**Planning and Control of Projects with a Service Level and Different Types of Precedence Relationships Using Stochastic Simulation**

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We present a decision support system (DSS) to compute performance measures of a project. Our approach allows us to incorporate the uncertainty on the activities' duration as well as four different types of precedence relationships. The DSS generates replicates of the project's performance, in which we simulate the duration of each activity. From these replicates, the expected completion time, the variance of completion time, the service time for a given service level and the probability that each activity will be in the critical path are estimated along with their corresponding measures of error. A validation of the DSS was performed by computing the empirical coverage, mean and standard deviation of half-widths, mean square error and empirical bias for the main performance metrics of a given project. Finally, we show experimental results where the procedures implemented in the DSS provide a good coverage and consistent half-widths even for a small number of replications.

**Keywords:** project management; PERT; CPM; project simulation.