

The Industrialisation Journey

MMC Ireland Conference 2024



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(Some of) The Challenges

- **Direct costs** of avoidable errors ~5% of project value = **£5 billion p.a.** with **Unmeasured/indirect = £10-25 bn p.a.**
(GIRI)
- 400 million tonnes of material every year, which results in **100 million tonnes of waste** being produced.
(UKGBC/WRAP)
- **7 tonnes of waste** to landfill for every house built
(Innovate UK)



Productivity



Demographic



Quality



Cost



Skills

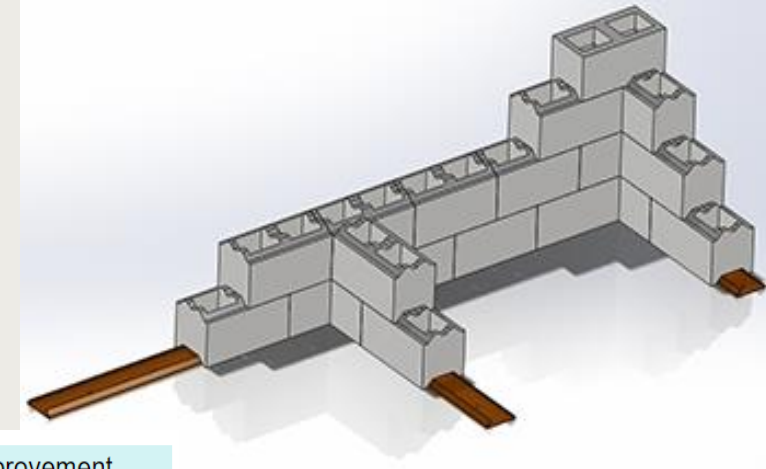


Health and Safety



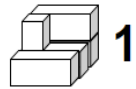
Mott MacDonald

So MMC (and DfMA...etc) are the answer?



Off site and near site pre-manufacturing

Site based improvement



1



2



3



4



5



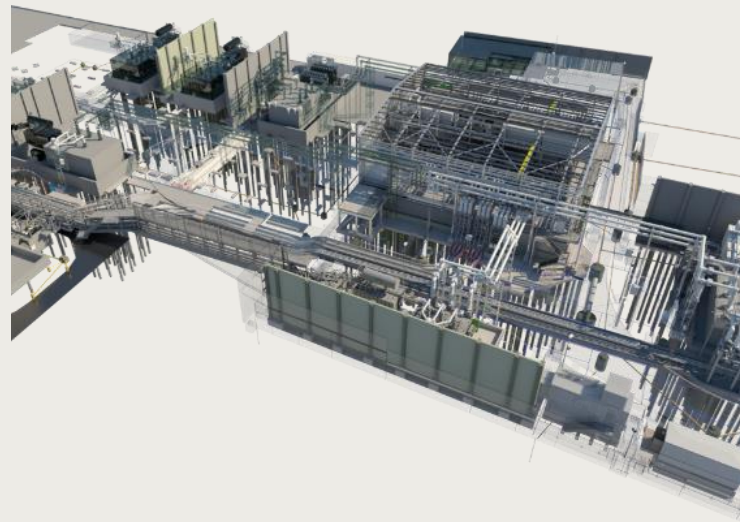
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7

Structural categories

Non-structural categories



But...

Ilke Homes sinks into administration with most of firm's 1,100 staff set to lose their jobs

Legal & General halts new production at modular homes factory near Leeds

Group tells staff it will let most of them go, as it considers options for loss-making factory

Three schools that were built by collapsed offsite specialist contractor Caledonian Modular must be rebuilt over structural integrity concerns

Government's plans for MMC in 'disarray', says Lords committee

"If [MMC] doesn't fly off the shelf after 10 years, maybe it is not the right answer,"

UK Government Policy Roadmap



Construction 2025
33% cheaper
50% faster
50% greener
50% trade gap



Industrial Strategy
Ideas, people, infrastructure, business environment, prosperous places



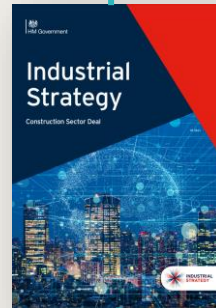
TIP
Investment, productivity, improve benefits



Construction Playbook
Getting projects and programmes right, from the start. Outcomes, relationships, MMC (and platforms), sustainable contracting, faster delivery. (updated 2022)



2017 Budget
Presumption in favour of offsite construction



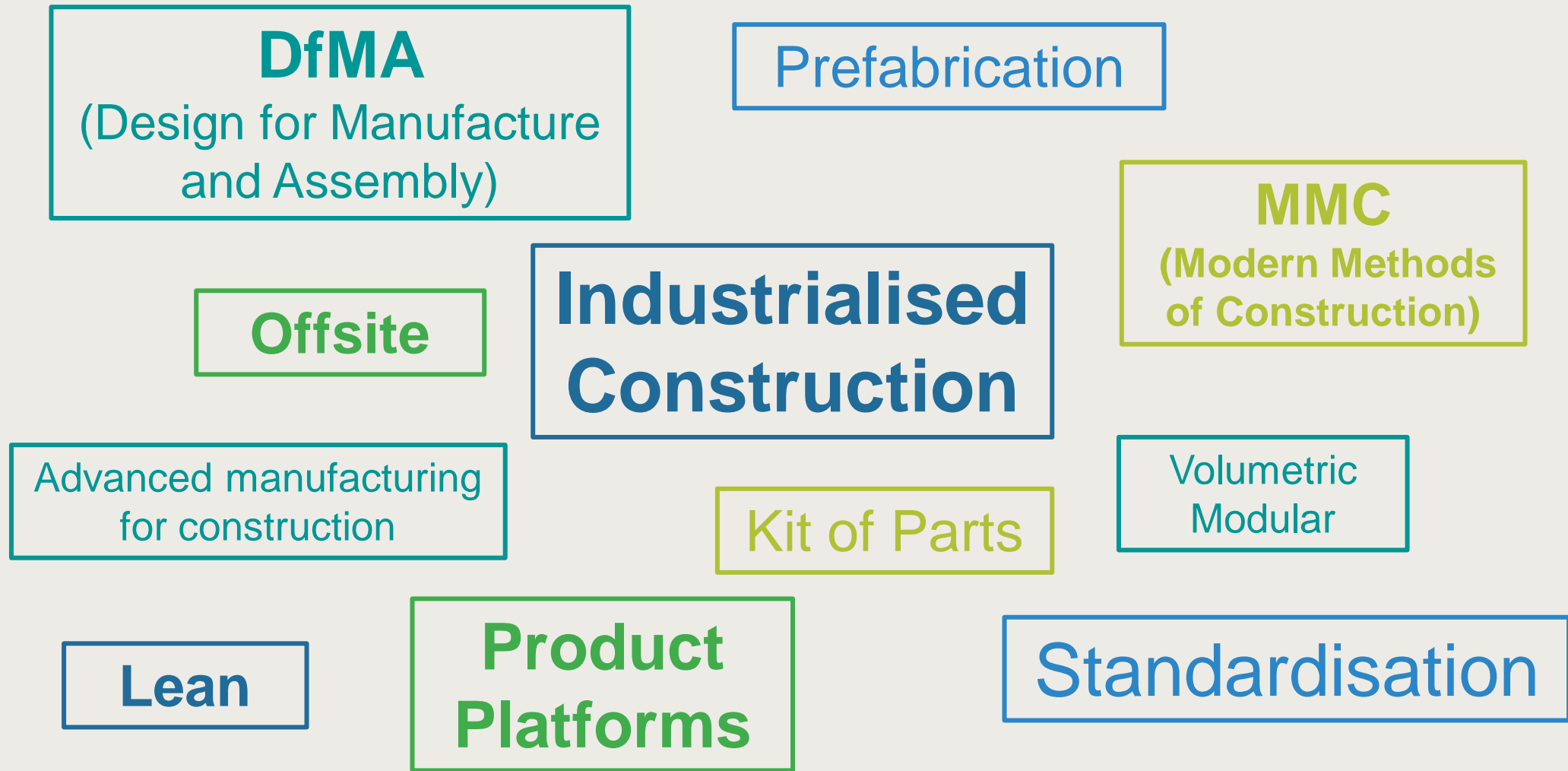
Sector Deal
£250M for:
Digital
Offsite
manufacturing
Whole-life asset
performance



TIP2: Roadmap to 2030
System change for the built environment, transforming how we intervene and drive a step change in performance.



What's in a word?



DfMA

(Design for Manufacture
and Assembly)

Prefabrication

Offsite

**Industrialised
Construction**

MMC
(Modern Methods
of Construction)

Advanced manufacturing
for construction

Kit of Parts

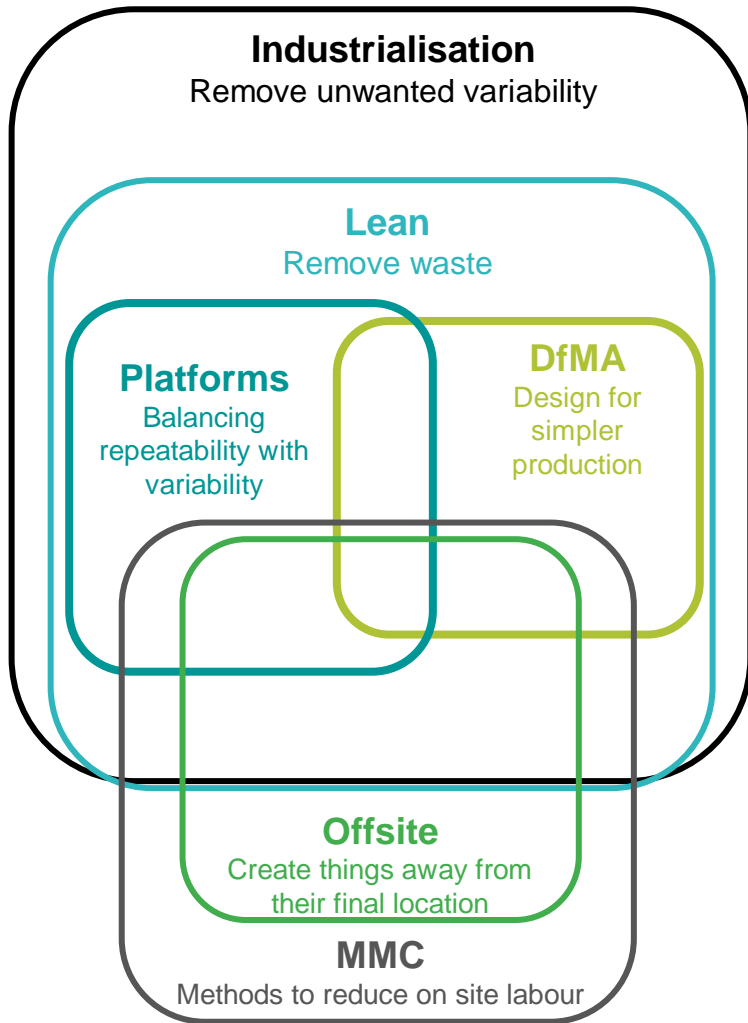
Volumetric
Modular

Lean

**Product
Platforms**

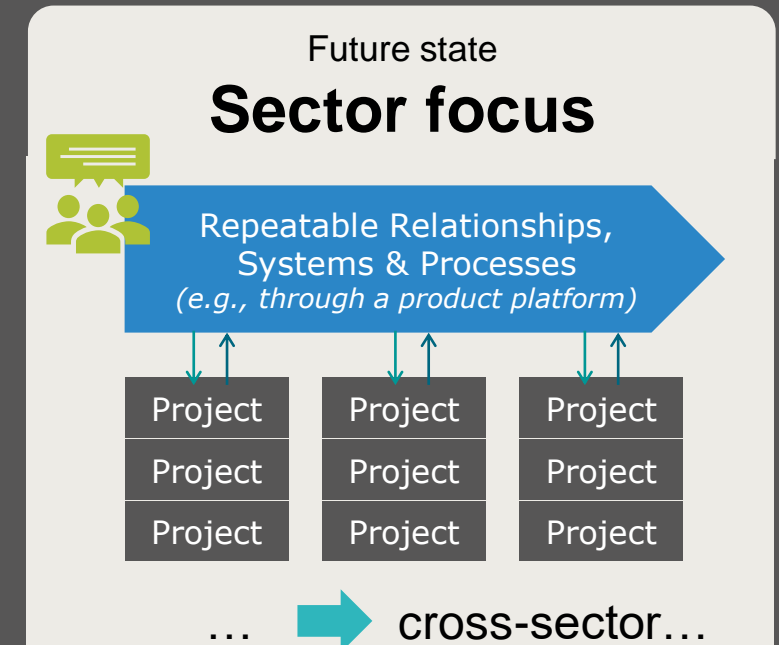
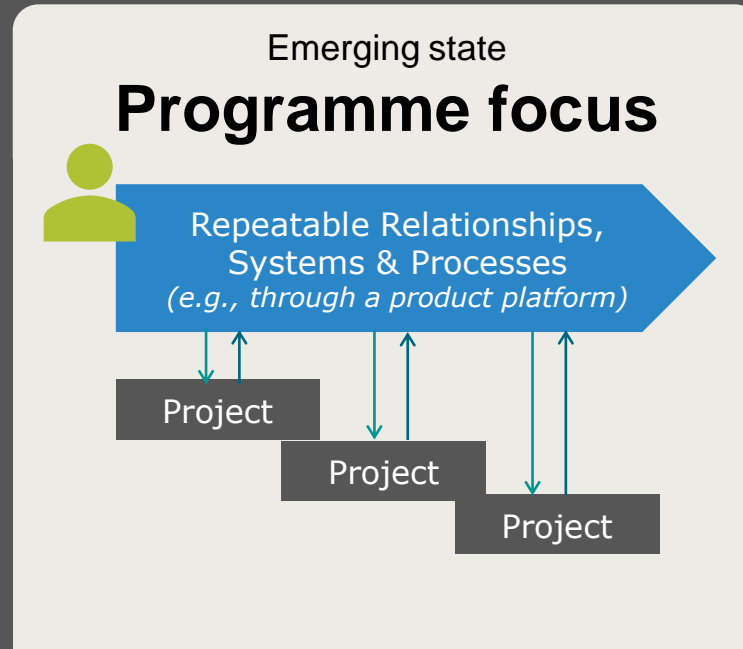
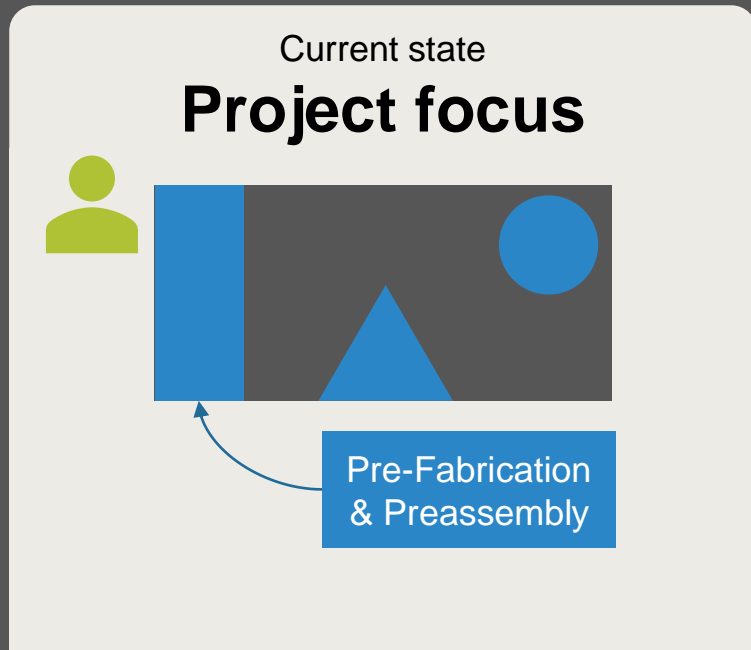
Standardisation

Positioning Industrialisation



<p>Industrialisation Remove unwanted variability</p>	<p>To increase productivity, increase predictability and overcome growing challenges with skills and materials, by reducing reliance on bespoke design and craft-based delivery. Industrialisation is simply removal of unwanted variability – in how assets are conceived, designed, built and how they perform. Achieved through use of repeatable technical systems, designed and produced using efficient and reliable processes, with an increased customer and supply chain focus.</p>
<p>Lean Remove waste</p>	<p>A methodology aimed at reducing waste and enhancing value in processes. It focuses on eliminating non-essential activities, improving quality, reducing production times, and achieving cost-efficiency, all while meeting customer needs.</p>
<p>DfMA Design for simpler production</p>	<p>Design for Manufacture and Assembly is a design approach aimed at simplifying the production process. It involves designing products with ease of manufacture and efficiency in mind, thereby reducing production time and costs. This approach enhances the quality and sustainability of the product while ensuring a smooth transition from design to production. (12 principles)</p>
<p>Product Platforms Balancing repeatability with variability</p>	<p>An integrated systems approach, balancing variability with repeatability. Includes a kit of parts, the associated production processes, knowledge, people and relationships required to deliver all or part of construction projects This allows for efficiency and cost-effectiveness in production, while still offering a degree of customisation to meet selected but diverse customer needs.</p>
<p>Offsite Create things away from their final location</p>	<p>Offsite refers to the practice of creating components in a location other than their final installation site. With the right conditions, this method allows for better control over the production process, leading to improved efficiency, quality, and safety. It also reduces onsite disruption, making it a preferred choice for many projects.</p>
<p>MMC Methods to reduce on site labour</p>	<p>Techniques aimed at reducing the need for onsite labour. These methods, which often involve offsite manufacturing and the use of digital technologies, can increase efficiency, improve quality, and reduce construction time and environmental impact</p>

Getting there will take time, but is entirely achievable



Increasing scale and benefit of industrialisation



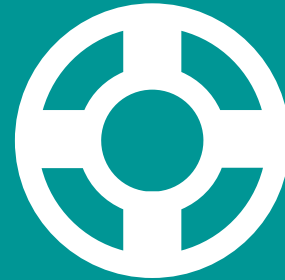
£1.8bn

potential annual CAPEX saving



£7.8bn

potential real GDP improvement



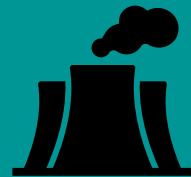
Save and improve lives



Reduced
waste



Improved
reuse and
recyclability



Lower
emissions



Lower
energy
use



Better
resources
use

So what can we
do now?









Use it, don't lose it!

Name	What	Where
Transforming Construction Handbook	Guidance on 5 areas of manufacturing processes and tools, (with details of how it was applied on an MoJ programme.)	Manufacturing Technology Centre Construction Handbook (the-mtc.org)
Construction Innovation Hub	All outputs from the 4-year government and industry funded programme.	https://constructioninnovationhub.org.uk/resources/
Government Discovery	Report on the research conducted to understand how strategic government intervention can boost productivity and improve performance in the UK construction sector	https://constructioninnovationhub.org.uk/media/zsgh4x13/final_governmentdiscover_report-2.pdf
Platform Design Programme: Defining the Need	Analysis of 5 departments pipelines and the opportunity for developing platform systems to meet the need	https://constructioninnovationhub.org.uk/media/slygf1sq/construction-innovation-hub-defining-the-need-2021.pdf
Product Platform Rulebook	The guidance on the platform framework covering Demand, Develop, Deploy. (The why and how to.)	https://construction-innovation-hub.euwest01.umbraco.io/media/nfdfyhoj/cih-product-platform-rulebook-edition-12.pdf
The Value of Platforms	An economic and qualitative analysis of the mass implementation of product platforms.	https://constructioninnovationhub.org.uk/media/rzwdinep/the-value-of-platforms-final-upload-april-2023.pdf
The Value Toolkit	A tool to enable better value-based decision making.	https://constructioninnovationhub.org.uk/media/2dobmih/20220927_hub_valuetoolkit_overview_interactive.pdf
Construction Product Quality Planning Guides (CPQP)	toolbox of resources to help manufacturers produce products and components in line with best practice quality standards	https://www.constructioninnovationhub.org.uk/our-projects-and-impact/platform-programme/assurance/cpqp-quality/
Knowledge Based Navigator	CDBB's knowledge base of reports, research and guidance.	Explorer App Centre for Digital Built Britain completed its five-year mission and closed its doors at the end of September 2022 (cam.ac.uk)



Thank you

