Construction workspace management: the development and application of a novel nD planning approach and tool

HDL HANDLE:
http://hdl.handle.net/10149/247112

TITLE:
Construction workspace management: the development and application of a novel nD planning approach and tool

AUTHORS:
Chavada, R. (Rajiv); Dawood, N. (Nashwan) (0000-0002-4873-7576); Kassem, M. (Mohamad)

AFFILIATION:
Teeside University

CITATION:

PUBLISHER:
International Council for Research and Innovation in Building and Construction

JOURNAL:
Journal of Information Technology in Construction

ISSUE DATE:
Sep-2012

URI:
http://hdl.handle.net/10149/247112

ADDITIONAL LINKS:
http://www.itcon.org/cgi-bin/works/Show?2012_13

ABSTRACT:
Activity Execution Workspace (AEW) is one of the main constraints and resources on construction sites. The proactive management of AEWs is a very challenging task due to the dynamic nature of construction sites, where the availability of AEW is continuously evolving and changing over time. Project managers are looking for proactive approaches and innovative IT tools to accurately manage workspaces on construction sites as this affects not only costs and duration of projects, but also the safety of construction sites. The review of current state-of-the-art shows that limited research has been devoted to this area and that significant methodological and practical limitations exist. This research paper presents a novel approach for the management of AEWs. The objective of this approach is to enable the management of AEWs by integrating the traditional planning process (CPM – Critical Path Method) and Building Information Modeling (BIM) data in a 4D/5D environment and providing real-time management and rehearsal of AEWs. The approach, prototype and pilot case study presented in this paper have proven that it is feasible and effective to proactively manage AEWs within a 4D/5D environment. This is in line with the principles of nD project management, where the ultimate aim is to give project planners the capability of rehearsing different construction options, before the construction starts, in order to improve the efficiency and productivity of construction processes.

TYPE:
Article

LANGUAGE:
en

KEYWORDS:
construction workspace; Building Information Modeling; BIM; 4D/5D planning

ISSN:
1403-6835
E-Planning and Collaboration: Concepts, Methodologies, Tools, and Applications contains a compendium of the latest academic material on the emerging interdisciplinary areas of e-planning and collaboration. Including innovative studies on data management, urban development, and crowdsourcing, this multi-volume book is an ideal source for planners, policymakers, researchers, and graduate students interested in how recent technological advancements are enhancing the traditional practices in e-planning.

Topics Covered.

Construction workspace management: The development and application of a novel nD planning approach and tool. The objective of this approach is to enable the management of AEWs by integrating the traditional planning process (CPM - Critical Path Method) and Building Information Modeling (BIM) data in a 4D/5D environment and providing real-time management and rehearsal of AEWs. The approach, prototype and pilot case study presented in this paper have proven that it is feasible and effective to proactively manage AEWs within a 4D/5D environment.