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

Errata - (Fourth Printing)

NOTE: The following errata is a cumulative list of the notable corrections that have been made since the first printing of the PMBOK[®] Guide—Sixth Edition. In order to verify the print run of your book (or PDF), refer to the bottom of the copyright page (which precedes the Notice page and Table of Contents). The last numeral in the string beginning "10 9 8" etc. denotes the printing of that particular copy.

Part 1 A Guide to the Project Management Body of Knowledge (PMBOK® Guide)

<u>Page</u>	Correction
75 <i>,</i> 76	Figs 4-2 and 4-3. Removed bullet for <i>benefits management plan</i> as input for business documents.
89	Table 4-1. Under Project Management Plan, added 19. Management reviews.
98 <i>,</i> 99	Figs 4-8, 4-9. Removed bullet for source selection criteria as input for project documents.
105	Fig 4-10. Added bullet for voting as tool & technique for decision making.
114	Fig 4-13. Added following process box: 6.2 Define Activities with the input <i>change requests</i> .
122	Fig 4-15. Changed input "Project Documents" to Business Documents.
138	Fig 5-4. Added bullet for <i>autocratic decision making</i> as tool & technique for decision making.
151	Section 5.3, 2 nd paragraph, 1 st sentence. Changed "The preparation of a detailed project scope statement builds upon the major deliverables, assumptions, and constraints that are documented during project initiation." to: <i>The preparation of a detailed project scope statement builds upon the high-level project description that is documented during project initiation</i> .
154	Section 5.3.3.1, 1 st sentence. Changed "The project scope statement is the description of the project scope, major deliverables, assumptions, and constraints." to <i>The project scope statement is the description of the project scope, major deliverables, and exclusions</i> .
161	Section 5.4.3.1, 1 st bullet (Project scope statement). Changed "The project scope statement includes the description of the project scope, major deliverables, assumptions and constraints." to: <i>The project scope statement includes the description of the project scope, major deliverables, and exclusions</i> .
164	Fig 5-16. Revised input for process box 4.3 to read <i>Direct and Manage Project Work</i> (was Direct and Manage Project Execution).

179 Fig 6-3. Added bullet for *alternatives analysis* as tool & technique for data analysis.

180. Section 6.1.1.3. Moved the following bullet to Section 6.1.1.4:

Guidelines and criteria for tailoring the organizaton's set of standard processes and procedures to satisfy the specific needs of the project.

- 183 Fig 6-6. Changed bullet under the inputs for project management plan from scope management plan to *schedule management plan*.
- 184 Section 6.2.1.1, 2nd bullet (Scope baseline), 2nd sentence. Changed "The project WBS, deliverables, constraints, and assumptions documented in the scope baseline are considered explicitly while defining activities." to *The project WBS, deliverables, and acceptance criteria documented in the scope baseline are considered explicitly while defining activities*.
- 188 Section 6.3.1.1, 2nd bullet (Scope baseline), 2nd sentence. Changed "The project WBS, deliverables, constraints, and assumptions documented in the scope baseline are considered explicitly while sequencing activities." to *The project WBS, deliverables, and acceptance criteria documented in the scope baseline are considered explicitly while sequencing activities*.
- 192 Fig 6-10. Changed labels to read FS with 2 Weeks (Lead) and SS with 15 Days (Lag). {By removing the dash, this eliminates possible confusion as to whether the figure is representing a positive or negative value for leads or lags.}
- 195 Fig 6-12. Added bullet for *voting* as tool & technique for decision making.
- 224 Section 6.6.1.1, 3rd bullet (Scope baseline), 2nd sentence. Changed "The project WBS, deliverables, constraints, and assumptions documented in the scope baseline are considered explicitly while monitoring and controlling the schedule baseline." to *The project WBS, deliverables, and acceptance criteria documented in the scope baseline are considered explicitly while monitoring and controlling the schedule baseline.*
- Fig 7-2. Added bullet for *alternatives analysis* as tool & technique for data analysis.
- 242 Section 7.2.1.1, 1st sub-bullet (Project scope statement). Changed "The scope statement (Section 5.3.3.1) reflects funding constraints by period for the expenditure of project funds or other financial assumptions and constraints." to *The scope statement (Section 5.3.3.1) includes the deliverables and acceptance criteria.*
- 388 Figure 10-7. Changed ".3 Data analysis" to .3 Data representation.
- 389 Figure 10-8. For process box 4.3 (Direct and Manage Project Work), changed "work performance reports" to *work performance data*.
- 483 Figure 12-5. Added a process box: *11.2 Identify Risks* with the output *agreements*.

Part 2 The Standard for Project Management

Page

Correction

559 Table 1-2. Under the heading Project Management Plan, added *19. Management reviews*.

- 566 Fig 3-1. Under Knowledge Area for Project Stakeholder Management, changed process name to *Plan Stakeholder Engagement*.
- 617 Section 5.2.2. Added bullet for *change log* to project document examples.

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Correction

717 Glossary definition for Project Scope Statement was changed from "The description of the project scope, major deliverables, assumptions, and constraints." to *The description of the project scope, major deliverables, and exclusions.*

4.1 DEVELOP PROJECT CHARTER

Develop Project Charter is the process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities. The key benefits of this process are that it provides a direct link between the project and the strategic objectives of the organization, creates a formal record of the project, and shows the organizational commitment to the project. This process is performed once or at predefined points in the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 4-2. Figure 4-3 depicts the data flow diagram for the process.



Figure 4-2. Develop Project Charter: Inputs, Tools & Techniques, and Outputs



Figure 4-3. Develop Project Charter: Data Flow Diagram

Project Management Plan	Project Documents		
1. Scope management plan	1. Activity attributes	20. Quality metrics	
2. Requirements management plan	2. Activity list	21. Quality report	
3. Schedule management plan	3. Assumption log	22. Requirements documentation	
4. Cost management plan	4. Basis of estimates	23. Requirements traceability matrix	
5. Quality management plan	5. Change log	24. Resource breakdown structure	
6. Resource management plan	6. Cost estimates	25. Resource calendars	
7. Communications management plan	7. Cost forecasts	26. Resource requirements	
8. Risk management plan	8. Duration estimates	27. Risk register	
9. Procurement management plan	9. Issue log	28. Risk report	
10. Stakeholder engagement plan	10. Lessons learned register	29. Schedule data	
11. Change management plan	11. Milestone list	30. Schedule forecasts	
12. Configuration management plan	12. Physical resource assignments	31. Stakeholder register	
13. Scope baseline	13. Project calendars	32. Team charter	
14. Schedule baseline	14. Project communications	33. Test and evaluation documents	
15. Cost baseline	15. Project schedule		
16. Performance measurement baseline	16. Project schedule network diagram		
17. Project life cycle description	17. Project scope statement		
18. Development approach	18. Project team assignments		
19. Management reviews	19. Quality control measurements		

Table 4-1. Project Management Plan and Project Documents

4.4 MANAGE PROJECT KNOWLEDGE

Manage Project Knowledge is the process of using existing knowledge and creating new knowledge to achieve the project's objectives and contribute to organizational learning. The key benefits of this process are that prior organizational knowledge is leveraged to produce or improve the project outcomes, and knowledge created by the project is available to support organizational operations and future projects or phases. This process is performed throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 4-8. Figure 4-9 depicts the data flow diagram for the process.



Figure 4-8. Manage Project Knowledge: Inputs, Tools & Techniques, and Outputs



Figure 4-9. Manage Project Knowledge: Data Flow Diagram

4.4.3.2 PROJECT MANAGEMENT PLAN UPDATES

Any change to the project management plan goes through the organization's change control process via a change request. Any component of the project management plan may be updated as a result of this process.

4.4.3.3 ORGANIZATIONAL PROCESS ASSETS UPDATES

All projects create new knowledge. Some of this knowledge is codified, embedded in deliverables, or embedded in improvements to processes and procedures as a result of the Manage Project Knowledge process. Existing knowledge can also be codified or embedded for the first time as a result of this process; for example, if an existing idea for a new procedure is piloted in the project and found to be successful.

Any organizational process asset can be updated as a result of this process.

4.5 MONITOR AND CONTROL PROJECT WORK

Monitor and Control Project Work is the process of tracking, reviewing, and reporting the overall progress to meet the performance objectives defined in the project management plan. The key benefits of this process are that it allows stakeholders to understand the current state of the project, to recognize the actions taken to address any performance issues, and to have visibility into the future project status with cost and schedule forecasts. This process is performed throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 4-10. Figure 4-11 depicts the data flow diagram for the process.



Figure 4-10. Monitor and Control Project Work: Inputs, Tools & Techniques, and Outputs



Figure 4-13. Perform Integrated Change Control: Data Flow Diagram



Figure 4-15. Close Project or Phase: Data Flow Diagram

5.2 COLLECT REQUIREMENTS

Collect Requirements is the process of determining, documenting, and managing stakeholder needs and requirements to meet objectives. The key benefit of this process is that it provides the basis for defining the product scope and project scope. This process is performed once or at predefined points in the project. The inputs, tools and techniques, and outputs of this process are depicted in Figure 5-4. Figure 5-5 depicts the data flow diagram of the process.



Figure 5-4. Collect Requirements: Inputs, Tools & Techniques, and Outputs



Figure 5-9. Define Scope: Data Flow Diagram

Since all the requirements identified in Collect Requirements may not be included in the project, the Define Scope process selects the final project requirements from the requirements documentation developed during the Collect Requirements process. It then develops a detailed description of the project and product, service, or result.

The preparation of a detailed project scope statement builds upon the high-level project description that is documented during project initiation. During project planning, the project scope is defined and described with greater specificity as more information about the project is known. Existing risks, assumptions, and constraints are analyzed for completeness and added or updated as necessary. The Define Scope process can be highly iterative. In iterative life cycle projects, a high-level vision will be developed for the overall project, but the detailed scope is determined one iteration at a time, and the detailed planning for the next iteration is carried out as work progresses on the current project scope and deliverables.

5.3.3 DEFINE SCOPE: OUTPUTS

5.3.3.1 PROJECT SCOPE STATEMENT

The project scope statement is the description of the project scope, major deliverables, and exclusions. The project scope statement documents the entire scope, including project and product scope. It describes the project's deliverables in detail. It also provides a common understanding of the project scope among project stakeholders. It may contain explicit scope exclusions that can assist in managing stakeholder expectations. It enables the project team to perform more detailed planning, guides the project team's work during execution, and provides the baseline for evaluating whether requests for changes or additional work are contained within or outside the project's boundaries.

The degree and level of detail to which the project scope statement defines the work that will be performed and the work that is excluded can help determine how well the project management team can control the overall project scope. The detailed project scope statement, either directly or by reference to other documents, includes the following:

- Product scope description. Progressively elaborates the characteristics of the product, service, or result described in the project charter and requirements documentation.
- Deliverables. Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project. Deliverables also include ancillary results, such as project management reports and documentation. These deliverables may be described at a summary level or in great detail.
- Acceptance criteria. A set of conditions that is required to be met before deliverables are accepted.
- **Project exclusions.** Identifies what is excluded from the project. Explicitly stating what is out of scope for the project helps manage stakeholders' expectations and can reduce scope creep.

Although the project charter and the project scope statement are sometimes perceived as containing a certain degree of redundancy, they are different in the level of detail contained in each. The project charter contains high-level information, while the project scope statement contains a detailed description of the scope components. These components are progressively elaborated throughout the project. Table 5-1 describes some of the key elements for each document.

The WBS represents all product and project work, including the project management work. The total of the work at the lowest levels should roll up to the higher levels so that nothing is left out and no extra work is performed. This is sometimes called the 100 percent rule.

For specific information regarding the WBS, refer to the *Practice Standard for Work Breakdown Structures* – Second Edition [15]. This standard contains industry-specific examples of WBS templates that can be tailored to specific projects in a particular application area.

5.4.3 CREATE WBS: OUTPUTS

5.4.3.1 SCOPE BASELINE

The scope baseline is the approved version of a scope statement, WBS, and its associated WBS dictionary, which can be changed only through formal change control procedures and is used as a basis for comparison. It is a component of the project management plan. Components of the scope baseline include:

- Project scope statement. The project scope statement includes the description of the project scope, major deliverables, and exclusions (Section 5.3.3.1).
- WBS. The WBS is a hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables. Each descending level of the WBS represents an increasingly detailed definition of the project work.
 - Work package. The lowest level of the WBS is a work package with a unique identifier. These identifiers provide a structure for hierarchical summation of costs, schedule, and resource information and form a code of accounts. Each work package is part of a control account. A control account is a management control point where scope, budget, and schedule are integrated and compared to the earned value for performance measurement. A control account has two or more work packages, though each work package is associated with a single control account.
 - Planning package. A control account may include one or more planning packages. A planning package is a work breakdown structure component below the control account and above the work package with known work content but without detailed schedule activities.



Figure 5-16. Validate Scope: Data Flow Diagram

The verified deliverables obtained from the Control Quality process are reviewed with the customer or sponsor to ensure they are completed satisfactorily and have received formal acceptance of the deliverables by the customer or sponsor. In this process, the outputs obtained as a result of the Planning processes in the Project Scope Management Knowledge Area, such as the requirements documentation or the scope baseline, as well as the work performance data obtained from the Execution processes in other Knowledge Areas, are the basis for performing the validation and for final acceptance.

The Validate Scope process differs from the Control Quality process in that the former is primarily concerned with acceptance of the deliverables, while the latter is primarily concerned with correctness of the deliverables and meeting the quality requirements specified for the deliverables. Control Quality is generally performed before Validate Scope, although the two processes may be performed in parallel.

6.1 PLAN SCHEDULE MANAGEMENT

Plan Schedule Management is the process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule. The key benefit of this process is that it provides guidance and direction on how the project schedule will be managed throughout the project. This process is performed once or at predefined points in the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 6-3. Figure 6-4 depicts the data flow diagram for the process.



Figure 6-3. Plan Schedule Management: Inputs, Tools & Techniques, and Outputs



Figure 6-4. Plan Schedule Management: Data Flow Diagram

6.1.1 PLAN SCHEDULE MANAGEMENT: INPUTS

6.1.1.1 PROJECT CHARTER

Described in Section 4.1.3.1. The project charter defines the summary milestone schedule that will influence the management of the project schedule.

6.1.1.2 PROJECT MANAGEMENT PLAN

Described in Section 4.3.2.1. Project management plan components include but are not limited to:

- Scope management plan. Described in Section 5.1.3.1. The scope management plan describes how the scope will be defined and developed, which will provide information on how the schedule will be developed.
- **Development approach.** Described in Section 4.2.3.1. The product development approach will help define the scheduling approach, estimating techniques, scheduling tools, and techniques for controlling the schedule.

6.1.1.3 ENTERPRISE ENVIRONMENTAL FACTORS

The enterprise environmental factors that can influence the Plan Schedule Management process include but are not limited to:

- Organizational culture and structure,
- Team resource availability and skills and physical resource availability,
- Scheduling software, and
- Commercial databases, such as standardized estimating data.

6.1.1.4 ORGANIZATIONAL PROCESS ASSETS

The organizational process assets that can influence the Plan Schedule Management process include but are not limited to:

- Historical information and lessons learned repositories;
- Existing formal and informal schedule development, management- and control-related policies, procedures, and guidelines;
- Guidelines and criteria for tailoring the organization's set of standard processes and procedures to satisfy the specific needs of the project,
- Templates and forms; and
- Monitoring and reporting tools.

6.2 DEFINE ACTIVITIES

Define Activities is the process of identifying and documenting the specific actions to be performed to produce the project deliverables. The key benefit of this process is that it decomposes work packages into schedule activities that provide a basis for estimating, scheduling, executing, monitoring, and controlling the project work. This process is performed throughout the project. The inputs, tools and techniques, and outputs of this process are depicted in Figure 6-5. Figure 6-6 depicts the data flow diagram of the process.



Figure 6-5. Define Activities: Inputs, Tools & Techniques, and Outputs



Figure 6-6. Define Activities: Data Flow Diagram

6.2.1 DEFINE ACTIVITIES: INPUTS

6.2.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- Schedule management plan. Described in Section 6.1.3.1. The schedule management plan defines the schedule methodology, the duration of waves for rolling wave planning, and the level of detail necessary to manage the work.
- ◆ **Scope baseline.** Described in Section 5.4.3.1. The project WBS, deliverables, and aceptance criteria documented in the scope baseline are considered explicitly while defining activities.

6.2.1.2 ENTERPRISE ENVIRONMENTAL FACTORS

Enterprise environmental factors that influence the Define Activities process include but are not limited to:

- Organizational cultures and structure,
- Published commercial information from commercial databases, and
- Project management information system (PMIS).

6.2.1.3 ORGANIZATIONAL PROCESS ASSETS

The organizational process assets that can influence the Define Activities process include but are not limited to:

- Lessons learned repository containing historical information regarding activity lists used by previous similar projects,
- Standardized processes,
- Templates that contain a standard activity list or a portion of an activity list from a previous project, and
- Existing formal and informal activity planning-related policies, procedures, and guidelines, such as the scheduling methodology, that are considered in developing the activity definitions.

6.2.2 DEFINE ACTIVITIES: TOOLS AND TECHNIQUES

6.2.2.1 EXPERT JUDGMENT

Described in Section 4.1.2.1. Expertise should be considered from individuals or groups with specialized knowledge of similar past projects and the work being performed.

Every activity except the first and last should be connected to at least one predecessor and at least one successor activity with an appropriate logical relationship. Logical relationships should be designed to create a realistic project schedule. It may be necessary to use lead or lag time between activities to support a realistic and achievable project schedule. Sequencing can be performed by using project management software or by using manual or automated techniques. The Sequence Activities process concentrates on converting the project activities from a list to a diagram to act as a first step to publish the schedule baseline.

6.3.1 SEQUENCE ACTIVITIES: INPUTS

6.3.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- Schedule management plan. Described in Section 6.1.3.1. The schedule management plan defines the method used and the level of accuracy along with other criteria required to sequence activities.
- Scope baseline. Described in Section 5.4.3.1. The project WBS, deliverables, and acceptance criteria documented in the scope baseline are considered explicitly while sequencing activities.

6.3.1.2 PROJECT DOCUMENTS

Project documents that can be considered as inputs for this process include but are not limited to:

- ◆ Activity attributes. Described in Section 6.2.3.2. Activity attributes may describe a necessary sequence of events or defined predecessor or successor relationships, as well as defined lead and lag and logical relationships between the activities.
- Activity list. Described in Section 6.2.3.1. The activity list contains all schedule activities required on the project that are to be sequenced. Dependencies and other constraints for these activities can influence the sequencing of the activities.
- Assumption log. Described in Section 4.1.3.2. Assumptions and constraints recorded in the assumption log may influence the way activities are sequenced, the relationship between activities, and the need for leads and lags, and may give rise to individual project risks that may impact the project schedule.
- Milestone list. Described in Section 6.2.3.3. The milestone list may have scheduled dates for specific milestones, which may influence the way activities are sequenced.

- External dependencies. External dependencies involve a relationship between project activities and non-project activities. These dependencies are usually outside of the project team's control. For example, the testing activity in a software project may be dependent on the delivery of hardware from an external source, or governmental environmental hearings may need to be held before site preparation can begin on a construction project. The project management team determines which dependencies are external during the process of sequencing the activities.
- Internal dependencies. Internal dependencies involve a precedence relationship between project activities and are generally inside the project team's control. For example, if the team cannot test a machine until they assemble it, there is an internal mandatory dependency. The project management team determines which dependencies are internal during the process of sequencing the activities.

6.3.2.3 LEADS AND LAGS

A lead is the amount of time a successor activity can be advanced with respect to a predecessor activity. For example, on a project to construct a new office building, the landscaping could be scheduled to start 2 weeks prior to the scheduled punch list completion. This would be shown as a finish-to-start with a 2-week lead as shown in Figure 6-10. Lead is often represented as a negative value for lag in scheduling software.



Figure 6-10. Examples of Lead and Lag

6.4 ESTIMATE ACTIVITY DURATIONS

Estimate Activity Durations is the process of estimating the number of work periods needed to complete individual activities with estimated resources. The key benefit of this process is that it provides the amount of time each activity will take to complete. This process is performed throughout the project. The inputs, tools and techniques, and outputs of this process are depicted in Figure 6-12. Figure 6-13 depicts the data flow diagram of the process.



Figure 6-12. Estimate Activity Durations: Inputs, Tools & Techniques, and Outputs

When an agile approach is used, Control Schedule is concerned with:

- Determining the current status of the project schedule by comparing the total amount of work delivered and accepted against the estimates of work completed for the elapsed time cycle;
- Conducting retrospectives (scheduled reviews to record lessons learned) for correcting processes and improving, if required;
- Reprioritizing the remaining work plan (backlog);
- Determining the rate at which the deliverables are produced, validated, and accepted (velocity) in the given time per iteration (agreed-upon work cycle duration, typically 2 weeks or 1 month);
- Determining that the project schedule has changed; and
- Managing the actual changes as they occur.

When work is being contracted, regular and milestone status updates from contractors and suppliers are a means of ensuring the work is progressing as agreed upon to ensure the schedule is under control. Scheduled status reviews and walkthroughs should be done to ensure the contractor reports are accurate and complete.

6.6.1 CONTROL SCHEDULE: INPUTS

6.6.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- Schedule management plan. Described in Section 6.1.3.1. The schedule management plan describes the frequency that the schedule will be updated, how reserve will be used, and how the schedule will be controlled.
- Schedule baseline. Described in Section 6.5.3.1. The schedule baseline is compared with actual results to determine if a change, corrective action, or preventive action is necessary.
- Scope baseline. Described in Section 5.4.3.1. The project WBS, deliverables, and acceptance criteria documented in the scope baseline are considered explicitly when monitoring and controlling the schedule baseline.
- Performance measurement baseline. Described in Section 4.2.3.1. When using earned value analysis the performance measurement baseline is compared to actual results to determine if a change, corrective action, or preventive action is necessary.

7.1 PLAN COST MANAGEMENT

Plan Cost Management is the process of defining how the project costs will be estimated, budgeted, managed, monitored, and controlled. The key benefit of this process is that it provides guidance and direction on how the project costs will be managed throughout the project. This process is performed once or at predefined points in the project. The inputs, tools and techniques, and outputs of this process are depicted in Figure 7-2. Figure 7-3 depicts the data flow diagram of the process.







Figure 7-3. Plan Cost Management: Data Flow Diagram

- Scope baseline. Described in Section 5.4.3.1. The scope baseline includes the project scope statement, WBS, and WBS dictionary:
 - Project scope statement. The scope statement (Section 5.3.3.1) includes the deliverables and acceptance criteria.
 - Work breakdown structure. The WBS (Section 5.4.3.1) provides the relationships among all the project deliverables and their various components.
 - WBS dictionary. The WBS dictionary (Section 5.4.3) and related detailed statements of work provide an identification of the deliverables and a description of the work in each WBS component required to produce each deliverable.

7.2.1.2 PROJECT DOCUMENTS

Project documents that can be considered as inputs for this process include but are not limited to:

- Lessons learned register. Described in Section 4.4.3.1. Lessons learned earlier in the project with regard to developing cost estimates can be applied to later phases in the project to improve the accuracy and precision of the cost estimates.
- Project schedule. Described in Section 6.5.3.2. The schedule includes the type, quantity, and amount of time that team and physical resources will be active on the project. The duration estimates (Section 6.4.3.1) will affect cost estimates when resources are charged per unit of time and when there are seasonal fluctuations in costs. The schedule also provides useful information for projects that incorporate the cost of financing (including interest charges).
- Resource requirements. Described in Section 9.2.3.1. Resource requirements identify the types and quantities
 of resources required for each work package or activity.
- **Risk register.** Described in Section 11.2.3.1. The risk register contains details of individual project risks that have been identified and prioritized, and for which risk responses are required. The risk register provides detailed information that can be used to estimate costs.

10.2.3.4 ORGANIZATIONAL PROCESS ASSETS UPDATES

Organizational process assets that may be updated as a result of this process include but are not limited to:

- Project records such as correspondence, memos, meeting minutes and other documents used on the project; and
- Planned and ad hoc project reports and presentations.

10.3 MONITOR COMMUNICATIONS

Monitor Communications is the process of ensuring the information needs of the project and its stakeholders are met. The key benefit of this process is the optimal information flow as defined in the communications management plan and the stakeholder engagement plan. This process is performed throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 10-7. Figure 10-8 depicts the data flow diagram for the process.



Figure 10-7. Monitor Communications: Inputs, Tools & Techniques, and Outputs



Figure 10-8. Monitor Communications: Data Flow Diagram

Monitor Communications determines if the planned communications artifacts and activities have had the desired effect of increasing or maintaining stakeholders' support for the project's deliverables and expected outcomes. The impact and consequences of project communications should be carefully evaluated and monitored to ensure that the right message with the right content (the same meaning for sender and receiver) is delivered to the right audience, through the right channel, and at the right time. Monitor Communications may require a variety of methods, such as customer satisfaction surveys, collecting lessons learned, observations of the team, reviewing data from the issue log, or evaluating changes in the stakeholder engagement assessment matrix described in Section 13.2.2.5.

The Monitor Communications process can trigger an iteration of the Plan Communications Management and/or Manage Communications processes to improve effectiveness of communication through additional and possibly amended communications plans and activities. Such iterations illustrate the continuous nature of the Project Communications Management processes. Issues or key performance indicators, risks, or conflicts may trigger an immediate revision.



Figure 12-5. Conduct Procurements: Data Flow Diagram

Project Management Plan	Project Documents		
1. Scope management plan	1. Activity attributes	20. Quality metrics	
2. Requirements management plan	2. Activity list	21. Quality report	
3. Schedule management plan	3. Assumption log	22. Requirements documentation	
4. Cost management plan	4. Basis of estimates	23. Requirements traceability matrix	
5. Quality management plan	5. Change log	24. Resource breakdown structure	
6. Resource management plan	6. Cost estimates	25. Resource calendars	
7. Communications management plan	7. Cost forecasts	26. Resource requirements	
8. Risk management plan	8. Duration estimates	27. Risk register	
9. Procurement management plan	9. Issue log	28. Risk report	
10. Stakeholder engagement plan	10. Lessons learned register	29. Schedule data	
11. Change management plan	11. Milestone list	30. Schedule forecasts	
12. Configuration management plan	12. Physical resource assignments	31. Stakeholder register	
13. Scope baseline	13. Project calendars	32. Team charter	
14. Schedule baseline	14. Project communications	33. Test and evaluation documents	
15. Cost baseline	15. Project schedule		
16. Performance measurement baseline	16. Project schedule network diagram		
17. Project life cycle description	17. Project scope statement		
18. Development approach	18. Project team assignments		
19. Management reviews	19. Quality control measurements		

Table 1-2. Project Management Plan and Project Documents

Business documents are documents that are generally originated outside of the project, and are used as inputs to the project. Examples of business documents include the business case and benefits management plan. The use of the business documents will depend on the company culture and project initiation process.

The enterprise environmental factors that influence the project and the organizational process assets available to the project will depend on the project and project environment and are not listed in this standard.



Figure 3-1. Planning Process Group

5.2.1 PROJECT MANAGEMENT PLAN COMPONENTS

Examples of project management plan components that may be inputs for this process include but are not limited to:

- Change management plan,
- Configuration management plan,
- Scope baseline,
- Schedule baseline, and
- Cost baseline.

5.2.2 PROJECT DOCUMENTS EXAMPLES

Examples of project documents that may be inputs for this process include but are not limited to:

- ◆ Basis of estimates,
- Requirements traceability matrix,
- Risk report, and
- Change log.

5.2.3 PROJECT MANAGEMENT PLAN UPDATES

Any component of the project management plan may be updated as a result of this process.

5.2.4 PROJECT DOCUMENTS UPDATES

Any formally controlled project document may be changed as a result of this process. A project document that is normally updated as a result of this process is the change log. The change log is used to document changes that occur during a project.

Project Procurement Management. Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team.

Project Quality Management. Project Quality Management includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements, in order to meet stakeholders' expectations.

Project Resource Management. Project Resource Management includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project.

Project Risk Management. Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project.

Project Schedule. An output of a schedule model that presents linked activities with planned dates, durations, milestones, and resources.

Project Schedule Management. Project Schedule Management includes the processes required to manage the timely completion of the project.

Project Schedule Network Diagram. A graphical representation of the logical relationships among the project schedule activities.

Project Scope. The work performed to deliver a product, service, or result with the specified features and functions.

Project Scope Management. Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

Project Scope Statement. The description of the project scope, major deliverables, and exclusions.

Project Stakeholder Management. Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

Project Team. A set of individuals who support the project manager in performing the work of the project to achieve its objectives. See also Project Management Team.

Project Team Directory. A documented list of project team members, their project roles, and communication information.

Proposal Evaluation Techniques. The process of reviewing proposals provided by suppliers to support contract award decisions.

Prototypes. A method of obtaining early feedback on requirements by providing a working model of the expected product before actually building it.