

# Project Management Theory and Practice

Gary L. Richardson



CRC Press

Taylor & Francis Group

Boca Raton London New York

---

CRC Press is an imprint of the  
Taylor & Francis Group, an **informa** business  
AN AUERBACH BOOK

---

# Contents

Preface .....	xxiii
Acknowledgments .....	xxv
Author .....	xxvii

## ***PART I Conceptual Overview of the Project Environment***

<b>Chapter 1</b> Introduction .....	3
1.1 Project Management .....	3
1.2 Role of the Project Manager .....	4
1.3 Project Manager Skills .....	4
1.3.1 Success Management .....	5
1.4 Text Content and Organization .....	6
1.4.1 Text Structure .....	6
Appendices .....	7
References .....	8
<b>Chapter 2</b> Evolution of Project Management .....	9
2.1 Early History of Project Management .....	9
2.2 Application of Analytical Science .....	10
2.3 Frederick Taylor and Scientific Management .....	10
2.4 Frank and Lillian Gilbreth .....	11
2.5 Henry Gantt .....	12
2.6 Mary Parker Follett .....	12
2.7 Elton Mayo .....	13
2.8 Phases of Project Management Evolution .....	13
2.9 Project Management Challenges .....	17
2.10 Project Management Benefits .....	18
2.10.1 At the Macrolevel .....	18
2.10.2 At the Microlevel .....	18
References .....	18
<b>Chapter 3</b> Project Management Body of Knowledge .....	21
3.1 High Level Overview .....	21
3.2 History of <i>PMBOK® Guide</i> development .....	22
3.3 Structure of the <i>PMBOK® Guide</i> .....	22
3.3.1 Project Domains .....	22
3.3.1.1 Initiation .....	24
3.3.1.2 Planning .....	25

3.3.1.3	Execution .....	25
3.3.1.4	Monitoring and Controlling .....	25
3.3.1.5	Closing .....	25
3.3.2	Knowledge Areas .....	26
3.3.2.1	Scope Management .....	26
3.3.2.2	Time Management .....	26
3.3.2.3	Cost Management .....	26
3.3.2.4	Quality Management .....	27
3.3.2.5	Human Resources Management .....	27
3.3.2.6	Communications Management .....	27
3.3.2.7	Risk Management .....	27
3.3.2.8	Procurement Management .....	28
3.3.2.9	Integration Management .....	28
3.3.2.10	Overall Process View .....	28
3.4	Key Introductory Vocabulary Terms .....	29
3.5	Ancillary Models .....	30
3.6	Summary .....	31
	Reference .....	31
<b>Chapter 4</b>	<b>Industry Trends in Project Management .....</b>	<b>33</b>
4.1	Standardizing Project Management .....	33
4.2	Enterprise Project Management .....	33
4.3	EPM in Operation .....	35
4.4	Implementation and Advantages of EPM .....	35
4.5	Other Trends Impacting Project Management .....	36
4.6	Project Management Perspective .....	37
	Discussion Questions .....	37
	References .....	37
<b>Chapter 5</b>	<b>Project Types .....</b>	<b>39</b>
	Reference .....	42
<b>Chapter 6</b>	<b>Project Organization Concepts .....</b>	<b>43</b>
6.1	PM Role .....	43
6.2	Reporting Relationships .....	43
6.3	Team Resources .....	44
6.4	Team Productivity and Size .....	44
6.5	Team's Physical Location Issues .....	45
6.6	Virtual Organizations .....	46
6.7	Organizational Culture .....	47
6.8	Summary .....	48
	References .....	48
<b>Chapter 7</b>	<b>Project Life Cycle Models .....</b>	<b>49</b>
7.1	Overview of Project Methodologies .....	49
7.2	Life Cycle Management Process .....	50
7.2.1	Feasibility Review .....	50
7.2.2	Project Plan .....	51

7.2.3	Logical versus Physical Design .....	51
7.2.4	Quality Control and Assurance .....	51
7.2.5	Monitor and Control .....	52
7.2.6	Periodic Status Reviews .....	52
7.2.7	Milestone or Stage Gate Reviews .....	52
7.2.8	Project Close .....	52
7.2.9	Project Communication Processes .....	52
7.2.10	Life Cycle Models .....	53
7.2.11	Templates .....	53
7.3	Key Project Management Artifacts .....	53
7.3.1	Initiating .....	54
7.3.2	Planning .....	54
7.3.3	Execution .....	54
7.3.4	Monitoring and Control .....	54
7.3.5	Baseline .....	54
7.4	Project Methodology Models .....	55
7.5	Summary Points .....	56
7.6	Potential Shortcomings of Project Methodologies .....	57
	References .....	57
<b>Chapter 8</b>	<b>Quick Start Example .....</b>	<b>59</b>
8.1	Project Management Work Packages .....	59
8.2	WP Dictionary .....	59
8.3	Multiple WPs .....	60
8.4	Psychology of Estimating .....	61
8.5	Procrastination .....	62
8.6	Developing the Whole Project View .....	63
8.7	Project Scope .....	63
8.8	Example: Pool Project Mechanics .....	64
8.9	Quick Start Wrap-Up .....	67
	Discussion Questions .....	68
	Reference .....	68
	Concluding Remarks for Part I .....	69
<b>PART II Projects as State Change Vehicles</b>		
<b>Chapter 9</b>	<b>Role of Projects in the Organization .....</b>	<b>73</b>
9.1	Project Valuation Models .....	73
9.2	Project Selection Strategies .....	75
9.3	Conclusion .....	78
	References .....	78
<b>Chapter 10</b>	<b>Project Initiation .....</b>	<b>79</b>
10.1	Environmental Factors to Consider .....	83
10.1.1	User Involvement .....	84
10.1.2	Executive Management Support .....	84
10.1.3	Experienced PM .....	85

10.1.4	Communications .....	85
10.1.5	Clear Business Objectives .....	86
10.1.6	Minimized Scope .....	87
10.1.7	Other Success Factors .....	87
10.1.7.1	Agile Development Approaches .....	87
10.1.7.2	Existence of a Standard Process Infrastructure .....	88
10.1.7.3	Use of a Standard Methodology .....	88
10.1.7.4	Reliable Time Estimates .....	89
10.1.7.5	Availability of Appropriate Skills .....	89
10.1.8	Industry and Organizational Culture .....	89
10.2	Predicting a Project's Success .....	89
10.3	Forecasting the Success of Technology Projects .....	90
10.4	Conclusion .....	92
	References .....	92
	Concluding Remarks for Part II .....	93

## ***PART III Defining the Triple Constraints***

<b>Chapter 11</b>	<b>Project Plan Development .....</b>	<b>99</b>
11.1	Arguments for Planning .....	100
11.1.1	Project Monitoring and Control .....	100
11.1.2	Conflicting Expectations .....	101
11.1.3	Overlooking the Real Solution .....	101
11.1.4	Competing Solutions .....	101
11.1.5	Misaligned Goals .....	101
11.1.6	Quality Solutions .....	101
11.2	Plan Process and Components .....	102
11.3	Initial Planning View .....	102
11.4	Plan Artifacts .....	103
11.5	Real-World Planning Process .....	104
11.6	Conclusion .....	104
	References .....	105
<b>Chapter 12</b>	<b>Scope Management .....</b>	<b>107</b>
12.1	Defining Project Work Units .....	108
12.2	WP Planning Variables .....	108
12.3	Multiple WPs .....	109
12.4	Developing the Project View .....	110
12.5	Developing Project WBS .....	110
12.6	WBS Mechanics .....	113
12.6.1	WBS Numbering Scheme .....	115
12.6.2	WBS Dictionary .....	116
12.6.3	Other WBS Views .....	117
12.6.4	Tracking Status of the WP .....	117
12.7	WBS Construction Mechanics .....	118
12.8	Requirements "Ibilities" .....	121
12.9	Moving Forward .....	122
	References .....	123

<b>Chapter 13</b>	<b>Time Management</b>	125
13.1	Defining Project Work Activities	125
13.1.1	Activity Definitional Data Elements	127
13.2	Activity Sequencing	127
13.3	Duration Estimating	128
13.4	Tips for Accurate Estimating	128
13.4.1	Types of Estimates	129
13.4.2	Estimating Techniques	130
13.4.2.1	Expert Judgment	130
13.4.2.2	Analogous Estimating	130
13.4.2.3	Heuristic Estimating	131
13.4.2.4	Delphi Technique	131
13.4.2.5	Parametric Estimating	132
13.4.2.6	Phased Estimating	133
13.4.2.7	Effort Distribution Estimating (Top-Down)	135
13.4.2.8	Bottom-Up Estimating	136
13.4.2.9	Monte Carlo Simulation	137
13.5	Activity Sequencing	137
13.5.1	Arrows and Boxes Models	137
13.5.2	AON Model	138
13.6	Time Calculation	139
13.7	Network Mechanics	139
13.8	Establishing the Project Activity Sequence	140
13.9	Forward Pass Calculation	141
13.10	Backward Pass Calculation	142
13.11	Defining Critical Path	143
13.12	Manipulating the Schedule	144
13.12.1	Automated Calculation Tools	144
13.13	Formatting Activity Results	144
13.14	Which Diagram Format Wins?	145
13.15	Summary	146
13.16	Estimating Checklist	146
	References	147
<b>Chapter 14</b>	<b>Cost Management</b>	149
14.1	Project Cost Planning Basics	149
14.2	Cost Planning	150
14.3	Cost Accuracy	150
14.4	Organizational Overhead	151
14.5	Scope, Time, and Cost Alignment	151
14.5.1	Scope Replanning	151
14.5.2	Fast Tracking	152
14.5.3	Schedule Crashing	152
14.6	Indirect Costs	154
14.7	Resource Alignment	154
14.8	Budget Reserves	157
14.8.1	Approved Changes	157
14.8.2	Risk Events	158
14.8.3	Management Reserve	158

14.9	Money Can Have Different Forms .....	159
14.9.1	Budget Expense Categories .....	159
14.9.2	Assets versus Expenses .....	160
14.9.3	Budget Cost Components .....	160
14.10	Management Approval and Baselines .....	161
14.11	Summary .....	162
	References .....	162
	Concluding Remarks for Part III .....	163

## ***PART IV Advanced Planning Models***

<b>Chapter 15</b>	Analyzing Variable Time Estimates .....	167
15.1	History of Variable Time Estimates .....	167
15.2	Modifying PERT for Commercial Projects .....	169
15.3	Defining Variable Time Estimates .....	169
15.4	Central Limit Theorem .....	171
15.5	Triangular Distributions .....	172
15.6	Calculating Probability of Completion .....	174
15.7	Summary .....	174
	References .....	175
<b>Chapter 16</b>	Project Simulation .....	177
16.1	Traditional Time Modeling Tools .....	177
16.1.1	Near Critical Path Activities .....	177
16.1.2	Task Existence Risk Modeling .....	177
16.1.3	Conditional Activity Branching .....	178
16.1.4	Correlation between Task Durations .....	178
16.2	Simulation in Risk Management .....	178
16.3	Pertmaster Modeling .....	180
16.4	Other Pertmaster Metrics .....	181
16.5	Summary .....	183
	References .....	184
<b>Chapter 17</b>	Critical Chain Management Model .....	185
17.1	Introduction .....	185
17.2	CC Concepts .....	185
17.3	CC Mechanics .....	188
17.4	CCM Model .....	189
17.5	Principles of the CC Model .....	189
17.6	Buffer Management .....	190
17.6.1	Buffer Types .....	192
17.7	Building the CC Schedule .....	193
17.8	Resource Allocation .....	194
17.9	Implementation Challenges .....	194
17.9.1	Organizational Barriers .....	195
17.9.1.1	Lack of Project Management Maturity .....	195
17.9.1.2	Buffer Resistance .....	195

17.9.1.3	Milestone Tracking versus Buffer Management Reporting .....	196
17.9.1.4	Existing Processes .....	196
17.9.1.5	Existing Project Management Methodology .....	196
17.9.1.6	Existing Tools and Processes .....	197
17.9.1.7	Formal Tracking and Reporting Mechanisms .....	197
17.9.1.8	Resistance to Change .....	197
17.9.2	Leadership Challenges .....	197
17.9.2.1	Project Control .....	198
17.9.2.2	Planning Support .....	198
17.9.2.3	WBS Development .....	198
17.9.2.4	Schedule Development .....	198
17.9.2.5	Buffer Calculations .....	198
17.9.2.6	Dictated versus Derived Scheduling .....	198
17.9.2.7	Project Prioritization .....	199
17.9.2.8	Resource Commitment .....	199
17.9.2.9	Multitasking .....	199
17.9.2.10	Prioritization .....	200
17.9.3	Skill Requirements .....	200
17.9.3.1	Task Time Estimation .....	200
17.9.3.2	Estimating Logic .....	200
17.9.3.3	Project Manager .....	201
17.9.3.4	Team Members .....	201
17.9.3.5	Task Status Reporting .....	202
17.10	Buffer Management .....	202
17.11	Organizational Challenges of the CC .....	203
17.12	CC Implementation Strategies .....	203
17.13	Conclusion .....	204
	References .....	205

## ***PART V Planning Support Processes***

<b>Chapter 18</b>	<b>Human Resource Management .....</b>	<b>209</b>
18.1	HR Planning .....	209
18.2	HR in Execution .....	210
18.3	Acquire Project Team .....	210
18.4	Project Organizations .....	211
	18.4.1 Dotted Lines .....	212
	18.4.2 People Issues .....	213
18.5	Role Specifications .....	213
18.6	Responsibility Assignment Matrix .....	214
18.7	Resource Histograms .....	214
18.8	Staff Management Plan .....	215
18.9	Motivation Theory .....	215
18.10	Individual Motivation Theories .....	215
18.11	Team Motivation .....	218



18.12	Hygiene Dissatisfiers .....	219
18.13	Employee Satisfaction .....	220
18.14	Conflict Management .....	220
18.14.1	Conflict Sources .....	221
18.15	Negotiation Skills .....	222
18.16	Techniques for Handling Conflict .....	223
18.17	Conflict Management Scenario Case .....	224
18.18	Leader versus Manager? .....	224
18.19	Attributes of a Leader .....	224
18.20	Training Programs .....	225
18.21	Summary .....	226
	References .....	226
<b>Chapter 19</b>	<b>Project Communications .....</b>	<b>229</b>
19.1	Introduction .....	229
19.2	Engaging Employees: A Case Study .....	229
19.3	Communications Management Processes .....	230
19.4	Identify Stakeholders .....	230
19.5	Plan Communications .....	230
19.6	Distribute Information .....	232
19.7	Manage Stakeholder Expectations .....	232
19.8	Report Performance .....	233
19.9	Human Communications Model .....	234
19.10	Communication Channels .....	237
19.11	Communicating Information .....	239
19.12	Improving the Effectiveness of Communication .....	239
19.13	Effective Listening .....	239
19.14	Barriers to Effective Communication .....	239
19.15	Communication Tension .....	240
19.16	Communication Styles .....	241
19.17	Communications: The Impossible Goal? .....	241
19.18	Conclusion .....	242
	Discussion Questions .....	242
	References .....	242
<b>Chapter 20</b>	<b>Procurement Management .....</b>	<b>245</b>
20.1	Introduction .....	245
20.2	Procurement Management .....	245
20.3	Make or Buy Decision .....	246
20.4	Procurement Management Processes .....	247
20.5	Planning for Procurement .....	248
20.5.1	Planning Stage Outputs .....	248
20.5.2	Procurement SOW .....	248
20.6	Conduct Procurements .....	249
20.6.1	Requests for Information .....	249
20.6.2	Requests for Proposals .....	249
20.6.3	Requests for Quotation .....	250
20.6.4	Invitations for Bid .....	250
20.6.5	Invitation to Negotiation .....	250

20.7	Bidding Process .....	250
20.8	Selecting Sellers .....	251
20.9	Contract Negotiation .....	251
20.10	Contracts .....	253
20.11	Administer Procurement .....	254
20.12	Procurement Audits .....	255
20.13	Contract Review and Reporting .....	255
	20.13.1 Record Keeping and Audits .....	256
20.14	Close Procurements .....	256
20.15	Procurement of Human Services .....	257
20.16	Ranking Vendor Proposals .....	258
	20.16.1 Instructions .....	258
20.17	Summary .....	258
	Discussion Questions .....	260
	Glossary of Procurement Terms .....	260
	Appendix: Legal Terms .....	261
	References .....	263
<b>Chapter 21</b>	<b>Quality Management .....</b>	<b>265</b>
21.1	Introduction .....	265
21.2	Evolution of Quality .....	265
21.3	Definition of Quality .....	266
21.4	Project Quality Management .....	268
21.5	Quality Perspective .....	268
21.6	Implications for Project Planning Stage .....	269
21.7	Quality Planning .....	269
	21.7.1 Quality Policy .....	269
	21.7.2 Quality Objectives .....	270
21.8	Quality Management Components .....	271
21.9	Quality Definition .....	271
21.10	Quality Planning .....	271
21.11	Quality Assurance .....	272
21.12	Quality Control .....	273
21.13	QA versus QC Operational Roles .....	273
21.14	Quality Gurus .....	274
	21.14.1 Edwards Deming .....	274
	21.14.2 Joseph Juran .....	275
	21.14.3 Philip Crosby .....	275
	21.14.4 Kaoru Ishikawa .....	276
	21.14.5 Armand Feigenbaum .....	276
	21.14.6 Genichi Taguchi .....	276
	21.14.7 Six Sigma .....	276
	21.14.8 Other Gurus .....	276
21.15	Quality Management Programs .....	277
	21.15.1 ISO 9000 .....	277
	21.15.2 Zero Defects .....	277
	21.15.3 Total Quality Management .....	277
	21.15.4 Six Sigma .....	278
	21.15.4.1 Statistical Definition of Six Sigma .....	278
	21.15.4.2 Six Sigma Fascination .....	278

21.15.4.3 Basic Methodologies .....	280
21.15.4.4 DMAIC Process Overview .....	281
21.16 <i>PMBOK® Guide</i> Quality Process Model .....	283
21.17 Other Programs .....	283
21.18 Evaluating Quality .....	283
21.18.1 Benchmarking .....	284
21.18.1.1 What Is It? .....	284
21.18.1.2 Types of Benchmarking .....	284
21.18.1.3 J. D. Power's Quality Benchmarking .....	284
21.19 Continuous Improvement .....	285
21.20 Failure Mode and Effects Analysis .....	285
21.21 Quality Tools .....	286
21.22 Other Quality Analysis Techniques .....	288
21.22.1 Design of Experiments .....	288
21.22.2 Quality Function Deployment .....	289
21.23 Organizational Roles and Responsibilities .....	290
21.24 Issues in Quality Management .....	291
21.25 Toyota Quality Perspective .....	291
21.26 Future of Quality Management .....	293
21.27 Worksheet Exercise: Are You Meeting Quality Goals? .....	294
Discussion Questions.....	296
References .....	296
<b>Chapter 22 Risk Management .....</b>	<b>297</b>
22.1 Introduction .....	297
22.2 Risk Management Process .....	300
22.3 Risk Management Planning .....	301
22.3.1 Developing an RBS .....	303
22.4 Risk Identification .....	303
22.5 Qualitative and Quantitative Risk Analysis .....	307
22.6 Risk Assessment .....	307
22.7 Risk Contingency Budget .....	311
22.8 Risk Response Planning .....	311
22.9 Risk Monitoring and Control .....	313
22.10 Risk Events versus Issues .....	313
22.11 Project Risk Assessment Worksheet .....	313
22.12 Risk Case Study .....	314
22.12.1 Mishap Foils Latest Attempt at a 25-Mile Skydive .....	314
22.13 Conclusion .....	314
Discussion Questions .....	316
References .....	316
<b>Chapter 23 Plan Review and Approval .....</b>	<b>317</b>
23.1 Reviewing Plan Components .....	317
23.2 Plan Approval Process .....	318
23.3 Review Major Planning Artifacts .....	318
23.4 Financial and Control Structures .....	319
23.4.1 Scope Reserve .....	321
23.4.2 Risk Reserve .....	321

23.4.3	Level of Effort .....	321
23.4.4	Overhead .....	322
23.4.5	Management Reserve .....	322
23.4.6	Profit .....	323
23.4.7	Budget Structure and Format .....	323
23.4.8	Control Structure .....	324
23.5	Documentation Plan Packaging .....	325
23.6	External Communication Process .....	325
23.7	Planning Stage Close .....	326
	Discussion Questions .....	327

## ***PART VI Project Execution—Managing the Plan***

<b>Chapter 24</b>	Project Execution and Control .....	331
24.1	Introduction .....	331
24.1.1	Magic Twelve Success Indicators .....	331
24.2	Status View .....	332
24.2.1	Status-Tracking Processes .....	333
24.2.2	Turning the Management and Control Knobs .....	335
24.2.2.1	ICC Process .....	336
24.3	Human Relations and Communications Issues .....	336
24.3.1	Team Acquisition .....	337
24.3.1.1	Developing the Project Team .....	337
24.3.1.2	Team Development .....	338
24.3.1.3	Team Skills and Capabilities .....	339
24.3.2	Manage Project Team .....	339
24.3.2.1	Motivation Level .....	339
24.3.3	Meetings as Information Sources .....	340
24.3.3.1	Meeting Structure .....	341
24.3.3.2	Management Involvement .....	341
24.4	Project Team Member Dissatisfiers .....	342
24.5	Project Team Member Motivators .....	343
24.6	Conclusion .....	344
	Discussion Questions .....	344
	References .....	345

## ***PART VII Monitoring and Controlling Techniques***

<b>Chapter 25</b>	Change Management .....	351
25.1	Introduction .....	351
25.2	Integrated Change Control .....	351
25.3	Project Management Plan .....	352
25.4	Change Control System .....	354
25.5	Configuration Management .....	356
25.6	Change Management Workflow .....	357
25.7	External Communication Issues .....	358

25.8	Project Operational Integration .....	359
25.9	Summary .....	360
25.10	Change Request Checklist .....	360
	References .....	361
<b>Chapter 26</b>	<b>Project and Enterprise Metrics .....</b>	<b>363</b>
26.1	Introduction .....	363
26.2	Fundamentals .....	363
26.2.1	Alignment with Organization Goals .....	363
26.3	Alignment with Organizational Maturity .....	365
26.4	Drivers of Performance and Change .....	366
26.5	Summary Categories .....	366
26.6	Metrics Evaluation Criteria .....	368
26.7	Establishing a Baseline and Setting Targets .....	370
26.8	Beware of the Metrics Pitfalls .....	370
26.9	Mechanics .....	371
26.9.1	Miscellaneous Issues .....	372
26.10	Industry Standard Metrics for Monitoring and Control .....	374
26.11	Conclusion .....	374
	References .....	375
<b>Chapter 27</b>	<b>Earned Value Management .....</b>	<b>377</b>
27.1	Basic Principles .....	378
27.2	Calculating EV Parameters .....	380
27.3	Interpreting EV Parameters .....	380
27.4	EVM Criteria .....	382
27.5	EVM Simplified .....	382
27.6	EVM for Commercial Applications .....	383
27.7	Emerging Applications of EVM .....	384
27.7.1	Earned Schedule .....	385
27.8	ES Mathematical Formulation .....	386
27.8.1	ES Formulae .....	387
27.8.2	ES Indicators .....	388
27.9	EVM Pros and Cons .....	388
27.10	Conclusions .....	389
	Appendix .....	389
	A. Summary Review of EV Metrics and Performance Parameters .....	389
	B. EV Formulae and Interpretation .....	390
	C. Using a Summary Project Plan Spreadsheet to Calculate EV Parameters .....	390
	D. EV Earning Rules .....	390
	References .....	394
<b>Chapter 28</b>	<b>Tracking Project Progress .....</b>	<b>395</b>
28.1	Introduction .....	395
28.2	Status Tracking .....	395
28.3	Tracking Metrics .....	397
28.4	Information Distribution .....	397
28.5	Control .....	398

28.5.1	Project Plan .....	399
28.5.2	Issue Management Process .....	399
28.5.3	Configuration Management .....	399
28.5.4	Integrated Change Control .....	400
28.6	KA Controls .....	400
28.6.1	Scope Control .....	400
28.6.2	Schedule Control .....	400
28.6.3	Cost Control .....	400
28.6.4	Quality Control .....	401
28.7	Project Status Tracking Case Study .....	402
28.8	Conclusion .....	403
	References .....	403
<b>Chapter 29</b>	<b>Enterprise Reporting Using the Balanced Scorecard .....</b>	<b>405</b>
29.1	Introduction .....	405
29.2	Scorecard Implementation .....	406
29.2.1	Communicating Strategic Objectives .....	406
29.2.2	Communicating Strategy .....	406
29.2.3	Assigning Responsibility .....	406
29.2.4	Aligning Strategy .....	406
29.2.5	Process Integration .....	407
29.3	BSC Implementation Principles .....	407
29.3.1	Best Practices .....	407
29.3.2	Barriers to Success .....	408
29.4	BSC Model .....	408
29.4.1	Financial Perspective .....	410
29.4.2	Internal Business Process Perspective .....	410
29.4.3	Learning and Growth Perspective .....	410
29.4.4'	Customer Perspective .....	411
29.5	BSC as a Strategic Management System .....	411
29.5.1	Overcoming the Vision Barrier .....	411
29.5.2	Overcoming the People Barrier .....	412
29.5.3	Overcoming the Resource Barrier .....	412
29.5.4	Overcoming the Management Barrier .....	413
29.6	BSC as a Communication Tool .....	413
29.7	Balancing the BSC Components .....	413
29.8	Advantages and Disadvantages of BSC .....	414
29.8.1	Advantages .....	414
29.8.2	Disadvantages .....	415
29.9	Future of the BSC .....	415
29.10	Conclusion .....	415
	References .....	416

## ***Part VIII Closing the Project***

<b>Chapter 30</b>	<b>The Closing Process .....</b>	<b>419</b>
30.1	Project Implementation Review .....	419
30.1.1	Normal Project Termination .....	420

30.2	Abnormal Termination .....	421
30.3	Termination Model .....	421
30.4	Project Termination Checklist .....	421
30.5	Project Team and Client Relationship .....	423
30.6	Creating Lessons Learned Documentation .....	423
30.7	Lessons Learned Report .....	424
30.8	Project Team Celebration .....	424
30.9	Conclusion .....	425
	References .....	425

## ***PART IX Contemporary Topics***

<b>Chapter 31</b>	<b>Organizational Maturity .....</b>	<b>429</b>
31.1	Introduction .....	429
31.2	Overview of Formal CMMs .....	430
31.3	SEI's CMM .....	431
31.4	CMM Structure .....	431
31.5	CMM Maturity Levels .....	432
31.5.1	Initial Level (Level 1) .....	432
31.5.2	Repeatability Level (Level 2) .....	432
31.5.3	Defined Level (Level 3) .....	433
31.5.4	Managed Level (Level 4) .....	433
31.5.5	Optimizing Level (Level 5) .....	433
31.6	Capability Maturity Model Integration (CMMI) .....	433
31.7	Value of Organizational Maturity .....	434
31.8	Organizational Project Management (OPM3) .....	435
31.9	Overview of OPM3 .....	436
31.10	OPM3 Components .....	438
31.10.1	Knowledge .....	438
31.10.2	Assessment .....	438
31.10.3	Evaluation Process .....	438
31.11	Best Practices .....	439
31.12	Capabilities Directory .....	439
31.13	Improvement Planning Directory .....	439
31.14	OPM3 Processes .....	442
31.15	Applying OPM3 in an Organization .....	443
31.16	OPM3 Benefits and Case Studies .....	444
31.17	Conclusion .....	445
	References .....	446
<b>Chapter 32</b>	<b>Project Portfolio Management .....</b>	<b>447</b>
32.1	Introduction .....	447
32.2	Role of PPM .....	447
32.3	Improving Project Selection Decisions .....	448
32.4	Improving Visibility of Project Performance .....	448
32.5	Better Understanding of Project Value .....	448
32.6	Conducting "What If" Analysis .....	449
32.7	Project Investment Management .....	449

32.8	Who Needs a PPM? .....	449
32.9	PPM Goal Structure .....	450
32.9.1	Subgoal 1: Strategic Goal Alignment .....	451
32.9.2	Subgoal 2: Resource Investment Focus .....	451
32.9.3	Subgoal 3: Better Project Control/Governance .....	451
32.9.4	Subgoal 4: Efficiency .....	452
32.9.5	Subgoal 5: Balance .....	452
32.9.6	Subgoal 6: Value Optimization .....	452
32.10	Models of PPM .....	453
32.11	The Hybrid Model .....	454
32.12	Efficient Frontier .....	454
32.12.1	Project Assessment .....	454
32.13	Keys to Implementing PPM .....	456
32.14	PPM Principles .....	456
32.15	Finding the Approach that Fits .....	457
32.16	Executive Support .....	457
32.17	Governance Framework .....	457
32.18	Value-Measurement Framework .....	458
32.19	Institute Effective Processes .....	459
32.20	PPM Implementation Roadmap .....	459
32.21	External Expertise .....	460
32.22	Implementation Goals .....	460
32.23	Key PPM Interfaces .....	460
32.24	PPM Implementation Challenges .....	461
32.25	Advantages of Implementing PPM .....	461
32.26	Summary .....	462
	References .....	462
<b>Chapter 33</b>	<b>Enterprise Project Management Office .....</b>	<b>465</b>
33.1	Introduction .....	465
33.2	PMO Functions .....	465
33.3	Enterprise Project Management Office .....	466
33.4	Communication .....	467
33.5	Performance Metrics .....	467
33.6	Status Reporting .....	468
33.7	EPMO Communication Linkages .....	469
33.8	EPMO Organizational Models .....	469
33.8.1	Weather Station .....	470
33.8.1.1	Organization Driver .....	470
33.8.1.2	Formal Authority .....	470
33.8.2	Control Tower .....	471
33.8.2.1	Organization Driver .....	471
33.8.2.2	Formal Authority .....	471
33.8.3	Resource Pool .....	472
33.8.3.1	Organizational Driver .....	472
33.8.3.2	Formal Authority .....	472
33.8.4	Which Model Is the Right One? .....	473
33.9	EPMO Maturation Stages .....	474
33.9.1	EPMO Tools and Technology .....	475
33.10	Evaluating and Prioritizing New Projects .....	477



33.11	Weighted Criteria Example .....	477
33.12	Summary .....	478
	References .....	479
<b>Chapter 34</b>	<b>HR Outsourcing .....</b>	<b>481</b>
34.1	Introduction .....	481
34.2	Management Drivers .....	482
34.3	First Wave Outsourcing .....	483
34.4	Offshoring Wave .....	483
34.5	Issues with Outsourcing Relationships .....	483
34.6	Outsourcing Success and Failures .....	484
34.7	Best Outsourcing Practices .....	485
34.8	Outsourcing Vendor Evaluation Worksheet .....	487
34.9	Conclusion .....	489
	References .....	489
<b>Chapter 35</b>	<b>High Productivity Teams .....</b>	<b>491</b>
35.1	Background and Overview .....	491
35.2	Introduction to TSP Concepts .....	492
35.3	PP Concepts .....	492
35.3.1	PP Example .....	493
35.3.2	Introducing PP to the Team .....	495
35.4	TP Process .....	495
35.5	TP Work Objects and Principles .....	496
35.5.1	TP Launch Structure .....	496
35.6	TP Launch Details .....	498
35.7	Teamwork Process .....	499
35.8	Quality Management .....	499
35.9	Experience Examples and Evaluation .....	500
35.10	TSP Qualitative Feedback Results .....	501
35.11	Future Trends .....	502
35.12	Large, Multidisciplined Projects .....	502
35.13	Summary .....	503
	References .....	503
<b>Chapter 36</b>	<b>Project Governance .....</b>	<b>505</b>
36.1	Introduction .....	505
36.2	Need for Project Governance .....	505
36.3	Project Governance Definition .....	506
36.4	Organizational Level Project Governance Principles .....	507
36.5	Tactical Level Project Governance .....	508
36.6	Operational Governance Model .....	509
36.7	Defining Responsibilities .....	510
36.8	Populating the Project Governance Framework .....	512
36.9	Governance Life Cycle Maturity Model .....	514
36.10	Governance Value Process .....	514
36.11	Corporate Governance and Project Teamwork (Halas) .....	516
36.12	Commentary .....	518

36.13 Conclusion ..... 518  
References ..... 519

***PART X Professional Ethics and Responsibility***

**Chapter 37** Ethical Project Management Practices ..... 523  
    37.1 Learning Objectives ..... 523  
    37.2 Introduction ..... 523  
    37.3 PMI’s Code of Professional Conduct ..... 526  
    Review Questions ..... 526  
    Reference ..... 529  
**Appendix A** Financial Metrics ..... 531  
**Appendix B** Templates ..... 539  
**Appendix C** Project Repository Architecture ..... 541  
**Index** ..... 545