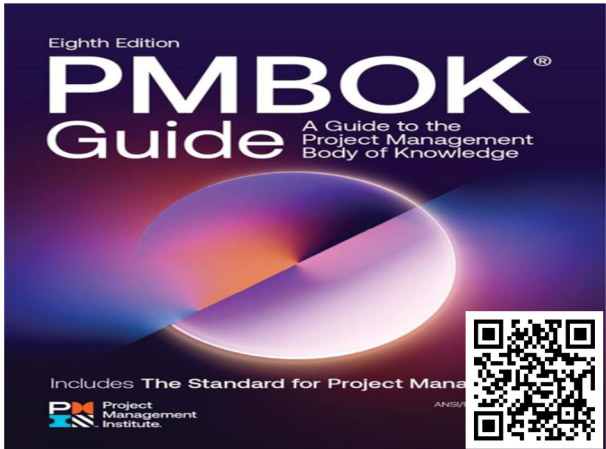


PMBOK Guide 8th Edition PDF

Visit the link below to download the full version of the ebook

[DOWNLOAD NOW](#)



Scan to Download
or Type the Link

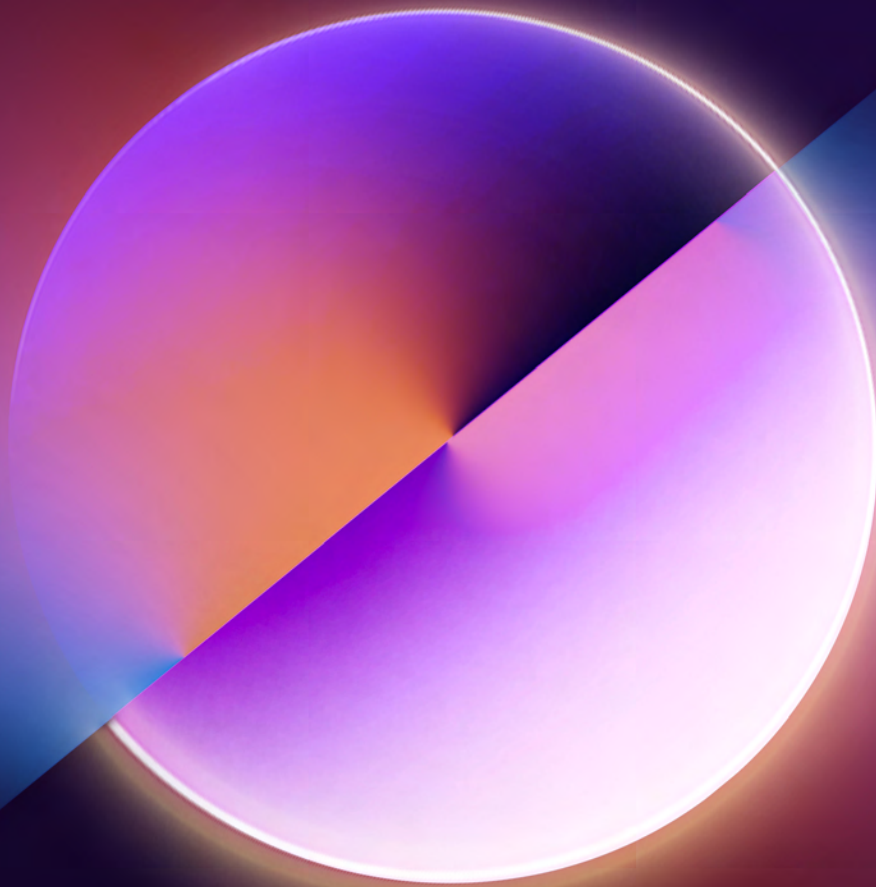
ebook.ac/pmbok8e

Eighth Edition

PMBOK®

Guide

A Guide to the
Project Management
Body of Knowledge



Includes **The Standard for Project Management**

The Standard for Project Management

and

A Guide to the Project Management Body of Knowledge

PMBOK® Guide
Eighth Edition



Library of Congress Cataloging-in-Publication Data

Names: Project Management Institute issuing body

Title: The standard for project management and a guide to the project management body of knowledge (PMBOK guide) / Project Management Institute.

Other titles: Guide to the project management body of knowledge (PMBOK guide) | PMBOK guide

Description: Eighth edition. | Newtown Square, Pennsylvania : Project Management Institute, [2025] | Includes bibliographical references and index. | Summary: "A Guide to the Project Management Body of Knowledge (PMBOK® Guide) remains the premier resource for project professionals around the world. The Eighth Edition is the most evidence-based and community-driven revision to date, shaped by nearly 48,000 data points, global practitioner insights, and two rounds of public feedback. Reflecting the evolving needs of the profession, this edition delivers a more accessible, streamlined, and adaptable approach to project management across industries, sectors, and development methods. What's new in the Eighth Edition: Updated definitions of foundational terms and concepts, aligned to current global practice and language accessibility A simplified set of six actionable project management principles The reimagining of Process Groups as five practical Focus Areas Integration of technical ways of working and other core concepts into seven comprehensive Project Performance Domains, including 40 newly evolved processes Key Benefits Bullet Points: With over 5 million copies in circulation, the PMBOK® Guide, issued by Project Management Institute, is the enduring global standard for project management Offers adaptable practices to suit a wide variety of industries, development approaches, and organizational needs Provides globally accessible language and concepts for broader application and easier understanding Equips practitioners to better focus on value delivery, not just output execution"-- Provided by publisher.

Identifiers: LCCN 2025036269 (print) | LCCN 2025036270 (ebook) | ISBN 9781628258295 paperback | ISBN 9781628258301 epub

Subjects: LCSH: Project management

Classification: LCC HD69.P75 G845 2025 (print) | LCC HD69.P75 (ebook) | DDC 658.4/04--dc23/eng/20250828

LC record available at <https://lcn.loc.gov/2025036269>

LC ebook record available at <https://lcn.loc.gov/2025036270>

A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Eighth Edition and
The Standard for Project Management

ISBN: 978-1-62825-829-5 (paperback)

ISBN: 978-1-62825-830-1 (ebook)

Published by:

Project Management Institute, Inc.
18 Campus Blvd., Ste. 150
Newtown Square, Pennsylvania 19073-3299 USA
Phone: +1 610 356 4600
PMI.org
Online Support: www.pmi.org/about/contact

©2025 Project Management Institute, Inc. All rights reserved.

Our copyright content is protected by U.S. intellectual property law that is recognized by most countries. To republish or reproduce our content, you must obtain our permission in writing. Please go to <https://www.pmi.org/permissions> for details.

This material is being provided under license to you for personal use only. No other use, distribution, reproduction, modification, and/or resale is permitted.

NO AI TRAINING: Without in any way limiting Project Management Institute's exclusive rights under copyright, any use of this publication to "train" generative artificial intelligence (AI) technologies to generate text is expressly prohibited. PMI reserves all rights to license uses of this work for generative AI training and development of machine learning language models.

Project Management Institute, PMI, the PMI logo, and PMBOK are trademarks and/or registered trademarks of Project Management Institute, Inc. in the U.S. and/or in other countries. For a comprehensive list of PMI trademarks, contact trademarks@pmi.org.

Printed in the United States of America. No part of this work may be reproduced or transmitted in any form or by any means, electronic, manual, photocopying, recording, or by any information storage and retrieval system, without prior written permission of the publisher.

The paper used in this book complies with the Permanent Paper Standard issued by the National Information Standards Organization (Z39.48—1992).

This publication has been designed with sustainability in mind, using practices that minimize paper usage and reduce environmental impact.

10 9 8 7 6 5 4 3 2 1

Notice

The Project Management Institute, Inc. (PMI) standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While PMI administers the process and establishes rules to promote fairness in the development of consensus, it does not write the document and it does not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in its standards and guideline publications.

PMI disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of application, or reliance on this document. PMI disclaims and makes no guaranty or warranty, expressed or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. PMI does not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide.

In publishing and making this document available, PMI is not undertaking to render professional or other services for or on behalf of any person or entity, nor is PMI undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

PMI has no power, nor does it undertake to police or enforce compliance with the contents of this document. PMI does not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health or safety-related information in this document shall not be attributable to PMI and is solely the responsibility of the certifier or maker of the statement.

Preface

PMI is committed to representing the voice of the project management community. That commitment drives a pursuit of practitioner input and continuous feedback on how the content of *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* should evolve.

With the *PMBOK® Guide*—Eighth Edition, PMI delivers the most evidence-based revision to date. Moreover, community input inspired a design that is simultaneously broad in scope and inclusive of all industries and approaches.

Evidence-Based and Globally Represented

To support the creation of this eighth edition, PMI conducted qualitative and quantitative research over the course of 2023 that yielded approximately 48,000 data points.

With this data in hand, a highly selective process was conducted to identify volunteers. That selection process yielded two globally diverse teams of subject matter experts. The development team consisted of 12 subject matter experts with a diverse background from 10 different countries across five continents; the review team featured 12 members from eight different countries, altogether representing dozens of industries and approaches. Over 18 months, the two teams worked independently in a double-blind fashion, iteratively developing and then validating the material in this eighth edition.

That work was validated and refined by two rounds of public community feedback, yielding more than 12,000 comments from project management practitioners around the world.

Summary of Changes

The majority of changes can be grouped into four main categories:

- Key term and concept updates,
- Principle refinement,
- Reintroduction of Process Groups as Focus Areas, and
- Project management performance domain updates.

Update of Key Terms and Concepts

This edition presents updated definitions of key terms and concepts, such as the core definitions for *project*, *project management*, and others. These updates are based on shifts in marketplace expectations encountered by portfolio, program, and project practitioners. While some of these shifts are recent, others accumulated over the last decade or longer. Shifts that motivate these updates include but are not limited to the following:

- **Timeliness.** Some of the key terms and concepts have not been updated in more than 40 years. In that time, the discipline of project management has meaningfully expanded and matured to merit updates.
- **Global accessibility.** The project management community is more global than ever before. The language used in some of the historical definitions has been unfriendly to international translation and nonnative English speakers.
- **Focus on value.** Earlier understandings of project management focused on efficient delivery of work within constraints (e.g., scope, schedule, compliance, quality). However, the current marketplace expects project management to address an expanding set of concepts, including the project's value proposition.

Refined Principles

This edition defines six project management principles that guide effective practice. These six principles are the result of a community-driven simplification of the principles defined in the previous edition's 12 principles. In the eighth edition, principles have been refined to be more actionable, and consolidated to minimize overlap, duplication, and confusion.

Additional details on the refinement of the project management principles can be found in Appendix X5: Evolution of the *PMBOK® Guide*.

Reintroducing Process Groups as Focus Areas

This edition presents five Project Management Focus Areas: Initiating, Planning, Executing, Monitoring and Controlling, and Closing. Most projects feature a life cycle that involves actions and activities related to these Focus Areas.

Historically, these five Focus Areas were presented as logical categories of formal project management processes, known as the Project Management Process Groups. In contrast, today's projects often satisfy these five concepts through the use of multiple approaches. In addition to formal processes, project life cycles are often managed by informal practices and/or flexible policies as well. As such, these historical Process Groups have been reimagined as Focus Areas.

...

Updated Performance Domains

Community input for the *PMBOK® Guide*—Eighth Edition overwhelmingly recommended updating the project performance domains to include and integrate various project management concepts described in previous editions. The concepts included are as follows:

- Project Management Knowledge Areas are fields or areas of specialization that are commonly employed when managing projects. They are historically defined in prior editions as a set of processes associated with a particular topic. This edition synthesizes those Knowledge Areas with other accepted concepts into seven project management performance domains.
- Project management processes are a formalized series of logically connected activities that manage a project throughout its life cycle. This edition includes a selection of 40 nonprescriptive processes that can be adapted to varied approaches, life cycles, and environments.
- Tailoring considerations and examples are inserted into each performance domain. These considerations and examples illustrate how practitioners can apply context-specific adjustments to individual processes or the overall performance domain.

Table of Contents

The Standard for Project Management

Preface	vii
Evidence-Based and Globally Represented.	vii
Summary of Changes.	vii
Update of Key Terms and Concepts	viii
Refined Principles.	viii
Reintroducing Process Groups as Focus Areas.	viii
Updated Performance Domains	ix
1 Introduction	3
1.1 Purpose of <i>The Standard for Project Management</i>	3
1.2 Key Terms and Concepts.	4
1.3 Foundational Elements of Project Management	6
1.3.1 Characteristics of a Project	6
1.3.2 Connecting Organizational Governance and Project Governance	7
1.3.3 Operations and Project Management.	9
1.3.4 Relationship of Portfolio, Program, Project, and Operations Management	10
2 A System for Value Delivery	13
2.1 Creating Value.	13
2.1.1 Value Delivery Components	15
2.1.2 Assessing Project Success	16
2.2 Project Environment	17
2.2.1 Enterprise Environmental Factors	18
2.2.2 Organizational Process Assets	19
2.2.3 Policies, Processes, and Procedures	20
2.2.4 Organizational Knowledge Repositories.	21
2.2.5 Organizational Structures	21

...

2.3 Product Management Considerations	21
2.4 Functions Associated With Projects	24
2.4.1 Provide Oversight and Coordination	25
2.4.2 Solicit and Manage Feedback	25
2.4.3 Facilitate and Support	26
2.4.4 Perform Work	26
2.4.5 Apply Expertise	26
2.4.6 Provide Organizational Direction and Insight	26
2.4.7 Provide Resources	27
2.5 Project Management Roles	27
2.5.1 Project Management Team	27
2.5.2 Sponsor, Customer, or Product Owner	32
2.5.3 Project Team	33
2.5.4 End Users and Other Key Stakeholders	33
3 Project Management Principles	35
3.1 The Project Management Mindset	36
3.2 Principles and Performance Domains	37
3.3 Adopt a Holistic View.	38
3.3.1 Project Impact	38
3.3.2 Principle in Action.	39
3.3.3 Connected Performance Domains	39
3.4 Focus on Value	40
3.4.1 Project Impact	41
3.4.2 Principle in Action.	42
3.4.3 Connected Performance Domains	42
3.5 Embed Quality Into Processes and Deliverables	43
3.5.1 Project Impact	44
3.5.2 Principle in Action.	45
3.5.3 Connected Performance Domains	45
3.6 Be an Accountable Leader	46
3.6.1 Project Impact	47
3.6.2 Principle in Action.	48
3.6.3 Connected Performance Domains	48

...

3.7 Integrate Sustainability Within All Project Areas	48
3.7.1 Project Impact	50
3.7.2 Principle in Action	52
3.7.3 Connected Performance Domains.....	52
3.8 Build an Empowered Culture.....	53
3.8.1 Project Impact	54
3.8.2 Principle in Action.....	54
3.8.3 Connected Performance Domains	55
4 Project Life Cycles	57
4.1 Project Phases	57
4.2 Project Development Approaches	59
4.2.1 Predictive Approaches.....	61
4.2.2 Adaptive Approaches.....	63
4.2.3 Hybrid Approaches.....	65
4.3 Considerations for a Development Approach Selection	67
4.3.1 Deliverables	67
4.3.2 Project.....	68
4.3.3 Organization	68
4.4 Delivery Cadence.....	69
4.5 Project Management Focus Areas	69
4.5.1 Initiating Focus Area.....	70
4.5.2 Planning Focus Area.....	70
4.5.3 Executing Focus Area.....	72
4.5.4 Monitoring and Controlling Focus Area	72
4.5.5 Closing Focus Area	72
4.5.6 Focus Areas as a Whole	73
References.....	75
Index.....	77

A Guide to the Project Management Body of Knowledge (PMBOK® Guide)

1 Introduction	3
1.1 Structure of the <i>PMBOK® Guide</i>	3
1.2 Relationship of the <i>PMBOK® Guide</i> and <i>The Standard for Project Management</i>	4
1.3 Changes to the <i>PMBOK® Guide</i>	5
2 Project Management Performance Domains	7
2.1 Governance Performance Domain	10
2.1.1 Project Value Creation	10
2.1.2 Project Governance Models	11
2.1.3 Metrics and Mechanisms for Effective Project Governance	13
2.1.4 Additional Considerations for Predictive Environments	13
2.1.5 Key Concepts	14
2.1.6 Processes	15
2.1.7 Tailoring Considerations	33
2.1.8 Interactions With Other Domains	35
2.1.9 Check Results	35
2.2 Scope Performance Domain	35
2.2.1 Key Concepts	35
2.2.2 Processes	39
2.2.3 Tailoring Considerations	44
2.2.4 Interactions With Other Domains	45
2.2.5 Check Results	46
2.3 Schedule Performance Domain	47
2.3.1 Key Concepts	47
2.3.2 Processes	48
2.3.3 Tailoring Considerations	55
2.3.4 Interactions With Other Domains	57
2.3.5 Check Results	57
2.4 Finance Performance Domain	58
2.4.1 Key Concepts	59
2.4.2 Processes	61
2.4.3 Tailoring Considerations	65
2.4.4 Interactions With Other Domains	66
2.4.5 Check Results	66

...

2.5 Stakeholders Performance Domain	67
2.5.1 Key Concepts	68
2.5.2 Processes	70
2.5.3 Tailoring Considerations	74
2.5.4 Interactions With Other Domains	77
2.5.5 Check Results.	78
2.6 Resources Performance Domain	79
2.6.1 Key Concepts	79
2.6.2 Processes	80
2.6.3 Tailoring Considerations	88
2.6.4 Interactions With Other Domains	91
2.6.5 Check Results.	92
2.7 Risk Performance Domain	92
2.7.1 Key Concepts	92
2.7.2 Processes	94
2.7.3 Tailoring Considerations	98
2.7.4 Interactions With Other Domains	101
2.7.5 Check Results.	102
3 Tailoring	103
3.1 Overview	103
3.2 Why Tailor?	104
3.3 What to Tailor	104
3.3.1 Life Cycle and Development Approach Selection	104
3.3.2 Processes	105
3.3.3 Engagement.	105
3.4 The Tailoring Process	105
3.4.1 Select Initial Development Approach	105
3.4.2 Tailor for the Organization	106
3.4.3 Tailor for the Project.	108
3.4.4 Implement Ongoing Improvement	109
3.5 Tailoring the Performance Domains.	110
3.6 Diagnostics	110
3.7 Summary	112
4 Inputs and Outputs	113
5 Tools and Techniques.	145

Appendix X1: Contributors and Reviewers	217
X1.1 Contributors and Reviewers	217
X1.2 PMI Team Members	231
Appendix X2: Project Management Offices	233
X2.1 Introduction	233
X2.2 The PMO Value Proposition	233
X2.3 Importance of Customer Centricity for a PMO	234
X2.4 PMO Type, Model, and Structure	234
X2.5 PMO Maturity Models	235
X2.6 Learn More About PMOs	236
Appendix X3: Artificial Intelligence	237
X3.1 Artificial Intelligence in the Project Context	237
X3.1.1 Strategies for AI Adoption	238
X3.1.2 State of the Market	239
X3.2 Common Use Cases	239
X3.3 Responsible Use and Ethical Concerns	239
X3.4 Suggested Resources	244
Appendix X4: Procurement	245
X4.1 Procurement Introduction	245
X4.2 Procurement Overview	246
X4.3 Make-or-Buy Analysis	246
X4.4 Procurement Strategy	247
X4.5 Bid Process and Documents	248
X4.6 Source Selection Analysis	249
X4.7 Source Selection Criteria	249
X4.8 Contract Type	250
X4.8.1 Fundamental Contract Models	251
X4.8.2 Emerging Trends in Contract Management	252
X4.9 Claims Administration	252
X4.9.1 Relevance to Project Managers	253
X4.9.2 Sensitivity of Legal Actions and Upholding Ethics Codes	254
Appendix X5: Evolution of the <i>PMBOK® Guide</i>	255
X5.1 Evidence-Based	255
X5.2 Changes in the Eighth Edition	257
X5.3 Sources for the Eighth Edition	257
X5.4 Refinement of Project Management Principles	257
References	261
Bibliography	263
Glossary	265
Index	277

...

List of Figures and Tables

The Standard for Project Management

Figures

Figure 1-1	Impact of Projects on Organizational States	8
Figure 1-2	A Framework for Managing Portfolios, Programs, Projects, and Operations	11
Figure 2-1	Examples of Business Value	14
Figure 2-2	Example of a System for Value Delivery	15
Figure 2-3	Example Information Flow	16
Figure 2-4	Project Influences	18
Figure 2-5	Sample Product Life Cycle	23
Figure 2-6	Project Management Team Within Various Spheres of Influence	28
Figure 2-7	Project Management Team Competencies	30
Figure 3-1	The Project Management Mindset	36
Figure 3-2	Adopt a Holistic View	38
Figure 3-3	Focus on Value	41
Figure 3-4	Embed Quality Into Processes and Deliverables	43
Figure 3-5	Be an Accountable Leader	47
Figure 3-6	Integrate Sustainability Within All Project Areas	49
Figure 3-7	The Sustainability Pyramid	49
Figure 3-8	Sustainability Broadens the Orientation of Project Management	51
Figure 3-9	Build an Empowered Culture	53
Figure 4-1	Impact of Variables Over Time	59
Figure 4-2	The Spectrum of Development Approaches	60
Figure 4-3	Constraint Options for Adaptive Approaches	61
Figure 4-4	Sample Predictive Life Cycle	62
Figure 4-5	Sample Predictive Life Cycle With an Incremental Delivery	62
Figure 4-6	Life Cycle With an Adaptive Development Approach	63
Figure 4-7	Agile Approaches Plotted by Breadth and Depth	64

...

Figure 4-8	Adaptive Development Followed by a Predictive Rollout	65
Figure 4-9	A Hybrid of Adaptive and Predictive Approaches Used Simultaneously	66
Figure 4-10	A Largely Predictive Approach With an Adaptive Component	66
Figure 4-11	A Largely Adaptive Approach With a Predictive Component	67
Figure 4-12	Project Boundaries	71
Figure 4-13	Example of Focus Area Interactions Within a Project or Phase Using a Predictive Approach.	73
Figure 4-14	Example of Focus Area Interactions Within a Project or Phase Using an Adaptive Approach.	74

Tables

Table 1-1	Comparative Overview of Portfolios, Programs, and Projects.	12
Table 2-1	Influences of Organizational Structures on Projects	22

A Guide to the Project Management Body of Knowledge (PMBOK® Guide)

Figures

Figure 1-1	Relationship Between Project Management Principles and Project Management Performance Domains	4
Figure 2-1	Structured Versus Self-Governed Projects.	12
Figure 2-2	Governance Performance Domain Processes Overview.	16
Figure 2-3	Initiate Project or Phase Inputs, Tools and Techniques, and Outputs	17
Figure 2-4	Integrate and Align Project Plans Inputs, Tools and Techniques, and Outputs.	19
Figure 2-5	Plan Sourcing Strategy Inputs, Tools and Techniques, and Outputs.	20
Figure 2-6	Manage Project Execution Inputs, Tools and Techniques, and Outputs.	22
Figure 2-7	Manage Quality Assurance Inputs, Tools and Techniques, and Outputs	23
Figure 2-8	Manage Project Knowledge Inputs, Tools and Techniques, and Outputs	25
Figure 2-9	Monitor and Control Project Performance Inputs, Tools and Techniques, and Outputs . .	27
Figure 2-10	Assess and Implement Changes Inputs, Tools and Techniques, and Outputs	29
Figure 2-11	Example Flow for Project Changes	30
Figure 2-12	Close Project or Phase Inputs, Tools and Techniques, and Outputs.	31
Figure 2-13	Scope Performance Domain Processes Overview	39
Figure 2-14	Plan Scope Management Inputs, Tools and Techniques, and Outputs.	40
Figure 2-15	Elicit and Analyze Requirements Inputs, Tools and Techniques, and Outputs	41
Figure 2-16	Define Scope Inputs, Tools and Techniques, and Outputs	42
Figure 2-17	Develop Scope Structure Inputs, Tools and Techniques, and Outputs.	43
Figure 2-18	Monitor and Control Scope Inputs, Tools and Techniques, and Outputs.	43
Figure 2-19	Validate Scope Inputs, Tools and Techniques, and Outputs	44
Figure 2-20	Schedule Performance Domain Processes Overview	48
Figure 2-21	Plan Schedule Management Inputs, Tools and Techniques, and Outputs.	49
Figure 2-22	Develop Schedule Inputs, Tools and Techniques, and Outputs.	50
Figure 2-23	Steps for Developing the Schedule	51
Figure 2-24	Monitor and Control Schedule Inputs, Tools and Techniques, and Outputs.	54
Figure 2-25	Two Scenarios of Budget Buildup.	61
Figure 2-26	Finance Performance Domain Processes Overview.	62
Figure 2-27	Plan Financial Management Inputs, Tools and Techniques, and Outputs	63
Figure 2-28	Estimate Costs Inputs, Tools and Techniques, and Outputs.	63
Figure 2-29	Develop Budget Inputs, Tools and Techniques, and Outputs.	64
Figure 2-30	Monitor and Control Finances Inputs, Tools and Techniques, and Outputs	65
Figure 2-31	Examples of Project Stakeholders	68

...

Figure 2-32	Stakeholders Performance Domain Processes Overview	70
Figure 2-33	Identify Stakeholders Inputs, Tools and Techniques, and Outputs	71
Figure 2-34	Plan Stakeholder Engagement Inputs, Tools and Techniques, and Outputs	72
Figure 2-35	Plan Communications Management Inputs, Tools and Techniques, and Outputs	73
Figure 2-36	Manage Stakeholder Engagement Inputs, Tools and Techniques, and Outputs	74
Figure 2-37	Manage Communications Inputs, Tools and Techniques, and Outputs	75
Figure 2-38	Monitor Stakeholder Engagement Inputs, Tools and Techniques, and Outputs	76
Figure 2-39	Monitor Communications Inputs, Tools and Techniques, and Outputs	77
Figure 2-40	Resources Performance Domain Processes Overview	80
Figure 2-41	Plan Resource Management Inputs, Tools and Techniques, and Outputs	81
Figure 2-42	Estimate Resources Inputs, Tools and Techniques, and Outputs	82
Figure 2-43	Acquire Resources Inputs, Tools and Techniques, and Outputs	83
Figure 2-44	Lead the Team Inputs, Tools and Techniques, and Outputs	85
Figure 2-45	Monitor and Control Resourcing Inputs, Tools and Techniques, and Outputs	87
Figure 2-46	Risk Classification	93
Figure 2-47	Risk Performance Domain Processes Overview	95
Figure 2-48	Plan Risk Management Inputs, Tools and Techniques, and Outputs	96
Figure 2-49	Identify Risks Inputs, Tools and Techniques, and Outputs	97
Figure 2-50	Perform Risk Analysis Inputs, Tools and Techniques, and Outputs	98
Figure 2-51	Plan Risk Responses Inputs, Tools and Techniques, and Outputs	99
Figure 2-52	Implement Risk Responses Inputs, Tools and Techniques, and Outputs	100
Figure 2-53	Monitor Risks Inputs, Tools and Techniques, and Outputs	100
Figure 3-1	Details of the Steps in the Tailoring Process	106
Figure 3-2	Assessing the Organizational and Project Factors When Tailoring	107
Figure 3-3	The Tailoring Process	110
Figure 3-4	Tailoring to Fit the Project Context	111
Figure 4-1	Cost Baseline, Expenditures, and Funding Requirements	126
Figure 4-2	Example of a Project Schedule Network Diagram	127
Figure 4-3	Example of a Requirements Traceability Matrix	132
Figure 4-4	Sample Resource Breakdown Structure	133
Figure 4-5	Excerpt From a Sample Risk Breakdown Structure	135
Figure 5-1	Relationship Among Product Vision, Release Planning, and Iteration Planning	147
Figure 5-2	Communication Model for Cross-Cultural Communication	154
Figure 5-3	Cost of Quality	159
Figure 5-4	Example of Critical Path Method	161

...

Figure 5-5	Example Decision Tree	164
Figure 5-6	Sample WBS Decomposed Down Through Work Packages	165
Figure 5-7	Sample WBS Organized by Phase	166
Figure 5-8	Sample WBS With Major Deliverables	167
Figure 5-9	Information Radiator	174
Figure 5-10	Iteration Burndown Chart	175
Figure 5-11	Components of Emotional Intelligence	178
Figure 5-12	Examples of Lead and Lag	180
Figure 5-13	Precedence Diagramming Method Relationship Types	186
Figure 5-14	Example Probability and Impact Matrix With Scoring Scheme	187
Figure 5-15	Project Canvas Example	189
Figure 5-16	Project Dashboard Example 1	190
Figure 5-17	Project Dashboard Example 2	191
Figure 5-18	Resource Leveling	193
Figure 5-19	Sample RACI Matrix	195
Figure 5-20	Schedule Compression Comparison	196
Figure 5-21	Example Tornado Diagram	198
Figure 5-22	Example Probability Distribution of a Target Milestone	199
Figure 5-23	Stakeholder Engagement Assessment Matrix	200
Figure 5-24	To-Complete Performance Index (TCPI)	206
Figure 5-25	Task Board or Kanban Board	213
Figure 5-26	Burnup Chart	214
Figure X3-1	The Relationship Among the Technologies Needed to Make Generative Pretrained Transformers (GPTs) Work	238
Figure X3-2	Use Cases Demonstrating Complexity and the Need for Human Intervention	243
Figure X4-1	Example Procurement Process Flow	248
Figure X5-1	<i>PMBOK® Guide</i> —Eighth Edition Content Migration	258

Tables

Table 2-1	Mapping Project Management Focus Areas to Performance Domains	9
Table 2-2	Sampling of Common Project Governance Scenarios	11
Table 2-3	Advantages of Insourcing Versus Outsourcing	21
Table 2-4	Governance Interactions With Other Performance Domains	36
Table 2-5	Check Outcomes—Governance Performance Domain	37
Table 2-6	Check Outcomes—Scope Performance Domain	46
Table 2-7	Check Outcomes—Schedule Performance Domain	58

...

Table 2-8	Check Outcomes—Finance Performance Domain	67
Table 2-9	Check Outcomes—Stakeholders Performance Domain	78
Table 2-10	Check Outcomes—Resources Performance Domain.	92
Table 2-11	Check Outcomes—Risk Performance Domain	102
Table 3-1	Common Situations and Tailoring Suggestions.	112
Table 4-1	Elements of the Project Charter and Project Scope Statement	129
Table 4-2	Example of Definitions for Probability and Impacts.	136
Table 5-1	Earned Value Calculations Summary	207
Table X3-1	Primary AI Use Cases in Project Management	240
Table X5-1	Evolutionary Changes of the <i>PMBOK® Guide</i>	256
Table X5-2	Refinement of Project Management Principles.	259

...

The Standard for Project Management



Introduction

1.1 Purpose of *The Standard for Project Management*

The Standard for Project Management provides a basis for understanding project management and how it facilitates intended outcomes. This standard applies to projects across all industries, including business, government, and nonprofit sectors; geographic regions; organizational size; or development approach (e.g., predictive, adaptive, or hybrid). The standard describes the system within which projects operate. This system includes governance, possible functions, the project environment, organizational culture, cross-functional teams, interactions with portfolios and programs, and considerations for the relationships between project management and other management disciplines, including product management.

The standard describes how project management creates value and benefits in organizations as well as how organizational and project leaders can harness the power of project management for success. Effective and efficient project management is a strategic competency within organizations. Projects enable organizations to:

- Align their project deliverables to business strategy and associated goals,
- Compete more effectively,
- Ensure long-term sustainability and growth,
- Drive positive change,
- Respond to the impact of business environment changes, and
- Create a positive impact for society at large.

...

The project management landscape has undergone significant changes in recent years, shaped by evolving global challenges such as climate change, resource constraints, geopolitical instability, and widening inequalities, alongside advancements in technology like artificial intelligence (AI).

Adaptive project management approaches, including but not limited to agile practices, have become increasingly important. These approaches enable project teams to tailor their strategies to meet the unique challenges and dynamic conditions of each project. While this standard discusses relevant agile practices in project management, it is important to note that the practice of agile extends beyond project management.

Simultaneously, generative AI (GenAI) is contributing to the field of project management by offering advanced tools and capabilities that, when used responsibly and correctly, can potentially improve project outcomes. Artificial intelligence–driven solutions can analyze vast amounts of data to provide actionable insights, predict risks, and recommend optimal courses of action. This technology can enhance decision-making processes, automate routine tasks, and support more accurate forecasting and planning. When applied effectively, AI can help project managers focus on performing strategic activities, managing stakeholder engagement, fostering innovation, and driving continuous improvement within the context of their projects. However, the impact of using AI depends on factors such as the quality of system inputs and human oversight.

In this evolving landscape, the role of a project manager continues to expand beyond traditional organizing skills. Project practitioners should be able to navigate complex environments, leverage emerging technologies, and align project outcomes with organizational strategic objectives. In today's business environment, project managers should be skilled strategists and change managers, capable of driving value to their organization, industry, and situation. While no one person can be an expert in all these things, the expectation in the modern workplace remains the same. Therefore, the practice of project management now requires excellence in an expanding array of disciplines.

The Standard for Project Management serves as a foundational guide for project management practitioners, providing a common language and framework that can be applied across various industries, methodologies, and technological advancements. The standard supports organizations and project professionals in navigating the complexities of modern project management, ensuring consistency and effectiveness in project delivery while allowing for the flexibility needed in today's dynamic business environment. By applying the standard, organizations can better position themselves to achieve strategic objectives, drive innovation, maintain competitiveness, and contribute to societal impact.

1.2 Key Terms and Concepts

The Standard for Project Management reflects the advancement of the profession. Organizations expect projects to deliver outcomes. Project managers are expected to deliver projects that create value for the organization and stakeholders within the organization's system for value delivery. The following terms are defined to provide context for the content in this standard:

- **Artifact.** A document or other item created during a portfolio, program, or project to help manage it and provide information to the project team, stakeholders, and management.

...

- **Benefit.** A gain or asset realized by the organization and other stakeholders as the result of outcomes delivered.
- **Outcome.** An end result or consequence of a process or project. Outcomes encompass the long-term effects, changes, or value generated by the project's deliverables, which can be either positive or negative. Positive outcomes, often termed "benefits," may include enhancements in performance, efficiency, or customer satisfaction. Conversely, negative outcomes, known as "disbenefits," may involve unintended adverse effects or costs. Evaluating outcomes is essential to determine how effectively a project has achieved its intended objectives and to understand its overall impact.
- **Output.** A product, result, or service generated by a process. May be an input to a successor process.
- **Portfolio.** A collection of programs, projects, and operations managed as a group to maximize overall value delivery and achieve strategic objectives, meet mandatory obligations, or generate income streams. Related activities may include subsidiary portfolios (subportfolios) and operations.
- **Product.** An artifact that is produced, is quantifiable, and can be either an end item in itself or a component item. "Product" is an overarching term that includes tangible (physical goods) and intangible (digital goods and services) items.
- **Program.** A group of related projects and program activities managed in a coordinated manner to obtain benefits not available from managing them individually. These interrelated activities can serve program components to enable the program to deliver the highest value and may include subsidiary programs.
- **Project.** A temporary initiative in a unique context undertaken to create value. The temporary nature of a project indicates a beginning and an end to the project work or a phase of the project work. A project's unique context can be driven by its distinct goals, environmental conditions, approaches, stakeholders, or other dimensions. Projects can be stand-alone efforts or part of a portfolio or program.
- **Project management.** The application of knowledge, skills, tools, and techniques to project activities to meet or exceed the intended value. Meeting or exceeding value in project management does not mean to endorse or accept gold plating or scope creep, but to emphasize a value-driven decision-making process, helping to ensure that the final project outcome satisfies the stakeholders' needs.
- **Project management office (PMO).** Organizational entities, typically established as departments or teams, primarily tasked with centralizing activities related to the management of portfolios, programs, and/or projects. The nature of these activities can vary according to the unique needs of each organization.
- **Project management team.** The members of the project team who are directly involved in project management activities.
- **Project manager.** The person assigned by the performing organization to lead the team that is responsible for achieving the project objectives. Project managers perform a variety of functions such as facilitating the project team's work to achieve the intended outcomes and managing the processes to bring about those outcomes in order to enable value delivery. Additional functions are identified in Section 2.4.

...

- **Project success.** The consensus view across intended beneficiaries, other stakeholders, and project participants that a project was perceived to have delivered value that was worth the effort and expense.
- **Project team.** A set of individuals performing the work of the project to achieve its objectives.
- **Value.** The excess of financial and nonfinancial benefits over investment that is gained from achieving the goals of a portfolio, program, or project. Different stakeholders perceive value in different ways, which can be explained quantitatively or qualitatively. Thus, organizations may focus on business value as determined by performance metrics or finances, such as return on investment (ROI). Customers may interpret value as the convenience offered by a given product or service. Governments and nongovernmental organizations (NGOs) may prioritize the value of societal impact on groups of people and their communities and environments.
- **Value delivery system.** A collection of strategic business activities aimed at building, sustaining, and/or advancing an organization. Portfolios, programs, projects, products, and operations can all be part of an organization's system for value delivery. This system enables organizations to align their work with their strategic objectives and achieve desired outcomes.

For other terms used in this standard, refer to the glossary and the *PMI Lexicon of Project Management Terms* [1].¹

1.3 Foundational Elements of Project Management

This section outlines the essential elements required to understand and effectively engage in project management. The section explores key project management perspectives and relationships that are crucial for effective project delivery and organizational success, covering concepts such as the following:

- How projects create value and drive organizational change;
- The link between organizational governance and project governance during project initiation;
- The differences between operations management and project management; and
- The relationships among portfolio, program, and project management, as well as their connections to operations management.

By examining these foundational elements, project management practitioners can gain a comprehensive understanding of how projects fit into the broader organizational context and contribute to value delivery.

1.3.1 Characteristics of a Project

Organizations expect projects to deliver value in addition to outputs and artifacts. Project managers are expected to deliver project outcomes that create value for the organization and stakeholders within the organization's system for value delivery.

¹ The numbers in brackets refer to the numbered list of references at the end of this standard.

Organizational work encompasses both operations and projects. Although both are expected to deliver value beyond outputs and artifacts, they differ in their value-creation processes. The following terms are defined to provide context for these distinctions and the broader content of this standard:

- **Temporary.** Projects are initiated to create value by producing tangible and/or intangible deliverables such as products, services, or other results. Unlike ongoing operations, projects are temporary and have a defined beginning and end. Although projects are temporary, their deliverables often persist beyond the project's conclusion. Usually, a project ends when one or more of the following conditions are met:
 - The project's objectives have been achieved;
 - A governing body, the project sponsor, or the project team has determined that the objectives will not or cannot be met;
 - Resources (funding, human, or physical) are exhausted or no longer available;
 - Due to changes in strategy, priorities, or the external environment, the need for the project no longer exists; or
 - The project is terminated for other reasons such as legal, regulatory, or compliance issues.
- **Unique context.** A unique context in projects refers to the specific conditions and environments that distinguish one project from another, even if they have otherwise similar characteristics. This uniqueness arises from factors such as differences in goals, scope, duration, location, technology, quality, costs, risks, resources, and stakeholders involved in the project. Even if two projects aim for the same value or objectives, each project differs due to the context in which it is carried out. These differences require tailored management approaches to meet the specific needs and challenges of each project. As a result, the unique context of each project requires customized strategies for success.

For example, a large housing development project may involve a single construction vendor in a single government district. However, each of those housing units may involve varying lenders and buyers, distinct customization requests, and unique grading requirements from one plot to another.

- **Value creation through organizational change.** Projects, in pursuit of value, drive change in organizations. From a business perspective, a project's purpose is to move an organization from one state to another to achieve a specific objective (see Figure 1-1). Before the project begins, an organization is in its current state. The desired result of the change driven by the project is described as the future state. For some projects, this shift may involve creating a transition state where several steps are taken in a structured manner to achieve the future state. The successful completion of a project results in the organization moving to the future state and achieving value for the organization, as defined by key stakeholders.

1.3.2 Connecting Organizational Governance and Project Governance

Organizational governance provides direction and control through policies, processes, procedures, and decisions to meet strategic and operational goals. Typically overseen by an executive committee or organizational leaders, organizational governance helps ensure transparency, oversight, compliance, resiliency, and adaptability for its stakeholders. In many organizations, organizational governance is inspired by the country's laws, business domain regulations, industry standards, and

...

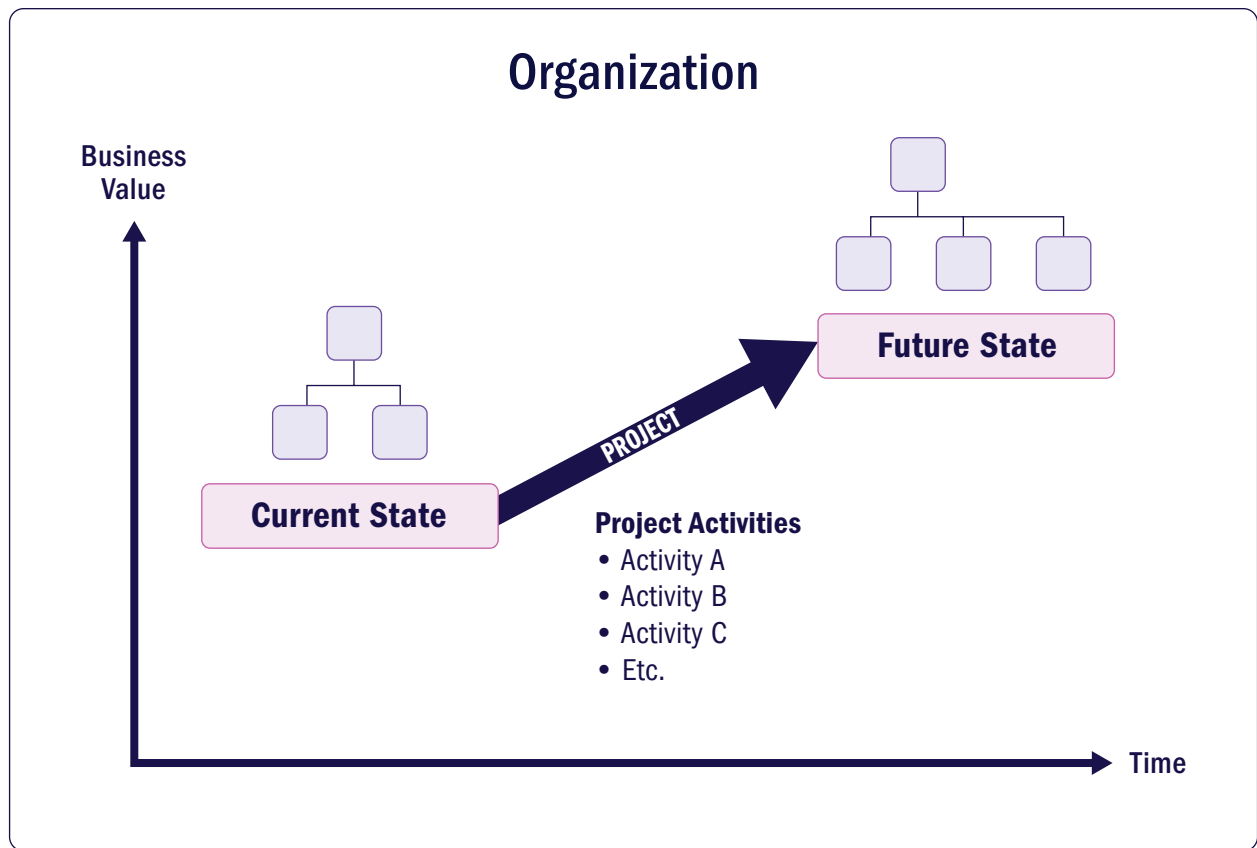


Figure 1-1. Impact of Projects on Organizational States

custom policies that are formed by the organization's unique context. This context can influence the governance of portfolios, programs, and projects in several ways, including the following:

- Enforcing legal, regulatory, and compliance requirements;
- Defining ethical, social, and environmental responsibilities;
- Specifying operational, legal, financial, and risk policies;
- Promoting the alignment of portfolios, programs, and projects with strategic objectives at different hierarchical levels;
- Ensuring that initiatives contribute to the organizational mission and vision: and
- Facilitating decision-making that maximizes delivered value connected to the system for value delivery.

Project governance is the adaptable framework that guides project management activities to create value through a unique product, service, or result aligned with organizational, strategic, and operational goals. Governance provides structure, systems and processes, roles, responsibilities, and decision-making models, such as RACI (responsible, accountable, consulted, informed) matrices or governance boards, to manage projects effectively. Governance frameworks can also ensure alignment with stakeholder expectations by defining accountability and communication protocols.

...

Additionally, project governance helps prioritize initiatives and allocate resources to support strategic objectives. For instance, a steering committee in a product launch project may oversee milestones, enforce quality standards, and resolve escalated issues. Further details on the Governance performance domain are discussed in the second part of this publication (see Section 2.1 of *A Guide to the Project Management Body of Knowledge [PMBOK® Guide]*) [2].

In summary, while organizational governance provides the overall direction and control for the entire organization, project governance focuses on the specific processes and frameworks that should be implemented to manage individual projects effectively. Both are essential for ensuring that projects contribute to the organization's strategic objectives and are executed successfully.

1.3.2.1 Project Initiation

Organizational leaders authorize projects in response to organizational strategic-objective realization and stakeholder needs. Projects enable organizations to make necessary changes to address these factors. The factors can be categorized into several areas, including the following:

- Meeting regulatory, legal, or social requirements;
- Satisfying stakeholder requests or needs;
- Implementing or changing business or technological strategies; and
- Creating, improving, or fixing products, processes, organizations, or services.

By responding to these factors, leaders can enhance an organization's viability. Projects provide the means to make these changes and should ultimately link to the organization's strategic objectives and business value.

1.3.3 Operations and Project Management

Operations management focuses on the efficient, effective production of products and/or services. Additionally, operations management helps ensure that business operations are conducted efficiently and effectively by utilizing optimal resources to meet customer demands and deliver value. As such, operations management is concerned with managing processes that transform inputs (e.g., materials, components, energy, and labor) into outputs (e.g., products, goods, services, and/or other results). Operations management is distinct from formal project management as outlined in this standard.

Changes in business or organizational operations can be the focus of a project, particularly when significant changes are required due to new products or service delivery offerings. Ongoing operations are outside of the scope of a project. However, there are intersecting points where the two areas cross. For example, projects can intersect with operations at various points during a product life cycle, such as the following:

- When developing new products or services, upgrading offerings, or expanding outputs;
- While improving product or service delivery operations or their development process;
- At the end of the product life cycle; and
- At each closeout phase or iteration.

...

At determined points, deliverables, human resources, and knowledge are transferred between the project and operations for implementation of the delivered work. These transfers help ensure the seamless integration of project outcomes into the organization's operational framework. This implementation may occur through a transfer of project resources or knowledge to operations or through a transfer of operational resources to the project. Engaging operations teams early in project planning is beneficial and can significantly influence the long-term success and sustainability of a project. This is when the project is typically handed over to operations to sustain and use the results of the project.

1.3.4 Relationship of Portfolio, Program, Project, and Operations Management

By utilizing project management principles, processes, tools, and techniques, organizations can effectively achieve their goals and objectives while delivering value. Portfolios, programs, projects, and operations are integral components of an organization, each serving interconnected roles.

Projects are often managed as stand-alone initiatives but they can also be part of larger portfolios or programs. When projects are grouped together into a program, they are managed in a coordinated manner to obtain benefits not available from managing them individually. Programs drive significant organizational change; they are not merely large projects. Programs aim to achieve organizational change and improvement by connecting resources and aligning projects strategically to create synergies. This integration maximizes generated value, enhances efficiency, and delivers value that individual projects cannot achieve on their own.

Some organizations use a portfolio to manage multiple programs and projects that are underway at any given time. A portfolio is a collection of programs, projects, and operations managed as a group to maximize overall value delivery and achieve strategic objectives, meet mandatory obligations, or generate income streams. Portfolio management involves selecting, prioritizing, managing, and optimizing an organization's programs and projects in line with its strategic goals, obligations (legal or otherwise), or business objectives. This holistic view helps ensure that resources are allocated efficiently and that the portfolio delivers maximum value.

Portfolios, programs, projects, and operations often engage with the same stakeholders and may compete for the same resources. Portfolio, program, and project managers should work together with operations leaders to maintain a balanced approach to resource allocation and stakeholder engagement. Overlap and competition for resources can otherwise threaten the organization's strategic objectives.

Figure 1-2 illustrates a sample portfolio indicating the relationships among the organizational components (i.e., programs, projects, shared resources, and stakeholders). Organizational and portfolio planning impact these components through prioritization based on risks, funding, and other considerations. The portfolio view allows organizations to see how the strategic goals are reflected in the portfolio. This portfolio view also enables the implementation and coordination of appropriate portfolio, program, and project governance. Coordinated governance allows for the authorized allocation of human, financial, and physical resources based on expected performance and benefits.

...

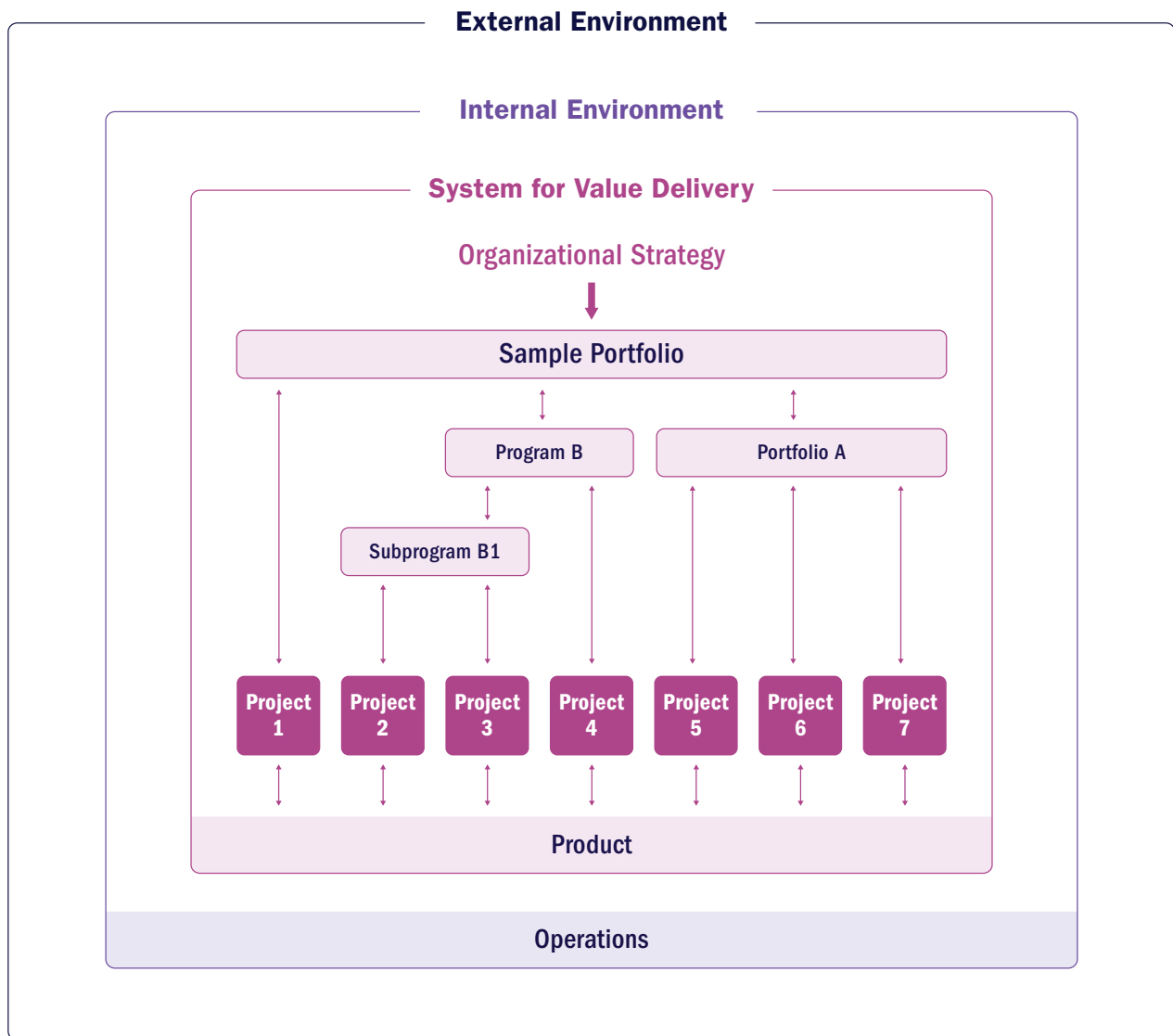


Figure 1-2. A Framework for Managing Portfolios, Programs, Projects, and Operations

Table 1-1 gives a comparative overview of portfolios, programs, and projects from an organizational perspective. The table highlights key differences and similarities in terms of definition, scope, change, planning, monitoring, and success criteria.

Table 1-1. Comparative Overview of Portfolios, Programs, and Projects

Organizational Project Management			
	Portfolios	Programs	Projects
Definition	A collection of programs, projects, and operations managed as a group to maximize overall value delivery and achieve strategic objectives, meet mandatory obligations, or generate income streams	A group of related projects and program activities managed in a coordinated manner to obtain benefits not available from managing them individually	A temporary initiative in a unique context undertaken to create value
Scope	Organizational scope aligned with strategic objectives	Includes and integrates the scope of its component projects and subprograms	Defined objectives, progressively elaborated
Change	Adaptable to continuous monitoring and adjustment to align with strategic priorities and changes in the environment	Adaptable to optimize value delivery at the program level	Adaptable to enable and maximize value delivery
Planning	Strategic planning, priority definition, and resource allocation between programs and projects	High-level planning that tracks interdependencies and aligns with program objectives	Predictive, adaptive, or hybrid, depending on project requirements and organizational context
Monitoring	Monitors strategic changes and resource allocation	Monitors progress of component projects and benefits realization	Monitoring and controlling outputs and value
Success	Measured by strategic value delivery, overall change management success, and alignment with organizational vision and mission	Measured by the program's ability to collectively deliver benefits and value and achieve strategic objectives	Measured by delivered value that was worth the effort and expense, including quality, timeliness, budget compliance, sustainability, and stakeholder satisfaction

...

A System for Value Delivery

The information in this section provides a context for a value delivery system, the project environment, product management, project functions, and project management roles as follows:

- **Creating Value.** Section 2.1 describes how projects operate within a system to produce value or enhance value production capabilities for organizations and their stakeholders.
- **Project Environment.** Section 2.2 identifies internal and external factors that can influence projects and the delivery of value.
- **Product Management Considerations.** Section 2.3 identifies the ways portfolios, programs, projects, and products relate to one another.
- **Functions Associated With Projects.** Section 2.4 identifies the functions that support project delivery.
- **Project Management Roles.** Section 2.5 describes the various roles of those involved in managing projects and their functions.

2.1 Creating Value

Projects exist in both large and small contexts. These contexts can range from government agencies, enterprises, or contractual arrangements to local nonprofits organizing community events or families organizing their vacations. For brevity, this standard uses the term “organization” broadly to encompass government agencies, enterprises, businesses, contractual arrangements, joint ventures, and other entities. Organizations create value for stakeholders, and the expected value to be created via any project investment should meet or exceed the threshold for targets, both financial and nonfinancial, that have been set. Projects are specifically designed to deliver value or enhance value

...

production capabilities, enabling the organizations involved—and their stakeholders—to maximize value while balancing competing constraints. Additionally, value delivery in today's environment extends beyond organizational objectives to also include societal impact and sustainability goals.

Business value is a net quantifiable benefit in any form of tangible or intangible elements that may contribute to the overall health and well-being of the organization during a project, at the end of the project, or in the long term. Figure 2-1 offers examples of such tangible and intangible elements.

The following are some examples of ways that projects meet or exceed expected value thresholds. Note that such value thresholds should always be considered in their investment context; that is, the expected value should meet or exceed a target threshold of return on project investments, whether that value is financial or nonfinancial or tangible or intangible, such as:

- Creating a new product, service, or result that meets the needs of customers or end users;
- Delivering the project within the performance baseline when the project's constraints baseline represents a high-value outcome;
- Contributing to community development, environmental sustainability, and ethical responsibility;
- Improving efficiency, productivity, effectiveness, responsiveness, or employee well-being;
- Enabling the changes needed to facilitate an organizational transition to its desired future state; and
- Sustaining benefits enabled by previous programs, projects, or business operations, and ensuring continuity of operations.

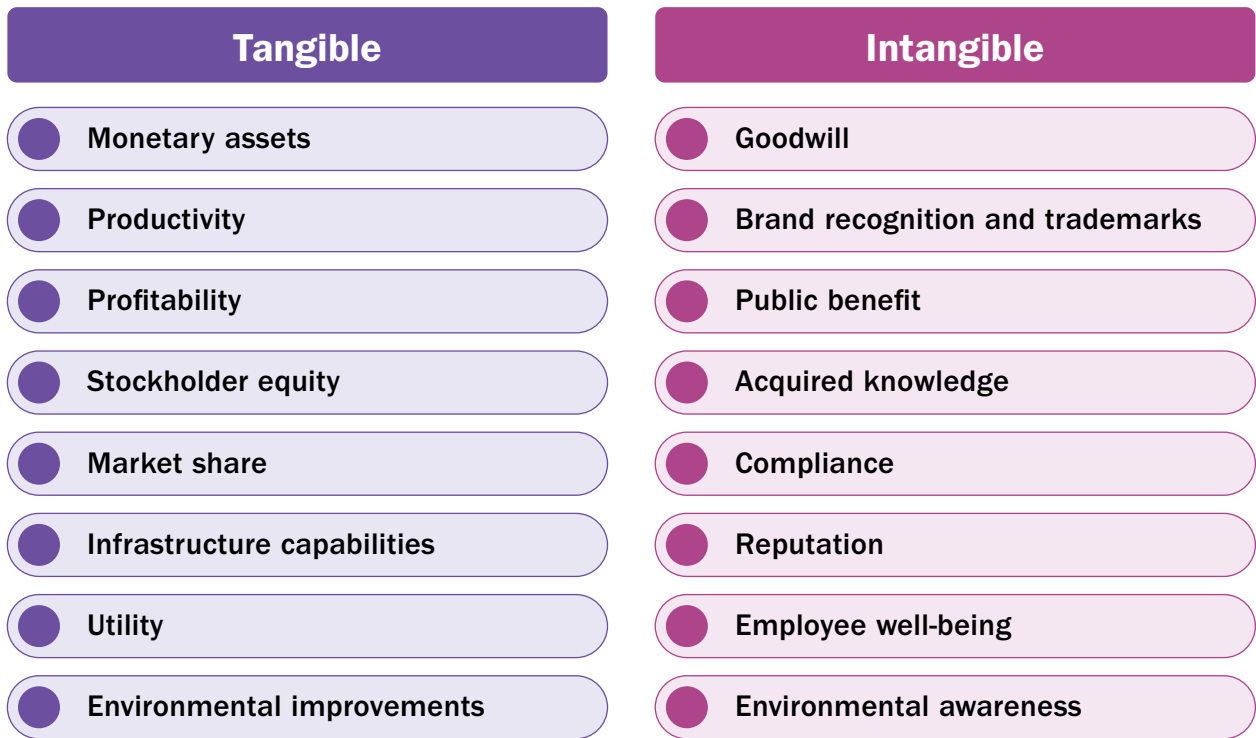


Figure 2-1. Examples of Business Value

2.1.1 Value Delivery Components

Portfolios, programs, projects, products, and operations all generate value, either individually or collectively. Together, these components form an integrated system designed to maximize and sustain value delivery while ensuring alignment with the organization's strategy. Figure 2-2 illustrates this value delivery system.

Portfolio management serves as the central framework that links strategy to execution, optimizing resource utilization to maximize value across programs, projects, products, and operations. Portfolios consist of programs and projects that deliver strategic benefits, including product development and operational improvements. Additionally, programs and projects may encompass product delivery. See Section 2.5 for more details on the relationships among portfolios, programs, projects, and operations.

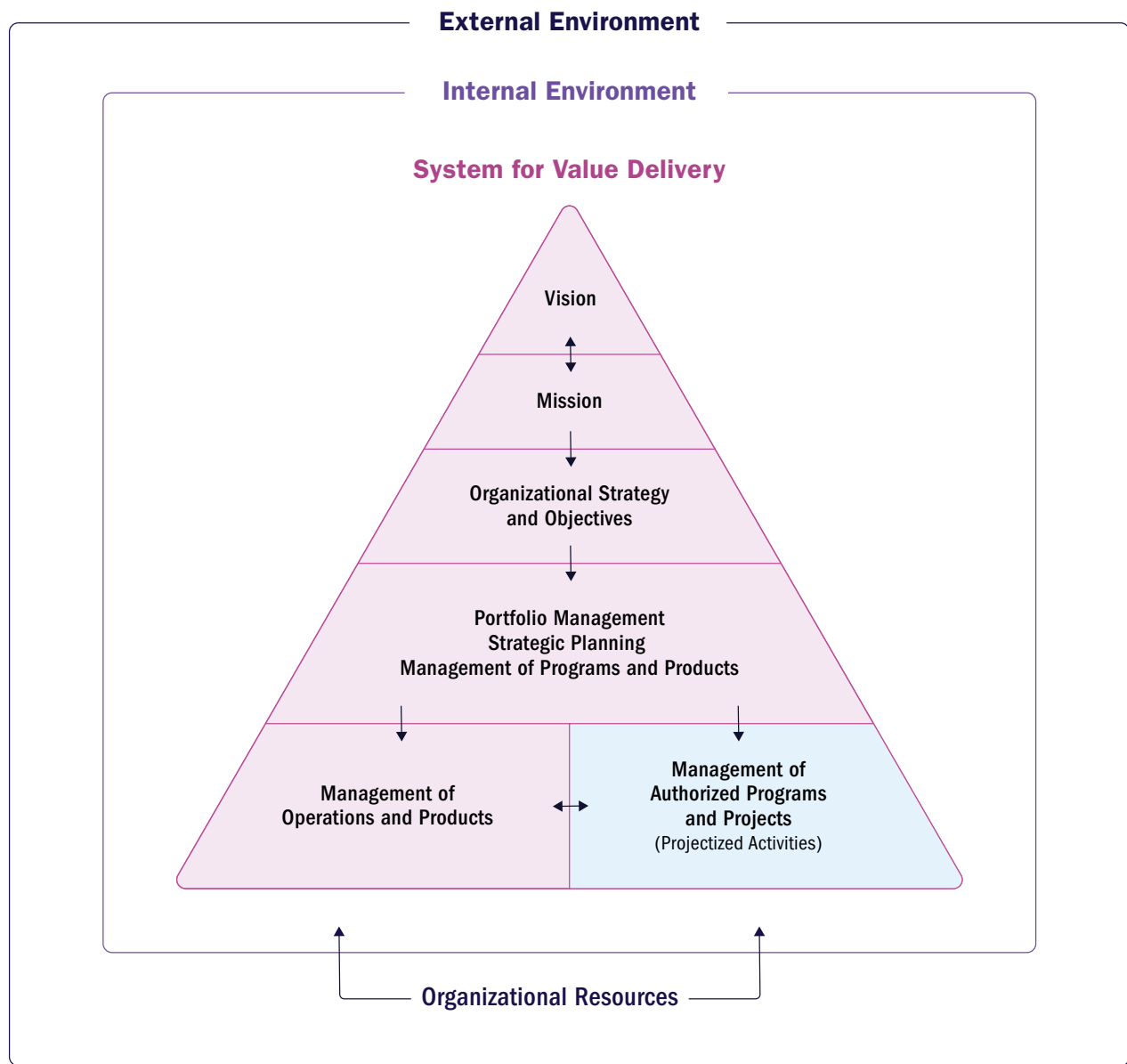


Figure 2-2. Example of a System for Value Delivery

...

Operations play a critical role in supporting and influencing portfolios, programs, and projects, as well as essential business functions such as payroll and supply chain management. At the same time, portfolios, programs, projects, and products interact dynamically, shaping and influencing one another to drive strategic outcomes.

As shown in Figure 2-2, a system for value delivery is part of an organization's internal environment that is subject to policies, procedures, methodologies, frameworks, governance structures, and so forth. That internal environment exists within the larger external environment, which includes the economy, competitive environment, legislative constraints, etc. Section 2.2 provides more detail on internal and external environments.

The components in a value delivery system create deliverables used to produce outcomes. An outcome is the end result or consequence of a process or project. Focusing on outcomes, possible alternatives, and strategic decisions emphasizes the long-term performance of the project. The outcomes create benefits, which are positive effects realized by the organization, and may also create disbenefits, which are negative consequences or losses. Benefits, in turn, create value, which is something of worth, importance, or usefulness. Because all projects are investments, their expected value—whether financial or nonfinancial—should meet or exceed target thresholds in order to justify the investment in the first place.

A value delivery system works most effectively when information and feedback are shared consistently among all components, keeping the system aligned with strategy and attuned to the environment. Figure 2-3 demonstrates an example of how information flows effectively throughout the system.

2.1.2 Assessing Project Success

The assessment of project success requires the evaluation of two important dimensions: the success of project outcomes and the success of project management processes. The first dimension focuses on the effectiveness of the project in realizing the intended value. The timing of this value realization depends on the nature of the product and the project—it can occur during the project, immediately

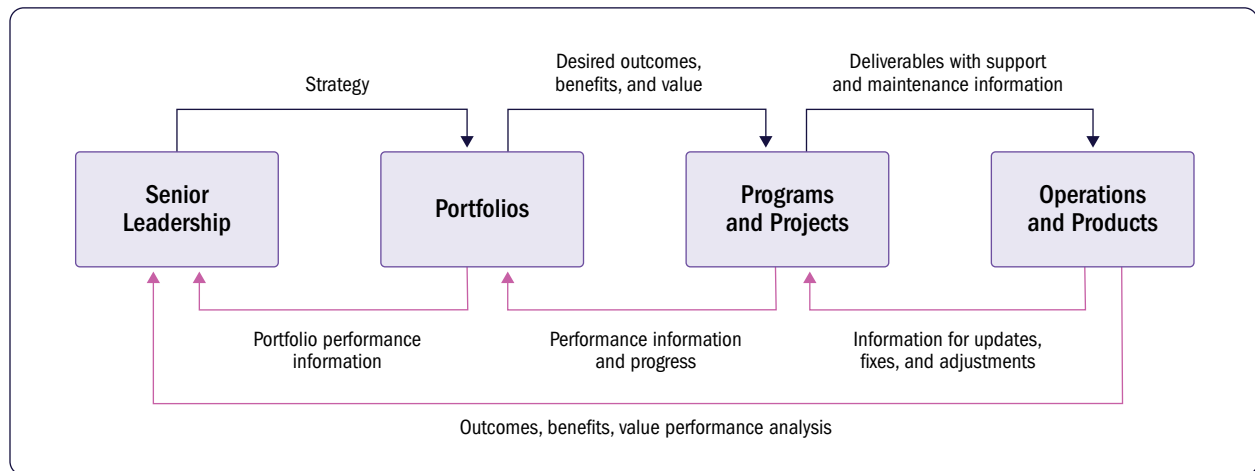


Figure 2-3. Example Information Flow

after its completion, or in the short or long term. This dimension includes achieving strategic objectives, which can be both financial and nonfinancial, such as meeting sales targets, achieving return on investment, acquiring new customers, being first to market, implementing technological or process improvements, complying with new standards and regulations, and meeting social and environmental sustainability goals. These outcomes reflect the project's ability to achieve significant impact and contribute to organizational success.

The second dimension focuses on the efficiency of project management processes, which is measured by how well the project adheres to constraints such as cost, scope, time, and quality. This aspect assesses the project's ability to deliver on time, on budget, and to the required standards, ensuring that resources are used effectively and stakeholder expectations are met.

Focusing on both dimensions is essential for delivering value and success to the organization. While the success of project management helps ensure efficient execution, the success of project outcomes is critical to the targeted business value, regardless of when that value is realized.

For example, in Sydney, Australia, the well-known Sydney Opera House project's initial budget was AUS\$7 million and the construction was expected to take 4 years. The final expenditure at completion was AUS\$102 million and the construction took 14 years. Today, the monument is a UNESCO World Heritage site—the most known landmark on the continent—and is visited each year by 10.9 million people. The management of this project is generally considered a failure but the project result exceeded the expectations many times over. The successful outcome would have been even stronger had the same scope been delivered years earlier and at a lower investment cost. Conversely, in 2016 in Montreal, Canada, officials discovered that a newly built overpass for Highway 15 did not align with the design plans for the upcoming redevelopment of the adjacent Champlain Bridge. As a result, just a year after a well-managed construction effort, the nearly CA\$11 million overpass had to be demolished.

In conclusion, assessing project success requires a balanced focus on both the success of project outcomes and the efficiency of project management processes. Focusing on these two aspects enables companies to not only complete projects effectively, but also to realize their strategic goals, ensuring sustainable growth and competitive advantage.

2.2 Project Environment

Projects exist and operate within the internal and external environments of an organization, and have varying degrees of influence on value delivery. Internal and external environments can influence planning and other project activities. These influences may yield a favorable, unfavorable, or neutral impact on project characteristics, stakeholders, or project teams. Two major categories of influences are enterprise environmental factors (EEFs) and organizational process assets (OPAs).

Enterprise environmental factors may originate from the environment outside of the project and from outside of the enterprise. These EEFs may have an impact at the organizational, portfolio, program, or project level.

Organizational process assets are internal to the organization. These OPAs may arise from the organization itself, a portfolio, a program, another project, or a combination of these. Figure 2-4 shows the breakdown of project influences into EEFs and OPAs.

...

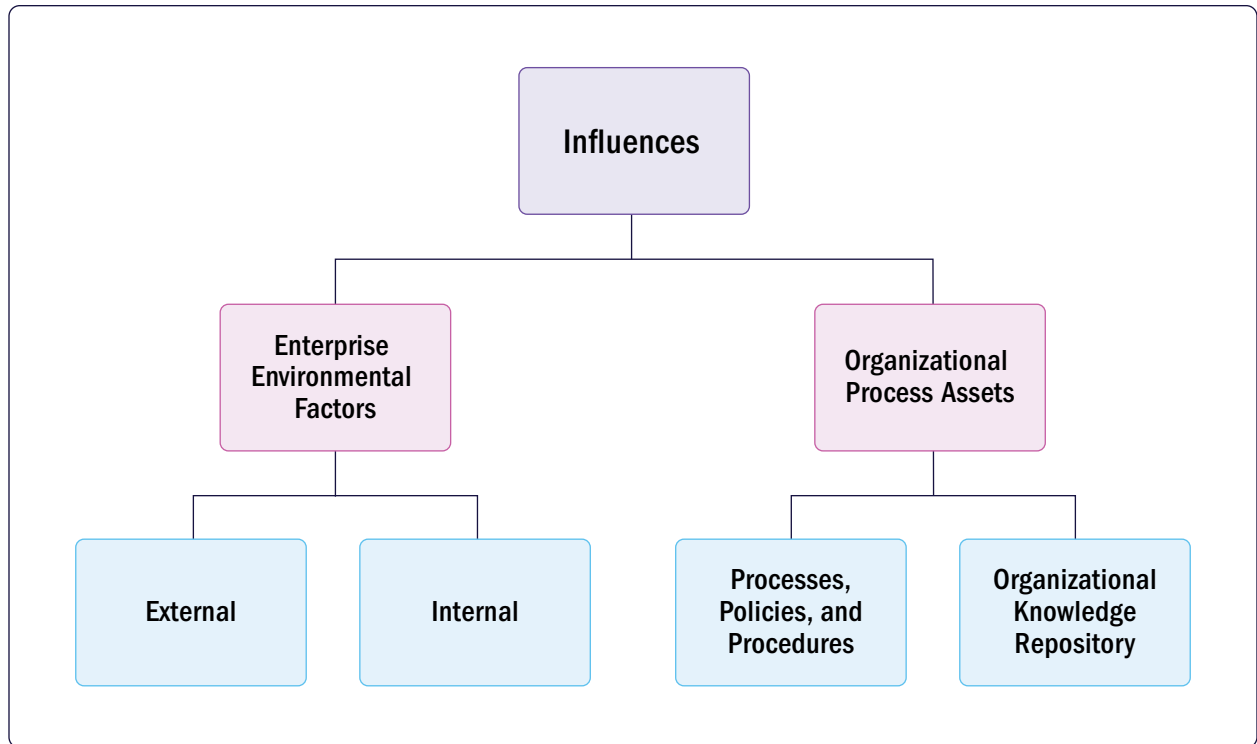


Figure 2-4. Project Influences

2.2.1 Enterprise Environmental Factors

Enterprise environmental factors refer to conditions not directly influenced by the project team that impact, constrain, or direct the project. These conditions can be internal and/or external to the organization. The EEFs are considered as inputs to many project management processes, specifically for most planning processes. These factors can either enhance or constrain project management options as well as influence tailoring needs and project outcomes, positively or negatively.

Enterprise environmental factors vary widely in type or nature and should be considered if the project is to be effective. The EEFs include but are not limited to the factors described in Sections 2.2.1.1 and 2.2.1.2.

2.2.1.1 Enterprise Environmental Factors Internal to the Organization

The following are examples of EEFs that are internal to the organization:

- **Organizational culture, structure, and governance.** Examples include vision, mission, values, beliefs, cultural norms, leadership styles, hierarchy and authority relationships, organizational styles, ethics, and codes of conduct.
- **Geographic distribution of facilities and resources.** Examples include physical locations, corporate offices, research and development centers, customer service hubs, and virtual or hybrid teams.
- **Infrastructure.** Examples include existing facilities, equipment, organizational telecommunications channels, information technology hardware, availability, and capacity.

...

- **Information technology systems.** Examples include task management tools, cost management tools, scheduling software tools, configuration management systems, web interfaces to other online automated systems, and work authorization systems.
- **Resource availability.** Examples include contracting and purchasing constraints, staffing levels or team capacity, and collaboration agreements.
- **Employee capability.** Examples include existing human resources expertise, skills, competencies, and specialized knowledge.
- **Financial capability of the organization.** Examples include external funding options and additional financial resources that may be required for projects.

2.2.1.2 Enterprise Environmental Factors External to the Organization

The following are examples of EEFs that are external to the organization:

- **Marketplace conditions.** Examples include competitors, customer behavior, market share, brand recognition, and trademarks.
- **Social and cultural influences and issues.** Examples include political climate, codes of conduct, ethics, and perceptions.
- **Legal restrictions.** Examples include country or local laws and regulations related to security, data protection, business conduct, employment, and procurement.
- **Academic research.** Examples include industry studies, publications, benchmarking results, empirical data that can inform decision-making, and emerging trends within the management field that could be insightful for project management.
- **Government or industry standards.** Examples include regulatory agency regulations and standards related to products, production, environment, safety, quality, and workmanship.
- **Financial considerations.** Examples include currency exchange rates, interest rates, inflation rates, tariffs, taxes, and geographic location.
- **Physical environmental elements.** Examples include working conditions, weather, and constraints such as geopolitical issues.
- **Emerging technologies and innovations.** Examples include advancements in artificial intelligence, automation, blockchain, and the Internet of Things (IoT).
- **Public health and safety regulations.** Examples include government-imposed health protocols, travel restrictions, quarantine measures, social distancing guidelines, and public safety mandates.

2.2.2 Organizational Process Assets

Organizational process assets, depending on the industry, organization, and working model, may include the plans, processes, documents, templates, and knowledge repositories specific to and used by the performing organization. These assets influence the management of the project.

Organizational process assets may include any artifact, practice, or knowledge from any or all of the performing organizations involved in the project, which can be used to execute or govern

...

the project. The OPAs also include the organization's lessons learned from previous projects and historical information, as well as lessons from previous work carried out. The OPAs are inputs to many project management processes and may include completed schedules, risk data, and earned value data. Since OPAs are internal to the organization, the project team members may be able to update and add to the OPAs as necessary throughout the project. They may be grouped into two categories:

- **Policies, processes, and procedures.** Generally, these assets are not updated as part of the work required to achieve the outcomes of the project and are usually established by the project management office (PMO) or another function outside of the project (for more details about PMOs, see Appendix X2). These assets can be updated only by following the appropriate organizational policies. Some organizations encourage project teams to tailor templates, life cycles, and checklists for the project. In these cases, the project team should tailor those assets according to the needs of the project.
- **Organizational knowledge repositories.** These assets are updated throughout the project with project information. For example, information on financial performance, lessons learned, performance metrics, and issues and defects are continually updated throughout the project.

2.2.3 Policies, Processes, and Procedures

The organization's policies, processes, and procedures for conducting project work include but are not limited to the following:

- Tailoring guidelines and criteria for the organization's set of standard processes and procedures to satisfy the specific needs of the project;
- Product and project life cycles as well as methods and procedures (e.g., project management methods, estimation metrics, process audits, improvement targets, checklists, and standardized process definitions for use in the organization);
- Templates (e.g., project management plans, project documents, project registers, report formats, contract templates, risk categories, risk statement templates, risk register templates, probability and impact definitions, probability and impact matrices, and stakeholder register templates);
- Preapproved supplier lists, contract templates (e.g., fixed-price, cost-reimbursable, and time and materials [T&M] contracts), and proposal evaluation criteria;
- Progress monitoring processes and procedures to meet or exceed the project's value proposition, reoptimizing the project baseline when advantageous;
- Change control procedures;
- Traceability matrices;
- Issue and defect management processes;
- Resource availability control and assignment management policies;
- Processes for prioritizing, approving, and issuing work authorizations;
- Standardized guidelines, work instructions, and performance measurement procedures and guidelines;

...

- Verification and validation processes;
- Service-level agreements (SLAs); and
- Project closure guidelines or requirements.

2.2.4 Organizational Knowledge Repositories

The organizational knowledge repositories for storing and retrieving information include but are not limited to the following:

- Configuration management knowledge repositories containing the versions of software and hardware components and baselines of all performing organization standards, policies, procedures, and project documents;
- Financial data repositories containing information such as labor hours, incurred costs, budgets, and any project cost overruns;
- Historical information and lessons learned knowledge repositories such as project records and documents, all project closure information and documentation, information regarding both the results of previous project selection decisions and previous project performance information, and information from risk activities;
- Issue and defect management data repositories containing issue and defect status, control information, issue and defect resolution, and action item results;
- Data repositories for metrics used to collect and make available measurement data on processes and products; and
- Project files from previous projects such as scope, cost, schedules, performance measurement baselines, project calendars, project schedule network diagrams, risk registers, risk reports, and stakeholder registers.

2.2.5 Organizational Structures

Determination of the appropriate organizational structure type is the result of analyzing two key elements. These elements are the organizational structure types available for use and how to optimize them for a given organization. The analysis often involves considerations such as resource allocation efficiency, decision-making speed, communication pathways, and the distribution of authority and responsibility. The optimal structure depends on variables such as the organization's size, industry, geographical spread, strategic objectives, and the complexity of its projects.

There is not a one-size-fits-all structure for any given organization. The final structure for a given organization is unique due to the numerous variables to be considered. Organizational structures take many forms. Table 2-1 compares several types of organizational structures and their influence on projects.

2.3 Product Management Considerations

Product management is the integration of people, data, processes, and business systems to create, develop, and maintain a product or service throughout its life cycle. The product life cycle is a series of phases that represents the evolution of a product, from introduction through growth, maturity, and to retirement.

...

cost performance index (CPI). A measure of the cost efficiency of budgeted resources expressed as the ratio of earned value to actual cost. See also *schedule performance index (SPI)*.

cost-reimbursable contract. A type of contract involving payment to the seller for the seller's actual costs, plus a fee typically representing the seller's profit.

cost variance (CV). The amount of budget deficit or surplus at a given point in time, expressed as the difference between the earned value and the actual cost. See also *schedule variance (SV)*.

crashing. A schedule compression technique used to shorten the schedule duration for the least incremental cost by adding resources. See also *fast tracking*.

criteria. Standards, rules, or tests on which a judgment or decision can be based or by which a product, service, result, or process can be evaluated.

critical path. The sequence of activities that represents the longest path through a project, which determines the shortest possible duration.

cumulative flow diagram. A chart indicating features completed over time, features in other states of development, and those in the backlog.

dashboard. A set of charts and graphs showing progress or performance against important measures of the project.

definition of done (DoD). A checklist of all the criteria required to be met so that a deliverable can be considered ready for customer use.

duration. The total number of work periods required to complete an activity or work breakdown structure component, expressed in hours, days, or weeks. See also *effort*.

earned value (EV). The measure of work performed expressed in terms of the budget authorized for that work. See also *actual cost (AC)*, *budget at completion (BAC)*, *estimate at completion (EAC)*, *estimate to complete (ETC)*, and *planned value (PV)*.

effort. The number of labor units required to complete a schedule activity or work breakdown structure component, often expressed in hours, days, or weeks. See also *duration*.

epic. A large, related body of work intended to hierarchically organize a set of requirements and deliver specific business outcomes.

estimate. A quantitative assessment of the likely amount or outcome of a variable, such as project costs, resources, effort, or durations.

estimate at completion (EAC). The expected total cost of completing all work expressed as the sum of the actual cost to date and the estimate to complete. See also *actual cost (AC)*, *budget at completion (BAC)*, *earned value (EV)*, *estimate to complete (ETC)*, and *planned value (PV)*.

estimate to complete (ETC). The expected cost to finish all the remaining project work. See also *actual cost (AC)*, *budget at completion (BAC)*, *earned value (EV)*, *estimate at completion (EAC)*, and *planned value (PV)*.

Executing Focus Area. Consists of those processes performed to complete the work in a manner consistent with the integrated baseline, which can and should be changed whenever such a change would enhance the value proposition of the project.

expected monetary value (EMV). The estimated value of an outcome expressed in monetary terms.

explicit knowledge. Knowledge that can be codified using symbols such as words, numbers, and pictures.

...

- Design phase, 45
- Design thinking, 168
- Develop Budget process, 62, 64
- Development approach, 65, 99, 104–106, 119
- Develop Schedule process, 49–53
- Develop Scope Structure process, 40, 42, 43
- Diagnostic process, in after-action reviews, 145
- Diminishing returns, law of, 53
- Discrete data, 163
- Discretionary dependencies, 167–168
- Disputable claims, 252–254
- Dispute review boards, 253
- Distributed management and leadership, 150, 168
- Diverge/converge pattern, of decision-making, 179
- Documents/documentation
 - in after-action reviews, 145
 - analysis of, 168–169
 - business documents, 116
 - and duration estimate, 53
 - procurement documentation, 124, 246, 248, 250–252
 - project documents, 125
 - quality test and evaluation documents, 130
 - requirements documentation, 130–131
- Downtime, 92
- Downward influence, 201
- Duration, 47, 48, 52–53. *See also* Schedule/scheduling
- Duration estimates, 119, 184
- Dynamic environments, 44–45
- Dynamic scheduling, 242

E

- Early warning signaling, 241
- Earned value (EV), 169, 206, 207
- Earned value (EV) analysis, 169
- Earned value management (EVM), 122, 139, 160, 169
- Effort, 47, 52–53
- Electronic communication skills, 155
- Elicit and Analyze Requirements process, 39, 40–41
- Emergent risk, 93
- Emotional intelligence, 169–170, 177–178
- Employee capability, 120
- Employee well-being, 91
- Empowerment, 86, 105
- Encoding, 153, 154
- Engagement
 - of project teams, 69, 105
 - sponsor, 68–69
 - stakeholder (*See* Stakeholder engagement)
 - tailoring, 105
- Enhance (strategy), 158, 202, 203

- Enterprise environmental factors (EEFs), 119–120
- Enterprise environmental factor updates, 120
- Environment
 - awareness of, 102
 - and scheduling, 56
- Environmental dynamics, 44–45
- Escalate (strategy), 157, 202, 203–204
- Escalation
 - governance and, 13
 - protocols for, 254
- Established contract models, 250
- Estimate at completion (EAC) value, 119, 209
- Estimate Costs process, 61, 62–63, 91
- Estimate(s)/estimating
 - analogous, 146–147
 - basis of, 115
 - bottom-up, 149
 - cost (*See* Cost estimates)
 - definition of, 47
 - duration, 119, 184
 - multipoint, 183
 - parametric, 184–185
 - resources, 82, 91
 - schedule, 47, 52–53
 - techniques of, 170
 - under uncertainty, 183
- Estimate Resources process, 80, 82, 91
- Estimate to complete (ETC), 209
- Ethics
 - artificial intelligence and, 239–244
 - claims administration and, 254
- Events, lagging indicators and, 14
- Executing (Focus Area), 9, 11
- Exit criteria, 32
- Expert determination, 253
- Expert judgment, 170
- Explicit knowledge, 24
- Exploit (strategy), 157, 202, 203
- External dependencies, 168
- External investment, 122
- External partners, dependency on, 44
- External risk, 135
- Extrinsic motivation, 182
- Eye contact, 184

F

- Facilitation, 170
- Facilities, geographic distribution of, 120
- Facts, 93
- Failure costs, 159
- Fast tracking, 197

...

- Hidden fact, 93
- Hierarchical charts, 171–172
- Highest technical proposal score selection method, 249
- High-performing project teams, 86, 92
- Histogram, 163
- Historical information review, 172
- Holistic view, 99, 111, 189
- Human resource constraints, 66
- Human resource management
 - green, 171
 - responsibilities of, 79
- 100 percent rule, 166
- Hybrid life cycle, 34, 45, 55
- Hygiene factors, of motivation, 181

I

- Idea generation, 240
- Idea napkin, 149
- Identify Risks process, 95, 96, 97, 137, 138
- Identify Stakeholders process, 70, 71
- Imitability, of resources, 194
- Impact/influence grid, 200–201
- Impact matrix. *See* Probability and impact matrix
- Impartiality, 254
- Implement Risk Responses process, 95, 98, 100
- Improvement
 - in after-action reviews, 146
 - continuous, 35, 146, 158
 - identifying, 188
 - process, 188
 - and tailoring, 109
- Incremental disbursement, 122
- Indicators
 - lagging, 14, 27
 - leading, 14, 27
- Individual assessments, 172
- Individual brainstorming, 150
- Industry standards, 120
- Influence
 - directions of, 201
 - skills, 173
- Influence diagrams, 172
- Information
 - in presentations, 186–187
 - sensitivity and confidentiality of, 156
 - urgency of need for, 156
- Information management, 173
- Information radiators, 173, 174, 212–214
- Information technology software, 120
- Infrastructure, 120
- Initiate Project or Phase process, 10, 16, 17–18

- Initiating (Focus Area), 9, 10
- In-progress postmortems, 174
- Inputs
 - in Acquire Resources process, 83
 - in Assess and Implement Changes process, 29
 - in Close Project or Phase process, 31
 - in Define Scope process, 42
 - in Develop Budget process, 64
 - in Develop Schedule process, 50
 - in Develop Scope Structure process, 43
 - in Elicit and Analyze Requirements process, 41
 - in Estimate Costs process, 63
 - in Estimate Resources process, 82
 - in Identify Risks process, 97
 - in Identify Stakeholders process, 71
 - in Implement Risk Responses process, 100
 - in Initiate Project or Phase process, 17
 - in Integrate and Align Project Plans process, 19
 - in Lead the Team process, 85
 - list of, 113–144
 - in Manage Communications process, 75
 - in Manage Project Execution process, 22
 - in Manage Project Knowledge process, 25
 - in Manage Quality Assurance process, 23
 - in Manage Stakeholder Engagement process, 74
 - in Monitor and Control Finances process, 65
 - in Monitor and Control Project Performance process, 27
 - in Monitor and Control Resourcing process, 87
 - in Monitor and Control Schedule process, 54
 - in Monitor and Control Scope process, 43
 - in Monitor Communications process, 77
 - in Monitor Risks process, 100
 - in Monitor Stakeholder Engagement process, 76
 - in Perform Risk Analysis process, 98
 - in Plan Communications Management process, 73
 - in Plan Financial Management process, 63
 - in Plan Resource Management process, 81
 - in Plan Risk Management process, 96
 - in Plan Risk Responses process, 99
 - in Plan Schedule Management process, 49
 - in Plan Scope Management process, 40
 - in Plan Sourcing Strategy process, 20
 - in Plan Stakeholder Engagement process, 72
 - in regression analysis, 192
 - in Validate Scope process, 44
- Insourcing, 14, 20–21
- Inspections, 174
- Integrate and Align Project Plans process, 10, 16, 18–19
- Integrated change control, 174
- Integrated project delivery (IPD), 247
- Integration, 105

...

- Mass communication, 152
- Mastery, as intrinsic motivator, 182
- Material resources, 79–80
- McClelland, David, 182
- McGregor, Douglas, 182
- Measure(s)
 - cost, 61
 - financial, 58–59
 - units of, 121, 139
- Measurement pitfalls, 28
- Mediation, 253
- Meeting(s), 181
 - automated minutes of, 241
 - daily coordination, 162
 - face-to-face, 181
 - retrospectives, 194–195
 - virtual, 181
- Meeting management, 181
- Mentoring, 151
- Message, in communication models, 153–154
- Metrics
 - for effective governance, 13
 - misusing, 28
 - quality, 129
 - vanity, 28
- Milestone list, 123
- Mind mapping, 181
- Mirroring, 184
- Mitigate (strategy), 203, 204
- Monitor and Control Finances process, 62, 64–65
- Monitor and Control Project Performance process, 11, 16, 17, 26–28
- Monitor and Control Resourcing process, 81, 87–88
- Monitor and Control Schedule process, 49, 53–55
- Monitor and Control Scope process, 40, 42–43, 143
- Monitor Communications process, 70, 74, 77
- Monitoring and Controlling (Focus Area), 9, 11
- Monitor Risks process, 95, 98, 100
- Monitor Stakeholder Engagement process, 70, 73, 76
- Monte Carlo analysis, 197, 198
- Moral rights, 199
- Motivation, 177, 178, 181–182, 192
- Motivation models, 181–182
- Multicriteria decision analysis, 163, 183, 240
- Multipoint estimating, 183

N

- Narratives, 201–202
- Natural language processing (NLP), 147
- Needs, theory of, 182
- Negative float, 161, 196

- Negotiation, 183, 253
- Networks/networking, 152, 183
- Nominal data, 162
- Nominal group, 184
- Nonconformance, cost of, 158–159
- Nonfunctional requirements, 130
- Nongovernmental organization (NGO) grants, 122
- Nonverbal communication, 184
- Norming (team development phase), 211

O

- Observation/conversation, 184
- Open communication, 86
- Openness, 89, 179
- Operational expenditures (OpEx), 59, 60
- Opportunities
 - definition of, 93
 - identifying, 188
 - realizing, 102
 - strategies for, 157–158, 202
- Oral communication skills, 155
- Ordinal data, 163
- Organization(s)
 - EEFs external to, 120
 - EEFs internal to, 120
 - in resource-based view, 194
 - tailoring for, 106–108
- Organizational breakdown structure (OBS), 171–172
- Organizational capabilities, 123
- Organizational cultural intelligence, 184
- Organizational culture, 56, 74, 109, 120
- Organizational governance, 33, 90, 120
- Organizational procedures links, 121
- Organizational process assets (OPAs), 123–124
- Organizational process asset (OPA) updates, 124
- Organizational structure, 120
- Organizational theory, 184
- Ouchi, William, 182
- Outcome-based contracts, 252
- Outputs
 - in Acquire Resources process, 83
 - in Assess and Implement Changes process, 29
 - in Close Project or Phase process, 31
 - in Define Scope process, 42
 - in Develop Budget process, 64
 - in Develop Schedule process, 50
 - in Develop Scope Structure process, 43
 - in Elicit and Analyze Requirements process, 41
 - in Estimate Costs process, 63
 - in Estimate Resources process, 82
 - in Identify Risks process, 97

...

Prompt lists, 191–192
Public communication, 152
Pull communication, 152
Purpose, as intrinsic motivator, 182
Push communication, 152

Q

Qualifications-only selection method, 249
Qualitative estimating techniques, 170
Qualitative risk analysis, 96
Quality
 cost of, 158–159
 definition of, 35
 objectives for, 121
 reports on, 129–130
 requirements for, 131
 and scope, 38
 testing, 205
Quality-and-cost-based selection method, 249
Quality assurance, 16, 23–24, 128, 129
Quality audit, 148
Quality-based selection method, 249
Quality control, 23
Quality control measurements, 128
Quality management, 22–23
Quality management plan, 128–129
Quality metrics, 129
Quality test and evaluation documents, 130
Quantitative estimating techniques, 170
Quantitative risk analysis, 96
Questionnaires, 192

R

RACI matrix, 194, 195
Ranking, 187, 201
Rarity, of resources, 194
Reallocated internal budgets, 122
Real-time monitoring, 241
Receivers, in communication models, 153–154
Recognition and rewards, 86, 192
Recognition plan, 134
Red hat, 198
Reflection, in after-action reviews, 146
Regression analysis, 192
Regulations, 65, 120. *See also* Organizational process assets (OPAs)
Rejected change requests, 114
Release, completion of, 33
Release backlog, 115

Release planning, agile, 146, 147
Reliability, of AI systems, 243
Report(s)
 final, 121
 formats of, 122, 139
 quality, 129–130
 risk, 138
 work performance, 144
Request for information (RFI), 248
Request for proposal (RFP), 248
Request for quote (RFQ), 248
Requirements
 clear understanding of, 46
 definition of, 38
 eliciting and analyzing, 40–41
 for funding, 126
 as known-known, 93
 for resources, 134
 stability of, 46
 types of, 130–131
Requirements documentation, 130–131
Requirements management plan, 131
Requirements traceability matrix, 131–132
Reserve analysis, 192
Reserves
 contingency, 60, 102, 192, 202, 204
 definition of, 60
 management, 60, 61
Resilience
 planning for, 101
 of projects, 94
 of project teams, 86, 102
Resource(s). *See also* Procurement management
 acquiring, 82–84, 133
 assignments of, 124, 143
 availability of, 66, 120
 cost estimates for, 119
 effective utilization of, 92
 estimating, 82, 91
 geographic distribution of, 120
 identification of, 133, 194
 monitoring and controlling, 87–88
 number of, and duration estimate, 53
 roles and responsibilities related to, 133–134
 scarce, 81, 90
 in schedule compression, 196–197
 sourcing strategies for, 14–15, 16, 19–21
 virtual, 124, 143
Resource-based view, 194
Resource breakdown structure, 132, 133, 172
Resource calendar, 132
Resource control, 134
Resource-leveled critical path (RLCP), 160

...

- Technical dependencies, 167
- Technical performance analysis, 205
- Technical requirements, 130
- Technical risk, 135
- Technology
 - advances in, 53
 - availability and reliability of, 156
 - and scheduling, 56
- Test and inspection planning, 205
- Testing/product evaluations, 205
- Text-oriented formats, 205
- Theory of constraints (TOC), 206
- Theory of needs, 182
- Theory X, 182
- Theory Y, 182
- Theory Z, 182
- Thinking
 - critical, 161, 177
 - design, 168
 - Six Thinking Hats® technique and, 198–199
- Threats
 - definition of, 93
 - strategies for, 203–204
- Thresholds, 139
- Time and materials (T&M) contract, 251
- Timing. *See also* Calendars; Schedule/scheduling
 - in communications management, 117
 - in project management, 126
 - for realizing benefits, 115
 - in risk management, 134
 - in schedule management, 139
- To-complete performance index (TCPI), 206–210
- Tools and techniques
 - in Acquire Resources process, 83
 - in Assess and Implement Changes process, 29
 - in Close Project or Phase process, 31
 - in Define Scope process, 42
 - in Develop Budget process, 64
 - in Develop Schedule process, 50
 - in Develop Scope Structure process, 43
 - in Elicit and Analyze Requirements process, 41
 - in Estimate Costs process, 63
 - in Estimate Resources process, 82
 - in Identify Risks process, 97
 - in Identify Stakeholders process, 71
 - in Implement Risk Responses process, 100
 - in Initiate Project or Phase process, 17
 - in Integrate and Align Project Plans process, 19
 - in Lead the Team process, 85
 - list of, 145–215
 - in Manage Communications process, 75
 - in Manage Project Execution process, 22
 - in Manage Project Knowledge process, 25
 - in Manage Quality Assurance process, 23
 - in Manage Stakeholder Engagement process, 74
 - in Monitor and Control Finances process, 65
 - in Monitor and Control Project Performance process, 27
 - in Monitor and Control Resourcing process, 87
 - in Monitor and Control Schedule process, 54
 - in Monitor and Control Scope process, 43
 - in Monitor Communications process, 77
 - in Monitor Risks process, 100
 - in Monitor Stakeholder Engagement process, 76
 - in Perform Risk Analysis process, 98
 - in Plan Communications Management process, 73
 - in Plan Financial Management process, 63
 - in Plan Resource Management process, 81
 - in Plan Risk Management process, 96
 - in Plan Risk Responses process, 99
 - in Plan Schedule Management process, 49
 - in Plan Scope Management process, 40
 - in Plan Sourcing Strategy process, 20
 - in Plan Stakeholder Engagement process, 72
 - in Validate Scope process, 44
- Top-down approach, 165
- Tornado diagram, 197, 198
- Total float, 160, 161, 167, 194, 196
- Traditional postmortems, 174
- Training, 134, 210
- Transfer (strategy), 203, 204
- Transition and readiness requirements, 130
- Transmission of message, 153, 154
- Transparency
 - AI systems and, 243
 - on bias, 89
 - of project managers, 89
- Trend(s)
 - analysis of, 210–211
 - leading indicators and, 14
- Trend line, 175
- Trust
 - in project teams, 86
 - and scheduling, 56
- Tuckman ladder, 211

U

- Unanimity, 163, 214
- Uncertainty
 - cost, 192
 - decision-making under, 163, 172, 183
 - definition of, 94
 - degree of, 94
 - effects of, 195, 203

...