

FINANCE-BASED SCHEDULING: TOOL TO MAXIMIZE PROJECT PROFIT USING IMPROVED GAS

ABSTRACT:

Since the execution of construction projects demands huge investments, contractors rarely rely on personal savings to carry out projects. Thus, the procurement of cash, termed as financing, has always been the first concern of contractors. On the other hand, scheduling process specifies start times of activities so as to complete projects at minimum time. Based on a project schedule, a profile of cash requirements is determined. Most contractors establish bank overdrafts to finance cash requirements of projects. Like other resources, cash must be thought of as a scarce resource. Bankers commonly impose limits on credit allocated to overdrafts. From contractors' perspective, contractors want to minimize financing cost which is determined based on factors including the interest rate and penalties accrued on unused portions of credit. Bankers usually quantify these factors based on the allowed credit limit. Thus, the available cash recognized as the most critical resource must be considered as a constraint in the scheduling process should realistic schedules are desired. This paper utilizes genetic algorithms (GAs) technique to revise CPM schedules so as to fulfill constraints of allocated credit. An extension scheme was devised to allow extending schedules to fulfill finance constraints. In addition, the proposed technique maximizes project profit through minimizing financing costs and total project duration.