

# MMC & OFFSITE STILL THE ANSWER?

Stephen Wightman – BuildOffsite Nov 2024

# Is MMC / Offsite Failing?

## Three Caledonian Modular-built schools to be demolished

Aaron Morby 10 months ago

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The Government has confirmed that three schools built by failed offsite specialist Caledonian Modular will be demolished and rebuilt.



Haygrove School to be demolished and rebuilt

## MailOnline

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### EXCLUSIVE 'Pouring money down the drain': Locals blast 'shameful' newbuild 'ghost estate' in Southend after developers announce £350k half-built homes will be demolished a year after they were abandoned

• Did YOU reserve one of the homes? Email [emily.davies@mailonline.co.uk](mailto:emily.davies@mailonline.co.uk)

By EMILY JANE DAVIES and ANDREW YOUNG

## News

### Ilke Homes falls into administration

Aaron Morby 4 months ago

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Modular house builder ilke Homes has been placed into administration after failing to find a buyer for the business.

## Construction Enquirer

News | Jobs | Directory | Data

### Persimmon writes-off £25m investment in TopHat

Grant Prior 1 month ago

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Persimmon has written-off the £25m it invested in modular house builder TopHat last year.

## News

### L&G Modular forced to dismantle new Bristol homes

Aaron Morby 3 months ago

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Insurance giant L&G is being forced to dismantle homes built during its short loss-making foray into manufacturing modular housing.

# Why Does Construction Need to Change?

## Drivers for Change (UK Statistics)

45

Fatal injuries in the construction industry in 2022/23, 31% of all workplace deaths.

4,185

Reported injuries in the construction industry 2021/22, 62% of which led to more than 7 days off work

-7.3%

Construction productivity growth since 1997 versus +28.8% growth for the wider economy (-25% for building construction)

10.2m

Tonnes of CO<sub>2</sub> emitted annually from construction activity

25%

Proportion of UK greenhouse gas emissions arising from the built environment

4,163

Number of construction business insolvencies in 2022

£21bn

Annual cost of avoidable errors in construction

136m

Tonnes of construction and demolition waste per annum

13,000

Estimated number of victims of modern slavery in the UK construction industry

217,000

Estimated number of new workers required by 2025 to meet construction demand

31%

Proportion of construction projects delivered within 10% of original budget

<3%

Proportion of the site-based workforce who are female

# Modern Methods of Construction (MMC)

Analysis of the  
National Infrastructure  
and Construction  
Pipeline 2023

January 2024

Reporting to Cabinet  
Office and HM Treasury

*UK Policy:*

*Presumption in Favour of Offsite for  
Public Sector Departments*

*House of Lords / Labour Government  
still supportive*

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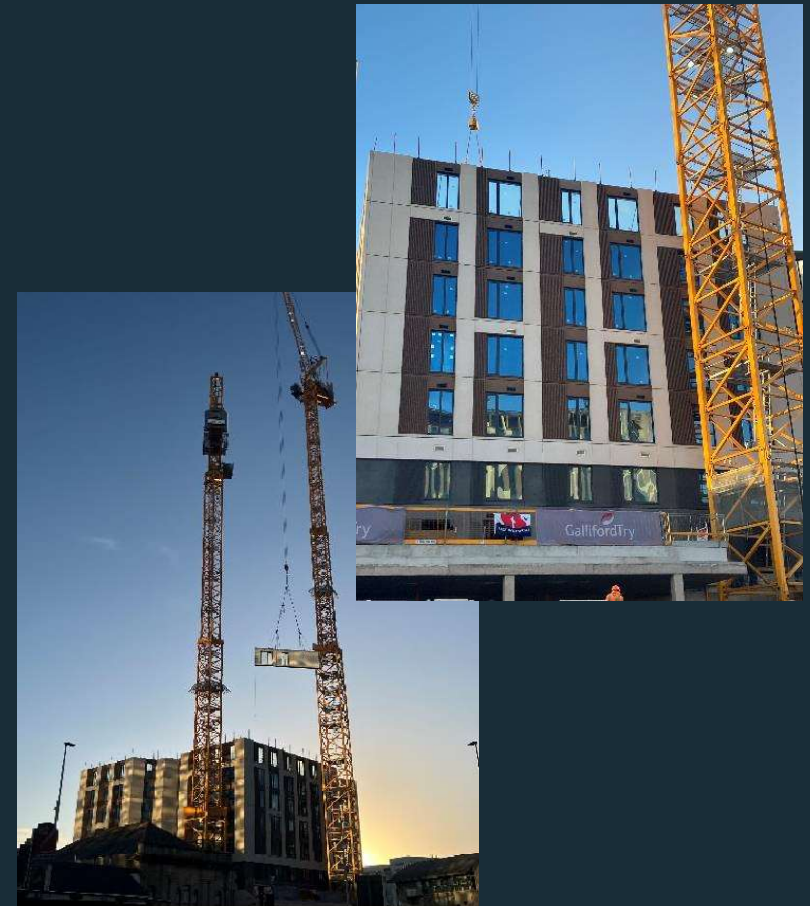
# Where is Offsite Being Used

- **Category 1**
  - Multi Occupancy Accommodation – Hotels, Student, Barracks, Custodial
  - BTR / Social Housing
  - Education
  - Healthcare
  - Rapid Retail
- **Category 2**
  - Category 1 +
    - Transportation & Infrastructure
    - Apartments
    - Housing for Sale
- **Category 3**
  - All market sectors
- **Category 5**
  - All market sectors



# Residential Sector Examples

- **System Adoption**
  - Panels, components and non-structural – almost BAU
  - Volumetric – targeted and limited
- **Key Benefit Case**
  - Reduced on-site labour requirements
  - Reduced disruption
  - Reduced weather dependency
  - Improved social outcomes from accelerated delivery
- **Application Examples**
  - Social Housing
  - Build to Rent
  - Single Unit Family Housing (Cat 2 and lower)
  - Temporary / Homeless Accommodation
  - Multi Occupancy (MoD, HO, MoJ, student, apartments)



# Healthcare Sector Examples

## System Adoption

- All systems widely used

## Key Benefit Case

- High value / volume ratios
- Speed of on-site Works
- Minimised disruption of occupied estate
- Improved social outcomes from accelerated delivery

## Application Examples

- Ward Blocks
- Operating Theatres
- Aseptic Suites
- Diagnostic Facilities – CT / MRI / PET
- Catheter Labs
- Specialist Clinics – Breast Screening
- Endoscopy Suites



# Pharma / Life Science Sector Examples

## ▪ System Adoption

- Category 2,3 & 5 Systems – Extensive
- Volumetric – Discrete Facilities

## ▪ Key Benefit Case

- High value / volume ratios
- Speed of on-site works
- Reduced site labour requirements
- Early revenue generation / market position

## ▪ Application Examples

- Incubator Facilities
- Vaccine Production Facilities
- Clean Rooms
- Drug Manufacturing





# Education Sector Examples

- **System Adoption**

- All systems widely used

- **Key Benefit Case**

- High value / volume ratios
- Speed of on-site works
- Certainty of programme
- Minimised disruption

- **Application Examples**

- Student Accommodation
- Classrooms / Teaching Spaces
- Halls and Sports Facilities
- University Buildings
- Special Needs Facilities



# Transportation and Infrastructure Examples

## System Adoption

- Panels, components – almost BAU
- Volumetric and non-structural – targeted and limited

## Key Benefits Case

- Minimised disruption
- Speed of on-site Works
- Reduced weather dependency

## Application Examples

- Nuclear
- Airports
- Roads
- Rail
- Power
- Data Centres



# Retrofit and Decarbonisation

- **System Adoption**
  - Category 5 Non-Structural
- **Key Benefits Case**
  - Speed of on-site Works
  - Minimised lost revenue / occupant disturbance
  - Quality
  - Minimised disruption
- **Applicable Technologies**
  - Envelope upgrades
  - M&E upgrades and refits
- **Building Examples**
  - Offices
  - Retail Facilities
  - Apartments
  - University Buildings



# ATKINSRÉALIS MMC ACTIVITIES

# What Stops Clients Adopting MMC?

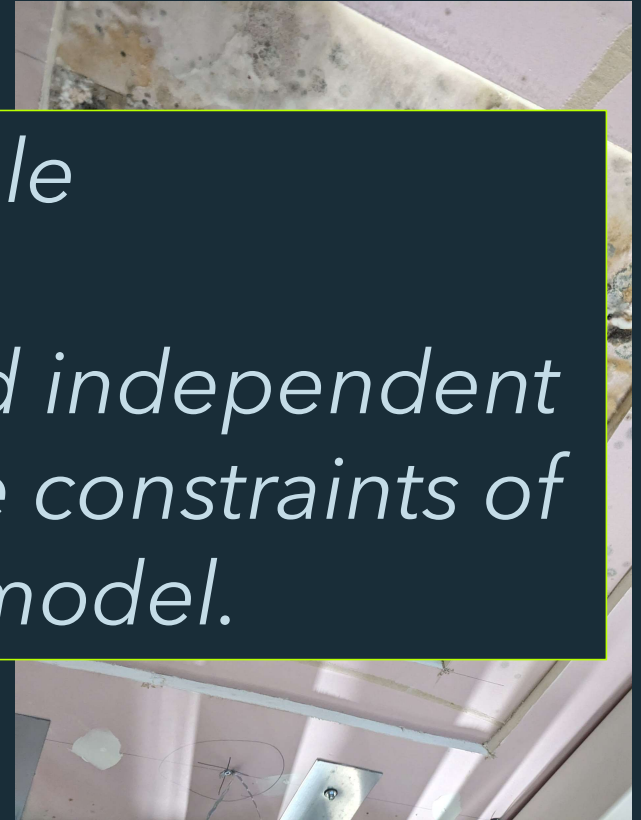
- Lack of exposure to good practice resulting in lower levels of knowledge and expertise

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## *MMC Advisor Role*

*Provides client assurance and independent appropriate advice within the constraints of the current delivery model.*

- Preconceptions about MMC



# How AtkinsRéalis help with MMC

- **Strategic Engagement**
  - MMC Strategy Setting, Review and Monitoring – Government / Private Enterprise
  - MMC Strategic Design / Manufacturing Consultancy
- **MMC Project Support, Construction Stages 0 to 7**
  - Early-stage input – assessments and project strategy setting
  - Design Advice
  - Review of Contractors Proposals
  - Commercial / CSA / Terms Advice
  - Programming Advice
  - Factory / WIP Inspections
  - Offsite Contractor Management / Procurement Guidance
- **Other**
  - Training / CPDs / External Positioning Opportunities / Education Support



# MMC Strategic Assessment Process

As part of our MMC Advisory Services we can undertake a Strategic MMC Assessment of a client portfolio. This will identify the opportunities for the use of MMC across the client assets / work scope and where and what benefits will accrue.

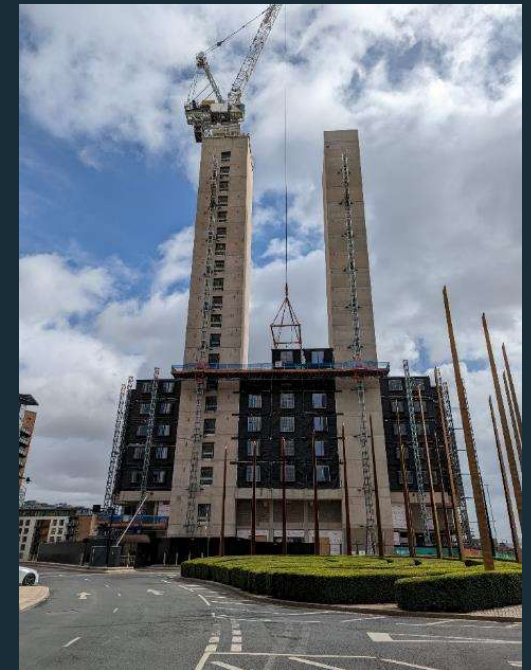
- **Stage 1 – Benchmark MMC Opportunity**
  - Work / Asset and Value assessments
  - Assess MMC Impact opportunities in each Work / Asset type
  - Report and suggested next steps assessment.
- **Stage 2 – Estate MMC Options Analysis**
  - Sample Stakeholder Workshops per Opportunity Type
  - MMC Options Analysis Scoring and Report
- **Stage 3 – Guidance / MMC Strategy**
  - Design Guides
  - MMC Strategy
  - Sample specifications, KPI's and performance measures
  - Supply chain assessment and development



# MMC Options Analysis Process

Our MMC Options Analysis process provides clients and their advisors with an auditable method of assessing the suitability of the various types of MMC and common MMC materials for a project, or programme of work, and what solutions will deliver best value. The process is as follows:

- **Policy / Project Drivers Workshop with Stakeholders**
  - Record all the project and policy specific factors that will influence MMC benefit delivery
- **Analysis of Available MMC Options**
  - Review Drivers and Score against Suitability Criteria to identify -
    - Primary category options
    - Materials and typologies options
    - Most Applicable MMC Strategy
- **Review of Impacts of Options**
  - To include impact on Cost / Programme / Risk / Specification / Sustainability
- **Design Implications**
  - Ensuring the maintenance of an open protocol to provide flexibility if drivers change
- **MMC Options Report**
  - Summary of Scoring, Recommendations, Best Fit Solutions, Comply or Explain Statement





# EDAROTH

A Different Delivery Model



# An additive model of delivery

Our end-to-end delivery solution is under-pinned by our Atkins-designed, off-site manufactured housing product range and our established delivery supply chain



Full development service, alleviating pressure on client resources and allowing them to **retain land and value uplift**



Our accredited homes are manufactured offsite, creating an **additive supply of housing** and new jobs across the UK



Optimised for the entire **asset life cycle** and designed to stay ahead of **future regulations** and standards



Entire **product range is carbon net zero**, supporting UK emissions targets whilst addressing fuel poverty

# The EDAROTH House Product

An offsite-manufactured, hybrid solution comprising closed panels and small-scale modules



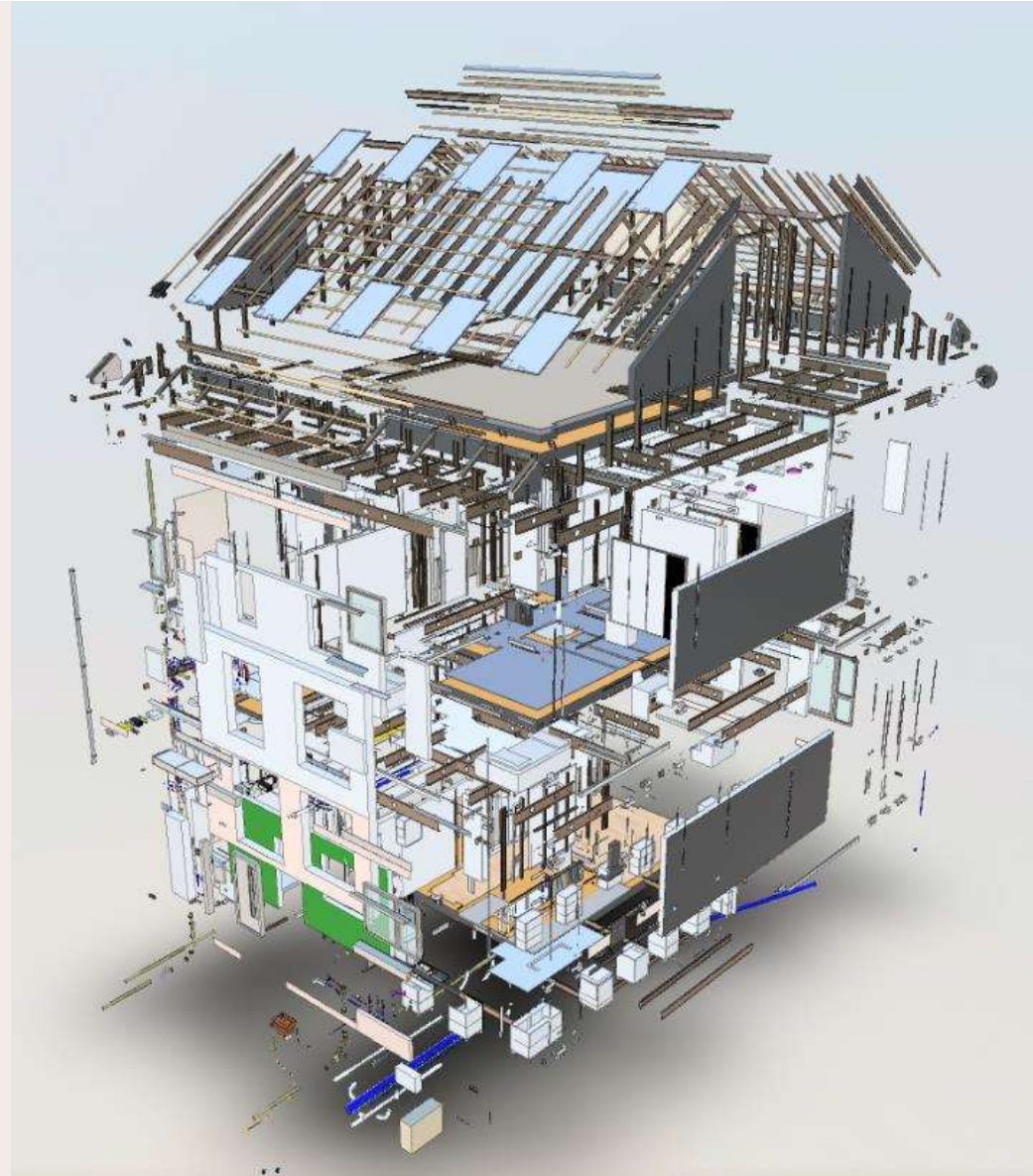
2 days



2 weeks

## Digital information must be structured to streamline every stage of the asset lifecycle and should be used as a single source of product information

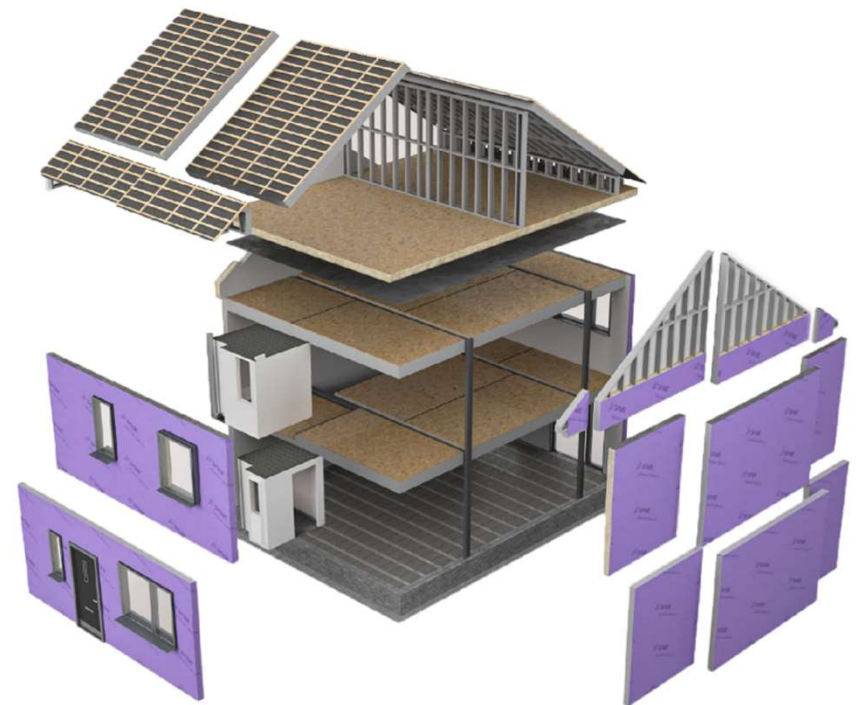
- > No longer just a tool for drawing production
- > Align with costing, procurement, manufacturing...
- > Level of detail greater than traditional construction
- > Data structured to maximise repetition and reuse
- > Design and build does not work in this model



# Common Data Environment

Our product harnesses our extensive **digital capability** and embeds principles of **social value** and **sustainability**

- > Higher **predictability** in terms of time, cost and quality throughout delivery lifecycle
- > Streamlined **delivery process** driven by detailed 3D models and product data
- > Comprehensive understanding of capital cost, **whole life cost** and **life cycle carbon**
- > **Digital twin** approach facilitates better asset management strategies for our clients



# Benefits of EDAROTH housing

Faster:

 **50%**

50% faster to build than traditional construction.

Tougher:

 **BOPAS**

Industry-recognised quality and durability accreditation from Buildoffsite Property Assurance Scheme (BOPAS).

More sustainable:

 **NET ZERO**

Achieves net zero carbon in use.

Efficient:

 **OPTIMISED LAYOUTS**

Layouts optimised for off-site manufacture whilst exceeding national space standards.

Safer:

 **FIRE SAFETY**

Walls manufactured entirely from non-combustible materials.

Lower bills:

 **50%**

50% reduction in central heating costs.

More secure:

 **SECURED BY DESIGN**

Secured by Design accredited with Product Assessment Specification (PAS) 24 compliant doors and windows.

More assurance:

 **NHBC**

The National House Building Council (NHBC) accepts certification. NHBC Buildmark.

Modern methods of construction:

 **63%**

Pre-Manufactured Value.

More inclusive:

 **LIFETIME HOMES**

Designed for adaptation using Lifetime Homes principles.

Higher quality:

 **HQM**

Designed to score very highly under the Homes Quality Mark scheme.



Watch our build process

# Current Developments

## > Raven Housing Trust

- > 26 Homes in Tranche 1
- > 69 Homes in Tranche 2
- > Further tranches 100+ Homes

## > Bristol Small Sites Strategy

- > Aggregation of small sites across Bristol to create sufficient quantities for development benefits.



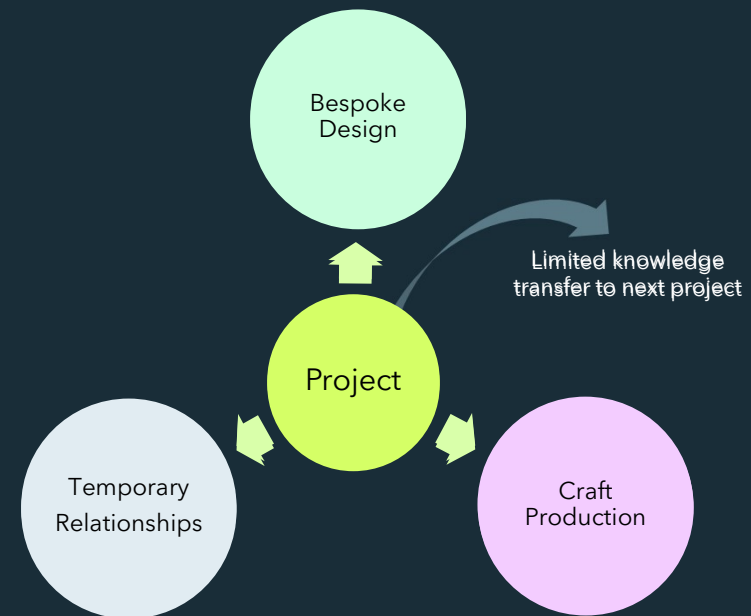
# INDUSTRIALISED CONSTRUCTION:

WHAT, WHY AND HOW?



# Traditional Project Delivery

- The traditional 'engineer-to-order' construction delivery model encourages constant reinvention in *what* we deliver and *how* we deliver it.
- This erodes efficiency, decreases predictability and prevents continuous improvement in project and asset performance.
- This model also underpins our continued reliance on craft-skills and site-based processes.

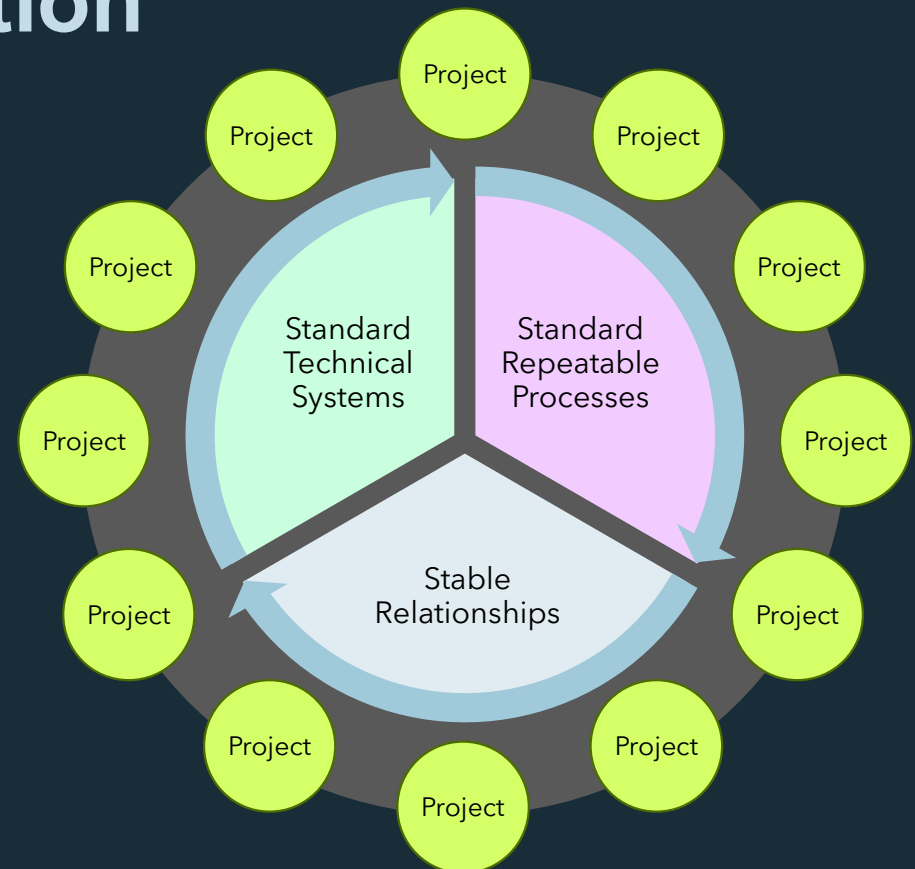


In the traditional model, the project sits at the centre.

# Industrialised Construction

## Overview

- Increasing skills shortages, declining productivity and the need to drive better social and environmental outcomes mean we need to rethink our traditional delivery model.
- Industrialised Construction approaches are centred around the use of standard technical systems that can be efficiently produced and repeatedly deployed across multiple projects using standard repeatable processes and stable relationships.



In the industrialised model, standardisation repeatability and continuous improvement are central

# Other MMC Activities

With our global reach AtkinsRéalis MMC Team is currently working with both major clients and UK and Overseas Governments to drive policy change and increase uptake of MMC

- **Infrastructure Procurement Authority**
  - helping government clients to create the right conditions for industrialised construction
- **Scottish Futures Trust / Construction Accord**
  - Options 4 Offsite Analysis
- **Construction Leadership Council**
  - Industrialised Construction Workstream
- **UK Government**
  - Ministry of Justice MMC Development
  - DfE
  - DCMS
- **International Projects**
  - NEOM THE LINE
  - SQI
  - AI Ula



# OFFSITE – STILL PART OF THE SOLUTION



**I tried Offsite  
and it didn't  
work!**

- › **Don't blame the brick –** Offsite solutions offer significant benefits when used correctly on appropriate projects and with good designers, suppliers and contractors.
- › **However, it is as important to know when NOT to use it as when to use it.**



**Early  
consideration  
is key and does  
not restrict the  
options**

# thank you

If you want to know more or see how we might be able to help with Offsite, MMC and Industrialised Construction please contact me:

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 AtkinsRéalis

# BOS members' Christmas meeting

**26 November 2024**

@buildoffsite

#CollaboratingForImpact

**Hosted by**

**ARUP**

[WWW.BUILDOFFSITE.COM](http://WWW.BUILDOFFSITE.COM)

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BUILD OFFSITE  
COLLABORATING FOR IMPACT