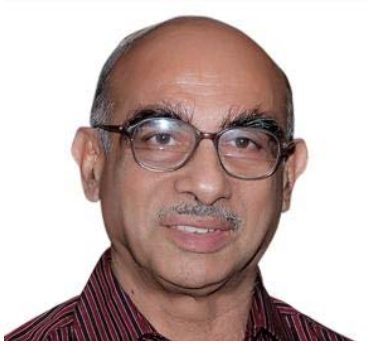
Project Simulation tutorial for RAC Conference

Simulation is the imitation of the operation of a real-world process or system such as a production line or a project—over time. Generally used during planning, the act of simulating something first requires that first a *model* be developed. This model represents the key characteristics or behaviors of the selected physical or abstract system or process. The model denotes the system itself, whereas simulation would emulate the operation of the system over time.
Project simulation helps best at the *planning* stage—to analyze real projects before they are launched. The goal here is to show the decision maker the different possible outcomes of his decisions, along with the probability that each outcome will occur. Simulation thus helps in reducing project risk, and in choosing the best project plan. In a typical simulation the model is built using a software tool. The simulation is then run to check the different possible outcomes and their probabilities as a result of different inputs for the uncertain variables.
This 2-hour tutorial will illustrate two applications of simulation—PERT performed by Excel® and optimal task crashing by CPSIM® (Critical Path Crashing Simulator).

At the end of the session,

1) The participants will have learned how to configure Excel to perform PERT for networks involving 12-15 activities using built-in statistical functions of Excel. Monte Carlo basics will be illustrated."

2) The participants will witness the dynamic simulation of a large network with activities repeatedly crashed and re-evaluated toward achieving minimal (optimal) total project cost. An optimal LP solution will also be shown."



Dr. Tapan Bagchi

A B Tech from IIT Kanpur, Tapan Bagchi holds a Ph D from the University of Toronto and a D Scin Quality Engineering from IIT Kharagpur. A passionate teacher of operational management and business statistics-related subjects, Bagchi spent 16 years working for EXXON-Mobil on four continents before returning to join the IIT system in 1987. Author of over 100 research papers and six texts, he has served IIT Kanpur, IIT Bombay, IIT Kharagpur, SP Jain Dubai, NDS Infoserv, NITIE, NMIMS University and KIIT University variously as Professor, Dean and Director for over 25 years. Presently he is the Director PGDM at KIIT University. His original publications are displayed by *ResearchGate*.

Currently a member of the distinguished Academic Advisory Group (AAG) of PMI India, Bagchi has received EXXON Chemical's Extraordinary Contribution Award and Outstanding CSR (Literacy) Volunteer Award, University of Toronto Open Fellowship, Outstanding Scholar and Outstanding Teacher Citations atNMIMS University, Best UG Teacher nominations at IIT Kanpur and University of Toronto, and a Best Paper Award at IISRO Dubai. He is designated a Registered Professional Engineer in Ontario Canada.

Designer of ISRO's LEO Spacecraft Task Scheduling Support System, Bagchihas had over 100,000 hits on his 40 lectures on Six Sigma on Youtube®. He splits his time now between institution building, mentoring, travel, and sampling from contemporary best sellers.