

# The digital project manager: Resetting the way we work

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Recent work disruptions due to COVID-19 have necessitated the accelerated adoption of digital technologies as project management tools and methods.

A project manager is considered to be one of the most stressful occupations in engineering and technology management. Projects are energy-intensive, time-constrained and high-pressure endeavours. They bring together visions, business ideas, plans, drawings, materials, equipment, tools, human resources, infrastructure, logistics, as well as health and safety, to achieve the accomplishment of a final product. However, what projects deliver is changing. They are no longer just a physical product or service; they now also include a digital component.

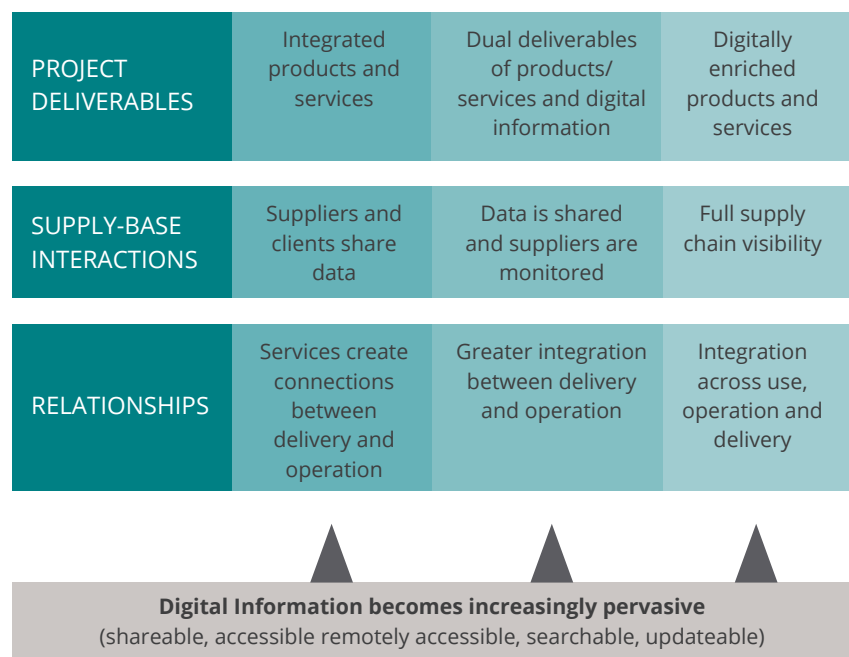
Having started with mainframe scheduling in the 1960s, the evolution of computer applications accelerated in the 1980s when computer-aided design software emerged and expert systems became available on personal computers. With the exponential development of digital technology, project delivery models now incorporate supply chains, principal-agent relationships, as well as end-user and operator interaction. Extensive documentation has, to a large extent, been replaced by automated digital workflows and analytics, creating their own integrated ecosystem.

Project integration remains one of the most important and complex aspects of project management. Creating, maintaining and controlling the infamous “golden thread” of integration, from design to finance, implementation, operation and maintenance, remain a challenge. In the large capital project environment, the development of built information modelling (BIM) largely contributed

to the integration and further enhancement of modularisation, providing projects with scaling capabilities.

The digital backbone and predesigned ecosystem make the underlying information searchable, remotely accessible, shareable and

updatable across the project life-cycle. Jennifer Whyte, in an article published in *Project Management Journal* on how digital information transforms project delivery models (Whyte, 2019), refers to this digital evolution as being pervasive and migrating towards complete integration.



Integration solutions are made possible by increasingly pervasive digital information

Even though BIM is used at high levels of sophistication during the design phases, the use of this and related digital technologies has not come to fruition during the construction phases. Construction is not for the faint hearted, and those involved know what it is to work in dusty conditions and cramped on-site offices, being exposed to the rain and blistering sunshine every day, on the lookout for dangers caused by large equipment, material lifted high above one's head and many obstacles that may cause one to trip or bump one's head. It is also the phase where the most money is spent.

Over recent decades, the construction phase of large capital projects has seen minimal improvement. The reasons for the slow adoption of digital technology in construction can be attributed to, among other things, poor internet coverage at remote locations, design changes during construction, established systems and procedures, compliance requirements and some prevailing old-school habits of seasoned construction workers and foremen. With an industry under pressure, the "traditional" way of construction project management is changing to increasingly embrace digitisation to become more productive and fully integrated across the project life-cycle.

Over the past two years, more than 1 500 construction technology start-up companies have been formed to develop application solutions for the industry. The software and digital tools that these companies develop can be clustered according to the various management functions of construction, which include the following:

- Design management: The real-time availability of the latest drawings and on-field capturing of mark-ups
- Scheduling: Improved 4D capabilities and real-time progress tracking through infrared and drone applications
- Materials management: Real-time sensors and detectors that monitor the delivery and movement of materials
- Fieldwork: The real-time monitoring of crew movement and deployment
- Quality control: Mobile applications for snag lists and the immediate notification of non-compliances and defects to the respective responsible people
- Contract management: Updating and tracking contract compliance, records of communication and the management of payments

- Safety: Real-time safety monitoring and immediate alerts in the case of incidents
- Collaboration and coordination

Until the beginning of 2020, all the abovementioned functions, with the exception of the last one, were digitised, but not yet fully managed in an integrated manner.

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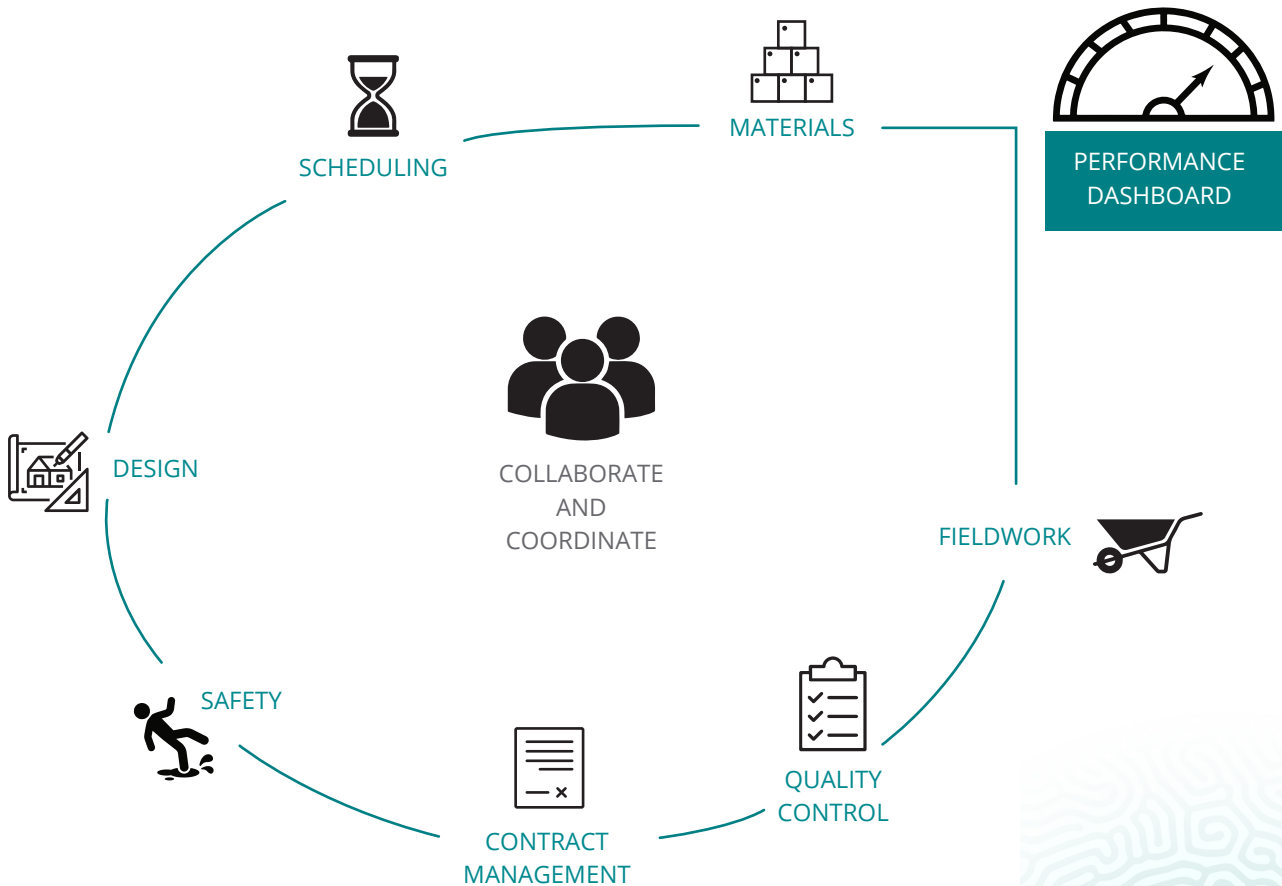
During the national lockdown brought about by the COVID-19 lockdown, collaboration and coordination were suddenly forced to go online with various platforms, such as Zoom, Microsoft Teams, Webex, Skype and GoToMeeting, being used extensively on project work with great success. Even though not yet quantified, reports indicate an improvement in project productivity and an increase in overall integration.



**WITH THE EXPONENTIAL DEVELOPMENT OF DIGITAL TECHNOLOGY, PROJECT DELIVERY MODELS NOW INCORPORATE SUPPLY CHAINS, PRINCIPAL-AGENT RELATIONSHIPS, AS WELL AS END-USER AND OPERATOR INTERACTION. PROJECT INTEGRATION REMAINS ONE OF THE MOST IMPORTANT AND COMPLEX ASPECTS OF PROJECT MANAGEMENT.**



Project management functions presented on a digital performance dashboard.



Performance dashboards have become more than a monthly status report, and are now almost a real-time reflection of the project at any given time.

With many applications to be deployed and refined in the near future, the challenge for the project manager will be to confront traditional work methods in a new digitised environment. The era of the digital project manager has dawned and this individual will be faced with the renewed challenge of digital collaboration and coordination.

Collaboration and coordination are key to any project, but if project managers want to get the most out of these digital tools, they will need to understand their own and other peoples' behaviour. Irrespective of which, or how many digital tools are deployed, people will remain central to achieving project outcomes and benefits. ➔

**Even though not yet quantified, reports indicate an improvement in project productivity and an increase in overall integration resulting from online collaboration and coordination platforms.**

**Reference**

Whyte, J., 2019. How digital information transforms project delivery models, *Project Management Journal* 50(2), 177-197.

