

Simulation Modeling for Military Decision-Makers

This course is designed for military decision-makers and analysts who would like to understand the nature of simulation and how it can be used to design and optimize their systems. The fundamental responsibilities of the decision-maker for simulation-project success are also discussed. The seminar is typically four hours in length and has no prerequisite.

This seminar has been presented to military organizations such as the U.S. Air Force, U.S. Army, Missile Defense Agency, Los Alamos National Lab, National Security Agency, and National Geospatial-Intelligence Agency. It has also been given for the defense contractors Lockheed Martin, MITRE, and Rockwell.

What You Will Learn:

1. Why Models and Simulations are Necessary

- Use of simulation models within the defense industry
- Types of models – analytical solutions, discrete-event simulation, continuous simulation, agent-based simulation, etc.
- Benefits of simulation modeling

2. Example Illustrating the Use of Simulation

3. Steps in a Sound Simulation Study

- Formulating the problem
- Collecting information/data and deciding on the level of model detail
- Selecting simulation software
- Modeling system randomness
- Developing valid and credible models
- Designing and interpreting simulation experiments
- Documenting and briefing the project results

4. The Decision-Maker's Role in a Successful Simulation Study

- Control and commitment of resources
- Problem formulation
- Approval of important model assumptions
- Common misconceptions

5. Ten Critical Pitfalls in Simulation Modeling and How to Avoid Them

- Modeling and validation
- Simulation software
- Modeling the randomness in a system
- Design and analysis of simulation experiments

Critical Questions That the Seminar Will Answer:

- What are modeling and simulation and how can they solve your organization's problems?
- What expertise is needed to perform sound simulation studies?
- How do you determine the best software to use for a particular application?

- How can simulation be used to evaluate military weapons systems and their logistics requirements?
- What role does the decision-maker play in a sound simulation study?
- How can simulation reduce the risks in military decision-making?
- What are common management misconceptions about simulation that can reduce its effectiveness?

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