

Using BIM model and genetic algorithms to optimize the crew assignment for construction project planning

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Abstrak

ABSTRACT

Project planning is among the most critical factors to the success of a construction project. In project planning, cost and schedule are closely interrelated, because they share a lot of common data in their planning processes. Therefore, the integration of cost and schedule functions has been an attractive issue in construction project planning. Many researchers have emphasized the benefits of this integration and several different methodologies combining cost and schedule data have been provided. However, the results of the previous studies are not comprehensive enough to fulfill the requirements of project planning. This paper presents a model-based planning system that employs Building Information Model (BIM), Object Sequencing Matrix (OSM), and Genetic Algorithms (GAs) to obtain an optimal crew assignment under resource and workspace constraints. The purposes are to evaluate the project costs and optimize the temporal distribution of resources in project planning. A computer implementation called Cost/Schedule Integrated Planning System (CSIPS) is also developed to verify the feasibility of the proposed approach.