

Build offsite - Leadership



Background and vision



Kier's evolution of Modern Methods of Construction

1920s

Bath Bridge

In 1928, Danish engineers Olaf Kier and Jørgen Lotz formed J Lotz and Kier. Their first project was a bridge in Bath, which is still in service today.

London Zoo Penguin Pool

One of the first buildings to demonstrate the expressive and structural potential of reinforced concrete.



Manufacturing Facilities

A variety of purpose-made equipment, switch panels and plant was designed and manufactured at our Harlow factory.



Coppormill Works

For the Coppormill Works contract in North East London more than 15,000ft steel linings were prefabricated here.



BP House

New offices in Harlow built on a 40-acre site with extensive use of precast concrete columns.



Dinorwig Pumped Storage

Europe's largest pumped storage scheme circulates 6.6 million m³ of water over 5 hours between interconnected high and low-level reservoirs to smooth fluctuations in demand.



Maentwrog Dam

First new dam built in Britain for a generation, 40m high and 120m long.



Colchester Hospital

The use of 148 steel-framed modules reduced the overall programme by six months.



Wedge House

600 brick-faced precast facade panels, weighing 4,200 tonnes, were installed in just 17 weeks by a handful of operatives.



Reading Gateway

Steel frame panels, pre-assembled with interior weatherproof board, were used for this new 120-bed Premier Inn.



1930s



Trans-Iranian Railway

Throughout the 1930s Kier expanded overseas. This contract formed our first joint venture with Edmund Nuttall (now BAM Group).

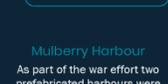
Highpoint I and II

One of the first examples of 'box-frame' construction in Britain and widely recognised as one of the finest residential buildings of its time.



Holly Frindlo House

Experimental use of 'frame and fill' with cantilevered façade.



Mulberry Harbour

As part of the war effort two prefabricated harbours were taken in sections across the Channel with the invading army and assembled off Omaha Beach.



Graham Water

The biggest man-made stretch of water in England - 14,000 million gallons - all held in place by an 80ft high, 1-mile long dam.



Medway Bridge

A new key piece of the M2 motorway, including a footpath and refurbishment to the original bridge.



Ironbridge Cooling Towers

The iconic pink was achieved by adding pre-packed bags of powder into the concrete mix. 3ft high rings of concrete were poured per day.



Tower Hill Station

A new three-track layout underground station at Tower Hill.



Bamford Water Treatment

Substantial extension to the existing water treatment works for Derwent Valley Water Board.



1970s

Metropole Hotel Birmingham

Introduced quick, economical methods of construction including bathroom pods, pre-assembled in pairs as complete modules.



The repetitive nature of operations enabled the training of local labour that had no previous experience of tunnelling operations, and little experience of civil engineering work.

Warangoi Hydroelectric

Won as a result of Kier's alternative design for a shield-driven, boltless, segmentally lined tunnel.



Itchen Bridge

For this project we designed an innovative method of launching the central precast concrete beams.



1990s

Lakeside Shopping Centre

One of the largest retail destinations in a single location in Europe.



Sizewell Nuclear Power Station

4,000-tonne cooling water tunnel elements were precast at Teesside, launched and towed to Sizewell, then lowered into a pre-dredged trench.



Channel Tunnel Rail Link

2,000-tonne steel bridge (including acoustic cladding) was assembled offshore and launched over King's Cross main railway lines during a 55-hour possession.



South Hook LNG Terminal

The biggest marine project in Europe, 440 concrete units, up to 50 tonnes, were cast up-river and shipped to site.



2000s

Wellcome Wing

A technically challenging new extension to the Science Museum in London, suspending three tray-like exhibition floors using steel plates built into concrete columns.



2010s

Gatwick Airport North Terminal

Enabled Gatwick to move into the position of the world's second largest airport.



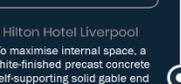
One Snowhill

Features a dramatic inclined utilised glazing system, overhanging the viaduct by four metres.



HMP High Down

A precast panelised system was used for the wall panels with glazing and security grilles cast in. The quality of finish meant it could be painted without plastering.



Hilton Hotel Liverpool

To maximise internal space, a white-finished precast concrete self-supporting solid gable end frame was devised.



St John Fishar Secondary School

Kier's first ever involvement with CLT, and the largest CLT panel building in the country at the time of construction.



Hinkley Point C

10,000 linear meters of precast concrete culverts used to divert the Holbrook stream, allowing for easier logistics.



Confidential HQ

Utilises an innovative air conditioning system, using the lake to assist the building's cooling system by regulating the temperature.



Project Capella

80% of the frame and facade was built offsite as high quality precast modules.



Southend Pier Cultural Centre

A 170 tonne steel frame prefabricated building, barged to the end of the pier and lifted into position.



HMP Oakwood

1,600 cells featuring precast concrete panels, risers and roof cassettes, totalling over 15,000 individual prefabricated elements.



DTTCP Lyneham

90% pre-fitted modular single living accommodation for trainees. The solution comprised self-supporting lightweight steel frame modules.



Hampton by Hilton

201-bed hotel utilising shipping containers as modular bedrooms, produced in a factory in China before being shipped to Bristol.



Crossrail

Precast segments were manufactured at our Old Oak Common facility and loaded onto the mobile underground factory. The segments formed rings to line the tunnels.



Sainsbury Wellcome Centre

Vertical risers, plant rooms and horizontal service runs were prefabricated offsite, as well as a bespoke utilised glass facade.



Morsley Gateway

Extensive use of precast, high-strength concrete, permitting rapid construction cycles and resulting in low maintenance and durable structures.



Berkley Groon

The first UK application of hardwood LVL technology, reducing unit sections for a more efficient and cost-effective prefabricated timber structure.



M6 Smart Motorways (J16-19)

Use of standard, repeatable processes and solutions to enable a rapid and efficient delivery.



Trago Mills

The construction of a retail and leisure store on the outskirts of Merthyr Tydfil, featuring modular cladding kits for 17 conic towers, factory-fabricated offsite in fully finished condition.



Spa Groom Estate

A radical plan for post-war social regeneration, designed by Berthold Lubetkin and Tecton architects.



1940s

1950s

Owen Falls Dam

A major hydro-electric scheme in Uganda across the White Nile, opened by the Queen in 1954.

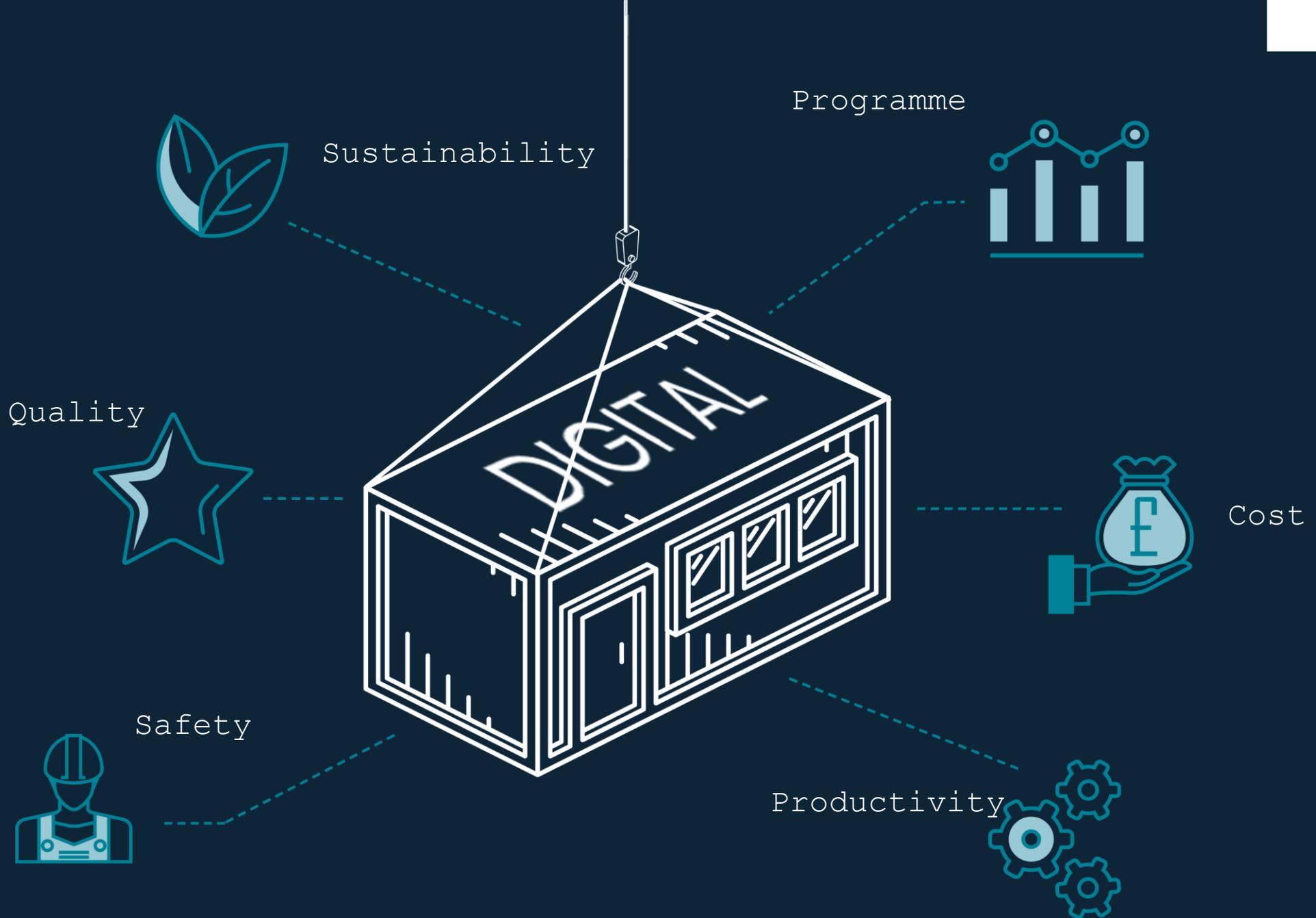


1960s

Hackney Power Station

Turbine House, Precipitator House, Cooling Tower, Boiler House, a 200ft high chimney, and precast bridge with segments assembled at certain hours to prevent obstruction to canal traffic.





The Challenge



Skills and
knowledge gaps

Lack of
industry self-
awareness

Pipeline
of work



Habit and embedded
behaviours

Supply chain
maturity and
capacity

Gaps in
performance data

Our Response



Digital interaction



Offsite portal

The screenshot shows the MyKIER website interface. At the top left is the MyKIER logo. To its right is a search bar with the text "Search this site" and a dropdown arrow. Below the search bar is a navigation menu with the following items: Home, Employee, Corporate Functions, Business Streams (highlighted with a red arrow), Business Support, Company, and Discover. Below the navigation menu is a breadcrumb trail: Home > Business Streams > Kier Regional Building > Offsite and MMC > Resources.

On the left side, there is a vertical sidebar menu with the following items: Strategy, Initiatives, Communicating the message, Case studies, Building techniques, Awards, Key contacts, Events calendar, Resources (highlighted in blue), News and updates, BoxClever®, Procurement, and Recent >.

The main content area is titled "Resources" and contains several categories of content:

- Marketing materials:** A thumbnail showing a document titled "Offsite and Modular Building: A Guide to the Business Model".
- Industry partner resources:** A thumbnail showing a laptop displaying a website.
- Useful guides:** A thumbnail showing a construction site with a steel frame.
- Tender responses:** A thumbnail showing a document titled "OFFSHORE OPPORTUNITIES".
- Publications:** A thumbnail showing a document titled "HOUSE OF LORDS: Modern and Enduring: Smart Construction: The Report of Session 2012-13" with a sub-heading "Off-site manufacture for construction: Building for change".
- Photo Gallery:** A thumbnail showing a modern building under construction.
- Graphics Library:** A thumbnail showing a graphic with gears and people icons.

Below the Resources section is a "Videos" section. It features a video player for "Kier Offsite Solutions" with 5 videos and 2 followers, and a "Microsoft Stream" logo. Below the video player are four video thumbnails with their titles and durations:

- Hampton by Hilton - Bristol (04:06)
- Kier Offsite Video 2018 (01:13)
- HMP Oakwood - Offsite Co... (10:59)
- Lyneham SLA Timelapse (02:39)



SUPPLY CHAIN SUSTAINABILITY
SCHOOL



THE **B1M**



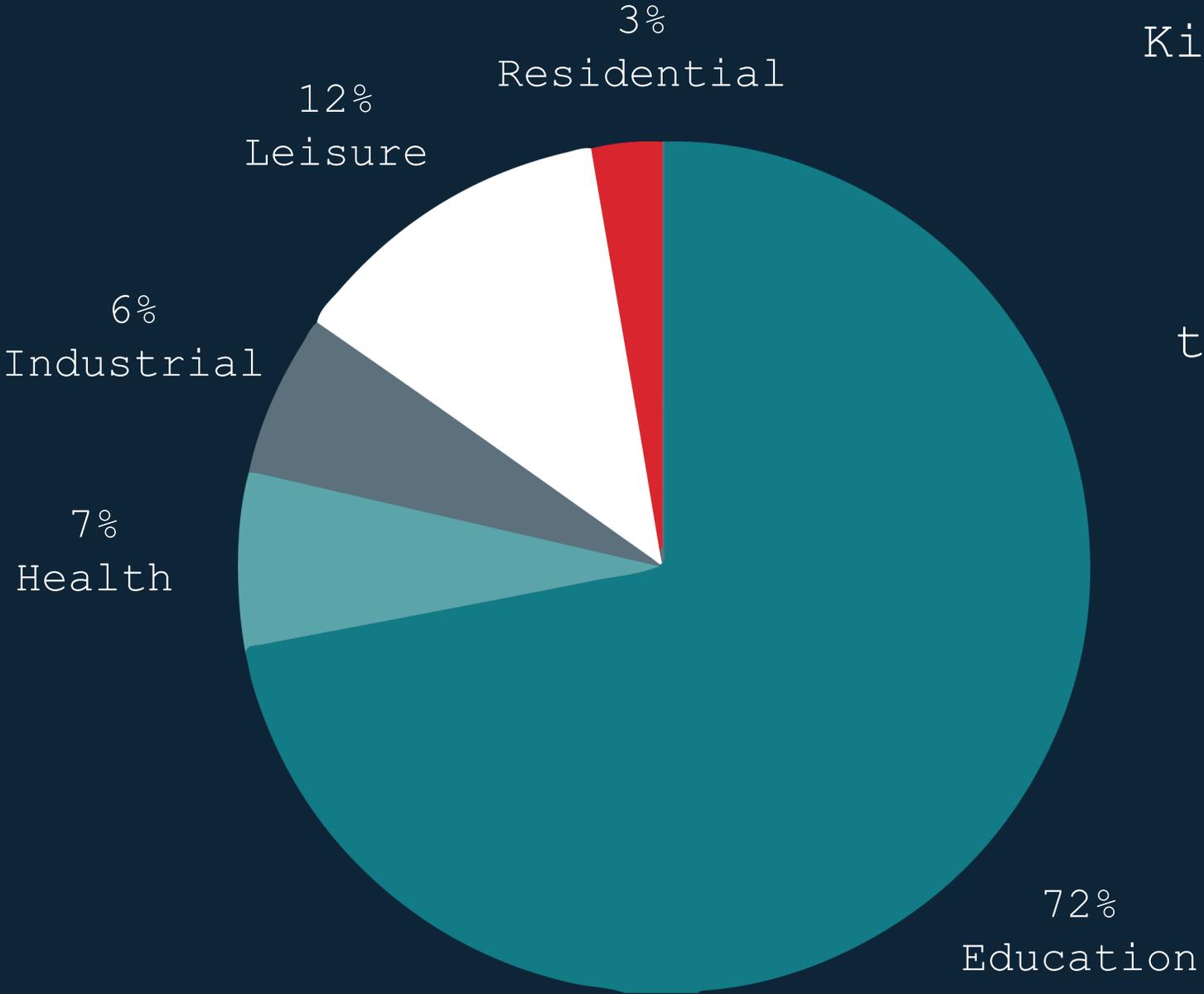
Data



Kier has delivered over

370m

worth of engineered
timber projects since
2008





Collaboratio
n

Repeatable Rooms

PROCURE

22

Smart Motorways



highways
england

HMP Wellingborough



Ministry
of Justice

RAF Lyneham



Ministry
of Defence

Blossom Street



British
Land

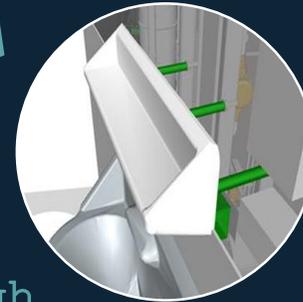
Digital integration



Model



Detail



Data

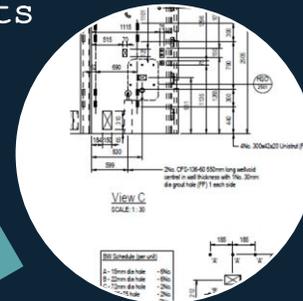


HMP Wellingborough

13500 precast components

60,000 + sub components

Manufacturing Design



Assembly



Manufacture

Lessons learned



Despite the defined benefits, adoption of OSM is varied at best.

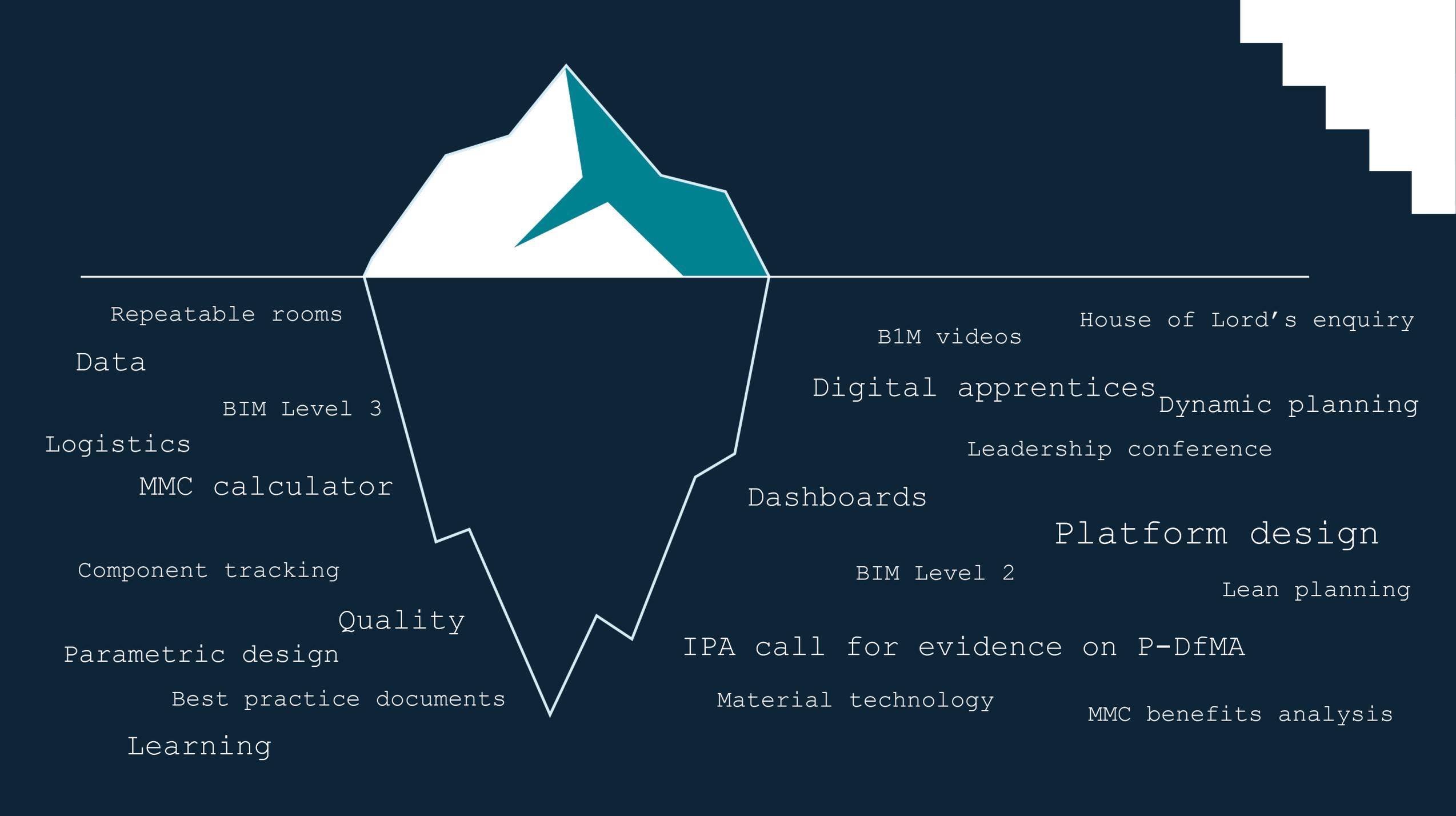
So why isn't offsite universally adopted?



If there was a logical answer we would have found it – we should therefore review the irrational.

“If you are planning for a year sow rice.
If you are planning for a decade plant trees.
If you are planning for a lifetime educate people.”

Chinese Proverb



In Summary





Modern Methods of Construction

Questions

