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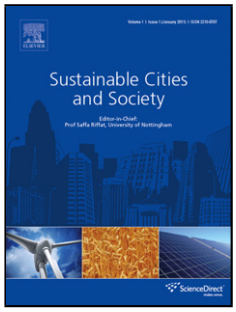

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PII: S2210-6707(19)31551-3

DOI: https://doi.org/10.1016/j.scs.2019.101979

Reference: SCS 101979

To appear in: *Sustainable Cities and Society*

Received Date: 31 May 2019

Revised Date: 16 October 2019

Accepted Date: 18 November 2019

Please cite this article as: Jalaei F, Jalaei F, Mohammadi S, An integrated BIM-LEED application to automate sustainable design assessment framework at the conceptual stage of building projects, *Sustainable Cities and Society* (2019), doi: https://doi.org/10.1016/j.scs.2019.101979

An integrated BIM-LEED application to automate sustainable design assessment framework at the conceptual stage of building projects

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Highlights

- This study evaluates the implementation of BIM by representing a computer model that automates the process to identify the required number of points based on LEED V4 certification.
- It is the first model that deals with almost the whole LEED v4 categories, associated certification levels, saves users' time, and reduces users' effort. It is also a simple point selection method and easy to use.
- 6 credits out of 8 credits (i.e. LT, WE, EA, MR, IEQ, IN, RP) are calculated by the proposed plug-in through collecting answers from BIM model, google map information for the project location and orientation, the embedded checklist questions in the plug-in to collect answers from user and the energy, lighting and water efficiency analysis results coming from GBS.
- The plug-in also uses K Nearest Neighbour (KNN) data mining method to estimate the missing credits, which could not be calculated directly from design, to propose the whole scale LEED evaluation interface for building projects.

Abstract

Construction industry has become more interested in designing and constructing environmentally friendly buildings that can provide both high performance and monetary savings. Generally, the sustainability analysis is mostly conducted at the end of the design stage, once their components and elements have already been selected. However, achieving an integrated sustainable design solution prior to construction means that the design team must manage reciprocal task interdependencies when making decisions related to the selection of the most suitable design alternative that will lead to sustainable and efficient buildings. This study describes a methodology to automate the process sustainability assessment for proposed buildings by