

# Monte Carlo Analysis for Projects



**PRAXIS**  
*learning*  
networks

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# Questions Monte Carlo Can Help Answer

## Project Initiation

- Very little information about the project.
- Might do the project – might not.
- Before I commit – what will it really cost?
- Before I Commit – how long will it really take?

## Project Planning

- More information about the project.
- Probably going to do the project.
- What is it really going to cost?
- How long is it really going to take?
- Can I meet critical external deadlines?

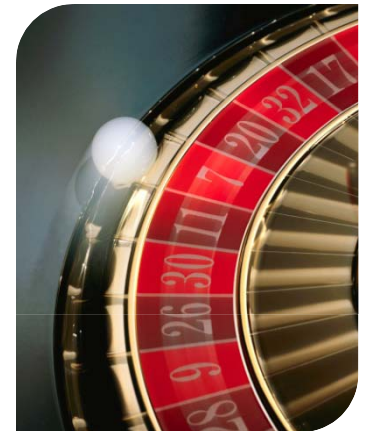
## Project Execution & Control

- Lots of information about the project.
- Some things are going very well, some are as planned, some are going poorly.
- How does my experience compare to what I planned?
- Based on what has happened so far, what should I anticipate?



## Monte Carlo Simulation – *What is it?*

- ❖ A class of computational algorithms that rely on repeated random sampling to compute their results
- ❖ Often used when simulating physical and mathematical systems
- ❖ Because of their reliance on repeated computation and random or pseudo-random numbers, Monte Carlo methods are most suited to calculation by a computer
- ❖ Used when it is infeasible or impossible to compute an exact result with a deterministic algorithm



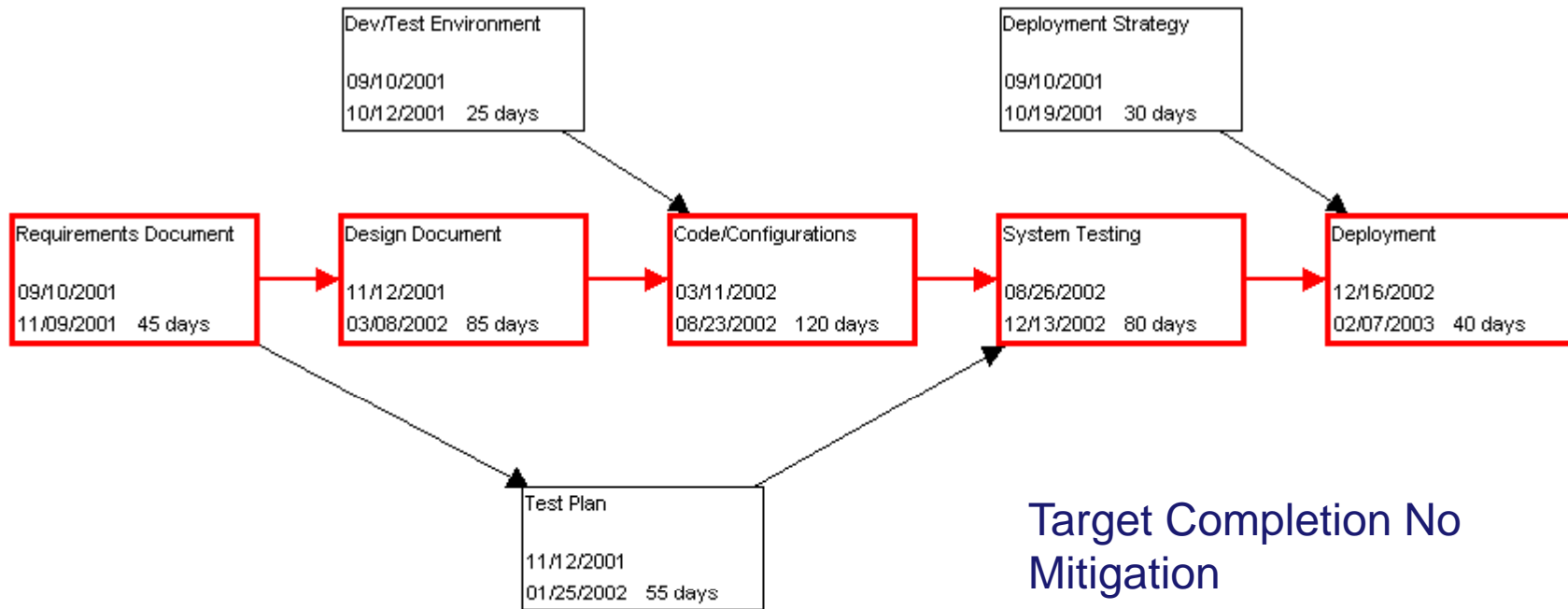


## Example

- ❖ The next two slides illustrate how Monte Carlo analysis can be applied to a simple project model
- ❖ A simple information technology project is depicted as an activity network
  - Starting Sept. 10, 2001 and planned completion is Feb. 7, 2003
- ❖ The Monte Carlo analysis indicates that the probability of hitting the completion date is less than 10%



# Project Model



Target Completion No  
Mitigation

**02/07/2003**



# Risk Profile without Mitigation

The project profile without mitigation shows the project has a:

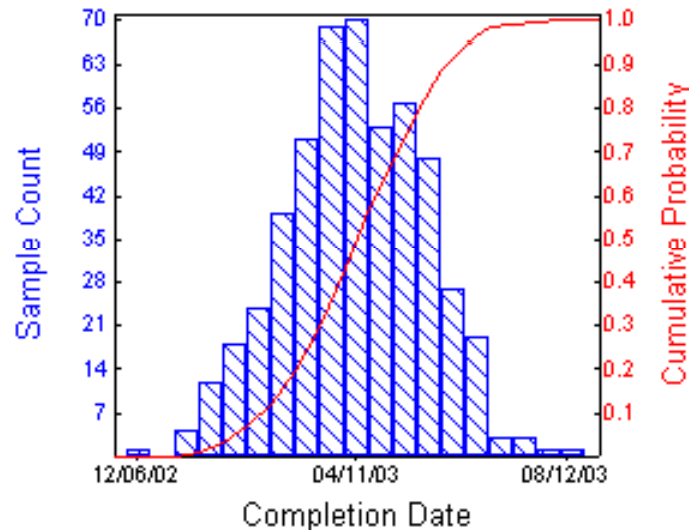
**5% chance of finishing no later than 01/31/2003**

**50% chance of finishing no later than 04/14/2003**

**100% chance of finishing no later than 08/12/2003**

Date: 08/31/2001 11:09:08 AM  
Number of Samples: 500  
Unique ID: 12  
Name: Promotional Tracking System

Completion Std Deviation: 29.0d  
95% Confidence Interval: 2.5d  
Each bar represents 10d.



Completion Probability Table

Prob	Date	Prob	Date
0.05	01/31/2003	0.55	04/17/2003
0.10	02/18/2003	0.60	04/23/2003
0.15	02/28/2003	0.65	04/28/2003
0.20	03/10/2003	0.70	05/06/2003
0.25	03/14/2003	0.75	05/12/2003
0.30	03/24/2003	0.80	05/19/2003
0.35	03/28/2003	0.85	05/26/2003
0.40	04/02/2003	0.90	06/04/2003
0.45	04/08/2003	0.95	06/16/2003
0.50	04/14/2003	1.00	08/12/2003