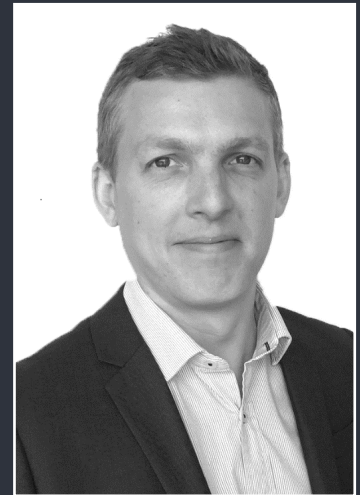


# Beyond 2D drawings: exploring the benefits and barriers to model-based construction in the UK

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Despite significant advances in the adoption of Building Information Modelling (BIM) and 3D design in the construction industry in recent years, 2D drawings largely remain the baseline for the communication of construction design information. Producing and processing significant numbers of 2D drawings imposes an administrative burden on projects and represents a major hurdle in the industry's strive for increased digitalisation. Furthermore, as developing automation, artificial intelligence and augmented reality technologies are embraced by the construction industry, the demand for 3D design is increasing. This research paper first establishes the perceived barriers to Model-Based Construction (MBC) through a series of interviews with experienced industry professionals who have had little exposure to its implementation, and second, it uses two case studies to explore the extent to which MBC is being implemented on early-adopter UK projects, examining the benefits and challenges that were experienced. The perceived barriers from the interviews are compared to the findings of the case studies and to a review of existing literature. The interviews revealed that the perceived barriers fall into five key themes –

commercial and contractual, level of detail, review and approvals, skillset, and industry-wide adoption.

The case study findings revealed that MBC adoption is in its infancy and is so far only being implemented in relation to certain aspects of construction, predominantly the installation of concrete reinforcement, with drawings still being used extensively for other tasks. The reasons for this are explored in the study and criteria are developed to assess the suitability of a construction task to the application of MBC. Most of the perceived barriers from the interviews did materialise in some form on the case study projects but were relatively easily overcome. However, ensuring a suitable level of detail in the model and determining critical dimensional information were residual challenges on both projects. Investment in the development of software tools to improve the practicalities of on-site dimensioning from 3D models is a key recommendation of the study.