

## How to Model, Analyze, and Improve Business Processes and Data

*Instructor-Led, On-Site Duration 3 days*

### Overview

Business processes are what organizations do. Whether documented or not, whether designed or not, whether understood or not, nothing gets done until someone (or “the system”) does it – that is what business processes are all about. They are a combination of business operating procedures, business rules, business data, and supporting technology. Yet, many business processes are undocumented, misunderstood, not optimized, not followed, error-prone, and inefficient.

Business data represents the real world and everything that your organization wants to know about it. Understanding how the business thinks about and uses its data is crucial for the development of any information technology (IT) project. The primary tool for communicating about business data is the business data model (business entity relationship diagram) which helps subject matter experts (SMEs), business analysts, system analysts, and data analysts discover the static structure and business rules of the data.

Processes and data represent two fundamental views of how an organization operates. Creating and using models helps you visualize and comprehend what is good, what is bad, and what is missing in these two dimensions. With this foundation, you will learn how to analyze the models and extract requirements for business process improvement or information technology solutions. These techniques can be used to identify problems in the current (AS-IS) situation or to predict behaviors in a proposed (TO-BE) solution.

**Note:** *This instructor-led course can be delivered in a series of virtual sessions via the Internet or live your site.*

### Target Audience

Business Analysts	Process Analysts
Business Process Managers	Data Administrators
Process Improvement Specialists	Data Analysts
Requirements Definition Specialists	Test Engineers
System Analysts	

*Developed and presented by:*



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**Learning  
Objectives**

*Upon completion of this seminar, you will . . .*

- Draw business process models
- Apply 5 improvement methods based on business process models
- Model the AS IS business process
- Document existing business processes
- Draw data flow, activity, swimlane, and sequence diagrams
- Choose the most appropriate technique to document the details of each process
- Extract and analyze business rules embedded on the processes
- Devise process measurements to evaluate initial and continuous improvement
- Develop a list of process improvements and/or requirements
- Interpret the Process Models for the business community for review
- Draw business data models
- Compare the pros and cons of data modeling
- Draw data model (entity relationship) diagrams
- Create a data model from requirements
- Morph an existing data model into a future data model
- Build a data model based on existing system documentation
- Assign attributes to the appropriate entity on the diagram
- Analyze data attribute's characteristics (metadata)
- Analyze user views, (screens, reports, etc.) to modify a data model
- Modify an existing data model based on new requirements
- Evaluate a data model for full normalization and correctness
- Report data constraints that influence the physical data structures

## 1 Introduction to Process Modeling

### The Problem with Process

Analysis of Business Systems Analysis  
The Fate Chart  
A Question File  
A Problem with Language  
Process Definition  
Benefits of High-Quality Models

## 2 Modeling Business Processes

### Creating Context Diagrams

System Modeling - A Short History  
Basic Process Modeling (The Symbols)  
Exercise: Identify the Errors on this Diagram  
The Simple Rigorous Business Process Model  
"Rigorous Business" Process Model Example  
Exercise: Order Entry Department Rigorous Business Model  
Exercise: Rigorous Model to Level 1 Process Model, step 1  
Top Level Functional (Process) Model  
Case Study Part 1

### Creating Process Models

Leveled Process Models  
Second Level Process Model  
Exercise: Second Level Process Model  
Leveled Process Models (Review)  
Completely Leveled Process Models  
Case Study

### Creating Event/Response Diagrams

Visual Tools  
Event/Response Symbols and Conventions  
Event/Response Example Diagram  
Exercise: Creating Event/Response Models

### Creating Wall Charts

Process Models Can Be Visually Confusing  
The Main Line  
Wall Chart  
Enter Order  
Check Credit  
Fill Order

### Introducing BPMN Symbols

Business Process Modeling Notation (BPMN)  
Business Process Modeling Connections

## 3 Analyzing Business Processes

### Analyzing Activity Diagrams and Process Models

Exercise: Functional Analysis of the Current Situation  
Functional Analysis Diagram  
Problem Definition  
Exercise: Problem Analysis  
Process Model for Problem Analysis  
Timing Analysis  
Exercise: How to Show Timings  
Process Model for Timing Analysis  
Exception Identification

Exercise: Exception Identification  
Process Model for Exception Analysis  
Exercise: Information Usage Analysis  
Process Model for Information Usage Analysis

### Business Rules

Finding Rules and Constraining Requirements  
Rule and Constraint Components  
Why Are Business Rules Hot?  
Discussion: Where Do Business Rules Live?  
Relationships between Business Rules

### Creating Decision Trees and Tables

Analyzing Business Rules  
Business Rule for Validation Example  
Exercise: Decision Trees  
Decision Tables  
Exercise: Decision Tables  
Decision Tables  
Exercise: Decision Table Actions

### Creating Activity Diagrams

Activity Diagramming Conventions  
Example of an Activity Diagram  
Exercise: Creating an Activity Diagram  
Introducing Swimlanes  
Example of a Swimlane Diagram  
Exercise: Modeling Swimlanes  
Concurrency and More  
From Data Flow to Object Flow  
Introducing Object Flow  
Exercise: Modeling Object Flow  
When To Use Swimlane Diagrams  
What's Wrong with this Diagram?

## 4 Improving Business Processes

### Improving Business Processes

Improvement Opportunities  
Process Model for Finding Improvements  
Exercise: Suggesting Improvements  
Exercise: Using Appropriate Controls  
All Controls Share the Following:  
Determining Functional Control Location  
Locating Functional Controls  
Exercise: Defining Functional Controls  
Exercise: Implement This (Rule) Control Requirement  
Short Term Improvements ("Quick Fixes")  
Process Model for Short Term Improvements  
Exercise: Finding Short Term Improvements  
Exercise: Long Term Suggestions  
Process Model for Long Term Improvements  
Improving Business Process Improvement

## 5 Introduction to Data Modeling

### Of People and Data

On Human Communication  
Things to Talk About . . .  
The Data Foundation  
Data, Information and Knowledge

## 6 Defining Business Data

### Creating Data Models Intuitively

Data Model Diagrams

Data Model Diagrams Alternative Graphic Conventions

Data Model Diagrams Additional Information

Exercise: Data Model Diagram for Project Resources

Data Model Evolution

Levels of Data Models

Defining Entities

Exercise: Definitions for Education Department Data For Your Answer

Exercise: Data Modeling from Descriptions

Exercise: Identifying and Placing Attributes

Simple Document for Invoicing System

Exercise: Data Model from a Form

Identifying Entities

Exercise: New System Data Model from Scratch

### Creating Data Models from User Views

Normalization – a Bottom Up Approach

The Order Document for the Invoicing System

Normalized Order

Normalization – Step 2

Normalization – Step 3

Normalization Helpful Hints

On Merging Data Models

Exercise: Combining Two Data Models

Exercise: Normalize an Invoice

Exercise: Attributes of All Invoicing System Forms

Exercise: Complete Invoicing System Data Model

Data Modeling - Two Approaches

### Defining Data Model Attributes

Attributes: Inside an Entity

Attribute Definition

### Overview of UML Class Symbols

E/R (Entity-Relationship) Diagrams: A Summary

## 7 Using Data Models to Discover Requirements

### Modifying Data Models

Creating a New System Data Model

Exercise: Potential Changes to Data Models

Quality Check

Data Stability

Exercise: Modifying the Project Resources Data Model

Previous Data Model for Project Resources

Modifying Diagrams and Forms

Exercise: Modifying a Data Model and Forms System

As-Is Forms for the Invoicing System

### Data Models as an Analysis Tool

Integrating Models (Conserving Data)

Integrating Data Models

Horizontal Balancing

Data Design

Sample Models

Exercise: New Information Requirements

Exercise: New User View Exercise

Invoicing System Data Model

Invoicing System Attributes

Data Models vs. Databases

Exercise: Summary

## 8 Physical Reality and Data

### Data Constraints

Performance Factors

Performance Factors (Trade-Offs)

Design Trade-Offs

Performance Factors: Access & Frequency

Performance Factors

Data Volumes

Constraining Factor