# Contents

**Preface** xxiii

1 **OVERVIEW** 1

1.0 Introduction 1
1.1 Understanding Project Management 2
1.2 Defining Project Success 7
1.3 Success, Trade-Offs, and Competing Constraints 8
1.4 The Project Manager–Line Manager Interface 9
1.5 Defining the Project Manager's Role 14
1.6 Defining the Functional Manager's Role 15
1.7 Defining the Functional Employee's Role 18
1.8 Defining the Executive's Role 19
1.9 Working with Executives 19
1.10 Committee Sponsorship/Governance 20
1.11 The Project Manager as the Planning Agent 23
1.12 Project Champions 24
1.13 The Downside of Project Management 25
1.14 Project-Driven versus Non-Project-Driven Organizations 25
1.15 Marketing in the Project-Driven Organization 28
1.16 Classification of Projects 30
1.17 Location of the Project Manager 30
1.18 Differing Views of Project Management 32
1.19 Public-Sector Project Management 34
1.20 International Project Management 38
1.21 Concurrent Engineering: A Project Management Approach 38
1.22 Added Value 39
1.23 Studying Tips for the PMI® Project Management Certification Exam 40

Problems 42

**Case Study**

Williams Machine Tool Company 44
2 PROJECT MANAGEMENT GROWTH: CONCEPTS AND DEFINITIONS 47

2.0 Introduction 47
2.1 General Systems Management 48
2.2 Project Management: 1945–1960 48
2.3 Project Management: 1960–1985 49
2.4 Project Management: 1985–2012 55
2.5 Resistance to Change 59
2.6 Systems, Programs, and Projects: A Definition 64
2.7 Product versus Project Management: A Definition 66
2.8 Maturity and Excellence: A Definition 68
2.9 Informal Project Management: A Definition 69
2.10 The Many Faces of Success 70
2.11 The Many Faces of Failure 73
2.12 The Stage-Gate Process 76
2.13 Project Life Cycles 78
2.14 Gate Review Meetings (Project Closure) 83
2.15 Engagement Project Management 84
2.16 Project Management Methodologies: A Definition 85
2.17 Enterprise Project Management Methodologies 87
2.18 Methodologies Can Fail 91
2.19 Organizational Change Management and Corporate Cultures 94
2.20 Project Management Intellectual Property 100
2.21 Systems Thinking 101
2.22 Studying Tips for the PMI® Project Management Certification Exam 104

Problems 107

Case Study
Creating a Methodology 108

3 ORGANIZATIONAL STRUCTURES 111

3.0 Introduction 111
3.1 Organizational Work Flow 113
3.2 Traditional (Classical) Organization 114
3.3 Developing Work Integration Positions 117
3.4 Line-Staff Organization (Project Coordinator) 121
3.5 Pure Product (Projectized) Organization 122
3.6 Matrix Organizational Form 125
3.7 Modification of Matrix Structures 132
3.8 The Strong, Weak, or Balanced Matrix 136
3.9 Center for Project Management Expertise 136
3.10 Matrix Layering 137
3.11 Selecting the Organizational Form  138
3.12 Structuring the Small Company  143
3.13 Strategic Business Unit (SBU) Project Management  146
3.14 Transitional Management  147
3.15 Barriers to Implementing Project Management in Emerging Markets  149
3.16 Seven Fallacies that Delay Project Management Maturity  156
3.17 Studying Tips for the PMI® Project Management Certification Exam  159

Problems  161

Case Studies
Jones and Shephard Accountants, Inc.  166
Coronado Communications  168

4  ORGANIZING AND STAFFING THE PROJECT OFFICE
AND TEAM  171
4.0 Introduction  171
4.1 The Staffing Environment  172
4.2 Selecting the Project Manager: An Executive Decision  174
4.3 Skill Requirements for Project and Program Managers  178
4.4 Special Cases in Project Manager Selection  184
4.5 Selecting the Wrong Project Manager  184
4.6 Next Generation Project Managers  188
4.7 Duties and Job Descriptions  189
4.8 The Organizational Staffing Process  193
4.9 The Project Office  199
4.10 The Functional Team  204
4.11 The Project Organizational Chart  205
4.12 Special Problems  208
4.13 Selecting the Project Management Implementation Team  210
4.14 Mistakes Made by Inexperienced Project Managers  213
4.15 Studying Tips for the PMI® Project Management Certification Exam  214

Problems  216

5  MANAGEMENT FUNCTIONS  223
5.0 Introduction  223
5.1 Controlling  225
5.2 Directing  225
5.3 Project Authority  230
5.4 Interpersonal Influences  237
5.5 Barriers to Project Team Development  240
5.6 Suggestions for Handling the Newly Formed Team  243
CONTENTS

5.7 Team Building as an Ongoing Process 246
5.8 Dysfunctions of a Team 247
5.9 Leadership in a Project Environment 250
5.10 Life-Cycle Leadership 252
5.11 Value-Based Project Leadership 255
5.12 Organizational Impact 257
5.13 Employee–Manager Problems 259
5.14 Management Pitfalls 262
5.15 Communications 265
5.16 Project Review Meetings 274
5.17 Project Management Bottlenecks 275
5.18 Cross-Cutting Skills 276
5.19 Active Listening 277
5.20 Project Problem-Solving 278
5.21 Brainstorming 288
5.22 Project Decision-Making 293
5.23 Predicting the Outcome of a Decision 301
5.24 Facilitation 303
5.25 Handling Negative Team Dynamics 306
5.26 Communication Traps 307
5.27 Proverbs and Laws 309
5.28 Human Behavior Education 311
5.29 Management Policies and Procedures 312
5.30 Studying Tips for the PMI® Project Management Certification Exam 313

Problems 318

Case Studies
The Trophy Project 327
Communication Failures 329
McRoy Aerospace 332
The Poor Worker 333
The Prima Donna 334
The Team Meeting 335
Leadership Effectiveness (A) 337
Leadership Effectiveness (B) 341
Motivational Questionnaire 347

6 MANAGEMENT OF YOUR TIME AND STRESS 355

6.0 Introduction 355
6.1 Understanding Time Management 356
6.2 Time Robbers 356
6.3 Time Management Forms 358
6.4 Effective Time Management 359
6.5 Stress and Burnout 360
6.6 Studying Tips for the PMI® Project Management Certification Exam 362

Problems 363

Case Study
The Reluctant Workers 364

7 CONFLICTS 365

7.0 Introduction 365
7.1 Objectives 366
7.2 The Conflict Environment 367
7.3 Types of Conflicts 368
7.4 Conflict Resolution 371
7.5 Understanding Superior, Subordinate, and Functional Conflicts 372
7.6 The Management of Conflicts 374
7.7 Conflict Resolution Modes 375
7.8 Studying Tips for the PMI® Project Management Certification Exam 377

Problems 379

Case Studies
Facilities Scheduling at Mayer Manufacturing 382
Telestar International 383
Handling Conflict in Project Management 384

8 SPECIAL TOPICS 391

8.0 Introduction 392
8.1 Performance Measurement 392
8.2 Financial Compensation and Rewards 399
8.3 Critical Issues with Rewarding Project Teams 405
8.4 Effective Project Management in the Small Business Organization 408
8.5 Mega Projects 410
8.6 Morality, Ethics, and the Corporate Culture 411
8.7 Professional Responsibilities 414
8.8 Internal Partnerships 417
8.9 External Partnerships 418
8.10 Training and Education 420
8.11 Integrated Product/Project Teams 422
8.12 Virtual Project Teams 424
8.13 Breakthrough Projects 427
8.14 Managing Innovation Projects 427
8.15 Agile Project Management 430
8.16 Studying Tips for the PMI® Project Management Certification Exam 431
Problems 437

Case Study
Is It Fraud? 440

9 THE VARIABLES FOR SUCCESS 443
9.0 Introduction 443
9.1 Predicting Project Success 444
9.2 Project Management Effectiveness 448
9.3 Expectations 449
9.4 Lessons Learned 450
9.5 Understanding Best Practices 451
9.6 Best Practices versus Proven Practices 458
9.7 Studying Tips for the PMI® Project Management Certification Exam 459
Problems 460

Case Study
Radiance International 460

10 WORKING WITH EXECUTIVES 463
10.0 Introduction 463
10.1 The Project Sponsor 464
10.2 Handling Disagreements with the Sponsor 474
10.3 The Collective Belief 475
10.4 The Exit Champion 476
10.5 The In-House Representatives 477
10.6 Stakeholder Relations Management 478
10.7 Politics 486
10.8 Studying Tips for the PMI® Project Management Certification Exam 487
Problems 488

Case Studies
Corwin Corporation 491
The Prioritization of Projects 499
The Irresponsible Sponsors 500
Selling Executives on Project Management 502
11 PLANNING 505
11.0 Introduction 505
11.1 Validating the Assumptions 508
11.2 Validating the Objectives 509
11.3 General Planning 510
11.4 Life-Cycle Phases 513
11.5 Proposal Preparation 516
11.6 Kickoff Meetings 516
11.7 Understanding Participants’ Roles 519
11.8 Project Planning 519
11.9 The Statement of Work 521
11.10 Project Specifications 526
11.11 Milestone Schedules 528
11.12 Work Breakdown Structure 529
11.13 WBS Decomposition Problems 536
11.14 Work Breakdown Structure Dictionary 540
11.15 Role of the Executive in Project Selection 541
11.16 Role of the Executive in Planning 546
11.17 The Planning Cycle 546
11.17 Work Planning Authorization 547
11.19 Why Do Plans Fail? 548
11.20 Stopping Projects 549
11.21 Handling Project Phaseouts and Transfers 550
11.22 Detailed Schedules and Charts 551
11.23 Master Production Scheduling 554
11.24 Project Plan 556
11.25 Total Project Planning 561
11.26 The Project Charter 565
11.27 Project Baselines 566
11.28 Verification and Validation 570
11.29 Requirements Traceability Matrix 571
11.30 Management Control 572
11.31 The Project Manager–Line Manager Interface 575
11.32 Fast-Tracking 577
11.33 Configuration Management 578
11.34 Enterprise Project Management Methodologies 579
11.35 Project Audits 582
11.36 Studying Tips for the PMI® Project Management Certification Exam 583

Problems 586

12 NETWORK SCHEDULING TECHNIQUES 597
12.0 Introduction 597
12.1 Network Fundamentals 600
12.2 Graphical Evaluation and Review Technique (GERT)  604
12.3 Dependencies  605
12.4 Slack Time  606
12.5 Network Replanning  612
12.6 Estimating Activity Time  616
12.7 Estimating Total Project Time  617
12.8 Total PERT/CPM Planning  618
12.9 Crash Times  620
12.10 PERT/CPM Problem Areas  623
12.11 Alternative PERT/CPM Models  626
12.12 Precedence Networks  627
12.13 Lag  630
12.14 Scheduling Problems  632
12.15 The Myths of Schedule Compression  632
12.16 Understanding Project Management Software  634
12.17 Software Features Offered  634
12.18 Software Classification  636
12.19 Implementation Problems  637
12.20 Critical Chain  638
12.21 Studying Tips for the PMI® Project Management Certification Exam  640

Problems 643

Case Studies
Crosby Manufacturing Corporation  656
The Invisible Sponsor  658

13 PROJECT GRAPHICS  661

13.0 Introduction  661
13.1 Customer Reporting  662
13.2 Bar (Gantt) Chart  663
13.3 Other Conventional Presentation Techniques  670
13.4 Logic Diagrams/Networks  673
13.5 Studying Tips for the PMI® Project Management Certification Exam  674

Problems  675

14 PRICING AND ESTIMATING  677

14.0 Introduction  677
14.1 Global Pricing Strategies  678
14.2 Types of Estimates  679
14.3 Pricing Process  682
14.4 Organizational Input Requirements  684
14.5 Labor Distributions  686
14.6 Overhead Rates 690
14.7 Materials/Support Costs 692
14.8 Pricing Out the Work 695
14.9 Smoothing Out Department Man-Hours 696
14.10 The Pricing Review Procedure 698
14.11 Systems Pricing 700
14.12 Developing the Supporting/Backup Costs 701
14.13 The Low-Bidder Dilemma 705
14.14 Special Problems 705
14.15 Estimating Pitfalls 706
14.16 Estimating High-Risk Projects 707
14.17 Project Risks 708
14.18 The Disaster of Applying the 10 Percent Solution to Project Estimates 712
14.19 Life-Cycle Costing (LCC) 714
14.20 Logistics Support 719
14.21 Economic Project Selection Criteria: Capital Budgeting 720
14.22 Payback Period 720
14.23 The Time Value of Money 721
14.24 Net Present Value (NPV) 722
14.25 Internal Rate of Return (IRR) 723
14.26 Comparing IRR, NPV, and Payback 724
14.27 Risk Analysis 724
14.28 Capital Rationing 725
14.29 Project Financing 726
14.30 Studying Tips for the PMI® Project Management Certification Exam 728

Problems 730

Case Study
The Estimating Problem 734

15 COST CONTROL 737

15.0 Introduction 737
15.1 Understanding Control 741
15.2 The Operating Cycle 744
15.3 Cost Account Codes 745
15.4 Budgets 750
15.5 The Earned Value Measurement System (EVMS) 752
15.6 Variance and Earned Value 754
15.7 The Cost Baseline 773
15.8 Justifying the Costs 775
15.9 The Cost Overrun Dilemma 778
15.10 Recording Material Costs Using Earned Value Measurement 779
15.11 The Material Accounting Criterion 782
CONTENTS

15.12 Material Variances: Price and Usage  783
15.13 Summary Variances  784
15.14 Status Reporting  785
15.15 Cost Control Problems  792
15.16 Project Management Information Systems  793
15.17 Enterprise Resource Planning  793
15.18 Project Metrics  794
15.19 Key Performance Indicators  800
15.20 Value-Based Metrics  806
15.21 Dashboards and Scorecards  812
15.22 Business Intelligence  815
15.23 Infographics  816
15.24 Studying Tips for the PMI® Project Management Certification Exam  816

Problems  820

Case Studies
The Bathtub Period  838
Franklin Electronics  839
Trouble in Paradise  841

16  TRADE-OFF ANALYSIS IN A PROJECT ENVIRONMENT  845

16.0 Introduction  845
16.1 Methodology for Trade-Off Analysis  848
16.2 Contracts: Their Influence on Projects  865
16.3 Industry Trade-Off Preferences  866
16.4 Conclusion  869
16.5 Studying Tips for the PMI® Project Management Certification Exam  869

17  RISK MANAGEMENT  871

17.0 Introduction  872
17.1 Definition of Risk  873
17.2 Tolerance for Risk  875
17.3 Definition of Risk Management  876
17.4 Certainty, Risk, and Uncertainty  877
17.5 Risk Management Process  883
17.6 Plan Risk Management (11.1)  884
17.7 Risk Identification (11.2)  885
17.8 Risk Analysis (11.3, 11.4)  892
17.9 Qualitative Risk Analysis (11.3)  897
17.10 Quantitative Risk Analysis (11.4)  903
17.11 Probability Distributions and the Monte Carlo Process  904
17.12 Plan Risk Response (11.5)  913
19.9 Contract Administration  995
19.10 Contract Closure  998
19.11 Using a Checklist  999
19.12 Proposal-Contractual Interaction  1000
19.13 Summary  1003
19.14 Studying Tips for the PMI® Project Management Certification Exam  1004

Case Studies
The Scheduling Dilemma 1009
To Bid or Not to Bid 1011
The Management Reserve 1012

20  QUALITY MANAGEMENT  1015

20.0 Introduction 1016
20.1 Definition of Quality 1017
20.2 The Quality Movement 1019
20.3 Comparison of the Quality Pioneers 1022
20.4 The Taguchi Approach  1023
20.5 The Malcolm Baldrige National Quality Award 1026
20.6 ISO 9000 1027
20.7 Quality Management Concepts 1029
20.8 The Cost of Quality 1032
20.9 The Seven Quality Control Tools 1035
20.10 Process Capability ($C_p$) 1052
20.11 Acceptance Sampling 1054
20.12 Implementing Six Sigma 1054
20.13 Lean Six Sigma and DMAIC 1056
20.14 Quality Leadership 1057
20.15 Responsibility for Quality 1058
20.16 Quality Circles 1058
20.17 Just-In-Time Manufacturing (JIT) 1059
20.18 Total Quality Management (TQM) 1061
20.19 Studying Tips for the PMI® Project Management Certification Exam 1065

21  MODERN DEVELOPMENTS IN PROJECT MANAGEMENT  1069

21.0 Introduction 1069
21.1 The Project Management Maturity Model (PMMM) 1070
21.2 Developing Effective Procedural Documentation 1074
21.3 Project Management Methodologies 1078
21.4 Continuous Improvement 1079
21.5 Capacity Planning 1080
21.6 Competency Models 1082
21.7 Managing Multiple Projects 1084
21.8 End-of-Phase Review Meetings 1085
Case Study
Honicker Corporation 1086

22 THE BUSINESS OF SCOPE CHANGES 1089
22.0 Introduction 1089
22.1 Need for Business Knowledge 1091
22.2 Timing of Scope Changes 1092
22.3 Business Need for a Scope Change 1093
22.4 Rationale for Not Approving a Scope Change 1094

Case Study
Kemko Manufacturing 1094

23 THE PROJECT OFFICE 1097
23.0 Introduction 1097
23.1 Present-Day Project Office 1098
23.2 Implementation Risks 1099
23.3 Types of Project Offices 1100
23.4 Networking Project Management Offices 1101
23.5 Project Management Information Systems 1101
23.6 Dissemination of Information 1103
23.7 Mentoring 1104
23.8 Development of Standards and Templates 1105
23.9 Project Management Benchmarking 1105
23.10 Business Case Development 1106
23.11 Customized Training (Related to Project Management) 1107
23.12 Managing Stakeholder Relations 1108
23.13 Continuous Improvement 1109
23.14 Capacity Planning 1109
23.15 Risks of Using a Project Office 1110
23.16 Project Portfolio Management 1111

Case Study
The Project Management Lawsuit 1116

24 MANAGING CRISIS PROJECTS 1119
24.0 Introduction 1119
24.1 Understanding Crisis Management 1119
24.2 Ford versus Firestone 1121
24.3 The Air France Concorde Crash 1122
24.4 Intel and the Pentium Chip 1123
24.5 The Russian Submarine Kursk 1123
24.6 The Tylenol Poisonings 1124
24.7 Nestlé’s Marketing of Infant Formula 1127
24.8 The Space Shuttle Challenger Disaster 1129
24.9 The Space Shuttle Columbia Disaster 1130
24.10 Victims Versus Villains 1131
24.11 Life-Cycle Phases 1132
24.12 Project Management Implications 1133

25 FUTURE OF PROJECT MANAGEMENT 1135
25.0 Changing Times 1135
25.1 Complex Projects 1139
25.2 Complexity Theory 1144
25.3 Scope Creep 1145
25.4 Project Health Checks 1151
25.5 Managing Troubled Projects 1155

26 THE RISE, FALL, AND RESURRECTION OF IRI迪UM: A PROJECT MANAGEMENT PERSPECTIVE  1167
26.0 Introduction 1167
26.1 Naming the Project “Iridium” 1169
26.2 Obtaining Executive Support 1170
26.3 Launching the Venture 1170
26.4 The Iridium System 1172
26.5 The Terrestrial and Space-Based Network 1172
26.6 Project Initiation: Developing the Business Case 1173
26.7 The “Hidden” Business Case 1175
26.8 Risk Management 1175
26.9 The Collective Belief 1177
26.10 The Exit Champion 1177
26.11 Iridium’s Infancy Years 1178
26.12 Debt Financing 1181
26.13 The M-Star Project 1182
26.14 A New CEO 1183
26.15 Satellite Launches 1183
26.16 An Initial Public Offering (IPO). 1184
26.17 Signing Up Customers 1184
26.18 Iridium’s Rapid Ascent 1185
26.19 Iridium’s Rapid Descent 1187
26.20 The Iridium “Flu” 1191
26.21 Searching for a White Knight 1192
26.22 The Definition of Failure (October, 1999) 1192
26.23 The Satellite Deorbiting Plan 1193
26.24 Iridium is Rescued for $25 Million 1194
26.25 Iridium Begins to Grow 1194
Contents

26.26 Shareholder Lawsuits 1195
26.27 The Bankruptcy Court Ruling 1195
26.28 Autopsy 1196
26.29 Financial Impact of the Bankruptcy 1197
26.30 What Really Went Wrong? 1198
26.31 Lessons Learned 1200
26.32 Conclusion 1202

Appendix A. Solutions to the Project Management Conflict Exercise 1205
Appendix B. Solution to Leadership Exercise 1211
Appendix C. Dorale Products Case Studies 1217
Appendix D. Solutions to the Dorale Products Case Studies 1229
Appendix E. Alignment of the PMBOK® Guide to the Text 1235

Author Index 1241
Subject Index 1243