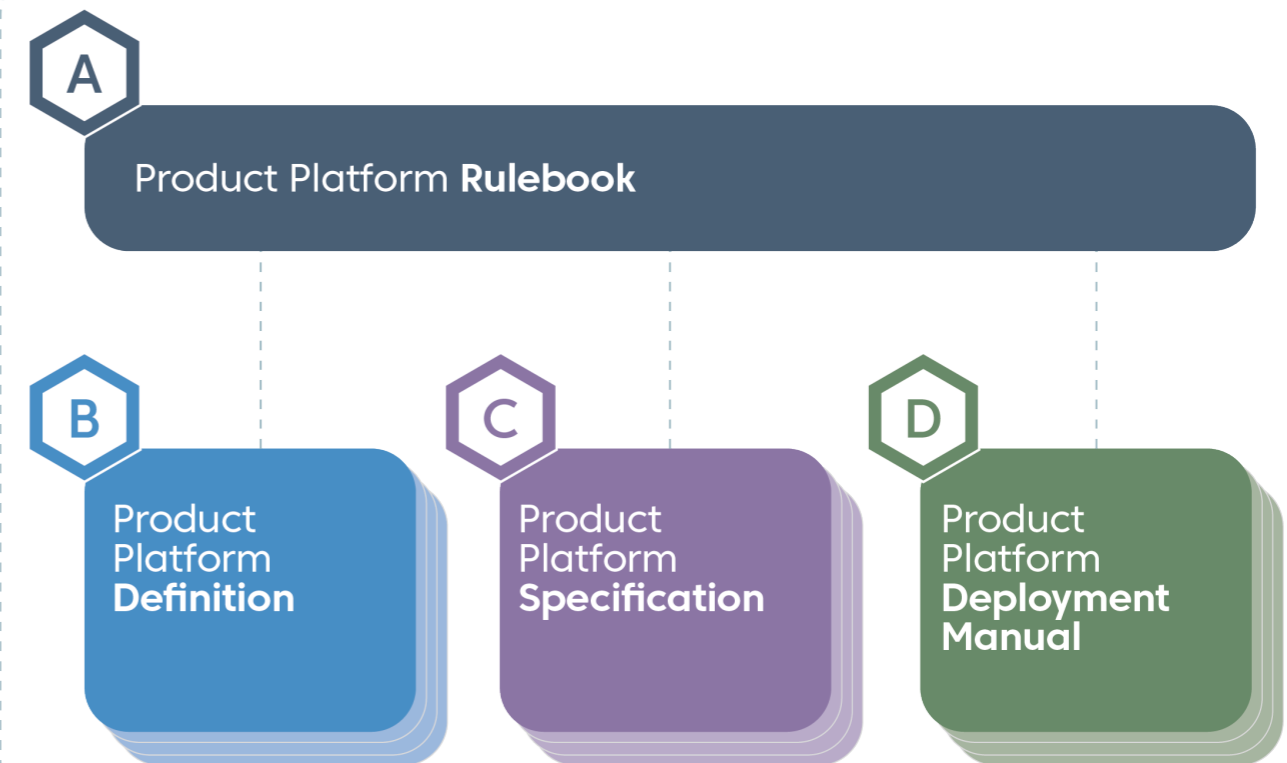
- Product Platform Rulebook** – includes rules, concepts, principles and processes to which all product platforms should adhere, throughout the stages of the **Product Platform Development Framework**.
- Product Platform Definition** – rules which define the boundaries of a particular product platform.
- Product Platform Specification** – technical specification of the components, production, product lifecycle management and supply chain associated with a particular product platform.
- Product Platform Deployment Manual** – rules and guidance which support the configuration and deployment of a particular product platform in an individual project context.

There is recognition that changes to construction operating models, with consideration of procurement and information management systems, will be required to maximise the benefit realisation from adopting a platform approach. This work is out of scope of this programme but outline considerations have been proposed for relevant parties to take forward.

THE PRODUCT PLATFORM DEVELOPMENT FRAMEWORK



THE PRODUCT PLATFORM RULEBOOK



Consultation Findings

In the spring and summer of 2021, the Hub held seven consultation workshops involving 124 stakeholders drawn from the built environment client base and supply chain ensuring cross sector representation and feedback.

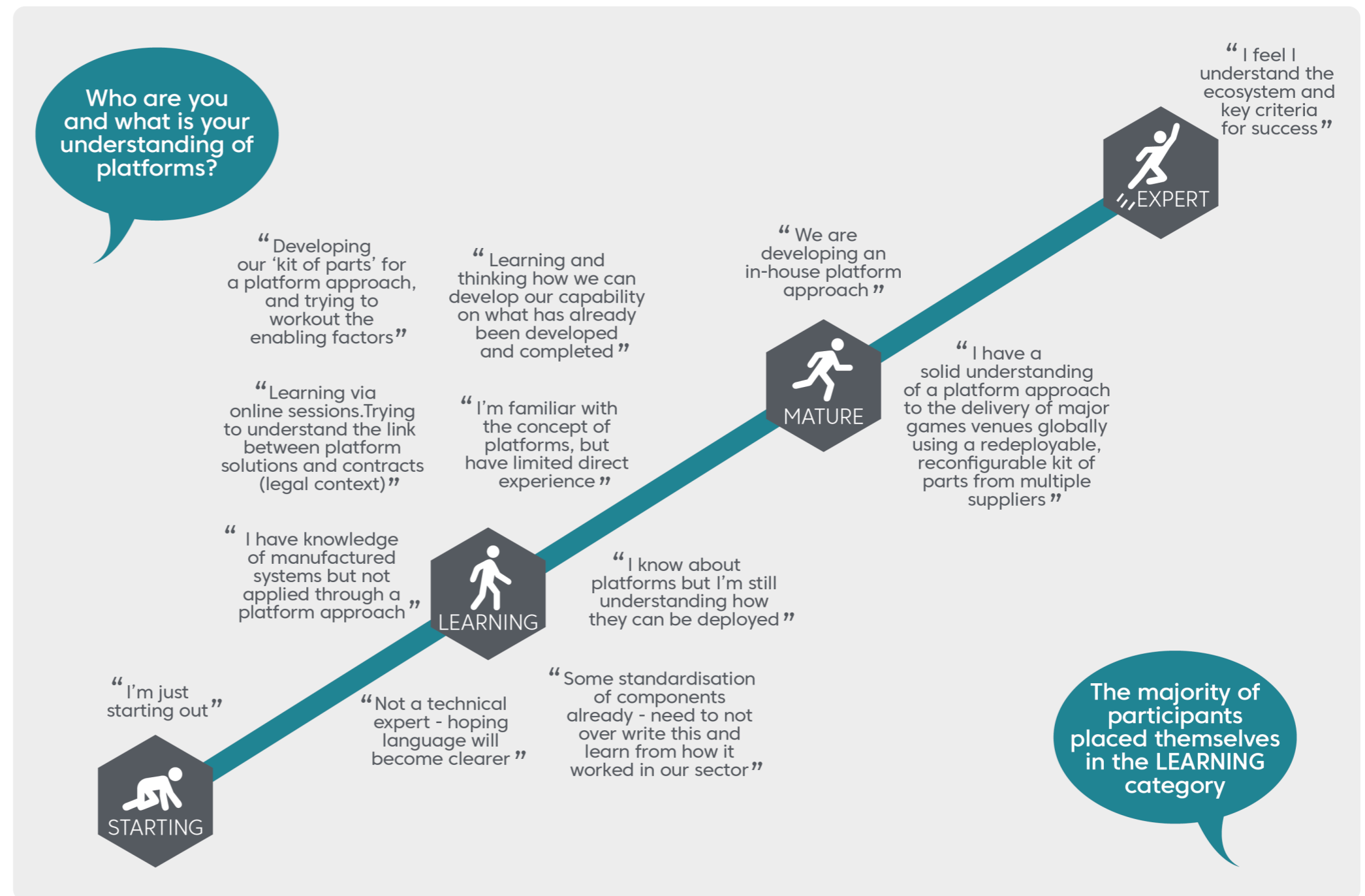
- Workshop 1: Wider sector #1
- Workshop 2: Wider sector #2
- Workshop 3: Clients
- Workshop 4: Hub Industry advisory board
- Workshop 5: Department for Education #1
- Workshop 6: Department for Education #2
- Workshop 7: Construction Leadership Council – Manufacturing Group

Each consultation consisted of presentations to the participants, and a focused workshop activity to collate feedback. The following pages outline the key findings and analysis of the data from the workshops. These outcomes informed the development of the **Product Platform Development Framework** and **Product Platform Rulebook** scope.

Stakeholder familiarity with Platforms

Participants were asked: What is your understanding of Platforms?

The findings show that the consultation groups have varied experience with construction product platforms, with the majority of participant placing themselves in the learning category.



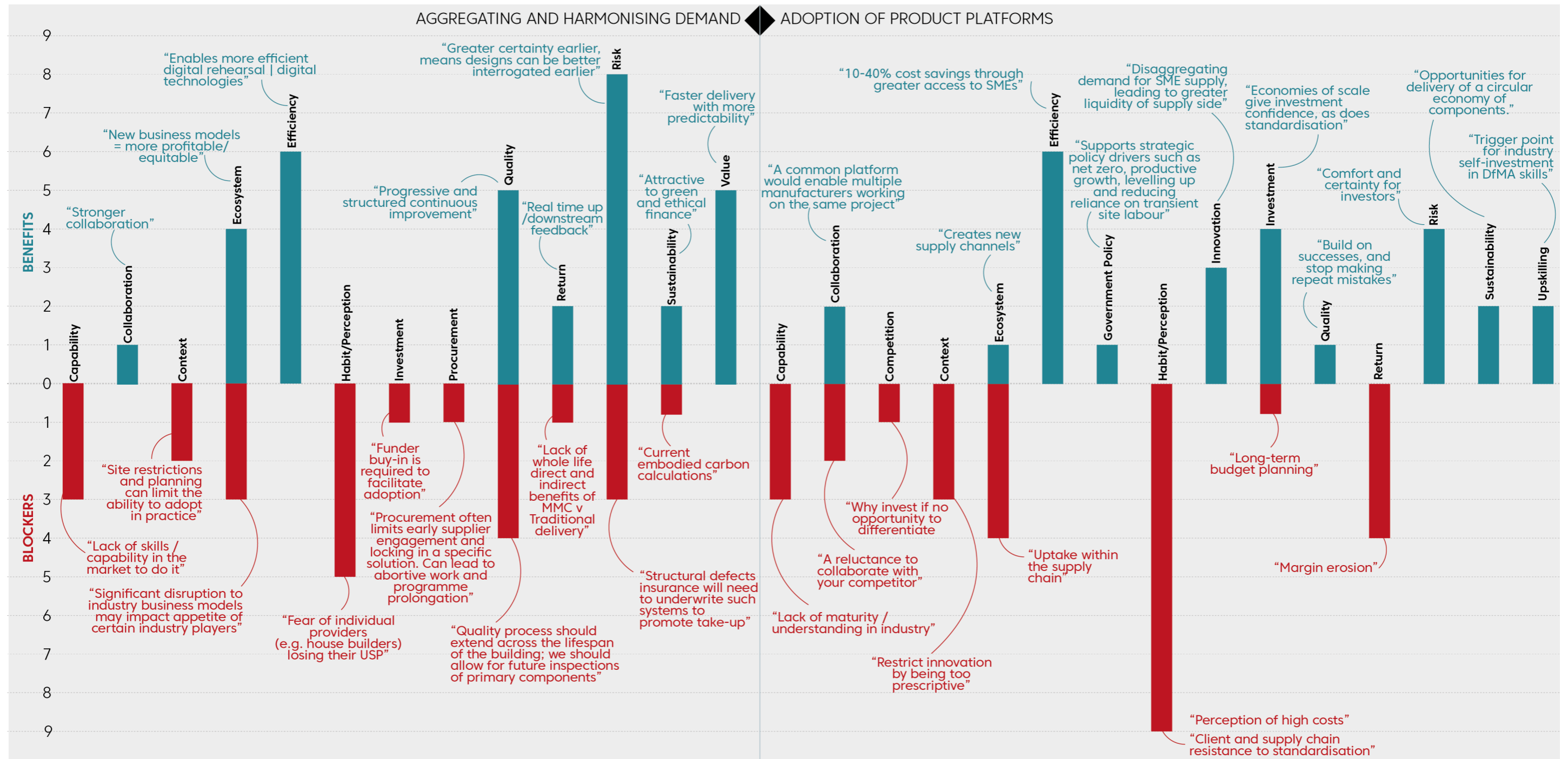
Consultation Findings

Benefits and blockers to aggregating and harmonising demand

The participants were asked to list benefits and blockers to aggregating and standardising demand.

Benefits and blockers to the adoption of product platforms

The participants were asked to list benefits and blockers to the adoption of product platforms.



Consultation Findings

Rulebook ownership

The participants were asked who should own, influence, and commit to apply the Rulebook?

Should the client own the Rulebook as part of the procurement process? Should it be owned by an external regulatory body as an open standard? Or joint ownership by a body of platform stakeholders?

The responses were varied, highlighting the varying interpretations of what a Rulebook is, and the intended audience and purpose. Views on ownership varied from individual supply chain organisations to consortia, and from government to independent standards bodies, with client or joint ownership popular options. There was near uniform agreement that the desire to influence, and responsibility for application, was relevant to most participants, indicating an appetite for a cocreation approach and the need for a distinction between universal and specific applications.

The output highlighted the need for further definition of the Rulebook.

Discussions relating to future ownership are being undertaken by the Hub Board in consultation with government and industry.

Rulebook content

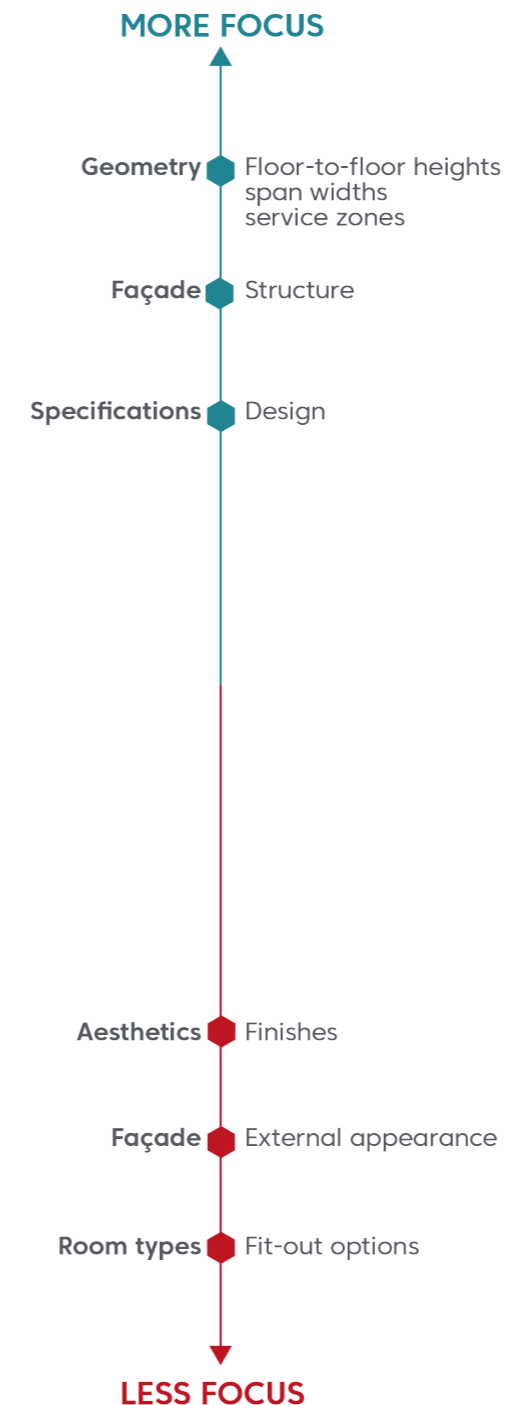
The participants were asked to what extent should the Rulebook outline closed/open system concepts, interface requirements and kit of parts definitions?

The output reflected the need for further definition of the Rulebook, but several common themes emerged, principally that the Rulebook should focus more on:

- + Enabling mass customisation
- + Definitions and consistent language
- + Process and requirements for aggregating demand in a consistent manner, enabling it to be met using repeatable solutions (such as connections, grids and room types)
- + Consistent data structures to improve analysis and enable easier data exchange and use across projects
- + A centralised BIM library of components
- + Interfaces.

And less on:

- Prescribing delivery models, performance metrics, and specific configurators
- Specific system concepts, kits of parts, components, assemblies, finishes and fit out options
- Appearance and aesthetics
- Room types and uses.



DEFINING THE NEED



Platform Design Programme:
Defining the Need
Construction Innovation Hub
January 2021

Following the well-received publication of the Defining the Need report in early 2021, the Hub worked with platform programme partner Mace to take this work further and explore the maturity of government departments approach to setting and defining specifications against a set of best practice criteria.

Following the valued contributions of our government client departments and industry partners experienced in delivering social infrastructure a maturity model has been created with an accompanying route map that will provide guidance as to how clients can progress through the maturity levels and enable the critical aggregation of demand. These reports will be published in the new year.

Product Platform Development Framework

There was a consensus from the consultation groups that to enable product platforms, demand would need to be aggregated; a perspective strongly supported within the Construction Playbook.

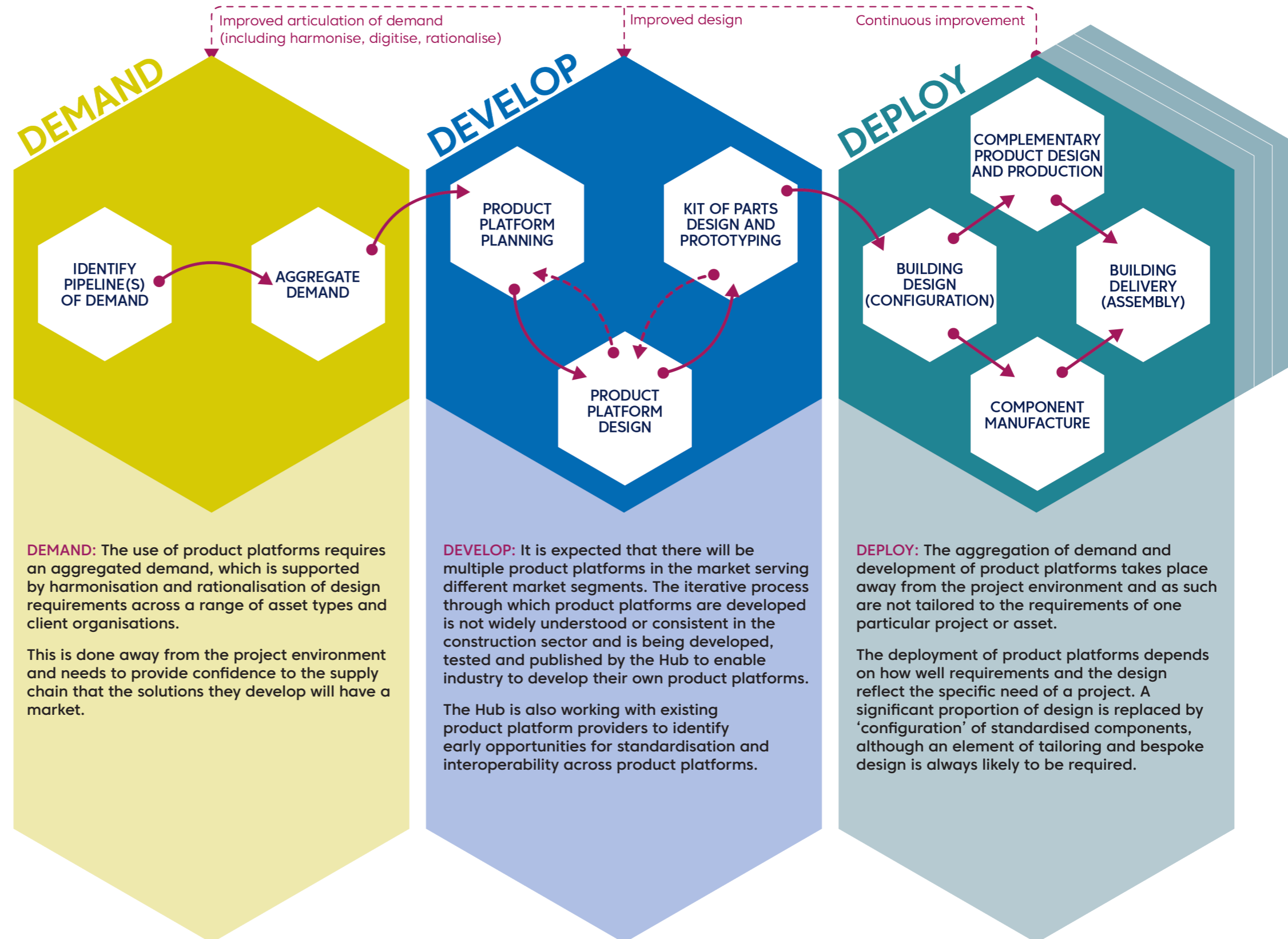
This will enable a product platform to be designed that will be suitable for deployment on a number of projects.

The aggregated demand pipeline will give confidence to the supply chain to invest in building capability and capacity, which in turn gives confidence to clients that demand could be met, therefore enabling product platforms to thrive in the industry. The criticality of this stage must not be underestimated.

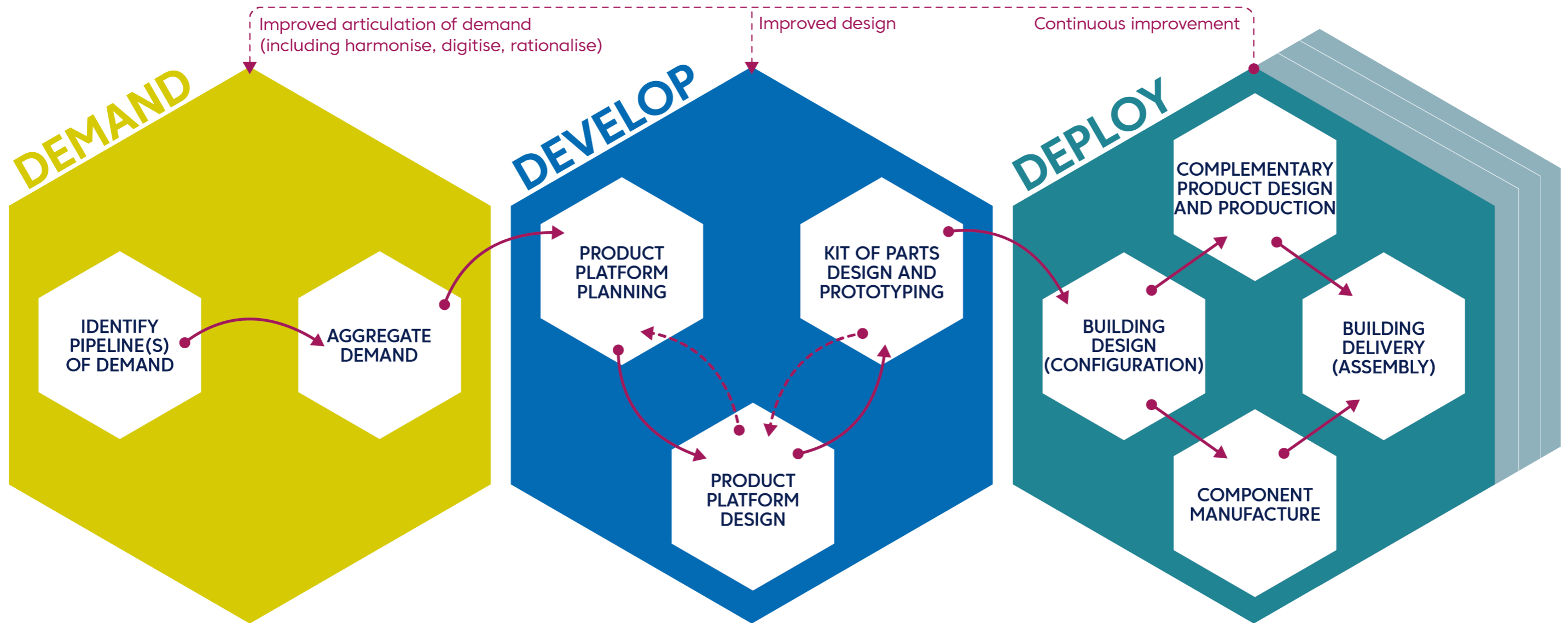
To ensure a consistent approach and with due consideration to incorporating all the key elements identified, a **Product Platform Development Framework** was created, using aggregated demand as an input.

The **DEMAND - DEVELOP - DEPLOY Product Platform Development Framework** is shown here. Further information on each of the steps in the process is included overleaf.

The **Product Platform Development Framework** outlines the key steps required to create a product platform. The **Product Platform Rulebook** will fully detail the process. The Rulebook will ensure data is consistent across product platforms, allowing interoperability and therefore broader potential for application and benefit.



Product Platform Development Framework



IDENTIFY PIPELINE(S) OF DEMAND: Identifying future planned procurements (projects, programmes) and forecast needs including financial value and characterisation of procurement/need.

AGGREGATE DEMAND: Bringing together the demand pipeline from multiple clients with associated technical requirements and value drivers so details can be segmented and analysed.

PRODUCT PLATFORM PLANNING: Analysing the aggregated demand and segmenting the market. Setting a platform strategy based on target segment(s) and approach to expansion. Route to market.

PRODUCT PLATFORM DESIGN: Ensuring voice of the customer is captured. Developing plans for what will be common and what needs to vary. Defining the system architecture and key high level design decisions, including commonality and principles at a system level, in response to the planning.

KIT OF PARTS DESIGN & PROTOTYPING: Detailed design of the kit of parts, detailed interfaces, production and installation processes. Prototyping of process and products to improve the design. Prepare for deployment (digital objects, supply chain and sourcing, configuration rules, guidance on use). Incorporate lessons learnt from prototyping and projects.

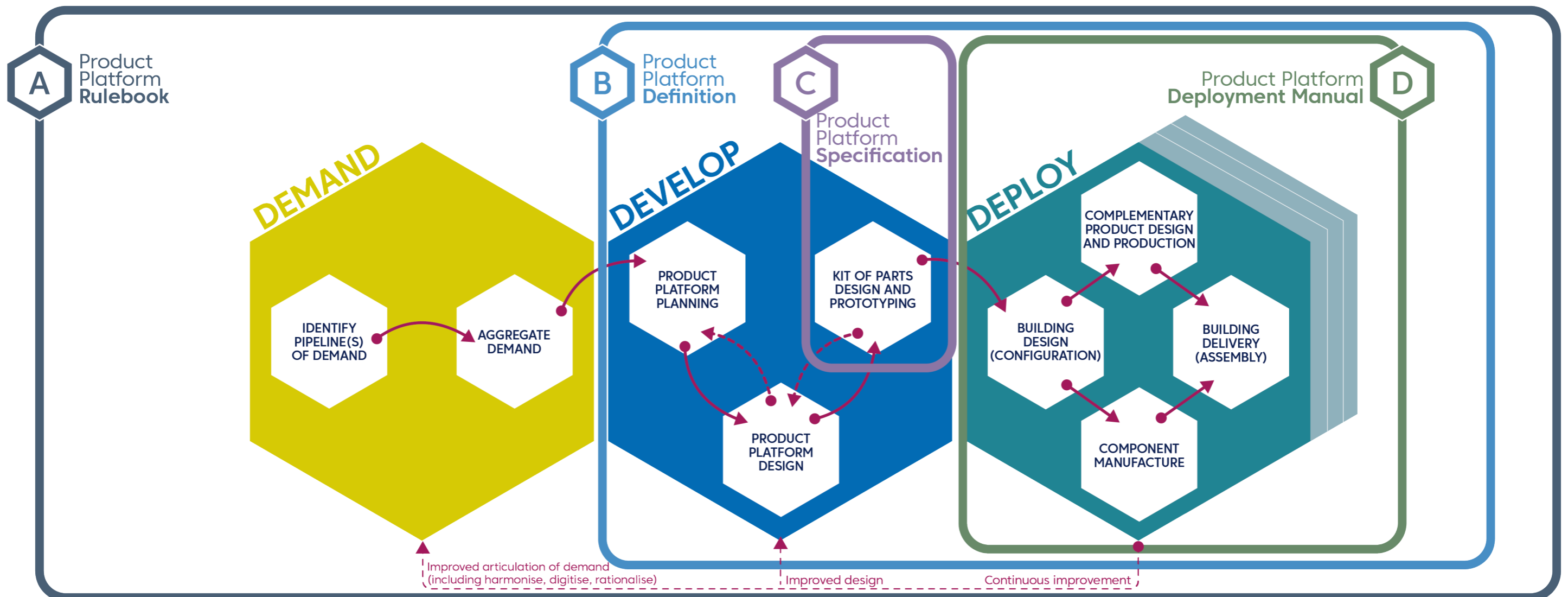
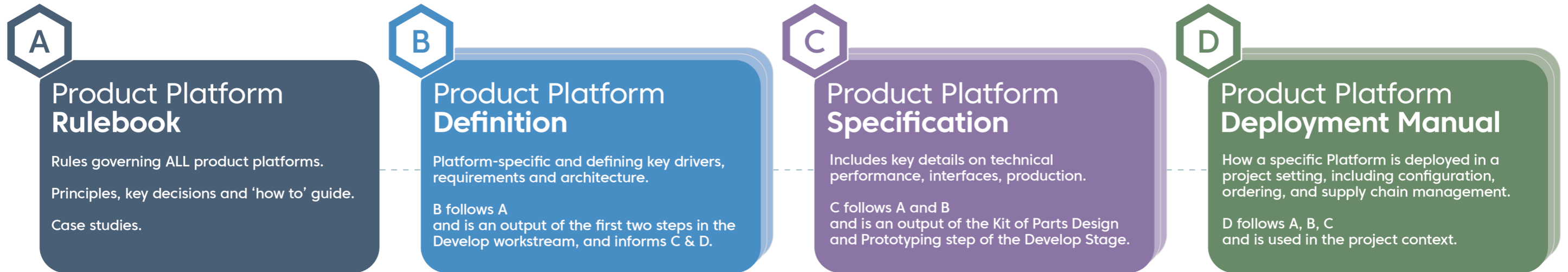
BUILDING DESIGN CONFIGURATION: The process of briefing and designing individual projects through the deployment and configuration of pre-existing kits of parts and the specification of additional, complementary project-specific systems and components.

COMPLEMENTARY PRODUCT DESIGN & PRODUCTION: Design and production of project-specific systems and components to complement core, repeatable platform components.

COMPONENT MANUFACTURE: Production of core, repeatable platform components.

BUILDING DELIVERY (ASSEMBLY): Logistics and assembly of offsite-manufactured components and systems together with on site activities needed to construct, deliver and handover the built asset.

The Rulebook Structure



Next Steps

1. The Hub will continue to engage with other parties already developing their own product platforms to contribute to the development of the **Product Platform Rulebook** by:

- gathering information on the overall approach to the product platform in question,
- assessing what acceptance criteria there should be for product platforms,
- developing case studies from existing product platform providers, and
- mapping their processes onto the **Product Platform Development Framework**.

2. Publication of the first draft of the **Product Platform Rulebook** during the first quarter of 2022.

3. Publication of the specification maturity model and roadmap.

4. Deliver physical and digital demonstrators of processes and assemblies throughout 2022 to broaden understanding and engagement across the sector.



The Hub welcomes your feedback on this work. Please scan the QR code to access the Feedback Form

