

# NCB

USA National Competence Baseline v2.0



© 2008 *asapm*

**American Society for the Advancement of Project Management**

## USA National Competence Baseline (NCB), *Version 2.0*

**The Program and Project Manager Knowledge and Competence Elements for the USA,  
presented by *asapm*: American Society for the Advancement of Project Management.  
*asapm* is the USA Member Association of the International Project Management Association**

### Acknowledgements

*asapm* recognizes and acknowledges the organizations and individuals whose efforts and contributions have made possible this release of the United States of America's National Competence Baseline for Project Managers.

**Project Manager:** Stacy Goff

**Professional Editor:** Julie Bettis

**USA-NCB Contributors** (in alphabetic sequence)

Chuck W. Benjamin	Bill Hubbard
Mark Beyer	Lew Ireland
Nigel Blampied	Rose Johnston
Bill Duncan	Camden Lindsay
Ken Fenster	Ron Waller
Donna Fitzgerald	Max Wideman
Stacy Goff	Robert Youker
Morgan Henrie	

### International Project Management Association

We thank IPMA for its support and encouragement in initiating the first competence-based Project Management certification program in the United States, and for ICB 3.0, the foundation and framework of the USA-NCB.

We thank Max Wideman, for use of the Glossary of Project Management Terms, online at [www.maxwideman.com](http://www.maxwideman.com)

© 2005, 2006, 2008 *asapm*, the American Society for the Advancement of Project Management, for PMCert, our semi-autonomous certification body.

**email:** [info@pmcert.org](mailto:info@pmcert.org) or [contact@asapm.org](mailto:contact@asapm.org); **websites:** [www.asapm.org](http://www.asapm.org), [www.pmcert.org](http://www.pmcert.org)

### Change Control

No.	Page	Change	Date
V1.0	▪	Initial Release, based on ICB 2 with significant improvements for USA. Later additions aligned with IPMA's new ICB3.0.	September, 2005
V1.5	▪	Aligned to IPMA's ICB3.0, with the exception of the sequence of Context, Technical and Behavioral Competences.	June, 2006
V2.0		<ul style="list-style-type: none"> <li>▪ References to Certification Levels Removed to reduce updates</li> <li>▪ New IPMA logo and branding applied.</li> </ul>	March, 2008

## Contents

Acknowledgements .....	2
i. Document Overview .....	3
1. Groups and Elements of the USA NCB.....	4
2. About the USA's National Competence Baseline (NCB) .....	5
a. Introduction to <i>asapm</i> .....	5
b. The USA National Competence Baseline: What it is, and is not.....	5
c. NCB and The Global Project Management Discipline.....	6
d. Principles for the NCB.....	6
e. Using the NCB for Competence Development .....	7
3. The USA-NCB Competence Groups and Their Elements .....	8
Group 1: Contextual Competences .....	8
Group 2: Technical Competences.....	25
Group 3: Behavioral Competences .....	50
Appendix: Related Documents for Competence-Based PM Certification .....	72

## i. Document Overview

We designed this USA National Competence Baseline (NCB) to support *asapm*'s certification program requirements through definition of the PM Competence elements. This is a derivative document, based on the IPMA's International Competence Baseline (ICB). We have specifically tailored the NCB for the U.S. community.

The NCB consists of three major sections that describe the Elements of Knowledge and Competences, and the processes in which we use them:

1. Section 1 shows the grouping of elements that comprise the NCB and a brief explanation of how program, project, and portfolio management are treated in subsequent material.
2. Section 2 provides an introduction to *asapm*, and to the NCB, including what it is and is not. It also describes our guiding principles for the NCB, and explains use of the NCB for Certification preparation and for PM Competence Development. More information about these uses is available on our website.
3. Section 3 defines the competence groups and competence elements within the groups. For each Element, e.g., 1.1 Projects and Project Management, we describe three things, which may be used as knowledge or experience criteria in an examination or assessment process:
  - a. A summary of key information about the element,
  - b. Additional information in the form of a list of Topics Addressed for those who wish to do more in-depth exploration of the element in other references, and
  - c. Possible Process Steps, a set of frequently-used steps that one could use in applying this element.
  - d. A list of cross-references or interactions with other Elements. These reflect the key dependencies of any one Element upon others in the NCB.
4. An appendix references additional sources of information regarding the Competence-Based PM Certification to provide guidance to those considering certification.

We recommend that readers start at the first Section to ensure better understanding of subsequent information. However, one may read any part to obtain specific information about a topic.

The *asapm* NCB Project Team

## 1. Groups and Elements of the USA NCB

*asapm* presents the Elements of the USA National Competence Baseline (USA-NCB) in the following table. We define and expand each Element later in this document. We grouped the Elements into three related competence areas that reflect the broad range of Project and Program Management competences needed for today's projects.

1. Contextual Competences	2. Technical Competences	3. Behavioral Competences
1.1 Projects and Project Management 1.2 Programs and Program Management 1.3 Portfolio Management 1.4 Project, Program and Portfolio Orientation 1.5 Permanent Organization 1.6 Business Processes 1.7 Systems Approach and Integration 1.8 Human Resource Development 1.9 Safety, Security, Health, and Environment 1.10 Legal Aspects 1.11 Finance and Accounting 1.12 Management of Change	2.1 Project Success Criteria 2.2 Stakeholders and Interested Parties 2.3 Objectives and Strategies 2.4 Risk: Threats and Opportunities 2.5 Project Quality 2.6 Project Organization 2.7 Teamwork 2.8 Problem Solving 2.9 Project Scope 2.10 Product Scope 2.11 Project Life Cycle and Phases 2.12 Schedules 2.13 Resources 2.14 Cost 2.15 Procurement and Contracts 2.16 Configuration Management 2.17 Project Control 2.18 Documentation, Information, and Reporting 2.19 Communication 2.20 Performance Measurement 2.21 Project Startup 2.22 Project Closeout	3.1 Leadership 3.2 Engagement and Motivation 3.3 Self-Control 3.4 Assertiveness 3.5 Relaxation 3.6 Openness 3.7 Creativity 3.8 Results Orientation 3.9 Efficiency 3.10 Consultation 3.11 Negotiation 3.12 Conflict and Crisis 3.13 Reliability 3.14 Values Appreciation 3.15 Ethics

### Explaining The Three Groups of Competence Elements

1. Contextual Elements, reflecting the interaction of Programs and Projects with their organizations' processes; these draw from other disciplines, and while essential to project success, they are often ignored.
2. Technical Elements, including the traditional disciplines of Project Management, and a few that are not normally considered except by the most effective.
3. Behavioral Elements deal with the personal relationships and the conduct of the candidate with the individuals and groups managed in the projects.

### Use of the Terms Program, Project, and Portfolio Management

There are many places in this National Competence Baseline where we cite "Project," or "Project Management." In every case, the related content is appropriate for Program Management as well, but we have avoided excessive use of the phrase "Program and Project Management." We have followed the same practice with Portfolio Management; all three disciplines depend on the appropriate knowledge, personal attributes, experiences and competences we describe in this USA National Competence Baseline.

## 2. About the USA's National Competence Baseline (NCB)

### A. INTRODUCTION TO *asapm*

A group of long-time Project Managers who have contributed greatly to the practice in the USA and Worldwide formed the American Society for the Advancement of Project Management (*asapm*) in July 2001. One of our most important priorities is to meet the competence credentialing needs of individuals and enterprises practicing Project and Program Management in the USA. While *asapm*'s focus is primarily U.S. practitioners, we are also cooperating with other nations on initiatives that help improve the project effectiveness of individuals and organizations worldwide.

The *asapm* Board of Directors determined that the USA needed a true multi-level competence-based Project Manager certification to advance the profession and support the needs of both Project Management practitioners and their employers. Because *asapm* is the USA's Member Association of the **International Project Management Association** (IPMA), the Board elected to develop an advanced certification series based on IPMA's Four Level Certification program (4-L-C). The first step in that effort has been to adapt IPMA's International Competence Baseline to the needs of the USA by creating this National Competence Baseline (NCB). For more information about *asapm*, go to our website: [www.asapm.org](http://www.asapm.org). A second step is to form PMCert, our semi-autonomous Certification body. For more information about this organization, its role in competence-based certification, and the suite of currently-available certifications, see [www.pmcert.org](http://www.pmcert.org).

### B. THE USA NATIONAL COMPETENCE BASELINE: WHAT IT IS, AND IS NOT

The USA's National Competence Baseline is a **framework for assessment, development and certification** of the knowledge, experience, behavioral attributes, and competence of Project participants. It provides a career ladder suitable for use by a range of project participants, from team member and leader, to Project Manager of increasingly complex Projects, to Program Manager. In addition to its use in building a career ladder, it helps focus an organization's learning and coaching, and assists practitioners at all levels in self-assessment. Finally, it is the basis for our certification at increasingly higher levels of demonstrated competence, and of project responsibility.

The USA-NCB is a taxonomy (or classification structure) of key Project Management and related Elements, **not a body of knowledge**. In the domain of effective Project Managers, the true body of knowledge spans thousands of books and publications, and lives on in the minds and experience of hundreds of thousands of project participants. As a taxonomy, it represents a starting-point, not the ending-point, for your personal discovery and assessment of knowledge, behavioral attributes, experiences and competences as a Project Manager or project stakeholder.

PMCert uses this document as the foundation for our 4-Level Competence-based Certification program. PMCert has other, more specific documents, some for public use and others for internal use, to supplement this competence baseline. The documents for public use will assist individuals and organizations in understanding the overall certification program. Internal documents support the governance, procedures, practices, and functions of the program.

While the USA-NCB provides brief coverage of each key Element of Project Management, this document does not provide comprehensive treatment. Rather, it provides an overview of each Element that should be sufficient (together with a separately-available self-assessment document) for an experienced project participant to perform a self-assessment. As a competence baseline, this document is the framework for assessment of the results that a Project Manager has produced.

The discipline of Project Management lacks consensus on the meaning of many commonly used terms. *asapm* and PMCert have applied the definitions shown in this document while recognizing that other organizations might embrace different terms and definitions. Beyond this document, we recommend the glossary that Max Wideman has posted at his website, [www.maxwideman.com](http://www.maxwideman.com). He has graciously given us (and you) permission to access this online version, and individuals and organizations can license his updated versions if they wish. We especially like Max's glossary approach because he provides multiple correct definitions, from multiple sources, to allow the reader to choose the one that works best. Max's contributions to worldwide Project Manager effectiveness are huge. Thanks, Max!

--continued

## 2. About the USA's National Competence Baseline (continued)

### C. NCB AND THE GLOBAL PROJECT MANAGEMENT DISCIPLINE

The discipline of Project Management has standards and guidelines to help define the work of project participants. The discipline defines these standards and guidelines by collecting, processing, and institutionalizing commonly accepted knowledge, behavioral attributes, experiences and competence in Project Management. The best of those standards become the foundation of Knowledge and Competence in the discipline.

The USA's National Competence Baseline is the foundation of our Certification program, based on the 4-Level Certification program from International Project Management Association. It identifies much of the knowledge, experience, behavior, and accomplishments expected from the managers of projects, and from the project participants. The NCB cites basic terms, activities, practices, functions, management processes, methods, techniques, and tools for use in effective Project Management practice and theory. It also notes specialized knowledge, experience, and competence, and where appropriate, innovative and advanced practices.

### D. PRINCIPLES FOR THE NCB

IPMA developed the ICB from National Competence Baselines by member countries, and then *asapm* localized it as the USA's NCB. A key value for international stakeholders is that the basis for the candidates' competence is universal across companies, organizations, disciplines, and countries.

**Standardize Globally, Certify Locally:** Any effective credential requires tailoring to some very specific Regional, Industry, and local needs. Our assessment program accommodates these differences in the report and interview processes. For example, we recognize industry differences by choosing one Assessor (where possible) from the relevant sector (the second Assessor is from another sector). We have adjusted for the US culture through key emphasis areas in this National Competence Baseline.

**Certify knowledge and personal attributes of competence.** The NCB focuses on the competence descriptions, and includes the summarized description of IPMA's universal and internationally recognized certification system. Each competence Element includes a title, a description of the content, and usually a list of key topics and possible process steps. The exception is Group 5, Behavioral Attributes, where we list observable behaviors to assist in self-assessment and then evaluation by Assessors.

**Self-Assessment.** A companion document, tailored to each certification level, contains the actual Knowledge and Experience Criteria, for your use in performing a Self-Assessment. You use this to decide if your combination of training and project experience has qualified you for competence-based certifications. See the Stage One Application with the Self-Assessment for the level you seek at [www.pmcert.org](http://www.pmcert.org).

**Assess Knowledge.** Knowledge Criteria are statements of what the candidate should know. They usually consist of a list, process steps, or other demonstration of knowledge. We use this information in multiple-choice, true/false, or essay questions in the exams for Level D or Level C certification. The Knowledge Criteria are general, and are not limited to the Reported Project for Certification Levels A, B, and C. Note that for those certification levels, demonstration of an Experience Criterion may eliminate the need for a related Knowledge Criterion.

**Assess Performance.** Experience Criteria are statements of what a candidate needs for Certification Levels A, B, or C to demonstrate competence in the Project or Program Report. Evidence cited in the report for these certification levels should reflect the nature of a reference or resource that shows the candidate demonstrated these criteria. Note that our Evidence examples are not part of this NCB, but will be made available to candidates writing their reports, and to Assessors.

**Tool and Method Neutrality.** The NCB does not recommend or include specific methodologies, methods, or tools. Where listed in an Element, the topics and possible process steps represent examples, not standards.

**Assess Grasp, Not Test Preparation.** For participants, suppliers, and customers to reap the benefits listed above, we have produced a range of certifications of Project Managers and other key stakeholders. The certifications indicate the potential for successful performance at different levels of intensity. While training can be instrumental in career development, competence "as a Project Manager" comes from effective practice.

--continued

## 2. About the USA's National Competence Baseline (continued)

### E. USING THE NCB FOR COMPETENCE DEVELOPMENT

The NCB is not only for those who wish to pursue advanced PM Certifications. It is also useful for individuals, teams, organizations or Enterprises that wish to use the Elements of the NCB to assess their knowledge and experience. For those who fall short of needed levels in certain elements, develop a Competence Development Plan improve program and project management effectiveness. A Competence Development Plan (CDP) is just like any other project plan. It requires actions, responsibilities, funding, a schedule, and execution, with tracking, monitoring and reporting progress. Key participants should include Managers, who will support and recognize competence development, Human Resources department staff, who can provide resources or guidance for development, and peer support.

#### Competence Development Plan (CDP) Interventions

Interventions, the actions needed to progress from one level to another, vary depending upon the current and desired level. For example, while training is a viable intervention for moving from zero to Level 1 Knowledge, it has decreasing impact as one moves further up the ladder. By Level 3 Attitudes, its impact may be minimal, and other interventions are essential. This should raise serious questions for those who send their project teams to a random set of classes (versus ones targeted to the most-needed Competences), and then expect project performance to result.

#### Level 1 Interventions: Training

Some type of learning is the key to moving from zero to Level 1. This can be self-study, a formal class (web-based or instructor-led), or on-the-job. The training should never be cram-course based, because that learning quickly dissipates. Instead, it should provide the foundation in each of the needed competence elements for further progression up the ladder. Just as test-cramming is ineffective, so is training that is not quickly applied: it has a half-life of less than six weeks.

#### Level 2 Interventions: Application

One moves from 1 Knowledge to 2 Skill by applying the tools and techniques of each topic. Ideally, this happens on project-related work, although scenarios, simulations and role plays in class can begin the process. Project experience in the needed competence elements is not just a one-time occurrence: In fact, "third time's a charm" is a guideline that is appropriate here. And, having a coach who can review the results and reward or redirect is a key to progression.

#### Level 3 Interventions: Recognition

As defined in PM CompModel, Level 3 Attitudes reflect two areas: One's interpersonal attributes, which affect your success in working with others, plus your attitudes about the practices you are applying. If you feel recognized and rewarded for demonstrating new skills, you will continue to develop them. And if your efforts are ignored, those skills will tend to dissipate. This is a key opportunity for Managers to provide coaching and reinforcement—if PM competence is to grow.

#### Level 4 Interventions: Competence

The greatest prerequisite to the next level is opportunity. One can learn the needed processes, demonstrate the skills, and receive recognition for applying them. But without the opportunity to apply them in a level of authority in a complex project, for example, one cannot achieve Competence as a Senior Project Manager. Also needed for this level: Management support and available coaches.

#### Level 5 Interventions: Performance

Performance results when the Competences are transferrable to different situations in the same organization, and the practitioner can clearly identify why his or her actions contributed to success. Top Managers participate in achieving Level 5, because Performance depends equally upon the environment of the project and the level of competence of those working on their Development Plan.

For more information about assessing against the NCB for Competence Development, see the PM Competence Model (PM CompModel) on the *asapm* website.



### 3. The USA-NCB Competence Groups and Their Elements

#### Group 1: Contextual Competences

Elements in the Contextual Competences Group establish the Project Management setting in today's enterprise. Project participants ranging from Executives to team members understand and apply this group's Competence Elements and their criteria in effective project-oriented organizations.

This group also reflects some of the most important general management competences that effective Project and Program Managers understand and demonstrate.

##### Group 1 Contextual Competences

- 1.1 Projects and Project Management
- 1.2 Programs and Program Management
- 1.3 Portfolio Management
- 1.4 Project, Program and Portfolio Orientation
- 1.5 Permanent Organization
- 1.6 Business Processes
- 1.7 Systems Approach and Integration
- 1.8 Human Resource Development
- 1.9 Safety, Security, Health, and Environment
- 1.10 Legal Aspects
- 1.11 Finance and Accounting
- 1.12 Management of Change

##### Other Groups of Competence Elements

##### Group 2 Technical Competences

- 2.1 Project Success Criteria
- 2.2 Stakeholders and Interested Parties
- 2.3 Objectives and Strategies
- 2.4 Risk: Threats and Opportunities
- 2.5 Project Quality

##### Group 2 Technical Competences, cont'd

- 2.6 Project Organization
- 2.7 Teamwork
- 2.8 Problem Solving
- 2.9 Project Scope
- 2.10 Product Scope
- 2.11 Project Life Cycle and Phases
- 2.12 Project Schedules
- 2.13 Project Resources
- 2.14 Project Cost
- 2.15 Procurement and Contracts
- 2.16 Configuration Management
- 2.17 Project Control
- 2.18 Documentation, Information, and Reporting
- 2.19 Communication
- 2.20 Performance Measurement
- 2.21 Project Startup
- 2.22 Project Closeout

##### Group 3 Behavioral Competences

- 3.1 Leadership
- 3.2 Engagement and Motivation
- 3.3 Self-Control
- 3.4 Assertiveness
- 3.5 Relaxation
- 3.6 Openness
- 3.7 Creativity
- 3.8 Results Orientation
- 3.9 Efficiency
- 3.10 Consultation
- 3.11 Negotiation
- 3.12 Conflict and crisis
- 3.13 Reliability
- 3.14 Values Appreciation
- 3.15 Ethics

continued

## 1.1 Projects and Project Management

**Projects** are unique endeavors undertaken to produce a product, service, or organizational change. One measures the success or failure of a project against quantitative and qualitative objectives, to ensure that the change will be beneficial. Projects are one-time occurrences that have defined starting and finishing points.

Although each project is unique, most projects have common characteristics. Projects may be classified according to the nature of the primary output (e.g., research and development, organizational change, information technology, building construction), the nature of the major interfaces (e.g., internal/external, regional/national/ international), or other criteria (e.g., project size, risk) as appropriate.

Additional characteristics of Projects provide insight into the competences needed to manage them:

- They are endeavors in which we organize human, material, and financial resources in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, following a standard life cycle, to achieve beneficial change defined by quantitative and qualitative objectives.
- They are unique sets of coordinated activities, with defined starting and finishing points, undertaken by an organization to meet specific objectives within defined schedule, cost, and performance parameters.
- They may have attributes such as: novelty, complexity, legal conditions, interdisciplinary, and work sharing.
- We often classify them by their type (e.g., investment, R&D, organizational, IT-projects) and other criteria (e.g., internal/external, regional/national/international).

**Project Management** is the planning, organizing, staffing, motivating, directing, leading, tracking, measuring, and controlling of all aspects of a project. Properly applied, the discipline helps to ensure that the project meets its objectives safely, and within agreed-upon time, cost, and performance criteria. Project Management overlaps general management in many areas such as communication and decision-making, and differs in others such as motivating staff because Project Managers seldom have direct control over all the resources needed to do their job.

Project management is appropriate for small projects, medium projects, and large projects. Project management, like the projects themselves, can span international borders and national cultures while keeping a single manager responsible for the work effort. The tools and techniques used over this span would likely vary or be applied differently.

**Project orientation** is the choice to manage by projects and the development of Project Management competence. The way project portfolios are coordinated, projects are managed, and the competences of the Project Managers are developed have direct impact on the success of a project. Projects differ substantially from normal operations of organizations. An important distinction: an organization manages by projects to be *effective*, while it most time manages operations to be *efficient*.

### Topics Addressed:

- Business process redesign
- Project management support office
- PM competence development
- PM methodology, techniques, and tooling

### Possible process steps:

1. Assess the need to perform projects.
2. Consider the organization and its culture and processes in relation to projects.
3. Make the business case for implementation of project orientation.
4. Change organization, culture, and processes accordingly.

## 1.2 Programs and Program Management

A **Program** is a series of specific, coordinated interdependent undertakings (projects, program phases, stages, subprojects, and often some ongoing, non-project activities) intended to achieve organizational objectives within an overall enterprise or portfolio strategy. The undertakings can be in sequence or parallel and at any one point in time they can each be at different phases of the project life cycle.

Endeavors called programs will generally fit into one of the following categories:

- A work effort so large and multi-discipline that individual phases or deliverables are best managed in smaller increments as if they were independent projects (e.g., nuclear power plant construction).
- A combination of a new product development project and ongoing product support, all under the direction of the same person or group (e.g., a new airplane, a new printer or a new computer processor product line).
- A related collection of projects (e.g., an annual maintenance program for a utility company, a fund-raising project run by a non-profit organization).
- A massive, urgent response to a crisis where traditional project planning and staged execution cannot be done (e.g., hurricane disaster response).

**Program Management** involves planning, organizing, staffing, directing, motivating, leading, tracking, measuring, and controlling of all aspects of a program. The Program Manager guides the development of the project team culture. And, the Program Manager ensures that the program stays in alignment with organizational goals while following enterprise or portfolio strategy.

The **Program Manager** executes *an appropriate selection* of the following activities of program management:

- Serves as the visionary leader of the program to maintain alignment with the organization's goals and the program's goals and objectives.
- Performs Business Development in the area of the Program's domain, or coordinates that activity with others.
- Establishes or coordinates the product concept and develops a convincing business case.
- Establishes criteria for resource allocation.
- Spans a product's entire life cycle, from concept, through multiple projects, operations, and into product or program retirement.
- Coordinates with Product Management, if not responsible for this business process.
- Ensures that the program efforts remain feasible and the promised benefits are delivered, even as the business climate changes.
- Manages the staging of multiple versions or releases of the program, or program product.
- Maintains executive visibility, support, and interest through the extended duration of each program.
- Coordinates the growth, skill, and competence development of Project Managers and team leads in the program.
- Demonstrates exemplary team skills, including leadership and teambuilding, influence, and communication.
- Directs the efforts of a Program Management Office to support the above activities.

A program benefits from the direct or indirect support of a **Program Management Office** to assist the Program Manager in the above activities. A Program Management Office is helpful in the following areas of program management and administrative support:

- Coordinates the availability and use of Enterprise resources that are not within the Program's control.
- Provides Program Accounting, for program control and progress billing.
- Provides administrative support to projects, including time tracking, status aggregation and report rollups.
- Manages cross-project dependencies within the program and across other programs.
- Ensures use of consistent process, techniques and tools across the projects and subprojects within the program.
- Manages contracts, both as a buyer and as a seller. As seller, manages the relationship with external customers. As buyer, manages subcontracts, where needed.

Program Managers may require the support of additional resources, such as:

- Executive Steering Committee or Executive Sponsor.
- Project Managers and Team Leaders.
- Administrative and Procurement/Contract Negotiation Support.

--continued

## 1.2 Programs and Program Management (continued)

**Programs versus Portfolios:** Program Management is an enterprise instrument for implementing strategic change, and/or operating the result. Portfolio management is an instrument to manage the continuity of projects and programs in an organization. This line management function aligns the portfolio to the business goals and is responsible for the prioritization of all projects and programs. It then coordinates the resources needed in the projects in compliance with the prioritization.

**Topics Addressed:**

- Organization strategic and business plans
- Program management support office
- Program management methodology, techniques, tools, and procedures
- Resource management policies and procedures
- Business processes

**Possible process steps:**

1. Identify the business case to apply program management.
2. Identify a scoring system to quantify necessity and benefits.
3. Align necessity and benefits to the goals of the organization according the scoring system.
4. Review with appropriate management level, make decisions, and communicate.
5. Change organization, culture, and processes accordingly.
6. List and prioritize strategic initiatives.
7. Initiate relevant programs.

## 1.3 Portfolio Management

**Portfolio Management** helps assure that the selection of projects and programs that contribute most to the organization's goals get the priority they deserve, the resources they need, and the results they promise.

A Portfolio is an all-inclusive list of all of the projects and programs of an organization. The portfolio can be for the entire organization or for different units. The organization can be large or small. There may also be multiple portfolios in one organization. The portfolio may also result from successful project work in a specific "vertical market" which is then used as a strategy to implement further cost effective development and implementation of the vertical market to expand the business base.

Portfolio Management may operate enterprise-wide, in a division of the enterprise, or within smaller groups in the enterprise. At its best, it aligns all projects and programs with organization strategies so that the most important projects have qualified resources available, and monitors progress toward promised results at the portfolio level as well as at the project level.

An organizational management function, Portfolio Management requires different processes and competences than the management of projects. On the other hand, the concept, feasibility, early scope identification, and estimating and benefit/cost analysis are prerequisite Project Management processes. These steps may or may not be part of the Portfolio Management process, but are required for valid analysis. The division of a complex program or project into subprojects is not portfolio management, but instead is part of normal Project Management.

Portfolio **Prioritization** evaluates the proposed and in-process projects and programs according to criteria that are important to the organization. The organization selects the criteria, and may include Return On Investment, break-even-time, project and business risk, alignment with Balanced Scorecard, and consideration of dependent projects.

In **Resource Allocation**, high-priority projects receive the resources needed (staff, funds, and equipment) to meet their timeline, and thus are ready for kick-off. Effective resource allocation requires that project resources required for ongoing maintenance and enhancement efforts need to be included in the analysis.

Portfolio Prioritization and Resource Allocation may be part of an organization's annual budgetary process, to assure that funding is available for the needed resources. However, multi-year projects and programs require a long-term view of their priorities and commitments. Even when used as part of budget cycles, Portfolio prioritization and resource allocation is an ongoing function, as higher-priority efforts that exceed their funding may cause cancellation or postponement of lower priority efforts.

**Portfolio Monitoring and Control** helps track the progress and to coordinate interrelationships among all ongoing projects and programs for the organization. This ongoing tracking and coordination may be the responsibility of a line organization or distributed throughout the organization. The competition between projects and the effective utilization of necessary and scarce resources is a key challenge for organizations with portfolios of projects and programs.

Portfolio Management requires a support infrastructure and processes, including:

- Priority setting committee, with processes for submission, reconsideration, and evaluation
- Identification and monitoring of each project or program's Critical Performance Indicators (CPIs) and their weighting to evaluate each project's relevance (business case)
- Consolidated "dashboard" projects report for top level management
- Integrated Project Management information systems
- Consistent project processes and milestones or gates for ease of cross-project staffing and rollup reporting
- Common presentation of reports

### Topics Addressed:

- Organization strategic and business plans
- Prioritization Methods and Processes
- Critical Performance Indicators, Balanced Score Card, and other evaluation criteria
- Use of a Project Management Office or Portfolio Management Office
- Resource management

continued

### 1.3 Portfolio Management (continued)

**Possible process steps:**

1. List projects and programs to prioritize.
2. Identify evaluation criteria and a scoring system to quantify need, benefits, and strategic linkage.
3. Align necessity and benefits to the goals of the organization according the scoring system.
4. Review with appropriate management stakeholders, make decisions, and communicate.
5. Allocate resources based on priority, and evaluate resulting impact on risks, and time and cost estimates.
6. Monitor in-process projects in the portfolio and evaluate each ones' performance.
7. Evaluate completed projects and programs to assure they meet the business needs, and capture Lessons Learned.
8. Store performance, time, cost, and project attributes for improved estimating and overall results in new projects.

## 1.4 Project, Program and Portfolio Orientation

**Project, Program and Portfolio Orientation (P3O)** is the decision and establishment of the processes for defining, organizing, and managing work efforts as projects, programs, and portfolios. P3O applies a systems approach to developing, planning, implementing, and controlling projects. Judicious tailoring and use of project management policies, procedures, practices, and techniques achieve the right balance of efficiency and effectiveness.

Depending on the kind of organization, P3O includes becoming aware of, and improving, known Project, Program or Portfolio Management practices or new practices and theories, ideally moving towards a project orientation. It then involves defining the most appropriate processes, methods, techniques, and tools, and then implanting them, changing attitudes, and applying organizational change.

Excellence models and maturity models are useful ways to benchmark and monitor improvement. Improvement is not a one-time occurrence. Continuous improvements further increase maturity in P3O and increase the success of the organization in carrying out its strategic plan.

Standards help to handle frequently occurring or unique events of daily project work. Standardization is a precondition for uniform use of terminology, common understanding, and a common basis for contractual agreements in the field of Project Management. Quality assurance includes auditing each project's compliance with the standards required.

During every project, the Project Manager employs the principles, processes, and tools of the organization, of the project management discipline, and of quality management to the work of the project team. The Project, Program or Portfolio Manager assures the checking, controlling, and improvement of the product as well as the processes.

P3O often includes the creation of a **Project (or Program or Portfolio) Management Office (PMO)** as the owner or caretaker of the P3O processes. See "Project Management Office" in the Permanent Organization Element.

### Topics Addressed:

- PM Maturity Models
- Business processes
- Systems and technology
- Staff development
- Standards and regulations
- Project Management Office

### Possible process steps for implementing Project, Program and Portfolio Management:

1. Senior Management decides to employ Project Management within the organization.
2. Senior Management arranges assessment of the organization's capabilities to conduct Project Management.
3. Develop a P3O Implementation model and rollout plan consistent with the mission, strategic goals, and objectives.
4. Develop P3O policies, procedures, standards, and practices in a PM handbook or methodology.
5. Develop P3O guidelines, roles, and responsibilities, templates, and/or other support material.
6. Develop a plan for training and development of all Project roles (*asapm's* Competence Model helps in this step).
7. Establish individual project team development plans, and identify coaches or internal experts for each skill area.
8. Train Project Managers, stakeholders, and project teams, and then follow up with coaching.
9. Test the P3O procedures, practices, and knowledge by selecting and implementing a pilot project.
10. Evaluate the pilot project results for transfer of the lessons learned to other projects.
11. Conduct an ongoing Project Management Improvement process.

### Possible additional process steps for institutionalizing Project, Program and Portfolio Management:

1. Benchmark against Project and Program Management Maturity Models.
2. Decide the steps to reach along the maturity path regarding competence development, organizational changes, methods/techniques/tooling, and coaching or guidance for projects and/or project staff.
3. Implement those steps.
4. Continuously improve by repeating the process steps.

## 1.5 Permanent Organization

**Permanent Organization** is the ongoing organization in which projects and programs operate. Complex projects may involve multiple Permanent Organizations. This Element covers the relationship between project and/or program organizations, which are temporary, and the permanent entities of the organizations contributing to or interfacing with the project work.

There is a symbiotic relationship between Projects or Programs, and the permanent organization. Permanent organizations have a long-range vision or purpose, and strategies for progressing toward it. Projects, programs, and portfolios manage and achieve changes in support of those strategies.

The permanent organization identifies the ongoing work activities, authority, organizational structure, procedures, and decision-making structure. For its projects, the permanent organization defines the context, including the policies, responsibilities, procedures, and controls. It also prescribes how the organization will manage the relevant business risks. The permanent organization provides the resources, facilities, and support for its projects.

On the other hand, Projects implement changes in the organization. The products of the project (e.g., new products to market, facilities, revised processes, or information systems) transform the permanent organization. Thus the Project Manager who is experienced in the respective business area and industry of the permanent organization will be in a better position to thrive within that organization.

The **Project Context** is the environment in which the project will be implemented. Both internal and external influences drive the context that affects the project implementation. Major influences include industry practices, applicable government standards, and relevant organizational processes and procedures.

On a strategic level, the general business context is responsible for creating a setting in which projects and programs can be effective. This includes decisions on how the organization is set up to work with projects and programs, how cost and revenue accounting are defined, how project resource allocation and development are organized, and how a project, program, or portfolio has to report and communicate to maintain general business control and alignment of the organization.

On a tactical level, the project or program links to general business context through the business case. The business case states the needed results from the program or project in terms of costs and revenues, and in terms of functionality, time, and other resources. Here the linkage with other departments should be clear in two ways: what does the project or program need from these departments, and what can they expect when the project or program starts to deliver.

On an operational level the general business context has to define the business requirements of the project's deliverables, to get the organization ready to exploit the deliverables to achieve the projected revenues and to test the deliverables for acceptance by and transfer to the general business.

The **Program or Project Management Office (PMO)** is a central or decentralized part of the permanent organization that helps assure that projects and programs contribute to the organization's goals. This PMO does so with an appropriate selection of the following actions or responsibilities:

- Owns or supports the organization's Project Portfolio Management.
- Establishes, reviews, and supports the organization's Project Management processes and standards
- Serves as process coaches or auditors to project teams.
- Collects, evaluates, and supplies project metrics to project teams.
- Monitors and manages cross-project dependencies among multiple concurrent projects.
- Coordinates, establishes, and evaluates project performance measures.
- Assesses PM Competence and organizes PM training.
- Evaluates and summarizes enterprise-wide project progress for executive management.
- Evaluates and acquires Project Management tools.
- Shares best practices, lessons learned, and new tools and techniques across the enterprise.
- Performs administrative functions in support of projects.

continued

## 1.5 Permanent Organization (continued)

**Management by Projects** is an organizational strategy in which most of the work of the permanent organization is accomplished through project efforts. It enhances organizational flexibility and dynamics, decentralizes operational management responsibilities, improves organizational learning, and facilitates organizational change. Organizations using management by projects as their strategy to accomplish work efforts are often called Project-Oriented Enterprises. Other management concepts (e.g., management by objectives) can also be integrated and effective.

### Topics Addressed:

- Context Overview: Position of the project in the program, portfolio, and enterprise
- Strategy through projects and programs
- Project oriented organizations
- Cost accounting
- Organizational goals, strategy, and structures
- Organizational decision making
- Organization Design, Project Organization
- Organizational Breakdown Structure (OBS)
- Project Management Office

### Possible process steps:

7. Understand the involved line organization(s) and their structure, objectives, standards, and ways of working.
8. Establish the organization(s) for projects and/or programs and/or portfolio(s).
9. Set strategic standards and guidelines (finance and economics, human resources, sales and marketing).
10. Identify commonalities and differences.
11. Consider options and consequences of each.
12. Discuss, decide, communicate, implement.

## 1.6 Business Processes

**Business Processes** are functions of the permanent organization (the enterprise) that support the achievement of strategic objectives through the effective allocation of resources to work efforts. Projects and Programs (temporary organizations) are building blocks for enterprises that can assure successful growth of business through the application of techniques and practices that integrate work efforts within a business process context.

Organizations use projects and programs to create change in business processes and value for the enterprise. While projects are often standalone efforts, it is important to recognize the business processes that support the project. The human resource department, finance and accounting, engineering, procurement, and sales are typical examples of functions that support projects through their business process. Project managers must understand the role and amount of support that these functions provide to the project as well as principles and practices of the planning and management for business operations that contribute to successful project results.

Business processes, including project processes, are increasingly defined and applied to enterprise work to improve efficiency and effectiveness of resource consumption. These definitions are driven to some extent by governmental regulatory requirements, most notably in human resource use, safety of products, and environmental considerations.

Business process functions often affect **Project activities** because they require coordination or support from other organizational functions external to the project organization. Some examples of project activities that require support from business process functions are:

- Staffing the project
- Preparing a job description for the project
- Drafting a contract for the project
- Designing an organizational solution when the project is to change the organization
- Validating the project's product by quality assurance measures or quality control actions
- Solving a human resource problem
- Managing the transition from a project stage to an operational stage for the product

The Project Manager is responsible for achieving project results. Key to that responsibility is to know how business processes relate to the project work. This is of particular importance if an existing organization or its business processes will change as a result of the project. Some examples are:

- Business process area objectives
- Staffing and skill development for the affected function(s)
- Work activities, assignments, authority, and responsibility
- Structure of the existing and new organization
- Procedures and decision-making within the organization
- Current business function policies

### Interdependent Business Processes

**Finance and Accounting** -- A separate Element covers this area in more detail. There exist, however, key interdependencies with projects. For example, to have timely cost data, either the Project Cost Tracking system must feed information to Financial Accounting, or the financial accounting processes must remove all delays so that the cost data is never more than a week old.

**Marketing, Business Development** -- The Marketing and Business Development processes are responsible for defining the product mix that the buyer will accept before, during, and after the investment made by the project. Marketing is responsible to ensure that this mix is designed in such a way that the investment is expected to be successful. The Business Development process assures that the project is conceived, realized, and finished to attain satisfaction of the customers. These business processes help assure that the project is based on products for which a real demand exists, now or in the future.

--continued

## 1.6 Business Processes (continued)

**Product Management** – Any complex product or a system of products should be developed by a project to give the greatest assurance that the benefits will be delivered in the most efficient and effective manner. A product manager may oversee the development, construction, and deployment (commissioning) to the customer. The product manager provides oversight of the product through its useful product life cycle, and manages development of new products to supersede existing products.

**Topics Addressed:**

Strategy through projects and programs  
Project-oriented organizations  
Business Process Design  
Business Case Analysis  
Cost Accounting or Activity Based Costing  
Human Resources Management in temporary organizations  
Organizational Change Management

**Possible process steps:**

1. Set strategies, standards, and guidelines (finance and economics, human resources, sales and marketing).
2. Align the objectives for the line organization and for projects, programs, and portfolio(s) as needed.
3. Formulate and implement business change strategy, management reporting, and business case requirements.
4. Initiate and evaluate projects and programs.
5. Monitor interaction between Elements of the permanent organization (the enterprise) and temporary organizations (projects), and fine-tune to improve performance.
6. Feed back information and adjust strategies.

## 1.7 Systems Approach and Integration

A **Systems Approach** is treating the work of the project from a holistic perspective that considers cause-and-effect relationships as well as feedback loops and reaction time delays, which can have simple or complex interrelations.

A **system** consists of multiple components, both tangible and intangible, that interact as a working unit. Systems may be small or large, simple or complex. A project is a temporary and often complex system, e.g., organization, management information system, human-machine-subsystems, and material resources.

**System management** includes the elaboration of the technical specification for the project to establish its scope, time, cost, quality, and risk. Subsequent management of the planning, designing, procurement, implementation, and testing of the work needs to be in the context of the project. System management includes the business (not technical) system analysis, system design and engineering, and business system development.

**Integration** in the project context is one of the key functions of a Project Manager. It is a special type of systems approach, which requires looking at a project as a system with a variety of technical and organizational interactions. Effective integration requires an appropriate personal style and adequate technical knowledge, as well as organizational, managerial, and leadership skills.

Integration brings together requirements, activities, and results to achieve the project objectives and success. The higher the complexity and the more diverse the expectations of the project, the more a professional approach to integration is needed. Project management activity combines various project results into a solid solution.

The **integrated project management plan** includes the scope, responsibilities, deliverables, timelines, cost, the risk and opportunity response plan, the quality plan, stakeholder management plan, project communication plan, procurement plan, contract plan, and deliverables plan. There are different terms for the integrated set of all the individual plans (e.g., project plan, Project Management handbook, Project Management plan.).

The creation and updating of individual plans and their integration may occur at different times in the project life cycle. These updated plans, including the impact of any changes, constitute the baseline against which project control compares the actual progress.

All stakeholders and other relevant interested parties must accept the updated Project Management plan, which the Project Manager then communicates at the needed degree of detail for each party.

### Topics Addressed:

- Systems Theory
- Project management plan
- Project plan
- Context relations and management
- Competing objectives and alternative decisions
- Integration test

### Possible process steps:

1. Identify demand and goals for the integration.
2. Plan the integration procedure including context management.
3. Collect results achieved and their interpretation.
4. Determine gaps, contradictions, opportunities, and threats.
5. Remove incompatibilities.
6. Validate integration results.

## 1.8 Human Resource Development

**Human Resource Development** is all actions taken to assess, acquire, and improve the knowledge levels and skill levels for Project Management competences of individuals and groups of individuals to provide a more efficient and effective workforce in the enterprise.

Human Resource development covers staff planning, recruitment, selection, training, preservation, assessment, and work simulation. It concerns all project members, such as the Project Manager, project team member (permanent or temporary), project controller, and project planner. For internal projects, also consider improving project-related competences of key stakeholders and other interested parties, such as project sponsors, internal customers, and managers who allocate resources.

Not all resource development occurs through classic Human Resources methods. **Organizational Learning** is an enterprise's process to collect, store, retrieve, and reuse information in a systematic way to gain a competitive advantage. Organizational learning for the project segment of the enterprise is a subset of the enterprise's overall efforts to become more efficient through continually applying lessons learned to new project efforts.

Projects can reap great benefits in Enterprises that have established a climate of Organizational Learning. Examples of information saved and re-used that can lead to improved project results include:

- The amount of time that should be spent planning a project: not too little to adversely affect the adequacy of the plan, and not too much so that resources are over-consumed
- The level of detail for scheduling a project: too much detail uses resources and too little detail does not give the visibility into project activities
- The precision of cost estimates: very precise estimates use more resources than less precise estimates.
- Techniques for rapid assimilation of new team members into the project: reduce lost effort through better individual integration into team efforts and team practices.
- Practices that reduce roadblocks, lower cost, and accelerate delivery
- Risks, Issues, and Lessons Learned, which are all the same information at different points in time

The Project Manager plays a key role in developing individuals assigned to projects. There is a need to satisfy many requirements for functional competence and interpersonal effectiveness. The list of topics below just begins to scratch the surface.

### Topics Addressed:

- Calculating and optimizing staffing requirements
- Recruitment procedures
- Applying assessment techniques
- Career planning
- Conducting training and coaching measures
- Compensation administration
- Assessing standard remuneration benefits
- Lessons Learned Collection and re-use

### Possible process steps:

1. Formulate the requirements for project resources in terms of knowledge, experience and behavior as well as in terms of start date, period and percentage needed.
2. Select the right people and / or work with individuals and teams already available.
3. Explain needs and expectations to each project team member and assess the person's personal circumstances, motivation, interests and goals.
4. Manage the planned and actual performance per individual and per team. Check deviations, explain them, and apply corrective actions.
5. Assure that personnel administration records are complete and up to date.
6. Monitor changes in the personal situation and the motivation of the team members.
7. Maintain regular contact with the responsible person within HR and the team member's line manager. Discuss performance, personal matters and development opportunities.

## 1.9 Safety, Security, Health, and Environment

**Safety, Security, Health, and Environment** are areas to consider to ensure that there are no adverse consequences from the project's activities, implementation, or use of the project's product. **Safety** encompasses all actions taken to prevent injury or death by an accident to either the project workers or others coming into contact with the project or its product. A Project Safety Plan typically identifies and documents concerns that alert individuals to potential hazards, and sets standard procedures for avoiding the hazards. Some hazard considerations for projects are safe working areas, avoidance of electrical shock, avoidance of temperature extremes, and proper operation of equipment. Safety reviews and periodic checks of working conditions are typical preventative measures.

**Health** includes all actions taken to prevent injury or death by exposure to adverse conditions to project workers or others coming into contact with the project or its product. Document concerns when there are conditions that could exist during the project implementation such as carbon monoxide poisoning, exposure to caustic chemicals, or exposure to radiation. Document Health concerns in the Project Safety Plan.

**Environment** covers all actions taken to prevent damage to the ecosystem, which would include animals, wetlands, forested areas, erosion of soil, and contamination of soil. The environment includes indoor impacts either on an active project team or from the product of the project. Concerns typically include the residual contamination of the project area that has adverse effects on habitation, surface and groundwater, and air.

**Environmental Impact Assessment Reports** establish the baseline description of the area and its properties with a description of any changes that may occur during development and implementation of the project or operation of the project's product. Plan specific reviews and inspections when there is potential for damage to the environment, and action taken immediately to correct any adverse trends.

The Enterprise executing the work is responsible and liable for the safety, health, and welfare of the project participants and visitors to the project site. As agent for the company, the Project Manager is responsible for establishing, implementing, and enforcing procedures that fulfill the enterprise's responsibilities. In some instances, the Project Manager may have a qualified safety officer assigned to the project to detect, assess, and mitigate potential hazards. The Project Manager also ensures implementation of plans in such a manner that the environment is not adversely changed.

### Topics Addressed:

- Safety plan, Safety reviews
- Environmental Impact Plan

### Possible process steps:

1. Identify health, safety, security, and environmental risks, requirements, and existing responsibilities.
2. Investigate the actual situation.
3. Elaborate plans for health, safety, security, and environmental protection.
4. Monitor and control the effect of the plans.
5. Report issues and risks.
6. Document lessons learned.

## 1.10 Legal Aspects

**Legal Aspects** of projects are those areas that require legal advice or actions, such as contracts, areas governed by law, or an order by a governmental agency. Projects involve many decisions with a legal aspect that may have important implications for the project. The Project Manager should be able to recognize situations that require a legal opinion to avoid or limit potential liability.

The Project Manager must have a general knowledge of applicable law to assess when to engage legal counsel. Some typical areas for legal consideration in projects are labor law, contract law, permissions, and permits, product liability, confidentiality of data, and copyright law. Project managers, while not expected to be trained in the legal profession or practice law, still need to assess when to engage legal counsel to assess a situation and render a legal opinion.

Call upon qualified lawyers within the area of question to review **legal issues**, and to render an opinion on the matter. The Project Manager may provide most of the project information, such as project documents, statements of individuals, and agreed upon contractual arrangements and other relevant information from the project that define procedures, as well as coordinate the time schedule and show cost calculations. Frequently, the legal issues are related to some contemplated action(s) such as potential claims or contract actions. In these cases, decisions should be made relative to the project and consider the non-legal project issues that are involved in the decision process. While legal issues are involved, the final decision is a business decision within the context of the legal advice.

Often legal issues may be avoided by following documented practices and obtaining legal advice prior to initiating an action that may have questionable legal aspects. Early advice might preclude a major challenge to actions in the project.

Projects will typically have contracts governed to some extent by contract law. All significant contracts should have a legal review before signing to ensure understanding the business and legal obligations incurred. Large organizations often have a lawyer on retainer to conduct such reviews.

### **Topics Addressed:**

- Business law
- International law
- Legal proceedings

### **Possible process steps:**

1. Identify need to involve legal experts.
2. Define project needs.
3. Review legal expert's recommendations.
4. Make and apply decisions.

## 1.11 Finance and Accounting

**Finance and Accounting** is the business process that relates to the acquisition, distribution, budgeting, and control of funds for the enterprise.

**Financial Management** is responsible for the commitment of **funds** for the project in a planned and advantageous way. It includes the treasury management functions needed to assure availability of the needed cash flow for projects.

The Project Manager prepares a **project budget** that is the expenditure plan. The financial management organization uses this information to determine a period's overall **financial requirements**. In some projects, the Project Manager must know the possibilities and evaluation of the project financing within and outside the country.

**Accounting** captures cost planning, cost accounting, and reporting for the enterprise or project. Expenses and revenues as well as assets and liabilities provide a clear picture of the economy and the solvency of the enterprise or the part of the enterprise (profit center).

In addition, most parties involved in the project use the corporate accounting system. The Project Manager is responsible for appropriate **checks and controls** in the use of the allocated funds. If the project is an **internal project** (e.g., a contract or an investment of the enterprise), the Project Manager usually is in direct contact with the accounting.

The Project Manager should understand how the customer is **calculating costs**, and be in the position to use and interpret the methods and figures from the accounting when analyzing and checking the economy and financial effects of project alternatives, of parts of the project, and of whole projects.

Special knowledge may be required for **International projects** where currency conversions are required or services in kind are used as a form of payment. Project managers should be aware of any unique financial or accounting requirements that affect the project and its profitability.

### Topics Addressed:

- General accounting
- Budgeting
- Controls and reporting
- Currency conversions

### Possible process steps:

1. Identify the financial environment of the project.
2. Define and apply financial procedures as appropriate.

## 1.12 Management of Change

**Management of Change** is the effective restructuring of an organizational design to meet new needs of the enterprise. Because projects impact the enterprise, one measure of project success is the extent to which the change is embraced by the enterprise.

**Responsibility for Management of Change** is typically with senior managers; the Project Manager implements the change using Project Management as the change agent. Projects can play a critical role in organizational change using Project Management techniques to plan and implement change. Some important aspects for consideration are:

- Consider the importance of change (change of paradigms, values, technology, information), ability of the organization to adapt, and corporate culture and policy.
- Avoid and reduce the resistance to change, solve conflicts (of interest).
- Detect and change different attitudes regarding values; unblock stopped situations; identify and develop available potential capabilities.
- Initiate, monitor, control, and successfully realize (in the long range) participative change processes with adequate interventions in the fields of Human Resource, team, and organizational development.

The Project Manager of an organizational change should be aware of the interrelations and processes in the enterprise's systems and have the ability to communicate with individuals, groups, and organizations in several roles and (consulting) situations in a systematic manner. The Project Manager should know how affected parties might typically react to changes and the change process.

Because **organizational change** has a high impact on people in the enterprise, the Project Manager uses strong interpersonal skills to inform and persuade individuals and groups that the change is in the best interest of the enterprise. The Project Manager works with the Sponsor and functional Managers to sell the problem and solution to the affected individuals as well as work to obtain their cooperation in making the change. Show these individuals that the future offers a better situation than the current organizational design.

**Strategies** for implementing the change are critical to the success of making an important organizational change. Some suggestions for successfully implementing organizational change are:

1. Involve as many affected individuals as possible in the planning.
2. Use the talents of the affected individuals to implement the plan.
3. Communicate to all parties, to include observers and affected parties.
4. Establish rules on how individuals will be treated during displacement.
5. Establish a point of contact for individuals having questions about the change.

Management of change should include the participation of several parties, as a team, who are engaged in solving problems of the enterprise. The corresponding teambuilding and the management of subgroups on different hierarchical levels and in different ranges of the organization, as well as communication in the complex procedure of concurrent group work and decision processes, are crucial aspects to ensure successful organizational changes.

### **Possible process steps:**

1. Define the Problem statement.
2. Establish a "need for change" statement.
3. Set the Objectives for change.
4. Design the new organization or processes.
5. Identify and implement skill and role change requirements.
6. Develop a schedule for the change, including major milestones.
7. Involve Stakeholders in implementing and validating the change (both affected parties and implementation team).
8. Establish the criteria for successful completion of the change.
9. Close-out the project and celebrate the change and the new organization.

## Group 2: Technical Competences

The Elements in this group address how to plan and control a project. They are fundamental to the success of Project Management within any organization.

### Group 2 Technical Competences

- 2.1 Project Success Criteria
- 2.2 Stakeholders and Interested Parties
- 2.3 Objectives and Strategies
- 2.4 Risk: Threats and Opportunities
- 2.5 Project Quality
- 2.6 Project Organization
- 2.7 Teamwork
- 2.8 Problem Solving
- 2.9 Project Scope
- 2.10 Product Scope
- 2.11 Project Life Cycle and Phases
- 2.12 Project Schedules
- 2.13 Project Resources
- 2.14 Project Cost
- 2.15 Procurement and Contracts
- 2.16 Configuration Management
- 2.17 Project Control
- 2.18 Documentation, Information, and Reporting
- 2.19 Communication
- 2.20 Performance Measurement
- 2.21 Project Startup
- 2.22 Project Closeout

### Group 3 Behavioral Competences

- 3.1 Leadership
- 3.2 Engagement and Motivation
- 3.3 Self-Control
- 3.4 Assertiveness
- 3.5 Relaxation
- 3.6 Openness
- 3.7 Creativity
- 3.8 Results Orientation
- 3.9 Efficiency
- 3.10 Consultation
- 3.11 Negotiation
- 3.12 Conflict and crisis
- 3.13 Reliability
- 3.14 Values Appreciation
- 3.15 Ethics

### Other Groups of Competence Elements

#### Group 1 Contextual Competences

- 1.1 Projects and Project Management
- 1.2 Programs and Program Management
- 1.3 Portfolio Management
- 1.4 Project, Program and Portfolio Orientation
- 1.5 Permanent Organization
- 1.6 Business Processes
- 1.7 Systems Approach and Integration
- 1.8 Human Resource Development
- 1.9 Safety, Security, Health, and Environment
- 1.10 Legal Aspects
- 1.11 Finance and Accounting
- 1.12 Management of Change

## 2.1 Project Success Criteria

**Project Success Criteria** are the standards used to judge the results of the project. Defining them distinctly and clearly is critical. **Project success criteria** may be interrelated or independent. They may change over time, particularly in response to external factors that affect the project context or changes in customer needs and expectations.

Stakeholder perceptions can be just as important in evaluating project success as are easily quantifiable ones. Despite best efforts, some Success Criteria may remain subjective, or difficult to measure. In this case, agree with each stakeholder how you will evaluate the difficult to measure criteria. Because the success criteria may change over time, phase-end reviews verify that the criteria are still accurate and complete, avoiding gaps discovery at project closure.

Project success criteria provide objective measures to help ensure that the project:

- Delivers its functionality
- Fulfills the requirements of the customer
- Is profitable for the delivery organization or contractor
- Satisfies all stakeholders' needs
- Meets the stated objectives
- Minimizes risk impacts

During an intermediate or post-project audit, success criteria may be critical to being able to assess project performance. Such an audit should also determine whether valid success criteria were established at the start of the project, and verify those criteria as still valid. Some of the success criteria, such as those related to schedule milestones, may aid in assessing the convergence of the project's objectives on a final solution that provides benefit to the organization..

Success criteria validity and their utility in guiding the project to successful completion should be reviewed during the post-project review for lessons learned. Any useful practices or variances identified from a project can contribute to improved performance in future projects.

### **Topics Addressed:**

- Writing effective objectives
- Managing Expectations
- Requirements Analysis and Management
- Organizational Change Management

### **Possible process steps:**

1. Identify all Stakeholders.
2. Assure collection of all Stakeholders' requirements and expectations
3. Map Requirements or Statement of Work to Objectives and subjective expectations.
4. Update Success Criteria at phase closeout for each phase.
5. Evaluate status of all Success Criteria as part of planning the last phase.
6. Demonstrate the Success Criteria compliance at project closure.
7. Review Success Criteria effectiveness as part of Lessons Learned.

## 2.2 Stakeholders and Interested Parties

**Stakeholders and other interested parties** are an important aspect of the project context. Stakeholders and other interested parties are individual persons or groups of persons whose interests the project may affect, positively or negatively. Stakeholders and other interested parties may support the project or they may work against it.

Stakeholders and other interested parties include those who are directly involved in the work of the project (e.g., customers, contractors, Project Manager, and other project team members). They include those affected by the conduct of the project (e.g., residents near a construction site), those affected by completion of the project (e.g., users of the project's product), and those who may affect the work of the project (e.g., internal experts or external regulatory agencies).

**Stakeholder identification and analysis** identifies potential stakeholders and other interested parties, and includes actions to understand their needs, influence their satisfaction, and increase the project's value for them. The analysis includes managing expectations about needed scope that the project may not deliver, and assessment of the consequences of taking or not taking control measures to change the situation, or to find other ways to meet those stakeholder needs.

**Planning and reporting** are means to make sure that everybody knows and understands exactly what the project or program is going to deliver, what has to be done by whom, and when and how the management processes are performed. These processes define where and with what tolerance the Project Manager makes the decisions, and when to escalate them.

Project Managers provide general business management information whenever the delta between performance and plan will exceed the defined tolerance. The Project Manager provides this information at the first indication that the project will exceed the tolerance, to give management as much time as possible to get additional information, and to decide on a plan of action.

Communication keeps everybody aligned. A stakeholder who is not actively participating in the project or program can only get information through project communication. The project or program should take care that the communication is appropriate both for the situation and for the level of impact, and represents a good mixture of formal and informal, push and pull, regular and occasional, or ad hoc. The Project Manager should have a good overview of changes in the general business context and interested parties or stakeholders.

### Topics Addressed:

- Stakeholder satisfaction and interests
- Stakeholder analysis and management
- Stakeholders and other interested parties communications strategy
- Expectation management
- Internal and external networks
- Project Reporting

### Possible process steps:

1. Consider stakeholders' structure, objectives, and ways of working.
2. Formulate and implement business change strategy, management reporting, and business case requirements.
3. Organize the Stakeholders and other interested parties in the project and establish a Stakeholder communication plan.
4. Solicit Stakeholder interests and expectations in requirements, scope, contents, deliverables, and project structure.
5. Prioritize Stakeholders interests and communicate to Stakeholders any interests that the project may not fulfill.
6. Identify the decision escalation process between the project and the Stakeholders.
7. Develop and verify Stakeholder satisfaction in each project phase.
8. Execute, communicate, and manage changes in the Stakeholder plan.

## 2.3 Objectives and Strategies

The **Project Objectives** are the quantitative and qualitative standards by which the project will control change and judge the completion of the project. They provide the standard for decision-making about all project factors (e.g., scope, financial, organizational, time, quality, safety, human resources, logistics, and procurement). Meeting the objectives means that the project has created the deliverable products and results needed to achieve the stated benefits. They often include measures in these three areas:

- Scope (deliverable products and services along with required quality attributes),
- Time (durations and dates), and
- Expenditure (person- or work-hours and cost of other resources, such as equipment and materials).

**Project Strategies** provide guidance about how the project will achieve its objectives. Typically established early in the project, strategies should be revised when the situation dictates a need for a different approach. One should not confuse Project Strategies with alignment to Enterprise Strategies, a factor to consider in Portfolio Prioritization. Project Strategies are tactical, and focused on the best approach to deliver the project, while the alignment of the project to Enterprise Strategies is essential for successful prioritization and subsequent funding.

There exists a relationship between Project Strategy and Risk Management, because the risks of the current Strategy or approach may cause the team to establish a different strategy. Similarly, any time the team modifies or adjusts the Project Strategy, the team should also re-evaluate the current Risk Management plan.

Late in any project, if a team considers reduced-scope options in response to time or cost concerns, they must always remember to evaluate the impact on the project Objectives, Strategies, and Risks.

Responsible Project Managers should conduct periodic checks to determine whether the project is converging on its objectives and whether the strategies employed are working to ensure that convergence. Indications of variances may dictate a need for a more formal audit of the project and corrective action to align performance to objectives and strategy.

### Topics Addressed:

- Writing effective objectives
- Project Feasibility and Business Case
- Strategic Prioritization
- Project Qualitative and Quantitative Measures
- Project Strategies and Alternatives Analysis
- Project Risk Management
- Project Change Control

### Possible process steps:

1. Identify all Stakeholders.
2. Understand the project problem or opportunity.
3. Determine Stakeholder needs.
4. Define the objective(s); if multiple, prioritize them.
5. Determine alternative strategies for meeting the objectives.
6. Use Objectives to evaluate Requirements and changes.
7. Evaluate project against the objectives at major milestones or gates.
8. Periodically evaluate the project for alignment with enterprise strategies.

## 2.4 Risk: Threats and Opportunities

**Project Risk** is any potential event or possible situation that will have impact on the project's ultimate success, impacting requirements, cost, time, and other pertinent factors. Risks consist of Threats (negative results) and Opportunities (beneficial results). Risk resides in all projects regardless of size or level of complexity.

Projects operate in a general environment of **uncertainty**. Because of that uncertainty, there is always the possibility that something unplanned will occur that will impact the project either negatively or positively. The possibility of a negative outcome is addressed through the process of Threat Management (often called Risk Management), and the possibility of a positive outcome is addressed through the process of Opportunity Management.

A **Business risk** for the performing organization is that the product will not meet the needs of the customer, or that the customer's needs have changed since inception of the project. Someone other than the Project Manager, such as an account manager, sales manager, or business manager, typically manages this risk, unlike project risk.

**Risk Management** is the process of identifying, analyzing, categorizing, quantifying, mitigating, managing, or accepting risk. Risk management is a formal process of analyzing potential project risks and developing risk response measures.

Risk Management starts with **Risk Planning**, determining processes, responsibilities, and timings for Risk actions. Next comes **Risk Identification**, with an initial Risk Assessment, and then repeated at key points through the project as the situation changes. Risk identification occurs again after project closure to help capture Lessons Learned.

High-level risk identification also helps business case analysis and decision-making in project portfolio prioritization.

**Risk Analysis** involves analyzing and quantifying identified Risks. In this process, establish the chances (how likely the risk is) and what impact each risk event would have if it occurred. Significant risks require the development of a risk response plan.

In developing **Risk responses**, identify, select, and assign actions to mitigate the negative impact of each risk on a project. Classify responses in five categories: Avoiding/Removing, Reducing, Insuring, Transferring or Accepting. For each risk response developed and assigned, perform **Risk Monitoring**. This process entails constantly scanning for the development of risk symptoms and determining that a risk trigger event has occurred.

Opportunity management is very much like contingency planning for Risk Threats. If a potential opportunity becomes real, then a risk-benefit analysis can be undertaken to ensure that the amount of change or disruption required to realize the benefit is consistent with the goals and objectives of the project.

### Topics Addressed:

- Strengths, weaknesses, opportunities, threats analysis (SWOT)
- Risk impact and probability analysis
- Expected monetary value of risk
- Risk owners; their Risk aversion and tolerance
- Risk and opportunity response strategy
- Level of risk after the response is implemented
- Residual risk and fallback plan
- Sensitivity analysis and contingencies

### Possible process steps:

1. Identify threats and opportunities, involving Stakeholders and other interested parties.
2. Analyze risks and their opportunities, involving interested parties.
3. Elaborate risk and opportunity response plan.
4. Communicate the agreed risk plan and have it approved.
5. Modify other Project Management plans to include the approved response.
6. Continuously identify new risks, reassess risks, plan responses, and modify.
7. Monitor and control the risk and opportunity response plan.

## 2.5 Project Quality

**Project Quality** consists of actions taken within the project context to deliver a product or service acceptable to the customer and meeting the customer's business needs. **Product Quality** is the sum of characteristics, features, and functions of product or service that leads to satisfying the customer's stated and implied needs.

**Quality management** comprises all activities and responsibilities of the overall management function that determine quality policy, objectives, adherence to regulatory requirements, and that implements them by means such as quality planning, quality control, quality assurance, and quality improvement within the quality management system.

A **quality management system** is the organizational structure, procedures, processes, and resources needed to implement quality management. Project quality management is an extension of this system specifically tailored to meet a customer's project needs. The implementation and management of project quality activities are the responsibility of the Project Manager, although others may perform the quality functions in a project.

Three different typically encountered areas of Quality management in a project:

- Quality Planning includes all actions taken to lay out a roadmap for design, development, and delivery of a product or service to a customer
- Quality Assurance (QA) defines the procedures and documentation requirements to establish a specific level of performance for a product developed and delivered by Project Management.
- Quality Control (QC) is the application of standards, techniques, and measures, such as by Quality Control Inspectors, to achieve a predefined level of performance in a product, typically the measurement of technical characteristics against a specific standard or project goal. Quality Control includes the testing and demonstration stages of a product or its components.

### Topics Addressed:

- Product quality management
- Process quality management
- Standards and Regulations
- Defect removal models, defect repair reviews
- Quality metrics
- Computer aided modeling and testing
- Effectiveness evaluation
- Cost of quality management, modeling, and testing

## 2.6 Project Organization

**Project Organization** is the result of the design and development of the project's organizational structure. This design and development process includes:

- Identification of all organizational units committed to the project work
- Definition of the Project Manager's responsibilities and authorities
- Definition of project and supporting staff and stakeholder resource roles, responsibilities, and interfaces
- Assignment of staff from parent organizational units or external hiring, and
- Control mechanisms for structure and operating procedures

The parent organization drives each Project Organization's implementation of Project Management. There are three basic types of organizational structure found in parent organizations:

- Functional organizational structure where the organization focuses on functions such as engineering, designing, sales, production, and manufacturing.
- Project (or projectized) structure where the organization focuses on the maximum use of projects to conduct its work.
- Matrix structure whereby the parent organization typically focuses on functions and allocates human resources to projects as needed.

The design and development of the project organizational structure takes into account cultural and environmental influences that support or work against a specific project purpose. The project organizational structure may change as the project progresses through its lifecycle to meet future conditions, such as different types and conditions of contract or a change in project purpose.

The **Organization Breakdown Structure (OBS)** is a tree-like graphical decomposition of the portion of the parent organization(s) involved with the project. Map the assignment of discrete project WBS items to the OBS to form a Responsibility Assignment Matrix (RAM). In these techniques, team member responsibilities to the project are identified and described for the specific work to accomplish.

The project organization is the focal point for the project's activities. It is disestablished at the project end. The life of the project organization is that of the project work.

### Topics Addressed:

- Organization chart
- Work Package descriptions
- Procedures
- Interface documentation
- Resource evaluation
- Staff development

### Possible process steps:

1. Identify all involved organizational units (internal and external).
2. Define the roles, interfaces, responsibilities, authorities and procedures.
3. Assign resources to organizational units.
4. Communicate decisions.
5. Manage the Project Organization
6. Dis-establish the Project Organization at Close-Out.

## 2.7 Teamwork

**Teamwork** is the collaborative effort among individual team members toward a common team goal. Projects are performed by teams of people, who are often brought together specifically for the purpose of the project. Teamwork includes the management and leadership competences of team building, operating in teams and group dynamics. Teams are groups of people who work together to realize specific objectives.

**Teams** are assemblies of people with a common goal, who work together to realize specific results. **Project teams** are often comprised of some individuals with technical skills, others with business skills, and still others with managerial skills. **Team members** bring a variety of knowledge, experience and competence, team culture attributes, and attitudes to the work environment, but must work as a single unit to achieve the team's purpose. Individuals assigned to a team may be from different organizations, may vary in age and cultural background, and may have different expectations of the project. Any of these factors can adversely affect the ability of the individuals to work as a team.

**Project teambuilding** can be both formal and informal. Formal processes include use of project start-up meetings, workshops, and seminars for the Project Manager and project team members. Informal processes include creating a team identity and spirit, motivating people to work well together, engaging in events that bond the team, and coaching strategies. All successful teambuilding results in molding individual effort to the team effort. In project teams, there are **dynamic effects** that either support or hinder project performance. Team progress in maturity tends to reduce counterproductive effects.

Teamwork exists when individual team members are able to subordinate their individual interests to the overall good of the team, and each individual focuses on accomplishing the team's purpose. Individuals assume roles as team members in conducting the work of the project. The team's rules and cultural norms guide team member actions, which contributes to the development and performance of a unified team.

Evidence that Teamwork exists is a project where people:

- Enjoy working together
- Collaborate on goals
- Are task-oriented
- Have traditions that stress team identity
- Contribute to each others' development
- Acknowledge individual and group accomplishments
- Are committed to results

### Topics Addressed:

- Individual styles assessment profiles
- Ability and inclination to work in teams
- Group dynamics

### Possible process steps:

1. Form – develop a common sense of purpose, belonging, and commitment.
2. Storm – assign tasks, roles, and responsibilities to aid control, decision-making, and conflict resolution.
3. Norm – establish new openness in how the team members can work together.
4. Perform – develop interdependency to obtain outstanding results.

## 2.8 Problem Solving

**Problem Solving** is the ability to resolve issues in the most timely, efficient, and effective manner.

Because projects often result in change, and change presents problems to many interested parties, projects present significantly more opportunities for problem solving. For those cases, use teamwork, creativity, and a systematic problem-solving procedure.

Projects with considerable uncertainty will present even more occasions for the Project Manager and team to solve problems of all sizes and various degrees of complexity. The Project Manager must have the ability to bring about the best solution that has a permanent fix for the issue. This dictates following a disciplined process so the problem-solving steps are visible and under control.

Solving a problem must address the **root cause** of the situation to ensure long-term results. Solving the problem by addressing the root cause requires a thorough study of the situation and identification of the root cause before corrective actions will be effective. This may result in a two-step process to correct the immediate situation to ensure continuity of operation, while you conduct an in-depth study on the real problem.

### Topics Addressed:

- General-to-detail and detail-to-general analysis
- Creation and assessment of alternatives
- Solutions (courses of action) in a system approach rather than simply a part of the system
- Creative brainstorming techniques develop solutions for complex problems.
- Ishikawa or Fishbone Diagrams
- Value analysis
- Benefit/Cost Analysis

Possible **problem-solving steps** are:

1. Identify the problem and not just the symptoms.
2. Define the scope of the problem and the desired end condition (not the solution).
3. Identify the stakeholders and other interested parties, both those affected and those who can affect the solution.
4. Analyze the problem for possible courses of action.
5. Evaluate and select the best course of action, and apply corrective measures.
6. Follow up to ensure that the problem is solved.

**Complex problems** require identification of root cause(s) and corrective action applied at different areas. This adds to the steps listed above in the standard problem-solving process as follows:

1. Define the scope of the immediate problem.
2. Identify the stakeholders and other interested parties, both those affected and those who can affect the solution.
3. Analyze the immediate problem for possible courses of action.
4. Select and apply the course of action.
5. Study the problem and identify the root cause.
6. Analyze the root cause of the problem for possible courses of action.
7. Select and apply the course of action.
8. Follow up on the immediate and root causes of the issue(s).

## 2.9 Project Scope

**Project Scope** is the work required to deliver the product of the project. Project Scope may include work efforts not delivered to the buyer or customer, but needed to produce or validate the product scope. Document the project scope at a high level in a **Project Scope Statement** (or in a Statement of Work) that describes what is included and what is excluded from the project.

Defining project scope requires good communication among the project stakeholders and other interested parties, and knowledge of the product of the project. Some projects start with a completely defined scope. Other projects develop it in steps, with those steps usually defined by the phases of the project life cycle.

A more detailed description of the work of the project takes the form of a **Work Breakdown Structure (WBS)**, a decomposition of the project's product into work packages. Typically presented in graphical form as a "tree diagram," the WBS may also take the form of an indented list.

The WBS is a central instrument of order and communication in the project. It depicts the deliverables and the work content in a manner that provides a framework for planning and control, and that allows measurement and verification of project progress.

**The Responsibility Assignment Matrix (RAM)** shows which person or unit in the Organizational Breakdown Structure (see the Project Organization Element) is responsible for completing each work package. In some instances, it may include subcontractors and other participating organizations. Large projects use the RAM to assign responsibility to organizations reporting directly to the Project Manager.

### Topics Addressed:

- Project Scope Statement or Statement of Work
- Differences between Project Scope and Product Scope
- Work Breakdown Structure (WBS)
- Work Packages
- Responsibility Assignment Matrix
- Project Scope Change Control

## 2.10 Product Scope

**Product Scope** is the project's product, which may include a general description, a functional description, a characteristic description, a product specification, a statement of work, or a combination of these documents. The product scope starts as an idea and progresses through several states of maturity until it defines the performance specifications desired by the buyer or customer.

A project typically deals with three types of products: (1) a physical product, (2) a service, and (3) an organizational change. A project may include one or more of these types of products. Each one converts and integrates resources to create the customer's desired outcome. Each product type starts with a goal and a description that defines the functions, characteristics, or end state desired.

When the products are not specified or not clear, it may be necessary to determine the solution to a problem through a series of steps such as:

1. Review and analyze the existing situation to determine what changes are needed to solve the problem.
2. Develop several solutions that meet the customer's needs.
3. Perform a comparative analysis between feasible solutions to determine the best one.
4. Select one solution and validate that it meets the customer's needs.
5. Define the steps needed to change from the existing state to the selected solution.

The **definition of the product** may only contain the end state. It may be desirable, however, to describe the product in several states of maturity to have intermediate objectives as the project converges on the result. In this way, some projects measure progress through a staged process. Some considerations are:

- A product may progress through the building process of pieces, parts, components, subassemblies, and assemblies in the construction of a physical product.
- Services may progress through a series of individual delivery, team delivery, and organizational delivery to meet the requirements in stages.
- Deliver organizational change in stages that meet intermediate objectives in a building block process.

The design and development of a product are subject to rigorous change controls through a process identified in the Configuration Management Element, for the project's product. The Project Scope Element outlines the design and development of the project scope, the additional work of the project that is not delivered to the customer.

The Project Manager must understand the scope of the project and of the product to effectively manage each. An understanding of both Elements supports better decision-making to manage the entire project when situations arise that indicate change needs to be made to either the project or product scope.

### Topics Addressed:

- Statement of Work
- Requirements or Specifications
- Scope Measurement
- Configuration Management
- Change Control processes and responsibilities
- Documentation and Training as Product Scope

## 2.11 Project Life Cycle and Phases

**Project Life Cycle** or Project Life Span is a series of phases through which a project will transition to achieve its objectives from conception to completion.

**Phases** are discrete time periods used as control mechanisms to ensure that the project is making satisfactory progress toward its objectives. Phases are sequential and time-restricted, and include groups of activities that produce specified results.

Each phase generates a product or result that stakeholders and decision-makers evaluate to verify progress, together with management decisions, in the form of major milestones or gates, to decide whether to continue the project, modify the scope, the schedule, or the resources, or terminate it. Some Phases of a project operate concurrently to compress the overall duration of the project (e.g., Design-Build).

Different projects may use different life cycles, depending upon the industry, type of project, size of project, and other factors that dictate variance from a generic model. An organization may have a standard project life cycle model in its methodology that is a starting point from which to plan a project.

In the absence of organization-specific or industry-specific phases, a universal set of life cycle phases might include:

- A. Concept
- B. Planning
- C. Implementation
- D. Close out

**Product life cycle** (facility, system or other product) is not the same as the project life cycle, but a series of phases that may include phases such as development, design, construction or fabrication, operation, decommission, and disposal. The duration of a product life cycle is typically longer than project life cycle because it addresses the product from the beginning to the end of its useful life.

### Topics Addressed:

- Industry or discipline-specific Phase Models
- Milestones or Gates
- Subproject Staging in larger Programs and Projects
- Phase Sequencing approaches: Classic Waterfall, Iteration, FastTrack, Concurrency and Overlap
- Project Reporting

### Possible process steps:

1. Select the appropriate Life Cycle and phases for the project.
2. Identify appropriate deliverables or products of each phase.
3. Identify major Milestones or Gates for phase reviews.
4. Control Life Cycle impacts of approved Changes.

## 2.12 Project Schedules

**Project Schedules** show the timing for accomplishment of each project's work. Network logic diagrams or Gantt charts (also called by some a bar chart) are typical representations of the project schedule.

**Scheduling** involves selecting and applying the most appropriate techniques to produce a sequence of activities that allows each phase of the project to meet its objectives. Scheduling also shows the cross-project dependencies within an organization, and subproject interrelationships in larger projects and programs.

### Topics Addressed:

- High-Level or Milestone Schedules
- Rolling Wave Scheduling
- Schedule Optimization and Crashing the Model
- Schedule Contingency Methods
- Use of Scheduling Tools
- Baseline Schedules
- Schedule Impacts and Change Control
- Schedule Monitoring

### Possible process steps:

1. Identify the activities needed to deliver each work package for the phase.
2. Define logical relationships between the activities.
3. Assign resources to accomplish the activities.
4. Estimate durations based on resource requirements (see also "Resources").
5. Establish activity start and finish dates based on resource allocation and availability.
6. Optimize the schedule in accordance with project time objectives.
7. Create the schedule baseline.
8. Evaluate schedule performance compared to the baseline.
9. Develop forecasts of future schedule performance.
10. Maintain or modify the schedule to reflect any approved changes.

## 2.13 Project Resources

**Project Resources** are the people, equipment, materials, supplies, money, and facilities needed to complete the project. The project may not consume or integrate all resources during the project.

**Resource planning** is the identification, estimation, and allocation of resources required for the completion of the project. Resource planning includes scheduling each resource so that it is available when needed by the project. Several **methods of estimating** help to assess the quantity of resources required, such as:

- Analogous estimating – comparison with similar work whose cost is known, and then adjusting for known and expected differences. This could involve the use of historical databases, workload norms, and reference materials.
- Parametric estimating – the use of formulas developed from data on previous projects.

To increase the **reliability of an estimate**, the work may be broken down into smaller components and separate estimates made for each. Estimates are usually defined in terms of ranges, especially three point ranges—an optimistic (lowest credible) estimate, a pessimistic (highest credible) estimate, and a most likely estimate.

Experience provides the best basis for resource estimates (often called Effort estimates). This may be the personal experience of the estimator, the experience of experts consulted by the estimator, or the experience of the authors and contributors to workload norms, reference materials, and parametric formulas. Estimates are distinct from budgets or prices.

**Resource allocation** assigns and evaluates all resources (human and non-human) either to specific activities or to the appropriate portion of the project duration. By varying dates and number of resources, **resource leveling** (smoothing) evaluates different priorities, i.e., minimize over-commitment or underutilization, minimize float or project duration, minimize damage caused by default, or minimize resource conflicts across multiple projects.

### Topics Addressed:

- Resource planning
- Estimating Methods, including Analogous and Parametric
- Estimating History Databases
- Resource Allocation
- Resource Leveling

### Possible process steps:

1. Estimate necessary resources, including the specific project management effort.
2. Schedule the resources.
3. Obtain commitments for resource assignments.
4. Place the estimates and the resources assignments plan under change control.
5. Manage assignments, with special care for the productivity of newly appointed team members.
6. Control the resources with respect to changes.
7. Modify the estimates database at project close out.

## 2.14 Project Cost

**Project Cost** is the anticipated total monetary value for all project activities, materials, human resource costs, and other resources such as subcontracts for part of the work, consultants for special work, and rental or lease of equipment. These costs may be direct costs such as labor expenses, or indirect costs such as licenses or overhead supervision.

Project cost **planning and control** identifies and quantifies the prospective cost of project deliverables or products, in an early phase of the project. Instruments of cost planning include the Bill of Quantities, Chart of Accounts, and S-curves. During the project, cost planning and control reconciles target, planned and actual money required and spent, and estimates other anticipated costs. A precondition to cost planning and control is that the deliverable products are measurable and calculable, and that any changes are well defined. Contingencies are reserves for covering risks in project cost.

Project financing is a process to ensure that it is always known in all project phases how much financial resources are requested for each date or period. The resources required depend on the cost and the time schedule. In addition, project financing assures there will be funds available for the project cash outflow throughout the project life cycle and for each party involved. Project financing includes the process of raising funds in the most prudent and favorable way. In addition to other considerations, the amount and frequency of payments must be in line with any contractual terms.

**Project financing** covers the process of raising funds in the most prudent and favorable way. Primary **financial measures** for a project are return on investment, net present value, and payback period.

### Topics Addressed:

- Cost estimating methods
- Cost control methods
- Chart of Accounts
- Budget for project cost
- S-Curves
- Contingencies and Reserves
- Financial resources
- Cash flows in and out
- Inflation of prices

### Possible process steps of cost planning and control:

1. Analyze and estimate costs of WBS items (by OBS item, if needed).
2. Differentiate costs for Human Resources, equipment, and materials.
3. Establish cost components..
4. Define cost targets.
5. Measure expenditures and incurred actual costs (management accounting).
6. Reconcile actual and planned funding.
7. Analyze variances and causes.
8. Take all changes and claims into account.
9. Perform trend forecasting of cost.
10. Forecast the residual costs and anticipated total costs.
11. Develop and apply measures for cost control.

### Possible process steps of Project financing:

1. Raise funds.
2. Analyze the contractual consequences for project financing.
3. Allocate budget to WBS items.
4. Calculate cash flow and managing.
5. Seek authorization for payment or release of funds.
6. Validate and manage budgets.
7. Cover incurred cost.
8. Modify budgets during implementation, as needed.

## 2.15 Procurement and Contracts

**Procurement** comprises the actions needed to obtain goods and services for the project. **Contracts** are the legal arrangements needed for acquiring or providing the goods and services. The purpose of contract management is to formalize and control a contractual arrangement. Partners need an agreement to remind each other of their promised duties.

Note that a project organization may be the buyer, the seller, or both (e.g., a bidder who subcontracts a portion of the contract), so this Element must be applied from both of those points of views. Internal agreements (i.e. an agreement between two parties of the same legal entity) for acquiring/delivering goods and services are also included in this Element.

**Procurement and Contracts** covers the following Project Management actions:

- Procurement planning – investigate and appraise the options available, make-or-buy analysis, and procurement or acquisition strategy
- Investigate and pre-qualify vendors and suppliers
- Establish supplier selection criteria and weighting
- Contract development -- preparation of contract documents, solicitation, selection of suppliers, contract negotiation, and contract award
- Contract administration, execution, and inspection
- Contract closeout, including the settlement of claims

As part of project procurement, **contract management** controls the design, completion, updating, and realization of contracts to achieve the project objectives.

**Claim management** involves controlling and assessing deviations or changes and evaluating their economic consequences for the purpose of avoiding, determining, motivating, or enforcing claims. This includes the preparation and validation of your own claims or the protection of others' claims.

### Topics Addressed:

- Procurement strategy
- Supply chain management
- Make/Buy analysis
- Request for Quote, Request for Proposal
- Tender documents
- Contract terms
- Penalties
- Contract performance review

### Possible process steps:

1. Procurement planning: Identify what to procure, investigate, and appraise the options available, perform make-or-buy analysis, and determine procurement or acquisition strategy.
2. Investigate and pre-qualify vendors and suppliers.
3. Establish supplier selection criteria and weighting.
4. Design and approve contractual requirements concerning default/delay, liability, warranty, specifications, pricing, forms of payment, and schedules.
5. Contract development: prepare contract documents, solicit, and select suppliers, negotiate contract, and award contract.
6. Analyze the contract and prepare the obligations for the project members.
7. Maintain additional contractual agreements such as confidentiality agreements, partnerships, limited service agreements, and letters of authorization.
8. Perform contract administration, execution, and inspection.
9. Follow-up all contractually relevant issues, e.g., any type of changes, because they may cause modifications of the wording of the contract, supplements, or claims.
10. Accept contract completion.
11. Perform contract closeout, including the settlement of claims.

## 2.16 Configuration Management

**Configuration Management** is the disciplined process of setting a baseline and managing changes from that point. This process applies equally to the project and the product of the project.

**Configuration management for the project** controls changes to the project plan whereby any changes to the objectives or other project working papers are evaluated, approved/disapproved, and a modified project plan is put in place. Changes to the project may also be affected by amendment of the contract for the product when there is a direct customer buying the product. In all cases, chronological traceability exists and the approval authority is listed in the project work papers for any change to the project.

**Configuration management of the product** is similar to the project except there is a formal process for changing the baseline, i.e., requirements or design features of the product. Once a baseline design is set for the product, a formal process must approve any changes. Configuration management of the product consists of all technical and organizational actions for:

- Configuration identification
- Configuration control
- Configuration status accounting
- Configuration audit

Configuration Management for the product starts with an initial Scope Statement or Statement of Work, or with Requirements. It continues with an initial design, which may require subsequent change to add or delete features because of customer direction, technical challenges, new methods of achieving the same functionality, or other reasons. Any change from the initial design must follow a rigorous process to track all variances from the original design in a Change Control process. Following final assembly, functional, and physical audits may verify the product to assure that all features are present because the product was changed.

**Product Change Control** focuses on control of the revised state of the product. It identifies, describes, classifies, assesses, approves, realizes, and verifies changes. A precondition of effective change control is a well-defined initial state (baseline) to permit systematic and well-documented change practices. This process also includes use of a Configuration Control Log or similar documenting of the trail of changes that includes:

1. Register all proposed changes (change requests in features or product scope).
2. Submit change requests for analysis of potential product consequences.
3. Evaluate the change requests for their product and project impact.
4. Authorize or reject the change request by appropriate authorities.
5. Implement approved changes.
6. Audit the completed changes and validate them as complete.

Any party to the project may submit **Change requests**. Manage and track these from proposal to final action. View all changes as a potential contract (internal or external) amendment.

**Waivers and deviations** are alternative solutions that do not follow the baseline product design. There must be a request from the performing party to the change control authority for either a waiver or deviation. Grant a waiver when an action is needed that does not conform to the design. Grant a deviation for completed work that does not conform to the design. Use waivers and deviations sparingly, because they are exceptions to the change control process.

### Topics Addressed:

- Scope definition documents
- Deliverable design and control methods
- New or changed physical products or services and their functions
- Formal deliverable acceptance processes
- Configuration control of changes
- Documentation of change results

## 2.17 Project Control

**Project Control** is the process of comparing actual project performance to the project plan to determine the degree of progress. When there is significant variance from the plan, this indicates the need for corrective action either to bring the variance in alignment with the plan, or to revise the plan to adjust for inefficiencies in the work performed.

Project control requires, as a prerequisite, baseline plans, together with any contractual commitments. Project control activities focus on schedules, cost, quality, product scope, and risk. This involves the collection and evaluation of status information at selected physical points in the project, reporting the information to a central point, analyzing the information to ensure validity and reliability, understanding the information, and comparing to the project plan. Good project control practices build confidence that the project is being accomplished in the manner prescribed by the project plan. Further, it gives warning when there are variances in the progress from the planned activities.

Project control is typically under the direction of the Project Manager, but may be established as an independent function under a separate organization, such as a contractor or a separate division of the organization.

One **principle of project control** is that more frequent reporting and tracking of the project provides greater control over the work. With complex projects or when uncertainty exists, it may be best to have frequent progress reporting.

### Topics Addressed:

- Baseline Plans for Time, Cost, Risk, Scope and Quality
- Status Tracking and Reporting
- Earned Value Management
- Status Analysis
- Issue Analysis
- Configuration Management, including Change Control
- Project Reporting
- Project Re-Planning

### Possible process steps:

1. Establish a project baseline for time, cost, scope, and quality, at a minimum (see related Elements).
2. Establish an effective project reporting system.
3. Monitor project performance on specific dates (e.g., time now analysis, budget to actual comparison, and product scope progress measurement reports).
4. Analyze target, plan, and actual variances.
5. Perform Work Authorization release.
6. Perform running trend forecasts.
7. Plan alternatives and run simulations (What-If Analyses).
8. Develop and apply control actions.
9. Adjust or modify project objectives, scope, or other factors (plan revision).

## 2.18 Documentation, Information, and Reporting

**Documentation, Information, and Reporting** form the basis for managing the project from an informed point of view.

The permanent organization may provide policies and procedures that prescribe **project documentation**. Those policies and procedures include such items as an organizational Project Management manual, organizational policy on Project Management, project methodologies, instructions on project reporting procedures, and other permanent directives that establish and maintain the organization's attitude toward the use of Project Management.

Project Documentation should list approved variances from those policies and procedures, plus additional information that is unique and important to project success. That additional documentation tracks the project product from concept through requirements, design, testing, development, validation, and delivery. Documentation for the project includes such items as project plans with all subordinate plans, such as Project Risk Management Plan, Procurement Plan, and Project Communication Management Plan.

**Data** are collected throughout the project's life cycle for analysis, combined with other data, sequenced, and then formatted and targeted for its audience as information. Thus, processed data becomes information that is usable to the project participants in an intelligible form and within the context of the project environment.

**Information** includes team emails, meeting minutes, notes from stakeholders and other interested parties, and project reports. Typically, this information is in written form. It could also include oral reports and communications.

**Other information** is collected to record the progress of the project such as a project diary or log, action items in an action log, issues in an issue log, correspondence in a correspondence log, and change control logs for project and product configuration management. Projects often establish a **Project Management information system** to store information in a set format that is compatible with the project's purpose.

**Reports** are routine and special means of collecting and disseminating information to apprise decision makers and stakeholders of the progress of the project. The communication plan portion of the project plan establishes and defines the type of each report, the format, the information in the report, and the frequency for collection and sharing of information. Once collected, collated, and analyzed, decision makers may need to act on that information to influence the direction of the project.

Senior management uses the reports to collect and analyze project decision-making information. Senior management may specify the type of report, frequency of report, and the type of information they need. Collection, formatting, and analysis of information must be planned and implemented to meet senior management's needs.

**Principles of information management** should guide the Project Manager in planning for, collecting, analyzing, and reporting project information. Some principles are:

- Collection plans should specify the precision of data, e.g., the reports are given in hours, days, or weeks (the greater the duration, the less precise the information).
- Collection plans should specify the need for accuracy of data, e.g., the reports cover the actual period of the report period and estimates are not acceptable.
- Data are raw figures that must be analyzed to become usable information.
- Collect only the data needed to manage the project and keep senior management informed.
- More frequent reporting can impose more control over the project.
- Disseminate information using as few report formats as possible to satisfy the needs of all decision makers and stakeholders.
- Collect data and track appropriately for the size and type of project.

The Project Manager is responsible for planning and ensuring proper maintenance of the data collection, data analysis, and information reporting process.

--continued

## 2.18 Documentation, Information, and Reporting (continued)

### Topics Addressed:

- Semantics
- Information structure
- Information data bases
- Document design
- Document identification
- Document modification
- Filing and archiving
- Information integrity
- Information security
- Privacy

## 2.19 Communication

**Communication** is the information interchange between individuals through a system of words, semantic notations, illustrations, mathematics, and behavior. In a project, the Project Manager is the linchpin for establishing and sustaining communication among the project team.

Effective communication involves the transmission of information and verification of the understanding of the message by the other parties. Communication may be in several forms (oral, written, textual or graphic, or body movements) that represent information. A project may use a combination of these forms to reinforce the message or to preserve the message over time. The means of communication may be through electronic mail, regular mail, telephone, group briefings, or face-to-face discussions. Selecting the most appropriate form and delivery method improves the communication process and success of the project.

The Project Manager must ensure the preparation and distribution of a **communication plan** that identifies the stakeholders and other interested parties, how they will be kept informed, how frequently information will be provided, and in what form the information will be disseminated. The communication plan formalizes the process of collecting, formatting, and disseminating information to the right parties in a timely manner. This is for both regular communication and for ad hoc communication. Rather than being a verbal discussion in a meeting, the communication plan should include written policies, and procedures on how and when the project will communicate with its stakeholders.

Miscommunication can lead to poor project results through the wrong actions or no action taken on project work. Examples that can lead to miscommunication are:

- Selective hearing – only listening to what a person wants to hear, such as only good news.
- Differing cultural norms – high or low cultural norms can result in too much or too little detail for some participants.
- Failing to report a bad news situation in time to take effective corrective action.
- Personal animosity that builds barriers between individuals' emotional maturity.
- Demeaning language or lack of consideration for the other party in a discussion.
- Distortion of messages through imprecise or inappropriate use of words.
- Using the least effective form of communication for the situation.
- Conflicting signals between oral communication and accompanying body language (saying one thing and indicating the opposite through signals with a body part).

Projects rely heavily on **meetings** to convey information that is critical to project success.

Effective preparation, execution, and implementation require the Project Manager to cause the following to happen:

- Set the time and location for the meeting.
- Prepare an agenda.
- Announce the time, location, purpose, and duration to invited participants.
- Give adequate time for the participants to prepare for the meeting.
- Establish rules of conduct for participants and review these rules at the start of each meeting.
- Stick to the agenda and avoid sidebar conversations.
- Manage meeting interaction and balance so all participants have a chance to contribute.
- After the meeting, summarize the agreements, and list the actions identified for individuals.
- Prepare a report of the minutes of the meeting with assigned actions.

### Topics Addressed:

The most effective Project Managers balance all the communication skills, rather than relying on several favored ones. But, we are only as effective as our weakest communication skills. The communication skills to master include:

- Listening to others
- Clear, concise verbal communication
- Presenting information
- Writing, formal and informal
- Reading methods such as scanning, reading for meaning, reading for understanding
- Facilitating large group discussions
- Discussing, such as keeping to the subject
- Paraphrasing, such as distilling information to the appropriate level

--continued

## 2.19 Communication (continued)

There is a group of less-obvious skills that the most effective communicators master, which include:

- Reading body language
- Managing voice intonation
- Explaining complex concepts
- Providing constructive feedback
- Selecting the correct level of detail for the situation and the audience
- Using graphics appropriately to improve communication breadth
- Matching the communication skill(s) and style to the situation
- Effectively managing meetings

**Possible process steps:**

1. Determine the message and the context.
2. Identify target audience and situation.
3. Choose place, time, duration, and means.
4. Plan communication process and prepare material.
5. Check infrastructure and perform communication.
6. Evaluate and take subsequent actions.

## 2.20 Performance Measurement

**Performance Measurement** is the evaluation process used to represent physical progress achieved for cost and schedule activities. Continuous measurement of project progress and status is vital for effective time (schedule) and cost control. This information gives a meaningful assessment of budgetary and time performance of a project with a resultant earned value. Plan the performance measurement process and gather performance information at the activity or task level, or at the work package level of projects. Summarize the information upward through a reporting structure using a tool such as the work breakdown structure.

**Earned value management** is one useful way to collect, format, calculate, and assess integrated project time and cost information to determine progress. Indicators of the project progress and status to date are:

- Budget or Cost Baseline (formerly Budgeted Cost of Work Scheduled — BCWS)
- Earned Value (formerly Budgeted Cost of Work Performed — BCWP)
- Actual (formerly Actual Cost of Work Performed — ACWP)
- Schedule Variance: Earned Value minus Budget
- Cost Variance: Earned Value minus Actual Cost

Compare Earned Value to Budget and Actual to produce two variance factors. Schedule Variance (SV) is the difference between the work completed and work scheduled. Cost Variance (CV) is the difference between the estimated cost of work and the actual cost of work. The term work, as used here, includes the consumption of all resources, whether human, material, or services. Use these results of the **time-now-analysis** to influence projections of likely outcome on the project in terms of cost and schedule.

### Topics Addressed:

- Status Tracking
- Status Reporting
- Earned Value Management
- Time-Now-Analysis

### Possible process steps:

1. Establish a baseline plan for all measurement factors.
2. Establish an effective project reporting system.
3. Report time, cost, progress and estimates to complete.
4. Evaluate Earned Value information.
5. Run trend forecasts
6. Plan alternatives and run simulations (What-if and trade off analysis)
7. Correct or redirect, as needed

## 2.21 Project Startup

**Project Startup** is the set of actions taken early in a project to create the foundation for success during subsequent project planning, implementation, and closeout. The actions that effectively launch the project define stakeholder expectations, resolve uncertainty, and document plans. Establishing the foundation for the project is important to the project's success during subsequent work. Participation of individuals involved with the project and clear decisions as to the project's future are critical for establishing the baseline for future work. Decisions and planning for the project must be documented to ensure that future actions meet agreed-upon objectives.

Project startup includes the creation and formation of a project team. **Objectives** for the teambuilding process in the project startup are to:

- Create a shared vision for the project, by identifying the project's context, purpose, and objectives,
- Define the scope of work, project organization, and objectives for quality, cost, and time,
- Get the project team functioning, by agreeing to its mode of operation and channels of communication, and
- Focus the project team on the purpose of the project and the method for achieving it.

A **startup-workshop** or **kickoff meeting** is a method of initiating the process. Using either one gives the project greater definition and communicates the expectations of the parties involved.

### Topics Addressed:

- Project charter
- Objectives
- Project management plan
- Project as built documentation
- Start up workshop
- Teambuilding

### Possible process steps:

1. Bring together the project team.
2. Secure equipment and facilities.
3. Set project objectives and scope.
4. Clarify and design the basic conditions of the project context.
5. Define and set up the project organization.
6. Define procedures for collaboration.
7. Perform project teambuilding.
8. Conduct initial project planning.
9. Create and agree to the project charter.
10. Determine the Sponsor and Executive commitment to the project.

## 2.22 Project Closeout

**Project Closeout** is the formal project closure process that includes product delivery and final compilation of the documentation of activities of the project. It combines three key processes: First, the commissioning or handover of the project deliverables or result, and their acceptance by the sponsor or buyer. Second, to document and forward all experiences in the project. Third, the project decommissioning, along with reassignment of the project team, accounting for equipment and other resources, contract closures, and acceptance by the project sponsor that the project is complete.

In addition to Project Closeout, Closeout also occurs for each release or build of the project, and for each phase of most projects. In this case, close each period of a project by evaluating and documenting results of the period, checking the objectives achieved (especially customer satisfaction), preparing the proposals for the next period(s), and identifying and making recommendations about the decisions to make at this stage.

Capture Project **Lessons Learned** continuously throughout the project to improve future project operations. In addition to continuous Lessons Learned, schedule a project close-out meeting, including a review process of experiences, useful for continuous improvement purposes.

Record this information to improve Lessons Learned:

1. Generate (if needed), verify, and validate all relevant data of the project deliverables, such as data sheets and final product configuration.
2. Document important events, such as interference and control actions.
3. Update the experiences or Lessons Learned database for improved future project results.
4. Document the level of satisfaction of customer and project members.
5. Conduct performance evaluation and evaluation of achievement of objectives.
6. Collect recommendations and proposals for improvement.

Closeout is the last process in the project lifecycle, and includes product handover just prior to product commissioning and operations. Completion of closeout signals a change in responsibilities of the parties as well as a change in the mode of work accomplished. For example, once a product is in use, the project mode of work typically changes to one of operations. When complete, formally release the members of project team from their role.

**Handover** of project deliverables or products follows a closeout procedure agreed to by the project sponsor and the Project Manager.

**Possible process steps for Project Closeout and Handover:**

1. Hand over and accept the product, together with manuals, testing protocols, and inspection reports.
2. Agree on warranties and liabilities.
3. Close contracts with contractors and suppliers.
4. Identify list of claims, if any.
5. Accept final invoices and authorize final payments.
6. Conduct final appraisal of financial situation (post-project calculation).
7. Complete final project report, containing lessons learned and the project documentation.
8. Prepare list of open points and finishing work (punch list).
9. Document agreements on training courses, and archive records.

**Early Project Closeout** may occur for reasons other than successful completion. Decision-makers could terminate or cancel a project; it may no longer fit within the organizational strategic objectives, or technology advances render the current project obsolete. In this case, the closing project actions should include: evaluating and documenting results, checking objectives, and identifying and making recommendations about the decisions taken for lessons learned.

**Topics Addressed:**

- Lessons Learned
- Commissioning
- Measuring Customer Satisfaction
- Transition
- Administrative or Financial paperwork

## Group 3: Behavioral Competences

Projects involve people. It is the Project Manager's ability to bring together the project participants and contributors, and connect them in an effective project organization that will achieve the project's objectives.

In this group, we assess the knowledge of the applicant, just as we do for the other groups. As well, for Levels IPMA-A, B, and C, we explore the behavior of the applicant—the way she or he actually demonstrates these attributes.

### Group 3. Behavioral Competences

- 3.1 Leadership
- 3.2 Engagement and Motivation
- 3.3 Self-Control
- 3.4 Assertiveness
- 3.5 Relaxation
- 3.6 Openness
- 3.7 Creativity
- 3.8 Results Orientation
- 3.9 Efficiency
- 3.10 Consultation
- 3.11 Negotiation
- 3.12 Conflict and Crisis
- 3.13 Reliability
- 3.14 Values Appreciation
- 3.15 Ethics

### Other Groups of Competence Elements

#### Group 1 Contextual Competences

- 1.1 Projects and Project Management
- 1.2 Programs and Program Management
- 1.3 Portfolio Management
- 1.4 Project, Program and Portfolio Orientation
- 1.5 Permanent Organization
- 1.6 Business Processes
- 1.7 Systems Approach and Integration
- 1.8 Human Resource Development
- 1.9 Safety, Security, Health, and Environment
- 1.10 Legal Aspects
- 1.11 Finance and Accounting
- 1.12 Management of Change

#### Group 2 Technical Competences

- 2.1 Project Success Criteria
- 2.2 Stakeholders and Interested Parties
- 2.3 Objectives and Strategies
- 2.4 Risk: Threats and Opportunities
- 2.5 Project Quality
- 2.6 Project Organization
- 2.7 Teamwork
- 2.8 Problem Solving
- 2.9 Project Scope
- 2.10 Product Scope
- 2.11 Project Life Cycle and Phases
- 2.12 Project Schedules
- 2.13 Project Resources
- 2.14 Project Cost
- 2.15 Procurement and Contracts
- 2.16 Configuration Management
- 2.17 Project Control
- 2.18 Documentation, Information, and Reporting
- 2.19 Communication
- 2.20 Performance Measurement
- 2.21 Project Startup
- 2.22 Project Closeout

## More About the Behavioral Attributes

We present the Behavioral Attributes differently than the other groups of Elements. We describe the Element, as we do for the other groups, and then provide a list of *Effective Behaviors* and *Behaviors to Improve*. Candidates can review behavioral patterns as an aid in self-assessment, and we will use those same patterns in certification assessment.

To assess Experience in the Behavioral Elements for each of the different IPMA certification levels:

- For level IPMA-D, we only assess Knowledge (and not Experience/Performance), just as with all the other Elements.
- For level IPMA-C, the candidate must have demonstrated the listed effective behaviors in non-complex project situations. The candidate might need guidance in the further development of behavioral attributes.
- For level IPMA-B, the candidate must have demonstrated effective behavior in complex project situations and within the context of the report project. The candidate has guided (sub) Project Managers in their development of behavior.
- For level IPMA-A, the candidate must have demonstrated the effective behaviors in the coordination of programs or project portfolios in the context of the project and the permanent organization. The candidate must have guided (sub)Program or Project Managers in their behavior development. The candidate must also have been involved in improving the behavioral Elements of others in projects or programs, and contributed to the development of Project Manager practices by publishing or presenting experiences or new concepts regarding the behavioral competences.

### 3.1 Leadership

**Leadership** is the ability to motivate and influence the behavior of others to cause them to cheerfully and willingly follow directions to achieve the desired results.

Effective leadership creates a social system in which both the leader and the led persons fulfill a task or solve a problem with a minimum of financial resources, time, emotional energy, and social inefficiencies or other factors, depending on priorities and objectives. Leadership includes influencing the attitude and behavior of individuals and groups to attain project objectives. The project leader achieves the objectives through organizing, motivating, planning, controlling, and directing resources.

Leadership is a **central role** of the Project Manager to accomplish the project objectives and lead the project team to a successful conclusion of all project work. Leadership is essential in the Project Manager's role, and becomes increasingly important as the project or program becomes more complex, and if the project context is at a strategic level.

**Delegation** is the practice of assigning another organization or individual the authority to perform project work. It is necessary to assess the specific knowledge, experience, energy, empathy, time, and resources available. Clearly define activities and objectives to ensure proper understanding when delegating authority.

**Leadership styles** differ among Project Managers by the amount of team member participation in decisions and degree of independence given to the team member. Used appropriately, different leadership styles can be effective, depending on the situation. Thus, assessing the situation and adapting one's style is a key factor in effective leadership. Different leadership styles form the relationship between the leader and project team. The basic ingredients of leadership include motivation, direction, recognition, communication, incentives, and sanctions (power).

#### Topics Addressed:

- Coaching
- Vision
- Natural authority
- Delegation
- Management styles
- Power, charisma
- Inspiration
- Feedback/Recognition
- Tenacity
- Fascination

#### Possible process steps:

1. Analyze the leadership roles for the project situation under consideration.
2. Identify an adequate leadership model for the current project situation, i.e., ensure that it is still compatible with your own style and ability.
3. Develop proposals for establishing or changing the leadership for the situation (see the topic list above).
4. Discuss and agree to a proposal. Organize feedback and adapt if applicable.
5. Implement adequate roles, styles, and new leaders (if applicable), also providing the necessary tools and training.
6. Analyze results and adapt again.

--continued

**3.1 Leadership (continued)**

<b>3.1 Leadership Criteria</b>		
<b>Item</b>	<b>Effective Behaviors</b>	<b>Behaviors to Improve</b>
1	Can delegate activities, has confidence in others, and coaches them to develop and live up to expectations	Does not delegate, and doesn't coach or develop others
2	Has a vision, expresses it very clearly, supports it well, and brings it to life	Can be self-absorbed, changes direction easily, has no vision, doesn't support ideas
3	Has natural authority, people listen and have confidence in him or her	Has to prove his or her points repeatedly, causing doubt
4	Is a skilled moderator	Cannot moderate processes or conflicts
5	Combines power and charisma	Appears weak and insignificant
6	Is inspiring, makes people proud to work on the team	People do feel attracted by his or her personality
7	Knows how to reward and take corrective action in ways acceptable to the team members	Doesn't reward, and takes corrective action in the wrong way or in an inappropriate setting
8	Takes total responsibility, delegates responsibilities and activities accordingly	Passes on all responsibilities and objectives directly to team members
9	Secures the project's objectives and protects team members in negotiating changes	Blames team members and allows pressure from others to change objectives, assignments, or the project specifications
10	Controls team members' behavior in a conscious and constructive way, has discipline and allows time for communication	Doesn't have a clear idea of the effect of his or her controlling actions, pretends there is a lack of time, and avoids discussion
11	Engages the team members in decisions or has clear reasons for unilateral decisions made	Decides all issues himself or herself, and does not communicate decisions to team members
12	Adopts a leadership style appropriate to the specific team and work situation, is open to feedback	Always leads in a predictable way and is defensive about his or her own leadership behavior
13	Acts as an example and is acknowledged as leader in the team and by the interested parties	Behavior is not considered appropriate by others; does not display leadership within the team or with interested parties
14	Acts and speaks calmly, formulates responses well and with authority	Speaks too quickly, uses unfinished sentences, and excessive gestures
15	Keeps calm during a crisis, avoids visible panic	Panics and loses self control

## 3.2 Engagement and Motivation

**Engagement** is the personal buy-in from the Project Manager to the project, and from the people inside and around the project. Engagement makes people believe in the project and want to be part of it. Engagement is a fundamental condition for project success. It is necessary to bring a vision to life and to motivate people to get together behind a common goal. **Motivation** depends on the internal situation in relation to internal and external attractions or incentives.

Engagement with and motivation of the individuals involved in the project has to be honest. This will then result in a good working atmosphere and increased productivity of both individuals and the team as a whole. Motivating an individual requires the Project Manager to be aware of the person's experiences, the personal attitude, situational circumstances, and their intrinsic motivation.

### Topics Addressed:

- Team building
- Verbalization and visualization of objectives
- Enthusiasm
- Positive attitude
- Delegation
- Responsibility orientation
- Motivation models

### Possible process steps:

1. Learn about the interests and culture of the various parties, and about the interests of individuals in the project.
2. Be explicit which interested parties or personal interests cannot or will not be served.
3. Look for possibilities to serve stakes or interests, define quick wins and incentives.
4. Be sure to know where people's buy-in lies and be alert on changes in motivation levels.
5. Appreciate, communicate, or document achievements adequately.
6. Support a project culture proud of accomplishment, giving regular feedback and keeping everyone involved.
7. Be aware of possible changes in interested parties or interests, and act accordingly.

3.2 Engagement and Motivation Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Actively manages the buy-in of various interested parties	Limits engagement to project and/or personal interests; doesn't show a concern for the interests of others
2	Welcomes initiatives and stimulates engagement from others	Limits people to defined activities; doesn't recognize initiatives of others
3	Is enthusiastic and positive, works with a smile and is service-oriented without losing sight of project objectives	Makes people nervous focusing primarily on problems and risks or is enthusiastic but loses sight of project objectives
4	Welcomes criticism as a form of engagement	Can't cope with criticism, does not turn it to an advantage for the project
5	Actively manages motivation levels	Doesn't deal with decreasing motivation
6	Makes the project plan a team effort	Imposes a project plan on the team
7	Shows realistic positive behavior; always looks for options when problems arise	Reports problems without offering options for resolution, waits for others to make decisions
8	Knows when and how to involve others	Works alone
9	Demonstrates willpower to maintain or increase project momentum	Gives up easily and is too easily demotivated
10	Stimulates team involvement and the cooperation of different disciplines	Hinders or delays constructive team work, avoids cooperation of different disciplines
11	Gives others responsibility and delegated authority, takes the blame, and shares the credit	Doesn't delegate, takes the credit, and blames others

### 3.3 Self-Control

**Self-Control** or self-management is a systematic and disciplined approach to cope with daily work, changing requirements, and stressful situations.

The effective use of one's own resources leads to successful management of one's own life in the interaction of all areas of life (e.g., work, family, spare time). Stress will be systematically managed with knowledge, experience, and methods to handle oneself and one's own resources. The Project Manager is responsible for the self-control of the team.

#### Topics Addressed:

- Time management
- Self management
- Working under stress
- Mental models
- Attitude towards work
- Balance and priorities

#### Possible process steps:

1. Analyze the stressful situation: where does stress emerge?
2. Do research: why does stress develop?
3. Analyze own working behavior.
4. Assess the determined causes.
5. Estimate and provide adequate resources and capacities.
6. Perform an analysis of strength and weakness, determine individual goal settings.
7. Define actions to reduce stress.
8. Communicate openly and honestly with involved people to reduce stress.
9. Share part of the responsibilities and activities, delegate and control systematically.
10. Adapt personal organization and own behavioral rules.
11. Determine personal time schedule.
12. Implement success control.
13. Reward special contributions.

3.3 Self-Control Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Controls emotions, has a high frustration threshold	Appears moody, irritable, and irrational, often loses self-control
2	Responds positively in case of acceptable criticism, reacts calmly to personal attacks, forgives	Is offended by, or indignant to criticism; reacts aggressively to attacks, often reacts emotionally and in an uncontrolled way, bears a grudge against others
3	Is able to discuss issues in the team, mediates, debates	Ignores conflicts that occur; is not aware of what happens informally, incites dissent
4	Supports the creation of argumentative culture in the team, always finds consensus with others	Neglects conflicts, uses power, destroys opposing positions, subordinates others
5	Talks openly and honestly about own and others' stress situation	Does not admit stress and does not take symptoms of stress seriously
6	Balances work and private domain	Is a workaholic, only looks at the work done, neglects his or her private life

### 3.4 Assertiveness

**Assertiveness** is the ability to achieve results and objectives, and create values through timing and persuasiveness. Personal or common ideas and objectives cannot be achieved if assertiveness, the persuasive power, is missing.

**Topics Addressed:**

- Internal conviction
- Relationships
- Diplomacy
- Authority
- Personality
- Self-actualization

**Possible process steps:**

1. Learn about the interests of the various concerned parties, and about the circumstances and interests of individuals in the project.
2. Identify and estimate the values, results, and objectives, the current situation, and the possible consequences.
3. Consider factual arguments and prepare for possible counter-arguments.
4. Assess the people involved, and their positions, interests, and relationships.
5. Prepare the action or motion, and plan the time for intervention.
6. Deliver content; take care to have a self-assured and calm appearance.
7. Express thanks for collaboration, show value appreciation.
8. Cultivate sustainable relationships.

3.4 Assertiveness Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Communicates the reason for decisions taken with team members	Does not communicate decisions to team members
2	Acts in an appropriate manner, is reliable, trustworthy and discrete	Acts inappropriately, appears unreliable, betrays confidences
3	Listens carefully to others	Neglects others' input, interrupts, talks a lot
3	Creates enthusiasm, motivates the team	Criticizes, is unable to motivate
4	Has an open and positive attitude, is a realistic optimist	Appears aloof from the team, ignores others, is pessimistic
5	Demonstrates influence and authority	Is overwhelmed and is not listened to
6	Considers and respects minority viewpoints	Aligns himself or herself only with the majority view or existing powerbrokers

### 3.5 Relaxation

**Relaxation** is the ability to relieve the tension in difficult situations. De-escalation is important to maintain fruitful cooperation between involved parties. It can take the tension out of a situation or re-energize a group.

Another important condition for good Project Management is that the manager is able to relax and recover poise, and to facilitate this for the team and individuals.

In any change process, stress is inevitable. Differences or irritations can suddenly erupt and become very unfriendly, threatening the project. An assertive Project Manager reacts at the earliest possible moment.

#### Topics Addressed:

- Humor
- Story-telling
- Re-energizing
- Do the unexpected
- De-escalation
- Perceptiveness
- Culture, leisure time, sports
- Personal contacts

#### Possible process steps:

1. Detect tension or fatigue within the project.
2. If possible, discover the reason for it and remove it.
3. If that is impossible, react intuitively for immediate action.
4. If more time is available to consider an appropriate reaction, choose the place and means of intervention carefully, and bring the people involved together, or intervene with face-to-face interviews or discussions.
5. Choose an unexpected and/or unconventional place, setting, or means when possible and appropriate for maximum effect.
6. Document your lessons learned.

3.5 Relaxation Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	(Re)acts in a relaxed manner	Is too tense to manage the situation
2	Applies humor and story-telling to the benefit of this project	Doesn't apply humor and story-telling, or does so inappropriately
3	Is capable of taking the heat out of a situation at the proper moment	Ends up exacerbating the situation by not using interventions in the right way or at the right moment
4	Maintains constant awareness of difficult situations arising, performs unexpected and unconventional interventions for optimum results	Doesn't notice anything going awry, is not creative in intervening or only applies conventional methods
5	Pays attention to stressful situations and relieves tension where possible	Is responsible for unnecessary stress and makes no attempt to relieve stressful situations
6	Is able to monitor his or her own well-being and to employ self-relaxation techniques before stress takes its toll	Does not evaluate his or her own condition, and is not able to take the necessary action
7	Budgets and plans activities for team building, social and leisure events alongside the work effort	Budgets and plans only for work

### 3.6 Openness

**Openness** is the ability to make others feel welcome to express themselves so that the project can benefit from their input, suggestions, worries, and criticism. Openness is necessary as a means to benefit from others' knowledge and experience. When a Project Manager works with other professionals, openness is an important competence: most of the team members know more about their own area of expertise than does the Project Manager. The relationships all build upon respect, trust, and reliability.

#### Topics Addressed:

- Flexibility
- Open to cultural differences
- Broad non-PM knowledge
- Accessible
- Transparency

#### Possible process steps:

1. Begin your days with informal contacts.
2. Welcome what you get, contribute to the topic.
3. Use open questions.
4. Create out-of-the-box situations to stimulate openness.
5. If one gets beneficial material, praise the one who gave it, so that everyone benefits.

3.6 Openness Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Is flexible, adapts easily to change, keeping in mind the interests of the project	Is rigid and change-averse, forgets interests of the project
2	Is open to age, gender, sexual orientation, religion, cultural and disability differences	Ignores age, gender, sexual orientation, religion, cultural and disability differences
3	Manages cooperation, orchestrates the team	Is task-oriented, manages the team like a machine
4	Has a broad non-PM knowledge and is able to adapt communication to be understandable to those receiving it	Can't express himself or herself using others' mindset, and is not well understood
5	Is fresh, in good physical and mental condition, and pays attention to personal grooming and attire: a pleasant person to work with	Physically and/or mentally unbalanced, is careless with personal grooming and attire, and causes offense to co-workers
6	Has an open and positive attitude, is a realistic optimist	Is pessimistic, shuts his or her eyes to others, appears aloof
7	Creates confidence, imbues good will	Appears distrustful
8	Actively approaches others positively, is in turn approachable	Waits for others' initiatives, is reserved and uncertain
9	Performs active stakeholder management, maintains formal and informal contacts with parties involved	Doesn't perform stakeholder management, avoids contacts with parties involved, has no time for informality
10	Accepts all team members, tolerates and stimulates other opinions in the team, and promotes active participation	Lets others feel his or her aversion, knows concepts only, knows everything better than everyone else, and does not seek input of others
11	Accepts and respects minorities, lets others become successful	Orients self to existing power situations, claims success

### 3.7 Creativity

**Creativity** is the ability to think and act out of the box. Based on what a Project Manager already knows, and a combination of ideas from others, the PM is able to build a new concept. People tend to be doubtful in the beginning but welcome the idea in the end. The importance of this competence is underestimated. It is one of the prime competences to realize project success. It helps the Project Manager to bridge differences, and motivates people to unite to realize the idea.

Look at the issue from different perspectives. Combine knowledge, common sense, intuition, and experience. Apply them to the object of interest. The challenge is: Reach for the impossible and achieve the unlikely! Intuition often triggers Creativity. Harness that intuition to the benefit of the project.

#### Topics Addressed:

- Imagination
- Optimism
- Holistic thinking
- Emotional intelligence
- New combinations
- Intuition
- Verbalization and visualization of objectives
- Creativity techniques

#### Possible process steps:

1. Recognize differences to bridge the problem, to solve the challenge, to develop a new concept.
2. Determine who can contribute or is involved in this matter.
3. Gather people together, explain the situation, and ask them to use their imaginations.
4. Stimulate as many ideas as possible and take care that no one discusses the feasibility of any contribution.
5. Define metrics to weigh possibilities and effects of the contributions and priorities. Apply common sense.
6. Discuss implementation of remaining ideas.
7. Plan and execute.

3.7 Creativity Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Is creative, welcomes challenges, and has an open mind to new ideas	Sticks only to known and proven solutions and is anxious about the unknown
2	Is optimistic that new ideas will lead to feasible solutions	Rejects ideas as not feasible, without evaluating them
3	Bridges differences by defining a new concept that can be achieved while respecting different viewpoints	Is not capable of integrating different concepts. Chooses from different viewpoints, and creates schisms in the team
4	Finds new solutions by applying new concepts, tools, and common sense in new areas	Can't accept using new concepts or tools as a way of overcoming difficult problems; doesn't use common sense
5	Stimulates people to come forward with ideas, recognizes possibilities, and organizes a sound process for finding a creative solution	Always looks for proven solutions; resents uncertainty and doesn't manage a creative solution finding process appropriately
6	Listens to physical stimuli and feelings, uses his or her intuition for problem-solving, and maintenance of relationships	Only accepts what can be modeled, neglects intuition and feelings. Sticks to reasoning and functional relations.
7	Listens to and uses own intuition and sorts his own ideas as a source of creativity	Systematically rejects intuition
8	Uses unconventional approaches for the benefit of the project. Takes creative decisions to mitigate risk	Always accepts the status quo even if the project is at stake. Is risk averse

### 3.8 Results Orientation

**Results Orientation** involves stimulating the project team and involved parties to transform the project objectives into the project results. The Project Manager has to take care that the project results satisfy the interested parties. This also applies to all agreed-upon changes during the project.

Project results include key performance results, customer results, team member needs, and results of other parties. This way the different results required by various interested parties can be defined at the initiation of the project. The Project Manager has to manage these results to satisfaction. This Project Management behavior closely links to project success. The Project Manager is not paid for hard work, nor for the plans or reports. The Project Manager is paid to realize the project results. The team's results may include items that the different participants in the project would like to get out of it for themselves, such as new learning. The Project Manager has to manage the deployment and the development of the team members to achieve all the results.

#### Topics Addressed:

- Entrepreneurship
- Continuous improvement
- Strengths, weaknesses, opportunities, threats
- Management of risk, changes, and the configuration
- Management of interested parties' expectations
- Measurable efficiency

#### Possible process steps:

1. Define project objectives, results, and deliverables as clearly and unambiguously as possible.
2. Identify the expectations of all stakeholders; define customer results and the needs of team members and others.
3. Be explicit about which stakeholder expectations will not be part of the project objectives, results or deliverables.
4. Determine the critical path in your project, communicate this well to all parties, and get it accepted.
5. Complete your project plan paying attention to quick wins. Communicate the project plan and get it accepted.
6. Repeat these steps during the project to manage risks, new insights, changes, and expectations.
7. Strive for continuous improvement by leadership and by feeding back the project performance regularly.
8. Take the pulse of your project and its context regularly. Practice relaxation when appropriate.
9. Communicate good project performance, results, deliverables, and objectives. Pay special attention to quick wins.
10. Link your key performance and project results to the metrics established.
11. Document your lessons learned.

3.8 Results Orientation Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Behaves like an entrepreneur	Is merely following orders
2	Shows an ability to get things done	Doesn't get things done
3	Continuously looks for possible improvements and challenges the status quo	Constantly accepts things the way they are; does not challenge the status quo
4	Always looks for solutions to problems so that the plan doesn't need to be altered	Isn't creative in finding solutions to problems; turns every problem into a change
5	Is opportunity-driven, without overlooking the risks	Is risk-averse and ignores opportunities
6	Keeps an eye on new developments and opportunities (e.g. new technology, markets, competitors and so on) that affect the project and reacts appropriately	Keeps within accepted boundaries and misses relevant new developments and opportunities that affect the project
7	Actively manages interested parties	Neglects interested parties
8	Is competent in managing results	Isn't competent in managing results
9	Manages expectations openly and well, delivers to or exceeds expectations	Is not clear in managing expectations or raises expectations too high

10	Keeps an eye on the detail, but not at the expense of the bigger picture	Doesn't have an eye for relevant detail. Misses big picture
----	--	---

### 3.9 Efficiency

**Efficiency** is the ability to produce the agreed deliverables and fulfill interested parties' expectations using only minimal necessary resources. Efficiency is a Project Management basic, at least if practiced on relevant issues. Planning, scheduling, and cost estimating are based on efficient use of all resources. To ensure that defined results reach expectations, efficiency must be part of the project culture.

A Project Manager must develop a sense for efficiency. If needed, this competence can easily be improved by training and coaching.

#### Topics Addressed:

- Productivity
- Continuous improvement
- Speed
- Compromises
- Benchmarking and measurements

#### Possible process steps:

1. Plan the necessary activities and assign resources to fulfill a given task, and add slack where appropriate.
2. Decide on priorities and acceptable deviations regarding time, money, or otherwise for the work to be done.
3. Manage the execution of work, and continuously look for possible resource savings.
4. Monitor the work done and resources spent, compared with the project plan.
5. Estimate the resources to be spent at completion.
6. Report if agreed resources will not be sufficient, and propose counter-measures.
7. Evaluate resources spent on completion, and re-plan similar activities. Practice continuous improvement.
8. Document and communicate insights for benchmark purposes in other projects.

3.9 Efficiency Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Is clear about the need for efficiency in the project and behaves accordingly	Isn't clear or doesn't communicate about efficiency, doesn't act as an example
2	Can delegate activities and has confidence in others; manages by exception	Tries to fulfill the activities alone, and has little confidence in others. Does not delegate.
3	Performs appropriate change control, informs at the earliest moment when a plan can't be met, offering management suggestions and alternatives. Management feels in control.	Promises new functionality or deliverables without ensuring the changes are achievable and/or without allocation of additional resources; alerts managers to unexpected changes in the plan at too late a stage. Managers feel they are not in control
4	Is punctual in starting meetings and ends them as soon as possible	Arrives at meetings late, lets them run longer than necessary
5	Strives for continuous improvement, stimulates people to find improvements all the time	Has no eye for or interest for improvements, is easily satisfied by the team
6	Has the energy and perseverance to carry on	Appears slow, has no patience, gives up quickly
7	Creates enthusiasm, asks for positive inputs, and is open to criticism	Is unable to motivate, criticizes unjustly, and is not open to criticism
8	Spots non-optimal use of resources and takes corrective action	Ignores idleness and doesn't react to warning signals from others
9	Uses efficiency in an effective manner	Practices efficiency on the wrong issues, forces people to make mistakes

### 3.10 Consultation

**Consultation** is the ability to reason, to present solid arguments, to listen to others' point of view, and to find solutions. They result in the fair exchange of opinions about project issues. Based on respect, systematic and structured thinking, analysis of facts, and agreements, it leads to accepted decisions. Consultation brings differences of opinion into the open. It is especially functional in project role-play.

**Reasoning** makes it possible to position and navigate in a new context, to be able to understand situations in any discipline, and to solve problems with high certainty. It challenges solutions and conclusions that are only based upon feelings and prejudices.

Logical questions and solutions are communicated more easily in the project organization. They should lead to more foreseeable and manageable results. Structures and logic enable Project Management, but can also make the process more difficult if they are too rigid.

**Topics Addressed:**

- Debates, confrontation
- Systematic and structured thinking
- Scenario planning
- Diplomacy
- Mediation
- Decision making and creating a win-win situation
- Methods and techniques
- Systems engineering

**Possible process steps:**

1. Analyze situation and context.
2. Identify objectives and best (and next-best) options. Imagine others' objectives and arguments.
3. Listen to others' arguments.
4. Identify commonalities and differences.
5. Make a prognosis of the effects, define scenarios or flanking actions.
6. Resolve differences, or agree on differences and the way to solve them.
7. Consider consequences; document and communicate.

--continued

**3.10 Consultation (continued)**

<b>3.10 Consultation Criteria</b>		
<b>Item</b>	<b>Effective Behaviors</b>	<b>Behaviors to Improve</b>
1	Always considers others' proposals, is fair	Pushes own proposal through at others' expense, is unfair
2	Is able to lead a discussion and asks for feedback; accepts feedback without resentment	Ignores or rejects feedback
4	Confrontation is used only as a last resort and is always based on logic and facts	Usually avoids confrontation or hurts people by being aggressive in confrontational situations
5	Tactfully mentions others' misbehavior, executes criticism constructively	Condone misbehavior or thinks he or she knows everything better than others; punishes and humiliates others
6	Behaves positively in case of acceptable criticism, reacts calmly to attacks; easily forgives	Is offended by criticism, reacts in an aggressive, emotional and uncontrolled way, holds a grudge
7	Supports the creation of consultative culture in the team, reaches consensus with others	Neglects conflicts, uses power, destroys opposing positions, and subordinates others
8	Makes decisions based on logic and arguments, and explains decisions well	Avoids decisions or decides without sufficient consultation and explanation
9	Argues concisely, clearly and logically	Argues at length, misses the point, is illogical or tells irrelevant stories
10	Brings energy to the group and harnesses the energy of all group members	Works primarily alone, or perhaps with a few close cronies
11	Has the stamina to find solutions and takes a serious interest in the people involved	Doesn't think holistically, procrastinates, ignores objections and pretends there is a lack of time
12	Is well-prepared and informed. Is able to lead a structured discussion.	Is neither prepared nor informed, and can't lead a proper discussion

### 3.11 Negotiation

**Negotiation** is the art of arriving at a solution that is acceptable to all parties involved. Negotiations are essential when two or more parties have different objectives. Effective use of negotiations can prevent conflict, or can provide a way to resolve conflict if it does occur. Negotiation involves give and take of oral or written exchanges between the parties until they reach a solution. There are three possible outcomes from negotiations:

- All parties agree to the solution, and can document the agreement.
- The parties agree to a partial solution, and defer on some aspects of the issues.
- The parties cannot agree to any part of the issues, and there is mediation or closeout of further discussions.

**Negotiations** typically follow a general process that appeals to the other parties' interests to find that mutually acceptable solution. Understand the issues and get agreement among the parties as to the actual issues involved. Present alternatives and counter-proposals made to close the gap between the parties. Although you may discover new issues, it is best to limit and contain the overall differences.

Evaluate the negotiation topics evaluated within a project context, for example:

- Reach agreement about project objectives with the customer.
- Obtain project approval from public authorities, who have a stake in the project.
- Obtain a settlement or agreement on contract or claim issues with contractors.
- Reach agreement through talks with new people who join the project team.

Successful negotiations require that all parties consider the other's interest, and work toward mutually acceptable conditions upon which all parties can agree. A **win-win** situation is the desirable result, conducted in an open manner. However, recognize that some negotiations are very political and commercial, and that compromises may not leave both parties fully satisfied. Departure from considering the other parties' interests can lead to failed negotiations that result in delays or termination without a solution.

Project managers are responsible for preparing to negotiate, or delegating the responsibilities to others more qualified to do so (e.g., establish the time and place, invite persons, determine positions and goals for the project, and develop preliminary or background information), the realization of actual negotiations, and follow-up of negotiations to ensure agreement has been reached.

Negotiating purely based on the content can prove very difficult. Try to establish and maintain good relations, and maintain this throughout the process.

#### **Topics Addressed:**

- Negotiation techniques
- Body language
- Leadership
- Meeting management

#### **Possible process steps:**

1. Decide on the desired outcome and minimum acceptable position.
2. Ask questions, collect data on the issue, analyze it.
3. Present options that satisfy the criteria.
4. Consider the possibilities to make it win-win.
5. Isolate what you agree upon and maintain a positive relationship.
6. Discuss and evaluate responses, as many times as necessary until you reach a conclusion.

--continued

**3.11 Negotiation (continued)**

<b>3.11 Negotiation Criteria</b>		
<b>Item</b>	<b>Effective Behaviors</b>	<b>Behaviors to Improve</b>
1	Shows the ability to negotiate and the stamina to carry the process through to a successful conclusion	Shows little ability for negotiation, appears slow, has no patience, gives up quickly
2	Actively helps to avoid and correct inappropriate behavior	Looks for guilty parties, lays the blame on others
3	Aims for win-win situations for both parties; acts to engender longer-term business or work relations	Does not respect others' interests, aims for a win : lose situation; has only a short term attitude to business or work relations
4	Can express himself or herself effectively and clearly, avoids unnecessary detail	Loses the thread of arguments
5	Defines negotiation objectives and scenarios	Does not prepare adequately before starting a negotiation
6	Creates the right ambience for negotiation; negotiates fairly and in a well-balanced way	Creates an uncomfortable atmosphere in the negotiations. Negotiates only from his or her own perspective; lacks a balanced approach
7	Respects others' claims and proposals and discusses on a content level	Tries to force the other party to accept his or her position
8	Can discuss and explain his or her own position reasonably without losing face	Defends own position compulsively, and is not ready to compromise
9	Is honest and fair about his or her own interests and objectives	Hides own interests, and is not honest and open
10	Negotiates hard at the content level but maintains a positive personal relationship	Attitude to negotiation is to take an unyielding stance both on the substance of the negotiations and at the interpersonal level
11	Explores interests and perceptions to find constructive solutions	Takes an unyielding position from the outset, and will not budge on demands
12	Tries to understand the other's position and perspective, listens carefully	Talks at cross-purposes and does no try to understand the other's position

### 3.12 Conflict and Crisis Management

**Conflicts and Crises** are situations requiring immediate action to limit their consequences and to promote cooperation. **Conflicts** are typically differences between two or more opposing people or parties, such that the differences reduce the opportunities for cooperation.

**Conflict Management** is the art of handling conflicts to reach the best solution for the situation. The solution should be acceptable to all parties, but may not be beneficial to either party to further the purpose of the project. Conflict management starts with addressing at start-up how you will implement it during the project.

The key to conflict management is to assess causes and consequences, and obtain additional information for a decision process to define possible solutions. Do this against a backdrop of people and organizations that are angry or in panic mode. In a minimum of time, the manager must arrange the information to aim for a positive, preferably synergetic, solution, and most importantly, stay calm, controlled, and friendly. In these circumstances, relaxation and balanced judgment are important qualities.

Projects can have conflict despite arrangements and efforts to prevent it. Conflicts arise in projects largely because:

- Some people work toward separate goals that are not compatible with the project objectives,
- Some people have a personal style that is difficult to work with for others who have a different style,
- Projects are temporary organizations where individuals are not accustomed to working with other assigned persons,
- Projects change the status quo, and those comfortable with the status quo may resist that change,
- Project people work in an environment of change and often new locations, or
- People under pressure to complete their project efforts can sometimes cause rejection of otherwise ideal solutions.

Conflict implies change from expected results and may threaten achievement of project objectives. **Managed conflict** can be healthy. It may create situations where functions are improved and products delivered in a better manner. Conflict is not bad, but a fact of project life. With the right solutions, conflict may bring additional benefits to the project.

Accomplish **conflict resolution** by:

- Withdrawal – parties disengage from the real or perceived issues.
- Smoothing – a third party attempts to convince the individuals engaged that a real issue does not exist.
- Compromise – each party gives up something to reach a mutually agreed upon position.
- Forcing – a third party decides on the course of action at the expense of all engaged parties.
- Problem-solving – engage a third party to define the issues through collection and analysis of facts.

Transparency and integrity shown by the Project Manager in working with persons or parties in conflict will help enormously in finding acceptable solutions. People tend to be more accepting when they are sure that the Project Manager has only one interest: to solve the conflict. A neutral mediator may also moderate conflicts.

**Crises** are unexpected situations that cause deviation from the direction as anticipated in the project plan. Crises may be similar to risks and issues, but often also have emotional aspects that one must consider in resolving the crises. A crisis is a situation that can occur without warning and has an adverse impact on achieving the project's objectives. Crises may result from such items as:

- Discovery of a major defect in the product
- Flawed process that results in defects in workmanship
- Unavailability of resources to complete the project
- Technology shortfall to solve a technical issue in the product
- A change in the stakeholders of a project, such as a new project sponsor, late in the project

**Crisis resolution** requires a rigorous process by which the true issues are identified and defined, and the problem solved through a detailed step-by-step procedure. A "workaround" is a temporary fix to a crisis, but a permanent fix must be applied later. Crisis resolution is part of risk management; early in any project, good risk analysis and scenario planning will contribute to your ability to manage foreseeable crises (and prepare as well for those unforeseen).

--continued

### 3.12 Conflict and Crisis Management (continued)

A crisis in a project can be described as a time of acute difficulty, more than would just arise out of a conflict. At such a time, quick and skilled judgment is needed to assess the crisis, define scenarios to solve the crisis, and secure the project, and to decide whether to escalate the issue and how high the escalation should go.

#### Topics Addressed:

- Mediation
- Motivation
- Team building
- Problem solving
- Judgment
- Contract
- Arbitration

#### Possible process steps:

1. For a project involving contracts and procurement, during start-up, perform a risk analysis, describe and cover issues in the contract, and plan how you would handle the situation if anticipated conflicts or crises arise.

In case of a conflict or crisis:

1. Be sure that the Project Manager is not personally involved in part of the conflict or crisis. If this is the case, it is wise to let the project board know so that they can assign someone else to resolve the conflict or crisis.
2. Consider the conflict or crisis from all parties' viewpoints.
3. Consider what approach to use to resolve the situation or whether to mediate using a third party expertise.
4. Consider the options for solution, balancing all interests.
5. Discuss, decide, and communicate.

3.12 Conflict and Crisis Management Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Is able to discuss issues with the team, mediates, debates, and is aware of emerging conflicts	Ignores emerging conflicts, does not know what happens informally, causes dissent
2	Is accessible, always has enough time to listen, works with the team and other interested parties	Is always busy and isolated, only conducts formal meetings. Has no informal or social relationship with the team
3	Accepts uncertainty as a challenge	Accumulates risks and problems
4	Is open in dealing with contradicting interests in conflicts and crises	Becomes an active participant in creating differences in the team, leading to conflicts or crises
5	Behaves positively in case of acceptable criticism, reacts calmly to personal attacks, forgives	Is offended by or indignant of criticism, reacts in an uncontrolled way to attacks, bears a grudge
6	Is fair, accepts others' proposals, accepts feedback without resentment	Pushes own proposal through at others' expense, rejects constructive feedback
7	Distinguishes between personal relationship and work-related problems, and solves them in the right order	Mixes personal relationship and content level problems
8	Appears confident and positive, treating those involved with respect for the individual and their roles	Is arrogant, appears vulnerable, manipulates other team members
9	Uses conflicts for the benefit of the project	Neglects smoldering issues, is not prepared to defend the project to the very end.

### 3.13 Reliability

**Reliability** causes others to trust that you will live up to what you promised with required precision. It covers responsibility, correctness, robustness, and confidence. It implies minimizing errors as well as openness and consistency. Reliability is a characteristic that project stakeholders value very much.

It optimizes the process to achieve the objectives and motivates all involved persons and groups. It encourages the team members to have self-control and self-confidence. By demonstrating reliability, you may avoid some barriers and setbacks during the project.

#### Topics Addressed:

- Visionary thinking
- Networking
- Planning and organizing
- Systematic and disciplined working method
- Attitude in relation to errors
- Management style
- Total Quality Management or other Quality Assurance Programs
- Control cycles

#### Possible process steps:

1. Describe the issue (change, error, non-compliance).
2. Estimate consequences of the issue based on a holistic view of the people involved and groups.
3. Assess the reliability of individuals and groups representatives involved with the project on a personal and working level.
4. Be honest and create openness with all individuals and group representatives involved with the project, based on mutual respect.
5. Take care that all key people participate in solution finding or scenario planning.
6. Identify and assess risks and opportunities, and define suitable actions and/or implementation of the consequences in the project plan.
7. Get agreement to the solution and/or the revised plan.
8. Execute and manage the work performed systematically.
9. Communicate adequately, and feed back the lessons learned.

3.13 Reliability Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Is reliable: delivers what was agreed to the required quality, on time and within budget	Is not reliable: delivers less than promised, is late or over budget; compromises on quality
2	Provides well informed, timely, reports to the project owner if issues arise that will force the project to go beyond acceptable tolerances	Works according to the principle of 'laissez aller, laissez-faire' ('let it go,' or a 'hands-off' approach). Reports too late for the project owner to influence the outcome.
3	Is trustworthy, handles confidentiality discretely	Appears untrustworthy, betrays confidences
4	Feels responsible for project success on behalf of all stakeholders and other interested parties	Always blames others
5	Takes total responsibility, defines sub-responsibilities the right way	Passes on all obligations and objectives directly from the project owner to the team members
6	Influences team members' behavior in a conscious and constructive way, has discipline, and takes time for communication	Does not have a clear idea of the effect of his or her controlling actions, pretends there is a lack of time, does not communicate well
7	Transmits all types of information well	Has difficulties in transmitting information

### 3.14 Values Appreciation

**Values Appreciation** is the ability to perceive others and their interests, to communicate with them, and to be receptive to other opinions and value patterns or ethical standards. The central basis for value appreciation is mutual respect.

The understanding of personal, organizational, or society wide drivers is necessary to get a plan accepted easily. A Project Manager who understands different values, as well as differences in values between people involved in the project, will be able to organize and execute a project far more easily than someone who does not.

#### Topics Addressed:

- Political sensitivity
- Liaison between context and project team
- Maintenance of contacts
- Personal interests and goals
- Personal presentation, external effect
- Condition for responsible action
- Social sensitivity

#### Possible process steps:

1. Maintain regular contact with people having political and social factors of influence.
2. Know the objectives and interests of parties.
3. Estimate and assess the current situation (e.g., politics, society, interested parties, and context conditions).
4. Project into the situation the views of the people you are communicating and cooperating with.
5. Understand or adopt an alternate point of view.
6. Consider the perspective of others, and on this basis, coordinate the arguments with those of others.
7. Respect and appreciate other opinions.
8. Exchange information systematically for considering the desires and needs of team members and other interested parties.
9. Be understanding, but encourage team members to act with self-responsibility and self-initiative; represent motivation.
10. React quickly and consider changing context factors.

3.14 Values Appreciation Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Takes others' values, feelings, desires and needs seriously whilst maintaining his focus on the scope of the project	Is insensitive to other's values, feelings, desires and needs; disregards their inputs
2	Allows sufficient freedom of action for subordinates to find and realize their own way	Constricts the freedom to act of his subordinates by obligating and controlling
3	Engages the team members and parties involved in decisions, or has a good reason for taking decisions without their involvement	Makes decisions alone, and doesn't communicate them to team members or parties involved
4	Acts as an example and is acknowledged as a leader	His or her behavior is not considered as serious and appropriate by others
5	Adequately balances between his or her own interests and those of others	Acts out of own interests or neglects others' interests completely
6	Gives direct feedback	Does not provide feedback on team members' work
7	Creates enthusiasm	Criticizes, is unable to motivate
8	Regularly maintains contact with parties involved	Avoids contact with involved parties
9	Creates confidence	Appears distrustful
10	Is accepted by the whole team and other interested parties	Takes on the role of an outsider

### 3.15 Ethics

**Ethics** is the morally accepted professional conduct for every individual and is a basic trait in every social system. Ethics allow people to conduct the project and deliver the results in a satisfactory manner. They represent personal and professional freedom as well as limits. Respect ethics to allow people to function without moral conflict in the project and in relation to interested parties and society.

Social and cultural differences can reveal differences in ethics. The Project Manager should be very conscious whether he or she can live with these differences or resolve them.

The candidate should conduct himself or herself according to the professional code of conduct. Introduce this ethical obligation to the project staff during project startup meetings and reinforce it periodically to maintain high standards.

#### Topics Addressed:

- Respect
- Integrity
- Confidence
- Transparent
- Code of conduct
- Solidarity

#### Possible process steps:

1. Detect possible unethical situation or proposal regarding yourself or between others; be sure that you maintain transparency in bringing it into the open and resolving the differences.
2. Involve relevant interested parties and issues with people involved personally.
3. Be very explicit in explaining which ethical convictions hinder you.
4. If your opponent insists, be respectful and try to resolve the situation or let mediation take place.
5. Communicate outcome, bear consequences.
6. Execute the necessary actions on the project.

3.15 Ethics Criteria		
Item	Effective Behaviors	Behaviors to Improve
1	Is conscious of ethical issues	Is not aware of, or ignores, ethical issues
2	Acts respectfully when bringing ethical issues and differences into the open	Makes fun of or is not, in other ways, respectful regarding ethical issues
3	Maintains integrity and is open about his or her personal or professional ethics	Compromises beyond ethical limits, is not honest in ethical issues
4	Holds to and respects ethical values even in times of conflict or crisis	Ignores ethical issues or acts unethically under pressure
5	Always lives up to agreements, doesn't abuse information or power	Doesn't live up to agreements, abuses information or power
6	Is transparent, fair, and categorical in ethical standards	Isn't open, honest, or is ambiguous in ethical standards
7	Shows solidarity to the team members and defends the project if necessary	Shows no solidarity and doesn't defend the project, shows only loyalty to management
10	Is happy to applaud others' success, favors the total result above raising his or her own profile	Presents success as his or her own achievement, neglects the contributions of others

## Appendix: Related Documents for Competence-Based PM Certification

In addition to this USA-NCB, additional documents help explain facets of the USA's Competence-Based Certification program for Program and Project Managers, and the processes and steps for understanding their applicability for you. This list explains the documents you should review if you are interested in pursuing Certification as a PM (*asapm*). This list was accurate at the time of publication. For the most current information, check the PMCert website, [www.pmcert.org](http://www.pmcert.org).

- ◆ **About Competence-Based PM Certification**  
This document explains more about the IPMA program, and implementation of it in the USA.
- ◆ **CIFTER**  
CIFTER is a tool that you use to determine if your project (the one upon which your competence will be assessed for Level C and Level B) is a complex project or not. One of the most important things for you to do to prepare for competence-based certifications is to determine the complexity of your target project. CIFTER is available at the [pmcert.org](http://pmcert.org) and [asapm.org](http://asapm.org) websites.
- ◆ **Which Cert?**  
An overview of the 4-L-C (Four Level Certification) levels, with role descriptions, prerequisites and the steps for certification at each level.
- ◆ **Certification Candidate Stage 1 Application Forms**  
For those who have completed a Self-Assessment and have decided to have their PM competence validated.
- ◆ **Glossary of Project Management Terms, courtesy of Max Wideman.**  
See [www.maxwideman.com](http://www.maxwideman.com). Max has collected multiple definitions of key Project Management terms from multiple sources; illustrating the fact that there are often multiple correct answers in the world of Project Management.
- ◆ **Synopsis: Learning Objectives that form the basis for Project Management Knowledge**  
For individuals who are integrating training for exam preparation with their professional learning, or for companies or academic institutions that wish to provide a more meaningful Project Management curriculum, the Synopsis helps you evaluate learning against the Elements we emphasize in the National Competence Baseline.
- ◆ **PMCert Marketing Materials**  
Whether you are trying to get your managers to support your quest for Competence, or help explain our certifications to those who are not yet familiar with them, these pages can help.
- ◆ **Competence Enabler Program**  
for PM Vendors who will benefit from involvement in this Project Manager certification program
- ◆ **Administrative procedures for PMCert, including guidelines concerning candidate information security**
- ◆ **PMCert Governance procedures.**