

Residential Construction & Modern Methods of Construction (MMC)



What's driving the change?



Contents

- 3 Executive summary
- 4 Background
- 5 What are the house builders doing?
- 6 Who are the competition and disruptors?
- 7 What is government doing?
- 8 Why IFS can help!
- 8 References

Executive summary

House builders are increasingly focusing their time and investments into modular, or as it has been historically known as, ‘prefabricated or premanufactured construction’, and this is part of the definition for the term ‘modern methods of construction (MMC)’. With the increased adoption of these techniques, it is creating a very different future for the residential construction market.

It’s important to be aware that there are different levels of MMC that could be used in residential construction such as complete units built in an off-site factory setting, to pods (kitchens/bathrooms) that are delivered complete and installed on-site, or it could be panels or components (walls, floors, ceilings) that are installed alongside traditional construction.

As an example of this in practice the UK government has defined MMC into the following categories.¹

The drivers behind this change are a combination of sustainability targets, build volume targets set by the market and government, supply chain issues with price and availability of products and services being the biggest challenge, then add into the mix in the lack of skilled labor/ageing workforce and the poor quality of traditional construction which creates a powerful reason for change. Research has shown that residential construction practices are starting to change in order to address these drivers with some companies integrating manufacturing into their business models, whilst others are choosing to partner with the manufacturing supply chain without directly owning plant and facilities. Then there are other housebuilders that continue with the ‘we’ve always done it this way..’. If you read this paper then you’ll see the time for real change is now.

The UK government white paper – Fixing our Broken Housing Market² Stated, “...potential to a 30% increase in the speed of the construction of new homes, with the potential of a 25% reduction in costs, as well potential for advances in improving quality and energy efficiency.”

Category definition



1

Pre-manufacturing
(3D primary structural systems)



2

Pre-manufacturing
(2D primary structural systems)



3

Pre-manufacturing components (non-systemised primary structure)



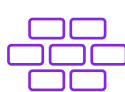
4

Additive manufacturing
(structural and non-structural)



5

Pre-manufacturing
(non-structural assemblies & sub-assemblies)



6

Traditional building product led site labour reduction/productivity improvements



7

Site process led site labour reduction/productivity/assurance improvements

Background

The term ‘Modern Methods of Construction’ is really a misnomer in that it’s not modern at all!

Timber framing has been used for over 10,000 years dating back to the Mesolithic period and archaeologists have found examples across the developed world.

The Romans used to prefabricate parts of their forts, they also used moulds to create blocks and they obviously did it well as many of their structures can be seen across large parts of Europe and beyond.

Through the industrial revolution many buildings saw the use of different types of fabrication with steel being a prime example. Across the world there are steel framed structures that manufactured off-site and assembled on-site as required.

Probably the most recognisable use of prefabrication came after the 2nd World War, with a solution devised by the UK government to temporarily house people made homeless during war. Between 1945-1951 over 1.5 million prefabricated homes were delivered. Many of these are testament to build quality that could be achieved as they are still being lived in today. But there is also a cultural stigma attached to ‘prefabs’ as they were never seen by most people as ‘proper’ houses, and that still holds true today.

Now most house builders still struggle to convey the relative value of a modular house compared to traditional brick and block. Which is ironic as who wouldn’t love to live in an oak framed bespoke building? Okay, not quite the same product but the principle is there.

Coming right up-to-date governments across the world are looking at similar challenges for their populations housing needs, and they are in the main global issues, not regional ones.

They include:

- Sustainability targets
- Increasing build volume and speed
- Reducing waste
- Increasing quality
- Management of supply chain issues
- Lack of skilled labour and an ageing workforce.

The UK government stated in its report from March 2021: Monitoring and measuring research study: impact of MMC on the delivery of homes, states:

“Sector productivity is at the heart of the challenges facing the UK construction industry in the 21st century. UK industrial productivity has risen by some 25% and the automotive sector by around 45% over the last 20 years whilst construction productivity has virtually flat-lined.

The housing sector shares the broader construction industry challenges at a time when UK housebuilding requires a step-change in output.”

What are the house builders doing?

A survey by one of the largest standards and warranty providers in the UK recorded back in 2017 stated that 69% of residential construction companies had delivered products to market using MMC and 92% of planned to extend its use.

The same report also talked about the different investment directions that houses-builders were taking in terms of directly investing in their own companies, research and development or taking control of processes or production. Whilst others were looking to partner with specialists to deliver all, or part of the products.

Note: of those surveyed nearly 30% of housebuilders had already invested in their own manufacturing facilities to take control of the overall process.

The HNBC report 'MMC – Who's Doing what?'⁴ details how the uptake in MMC is being adopted by a range of residential construction companies and it also talks to how the differing investment strategies are being directed.



Who are the competition and disruptors?



Legal & General Homes and sister company CALA Homes are working together to implement a mutual and comprehensive sustainability strategy. They are recognisable as one of leading financial services companies but describe themselves as a start-up when it comes to building homes. Their drive to tackle the housing shortage in UK by focussing on building modular homes and partnering with other specialists to do so.⁸

Ilke Homes are another new entrant to the modular housing market and have build a team that will facilitate their factory-built homes. Their team is made up of experts from industries like engineering and aerospace and of course housebuilding, all committed to building the future.

They also use modelling technology such as BIM, we're able to create digital twins of their homes, allowing for different disciplines to work seamlessly together in order to speed up the manufacturing process. In addition, the technology also allows them to generate precise estimations for the materials needed to produce one of our homes, meaning we're able to reduce construction waste by 90 percent.

Boklok are another new entrant to the UK market. They are a collaboration between Skanska and Ikea and originally started building in Sweden, Norway and Finland. Like Ilke and L&G they are combining experts from manufacturing and construction/housebuilding to target the modular market and whilst they may be new to the UK, they completed over 14,000 in Scandinavia.

Sekisui House are the largest housebuilder in Japan and recently moved into the UK for the same reasons as L&G¹⁰. They have own funding from the UK government, see next section. And have partnered with Urban Splash to target the modular housebuilding market in the UK. It's also worth noting the founder of 'We buy any car.com' has taken a 5% stake in the company.

It's safe to say the diversification of the UK residential construction market is firmly under way!

What is government doing?

The UK government has committed £2.3 billion to a Housing Infrastructure Fund back in 2017 and has also defined how MMC can be categorised¹, and has gone on to publish guidance on how we monitor and measure the impact that MMC has on the delivery of homes².

In September 2020, Homes England announced that housing associations must commit to building 25% of accommodation using MMC to secure funding. They stated the MMC is 'central' to governments affordable homes programme⁵.

The expectation from government then is clear, and in the Construction Sector Deal⁶ they state that goals will be met by focussing on 3 strategic areas.

- Digital techniques deployed at all phases of design will deliver better, more certain results during the construction and operation of buildings. Clients, design teams, construction teams and the supply chain working more closely together will improve safety, quality and productivity during construction, optimise performance during the life of the building and better our ability to upgrade and ultimately dismantle and recycle buildings.
- Offsite manufacturing technologies will help to minimise the wastage, inefficiencies and delays that affect onsite construction, and enable production to happen in parallel with site preparation – speeding up construction and reducing disruption.
- Whole life asset performance will shift focus from the costs of construction to the costs of a building across its life cycle, particularly its use of energy. The government will ensure that our modern Industrial Strategy and our significant investments in housing and infrastructure support this change and innovation.

Mark Farmer, the government's MMC champion has recently co-authored a report with Mike De'th from HTA Design called, 'Build Homes, Build Jobs, Build Innovation' which states that 50,000 jobs could be created if government set a target of 75,000 modular homes delivered per year by 2030.⁷

The government has also, via Homes England, made investments to stimulate the delivery of MMC housing in the UK. In 2019 they invested £30 million in Ilke Homes, a Yorkshire based modular housing factory.

Additionally, 'Sekisui House' has also set up in the UK with £22m of its own money and £30m from the government's Home Building Fund, again administered through Homes England.

Government's mmc task force

<https://www.lexology.com/library/detail.aspx?g=e64fcfad-48ac-41ef-aa5f-54729383c461>

Why IFS can help!

IFS Cloud is a project & asset focussed ERP solution therefore designed to support the full project & asset lifecycle. To that end, IFS have customers that operate within different stages of this lifecycle. For example, organisations that design, that construct, that operate and maintain complex assets and facilities, as well as organisations that are responsible for multiple stages of this lifecycle and are able to manage the entire process within IFS. With this in mind IFS Cloud provides solutions for:

- General Contractors
- Speciality & Engineering Contractors
- Residential & Property Developers
- Modular & Prefabricated Manufacturers
- Facilities/Service Management Providers

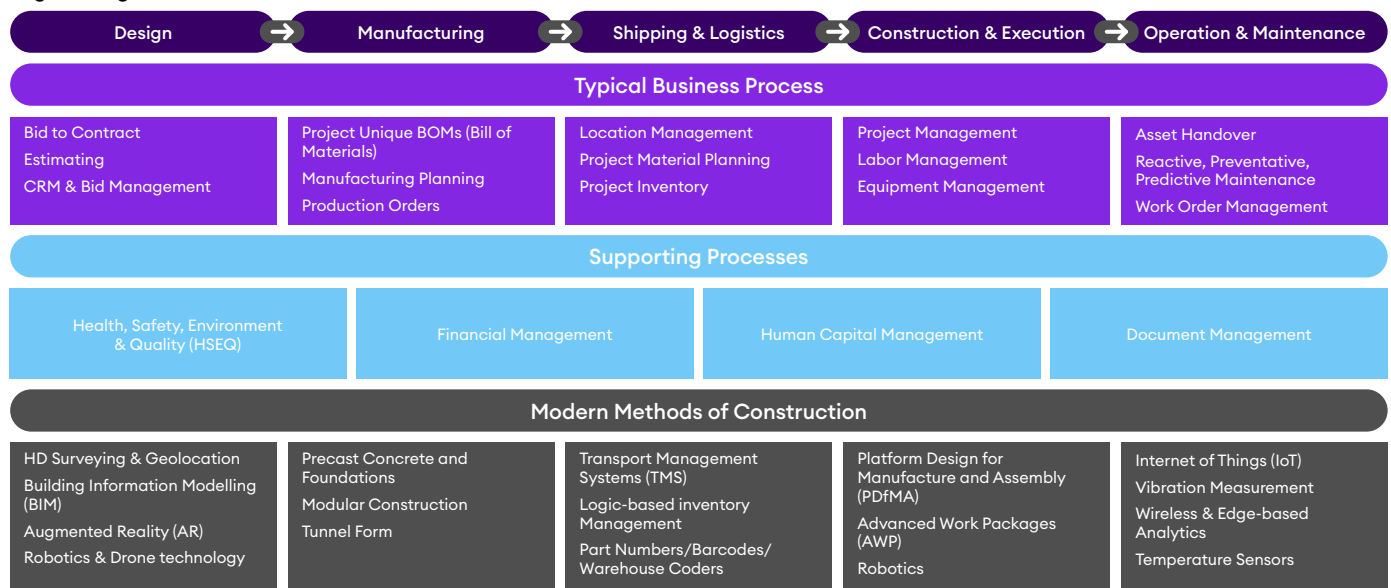
An advantage of IFS Cloud is that it is deployed within one single product, providing seamless data flow between processes and a consistent user experience throughout the application.

Check out how [ifs.com](https://www.ifs.com) can support your transition [here](#).

References

1. <https://www.gov.uk/government/publications/modern-methods-of-construction-working-group-developing-a-definition-framework>
2. <https://www.gov.uk/government/publications/fixing-our-broken-housing-market>
3. <https://www.gov.uk/government/publications/the-impact-of-mmc-use-on-home-building-delivery-phases/monitoring-and-measuring-research-study-impact-of-mmc-on-the-delivery-of-homes>
4. <https://www.nhbcfoundation.org/wp-content/uploads/2018/11/NF82.pdf>
5. <https://www.housingtoday.co.uk/news/a-quarter-of-affordable-homes-must-be-mmc/5107883.article>
6. <https://www.gov.uk/government/publications/construction-sector-deal/construction-sector-deal>
7. <https://www.insidehousing.co.uk/news/news/government-should-set-target-of-75000-modular-homes-per-year-by-2030-major-report-finds-67966>
8. <https://www.legalandgeneral.com/modular-homes/about-us/>
9. <https://www.theconstructionindex.co.uk/news/view/boots-site-to-become-uks-largest-low-rise-modular-housing-development#:text=19%20Jul%2021%20Modular%20housing,home%20scheme%20in%20Beeston%2C%20Nottingham.&text=The%20development%20by%20pharmacy%20chain,modular%20housing%20development%20to%20date>
10. <https://www.urbansplash.co.uk/resources/boost-for-housing-market-as-japans-biggest-housebuilder-sekisui-house-moves-in-to-uk>

Engineering and Construction Value Chain



About IFS

IFS develops and delivers enterprise software for companies around the world who manufacture and distribute goods, build and maintain assets, and manage service-focused operations. Within our single platform, our industry specific products are innately connected to a single data model and use embedded digital innovation so that our customers can be their best when it really matters to their customers—at the Moment of Service™.

The industry expertise of our people and of our growing ecosystem, together with a commitment to deliver value at every single step, has made IFS a recognized leader and the most recommended supplier in our sector. Our team of 4,500 employees every day live our values of agility, trustworthiness and collaboration in how we support our 10,000+ customers.

Learn more about how our enterprise software solutions can help your business today at ifs.com.

#MomentOfService