

Contents

1 Projects in Contemporary Organizations, 1

1.1 The Definition of a "Project", 8

1.2 Why Project Management?, 12

1.3 The Project Life Cycle, 14

1.4 The Structure of This Text, 19

PROJECT MANAGEMENT IN PRACTICE:

Implementing Strategy Through Projects at Blue Cross/Blue Shield, 8

PROJECT MANAGEMENT IN PRACTICE: The

Olympic Torch Relay Project, 11

PROJECT MANAGEMENT IN PRACTICE:

Demolishing San Francisco's Bridges Safely, 18

DIRECTED READING: Lessons for an Accidental Profession, 25

PART | PROJECT INITIATION

2 Project Selection, 39

- 2.1 Criteria for Project Selection Models, 40
- 2.2 The Nature of Project Selection Models, 42
- 2.3 Types of Project Selection Models, 45
- 2.4 Analysis Under Uncertainty—The Management of Risk, 62
- Comments on the Information Base for Selection, 66
- 2.6 Project Proposals, 68

PROJECT MANAGEMENT IN PRACTICE: Project Selection for Spent Nuclear Fuel Cleanup, 52

PROJECT MANAGEMENT IN PRACTICE: Selecting a Composting Project at Larry's Markets, 61

PROJECT MANAGEMENT IN PRACTICE: The Military Mobile Communication System—
A Procurement Innovation, 71
DIRECTED READING: Automotive

Builders, Inc.: The Stanhope Project, 79

3 The Project Manager, 85

- 3.1 Project Management and the Project Manager, 87
- Special Demands on the Project Manager, 95
- 3.3 Selecting the Project Manager, 107
- 3.4 Problems of Cultural Differences, 112
- 3.5 Impact of Institutional Environments, 117
- 3.6 Multicultural Communications and Managerial Behavior, 124 PROJECT MANAGEMENT IN PRACTICE: The Project Management Career Path at AT&T, 93

PROJECT MANAGEMENT IN PRACTICE: The Wreckmaster at a New York Subway Accident, 104

PROJECT MANAGEMENT IN PRACTICE: Success at Energo by Integrating Two Diverse Cultures, 116

PROJECT MANAGEMENT IN PRACTICE: Project Management in Brazil During Unstable Times, 121

Good Project Manager, 134

4 Project Organization, 139

- 4.1 The Project as Part of the Functional Organization, 141
- 4.2 Pure Project Organization, 145

xiv CONTENTS

4.3 The Matrix Organization, 147

4.4 Mixed Organizational Systems, 152

4.5 Choosing an Organizational Form, 154

4.6 The Project Team, 160

4.7 Human Factors and the Project Team, 163

PROJECT MANAGEMENT IN PRACTICE:

Reorganizing for Project Management at Prevost Car, 144

PROJECT MANAGEMENT IN PRACTICE:

Converting to Project Management in Government Agencies, 159

PROJECT MANAGEMENT IN PRACTICE:

South African Repair Success through Teamwork, 168

DIRECTED READING: The Virtual Project: Managing Tomorrow's Team Today, 175

5 Project Planning, 182

- 5.1 Initial Project Coordination, 184
- 5.2 Systems Integration, 192
- 5.3 Sorting Out the Project, 193
- 5.4 The Work Breakdown Structure and Linear Responsibility Charts, 203
- Interface Coordination through Integration Management, 209

PROJECT MANAGEMENT IN PRACTICE:

Extensive Project Planning for Kodak's New Photographic System, 190
PROJECT MANAGEMENT IN PRACTICE:

Disaster Project Planning in Iceland, 202
DIRECTED READING: Planning for Crisis in
Project Management, 217

6 Conflict and Negotiation, 226

6.1 The Nature of Negotiation, 229

6.2 Partnering, Chartering, and Change, 230

6.3 Conflict and the Project Life Cycle, 234

6.4 Some Requirements and Principles of Negotiation, 243

6.5 Negotiation in Action—The Quad Sensor Project, 246 PROJECT MANAGEMENT IN PRACTICE: Selling

PROJECT MANAGEMENT IN PRACTICE: Selling New Area Codes to Consumers Who Don't Want Them, 228 PROJECT MANAGEMENT IN PRACTICE:

A Consensus Feasibility Study for Montreal's Archipel Dam, 242

DIRECTED READING: Methods of Resolving Interpersonal Conflict, 252

PART II PROJECT IMPLEMENTATION

7 Budgeting and Cost Estimation, 261

7.1 Estimating Project Budgets, 264

7.2 Improving the Process of Cost Estimation, 276

PROJECT MANAGEMENT IN PRACTICE: Pathfinder Mission to Mars—on a Shoestring, 263

PROJECT MANAGEMENT IN PRACTICE:

Completing the Limerick Nuclear Facility Under Budget, 274

PROJECT MANAGEMENT IN PRACTICE: Managing Costs at Massachusetts' Neighborhood

Health Plan, 290

DIRECTED READING: Three Perceptions of Project Cost, 295

8 Scheduling, 302

8.1 Background, 302

8.2 Network Techniques: PERT and CPM, 307

8.3 Gantt Charts, 332

8.4 Extensions and Applications, 339
PROJECT MANAGEMENT IN PRACTICE: Replacing the Atigun Section of the Trans Alaska Pipeline, 304

PROJECT MANAGEMENT IN PRACTICE: Hosting the Annual Project Management Institute Symposium, 336

DIRECTED READING: The Sharon Construction Corporation, 359

9 Resource Allocation, 361

- 9.1 Critical Path Method—Crashing a Project, 363
- 9.2 The Resource Allocation Problem, 371
- 9.3 Resource Loading, 372
- 9.4 Resource Leveling, 375

9.5 Constrained Resource Scheduling, 378

9.6 Multiproject Scheduling and Resource Allocation, 388 PROJECT MANAGEMENT IN PRACTICE: Expediting Los Angeles Freeway Repairs

After the Earthquake, 362
PROJECT MANAGEMENT IN PRACTICE: Benefits
of Resource Constraining at Pennsylvania
Electric, 387

PROJECT MANAGEMENT IN PRACTICE:

Minnesota DOT Ties Projects to Resources and Constraints, 399 DIRECTED READING: D. U. Singer Hospital

10 Monitoring and Information Systems, 410

Products Corp., 407

- 10.1 The Planning-Monitoring-Controlling Cycle, 412
- 10.2 Information Needs and the Reporting Process, 422
- 10.3 Computerized PMIS (Project Management Information Systems), 437
 PROJECT MANAGEMENT IN PRACTICE: Using Project Management Software to Schedule the Olympic Games, 411
 PROJECT MANAGEMENT IN PRACTICE: Tracking Scope Creep: A Project Manager Responds, 421
 PROJECT MANAGEMENT IN PRACTICE: Success Through Earned Value at Texas Instruments, 433
 DIRECTED READING: Survey of Project Management Tools, 453

11 Project Control, 462

- 11.1 The Fundamental Purposes of Control, 464
- 11.2 Three Types of Control Processes, 468
- 11.3 Comments on the Design of Control Systems, 476
- 11.4 Control as a Function of Management, 482
- 11.5 Balance in a Control System, 487
- 11.6 Control of Creative Activities, 490
- 11.7 Control of Change and Scope Creep, 491

PROJECT MANAGEMENT IN PRACTICE:

Extensive Controls for San Francisco's
Metro Turnback Project, 466
PROJECT MANAGEMENT IN PRACTICE: Schedule
and Cost Control for Australia's New
Parliament House, 483
PROJECT MANAGEMENT IN PRACTICE: Better
Control of Development Projects at
Johnson Controls, 494
DIRECTED READING: Controlling Projects
According to Plan, 500

PART III PROJECT TERMINATION

12 Project Auditing, 511

- 12.1 Purposes of Evaluation—Goals of the System, 512
- 12.2 The Project Audit, 515
- 12.3 Construction and Use of the Audit Report, 519
- 12.4 The Project Audit Life Cycle, 523
- 12.5 Some Essentials of an Audit/Evaluation, 525
- 12.6 Measurement, 528

 PROJECT MANAGEMENT IN PRACTICE: Lessons from Auditing 110 Client/Server and Open Systems Projects, 515

 PROJECT MANAGEMENT IN PRACTICE: Auditing a Troubled Project at Atlantic States Chemical Laboratories, 522

 DIRECTED READING: Post-Project Appraisals Pay, 534

13 Project Termination, 539

- 13.1 The Varieties of Project Termination, 540
- 13.2 When to Terminate a Project, 545
- 13.3 The Termination Process, 551
- 13.4 The Final Report—A Project
 History, 557
 PROJECT MANAGEMENT IN PRACTICE: Nucor's
 Approach to Termination by
 Addition, 542
 PROJECT MANAGEMENT IN PRACTICE:

Terminating the Superconducting Super Collider Project, 550

xvi CONTENTS

DIRECTED READING: Knowing When to Pull the Plug, 563

Epilogue, 571

On the Need for a Universal Information System, 572 On the Need for Conflict Resolution in Matix Management, 573 On the Need for New Methods of Rewarding Excellence, 574

Appendix A: Area Under the Normal Distribution, 575 Appendix B: Probability and Statistics, 577

B.1 Probability, 577

B.2 Event Relationships and Probability Laws, 578

B.3 Statistics, 581

Appendix C: Answers to the Even-Numbered Problems, 588

Photo Credits, 593

Author Index, 595

Subject Index, 605