



Construction Innovation Hub - Platform Papers

Setting the vision for implementation of
Product Platforms.

June 2023





“We all know we need to deliver faster, better and greener. Change is coming. It is no longer a question of “if”, it is now about “when”. We now have the right enabling environment for this change and these Platform Papers are an essential guide to help policymakers, clients and industry navigate the roadmap to a more productive, sustainable and valuable future.

“We must ensure we continue to build confidence, capability and capacity as we together take the next steps on our transformation journey”

Keith Waller
Programme Director
Construction Innovation Hub





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Members of the SNC-Lavalin Group

Contents

- 1 Platform Papers – What, Why, How?
- 2 Summary of the Papers
- 3 Conclusions
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An introduction to the Platform Papers

After receiving feedback from industry following the publication of the [Product Platform Rulebook](#), The [Construction Innovation Hub](#) commissioned a series of papers that explores the route forward for uptake of product platforms by clients and the supply chain. These papers include [a novel analysis of the impact on the economy](#) if product platforms were implemented at scale for public building assets and a review of the effect on [Tier 1 contracting organisations](#).

The Rulebook team have also further [defined the process](#) for aggregating demand and selecting a product platform strategy; the team carried out this process with government clients to provide a case study and recommendations to enable product platforms. A [guide to writing deployment manuals](#) for product platforms has been written, from the perspective of a design team who would utilise a product platform for a project.

The team also up-issued the Rulebook, providing additional information on circularity, developed [a product platform self-assessment](#) and conducted research into [decarbonising concrete using a platform approach](#). Finally, the Rulebook team created a [terminology infographic](#), ensuring definitions are clearly described and linked, vitally important to the successful implementation of product platforms.

Why Have We Published The Platform Papers?

The Platform Papers, commissioned after the publication of the first edition Product Platform Rulebook, aim to address potential barriers to the implementation of product platforms across our public infrastructure. They answer the following questions:

What are Product Platforms?

- Up-issuing the Rulebook and providing a terminology infographic to detail the main terminology used to describe product platforms.

Why should we implement Product Platforms?

- Providing a novel analysis of the widescale economic benefits of implementing product platforms and aggregating government department outcome delivery plans to understand value on the macroeconomic scale.
- Reporting how this will affect Tier 1 contracting organisations.
- Reporting how a platform approach can enable the decarbonisation of concrete in the built environment.

How do we implement Product Platforms?

- Detailing a process to aggregate demand and defining a Product Platform strategy as described in the Product Platform Rulebook.
- Showing how this process may be used with government departments and providing recommendations for changing how data can be shared to better enable product platforms.
- Providing a guide of what should be in a deployment manual, detailed by a project team who would expect to utilise a deployment manual on their own projects.
- Providing a self-assessment to enable organisations to analyse the maturity of their product platform and identify gaps to be addressed on their development journey.
- This has been complemented by an independent report into the strategic options for product platforms, including the specific decisions that need to be made within government and industry to enable uptake.



List of Hub Platform Papers

1 [Rulebook Implementation Strategy Options](#) - An independent paper detailing a route forward for the implementation of Product Platforms

2 [The Value of Platforms](#) - A novel macroeconomics analysis of the economic impact if Product Platforms were widely adopted across social buildings

3 [Platforms in the Wild](#) - An analysis of the commercial model, blockers and enablers for Product Platforms adoption by Tier 1 organisations

4 [Developing a Product Platform Strategy](#)- Further defining the process for aggregating demand and defining a Product Platform strategy with a case study on government departments

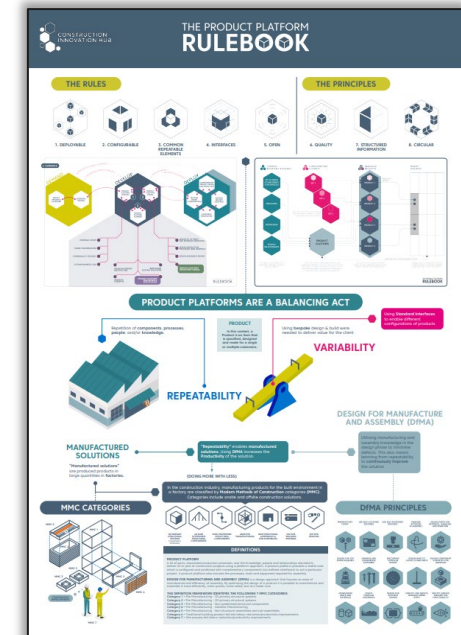
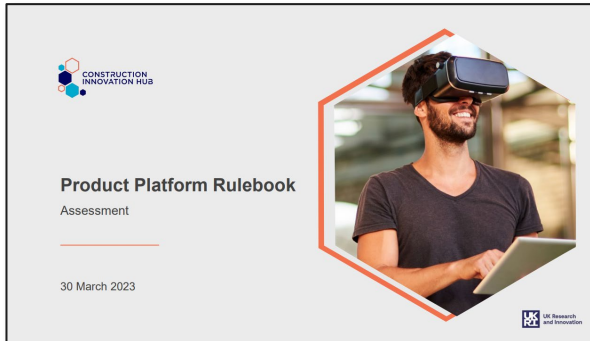
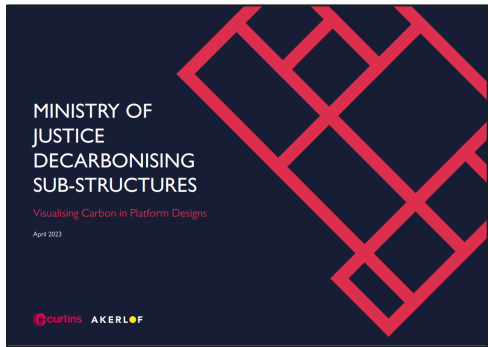
5 [A Guide To Deployment Manuals](#) - A short guide of what's expected from a Deployment Manual

6 [Updating the Rulebook to Version 1.2](#) - An updated version of the Rulebook, detailing additional guidance on circularity

7 [Product Platform Infographic Poster](#) - An accessible infographic describing the main terminology and debunking definitions central to Product Platform collaboration

8 [Product Platform Assessment](#) - An assessment enabling the user to understand where they are on their Product Platform journey and identify the gaps that need to be addressed

9 [Decarbonising Substructures](#) – A demonstration of how the MoJ's Platform approach can allow the visualisation of carbon within discreet elements, in this case, sub-structures, and how this can be harnessed to implement practical changes that reduce carbon



“The construction sector is in a state of ongoing transformation, the tangible benefits to attributes such as cost and quality, and objectives such as health and safety, traceability and capacity to match demand, achievable through a manufacturing-based approach to construction, are undeniable.”

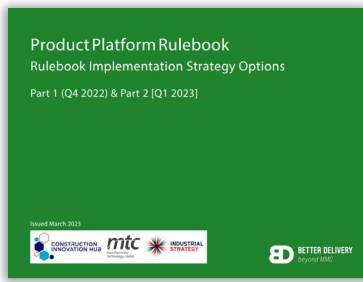
“The Product Platform Rulebook and supporting Platform Papers provide the evidence and guidance for the industry to move forward, to the benefit of the built environment and wider society.”

Steve Nesbitt

Chief Technologist

Manufacturing Technology Centre





The Platform Papers

Rulebook Implementation Strategy Options

What is it?

This report acts as a decision-making catalyst to enable the Construction Innovation Hub's stakeholders with the necessary choices to instigate clear industry deliverables aimed at maximising the industry's product platform uptake.

This paper's impact

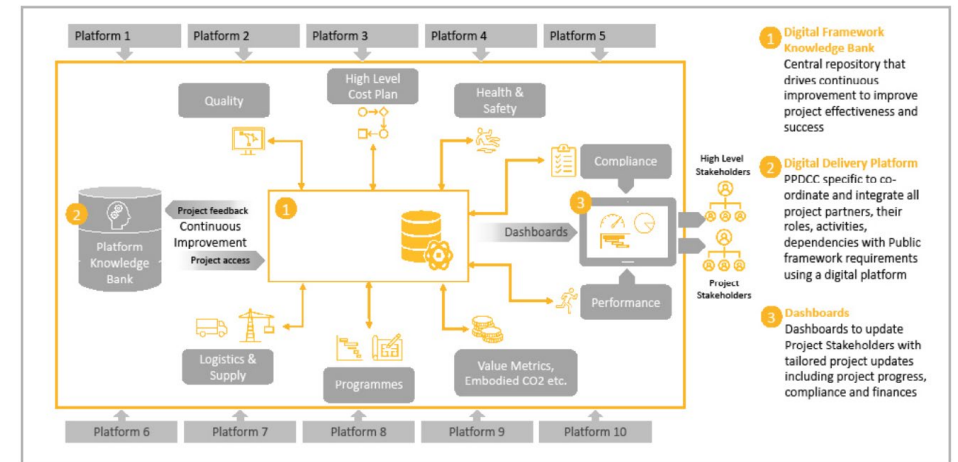
This report provides an independent, critical perspective for what has been achieved by the Hub and what needs to happen next, including the decisions that need to be made and the strategy options to take Rulebook Implementation forward:

Strategy 1 is the minimum amount of incentive/assistance launch – effectively 'here's the Rulebook, off you go'.

Strategy 2 is an agreed position between Strategy 1 and 3 and will be the chosen hybrid option.

Strategy 3 is a fully supported and incentivised launch, with prescriptive rules of engagement, specified toolkits and operating data collection/management.

Product Platform Data Control Centre





The Platform Papers

The Value of Product Platforms

What Is It?

Construction has a significant role to play in improving national productivity and creating the assets which society needs to function efficiently. All the while, it needs to address skills shortages, safety and wellbeing challenges, errors and waste. This report shows that Government ambition for the adoption of Product Platforms through its social infrastructure pipeline can help address some key challenges in construction and make an important contribution to national GDP.

This Paper's Impact

The UK has a chronic productivity problem, falling behind the likes of France and Germany by as much as 20% and costing the average household some £5,000 per year. This report shows how the construction sector could help to improve the country's productivity performance and drive national GDP growth. The sector's unique role in driving growth across the economy and supporting public services stems from its scale at 9%+ of GDP, contribution to the creation of half of the nation's physical capital, and its supply chain.

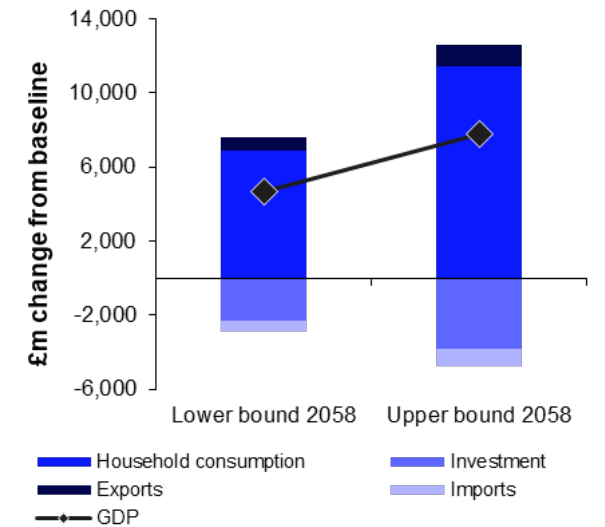
To respond to these challenges, the construction sector therefore needs to: be a lot more productive. The gap between output and productivity has widened in the past decade and this acts as drag on the economy. The sector needs to:

- **be safer and less dependent on labour**
Over a third of UK construction workers are over 50
- **make fewer errors**
Defect remediation can account for 10-20% of project value
- **generate less waste**
Construction generates 60% of UK waste [by weight]

Product Platforms support an increase in productivity which will:

- Reduce construction costs by up to 31%, worth up to £1.8bn a year to Government's social infrastructure spending alone;
- Provide a multiplier effect to increase real GDP by up to £7.8bn a year on a sustained basis.

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GDP Lower and Upper Bound Estimated Change per Year (£m)

Widescale use of Product Platforms have been forecasted to provide:

+£7.8bn
annual real increase in GDP

+£11.4bn
annual real increase in consumption

GDP is estimated to increase by an annual £4.7bn to £7.8bn, and consumption is estimated to increase by an annual £6.9bn to £11.4bn.

“The Value of Platforms in Construction is an exploration of the macroeconomic implications of Product Platforms. As we explored the research, reports and analysis, it has evolved into a solid evidence base supporting the business case for adopting platform approaches across government and the supply chain.”

“Not only does this report provide details of the significant potential for capital savings on delivering our social infrastructure to the tune of £1.8bn per year, but we were also able to quantify the impact on GDP and show the opportunity to improve and even save lives. I am delighted at the response we have received, and the growing, collective ambition for implementation.””

Ben Carlisle

Global Practice Leader for DfMA (Design for Manufacture and Assembly)

Mott Macdonald



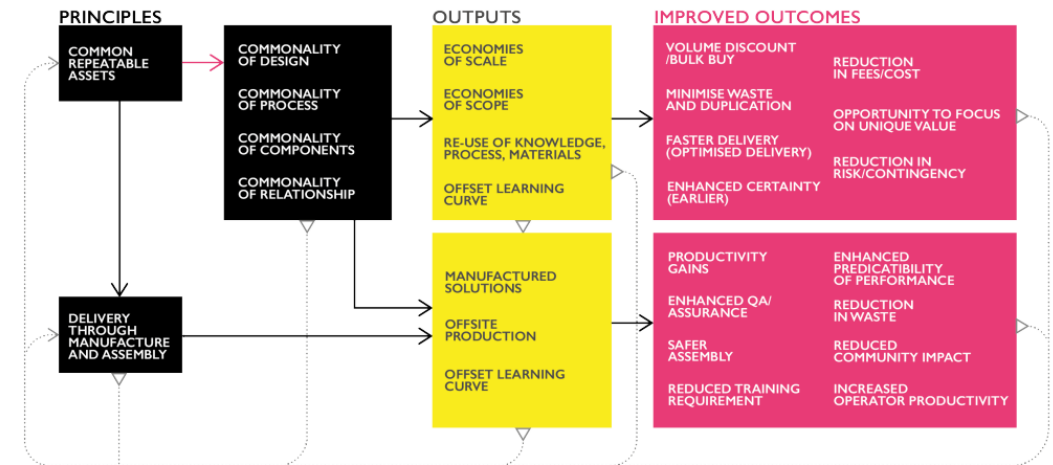


The Platform Papers

Platforms in the Wild' - Platforms deployed by UK Tier One Contractors

What is it?

This report focuses on Tier 1 Contractors and reviews the principles of how they can leverage their scale through embedding a platform-based approach and deliver improved outcomes. This is achieved through defining the background challenges such as the Tier 1 market, profitability and revenue, inconsistent pipeline and risk profile. The Rulebook process DEMAND, DEVELOP, DEPLOY is then used as a background to highlight the desired future state for Tier 1 organisations.



Product Platforms Unlock Continuous Improvement Loops

This paper's impact

Tier 1 contractors are in a prime position in the UK construction industry to leverage their size and deploy product platforms at scale. If the challenges faced by these organisations are fully understood, the next steps can be taken to unlock platform-based solutions.

“As apex organisations, Tier 1 contractors hold scale and influence, representing both best practice and the challenges our industry faces. The adoption of a platform strategy offers promise to enhance and address both, not least in reducing the contracting risk profile and delivering enhanced competitiveness. However, as quid pro quo, they require adaptation to established business models and ways of working.”

Platforms in the Wild outlines the ingredients required by Tier 1s to unlock the opportunities presented within the ‘Value of Platforms’ report and the potential to deliver better environmental, social and economic outcomes.”

Jamie Hillier

Partner

Akerlof





The Platform Papers

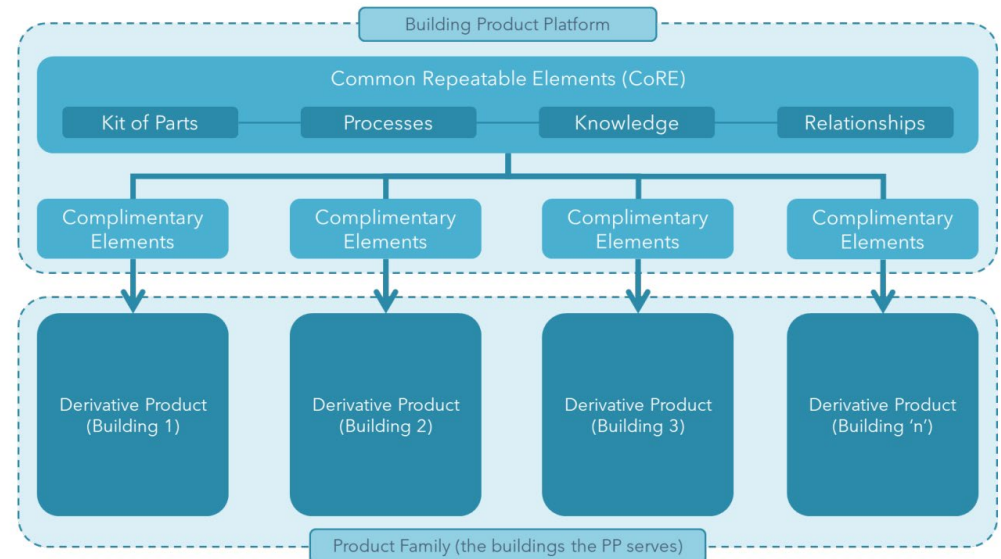
Implementing The Rulebook with Government Clients

What is it?

The study is focused on the initial stages of the 'DEMAND, DEVELOP, DEPLOY' framework, and more specifically the process steps that would take a client up to an initial Product Platform Strategy.

This paper's impact

The study sets out a practical, client-focused platform strategy development process, and in doing so refines some of the core concepts and terminology set out in the Rulebook to aid its implementation. With reference to case study data from two major government clients, the study highlights the current barriers to the development of a building product platform strategy, reflecting on these findings to provide a sound basis for further work in this field.



“There has never been a more pressing need to rethink the way we deliver, operate and adapt our built environment. And whether tackling climate change, delivering better social value or driving a more sustainable economic model for our sector, the industrialisation of construction has a critical role to play.”

“The Hub’s most recent work has demonstrated the overwhelming value an industrialised, platform-based approach to construction can offer whilst highlighting key enablers to this future state. At Faithful and Gould - and across the global SNC Lavalin group – we are testing, deploying and building upon the Hub’s outputs to bring the transformation agenda to life.”

Ron Lang
Regional Director
Faithful and Gould





The Platform Papers

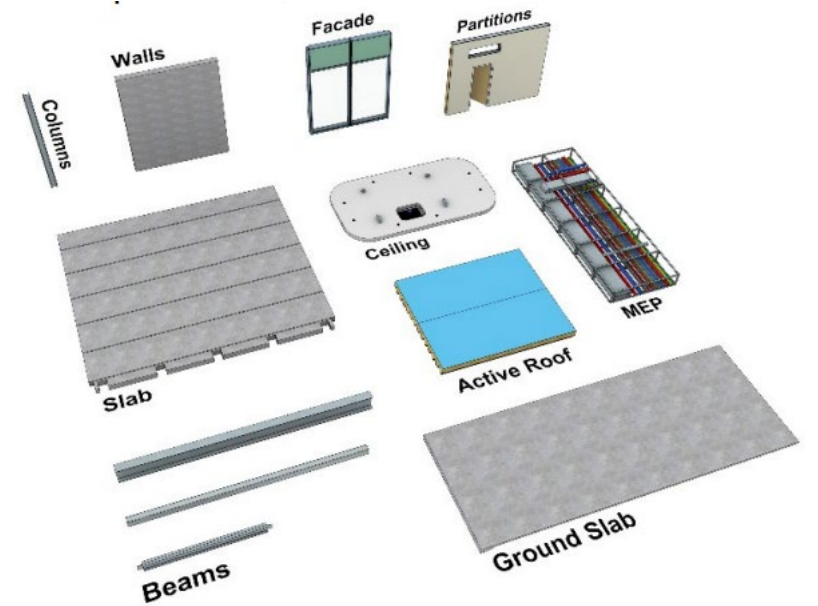
A Guide to Deployment Manuals

What is it?

A short guide, as defined by the hub design team, providing the definition of a Deployment Manual within the DEPLOY stage of the Rulebook process. This includes the standardised contents for a specific product platform solution, as well as next steps to progress the uptake and development of Deployment Manuals in the future, beyond the Construction Innovation Hub programme.

This paper's impact

Developing standardised technical content within Product Platform Deployment Manuals ensures best practice is adopted throughout industry. Developing a consistent approach to Deployment Manuals enables easily accessible structured information for designers, enabling them to incorporate a product platform into their design with speed and efficiency.



A standardised ontology

“A product platform is only ever as good as the data that informs it, and we want to ensure that every supplier that wants to innovate the construction sector, feels empowered to be part of this change through accessible, intuitive systems that link directly to successful project implementation.”

“The Hub’s Platform Deployment Manuals Guide provides an invaluable framework that prompts those developing their systems and deployment manuals and encourages a consistency and quality of content for designers to utilise. This approach will maximise the uptake of platforms more widely, helping the movement towards a more productive national construction industry”

Jonathan Roynon
Director
Buro Happold

Matthew Holloway
Principal
Grimshaw





The Platform Papers

Updating the Rulebook to Version 1.2

What is it?

Following the 2022 release of the beta and v1.1 of the Hub's Product Platform Rulebook, further government and industry views have been gathered and reviewed for implementation and uptake. The latest v1.2 update includes further guidance for the application of Circular Design Principles. The eight Product Platform Rules and Principles have also been updated.

This paper's impact

Providing further guidance on circular design principles enables developers of product platforms to consider strategic outcomes, linked to the Value Toolkit, in order to develop product platforms that progress the sector from the current state (linear economy) to the future state (circular economy). Re-ordering the eight rules and principles ensures compliance and performance can be assessed with greater clarity.

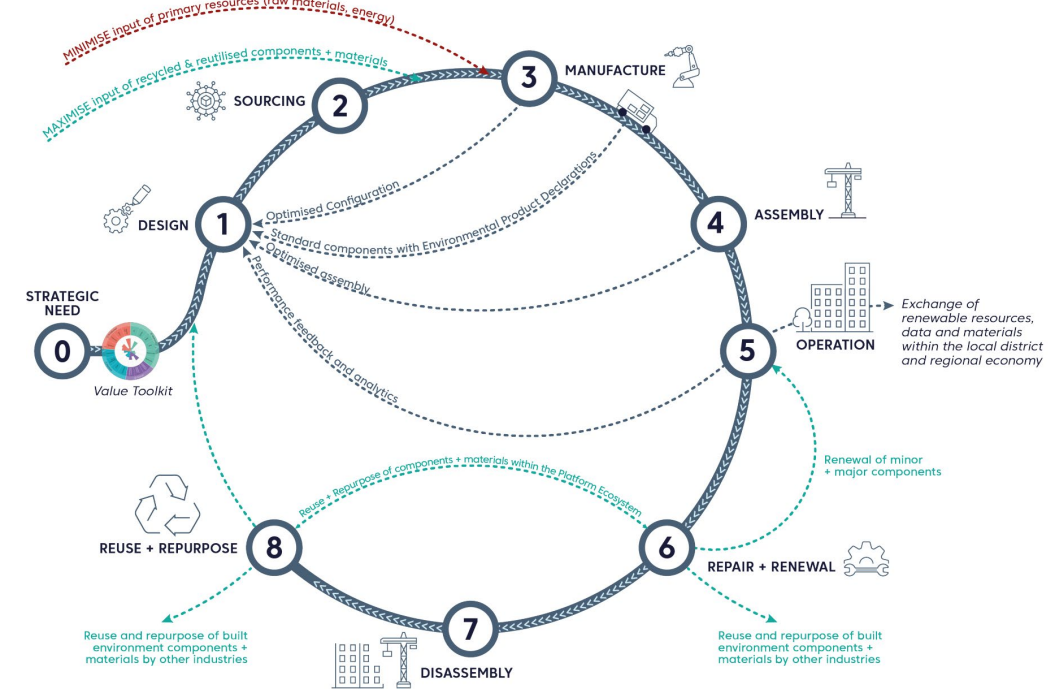


Fig. 6D: The Circular Economy

Adapted by Akerlof, with thanks to Arup's Circular Economy Report

“The Platform Rulebook is an important resource. Its eight rules and principles allow a structured approach to the procurement, design and deployment of assets based on a standardised kit of parts but, importantly, end of life scenarios and the circular economy are also considered.”

“A distinguishing feature of Platform DfMA is the potential for interoperability between projects, sectors and building products and with that comes the opportunity to exploit an end-of-life scenario that fully embraces re-use.”

“The widespread adoption of the Rulebook will help to streamline the delivery of built assets which share a high degree of commonality – schools, hospitals, commercial offices and even residential buildings, but by also embracing the circular economy it will ensure that these new buildings are material efficient.”

“Steel is a material that can enable many cycles of re-use and/or re-manufacture because of its inherent robustness. Cycles of re-use which occur within a standardised ecosystem can reduce the need to alter individual components with an attendant reduction in embodied carbon.”

“Tata Steel welcomes the publication of the Platform Rulebook as a significant tool in the continued development of Platform DfMA and the many advantages it offers to the construction sector.”

Matthew Teague RIBA
Market Engagement Manager
Building Systems UK
Tata Steel





The Platform Papers

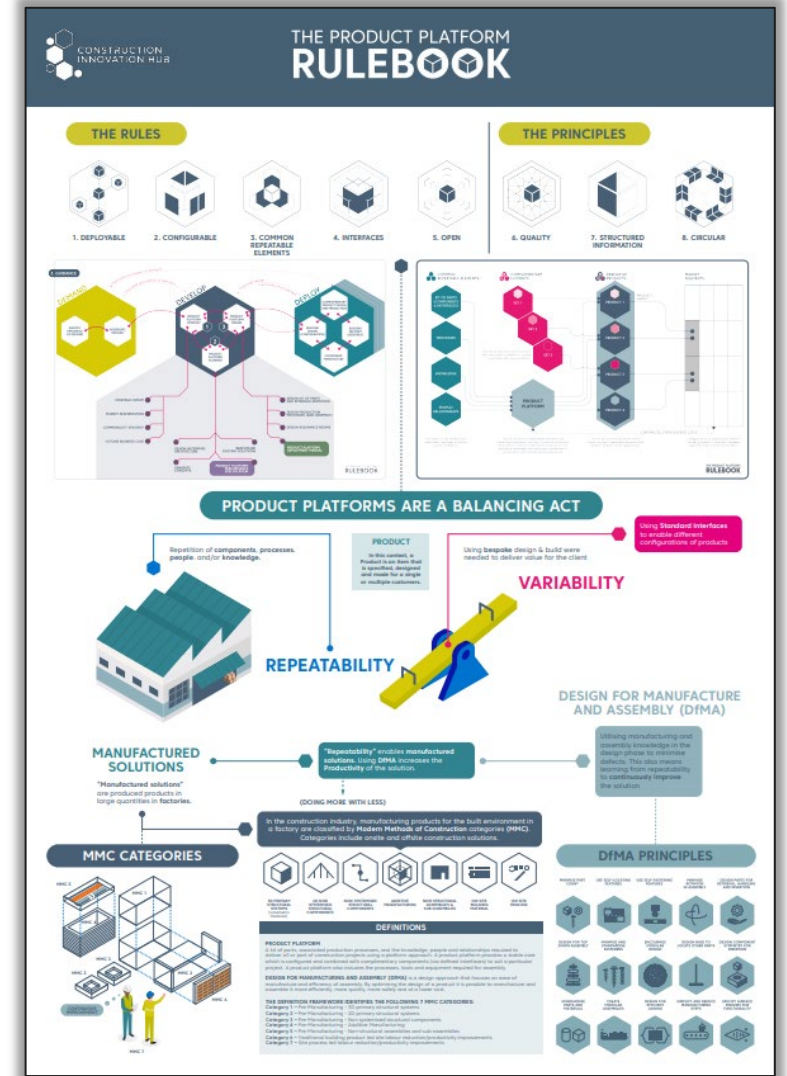
A Product Platform Infographic Poster

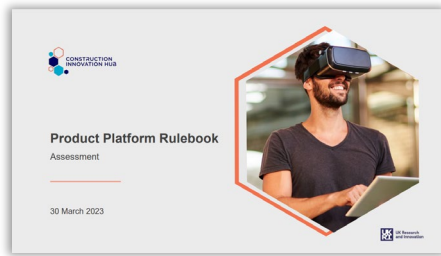
What is it?

A visual infographic that defines what a Product Platform is and how it relates to key concepts such as Design for Manufacture and Assembly (DfMA) and Modern Methods of Construction (MMC) categories.

This paper's impact

This infographic ensures industry has a consistent definition of all the key concepts within the Rulebook and Platform Papers. The visual clarifies each definition in relation to all others enabling a shared common understanding across industry.





The Platform Papers

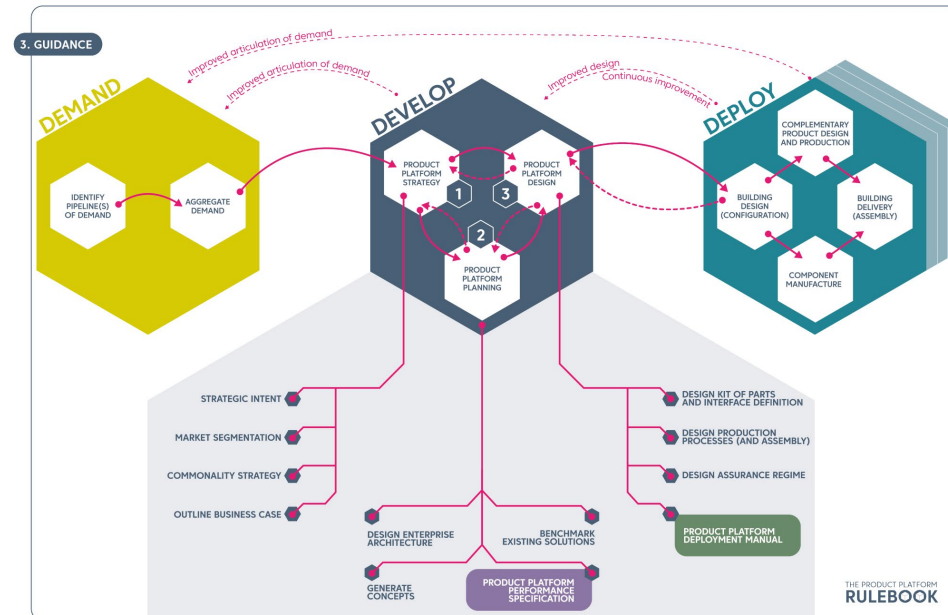
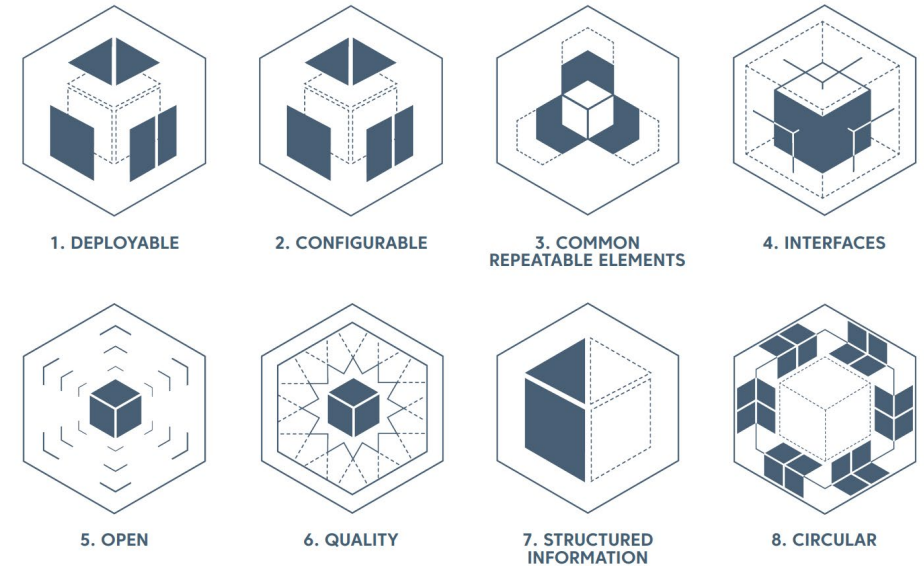
Product Platform Assessment

What is it?

An assessment for construction organisations to gather supporting data and information, enabling them to define the maturity of their potential product platform solution, the supporting business case, and whether a solution complies with the eight Product Platform Rules and Principles.

This paper's impact

This aims to enable industry organisations to self-assess how mature their product platform is and guide them through the DEMAND – DEVELOP – DEPLOY Rulebook process. Following this assessment, organisations are aware of the gaps to be addressed in their product platform development journey.



“Over the 4 years of being involved in the Hub’s Platform Programme, I have seen the evolution of the participants’ attitude to the idea of a ‘kit-of-parts’ approach to construction. From initial push-back to collaboration and finally the breakthrough to the production of products, systems, and then the suite of documents enabling the adoption of these new approaches.”

“The biggest takeaway for me has always been the benefits to deal with the ongoing challenges that the construction industry continually faces. By standardising components, interfaces and processes we have the ability to increase efficiency, reduce costs, improve quality and performance, shore up supply chains, develop skills, and create a model to innovate to.”

“The platform approach allows companies to collaborate, test and deliver products without necessarily upscaling their infrastructure. Supported by the guidance set out in the Rulebook, they can start to create consistency and clarity, continually improve processes and products and proactively manage risk.”

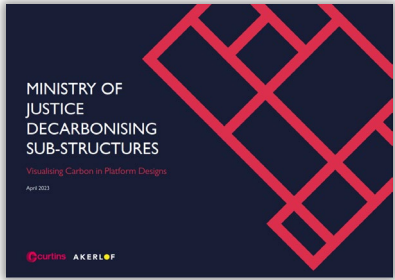
“I really hope companies have the foresight to utilise the tools developed by industry for industry as they offer a transformative opportunity.”

Clare Fenton

Chair of the Metal Cladding and Roofing Manufacturers Association

Fenton Partners





The Platform Papers

Decarbonising Sub-Structures

What is it?

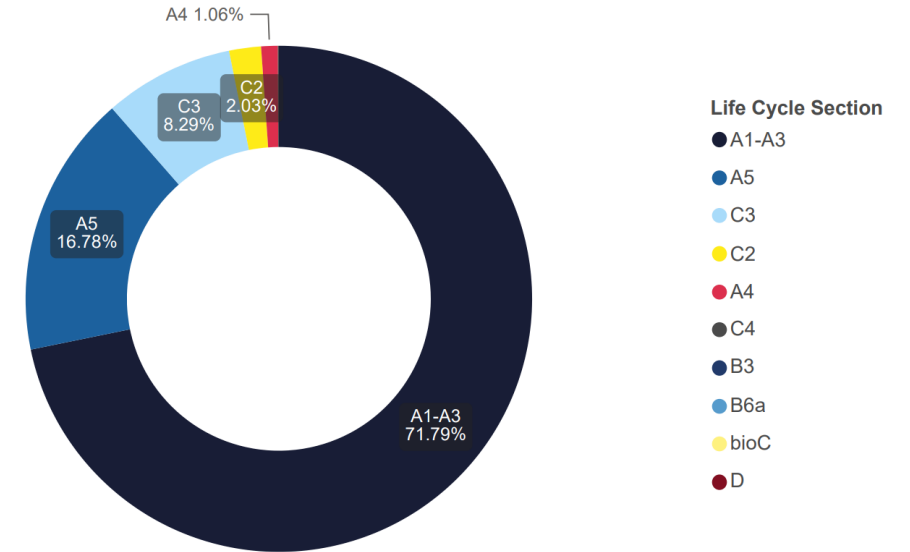
The Ministry of Justice (MoJ) has pioneered the adoption of platform principles, rationalising the design of its future portfolio to support faster, better and greener delivery. This report focuses on the carbon content within the sub-structures and foundations, visually demonstrating the impact of each element to identify priority areas for embodied carbon reduction. A comprehensive action plan and timeline is outlined, informing a route map for future carbon reduction as part of the MoJ's pathway towards net zero.

This paper's impact:

By enabling manufactured solutions, platforms offer the potential to be greener, with a reduced carbon footprint and impact upon the environment. This paper demonstrates and visualises the opportunity to decarbonise the built environment with government departments.

Lifecycle stages for all projects

- The table shows the volume by life cycle stage and by asset type
- The bulk of carbon is within A1 - A3 and is dominated by concrete and steel products.



Building	Sum of TOTAL kg CO ₂ e
CASU	193,340.80
Central Service Hub	1,179,114.48
Entrance Resource Hub	1,400,918.43
Fencing	800,940.34
Hard Landscaping	2,691,943.84
House Blocks	5,197,896.51
Kitchen	685,998.02
Soft Landscaping	267,186.26
Support Building	285,566.89
Workshop	1,643,317.75
Total	14,346,223.31

Conclusions

1. Options have been defined for a successful Rulebook Implementation Strategy, a Rulebook custodian and a leadership group should be appointed take this forward beyond the Construction Innovation Hub
2. There is clear evidence, generated through the **Value of Platforms** report, of the Macroeconomic impact of Product Platforms and their adoption
3. Enabling Tier 1 organisations to adopt Product Platforms presents an opportunity to leverage their size and scale, **further accelerating implementation** in wider industry, provided there is a sound business case to do so
4. Ensuring government department stakeholders understand the DEMAND, DEVELOP, DEPLOY framework, particularly in the early DEMAND phase, through a **client-focused platform strategy development process**, is fundamental to their adoption



The Value of Platforms in Construction

Re-emphasising the macroeconomics benefits

At a project level, this equates to reducing the price of a:

- £22m secondary school by up to £7m
- £475m hospital by up to £147m
- £400m prison by up to £124m
- £25m defence accommodation project by up to £8m
- £10m housing development by up to £3m



There are wider benefits to the economy...

- Provide a multiplier effect to increase real GDP by up to £7.8bn a year on a sustained basis

Quality and efficiency will improve...

- Errors and rework in construction cost up to £23 billion each year, which is equivalent to 3.6% of GDP
(Source: ONS + GIRI)

There are health and safety benefits of this approach...

If construction were to become 'like manufacturing', each year we might expect:

- 16,865 (22%) fewer instances of ill health
- 17 (57%) fewer fatalities
- 18,310 (31%) fewer non-fatal injuries

Recommendations

1. Organisations new to Product Platforms are encouraged to access the Product Platform Rulebook and supporting Platform Papers: [Rulebook | Construction Innovation Hub](#)
2. Strategy 2 or 3 is recommended from the independent review of implementing Product Platforms, as opposed to publishing the Rulebook with no further action. i.e. a fully supported and incentivised launch, with prescriptive rules of engagement, specified toolkits and operating data collection/management or hybrid version of this
3. Further training and knowledge transfer to continue the implementation of Product Platforms, to reach as wide an audience as possible within the sector, including organisations not involved to date in the Hub
4. Construction Innovation Alliance (legacy board from the Hub) to continue driving momentum and adoption of the Rulebook with industry and Government





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