

Contents

1	Introduction to Business Process Management	1
1.1	Processes Everywhere	1
1.2	Ingredients of a Business Process	3
1.3	Origins and History of BPM	8
1.3.1	The Functional Organization	8
1.3.2	The Birth of Process Thinking	10
1.3.3	The Rise and Fall of BPR	12
1.4	The BPM Lifecycle	15
1.5	Recap	26
1.6	Solutions to Exercises	26
1.7	Further Exercises	28
1.8	Further Reading	31
2	Process Identification	33
2.1	Focusing on Key Processes	33
2.1.1	The Designation Phase	34
2.1.2	The Evaluation Phase	38
2.2	Designing a Process Architecture	42
2.2.1	Identify Case Types	44
2.2.2	Identify Functions for Case Types	45
2.2.3	Construct Case/Function Matrices	49
2.2.4	Identify Processes	50
2.2.5	Complete the Process Architecture	55
2.3	Recap	57
2.4	Solutions to Exercises	57
2.5	Further Exercises	59
2.6	Further Reading	60
3	Essential Process Modeling	63
3.1	First Steps with BPMN	63
3.2	Branching and Merging	67
3.2.1	Exclusive Decisions	67

3.2.2	Parallel Execution	69
3.2.3	Inclusive Decisions	72
3.2.4	Rework and Repetition	77
3.3	Information Artifacts	79
3.4	Resources	82
3.5	Recap	89
3.6	Solutions to Exercises	89
3.7	Further Exercises	93
3.8	Further Reading	95
4	Advanced Process Modeling	97
4.1	Process Decomposition	97
4.2	Process Reuse	100
4.3	More on Rework and Repetition	102
4.3.1	Parallel Repetition	104
4.3.2	Uncontrolled Repetition	107
4.4	Handling Events	108
4.4.1	Message Events	108
4.4.2	Temporal Events	110
4.4.3	Racing Events	111
4.5	Handling Exceptions	114
4.5.1	Process Abortion	115
4.5.2	Internal Exceptions	116
4.5.3	External Exceptions	117
4.5.4	Activity Timeouts	118
4.5.5	Non-interrupting Events and Complex Exceptions	119
4.5.6	Interlude: Event Sub-processes	121
4.5.7	Activity Compensation	122
4.6	Processes and Business Rules	124
4.7	Process Choreographies	125
4.8	Recap	129
4.9	Solutions to Exercises	130
4.10	Further Exercises	146
4.11	Further Reading	152
5	Process Discovery	155
5.1	The Setting of Process Discovery	155
5.1.1	Process Analyst Versus Domain Expert	156
5.1.2	Three Process Discovery Challenges	158
5.1.3	Profile of a Process Analyst	159
5.2	Discovery Methods	161
5.2.1	Evidence-Based Discovery	161
5.2.2	Interview-Based Discovery	162
5.2.3	Workshop-Based Discovery	164
5.2.4	Strengths and Limitations	165

5.3	Process Modeling Method	167
5.3.1	Identify the Process Boundaries	167
5.3.2	Identify Activities and Events	167
5.3.3	Identify Resources and Their Handovers	168
5.3.4	Identify the Control Flow	169
5.3.5	Identify Additional Elements	169
5.4	Process Model Quality Assurance	171
5.4.1	Syntactic Quality and Verification	171
5.4.2	Semantic Quality and Validation	172
5.4.3	Pragmatic Quality and Certification	174
5.4.4	Modeling Guidelines and Conventions	175
5.5	Recap	178
5.6	Solutions to Exercises	179
5.7	Further Exercises	181
5.8	Further Reading	183
6	Qualitative Process Analysis	185
6.1	Value-Added Analysis	185
6.1.1	Value Classification	185
6.1.2	Waste Elimination	189
6.2	Root Cause Analysis	190
6.2.1	Cause–Effect Diagrams	191
6.2.2	Why–Why Diagrams	196
6.3	Issue Documentation and Impact Assessment	198
6.3.1	Issue Register	198
6.3.2	Pareto Analysis and PICK Charts	201
6.4	Recap	204
6.5	Solutions to Exercises	205
6.6	Further Exercises	208
6.7	Further Reading	210
7	Quantitative Process Analysis	213
7.1	Performance Measures	213
7.1.1	Process Performance Dimensions	213
7.1.2	Balanced Scorecard	217
7.1.3	Reference Models and Industry Benchmarks	218
7.2	Flow Analysis	219
7.2.1	Calculating Cycle Time Using Flow Analysis	219
7.2.2	Cycle Time Efficiency	224
7.2.3	Cycle Time and Work-In-Process	225
7.2.4	Other Applications and Limitations of Flow Analysis	227
7.3	Queues	229
7.3.1	Basics of Queueing Theory	229
7.3.2	M/M/1 and M/M/c Models	232
7.3.3	Limitations of Basic Queueing Theory	234

7.4	Simulation	235
7.4.1	Anatomy of a Process Simulation	235
7.4.2	Input for Process Simulation	236
7.4.3	Simulation Tools	240
7.4.4	A Word of Caution	243
7.5	Recap	243
7.6	Solutions to Exercises	244
7.7	Further Exercises	246
7.8	Further Reading	250
8	Process Redesign	253
8.1	The Essence of Process Redesign	253
8.1.1	Why Redesign?	253
8.1.2	What Is Redesign?	256
8.1.3	The Devil's Quadrangle	258
8.1.4	How to Redesign?	259
8.2	Heuristic Process Redesign	262
8.2.1	Customer Heuristics	263
8.2.2	Business Process Operation Heuristics	264
8.2.3	Business Process Behavior Heuristics	266
8.2.4	Organization Heuristics	267
8.2.5	Information Heuristics	270
8.2.6	Technology Heuristics	271
8.2.7	External Environment Heuristics	271
8.3	The Case of a Health Care Institution	273
8.3.1	Sending Medical Files by Post	275
8.3.2	Periodic Meetings	275
8.3.3	Requesting Medical Files	276
8.4	Product-Based Design	278
8.4.1	Analysis: Creating a Product Data Model	279
8.4.2	Design: Deriving a Process from a Product Data Model	285
8.5	Recap	288
8.6	Solutions to Exercises	289
8.7	Further Exercises	292
8.8	Further Reading	295
9	Process Automation	297
9.1	Automating Business Processes	297
9.1.1	Business Process Management Systems	298
9.1.2	Architecture of a BPMS	299
9.1.3	The Case of ACNS	304
9.2	Advantages of Introducing a BPMS	309
9.2.1	Workload Reduction	309
9.2.2	Flexible System Integration	310
9.2.3	Execution Transparency	311
9.2.4	Rule Enforcement	312

9.3	Challenges of Introducing a BPMS	313
9.3.1	Technical Challenges	313
9.3.2	Organizational Challenges	314
9.4	Turning Process Models Executable	316
9.4.1	Identify the Automation Boundaries	317
9.4.2	Review Manual Tasks	319
9.4.3	Complete the Process Model	323
9.4.4	Bring the Process Model to an Adequate Granularity Level	324
9.4.5	Specify Execution Properties	327
9.4.6	The Last Mile	337
9.5	Recap	338
9.6	Solutions to Exercises	338
9.7	Further Exercises	347
9.8	Further Reading	351
10	Process Intelligence	353
10.1	Process Execution and Event Logs	353
10.1.1	The Perspective of Participants on Process Execution	354
10.1.2	The Perspective of the Process Owner on Process Execution	354
10.1.3	Structure of Event Logs	356
10.1.4	Challenges of Extracting Event Logs	359
10.2	Automatic Discovery	360
10.2.1	A α -Algorithm	360
10.2.2	of the α -Algorithm	361
10.2.3	364
10.2.4	366
10.3	367
10.3.1	367
10.3.2	369
10.3.3	370
10.3.4	F1	372
10.4	Conformance	373
10.4.1	Conformity	374
10.4.2	Conformance	377
10.5	Recap	378
10.6	Solutions to Exercises	379
10.7	Further Exercises	382
10.8	Further Reading	382
References		385
Index		391