

# **A BIM-based model checking in the green building maintenance: a review**

## **Abstract**

**Purpose:** This paper aims to identify the different system approach using building information modelling (BIM) technology that is equipped with automated evaluation processes. BIM research has mainly focused on theoretical models of acceptance in the green building (GB) maintenance industry. However, BIM has the potential to the competency's performance and design knowledge of building control instrument. Realising this potential requires a study of BIM at the maintenance planning level, which is considered to be BIM-based model checking (BMC). BMC and its effect in the maintenance planning have not been sufficiently investigated.

**Design/methodology/approach:** The aim of this paper is to present a critical review of literature on the theoretical background of BMC practices and the main features of information and communication technology tools and techniques in the GB maintenance projects.

**Findings:** A theoretical framework of BMC is developed and presented. The proposed model incorporates requirement for maintaining a competency's performance on maintenance planning schemes of GB projects and the importance of early integration of BMC in the design phase to identify alternative methods to cogenerate, monitor and optimise BMC.

**Originality/value:** It is found that variables facilitating BMC are integrated at different GB maintenance environments levels and are shaped by the context. Directions for future research are presented.

## **Keywords**

BIM-based model checking; GB maintenance; Green building; ICT; Improvement; Maintenance; Maintenance planning