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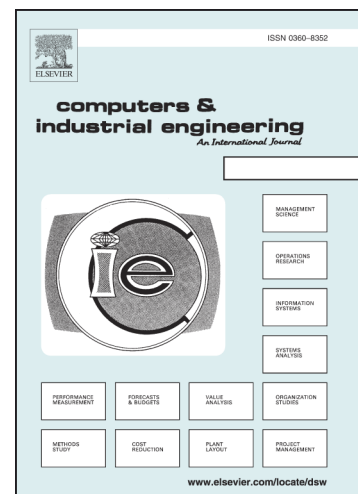
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The integration of constrained resources into top-down project control

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Abstract

The timely completion of a project is one of its main factors for success. During the scheduling phase, a project buffer can be installed to protect the project deadline. During the execution phase, tolerance limits that generate warning signals when the project deadline is endangered should be constructed to monitor the buffer consumption. These tolerance limits will be constructed for the dynamic progress data provided by the Earned Value Management/Earned schedule methodology (EVM/ES).

In this paper, we incorporate information on the availability of scarce resources into the construction of analytical tolerance limits for EVM/ES, in order to improve the efficiency and reliability of these tolerance limits. In order to review the performance of the limits, a computational experiment has been carried out in which they are compared to analytical tolerance limits that disregard the availability of resources. Results have shown that the performance of analytical tolerance limits can be significantly enhanced by incorporating the available resource information.

Keywords: Project management, schedule control, earned value management, scarce resources

1. Introduction

The goal of project control is detecting potential problems or opportunities during project execution, by measuring the deviations from the baseline schedule. Top-down project control involves measuring and monitoring the progress of a project at the aggregated project level. Hence, a single metric which includes the aggregated project progress information can be used by the project manager in order to review the project progress. When this aggregated metric indicates a problem at the highest Work Breakdown Structure (WBS) level, the project manager should drill down the WBS in order to investigate which activities require corrective actions to resolve the problem. A well-known top-down project monitoring technique is Earned Value Management (EVM), which

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