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| Nota di contenuto | Cover; Title Page; Copyright Page; Table of Contents; Introduction; Chapter 1: Simulation: History, Concepts, and Examples; 1.1. Issues: simulation, a tool for complexity; 1.1.1. What is a complex system?; 1.1.2. Systems of systems; 1.1.3. Why simulate?; 1.1.4. Can we do without simulation?; 1.2. History of simulation; 1.2.1. Antiquity: strategy games; 1.2.2. The modern era: theoretical bases; 1.2.3. Contemporary era: the IT revolution; 1.3. Real-world examples of simulation; 1.3.1. Airbus; 1.3.2. French defense procurement directorate; 1.4. Basic principles; 1.4.1. Definitions 1.4.2. Typology1.5. Conclusion; 1.6. Bibliography; Chapter 2. Principles of Modeling; 2.1. Introduction to modeling; 2.2. Typology of models; 2.2.1. Static/dynamic; 2.2.2. Deterministic/stochastic; 2.2.3. Qualities of a model; 2.3. The modeling process; 2.3.1. Global process; 2.3.2. Formulation of the problem; 2.3.3. Objectives and organization; 2.3.4. Analysis of the system; 2.3.5. Modeling; 2.3.6. Data collection; 2.3.7. |

Coding/implementation; 2.3.8. Verification; 2.3.9. Validation; 2.3.10. Execution; 2.3.11. Use of results; 2.3.12. Final report; 2.3.13. Commissioning/capitalization
2.4. Simulation project management2.5. Conclusion; 2.6. Bibliography; Chapter 3. Credibility in Modeling and Simulation; 3.1. Technico-operational studies and simulations; 3.2. Examples of technico-operational studies based on simulation tools; 3.2.1. Suppression of aerial defenses; 3.2.2. Heavy helicopters; 3.3. VV&A for technico-operational simulations; 3.3.1. Official definitions; 3.3.2. Credibility; 3.3.3. Key players in the domain; 3.4. VV&A issues; 3.4.1. Elements concerned; 3.4.2. Verification and validation techniques; 3.4.3. VV&A approaches; 3.4.4. Responsibilities in a VV&A process
3.4.5. Levels of validation3.4.6. Accreditation; 3.5. Conclusions; 3.5.1. Validation techniques; 3.5.2. Validation approaches; 3.5.3. Perspectives; 3.6. Bibliography; Chapter 4. Modeling Systems and Their Environment; 4.1. Introduction; 4.2. Modeling time; 4.2.1. Real-time simulation; 4.2.2. Step-by-step simulation; 4.2.3. Discrete event simulation; 4.2.4. Which approach?; 4.2.5. Distributed simulation; 4.3. Modeling physical laws; 4.3.1. Understanding the system; 4.3.2. Developing a system of equations; 4.3.3. Discrete sampling of space; 4.3.4. Solving the problem
4.4. Modeling random phenomena4.4.1. Stochastic processes; 4.4.2. Use of probability; 4.4.3. Use of statistics; 4.4.4. Random generators; 4.4.5. Execution and analysis of results of stochastic simulations; 4.5. Modeling the natural environment; 4.5.1. Natural environment; 4.5.2. Environment databases; 4.5.3. Production of an SEDB; 4.5.4. Quality of an SEDB; 4.5.5. Coordinate systems; 4.5.6. Multiplicity of formats; 4.6. Modeling human behavior; 4.6.1. Issues and limitations; 4.6.2. What is human behavior?; 4.6.3. The decision process; 4.6.4. Perception of the environment; 4.6.5. Human factors
4.6.6. Modeling techniques

Sommario/riassunto

Systems engineering is the design of a complex interconnection of many elements (a system) to maximize a specific measure of system performance. It consists of two parts: modeling, in which each element of the system and its performance criteria are described; and optimization in which adjustable elements are tailored to allow peak performance. Systems engineering is applied to vast numbers of problems in industry and the military. An example of systems engineering at work is the control of the timing of thousands of city traffic lights to maximize traffic flow. The complex and intricate field