

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 Process Discovery 360
 - 10.2.1 Assumptions of the α -Algorithm 360
 - 10.2.2 The Order Relations of the α -Algorithm 361
 - 10.2.3 The α -Algorithm 364
 - 10.2.4 Robust Process Discovery 366
 - 10.3 Performance Analysis 367
 - 10.3.1 Time Measurement 367
 - 10.3.2 Cost Measurement 369
 - 10.3.3 Quality Measurement 370
 - 10.3.4 Flexibility Measurement 372
 - 10.4 Conformance Checking 373
 - 10.4.1 Conformance of Control Flow 374
 - 10.4.2 Conformance of Data and Resources 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**



<http://www.springer.com/978-3-642-33142-8>

Fundamentals of Business Process Management

Dumas, M.; La Rosa, M.; Mendling, J.; Reijers, H.

2013, XXVII, 399 p., Hardcover

ISBN: 978-3-642-33142-8