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Constructing Harmony A Journey from Fragmentation to Synchronicity in Public Building Projects



Who are we and why are we here?

Cross public/private/industry group of like minded people working together to investigate what is required to establish the right environment to encourage investment and commitment to grow the market to deliver quality sustainable social infrastructure.



Ben



Scott



Sara



Kevin



Peter



Jennifer



Tom

What is the Challenge?

To drive change in implementation of the Construction Playbook's ambitious goal of using platform approaches to drive innovation and efficiency.

How can we encourage the market to invest in platform development and delivery where the efficiencies of the automotive industry can be replicated for elemental parts such as MEP.



Presentation Running Order

Kevin Masters:- What is the problem we are trying to solve?

Scott Tacchi:- Market perspective

Ben Carlisle:- Facilitating Platform delivery

Peter Millar:- What needs to be true on the Public and Private Sector

Sara Humber:- Wash up and conclusion

TRANSFORMATION

The Virtuous Circle





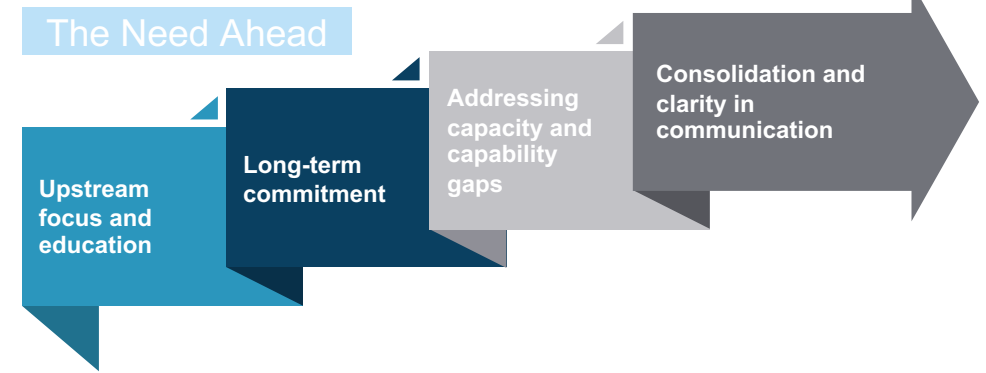
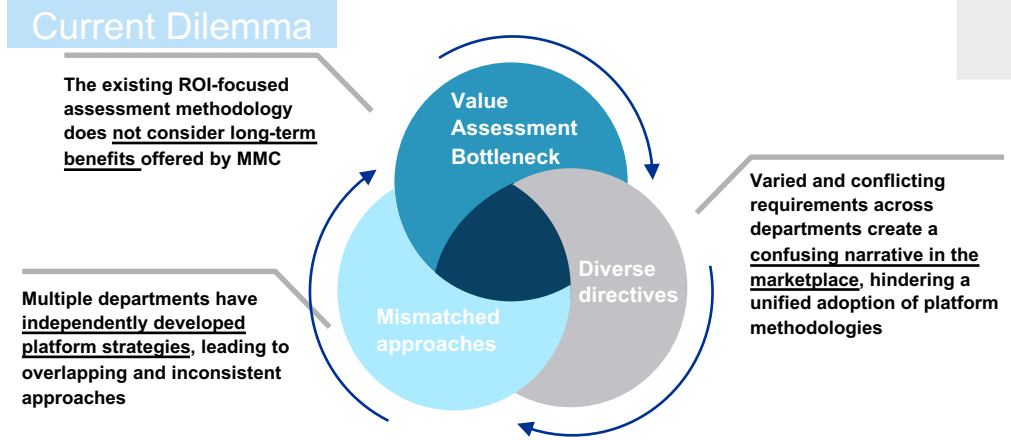
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What is the problem?

Kevin Masters

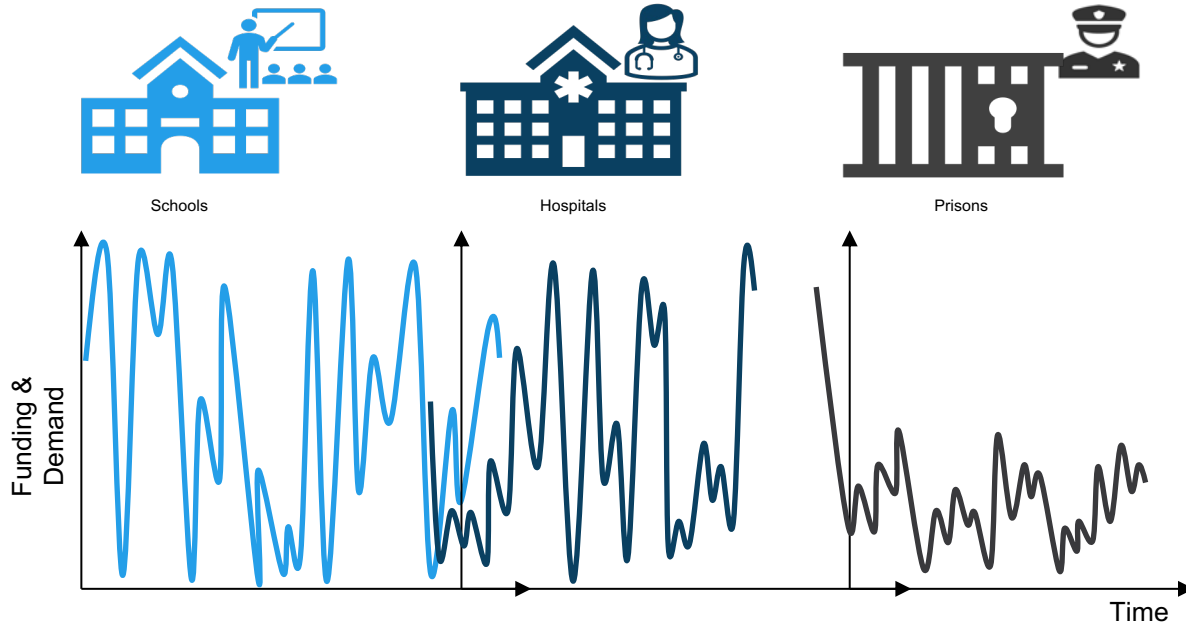


Unified vision, fragmented execution: The double edged sword of multi-departmental delivery



Dismantling Silos: Splintered funding dynamics across public buildings

From schools to prisons: The tapestry of funding disparities



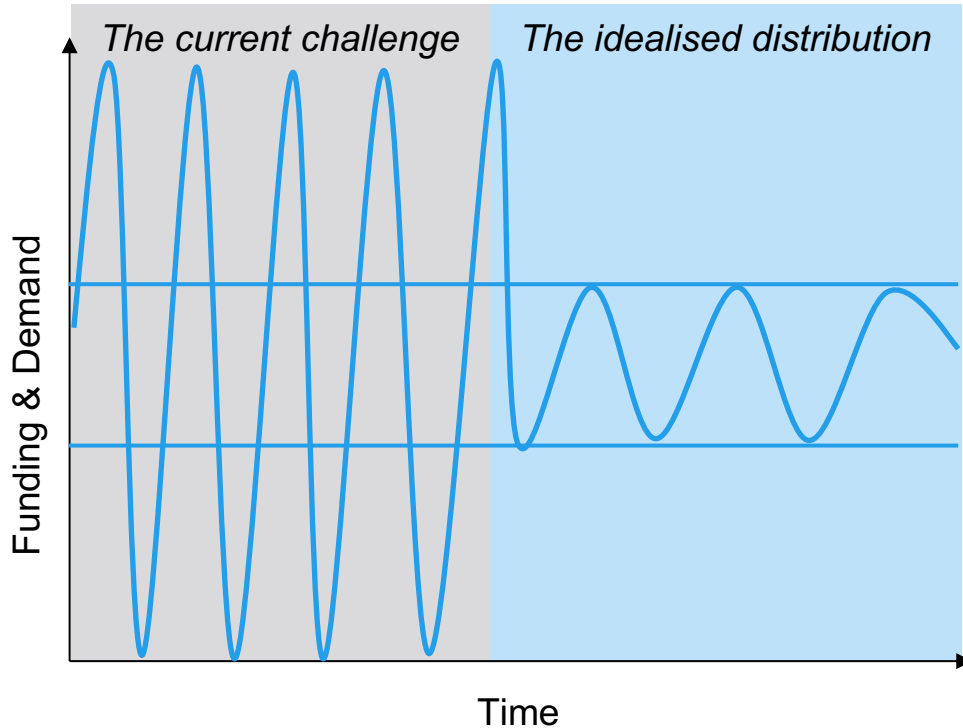
The current challenge

- Unpredictable spend patterns disrupt project cycles
- The jam tomorrow is often promised but rarely materializes
- Fluctuations cause over-demand or excess capacity
- Programmes competing for resource
- Inability to create alignment against common outcomes



This leads to distrust and inefficiency

From uncertainty to uniformity: Navigating the Funding Waves



The idealised distribution

- **Standardisation:** Ensures more consistent profiling, smoothing demand cycles
- **Predictability:** Offers clarity on funding allocation timings and amounts
- **Prioritisation:** Focus on the areas that deliver greatest impact
- **Innovation:** Clear requirements and expectation setting
- **Efficiency:** Enhances resource allocation and project delivery speed



Trust: Predictable processes mend stakeholder trust, ensuring resource stability

Balancing Immediate Project Delivery with Long-Term Portfolio Planning

Current Project Demands

High Volume of Projects: Currently, the government is spearheading several large-scale programs, each imposing significant demands on the supply chain, such as NHP aiming for 40 hospitals, DfE targeting rebuilding 500 schools, and MoJ focusing on 4000 new prison places.

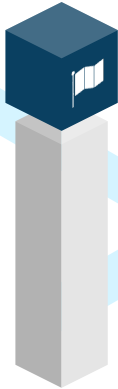
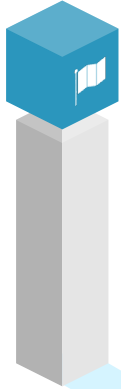
The Need for Balance

Portfolio Approach: Adopting a comprehensive view of all projects could facilitate more efficient resource and timeline management, even while each project maintains its unique, specialized strategies.

Urgent Delivery: The necessity for timely and quality project delivery remains paramount, especially within the context of adopting a broader, portfolio viewpoint.

Dual Challenge

Continuation vs. Strategy: Managing existing builds competes with future-oriented planning, creating a paradox of attention between **delivering present projects** and **strategizing for upcoming ones**.



Interdepartmental Competition: The Struggle for Unified Supply Chain Access

Converging Pipelines

Though catering to distinct societal needs, the construction of schools, hospitals, and prisons surprisingly converge, vying for access to a singular supply chain and inadvertently entwining their project pathways



Schools



Hospitals



Prisons

Challenges Breeding Complexity

MMC Perception

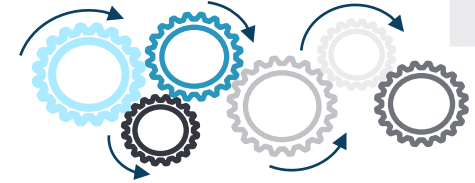
A holistic understanding and prudent application of Modern MMC are pivotal, acknowledging that while not a cure-all, MMC can yield substantial benefits under apt circumstances

Barrier to Standardisation

Addressing the stubborn 'unique asset' perspective and the resistance to embracing standardised approaches due to perceived threats to proprietary design and functionality.

Eroding Trust

Engaging the pervasive mistrust among government bodies, suppliers, consumers, and manufacturers, fostering a climate of scepticism and impeding collaborative progress



Shift towards a unified approach

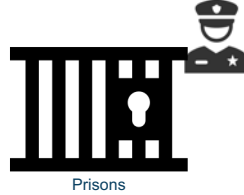
Ensuring comprehension and adept application of MMC across stakeholder groups is imperative, manoeuvring through the intricate dynamics of standardization and individualization without promoting a one-size-fits-all mindset.

Simultaneously, it's vital to navigate through the mire of distrust, aligning stakeholders towards a cohesive, transparent operational model without prematurely revealing a singular path forward

Component Synergy: Glimpsing Uniformity amidst Structural Diversity

Visible differences, Invisible similarities

Schools, hospitals, and prisons cater to varied societal needs with unique roles and functions. Yet, when peeled back to the core, these structures reveal similar building components and supply chain requisites



Unveiling common threads

Yet, when distilled to the component level, we uncover a tapestry of shared elements, revealing opportunities for synergy and standardization



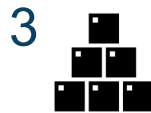
1 Single element level

Noteworthy is the uniform use of structural steel sections, despite them being adapted to the diverse requirements of each facility type, hinting at a shared supply chain narrative



2 Single system level

Modular MEP systems, while deployed across varied building functions, underscore a universal applicability and standardized approach to installations.



3 Cluster level

From the strategic clustering of hospital departments to the organization of school classrooms, a universal methodology in managing spatial components emerges



4 Whole building

Regardless of the intended purpose, the leveraging of standardized designs and components surfaces as a recurring theme in facilitating rapid establishment

Bridging the gap

As we bridge the gap between unique structural demands and standardized processes, a potential approach subtly comes into view

- **Balancing Act:** The recurrent appearance of products and processes across projects, coupled with tailored solutions and standardized interfaces, implies a merger of design and efficiency.
- **Deriving Solutions:** Melding standard components with unique features brings forth a scenario where multiple product families can meet diverse market needs without starting from scratch



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Supplier Perspective Scott Tacchi

“When we are confronted with evidence that challenges our deeply held beliefs we are more likely to reframe the evidence than we are to alter our beliefs.

We simply invent new reasons, new justifications, and new explanations.

Sometimes we ignore the evidence altogether”.

Matthew Syed

Black Box Thinking; Marginal Gains and the Secrets of High Performance



Construction Playbook

The Construction Playbook

The Playbook has 14 key policies covering the contracting lifecycle

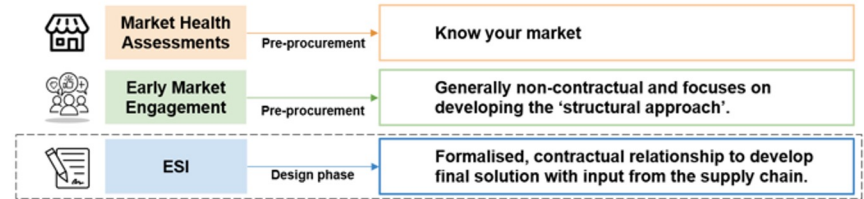


- 1 Publication of commercial pipelines
- 2 Market health & capability assessments
- 3 Portfolios and longer term contracting
- 4 Harmonise, digitise and rationalise demand
- 5 Further embed digital technologies
- 6 Early supply chain involvement
- 7 Outcome-based approach
- 8 Benchmarking and Should Cost Modelling
- 9 Delivery Model Assessments
- 10 Effective contracting
- 11 Risk allocation
- 12 Pricing & payment mechanisms
- 13 Assessing the economic and financial standing of suppliers
- 14 Resolution planning



Early Supply Chain Involvement (ESI)

- ESI involves contracting with the supply chain in the pre-construction phase to input into the design before the solution is finalised.
- Involving the supply chain sufficiently early will help identify opportunities, mitigate risks and access the industry expertise in all tiers of the supply chain.



6: Early supply chain involvement

7: Outcome-based approach

Early Supply Chain Involvement

Case Study:

Do you have any case study examples of Early Supply Chain involvement where: Main Works Contractors are engaged mid-way through RIBA 3 or even RIBA 4.

This represents 70% to 80% of the work that comes into SRM.

Advised completed stage 3 but in reality, most of a stage 3 but not all.

Early Supply Chain Involvement

Do you have any case study examples of ESI where: Main Works Contractors are engaged at RIBA 2 or early RIBA 3 and any challenges that this presented:

This represents a small proportion of work that comes into SRM, normally of the negotiated and or CM type. There are so many opportunities and challenges, and many depend on the client and the commercial arrangements being requested.

Some basics.

Early Supply chain : challenges

- ❓ Has a cost plan been accurately developed? NO market testing.
- ❓ Is the clients' expectations of what is deliverable and realistic been managed, normally a NO.
- ❓ Is there a fixed design? Has the opportunity to address the designs failings passed us? **If SRM receive a completed stage 3 design often 70% of the opportunity has been lost** if the architect and engineer did not set out with innovation / MMC in mind. SRM and contractors are left trying to enhance the scheme only looking at 15% of what's remaining.
- ❓ Unrealistic & Market Untested delivery programmes.

Early Supply Chain : Opportunities

- ❑ Opportunity to address buildability inc H&S in delivery.
- ❑ Opportunity to address MMC / standardisation / rationalisation of whole design and embedment of Key Performance Requirements.
- ❑ Opportunity to represent realistic tested cost plans.
- ❑ Opportunity to enhance & benchmark programme.
- ❑ Opportunity to offer up realistic VE as a stage that has the greatest impact.
- ❑ Opportunity, Opportunity. Opportunity.....

Patterns and Anchor Points

Design

- Structural horizontal and vertical grid,
- Elevational treatment
- Service voids & MEP strategy
- Schedule of accommodation
- Social value
- Carbon targets

Contractual

- D&B all risk. JCT / NEC risk dump
- CM
- Value based procurement
- Partnering
- Alliancing
- FAC1

Financial

- Accurate cost plan
- Strategic misrepresentation
- Optimism bias
- Should cost model

What is driving your outcomes?

Jan 1994 – Latham report - identifying disharmony

Mid 2017 – Gov white paper on housing and adoption of MMC (30yrs of flat productivity increase).

Jan 2019 – Presumption in Favour of MMC for 6 Government Departments.

Constant rhetoric from industry over need for a disruptor / need for change.

Profit margins remain at 1-2%.

Reducing workforce, lack of new skilled labour.

Outcome Based Approach

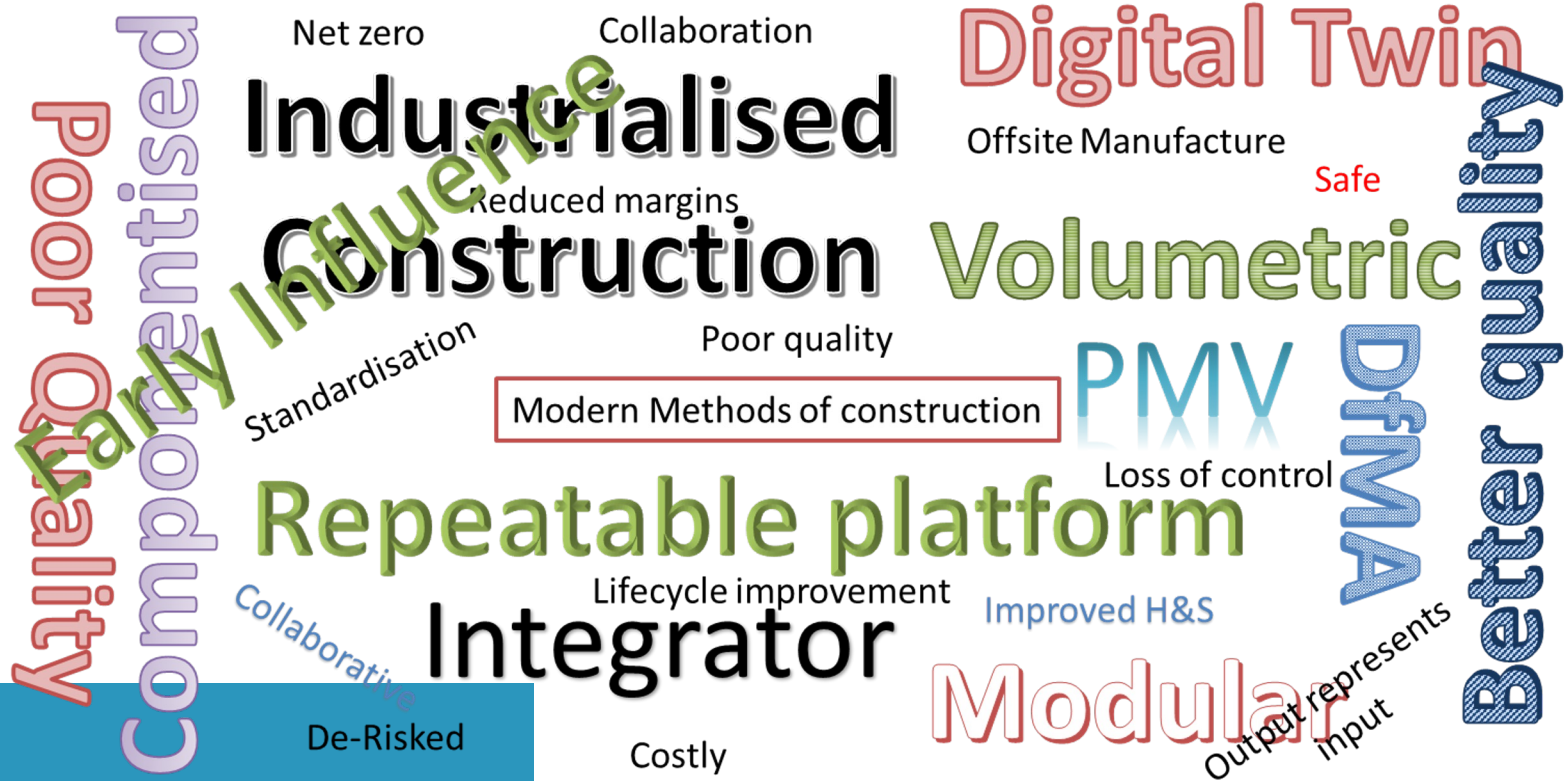
Q: What is your actual Outcome focus?

Q: Are you culturally prepared for change?

Q: Are you engaged with evolving technology?
new supply chains?

SRM & MMC Outputs – case study:

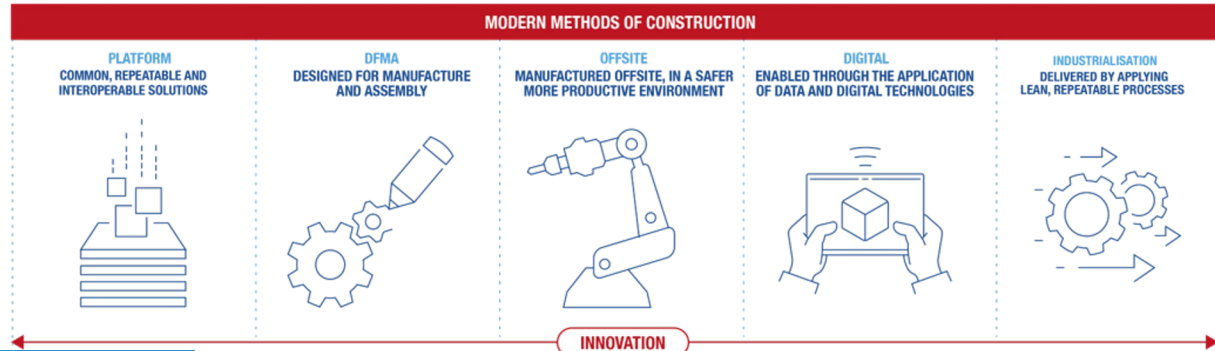
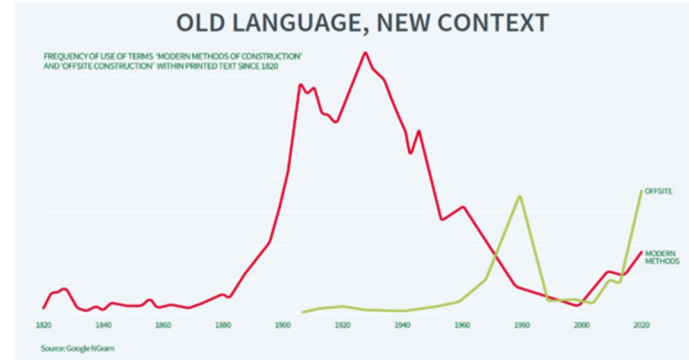
What's the right solution?



Outcomes: MMC – early decision making locking in key benefits

WHAT IS MMC?

MMC - a **bro**ad term to describe **contemporary innovations** in construction, including new technologies (such as digital tools and techniques), **offsite manufacture** and use of efficient **processes** to deliver productive, sustainable and **better outcomes**.



So What?

- Productivity improvement through a structured and disciplined approach to [best practice] adoption of all aspects of Modern Methods of Construction [Contemporary Innovation] where it best fits.
- SRM are the first UK Tier 1 contractor to implement an ‘Integrator Policy’ throughout all business units.

“Productivity isn’t everything, but in the long run it is almost everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.”

Paul Krugman
The Age of Diminishing Expectations, 1994

‘Profit margin improvement’ should not be a dirty phrase. 1% to 2% has long been established as the norm and acceptable – only in construction is this the case

Scott Tacchi, 2023

Outcomes – what next?

I believe that some business and business cases are setting out applaudable honourable outcomes.

I also believe that due to a mix of: Strategic Misrepresentation, Sophistry, Optimism Bias, Incompetence, ignorance and Salience Bias when it comes to **cost plans**, the delivery of our applaudable honourable outcomes is being crushed.

We need to do something new...thinking beyond and outside the conventional project boundaries

I believe / hope that this spiral can be stopped by those in this room.... Each of us can make a difference.



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Platform Delivery

Ben Carlisle



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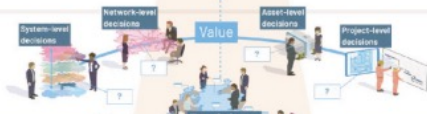
1. Productivity isn't everything, but in the long-run it almost is: Construction significantly affects the wider economy
2. Better questions beget better answers: the patterns we see are a result of the environment we create
3. Progressively getting better: three horizon model
4. Messy demand and ordered production: changing patterns need a better environment
5. Common and repeatable: platforms include technical systems, processes, and supply chain relationships that all improve over time
6. Thinking in different dimensions: platform thinking needs the three domains of Demand-Develop-Deploy

Productivity isn't everything, but in the long-run it almost is: Construction significantly affects the wider economy

Societal outcomes



Policy



Systems of Systems



6-8%

Of GDP is from construction

50%

Of capital created in the economy is by construction

6.5X

Increase in productivity for manufacturing vs construction 2009-2019

25%

UK carbon emissions are from the built environment

30%

Work-related fatalities each are relate to construction

700,000

Construction workers aged over 50

10%

Of all construction work is public sector social infrastructure (£6bn/year)

£1.8bn

Potential annual social infrastructure saving from improved approaches (~30%)

£7.8bn

Potential real GDP improvement from better social infrastructure delivery

The performance of construction influences the performance of the wider economy.

Better questions beget better answers

The patterns we see are a result of the environment we create



Construction has evolved to suit its environment

Construction is a connected system that has perfectly adapted and evolved to survive in a cyclical, variable and volatile environment. This continues despite the challenges with productivity, safety, workforce availability and more.



We've tried copying others

For decades, the construction industry has sought to replicate the productivity improvements seen in other sectors by encouraging the adoption of manufacturing technologies and processes.



But it doesn't make sense in our environment

Whilst the adoption of prefabrication and pre-assembly continues to grow, a wholesale shift from onsite to offsite production remains limited due to the continued prevalence of our project-based, engineer-to-order delivery model.



Without changing the environment, the approach won't change

The progress in other production sectors is evident and is a logical response to the commercial and consumer environment. Without changing this, the methods of construction will not sustainably change.

Limiting factors

Variable requirements and demand
Expectations of customisation
Missing or variable metrics
Design approaches
Buying behaviours and risk profile
Industry structure and business models
Lack of continuous improvement



Industry improvement

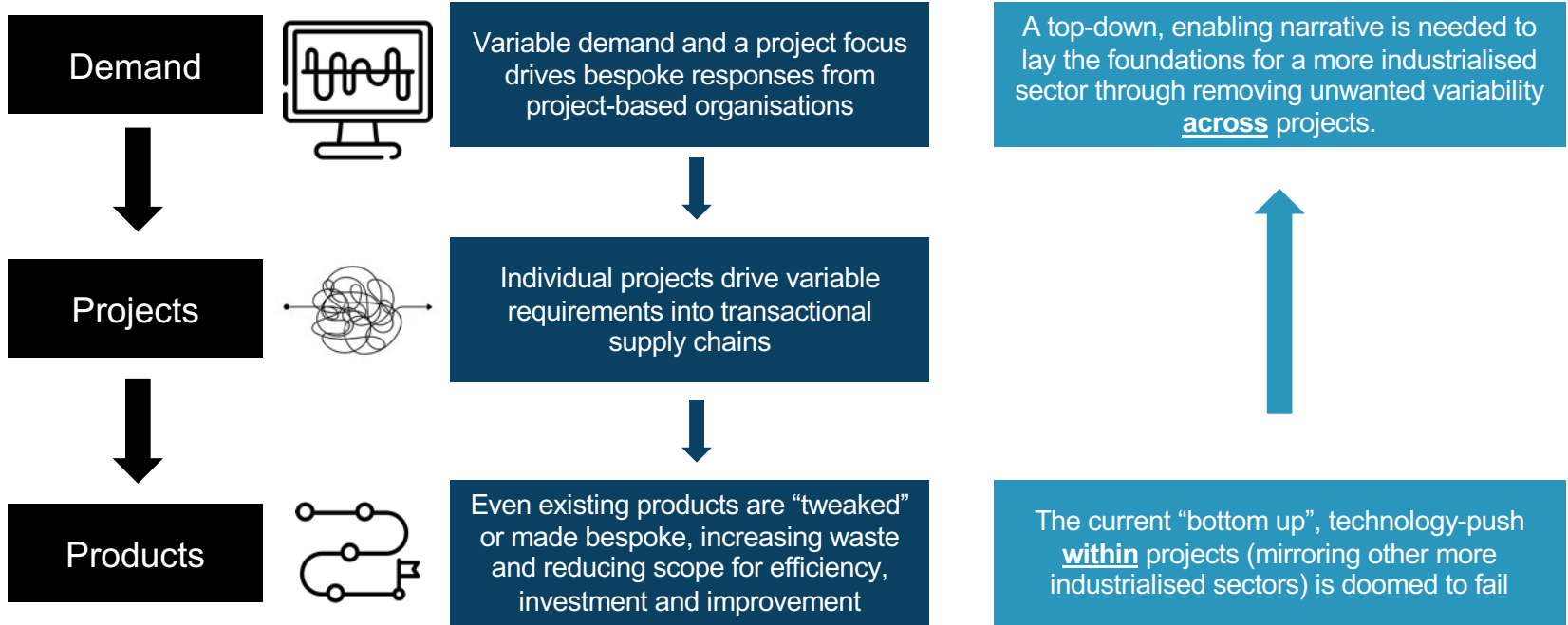


Driving forces

Low productivity
Safety and wellbeing
Workforce and employment
Net zero
Affordability
High demand
Resilience

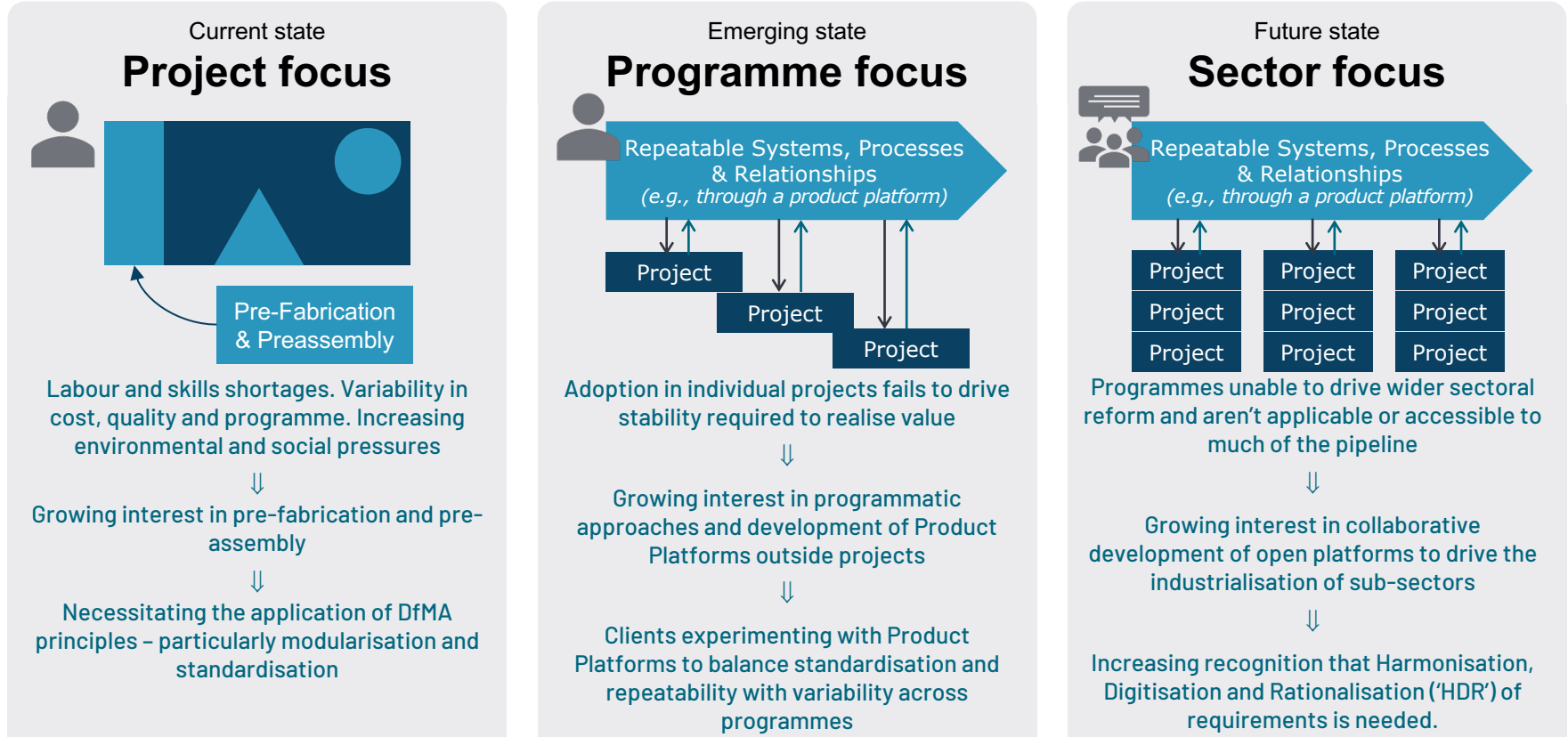
Messy demand and ordered production

Changing patterns needs a better environment



Work in progress




Progressively getting better: three horizon model

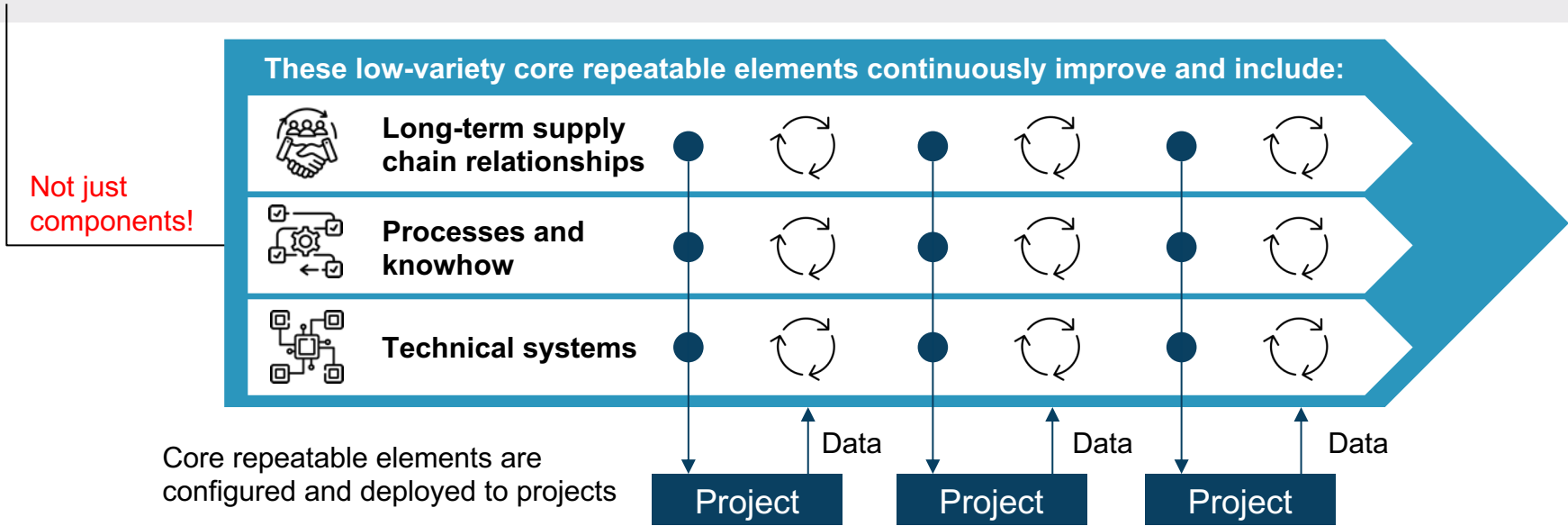


Product platforms make sense in these contexts

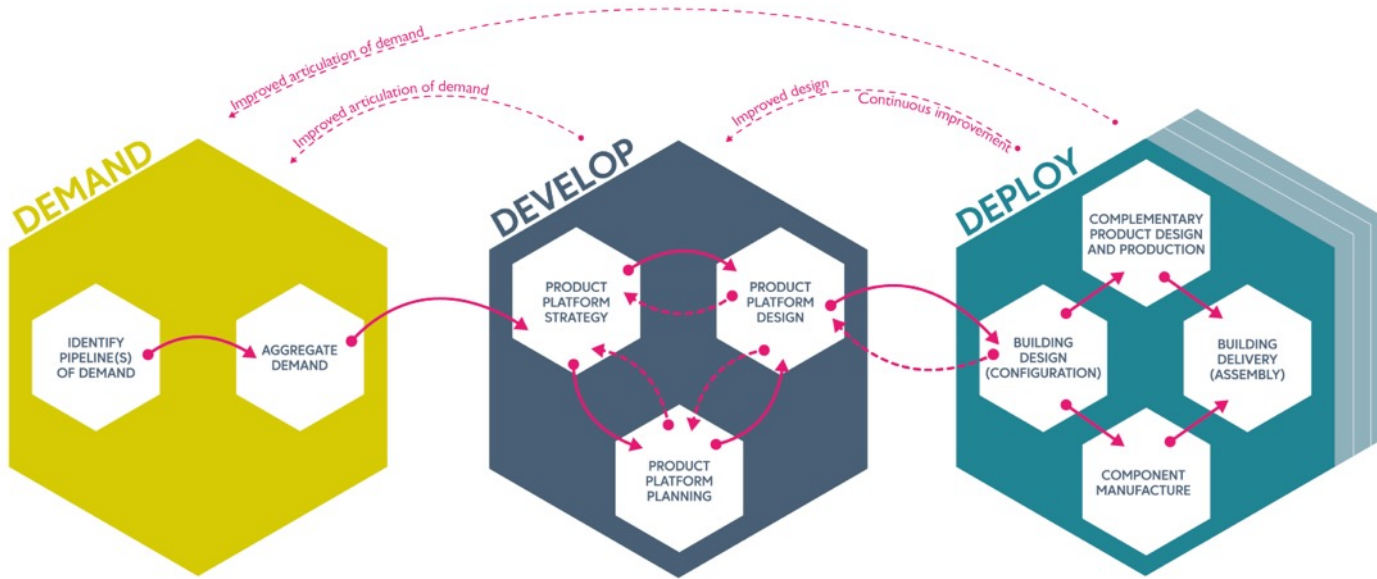
Common and repeatable: platforms include supply chain relationships processes and technical systems that all improve over time

Platforms vary in form – and there isn't one answer – but they share common features:

-  **1. A set of low-variety, core repeatable elements**
- +**
-  **2. Stable interfaces to variable elements**
- +**
-  **3. Governed by a set of rules on how elements can be integrated**



Thinking in different dimensions: platform thinking needs the three domains of Demand-Develop-Deploy



1. Requirements: Harmonise digitalise rationalise
2. Pipeline: More detail than “just” projects
3. Management: holistic not piecemeal

1. Product lifecycle, not singular projects
2. Design the system not the instance
3. Systematic and embedded quality

1. Bespoke by choice: configured not designed
2. Supply chains: strategic not transactional
3. Increase in value of project and product data



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What needs to be true to drive change?

Peter Millar



1. What does government need from the private sector?

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. Government need the private sector to invest in growing market capacity and skills to deliver our ever growing need for sustainable infrastructure.

The ability to deliver infrastructure at pace.

Transparency and predictability on costs.

Deadlines hit for completion commitments, with fewer errors.

Lessons learnt to be hardwired in for continuous improvement.

Value add from early engagement & Consistent feedback about changes required.

Create the best possible assets, supporting macro-issues and wider economy.

Environmental & Social value targets achieved.

Investment to facilitate higher productivity and capacity.

2. What does the market need from government to enable investment?

The market already invests significantly in major government programmes. Extensive market engagement and sounding sessions, staff employed to develop sector specific offerings and business development, self-funding standardised design approaches, building partnerships and planning contracts for future collaboration.

Assured return to undertake any significant investment. Ability to make a profit.

Balanced cost/reward approach to tender process & performance based allocation.

Certainty of pipeline. Stop turning the tap on-and-off.

Clarity and consistency of brief, optimising standardisation.

Early release of Contracts to trigger investment funding and mobilisation.

Engage early with the Tier 1 & 2/3 markets who ultimately deliver the work.

Better risk allocation, based on 'best athlete' to manage it.

Clients need skin in the game.

Next steps....

What needs to change?

How can we influence change?

So what are we expecting people to do differently?

What is the pathway?

How long does it take?

What should Policy makers and Departments do?

What are the steps to doing things differently?

Awareness and understanding?

Implementing a review?

Portfolio management from the centre- looking across the Departmental delivery silos

Forward look and visibility. How can you help us frame what the future looks like?