

Project 3.27

Using Building Information Modelling (BIM) for Smarter and Safer Scaffolding Construction

RESEARCH PROGRAM 3: PRODUCTIVITY THROUGH INNOVATION

A considerable number of accidents that occur on construction sites in Australia can be attributed to scaffolding that is non-compliant and unsafe. In 2009, Workplace Health and Safety (WHS) Authorities in Australia have found that 40% of all scaffolding projects do not comply with national safety and design standards. It is clear that the planning and management of temporary scaffolding structures must be informed more directly by safety and construction considerations.

Objectives

This research will deliver tools and knowledge that help reduce the likelihood of accidents arising from non-compliant structures, by integrating construction and safety constraints into the design, analysis, assembly, inspection and disassembly of scaffolding.

As a core member of SBEnrc, the QUT team has developed a prototype modelling system demonstrating how current industry standards and practices can be translated into design rules that facilitate automated scaffolding layout. The system uses building massing information and user-specified parameters to generate scaffolding designs (figure 1), and has been successfully tested against a variety of building forms (figure 2). This project builds on the prototype by providing further support for:

- automated model and drawing outputs
- quantity take-offs and costings
- visualisations for construction scheduling
- direct links to structural analysis
- onsite safety checks and real-time construction tracking.

Industry Outcomes

This project is aligned with the national harmonisation of the new Workplace Health and Safety (WHS) act across all states and territories, requiring designers to consider and assess safety and constructability issues early on in a project. It will improve the industry's ability to meet requirements for the design of structures that are within appropriate risk limits to the health and safety of the persons using them.

It will also result in significant productivity benefits by streamlining the links between the design and construction of temporary scaffolding structures, for building projects initially and looking to explore the implications for infrastructure projects also.



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