## **Contents**

Preface	<u>xix</u>
1 Overview	
1.0 Introduction	1
1.1 Understanding Project Management	2
1.2 Defining Project Success	<u>5</u>
1.3 The Project Manager–Line Manager Interface	<u>6</u>
1.4 Defining the Project Manager's Role	9
1.5 Defining the Functional Manager's Role	<u>12</u>
1.6 Defining the Functional Employee's Role	<u>15</u>
1.7 Defining the Executive's Role	<u>16</u>
1.8 Working with Executives	<u>16</u>
1.9 The Project Manager As the Planning Agent	<u>17</u>
1.10 Project Champions	<u>19</u>
1.11 The Downside Risk of Project Management	<u>20</u>
1.12 Project-Driven Versus Non-Project-Driven Organizations	<u>24</u>
1.13 Marketing in the Project-Driven Organization	<u>26</u>
1.14 Classification of Projects	<u>29</u>
1.15 Location of the Project Manager	<u>30</u>
1.16 Differing Views of Project Management	<u>32</u>
1.17 Concurrent Engineering: A Project Management Approach	<u>34</u>

1.18 Total Quality Management (TQM): A Project Management Approach	
Problems	<u>39</u>
Case Studies	
Jackson Industries	<u>42</u>
Kombs Engineering	<u>44</u>
Williams Machine Tool Company	45

2 Project Management Growth: Concepts and Definitions	<u>47</u>
2.0 Introduction	<u>47</u>
2.1 General Systems Management	<u>47</u>
2.2 Project Management: 1960–1985	<u>48</u>
2.3 Project Management: 1985–2000	<u>60</u>
2.4 Resistance to Change	<u>65</u>
2.5 Systems, Programs, and Projects: A Definition	<u>70</u>
2.6 Product Versus Project Management: A Definition	<u>72</u>
2.7 Maturity and Excellent: A Definition	<u>74</u>
2.8 Informal Project Management: A Definition	<u>75</u>
2.9 Project Life Cycles	<u>76</u>
2.10 Project Management Methodologies: A Definition	<u>83</u>
2.11 Systems Thinking	<u>86</u>
Problems	<u>89</u>
Case Studies	
L. P. Manning Corporation	<u>89</u>
Project Firecracker	<u>90</u>
3 Organizational Structures	97
3.0 Introduction	<u>97</u>
3.1 Organizational Work Flow	<u>100</u>
3.2 Traditional (Classical) Organization	<u>101</u>
3.3 Developing Work Integration Positions	105

3.4 Line–Staff Organization (Project Coordinator)	<u>109</u>
3.5 Pure Product (Projectized) Organization	<u>110</u>
3.6 Matrix Organizational Form	<u>113</u>
3.7 Modification of Matrix Structures	<u>124</u>
3.8 Center for Project Management Expertise	<u>128</u>
3.9 Matrix Layering	129
3.10 Selecting the Organizational Form	<u>131</u>
3.11 Structuring the Small Company	<u>139</u>
3.12 Strategic Business Unit (SBU) Project Management	<u>141</u>
3.13 Transitional Management	<u>143</u>
Problems	<u>145</u>
Case Studies	
Jones and Shephard Accountants, Inc.	<u>151</u>
Fargo Foods	<u>154</u>
Quasar Communications, Inc.	<u>156</u>

4 О1	rganizing and Staffing the Project Office and Team	<u>161</u>
	4.0 Introduction	<u>161</u>
	4.1 The Staffing Environment	<u>162</u>
	4.2 Selecting the Project Manager: An Executive Decision	<u>166</u>
	4.3 Skill Requirements for Program Managers	<u>173</u>
	4.4 Special Cases in Project Manager Selection	<u>180</u>
	4.5 Selecting the Wrong Project Manager	<u>180</u>
	4.6 Next Generation Project Managers	<u>185</u>
	4.7 Duties and Job Descriptions	<u>186</u>
	4.8 The Organizational Staffing Process	<u>191</u>
	4.9 The Project Office	<u>199</u>
	4.10 The Functional Team	<u>206</u>
	4.11 The Project Organizational Chart	<u>208</u>
	4.12 Special Problems	211
	4.13 Selecting the Project Management Implementation Team	214
	Problems	217
	Case Studies	
	Government Project Management	223
	Falls Engineering	224
	White Manufacturing	227
	Martig Construction Company	228
	The Carlson Project	229

5 Management Functions	<u>231</u>
5.0 Introduction	<u>231</u>
5.1 Controlling	<u>232</u>
5.2 Directing	233
5.3 Project Authority	237
5.4 Interpersonal Influences	<u>246</u>
5.5 Barriers to Project Team Development	<u>249</u>
5.6 Suggestions for Handling the Newly Formed Team	<u>253</u>
5.7 Team Building As an Ongoing Process	<u>258</u>
5.8 Leadership in a Project Environment	<u>260</u>
5.9 Life-Cycle Leadership	<u>261</u>
5.10 Organizational Impact	<u>264</u>
5.11 Employee–Manager Problems	<u>266</u>
5.12 Management Pitfalls	<u>270</u>
5.13 Communications	<u>273</u>
5.14 Project Review Meetings	<u>284</u>
5.15 Project Management Bottlenecks	284

	5.16 Communication Traps	<u>286</u>
	5.17 Proverbs	288
	5.18 Management Policies and Procedures	<u>289</u>
	Problems	<u>289</u>
	Case Studies	
	Wynn Computer Equipment (WCE)	<u>303</u>
	The Trophy Project	<u>304</u>
	Leadership Effectiveness (A)	<u>308</u>
	Leadership Effectiveness (B)	<u>310</u>
	Motivational Questionnaire	318
б Гі	me Management	325
	6.0 Introduction	<u>325</u>
	6.1 Understanding Time Management	<u>325</u>
	6.2 Time Robbers	328
	6.3 Time Management Forms	331
	6.4 Introduction to Stress and Burnout	332
	6.5 Stress in Project Management	336
	6.6 Time Management Survey	<u>337</u>
	6.7 Effective Time Management	<u>352</u>
	6.8 Management Pitfalls	<u>355</u>
	6.9 Project Communications	<u>355</u>
	6.10 Project Management Bottlenecks	<u>357</u>

Problems	<u>357</u>
Case Studies	
The Reluctant Workers	<u>357</u>
Time Management for Project Managers	<u>358</u>
7 Conflicts	<u>379</u>
7.0 Introduction	<u>379</u>
7.1 Objectives	<u>379</u>
7.2 The Conflict Environment	<u>381</u>
7.3 Managing Conflict	<u>385</u>
7.4 Conflict Resolution	401
7.5 Understanding Superior, Subordinate, and Functional Conflict	402
7.6 The Management of Conflicts	<u>405</u>
7.7 Conflict Resolution Modes	<u>406</u>
Problems	<u>408</u>

## Case Studies

	Facilities Scheduling at Mayer Manufacturing	<u>41</u> 1
	Scheduling the Safety Lab	413
	Telestar International	414
	The Problem with Priorities	415
	Handling Conflict in Project Management	416
8 Sp	pecial Topics	423
	8.0 Introduction	423
	8.1 Performance Measurement on the Horizontal Line	423
	8.2 Financial Compensation and Rewards	432
	8.3 Effective Project Management in the Small Business Organization	439
	8.4 Mega Projects	<u>441</u>
	8.5 R&D Project Management	442
	8.6 Code of Ethics	453
	Problems	454
	Case Studies	
	American Electronics International	458
9 Tł	ne Variables for Success	461
	9.0 Introduction	<u>461</u>
	9.1 Predicting Project Success	<u>461</u>
	9.2 Project Management Effectiveness	466

	9.3 Expectations	<u>467</u>
	9.4 Force Field Analysis	<u>469</u>
	9.5 Lessons Learned	<u>474</u>
	Problems	<u>474</u>
10 W	orking with Executives	<u>475</u>
	10.0 Introduction	<u>475</u>
	10.1 The Project Sponsor	<u>475</u>
	10.2 The In-House Representatives	<u>488</u>
	10.3 Selling Executives on Project Management	<u>489</u>
	Problems	<u>499</u>
	Case Studies	
	The Blue Spider Project	<u>503</u>
	Greyson Corporation	<u>514</u>

	Corwin Corporation	<u>518</u>
	The Boeing 767: From Concept to Production (A)	526
	The Boeing 767: From Concept to Production (B)	<u>546</u>
11 Pla	anning	<u>549</u>
	11.0 Introduction	<u>549</u>
	11.1 General Planning	<u>552</u>
	11.2 Identifying Strategic Project Variables	<u>555</u>
	11.3 Life-Cycle Phases	<u>558</u>
	11.4 Proposal Preparation	<u>561</u>
	11.5 Understanding Participants' Roles	<u>562</u>
	11.6 Project Planning	<u>563</u>
	11.7 The Statement of Work	<u>565</u>
	11.8 Project Specifications	<u>570</u>
	11.9 Milestone Schedules	<u>572</u>
	11.10 Work Breakdown Structure	<u>573</u>
	11.11 WBS Decomposition Problems	580
	11.12 Role of the Executive in Project Selection	<u>584</u>
	11.13 Role of the Executive in Planning	<u>587</u>
	11.14 The Planning Cycle	<u>589</u>
	11.15 Work Planning Authorization	<u>591</u>
	11.16 Why do plans fail?	<u>592</u>
	11.17 Stopping Projects	593

11.18 Handling Project Phaseouts and Transfers	<u>595</u>
11.19 Detailed Schedules and Charts	<u>597</u>
11.20 Master Production Scheduling	<u>601</u>
11.21 Program Plan	<u>602</u>
11.22 Total Project Planning	<u>608</u>
11.23 The Project Charter	613
11.24 Management Control	<u>616</u>
11.25 The Project Manager–Line Manager Interface	<u>616</u>
11.26 Fast-Tracking	<u>618</u>
11.27 Configuration Management	<u>620</u>
11.28 Procedural Documentation	<u>621</u>
11.29 Established Practices	<u>624</u>
Problems	<u>624</u>
Case Studies	
The Two-Boss Problem	<u>634</u>
Project Overrun	<u>635</u>
Margo Company	<u>636</u>
Denver International Airport (DIA)	<u>638</u>

12 Network Scheduling Techniques	<u>671</u>
12.0 Introduction	<u>671</u>
12.1 Network Fundamentals	<u>674</u>
12.2 Graphical Evaluation and Review Technique (GERT)	<u>679</u>
12.3 Dependencies	<u>679</u>
12.4 Slack Time	<u>680</u>
12.5 Network Replanning	<u>686</u>
12.6 Estimating Activity Time	<u>690</u>
12.7 Estimating Total Program Time	<u>691</u>
12.8 Total PERT/CPM Planning	<u>692</u>
12.9 Crash Times	<u>694</u>
12.10 PERT/CPM Problem Areas	<u>698</u>
12.11 Alternative PERT/CPM Models	<u>700</u>
12.12 Precedence Networks	<u>701</u>
12.13 Lag	<u>704</u>
12.14 Understanding Project Management Software	704
12.15 Software Features	<u>706</u>
12.16 Software Classification	<u>708</u>
12.17 Project Software Evaluation	<u>709</u>
12.18 Implementation Problems	713
Problems	714

Case Studies

Crosby Manufacturing Corporation	<u>722</u>
13 Project Graphics	<u>725</u>
13.0 Introduction	<u>725</u>
13.1 Customer Reporting	<u>726</u>
13.2 Bar (Gantt) Chart	<u>727</u>
13.3 Other Conventional Presentation Techniques	734
13.4 Logic Diagrams/Networks	738
Problems	740
24 Pricing and Estimating	
14.0 Introduction	741
14.1 Global Pricing Strategies	742
14.2 Types of Estimates	743
14.3 Pricing Process	<u>746</u>
14.4 Organizational Input Requirements	<u>749</u>
14.5 Labor Distributions	<u>750</u>
14.6 Overhead Rates	<u>754</u>
14.7 Materials/Support Costs	<u>757</u>

14.8 Pricing out the Work	<u>759</u>
14.9 Smoothing out Department Man-Hours	761
14.10 The Pricing Review Procedure	<u>762</u>
14.11 Systems Pricing	<u>765</u>
14.12 Developing the Supporting/Backup Costs	<u>766</u>
14.13 The Low-Bidder Dilemma	770
14.14 Special Problems	770
14.15 Estimating Pitfalls	<u>771</u>
14.16 Estimating High-Risk Projects	<u>772</u>
14.17 Project Risks	<u>773</u>
14.18 The Disaster of Applying the 10 Percent Solution to Project Estimates	<u>777</u>
14.19 Life-Cycle Costing (LCC)	<u>779</u>
14.20 Logistics Support	<u>784</u>
14.21 Economic Project Selection Criteria: Capital Budgeting	<u>787</u>
14.22 Payback Period	<u>787</u>
14.23 The Time Value of Money	788
14.24 Net Present Value (NPV)	<u>789</u>
14.25 Internal Rate of Return (IRR)	<u>790</u>
14.26 Comparing IRR, NPV, and Payback	<u>791</u>
14.27 Risk Analysis	<u>791</u>
14.28 Capital Rationing	<u>792</u>
Problems	<u>794</u>

## Case Studies

Polyproducts Incorporated	<u>798</u>
Small Project Cost Estimating at Percy Company	<u>801</u>
Capital Industries	<u>804</u>
Payton Corporation	<u>805</u>
Cory Electric	<u>806</u>
Camden Construction Corporation	<u>809</u>
15 Cost Control	813
15.0 Introduction	813
15.1 Understanding Control	817
15.2 The Operating Cycle	820
15.3 Cost Account Codes	<u>821</u>
15.4 Budgets	828
15.5 Variance and Earned Value	829
15.6 Recording Material Costs Using Earned Value Measurement	848
15.7 The Material Accounting Criterion	<u>850</u>
15.8 Material Variances: Price and Usage	<u>851</u>
15.9 Summary Variances	853

15.	10 Status Reporting	<u>853</u>
15.	11 Cost Control Problems	<u>860</u>
Pro	blems	<u>862</u>
Cas	se Studies	
	The Bathtub Period	<u>873</u>
16 Trade-o	off Analysis in a Project Environment	<u>875</u>
16.0	0 Introduction	<u>875</u>
16.	1 Methodology for Trade-off Analysis	<u>879</u>
16.2	2 Contracts: Their Influence On Projects	<u>897</u>
16.3	3 Industry Trade-off Preferences	<u>898</u>
16.4	4 Conclusion	<u>901</u>
17 Risk M	anagement	903
17.0	0 Introduction	<u>903</u>
17.	1 Definition of Risk	<u>905</u>
17.2	2 Tolerance for Risk	<u>906</u>
17.3	3 Definition of Risk Management	<u>907</u>
17.4	4 Certainty, Risk, and Uncertainty	<u>907</u>
17.5	5 Risk Management Process	<u>913</u>
17.0	6 Risk Planning	914
17.	7 Risk Assessment	<u>915</u>
17.8	8 Risk Identification	<u>915</u>
17.9	9 Risk Analysis	<u>920</u>

17.10 The Monte Carlo Process	927
17.11 Risk Handling	932
17.12 Risk Monitoring	937
17.13 The Use of Lessons Learned	938
Problems	942
Case Studies	
Teloxy Engineering (A)	948
Teloxy Engineering (B)	949
18 Learning Curves	
18.0 Introduction	951
18.1 General Theory	951
18.2 The Learning Curve Concept	953
18.3 Graphic Representation	<u>954</u>
18.4 Key Words Associated with Learning Curves	<u>956</u>

18.5 The Cumulative Average Curve	<u>957</u>
18.6 Sources of Experience	960
18.7 Developing Slope Measures	<u>964</u>
18.8 Unit Costs and Use of Midpoints	<u>965</u>
18.9 Selection of Learning Curves	965
18.10 Follow-on Orders	967
18.11 Manufacturing Breaks	967
18.12 Learning Curve Limitations	968
18.13 Prices and Experience	970
18.14 Competitive Weapon	972
Problems	974
Case Studies	
Insight Optical Equipment Company	975
19 Managing Cultural Differences	
19.0 Introduction	987
19.1 An Introduction to Global Projects	987
19.2 Uniqueness and Trends in Global Projects	988
19.3 Cultural Challenges Broken down by Knowledge Areas	989
19.4 The Project Manager's Checklist for Global Projects	1000
19.5 Managing during Political, Social, and Economic Reform	1000
19.6 An Introduction to Project Management in South Africa	1001
19.7 Internal Factors Affecting Project Management	1001

19.8 External Factors Affecting Project Management	<u>1003</u>
Problems	1008
20 Strategic Planning for Excellence in Project Management	1009
20.0 Introduction	1009
20.1 Influence of Economic Conditions	1009
20.2 What is general strategic planning?	1012
20.3 What is strategic planning for project management?	1013
20.4 Critical Success Factors for Strategic Planning	1017
20.5 Identifying Strategic Resources	1023
20.6 Strategic Selection of Projects	1028
20.7 Portfolio Selection of Projects	1031
20.8 Horizontal Accounting	1034
20.9 Continuous Improvement	1036
20.10 The Project Office/Center for Excellence	1039
20.11 Why does strategic planning for project management fail?	1040
20.12 Organizational Restructuring	1042
20.13 Career Planning	<u>1044</u>

1 Modern Developments in Project Management	
21.0 Introduction	<u>1045</u>
21.1 The Project Management Maturity Model (PMMM)	<u>1045</u>
21.2 Developing Effective Procedural Documentation	1050
21.3 Project Management Methodologies	<u>1056</u>
21.4 Continuous Improvement	1057
21.5 Capacity Planning	1062
21.6 Competency Models	1063
21.7 Managing Multiple Projects	<u>1066</u>
21.8 End-of-Phase Review Meetings	1067
22 The Impact of Concurrent Engineering on Project Management	<u>1069</u>
22.0 Introduction	1069
22.1 Understanding Concurrent Engineering	<u>1070</u>
22.2 Project Planning	1072
22.3 Risk Management	1073
22.4 Creeping Scope	1073
22.5 Project Management Guidelines	<u>1074</u>
22.6 Selecting the Project Manager	1077
22.7 The Project Office	1077
22.8 The Functional Team	1079
22.9 Project Sponsorship	<u>1080</u>
22.10 Wage and Salary Administration	1081

	22.11 Conclusion	1082
23 Qı	nality Management	1083
	23.0 Introduction	1083
	23.1 Definition of Quality	1085
	23.2 The Quality Movement	1086
	23.3 The Taguchi Approach	1090
	23.4 The Malcolm Baldrige National Quality Award	1093
	23.5 ISO 9000	<u>1096</u>
	23.6 Quality Management Concepts	1097
	23.7 The Cost of Quality	1100
	23.8 The Seven Quality Control Tools	1103
	23.9 Process Capability (C <sub>p</sub> )	1120
	23.10 Acceptance Sampling	1123
	23.11 Operating Characteristic Curves	1123
	23.12 Implementing Six Sigma	1126
	23.13 Quality Leadership	1129
	23.14 Responsibility for Quality	1130

23.	15 Quality Circles	<u>1131</u>
23.	16 Just-in-Time Manufacturing (JIT)	1131
23.	17 Total Quality Management (TQM)	<u>1134</u>
24 Contrac	cts and Procurement	<u>1139</u>
24.0	0 Introduction	<u>1139</u>
24.	1 Procurement	<u>1140</u>
24.2	2 Requirement Cycle	<u>1141</u>
24.3	3 Requisition Cycle	<u>1142</u>
24.4	4 Solicitation Cycle	1143
24.5	5 Award Cycle	1145
24.0	6 Types of Contracts	<u>1146</u>
24.7	7 Incentive Contracts	<u>1152</u>
24.8	8 Contract Type Versus Risk	1153
24.9	9 Contract Administration Cycle	1155
24.	10 Using a Checklist	1157
24.	11 Proposal-Contractual Interaction	1159
24.	12 Summary	<u>1163</u>
Appendix A. Solutions to the Project Management Conflict Exercise		<u>1165</u>
Append	Appendix B. Solution to Leadership Exercise	
Author	Author Index	
Subject	t Index	<u>1181</u>