



# CONSTRUCTION COLLABORATION TECHNOLOGY

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# INTRODUCTION



## Post Email: a route to productivity gains?

*Collaboration is essential in the construction industry. Bringing together multiple stakeholders, dispersed supply chains and numerous delivery teams in a project environment creates risk. Failing to collaborate effectively increases this risk and puts the efficient delivery of projects in jeopardy.*

Email, whilst still the most common collaboration tool, is starting to show its age. Whilst still certainly serving a purpose in construction, email is facing increasing competition from 'real-time' collaboration software solutions.

Linear email threads, in which numerous collaborators communicate, are extremely difficult to keep track of, often leaving vital information buried. However, the shortcomings of email are being addressed in the form of new construction management software and work stream collaboration technologies. New technologies and software applications are increasingly being used to facilitate the effective sharing of project-related information between geographically dispersed, multi-disciplinary members of a construction project team.

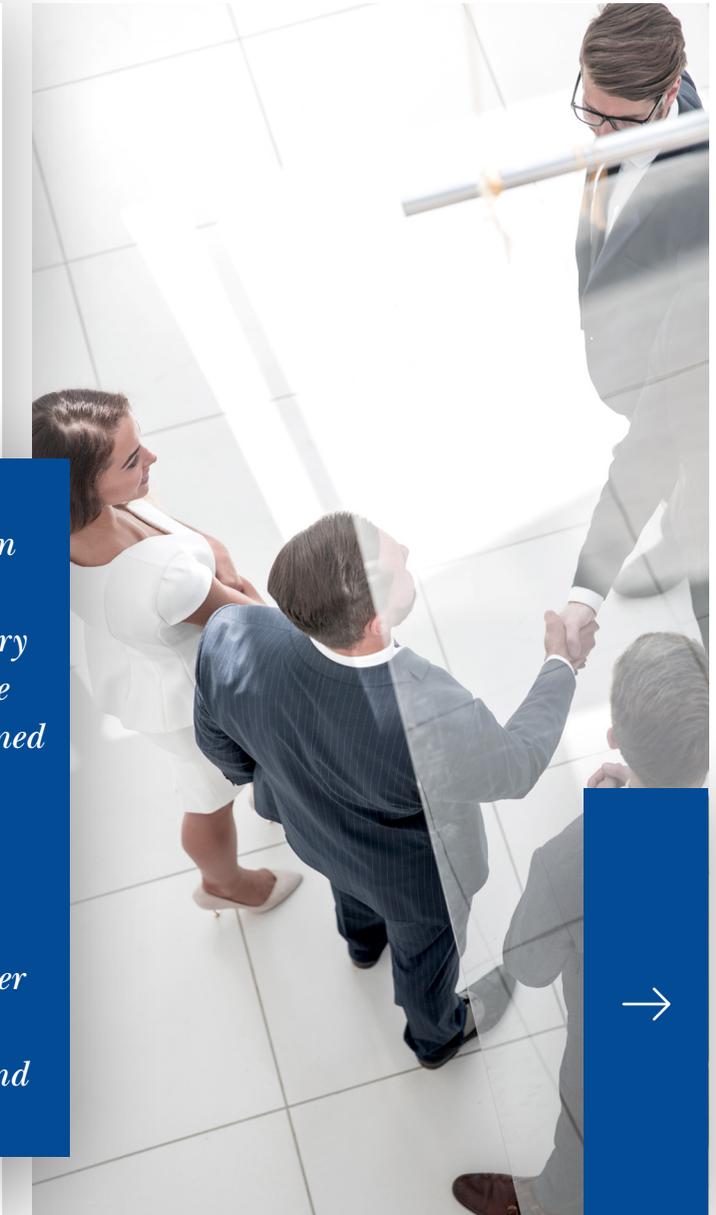
Do these tools offer a route to productivity gains in the construction industry?

As an industry, construction is considered poor at adopting new innovations. Indeed, we have seen numerous initiatives by Government to encourage innovation and collaboration with the desired outputs of waste reduction and delivering better value to customers. A succession of reports have considered how this can be achieved. Sir John Egan's 1998 report 'Rethinking Construction' <sup>1</sup> suggested that changes need to be made to existing structures and working practices. The report proposed integrating the project processes and teams around the product, proposing that designers should work in closer collaboration with other participants in the project so that they can, for example, better understand how components are manufactured and assembled. Sir John Egan submitted that reducing fragmentation in this way would deliver better value to the customer and eliminate waste in all its forms.

Even before Egan's report, Sir Michael Latham noted the importance of adopting an integrated approach to construction, placing a greater focus on teamwork. The report refers to the concept of 'partnering' - a formal arrangement (not limited to a particular project) where parties agree to work together, in a relationship of trust, to achieve

specific primary objectives by maximising the effectiveness of each participant's resources and expertise. The report suggested that such a system would encourage greater levels of openness and teamwork between supplier and client, facilitate continuous improvement and reduce completion time and cost. To do this though requires a high degree of openness and collaboration between parties. <sup>2</sup>

*More recently, Mark Farmer's 2016 report 'The Farmer Review of the UK Construction Labour Model' <sup>3</sup>, described the lack of innovation and collaboration in the industry as being at the root of its change inertia. He said the reality was that many are conditioned to operating in an adversarial way and do not see the case to move towards a more collaborative and integrated approach for fear that a lack of commercial tension will impact their own financial outcomes. Farmer suggested that this approach prevents the industry sharing risk more appropriately and is preventing it from scaling up.*



<sup>1</sup> [http://constructingexcellence.org.uk/wp-content/uploads/2014/10/rethinking\\_construction\\_report.pdf](http://constructingexcellence.org.uk/wp-content/uploads/2014/10/rethinking_construction_report.pdf)

<sup>2</sup> <http://constructingexcellence.org.uk/wp-content/uploads/2014/10/Constructing-the-team-The-Latham-Report.pdf>

<sup>3</sup> <https://www.gov.uk/government/publications/construction-labour-market-in-the-uk-farmer-review>

## COLLABORATION: FROM BUZZWORD TO BARE NECESSITY



So evidently, greater collaboration has been encouraged by industry experts for decades. There is evidence that contractors are thinking more about their approach to collaboration. For example, Laing O'Rourke has begun working with their external design houses collaboratively, rather than contractually, by using cross-functional teams. Their new method of collaborative design development is founded on multi-dimensional digital engineering data models. Using these multi-dimensional data models has vastly enhanced the potential and efficiency of the Design for Manufacture and Assembly (DfMA) process, as well as off-site manufacturing and assembly.

Mace also believes that in order to boost output and speed up delivery, real collaboration is needed. Mace noted in a recent report <sup>4</sup> that the construction industry



has developed an unequal working relationship and status between those who design and manage the project and the contractor and supply chain who then has to deliver the work. Accordingly, Mace advocates an open partnership model that brings contractors in early to advise the client and designers on what is technically possible and efficient. They suggest that one way to encourage collaboration is to provide incentives for benefit sharing. For example, clients could allocate some of the project budget for a pooled bonus – paid out if the project comes in on time and on budget. This has the effect of motivating teams to work collaboratively in order to achieve mutual objectives.

Whilst contractors may be driven by the profit motive than can result from better collaboration, there are numerous peripheral benefits, such as reduced risk



for all parties from being more aligned and a better understanding of the design and construction process from enhanced knowledge sharing. As the industry has seen with the adoption and growing use of Building Information Management (BIM) software, as more data becomes available that quantifiably demonstrates the benefits of greater collaboration, more will adopt a collaborative approach.

*There is a consensus in the industry that we need to improve collaboration if we are going to increase productivity and profit, and ensure we have a sustainable business model going forwards. As highlighted above, there has been progress in this direction.*

<sup>4</sup> <https://www.macegroup.com/perspectives/161222-the-uks-productivity-problem-and-how-to-solve-it>

## THE CURRENT PROJECT ENVIRONMENT

One area where there are considerable gains to be made is how we communicate with each other in a project environment. But before looking at potential improvements let's consider how we currently communicate on a large, complex multi-faceted project.

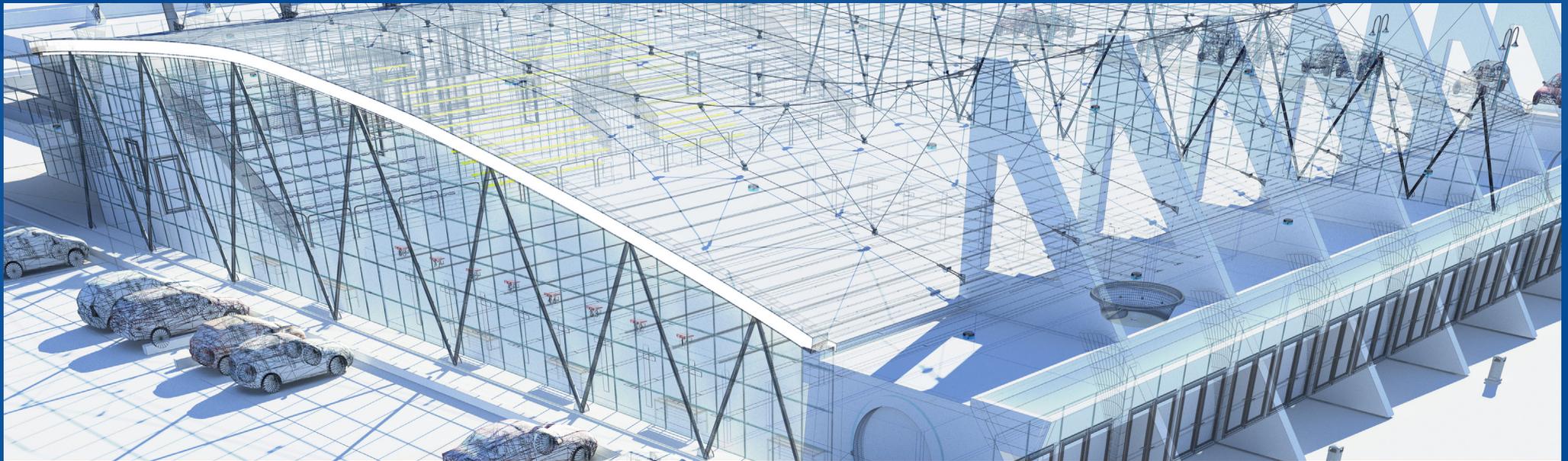
Most complex projects will be designed in REVIT, with BIM being utilised as a virtual design management tool. Whilst rates of take up are not 100% most large project environments utilise BIM – at least during the design stage. Similarly most projects will utilise an Electronic Document

Management System (EDMS) such as Procore and Asite's Adoddle platform. This enables all design information to be shared and commented upon. Most contract administration functions can also utilise this software too.

Platforms such as Procore and Adoddle continue to evolve and many will now do far more than support document management and contract administration functions. They can be used to manage workflows and compliance with global standards. Many offer BIM co-ordination, change visualisation, quality and issue management, as well as safety programme

checklists. Some also allow a degree of direct messaging. These however are not readily taken up. At a project level most electronic communication remains via email. This has not changed much in 20 years!

Email is a poor platform for monitoring project progress. Inefficient and non-targeted, it leads to people managing their inbox rather than project tasks. Below are some alternative tools other sectors have adopted to improve collaboration.



## GT THE MOST COMMON COLLABORATION TOOLS OTHER INDUSTRIES ARE USING

Asana, Slack and Trello are all well-known collaboration platforms being used across a range of industries and sectors. Whilst each has a slightly different focus they all enable effective collaboration.

For example, Slack allows you to organise conversations into different channels or, in the case of construction, projects. It also supports video-calling and file-sharing.

Asana is a great tool for tracking workflow. The programme lets you create to-do lists for ongoing projects, set reminders for upcoming deadlines and send requests to colleagues. Comments can also be assigned into relevant posts within the app. Projects can be displayed in multiple formats (eg board, list etc) and is ideal for tracking project progress and providing updates on how various tasks are developing. Asana works particularly well for larger projects that generally have more complicated relationships between tasks.

Trello is also an app for organising projects and tasks. It's a digital Kanban board (a workflow visualisation tool that communicates status, progress and issues) but also provides project

management features. It allows users to create and assign tasks, categorising them into lists so that they are easier to manage. The task management system lets you track the flow of work as it moves from left to right.

The collaboration market has become even more competitive with the likes of Facebook and Google launching their own, internally developed, tools. Facebook has entered the collaboration market with a new platform called 'Facebook Workplace'. It features core business requirements like calendar, email, instant messaging and a number of other tools used on a daily basis by organisations. It also brings Facebook's news feed, commenting system and more to liven up collaboration at work. Facebook has been using a version of Workplace internally since 2011 and, along with Facebook Messenger, it has helped reduce their reliance on email and other Software as a Service (SAAS) tools.

Google's G Suite, which includes several collaborative programmes such as Google Docs, Sheets and Slides, allows users to view and edit documents, spreadsheets and presentations together in real-time through a web browser or mobile device, without having to transfer files.

Google has also recently announced a hardware product for G Suite called 'Jamboard' – a digital interactive whiteboard that enables collaborative meetings and brainstorming.

'Microsoft Teams' is another new offering. Launched in 2017, the business communications app enables local and remote workers to collaborate on content in real time and near-real time across different devices. The chat-based workspace allows users to create teams within which users can create different channels to organise their communications by topic. Within team-based messaging threads, users can schedule voice and video meetings - a workflow that provides contextual communications. It's also integrated with Office applications so users can, for example, edit PowerPoint files within the Teams app.

These are all effective collaboration tools, and whilst they weren't created specifically for construction, they can be used to facilitate more effective collaboration between the parties involved in a construction project.

# CONCLUSION

There are a plethora of digital collaboration tools out there, yet according to the McKinsey Global Institute, construction is still one of the least digitised of all the major industries<sup>5</sup>. Improving collaboration certainly ranks high as a business objective as a break in the chain of communication can disrupt the integrity of a project and create substantial inefficiencies. Despite this, 38% of construction companies reported that they are not experimenting with emerging technology<sup>6</sup>.

Granted there is a learning curve (and cost) that comes with adopting any new technology and this time and financial commitment may be deterring some companies from investing in some of the collaborative technologies currently available. But when you consider that

21% of all construction costs are thought to come from errors<sup>7</sup>, it makes little sense not to invest in waste-reducing collaborative technologies.

Use of these technologies, tools and platforms does not guarantee smooth project collaboration. Sometimes the best way to solve a problem is with a face-to-face meeting. However, these new sophisticated collaboration technologies can play a key role in improving efficiency and productivity and delivering cost savings.

Predicting the future is a dangerous occupation, but it is safe to say that we will not be communicating in a project environment in the same way in 10 years' time.

<sup>5</sup> <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/imagining-constructions-digital-future>

<sup>6</sup> <https://jbknowledge.com/2018-construction-technology-report-survey>

<sup>7</sup> <https://getitright.uk.com/>