Building Information Modelling or BIM is emerging as a transformative technology that could greatly enhance New Zealand’s built assets and infrastructure and provide a significant boost to the economy.
Design
As a lifecycle model, BIM begins in the early stages of a project. Designers are likely to benefit from fundamental changes to the design process and the greater certainty between design intent and the final construction and operation of the building. Indeed, 69% of European organisations using BIM report that it improves the collective understanding of design intent, while 75% report that it improves multi-party communication and understanding, primarily from greater ability to visualise and share information in 3-D.

As well as design and layout information, each project stakeholder has access to scheduling, financial, performance and materials data from the beginning of the project. This ability to share and collaborate promotes design decisions that optimise the building when it is cheap and easy to make changes, unlike later phases, when alterations can have significant construction and lifecycle costs. In the United States, 57% of designers who use BIM say they find the technology directly reduces the number of errors and omissions during the design phase of the project.

Project management
Many project managers also report fewer errors, reduced rework, shorter project durations and lower overall construction costs when employing BIM in the early phases of a project. BIM’s ability to visualise design options make it quick, easy and cheap to validate options against key performance criteria, keeping costs down and increasing the certainty of project outcomes.

BIM also has a strong influence on project duration. One overseas report, which documented construction practices over several years, found that in 2019 the average duration of BIM projects was 27% shorter than traditional projects. By 2012, BIM had widened the gap to 37%. This suggests that the advantages of BIM become more pronounced as users gain experience and become more proficient with the technology. One survey even estimates that BIM’s data sharing ability alone is enough to reduce the duration of a single project by up to 7%.

Rework and cost overruns
In 2019, the average rework cost was 33% of the total project budget. This rework results from design changes, missed specifications, cost overruns and missed schedules during construction. BIM’s sophisticated modelling capabilities also enable builders to make much greater use of prefabricated materials and pre-assembled components, which have well-documented productivity and quality advantages. In the United States, 81% of contractors say this is the single most important benefit of moving to a BIM-based construction model.

WHAT IS BIM?
BIM is a digital representation of the complete physical and functional characteristics of a built asset. A BIM model can contain information on design, construction, logistics, operation, maintenance, budgets, schedules and much more. This depth of information contained within BIM enables a richer analysis than traditional processes and it has the potential to integrate large quantities of data across several disciplines throughout the building’s lifecycle.

BIM is emerging as a transformative technology
Productivity gains
Productivity gain is one of the major benefits of using BIM and is the top metric organisations expect to improve when they adopt the technology. Primarily, BIM realises this gain through its ability to:
- minimise project management
- foster communication and co-ordination
- identify errors early
- reduce rework
- reduce costs
- improve quality.

Internationally, BIM’s reputation for boosting productivity has made it widely accepted as a best practice approach for delivering major building projects. The United Kingdom government, for example, anticipates a 20–30% reduction in the lifecycle cost of its public-sector assets by requiring the use of BIM on all infrastructure projects built after 2016. In the United States, one of the most tightly controlled construction sectors in the world, the number of building sector professionals using BIM has surged from 28% in 2007 to 71% in 2012.

Adoption up to 71%
SOURCES AND FURTHER READING

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FURTHER INFORMATION

• BRANZ
  www.branz.co.nz

• Building and Construction Productivity Partnership
  www.buildingvalue.co.nz