Harness the Power of "What-If" Analytics: Shaping Your Future with Simulation

Training Details

Training Time	:	1 Day
Capacity	:	10
Prerequisites	:	There are no prerequisites for this course.

About Training

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It is feasible, practical, and prudent to explore new ideas, evaluate alternatives, and peek into the future using what-if analytics. Common analytics techniques focus on statistics, but business managers often need more decision-making guidance and fewer statistics. Simulation techniques help to identify, analyze, and compare various decision-making scenarios, and to evaluate a range of options by playing the what-if game.

A well-rounded analytics organization includes analysts who are skilled with simulation, and these people often become the most in-demand analysts.

Combining models, assumptions and decision variables yields insights helpful when choosing the best path into the future. Simulation models enhance understanding of key behavior patterns, leading to increased confidence and ability to define and achieve key business objectives.

Implementing simulation as a core part of business analytics practice simply makes sense. Business questions starting with "why" and extending to "what if" can be answered with certainty and clarity.

This course provides an introduction to simulation analytics. Topics include definitions, general system concepts, modeling techniques, and application areas. Pragmatic examples are provided throughout the course. A framework to position simulation in the broader BI program is also provided.

What You'll Learn

- Categories of simulation models
- Domains of applicability
- How to build and implement simulation models
- Data management requirements for simulation
- How business problems can be defined and solved
- The role of experimental design
- How insights can be generated
- How to explore and discover routes to successful outcomes
- How analytics, simulation, and BI are interconnected disciplines

Who Should Attend

Business analytics leaders, BI program leaders; BI architects and project managers; business analytics team members; business managers and decision makers; functional analysts; operations managers; process improvement specialists.

Outline

1.0 Introduction

- Basic Concepts
- Business Intelligence
- Analytics
- Real and Virtual Domains
- Systems and Interfaces
- General System Structure
- Properties of Systems
- System Example 1
- System Example 2
- System Example 3
- Variables and Relationships
- Models and Simulation
- Data and Information
- Defining Insight
- Capabilities of Simulation
- Discovery and Experimentation
- Learning
- Monitoring and Surveillance
- Generating Business Insights
- Business Intelligence Framework
- Description
- Overview
- Value Generation Components
- Monitoring and Learning Components

- Leadership Components
- Putting the Pieces Together
- Simulation Framework
- Overview
- The Context Component - Why
- The Approach Component - How
- The Basic Components - What
- The Analytical Components - What
- The Roles Component - Who
- The Time Component - When
- The Organization Component - Where
- Review

2.0 Principles and Practices

- Context and Opportunities
- Pursuing Goals
- Solving Problems
- Generating Insights
- Decision Support
- Application Areas
- Overview
- Business Processes
- Industrial Processes
- Physical Processes
- Economics
- Queues and Discrete Events
- System Models
- Representing Reality
- Model Categories
- Defining the Structural Model
- Defining the Functional Model
- Defining the System Model
- State Variables and Relationships
- Properties of Systems
- Components and Structure
- Modeling Categories
- Model Components
- Description
- Quantitative Data
- Qualitative Data
- Relationships
- Interactions
- Engine

- System Simulation
- Preparing to Use the Model

3.0 Modeling Techniques

- Overview
- Approaches and Techniques
- Classifying Models by System Properties
- Selecting a Modeling Method
- Approaches and Techniques Review
- Combining Techniques
- Continuous Physical Models
- Description and Purpose
- Modeling Approach
- Identifying Relationships
- Example - Scenario
- Example - Variables and Equations
- Example - Simulated Results
- Application Areas
- Business Process Models
- Description and Purpose
- Modeling Approach
- Structural Model Example
- Adding the Behavioral Model Components
- Application Areas
- Stock and Flow Models
- Description and Purpose
- Modeling Approach
- Example Scenario
- Example Model Structure
- Example Model Equations
- Example Results
- Application Areas
- Monte Carlo Models
- Description
- Modeling Approach
- Defining the Structure
- Defining the Model Behavior
- Example Scenario
- Example Application
- Example Results
- Application Areas
- Discrete Event Models
- Purpose and Structure

- Approach
- The Poisson Probability Distribution
- Example - Base Case
- Example - Off Peak Period
- Example - Peak Period
- Example - Solution Options
- Example - Solution Option 1
- Example - Solution Option 2
- Application Areas
- Empirical Models
- Description and Purpose
- Approach
- Example Scenario
- Data Preparation
- Word of Caution
- Model Generation 1
- Model Generation 2
- Model Evaluation
- Review Approaches and Techniques

4.0 Simulation

- Opportunities and Techniques
- Overview
- Operational Decisions
- Planning and Design
- Surveillance
- Virtual Measurements