



ARTICLE

# A spotlight on project management

## The key risks and trends

In this 'Ask the Expert' article, we speak to Javier H. Hernández, a Senior Director who recently joined our team in London, about the latest trends in construction project management.

### What are the biggest project management risks faced by construction and engineering professionals today?

The combined impact of COVID-19, Brexit, and a boom in demand have had a huge impact on the construction industry, resulting in rising costs due to material and labour shortages. For example, in Ireland, the tender price increased to 7% in the first half of 2021.<sup>1</sup>

To overcome this, project managers must find alternative materials and encompass value engineering in the design process to investigate alternative materials and techniques, utilising local sources and off-site manufacturing. Efficient procurement is paramount in securing long-lead materials and equipment on time. Technical and material submittals, mock-ups, approvals and orders should be carried out in a timely manner.

Project managers should also consider suspending the Just-in-Time (JIT) approach, wherein materials are only received from suppliers when they are needed on site.

To reduce material waste during construction, projects should adopt real-time information systems that book in materials when they arrive on-site and track them through to installation using QR coding. Furthermore, logistic plans are more critical than ever in order to optimise crane time, hooking time, movements of materials and to avoid idle times of resources. Extra hoists, scaffolding, concrete pumps, and stock areas offsite will improve the supply chain's productivity.

Sites must also be attractive for the subcontractors to deploy their resources. A continuous flow of work for the various trades will prevent any demobilisation and the problems encountered with re-mobilisation. Maintaining high health and safety standards, providing extra welfare facilities, and promoting strong diversity, inclusion, and equality programmes will ensure high morale and productivity. A positive working environment with strong stakeholder relationships and common goals can encourage project teams to act as 'one team' to deliver optimal project outcomes.

<sup>1</sup> Society of Chartered Surveyors in Ireland (SCSI) Tender Price Index. (<https://scsi.ie/tpi2021/>)

## What are your top tips for ensuring a project is delivered on time and within budget?

Firstly, robust commercial management of the cost/value with monthly closing of Cost Value Reconciliation (CVR): cash/cost flows, earned value (EV)<sup>2</sup> and accruals are three different indicators to control the project to keep it on target (cost and time). The project management team should analyse the differences to re-assess the cost to complete, current P&L<sup>3</sup> of the month and forecast, and maintain a positive cash position<sup>4</sup> for the main contractor and its supply chain. I have often found that accruals have not been adequately inputted, and there is an unexpected missing cost at the end.

My second tip is to engage strong programme management, with all parties involved, working under a single programme and unique critical path. The schedule should contain procurement activities, technical submittals, method statements, risk matrix items, testing and commissioning, and a contingency to absorb unpredicted events. The schedule should also be regularly updated<sup>5</sup> with factual and accurate data; coordination and regular meetings with the main subcontractors, designers and client teams on four-week look ahead plans under a single and up-to-date programme will contribute to the successful delivery of the project.

Thirdly, early pre-commissioning and pre-testing of all installations by leveraging technology can help to secure the programme (for example, the use of camera surveys on hidden installations) before continuing with follow on activities. Mechanical & Electrical systems (M&E) tend to be 40%-45%<sup>6</sup> of the build cost. Commissioning, demonstration, and final integration of all installations are always on the critical path. As such, a team dedicated to commissioning is vital for the success of the project. Identifying the key rooms where the brain of the M&E services are, having power 'on' as early as possible, and building thinking towards the commissioning of activities (such as test pack requirements and approvals of third parties) will secure the tail end of the programme where there is no longer an opportunity to reduce the time for completion.

In my experience, design activities usually delay most projects. Frozen design is paramount to allow the technical drawing process to begin, as well as the procurement of subcontractors and materials. A potential strategy is the appointment (subject to contract) of critical path subcontractors during the tender period to initiate these processes and progress the design to RIBA Stage 5<sup>7</sup> immediately upon project commencement.

## How is technology being used to optimise project performance?

The construction industry is awash with new technology, which must be embraced by all parties to optimise performance and succeed in achieving the project's goals.

The UK BIM (building information modelling) level 2 mandate<sup>8</sup> or Ireland's BIM roadmap<sup>9</sup> requires project teams on public procured projects to produce digital 3D models (Level 2 BIM) as per BS EN ISO 19650. However, I believe the mandate should go one step further and adopt a federated model and asset management (Stage 3).

A robust BIM Execution Plan (BEP), including a Common Data Environment (CDE) from the outset, identifying the roles & responsibilities of all stakeholders will reduce cost and save time. BIM, if used correctly, can ensure the 'first time right' approach, identifying clashes in real-time and providing collaborative decision making.

The BEP also involves the commercial teams and Quantity Surveyors (QS). If the design information is inputted into the model, following the New Rules of Measurement (NRM) or ICMS<sup>10</sup> and the level of codes agreed with a QS, it could improve BIM take-off to order BIM materials more accurately and measure progress from BIM. Contractors must prepare their commercial and design teams to implement BIM 4D (time/clash) and 5D (cost management)<sup>11</sup> to work more efficiently and collaboratively.

Other trends include augmented reality (AR/VR)<sup>12</sup> and generative design<sup>13</sup>, which can facilitate data-driven decision-making for design, and by simultaneously reviewing the constraints (cost, time, materials), goals and inputs, different alternatives can be produced.

2 Using the programme software with the activities loaded with the value or revenue or BOQ to measure every month the value earned independently of the value certified by the employer consultant.

3 Profit and Loss.

4 "Cash flow is the lifeblood of the construction industry", by Denning Lord (*Dawnays Ltd v F G Minter Ltd [1971] 2 All ER 1389*)

5 Weekly or fortnightly as a maximum period between updates.

6 Based on the latest PPP Projects that I tendered during 2021.

7 <https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work>.

8 Implemented in April 2016 under UK BIM Framework.

9 <http://www.nbcireland.ie/press-release>.

10 International Construction Measurement Standard. <https://icms-coalition.org/>.

11 <https://scsi.ie/wp-content/uploads/2021/02/SCSI-TU-Dublin-BIM-Information-Guide-Final.pdf>

12 <https://constructionblog.autodesk.com/augmented-reality-ar-construction/>; <https://constructionmanagemagazine.com/ar-for-visual-inspection/>.

13 <https://www.autodesk.com/solutions/generative-design/architecture-engineering-construction>

The use of drones with 360 cameras and flying spherical scanners are now used to 3D scan to BIM a whole façade, roof, or envelope. It can also measure progress on infrastructure projects or map real conditions to ensure the accuracy of what has been built. Internally, 3D laser scanning robots can create as-built documentation or record progress for claims or programme updates.

Finally, as the construction industry moves towards sustainability, low CO2 emissions, energy, water use, and waste reduction in construction projects are crucial. To support these projects, 3D printing<sup>14</sup> using modelling software for complex shapes to increase efficiency, and robotics<sup>15</sup> that can carry out risky activities safely, are the near future. Sustainability is becoming a key factor in determining a company's reputation and value.<sup>16</sup>

### What are the most common pitfalls in programme management?

The use of different and partial programmes on-site is a common pitfall. It could be the case where the client uses the tender programme, the ER<sup>17</sup> uses an out-of-date baseline with progress, the main contractor uses an internal programme, and others (designers, subcontractors, suppliers) use micro-programmes. This can create chaos in programming as the parties are not aligned, and may not be following the same sequences or critical path.

A lack of accurate reporting can render progress reports useless and unreliable. The contract programme could be out of date due to re-sequencing, additional changes, and new events not being implemented. In some cases, the rectification of defective works could create negative progress. Furthermore, the progress assigned to activities is sometimes misleading. I have seen reporting of activities whereby the progress assigned was ahead of time and then stayed at 95% until they were closed, or when every week the project managers are reporting an additional seven days to be completed, meaning that no progress was achieved at all.

Another common pitfall is the wrong allocation of links between certain activities when there is no coordination between the planner and project managers. Thus, the sequence of the programme is not following reality on-

site. Open-end activities, negative lags and missing links also generate false completion dates.

### How are you working with FTI Consulting's clients to resolve these issues?

For over 20 years, I have advised owners, consultants, contractors, construction managers and legal counsel on issues relating to risk, project, and procurement management. Since joining FTI Consulting in August 2021, I have been working with clients to ensure their construction project runs as smoothly as possible.

I can provide project management support pre-contract (contract strategy advice or risk analysis, for example, in a PPP where most of the risk is transferred to the contractor) or during construction, helping to minimise risk, cost, delays, and dispute avoidance.

In my previous role as a Board Member of a major contractor, I have successfully used FTI Consulting to run quarterly independent delay analyses of a complex project. This independent advice can help you to know the prospect of your claim from a third party, which is unbiased. This allows the Board (or a client) to decide on mitigation/acceleration, your position to negotiate, or ultimately whether or not to initiate dispute resolution procedures (such as adjudication or conciliation) if our opinion differs from the assessment given to your compensation event. I have found it more cost-effective to involve external consultants and legal counsels as early as possible in the contract before it is too late to undo the damage.

By following industry best practices, conducting due diligence on your programme management processes, project control monitoring or commercial reporting can help to identify if your company targets (or goals) are expected, and can help to address some of the pitfalls mentioned in this article. It is also common to overestimate the recovery of values claimed in the CVRs to balance the additional cost suffered; with FTI Consulting's advice, the Board or client would have a neutral assessment of the claims to make the right commercial decisions for your business.

You can read Javier's full bio [here](#).

**Learn more about our construction solutions team [here](#).**

14 HS2 Ltd London tunnels contractor SCS JV (Skanska Costain Strabag joint venture)

15 <https://www.bimplus.co.uk/skanska-unveils-bim-linked-construction-site-robot/or-TyBot-on-Freedom-Road-in-Cranberry-Twp,-Pennsylvania>.

16 [https://ftiresiliencebarometer.com/report?utm\\_source=eloqua&utm\\_medium=email&utm\\_campaign=gbr-flc-sep-21-2021-aware-rb-autumn-2021&utm\\_content=general&utm\\_term=general](https://ftiresiliencebarometer.com/report?utm_source=eloqua&utm_medium=email&utm_campaign=gbr-flc-sep-21-2021-aware-rb-autumn-2021&utm_content=general&utm_term=general)

17 Employer Representative, or Engineer, Project Manager, depending on the standard form of contract.

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