

into the Develop Schedule process. The inputs and outputs of this process are depicted in Figure A1-17.

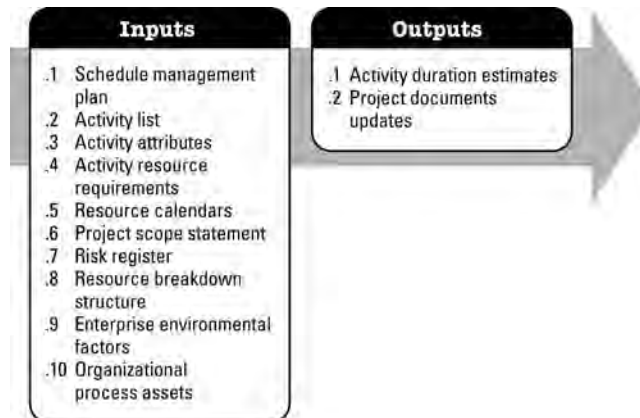


Figure A1-17. Estimate Activity Durations: Inputs and Outputs

A1.5.11 Develop Schedule

Develop Schedule is the process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model. The key benefit of this process is that by entering schedule activities, durations, resources, resource availabilities, and logical relationships into the scheduling tool, it generates a schedule model with planned dates for completing project activities. The inputs and outputs of this process are depicted in Figure A1-18.

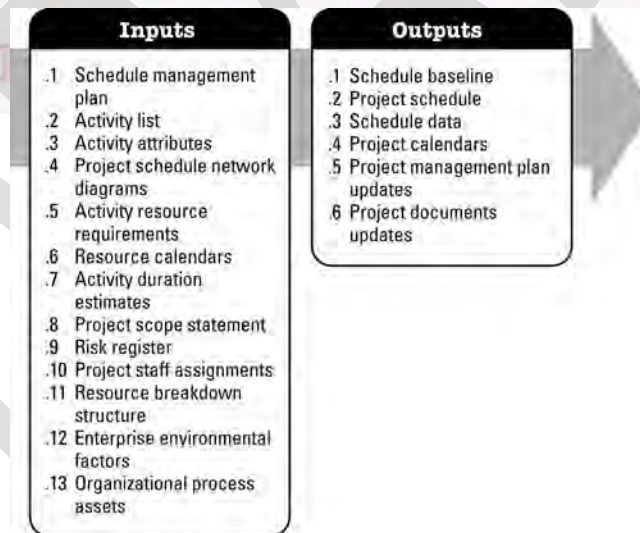


Figure A1-18. Develop Schedule: Inputs and Outputs

A1.5.12 Plan Cost Management

Plan Cost Management is the process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs. The key benefit of this process is that it provides guidance and direction on how the project costs will be managed throughout the project. The inputs and outputs of this process are depicted in Figure A1-19.

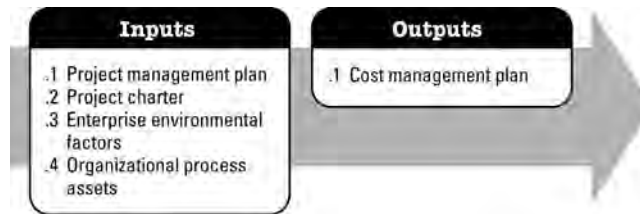


Figure A1-19. Plan Cost Management: Inputs and Outputs

A1.5.13 Estimate Costs

Estimate Costs is the process of developing an approximation of the monetary resources needed to complete project activities. The key benefit of this process is that it determines the amount of cost required to complete project work. The inputs and outputs of this process are depicted in Figure A1-20.

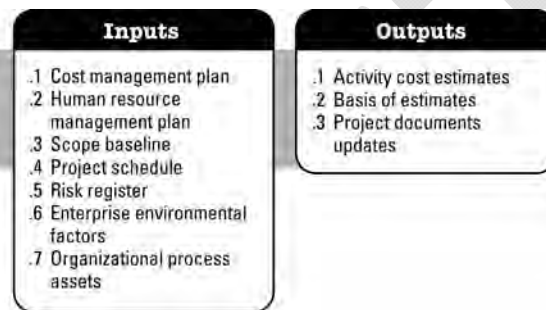


Figure A1-20. Estimate Costs: Inputs and Outputs

A1.5.14 Determine Budget

Determine Budget is the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline. The key benefit of this process is that it determines the cost baseline against which project performance can be monitored and controlled. The inputs and outputs of this process are depicted in Figure A1-21.

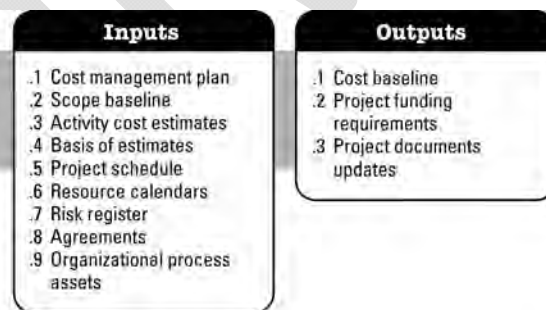


Figure A1-21. Determine Budget: Inputs and Outputs

A1.5.15 Plan Quality Management

Plan Quality Management is the process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with relevant quality requirements. The key benefit of this process is that it provides guidance and direction on how quality will be managed and validated throughout the project. The input and outputs of this process are depicted in Figure A1-22.

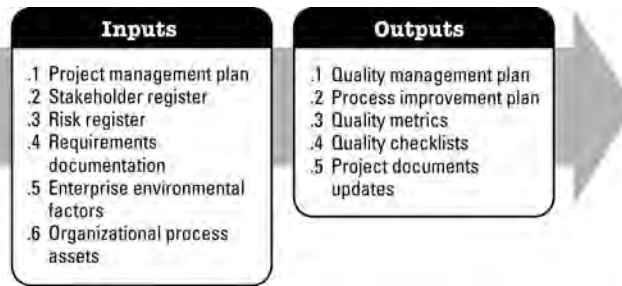


Figure A1-22. Plan Quality Management: Inputs and Outputs

A1.5.16 Plan Human Resource Management

Plan Human Resource Management is the process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan. The key benefit of this process is that it establishes project roles and responsibilities, project organization charts, and the staffing management plan including the timetable for staff acquisition and release. The input and outputs of this process are depicted in Figure A1-23.

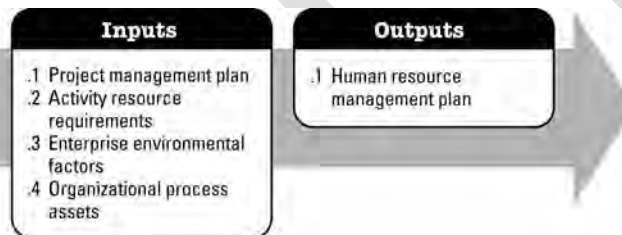


Figure A1-23. Plan Human Resource Management: Inputs and Outputs

A1.5.17 Plan Communications Management

Plan Communications Management is the process of developing an appropriate approach and plan for project communications based on stakeholder's information needs and requirements, and available organizational assets. The key benefit of this process is that it identifies and documents the approach to communicate most effectively and efficiently with stakeholders. The inputs and outputs of this process are depicted in Figure A1-24.

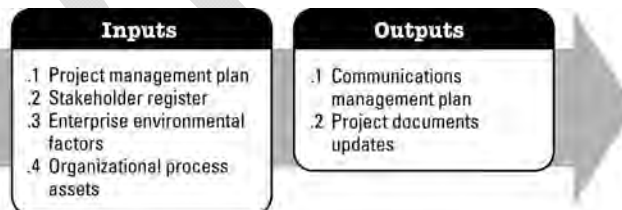


Figure A1-24. Plan Communications Management: Inputs and Outputs

A1.5.18 Plan Risk Management

Plan Risk Management is the process of defining how to conduct risk management activities for a project. The key benefit of this process is that it ensures that the degree, type, and visibility of risk management are commensurate with both the risks and the importance of the project to the organization. The input and outputs of this process are depicted in Figure A1-25.



Figure A1-25. Plan Risk Management: Inputs and Outputs

A1.5.19 Identify Risks

Identify Risks is the process of determining which risks may affect the project and documenting their characteristics. The key benefit of this process is the documentation of existing risks and the knowledge and ability it provides to the project team to anticipate events. The inputs and outputs of this process are depicted in Figure A1-26.

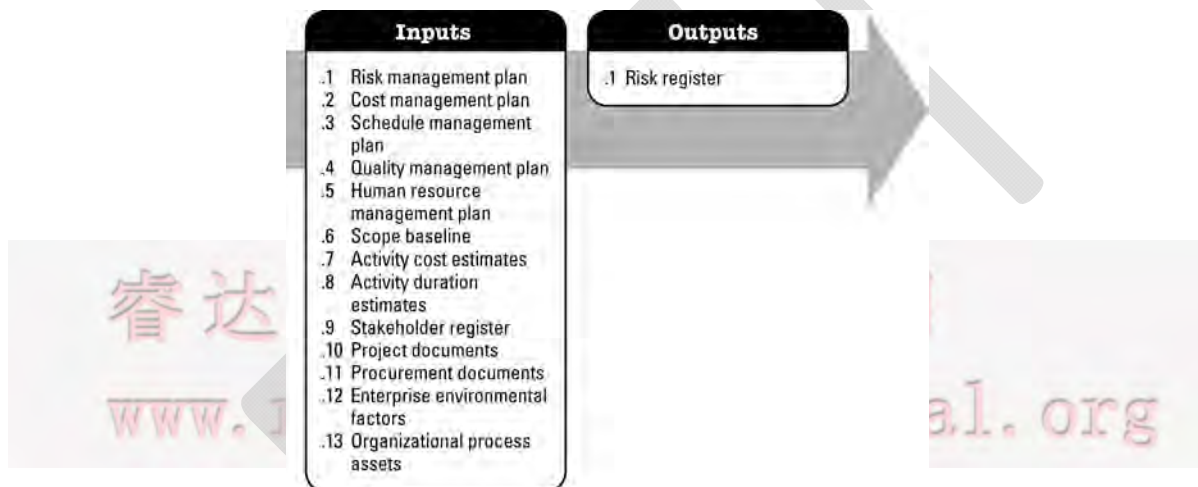


Figure A1-26. Identify Risks: Inputs and Outputs

A1.5.20 Perform Qualitative Risk Analysis

Perform Qualitative Risk Analysis is the process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact. The key benefit of this process is that it enables project managers to reduce the level of uncertainty and to focus on high-priority risks. The inputs and outputs of this process are depicted in Figure A1-27.

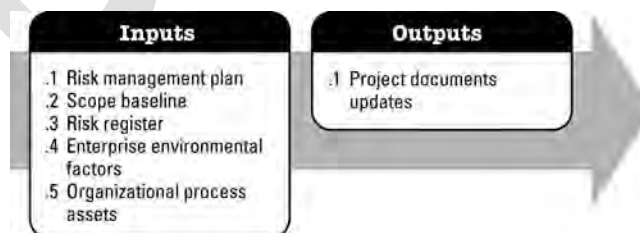


Figure A1-27. Perform Qualitative Risk Analysis: Inputs and Outputs

A1.5.21 Perform Quantitative Risk Analysis

Perform Quantitative Risk Analysis is the process of numerically analyzing the effect of identified risks on overall project objectives. The key benefit of this process is that it produces

quantitative risk information to support decision making in order to reduce project uncertainty. The inputs and outputs of this process are depicted in Figure A1-28.

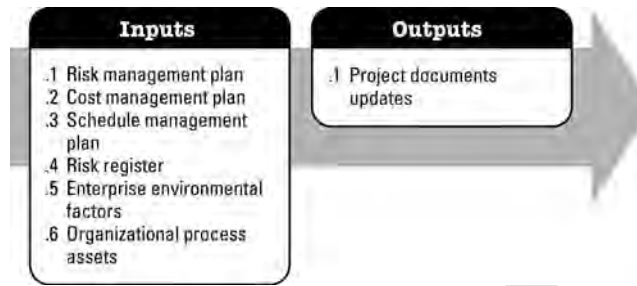


Figure A1-28. Perform Quantitative Risk Analysis: Inputs and Outputs

A1.5.22 Plan Risk Responses

Plan Risk Responses is the process of developing options and actions to enhance opportunities and to reduce threats to project objectives. The key benefit of this process is that it addresses the risks by their priority, inserting resources and activities into the budget, schedule and project management plan as needed. The inputs and outputs of this process are depicted in Figure A1-29.



Figure A1-29. Plan Risk Responses: Inputs and Outputs

A1.5.23 Plan Procurement Management

Plan Procurement Management is the process of documenting project procurement decisions, specifying the approach, and identifying potential sellers. The key benefit of this process is that it determines whether to acquire outside support, and if so, what to acquire, how to acquire it, how much is needed, and when to acquire it. The inputs and outputs of this process are depicted in Figure A1-30.

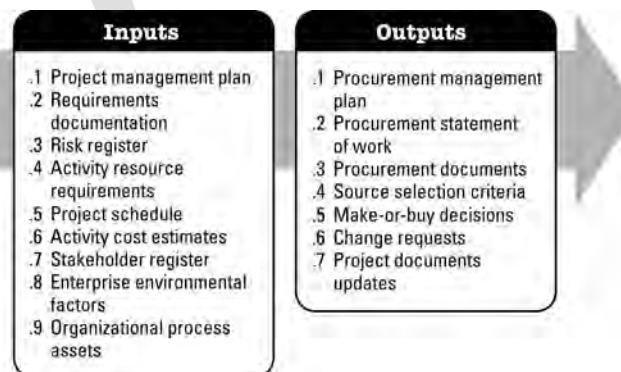


Figure A1-30. Plan Procurement Management: Inputs and Outputs

A1.5.24 Plan Stakeholder Management

Plan Stakeholder Management is the process of developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests, and potential impact on project success. The key benefit of this process is that it provides a clear, actionable plan to interact with project stakeholders to support the project's interests. The inputs and outputs of this process are depicted in Figure A1-31.

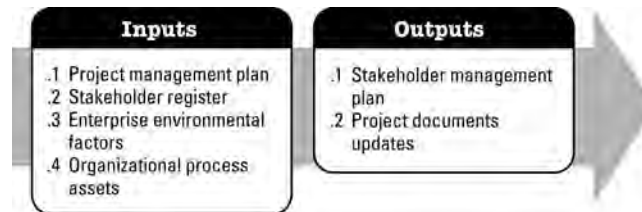


Figure A1-31. Plan Stakeholder Management: Inputs and Outputs

A1.6 Executing Process Group

The Executing Process Group consists of those processes performed to complete the work defined in the project management plan to satisfy the project specifications. This Process Group involves coordinating people and resources, managing stakeholder expectations, as well as integrating and performing the activities of the project in accordance with the project management plan (Figure A1-32).

During project execution, results may require planning updates and rebaselining. This can include changes to expected activity durations, changes in resource productivity and availability, and unanticipated risks. Such variances may affect the project management plan or project documents and may require detailed analysis and development of appropriate project management responses. The results of the analysis can trigger change requests that, if approved, may modify the project management plan or other project documents and possibly require establishing new baselines. A large portion of the project's budget will be expended in performing the Executing Process Group processes. The Executing Process Group (Figure A1-32) includes the project management processes identified in Figures A1-33 through A1-40 (see Sections A1.6.1 through A1.6.8).

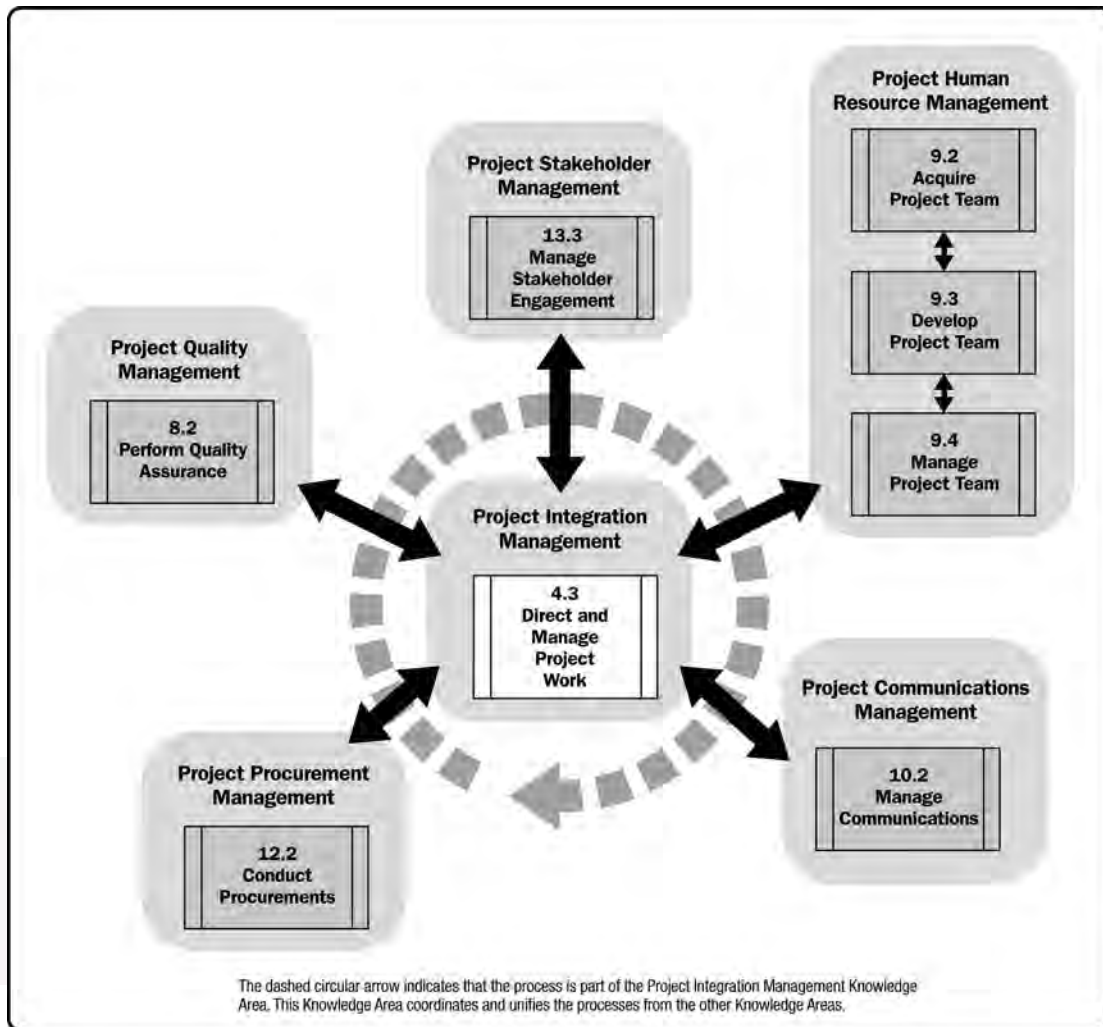


Figure A1-32. Executing Process Group

A1.6.1 Direct and Manage Project Work

Direct and Manage Project Work is the process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives. The key benefit of this process is that it provides overall management of the project work. The inputs and outputs of this process are depicted in Figure A1-33.

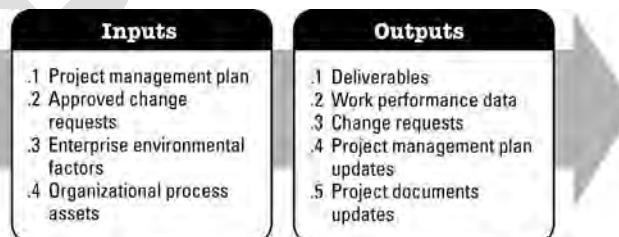


Figure A1-33. Direct and Manage Project Work: Inputs and Outputs

A1.6.2 Perform Quality Assurance

Perform Quality Assurance is the process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used. The key benefit of this process is it facilitates the improvement of quality processes. The input and outputs of this process are depicted in Figure A1-34.

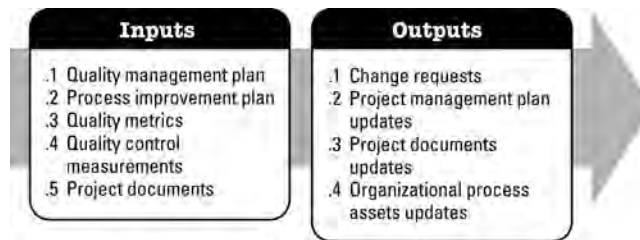


Figure A1-34. Perform Quality Assurance: Inputs and Outputs

A1.6.3 Acquire Project Team

Acquire Project Team is the process of confirming human resource availability and obtaining the team necessary to complete project activities. The key benefit of this process consists of outlining and guiding the team selection and responsibility assignment to obtain a successful team. The inputs and outputs of this process are depicted in Figure A1-35.

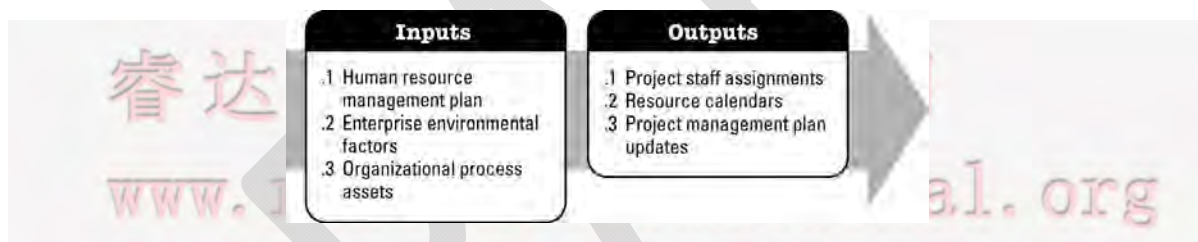


Figure A1-35. Acquire Project Team: Inputs and Outputs

A1.6.4 Develop Project Team

Develop Project Team is the process of improving competencies, team member interaction, and overall team environment to enhance project performance. The key benefit of this process is that it results in improved teamwork, enhanced people skills and competencies, motivated employees, reduced staff turnover rates, and improved overall project performance. The inputs and outputs of this process are depicted in Figure A1-36.

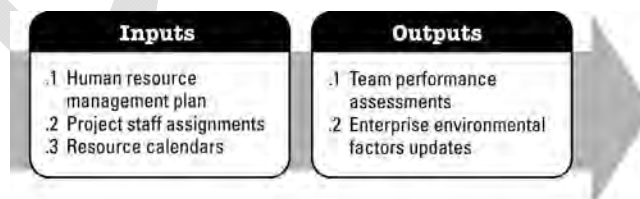


Figure A1-36. Develop Project Team: Inputs and Outputs

A1.6.5 Manage Project Team

Manage Project Team is the process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance. The key benefit of this process is that it influences team behavior, manages conflict, resolves issues,

and appraises team member performance. The inputs and outputs of this process are depicted in Figure A1-37.

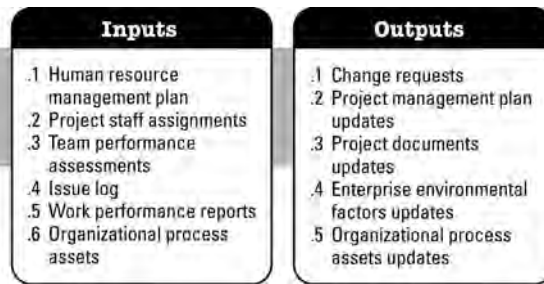


Figure A1-37. Manage Project Team: Inputs and Outputs

A1.6.6 Manage Communications

Manage Communications is the process of creating, collecting, distributing, storing, retrieving, and the ultimate disposition of project information in accordance with the communications management plan. The key benefit of this process is that it enables an efficient and effective communications flow between project stakeholders. The inputs and outputs of this process are depicted in Figure A1-38.

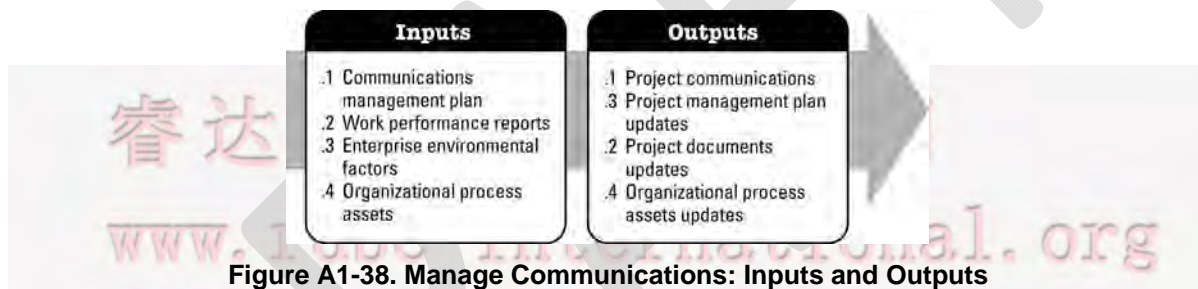


Figure A1-38. Manage Communications: Inputs and Outputs

A1.6.7 Conduct Procurements

Conduct Procurements is the process of obtaining seller responses, selecting a seller, and awarding a contract. The key benefit of this process is that it provides alignment of internal and external stakeholder expectations through established agreements. The inputs and outputs of this process are depicted in Figure A1-39.

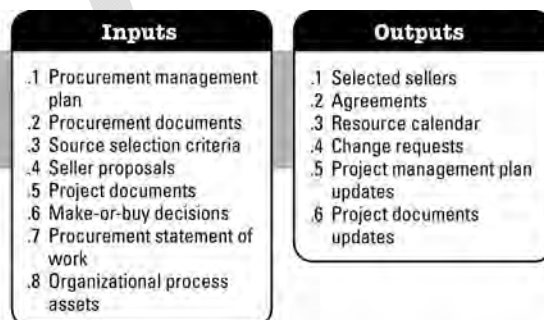


Figure A1-39. Conduct Procurements: Inputs and Outputs

A1.6.8 Manage Stakeholder Engagement

Manage Stakeholder Engagement is the process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle. The key benefit of this process is that it allows the project manager to increase support and minimize resistance from stakeholders, significantly increasing the chances to achieve project success. The inputs and outputs of this process are depicted in Figure A1-40.

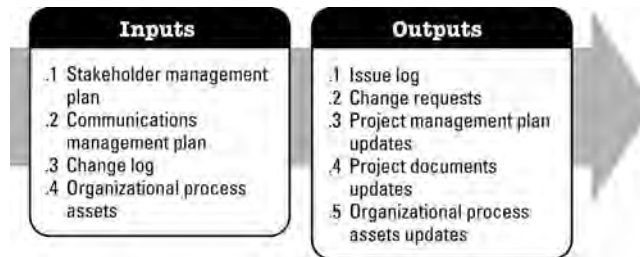


Figure A1-40. Manage Stakeholder Engagement: Inputs and Outputs

A1.7 Monitoring and Controlling Process Group

The Monitoring and Controlling Process Group consists of those processes required to track, review, and orchestrate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes. The key benefit of this Process Group is that project performance is measured and analyzed at regular intervals, appropriate events or exception conditions to identify variances from the project management plan. The Monitoring and Controlling Process Group also involves:

- Controlling changes and recommending corrective or preventive action in anticipation of possible problems,
- Monitoring the ongoing project activities against the project management plan and the project performance measurement baseline, and
- Influencing the factors that could circumvent integrated change control or configuration management so only approved changes are implemented.

This continuous monitoring provides the project team insight into the health of the project and identifies any areas requiring additional attention. The Monitoring and Controlling Process Group not only monitors and controls the work being done within a Process Group, but also monitors and controls the entire project effort. In multiphase projects, the Monitoring and Controlling Process Group coordinates project phases in order to implement corrective or preventive actions to bring the project into compliance with the project management plan. This review can result in recommended and approved updates to the project management plan. For example, a missed activity finish date may require adjustments and trade-offs between budget and schedule objectives. In order to reduce control overheads, management by exception procedures and other techniques can be appropriately considered. The Monitoring and Controlling Process Group (Figure A1-41) includes the following project management processes (Figures A1-7.1 through A1-7.11):

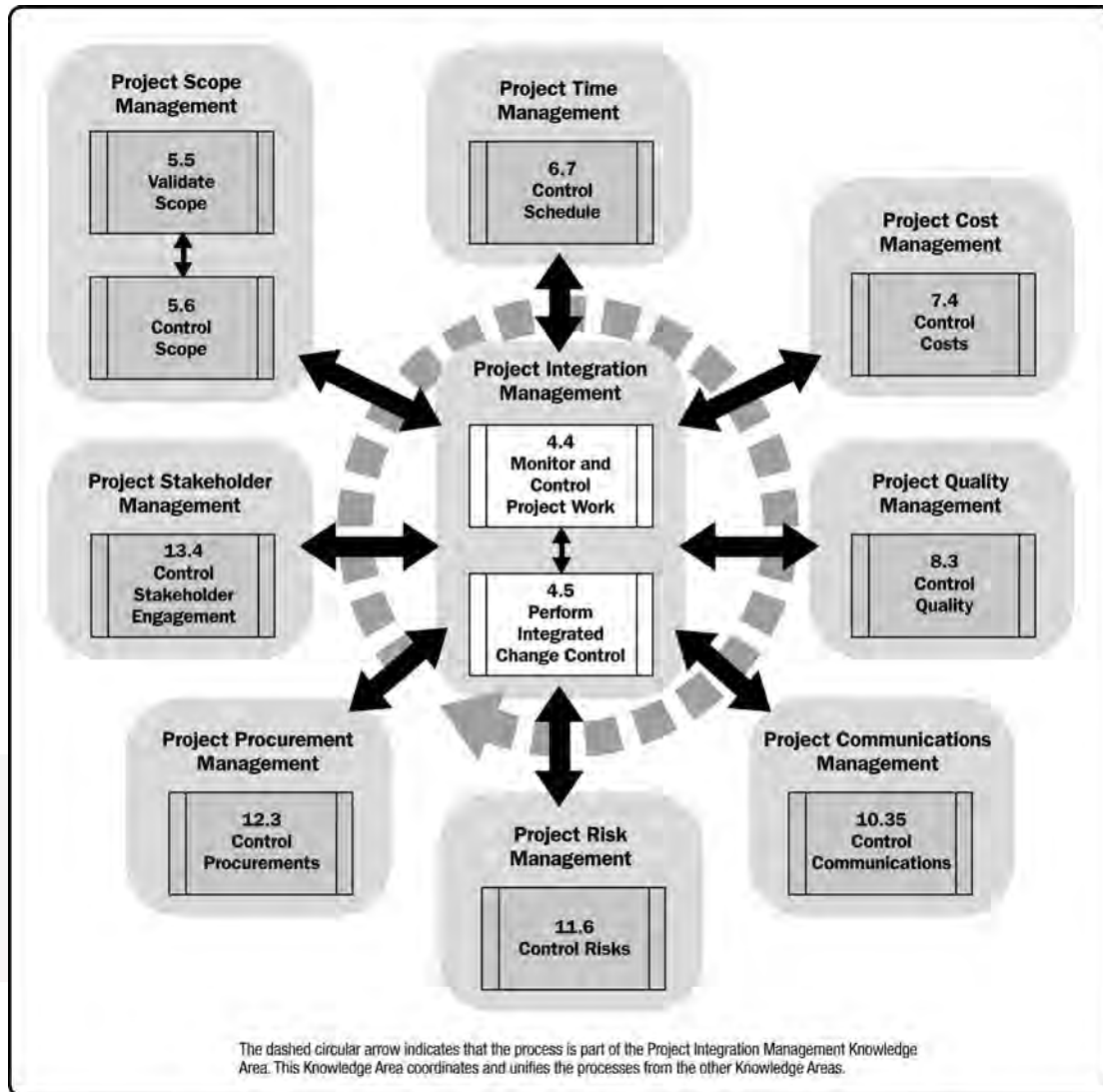


Figure A1-41. Monitoring and Controlling Process Group

A1.7.1 Monitor and Control Project Work

Monitor and Control Project Work is the process of tracking, reviewing, and reporting the progress to meet the performance objectives defined in the project management plan. The key benefit of this process is that it allows stakeholders to understand the current state of the project; the steps taken; and budget, schedule, and scope forecasts. The inputs and outputs for this process are depicted in Figure A1-42.

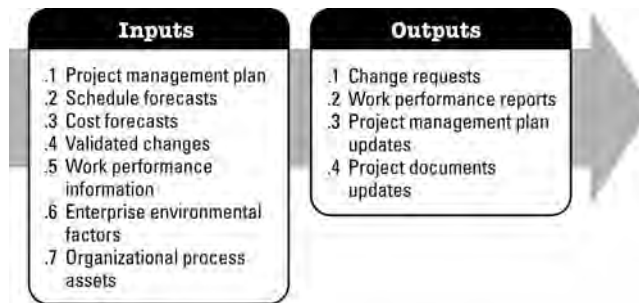


Figure A1-42. Monitor and Control Project Work: Inputs and Outputs

A1.7.2 Perform Integrated Change Control

Perform Integrated Change Control is the process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition. It reviews all requests for changes or modifications to project documents, deliverables, baselines or the project management plan, and approves or rejects the changes. The key benefit of this process is that it allows for documented changes within the project to be considered in an integrated fashion while reducing project risk, which often arises from changes made without consideration to the overall project objectives or plans. The inputs and outputs of this process are depicted in Figure A1-43.

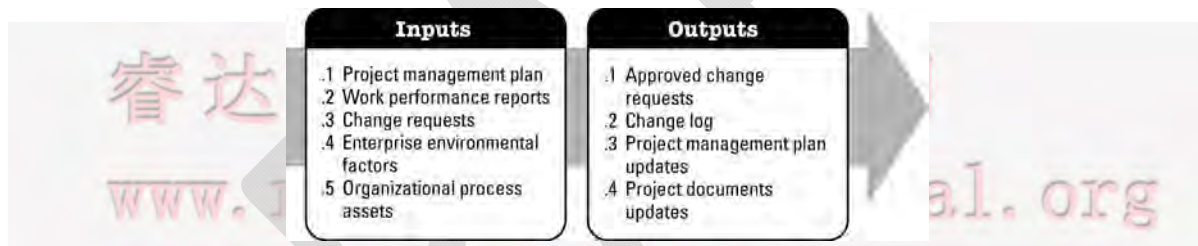


Figure A1-43. Perform Integrated Change Control: Inputs and Outputs

A1.7.3 Validate Scope

Validate Scope is the process of formalizing acceptance of the completed project deliverables. The key benefit of this process is that it brings objectivity to the acceptance process and increases the chance of final product, service, or result acceptance by validating each deliverable. The inputs and outputs of this process are depicted in Figure A1-44.

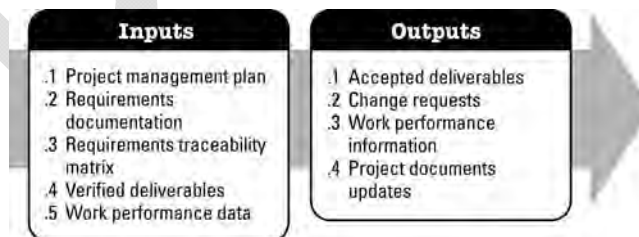


Figure A1-44. Validate Scope: Inputs and Outputs

A1.7.4 Control Scope

Control Scope is the process of monitoring the status of the project and product scope and managing changes to the scope baseline. The key benefit of this process is that it allows the

scope baseline to be maintained throughout the project. The inputs and outputs of this process are depicted in Figure A1-45.

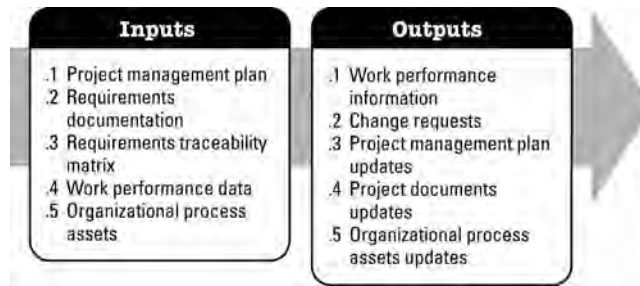


Figure A1-45. Control Scope: Inputs and Outputs

A1.7.5 Control Schedule

Control Schedule is the process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan. The key benefit of this process is that it provides the means to recognize deviation from the plan and take corrective and preventive actions and thus minimize risk. The inputs and outputs of this process are depicted in Figure A1-46.

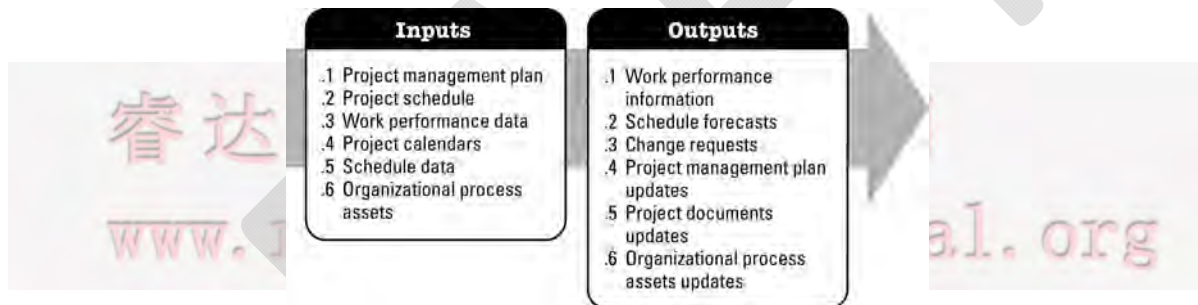


Figure A1-46. Control Schedule: Inputs and Outputs

A1.7.6 Control Costs

Control Costs is the process of monitoring the status of the project to update the project costs and managing changes to the cost baseline. The key benefit of this process is that it provides the means to recognize variance from the plan in order to take corrective action and minimize risk. The inputs and outputs of this process are depicted in Figure A1-47.

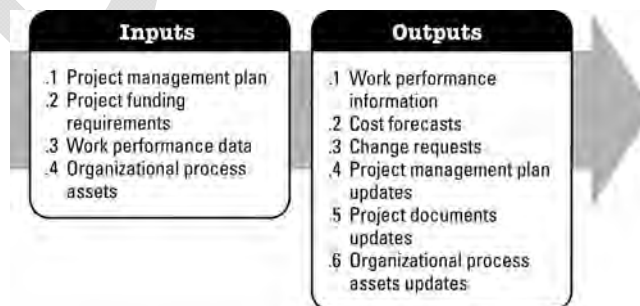


Figure A1-47. Control Costs: Inputs and Outputs

A1.7.7 Control Quality

Control Quality is the process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes. The key benefits of this process include: (1) identifying the causes of poor process or product quality and recommending and/or taking action to eliminate them; and (2) validating that project deliverables and work meet the requirements specified by key stakeholders necessary for final acceptance. The inputs and outputs of this process are depicted in Figure A1-48.

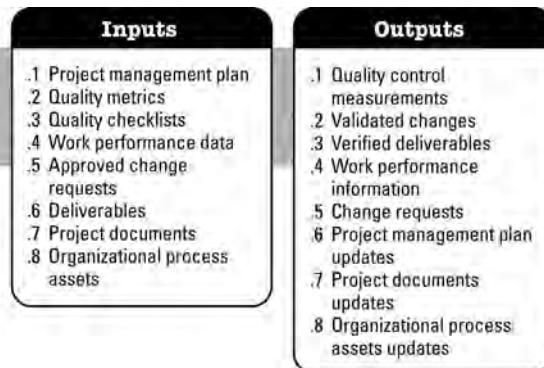


Figure A1-48. Control Quality: Inputs and Outputs

A1.7.8 Control Communications

Control Communications is the process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met. The key benefit of this process is that it ensures an optimal information flow among all communication participants at any moment in time. The inputs and outputs of this process are depicted in Figure A1-49.

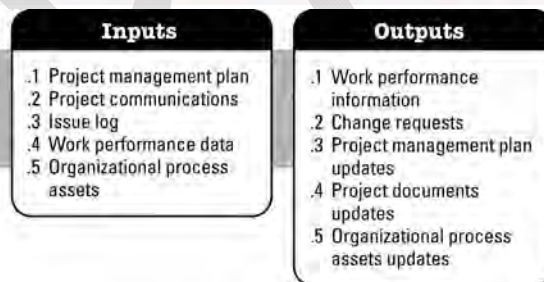


Figure A1-49. Control Communications: Inputs and Outputs

A1.7.9 Control Risks

Control Risks is the process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project. The key benefit of this process is that it improves efficiency of the risk approach throughout the project life cycle to continuously optimize risk responses. The inputs and outputs of this process are depicted in Figure A1-50.

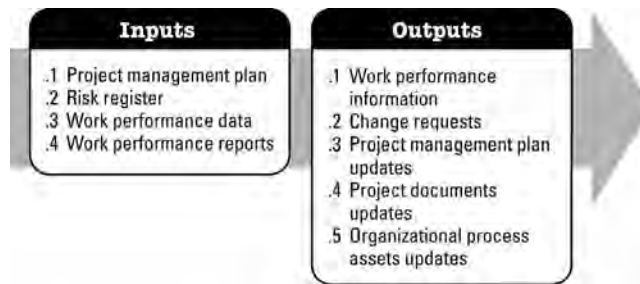


Figure A1-50. Control Risks: Inputs and Outputs

A1.7.10 Control Procurements

Control Procurements is the process of managing procurement relationships, monitoring contract performance, and making changes and corrections to contracts as appropriate. The key benefit of this process is that it ensures that both the seller's and buyer's performance meets procurement requirements according to the terms of the legal agreement. The inputs and outputs of this process are depicted in Figure A1-51.

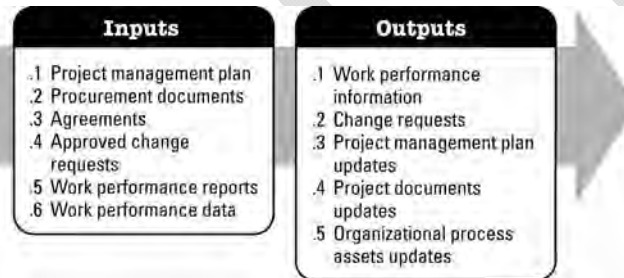


Figure A1-51. Control Procurements: Inputs and Outputs

A1.7.11 Control Stakeholder Engagement

Control Stakeholder Engagement is the process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders. The key benefit of this process is that it will maintain or increase the efficiency and effectiveness of stakeholder engagement activities as the project evolves and its environment changes. The inputs and outputs of this process are depicted in Figure A1-52.

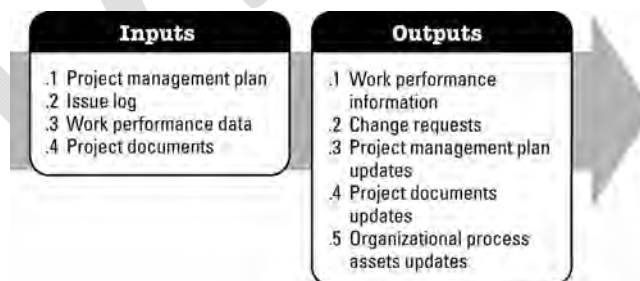


Figure A1-52. Control Stakeholder Engagement: Inputs and Outputs

A1.8 Closing Process Group

The Closing Process Group consists of those processes performed to conclude all activities across all Project Management Process Groups to formally complete the project, phase,

or contractual obligations. This Process Group, when completed, verifies that the defined processes are completed within all the Process Groups to close the project or a project phase, as appropriate, and formally establishes that the project or project phase is complete.

This Process Group also formally establishes the premature closure of the project. Prematurely closed projects may include, for example: aborted projects, cancelled projects, and projects in a critical situation. In specific cases, when some contracts cannot be formally closed (e.g. claims, ending clauses etc.) or some activities are to be transferred to other organizational units, specific hand over procedures may be arranged and finalized.

At project or phase closure, the following may occur:

- Obtain acceptance by the customer or sponsor to formally close the project or phase,
- Conduct post-project or phase-end review,
- Record impacts of tailoring to any process,
- Document lessons learned,
- Apply appropriate updates to organizational process assets,
- Archive all relevant project documents in the project management information system (PMIS) to be used as historical data,
- Close out all procurements activities ensuring termination of all relevant agreements, and
- Perform team members' assessment and release project resources.

The Closing Process Group (Figure A1-53) includes the following project management processes (See Sections A1.8.1 and A1.8.2):

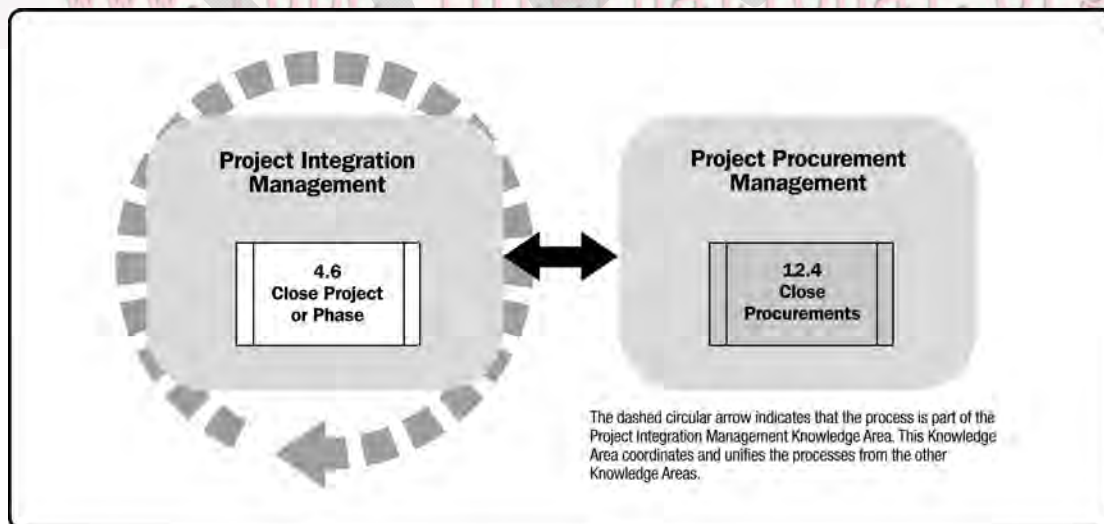


Figure A1-53. Closing Process Group

A1.8.1 Close Project or Phase

Close Project or Phase is the process of finalizing all activities across all of the Project Management Process Groups to formally complete the project or phase. The key benefit of this process is that it provides lessons learned, the formal ending of project work, and the release of

organization resources to pursue new endeavors. The inputs and outputs of this process are depicted in Figure A1-54.

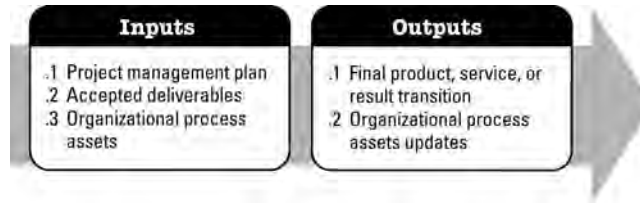


Figure A1-54. Close Project or Phase: Inputs and Outputs

A1.8.2 Close Procurements

Close Procurements is the process of completing each procurement. The key benefit of this process is that it documents agreements and related documentation for future reference. The inputs and outputs of this process are depicted in Figure A1-55.

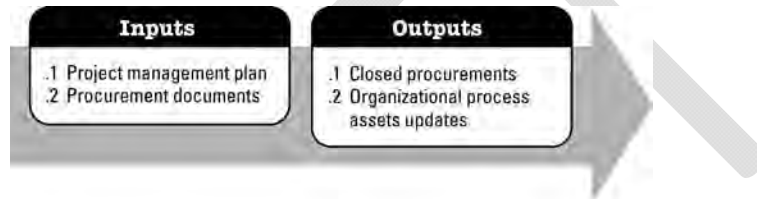


Figure A1-55. Close Procurements: Inputs and Outputs

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Glossary

Acceptance Criteria. A set of conditions that is required to be met before deliverables are accepted.

Accepted Deliverables. Products, results, or capabilities produced by a project and validated by the project customer or sponsors as meeting their specified acceptance criteria.

Accuracy. Within the quality management system, *accuracy* is an assessment of correctness.

Acquire Project Team. The process of confirming human resource availability and obtaining the team necessary to complete project activities.

Acquisition. Obtaining human and material resources necessary to perform project activities. Acquisition implies a cost of resources, and is not necessarily financial.

Activity. A distinct, scheduled portion of work performed during the course of a project.

Activity Attributes. Multiple attributes associated with each schedule activity that can be included within the activity list. Activity attributes include activity codes, predecessor activities, successor activities, logical relationships, leads and lags, resource requirements, imposed dates, constraints, and assumptions.

Activity Code. One or more numerical or text values that identify characteristics of the work or in some way categorize the schedule activity that allows filtering and ordering of activities within reports.

Activity Cost Estimates. The projected cost of the schedule activity that includes the cost for all resources required to perform and complete the activity, including all cost types and cost components.

Activity Duration. The time in calendar units between the start and finish of a schedule activity. See also *duration*.

Activity Duration Estimate. A quantitative assessment of the likely amount or outcome for the duration of an activity.

Activity Identifier. A short unique numeric or text identification assigned to each schedule activity to differentiate that project activity from other activities. Typically unique within any one project schedule network diagram.

Activity List. A documented tabulation of schedule activities that shows the activity description, activity identifier, and a sufficiently detailed scope of work description so project team members understand what work is to be performed.

Activity Network Diagrams. See *project schedule network diagram*.

Activity-on-Node (AON). See *precedence diagramming method (PDM)*.

Activity Resource Requirements. The types and quantities of resources required for each activity in a work package.

Actual Cost (AC). The realized cost incurred for the work performed on an activity during a specific time period.

Actual Duration. The time in calendar units between the actual start date of the schedule activity and either the data date of the project schedule if the schedule activity is in progress or the actual finish date if the schedule activity is complete.

Adaptive Life Cycle. A project life cycle, also known as change-driven or agile methods, that is intended to facilitate change and require a high degree of ongoing stakeholder involvement. Adaptive life cycles are also iterative and incremental, but differ in that iterations are very rapid (usually 2–4 weeks in length) and are fixed in time and resources.

Additional Quality Planning Tools. A set of tools used to define the quality requirements and to plan effective quality management activities. They include, but are not limited to: brainstorming, force field analysis, nominal group techniques and quality management and control tools.

Adjusting Leads and Lags. A technique used to find ways to bring project activities that are behind into alignment with plan during project execution.

Advertising. The process of calling public attention to a project or effort.

Affinity Diagram. A group creativity technique that allows large numbers of ideas to be classified into groups for review and analysis.

Agreements. Any document or communication that defines the initial intentions of a project. This can take the form of a contract, memorandum of understanding (MOU), letters of agreement, verbal agreements, email, etc.

Alternative Analysis. A technique used to evaluate identified options in order to select which options or approaches to use to execute and perform the work of the project.

Alternatives Generation. A technique used to develop as many potential options as possible in order to identify different approaches to execute and perform the work of the project.

Analogous Estimating. A technique for estimating the duration or cost of an activity or a project using historical data from a similar activity or project.

Analytical Techniques. Various techniques used to evaluate, analyze, or forecast potential outcomes based on possible variations of project or environmental variables and their relationships with other variables.

Application Area. A category of projects that have common components significant in such projects, but are not needed or present in all projects. Application areas are usually defined in terms of either the product (i.e., by similar technologies or production methods) or the type of customer (i.e., internal versus external, government versus commercial) or industry sector (i.e., utilities, automotive, aerospace, information technologies, etc.). Application areas can overlap.

Applying Leads and Lags. A technique that is used to adjust the amount of time between predecessor and successor activities.

Apportioned Effort. An activity where effort is allotted proportionately across certain discrete efforts and not divisible into discrete efforts. [Note: Apportioned effort is one of three earned value management (EVM) types of activities used to measure work performance.]

Approved Change Request. A change request that has been processed through the integrated change control process and approved.

Approved Change Requests Review. A review of the change requests to verify that these were implemented as approved.

Assumption. A factor in the planning process that is considered to be true, real, or certain, without proof or demonstration.

Assumptions Analysis. A technique that explores the accuracy of assumptions and identifies risks to the project from inaccuracy, inconsistency, or incompleteness of assumptions.

Attribute Sampling. Method of measuring quality that consists of noting the presence (or absence) of some characteristic (attribute) in each of the units under consideration. After each unit is inspected, the decision is made to accept a lot, reject it, or inspect another unit.

Authority. The right to apply project resources, expend funds, make decisions, or give approvals.

Backlog. A listing of product requirements and deliverables to be completed, written as stories, and prioritized by the business to manage and organize the project's work.

Backward Pass. A critical path method technique for calculating the late start and late finish dates by working backward through the schedule model from the project end date.

Bar Chart. A graphic display of schedule-related information. In the typical bar chart, schedule activities or work breakdown structure components are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars. See also *Gantt chart*.

Baseline. The approved version of a work product that can be changed only through formal change control procedures and is used as a basis for comparison.

Basis of Estimates. Supporting documentation outlining the details used in establishing project estimates such as assumptions, constraints, level of detail, ranges, and confidence levels.

Benchmarking. Benchmarking is the comparison of actual or planned practices, such as processes and operations, to those of comparable organizations to identify best practices, generate ideas for improvement, and provide a basis for measuring performance.

Bidder Conference. The meetings with prospective sellers prior to the preparation of a bid or proposal to ensure all prospective vendors have a clear and common understanding of the procurement. Also known as contractor conferences, vendor conferences, or pre-bid conferences.

Bottom-Up Estimating. A method of estimating project duration or cost by aggregating the estimates of the lower-level components of the work breakdown structure (WBS).

Brainstorming. A general data gathering and creativity technique that can be used to identify risks, ideas, or solutions to issues by using a group of team members or subject matter experts.

Budget. The approved estimate for the project or any work breakdown structure component or any schedule activity.

Budget at Completion (BAC). The sum of all budgets established for the work to be performed.

Buffer. See *reserve*.

Business Case. A documented economic feasibility study used to establish validity of the benefits of a selected component lacking sufficient definition and that is used as a basis for the authorization of further project management activities.

Business Value. A concept that is unique to each organization and includes tangible and intangible elements. Through the effective use of project, program, and portfolio management disciplines, organizations will possess the ability to employ reliable, established processes to meet enterprise objectives and obtain greater business value from their investments.

Buyer. The acquirer of products, services, or results for an organization.

Cause and Effect Diagram. A decomposition technique that helps trace an undesirable effect back to its root cause.

Central Tendency. A property of the central limit theorem predicting that the data observations in a distribution will tend to group around a central location. The three typical measures of central tendency are the mean, median, and mode.

Change Control. A process whereby modifications to documents, deliverables, or baselines associated with the project are identified, documented, approved, or rejected.

Change Control Board (CCB). A formally chartered group responsible for reviewing, evaluating, approving, delaying, or rejecting changes to the project, and for recording and communicating such decisions.

Change Control System. A set of procedures that describes how modifications to the project deliverables and documentation are managed and controlled.

Change Control Tools. Manual or automated tools to assist with change and/or configuration management. At a minimum, the tools should support the activities of the CCB.

Change Log. A comprehensive list of changes made during the project. This typically includes dates of the change and impacts in terms of time, cost, and risk.

Change Request. A formal proposal to modify any document, deliverable, or baseline.

Charter. See *project charter*.

Checklist Analysis. A technique for systematically reviewing materials using a list for accuracy and completeness.

Checksheets. A tally sheet that can be used as a checklist when gathering data.

Claim. A request, demand, or assertion of rights by a seller against a buyer, or vice versa, for consideration, compensation, or payment under the terms of a legally binding contract, such as for a disputed change.

Claims Administration. The process of processing, adjudicating, and communicating contract claims.

Close Procurements. The process of completing each project procurement.

Close Project or Phase. The process of finalizing all activities across all of the Project Management Process Groups to formally complete a project or phase.

Closed Procurements. Project contracts or other procurement agreements that have been formally acknowledged by the proper authorizing agent as being finalized and signed off.

Closing Process Group. Those processes performed to finalize all activities across all Process Groups to formally close a project or phase.

Code of Accounts. A numbering system used to uniquely identify each component of the work breakdown structure (WBS).

Collect Requirements. The process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.

Colocation. An organizational placement strategy where the project team members are physically located close to one another in order to improve communication, working relationships, and productivity.

Communication Constraints. Restrictions on the content, timing, audience, or individual who will deliver a communication usually stemming from specific legislation or regulation, technology, or organizational policies.

Communication Methods. A systematic procedure, technique, or process used to transfer information among project stakeholders.

Communication Models. A description, analogy or schematic used to represent how the communication process will be performed for the project.

Communication Requirements Analysis. An analytical technique to determine the information needs of the project stakeholders through interviews, workshops, study of lessons learned from previous projects, etc.

Communication Technology. Specific tools, systems, computer programs, etc., used to transfer information among project stakeholders.

Communications Management Plan. A component of the project, program, or portfolio management plan that describes how, when, and by whom information about the project will be administered and disseminated.

Compliance. A general concept of conforming to a rule, standard, law, or requirement such that the assessment of compliance results in a binomial result stated as “compliant” or “noncompliant.”

Conduct Procurements. The process of obtaining seller responses, selecting a seller, and awarding a contract.

Configuration Management System. A subsystem of the overall project management system. It is a collection of formal documented procedures used to apply technical and administrative direction and surveillance to: identify and document the functional and physical characteristics of a product, result, service, or component; control any changes to such characteristics; record and report each change and its implementation status; and support the audit of the products, results, or components to verify conformance to requirements. It includes the documentation, tracking systems, and defined approval levels necessary for authorizing and controlling changes.

Conflict Management. Handling, controlling, and guiding a conflictual situation to achieve a resolution.

Conformance. Within the quality management system, conformance is a general concept of delivering results that fall within the limits that define acceptable variation for a quality requirement.

Conformance Work. In the cost of quality framework, conformance work is done to compensate for imperfections that prevent organizations from completing planned activities correctly as essential first-time work. Conformance work consists of actions that are related to prevention and inspection.

Constraint. A limiting factor that affects the execution of a project, program, portfolio, or process.

Context Diagrams. A visual depiction of the product scope showing a business system (process, equipment, computer system, etc.), and how people and other systems (actors) interact with it.

Contingency. An event or occurrence that could affect the execution of the project that may be accounted for with a reserve.

Contingency Allowance. See *reserve*.

Contingency Reserve. Budget within the cost baseline or performance measurement baseline that is allocated for identified risks that are accepted and for which contingent or mitigating responses are developed.

Contingent Response Strategies. Responses provided which may be used in the event that a specific trigger occurs.

Contract. A contract is a mutually binding agreement that obligates the seller to provide the specified product or service or result and obligates the buyer to pay for it.

Contract Change Control System. The system used to collect, track, adjudicate, and communicate changes to a contract.

Control. Comparing actual performance with planned performance, analyzing variances, assessing trends to effect process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.

Control Account. A management control point where scope, budget, actual cost, and schedule are integrated and compared to earned value for performance measurement.

Control Chart. A graphic display of process data over time and against established control limits, which has a centerline that assists in detecting a trend of plotted values toward either control limit.

Control Communications. The process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.

Control Costs. The process of monitoring the status of the project to update the project costs and managing changes to the cost baseline.

Control Limits. The area composed of three standard deviations on either side of the centerline or mean of a normal distribution of data plotted on a control chart, which reflects the expected variation in the data. See also *specification limits*.

Control Procurements. The process of managing procurement relationships, monitoring contract performance, and making changes and corrections as appropriate.

Control Quality. The process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

Control Risks. The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.

Control Schedule. The process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.

Control Scope. The process of monitoring the status of the project and product scope and managing changes to the scope baseline.

Control Stakeholder Engagement. The process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders.

Corrective Action. An intentional activity that realigns the performance of the project work with the project management plan.

Cost Aggregation. Summing the lower-level cost estimates associated with the various work packages for a given level within the project's WBS or for a given cost control account.

Cost Baseline. The approved version of the time-phased project budget, excluding any management reserves, which can be changed only through formal change control procedures and is used as a basis for comparison to actual results.

Cost Management Plan. A component of a project or program management plan that describes how costs will be planned, structured, and controlled.

Cost of Quality. A method of determining the costs incurred to ensure quality. Prevention and appraisal costs (cost of conformance) include costs for quality planning, quality control (QC), and quality assurance to ensure compliance to requirements (i.e., training, QC systems, etc.). Failure costs (cost of nonconformance) include costs to rework products, components, or processes that are non-compliant, costs of warranty work and waste, and loss of reputation.

Cost Performance Index (CPI). A measure of the cost efficiency of budgeted resources expressed as the ratio of earned value to actual cost.

Cost Plus Award Fee Contracts (CPAF). A category of contract that involves payments to the seller for all legitimate actual costs incurred for completed work, plus an award fee representing seller profit.

Cost Plus Fixed Fee Contract (CPFF). A type of cost-reimbursable contract where the buyer reimburses the seller for the seller's allowable costs (allowable costs are defined by the contract) plus a fixed amount of profit (fee).

Cost Plus Incentive Fee Contract (CPIF). A type of cost-reimbursable contract where the buyer reimburses the seller for the seller's allowable costs (allowable costs are defined by the contract), and the seller earns its profit if it meets defined performance criteria.

Cost Variance (CV). The amount of budget deficit or surplus at a given point in time, expressed as the difference between the earned value and the actual cost.

Cost-Benefit Analysis. A financial analysis tool used to determine the benefits provided by a project against its costs.

Cost-Reimbursable Contract. A type of contract involving payment to the seller for the seller's actual costs, plus a fee typically representing seller's profit. Cost-reimbursable contracts often include incentive clauses where, if the seller meets or exceeds selected project objectives, such as schedule targets or total cost, then the seller receives from the buyer an incentive or bonus payment.

Crashing. A technique used to shorten the schedule duration for the least incremental cost by adding resources.

Create WBS. The process of subdividing project deliverables and project work into smaller, more manageable components.

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

Critical Chain Method. A schedule method that allows the project team to place buffers on any project schedule path to account for limited resources and project uncertainties.

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

Critical Path Activity. Any activity on the critical path in a project schedule.

Critical Path Method. A method used to estimate the minimum project duration and determine the amount of scheduling flexibility on the logical network paths within the schedule model.

Customer. Customer is the person(s) or organization(s) that will pay for the project's product, service, or result. Customers can be internal or external to the performing organization.

Customer Satisfaction. Within the quality management system, a state of fulfillment in which the needs of a customer are met or exceeded for the customer's expected experiences as assessed by the customer at the moment of evaluation.

Data Date. A point in time when the status of the project is recorded.

Data Gathering and Representation Techniques. Projects to collect, organize, and present data and information.

Decision Tree Analysis. A diagramming and calculation technique for evaluating the implications of a chain of multiple options in the presence of uncertainty.

Decomposition. A technique used for dividing and subdividing the project scope and project deliverables into smaller, more manageable parts.

Defect. An imperfection or deficiency in a project component where that component does not meet its requirements or specifications and needs to be either repaired or replaced.

Defect Repair. An intentional activity to modify a nonconforming product or product component.

Define Activities. The process of identifying and documenting the specific actions to be performed to produce the project deliverables.

Define Scope. The process of developing a detailed description of the project and product.

Deliverable. Any unique and verifiable product, result, or capability to perform a service that must be produced to complete a process, phase, or project.

Delphi Technique. An information gathering technique used as a way to reach a consensus of experts on a subject. Experts on the subject participate in this technique anonymously. A facilitator uses a questionnaire to solicit ideas about the important project points related to the subject. The responses are summarized and are then recirculated to the experts for further comment. Consensus may be reached in a few rounds of this process. The Delphi technique helps reduce bias in the data and keeps any one person from having undue influence on the outcome.

Dependency. See *logical relationship*.

Dependency Determination. A technique used to identify the type of dependency that is used to create the logical relationships between predecessor and successor activities.

Design of Experiments. A statistical method for identifying which factors may influence specific variables of a product or process under development or in production.

Determine Budget. The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

Develop Project Charter. 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.

Develop Project Management Plan. The process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan.

Develop Project Team. The process of improving competencies, team member interaction, and overall team environment to enhance project performance.

Develop Schedule. The process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.

Diagramming Techniques. Approaches to presenting information with logical linkages that aid in understanding.

Dictatorship. A group decision-making technique in which one individual makes the decision for the group.

Direct and Manage Project Work. The process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.

Discrete Effort. An activity that can be planned and measured and that yields a specific output. [Note: Discrete effort is one of three earned value management (EVM) types of activities used to measure work performance.]

Discretionary Dependency. A relationship that is established based on knowledge of best practices within a particular application area or an aspect of the project where a specific sequence is desired.

Document Analysis. An elicitation technique that analyzes existing documentation and identifies information relevant to the requirements.

Documentation Reviews. The process of gathering a corpus of information and reviewing it to determine accuracy and completeness.

Duration (DU or DUR). The total number of work periods (not including holidays or other nonworking periods) required to complete a schedule activity or work breakdown structure component. Usually expressed as workdays or workweeks. Sometimes incorrectly equated with elapsed time. Contrast with *effort*.

Early Finish Date (EF). In the critical path method, the earliest possible point in time when the uncompleted portions of a schedule activity can finish based on the schedule network logic, the data date, and any schedule constraints.

Early Start Date (ES). In the critical path method, the earliest possible point in time when the uncompleted portions of a schedule activity can start based on the schedule network logic, the data date, and any schedule constraints.

Earned Value (EV). The measure of work performed expressed in terms of the budget authorized for that work.

Earned Value Management. A methodology that combines scope, schedule, and resource measurements to assess project performance and progress.

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

Emotional Intelligence . The capability to identify, assess, and manage the personal emotions of oneself and other people, as well as the collective emotions of groups of people.

Enterprise Environmental Factors. Conditions, not under the immediate control of the team, that influence, constrain, or direct the project, program, or portfolio.

Estimate. A quantitative assessment of the likely amount or outcome. Usually applied to project costs, resources, effort, and durations and is usually preceded by a modifier (i.e., preliminary, conceptual, feasibility, order-of-magnitude, definitive). It should always include some indication of accuracy (e.g., $\pm x$ percent). See also *budget* and *cost*.

Estimate Activity Durations. The process of estimating the number of work periods needed to complete individual activities with estimated resources.

Estimate Activity Resources. The process of estimating the type and quantities of material, human resources, equipment, or supplies required to perform each activity.

Estimate at Completion (EAC). The expected total cost of completing all work expressed as the sum of the actual cost to date and the estimate to complete.

Estimate Costs. The process of developing an approximation of the monetary resources needed to complete project activities.

Estimate to Complete (ETC). The expected cost to finish all the remaining project work.

Execute. Directing, managing, performing, and accomplishing the project work; providing the deliverables; and providing work performance information.

Executing Process Group. Those processes performed to complete the work defined in the project management plan to satisfy the project specifications.

Expected Monetary Value (EMV) Analysis. A statistical technique that calculates the average outcome when the future includes scenarios that may or may not happen. A common use of this technique is within decision tree analysis.

Expert Judgment. Judgment provided based upon expertise in an application area, knowledge area, discipline, industry, etc., as appropriate for the activity being performed. Such expertise may be provided by any group or person with specialized education, knowledge, skill, experience, or training.

External Dependency. A relationship between project activities and non-project activities.

Facilitated Workshops. An elicitation technique using focused sessions that bring key cross-functional stakeholders together to define product requirements.

Failure Mode and Effect Analysis (FMEA). An analytical procedure in which each potential failure mode in every component of a product is analyzed to determine its effect on the reliability of that component and, by itself or in combination with other possible failure modes, on the reliability of the product or system and on the required function of the component; or the examination of a product (at the system and/or lower levels) for all ways that a failure may occur. For each potential failure, an estimate is made of its effect on the total system and of its impact. In addition, a review is undertaken of the action planned to minimize the probability of failure and to minimize its effects.

Fallback Plan. Fallback plans include an alternative set of actions and tasks available in the event that the primary plan needs to be abandoned because of issues, risks, or other causes.

Fast Tracking. A schedule compression technique in which activities or phases normally done in sequence are performed in parallel for at least a portion of their duration.

Fee. Represents profit as a component of compensation to a seller.

Finish Date. A point in time associated with a schedule activity's completion. Usually qualified by one of the following: actual, planned, estimated, scheduled, early, late, baseline, target, or current.

Finish-to-Finish (FF). A logical relationship in which a successor activity cannot finish until a predecessor activity has finished.

Finish-to-Start (FS). A logical relationship in which a successor activity cannot start until a predecessor activity has finished.

Firm-Fixed-Price Contract (FFP). A type of fixed price contract where the buyer pays the seller a set amount (as defined by the contract), regardless of the seller's costs.

Fishbone diagram. See *Cause and Effect Diagram*.

Fixed Formula Method. An earned value method for assigning a specified percentage of budget value for a work package to the start milestone of the work package with the remaining budget value percentage assigned when the work package is complete.

Fixed Price Incentive Fee Contract (FPIF). A type of contract where the buyer pays the seller a set amount (as defined by the contract), and the seller can earn an additional amount if the seller meets defined performance criteria.

Fixed Price with Economic Price Adjustment Contracts (FP-EPA). A fixed-price contract, but with a special provision allowing for predefined final adjustments to the contract price due to changed conditions, such as inflation changes, or cost increases (or decreases) for specific commodities.

Fixed-Price Contracts. An agreement that sets the fee that will be paid for a defined scoped of work regardless of the cost or effort to deliver it.

Float. Also called slack. See *total float* and *free float*.

Flowchart. The depiction in a diagram format of the inputs, process actions, and outputs of one or more processes within a system.

Focus Groups. An elicitation technique that brings together prequalified stakeholders and subject matter experts to learn about their expectations and attitudes about a proposed product, service, or result.

Forecast. An estimate or prediction of conditions and events in the project's future based on information and knowledge available at the time of the forecast. The information is based on the project's past performance and expected future performance, and includes information that could impact the project in the future, such as estimate at completion and estimate to complete.

Forward Pass. A critical path method technique for calculating the early start and early finish dates by working forward through the schedule model from the project start date or a given point in time.

Free Float. The amount of time that a schedule activity can be delayed without delaying the early start date of any successor or violating a schedule constraint.

Functional Manager. Someone with managerial authority over an organizational unit within a functional organization. The manager of any group that actually makes a product or performs a service. Sometimes called a line manager.

Functional Organization. A hierarchical organization where each employee has one clear superior, and staff are grouped by areas of specialization and managed by a person with expertise in that area.

Funding Limit Reconciliation. The process of comparing the planned expenditure of project funds against any limits on the commitment of funds for the project to identify any variances between the funding limits and the planned expenditures.

Gantt Chart. A bar chart of schedule information where activities are listed on the vertical axis, dates are shown on the horizontal axis, and activity durations are shown as horizontal bars placed according to start and finish dates.

Grade. A category or rank used to distinguish items that have the same functional use (e.g., "hammer") but do not share the same requirements for quality (e.g., different hammers may need to withstand different amounts of force).

Ground Rules. Expectations regarding acceptable behavior by project team members.

Group Creativity Techniques. Techniques that are used to generate ideas within a group of stakeholders.

Group Decision-Making Techniques. Technique to assess multiple alternatives that will be used to generate, classify, and prioritize product requirements.

Guideline. An official recommendation or advice that indicates policies, standards, or procedures for how something should be accomplished.

Hammock Activity. See *summary activity*.

Hard Logic. See *mandatory dependency*.

Histogram. A special form of bar chart used to describe the central tendency, dispersion, and shape of a statistical distribution.

Historical Information. Documents and data on prior projects including project files, records, correspondence, closed contracts, and closed projects.

Human Resource Management Plan. A component of the project management plan that describes how the roles and responsibilities, reporting relationships, and staff management will be addressed and structured.

Idea/Mind Mapping. Technique used to consolidate ideas created through individual brainstorming sessions into a single map to reflect commonality and differences in understanding and to generate new ideas.

Identify Risks. The process of determining which risks may affect the project and documenting their characteristics.

Identify Stakeholders. The process of identifying the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.

Imposed Date. A fixed date imposed on a schedule activity or schedule milestone, usually in the form of a “start no earlier than” and “finish no later than” date.

Incentive Fee. A set of financial incentives related to cost, schedule, or technical performance of the seller.

Incremental Life Cycle. A project life cycle where the project scope is generally determined early in the project life cycle, but time and cost estimates are routinely modified as the project team’s understanding of the product increases. Iterations develop the product through a series of repeated cycles, while increments successively add to the functionality of the product.

Independent Estimates. A process of using a third party to obtain and analyze information to support prediction of cost, schedule, or other items.

Influence Diagram. A graphical representation of situations showing causal influences, time ordering of events, and other relationships among variables and outcomes.

Information Gathering Techniques. Repeatable processes used to assemble and organize data across a spectrum of sources.

Information Management Systems. Facilities, processes, and procedures used to collect, store, and distribute information between producers and consumers of information in physical or electronic format.

Initiating Process Group. Those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.

Input. Any item, whether internal or external to the project that is required by a process before that process proceeds. May be an output from a predecessor process.

Inspection. Examining or measuring to verify whether an activity, component, product, result, or service conforms to specified requirements.

Inspections and Audits. A process to observe performance of contracted work or a promised product against agreed-upon requirements.

Interpersonal Skills. Ability to establish and maintain relationships with other people.

Interrelationship Digraphs. A quality management planning tool, the interrelationship digraphs provide a process for creative problem-solving in moderately complex scenarios that possess intertwined logical relationships.

Interviews. A formal or informal approach to elicit information from stakeholders by talking to them directly.

Invitation for Bid (IFB). Generally, this term is equivalent to request for proposal. However, in some application areas, it may have a narrower or more specific meaning.

Issue. A point or matter in question or in dispute, or a point or matter that is not settled and is under discussion or over which there are opposing views or disagreements.

Issue Log. A project document used to document and monitor elements under discussion or in dispute between project stakeholders.

Iterative Life Cycle. A project life cycle where the project scope is generally determined early in the project lifecycle, but time and cost estimates are routinely modified as the project team understanding of the product increases. Iterations develop the product through a series of repeated cycles, while increments successively add to the functionality of the product.

Lag. The amount of time whereby a successor activity is required to be delayed with respect to a predecessor activity.

Late Finish Date (LF). In the critical path method, the latest possible point in time when the uncompleted portions of a schedule activity can finish based on the schedule network logic, the project completion date, and any schedule constraints.

Late Start Date (LS). In the critical path method, the latest possible point in time when the uncompleted portions of a schedule activity can start based on the schedule network logic, the project completion date, and any schedule constraints.

Lead. The amount of time whereby a successor activity can be advanced with respect to a predecessor activity.

Lessons Learned. The knowledge gained during a project which shows how project events were addressed or should be addressed in the future with the purpose of improving future performance.

Lessons Learned Knowledge Base. A store of historical information and lessons learned about both the outcomes of previous project selection decisions and previous project performance.

Level of Effort (LOE). An activity that does not produce definitive end products and is measured by the passage of time. [Note: Level of effort is one of three earned valued management (EVM) types of activities used to measure work performance.]

Leveling. See *resource leveling*.

Life Cycle. See *project life cycle*.

Log. A document used to record and describe or denote selected items identified during execution of a process or activity. Usually used with a modifier, such as issue, quality control, action, or defect.

Logical Relationship. A dependency between two activities, or between an activity and a milestone.

Majority. Support from more than 50 percent of the members of the group.

Make-or-Buy Analysis. The process of gathering and organizing data about product requirements and analyzing them against available alternatives including the purchase or internal manufacture of the product.

Make-or-Buy Decisions. Decisions made regarding the external purchase or internal manufacture of a product.

Manage Communications. The process of creating, collecting, distributing, storing, retrieving, and the ultimate disposition of project information in accordance with the communications management plan.

Manage Project Team. The process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance.

Manage Stakeholder Engagement. The process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle.

Management Reserve. An amount of the project budget withheld for management control purposes. These are budgets reserved for unforeseen work that is within scope of the project. The management reserve is not included in the performance measurement baseline (PMB).

Management Skills. The ability to plan, organize, direct, and control individuals or groups of people to achieve specific goals.

Mandatory Dependency. A relationship that is contractually required or inherent in the nature of the work.

Market Research. The process of gathering information at conferences, online reviews, and a variety of sources to identify market capabilities.

Master Schedule. A summary-level project schedule that identifies the major deliverables and work breakdown structure components and key schedule milestones. See also *milestone schedule*.

Material. The aggregate of things used by an organization in any undertaking, such as equipment, apparatus, tools, machinery, gear, material, and supplies.

Matrix Diagrams. A quality management and control tool used to perform data analysis within the organizational structure created in the matrix. The matrix diagram seeks to show the strength of relationships between factors, causes, and objectives that exist between the rows and columns that form the matrix.

Matrix Organization. Any organizational structure in which the project manager shares responsibility with the functional managers for assigning priorities and for directing the work of persons assigned to the project.

Methodology. A system of practices, techniques, procedures, and rules used by those who work in a discipline.

Milestone. A significant point or event in a project, program, or portfolio.

Milestone List. A list identifying all project milestones and normally indicates whether the milestone is mandatory or optional.

Milestone Schedule. A summary-level schedule that identifies the major schedule milestones. See also *master schedule*.

Monitor. Collect project performance data with respect to a plan, produce performance measures, and report and disseminate performance information.

Monitor and Control Project Work. The process of tracking, reviewing, and reporting the progress to meet the performance objectives defined in the project management plan.

Monitoring and Controlling Process Group. Those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Monte Carlo Analysis. A technique that computes or iterates the project cost or project schedule many times using input values selected at random from probability distributions of possible costs or durations, to calculate a distribution of possible total project cost or completion dates.

Monte Carlo Simulation. A process which generates hundreds or thousands of probable performance outcomes based on probability distributions for cost and schedule on individual tasks. The outcomes are then used to generate a probability distribution for the project as a whole.

Most Likely Duration. An estimate of the most probable activity duration that takes into account all of the known variables that could affect performance.

Multi-Criteria Decision Analysis. This technique utilizes a decision matrix to provide a systematic analytical approach for establishing criteria, such as risk levels, uncertainty, and valuation, to evaluate and rank many ideas.

Near-Critical Activity. A schedule activity that has low total float. The concept of near-critical is equally applicable to a schedule activity or schedule network path. The limit below which total float is considered near critical is subject to expert judgment and varies from project to project.

Negotiated Settlements. The process of reaching final equitable settlement of all outstanding issues, claims, and disputes through negotiation.

Negotiation. The process and activities to resolving disputes through consultations between involved parties.

Network. See *project schedule network diagram*.

Network Analysis. See *schedule network analysis*.

Network Logic. The collection of schedule activity dependencies that makes up a project schedule network diagram.

Network Path. Any continuous series of schedule activities connected with logical relationships in a project schedule network diagram.

Networking. Establishing connections and relationships with other people from the same or other organizations.

Node. One of the defining points of a schedule network; a junction point joined to some or all of the other dependency lines.

Nominal Group Technique. A technique that enhances brainstorming with a voting process used to rank the most useful ideas for further brainstorming or for prioritization.

Nonconformance Work. In the cost of quality framework, non-conformance work is done to deal with the consequences of errors and failures in doing activities correctly on the first attempt. In efficient quality management systems, the amount of non-conformance work will approach zero.

Objective. Something toward which work is to be directed, a strategic position to be attained, a purpose to be achieved, a result to be obtained, a product to be produced, or a service to be performed.

Observations. A technique that provides a direct way of viewing individuals in their environment performing their jobs or tasks and carrying out processes.

Opportunity. A risk that would have a positive effect on one or more project objectives.

Optimistic Duration. An estimate of the shortest activity duration that takes into account all of the known variables that could affect performance.

Organizational Breakdown Structure (OBS). A hierarchical representation of the project organization that illustrates the relationship between project activities and the organizational units that will perform those activities.

Organizational Process Assets. Plans, processes, policies, procedures, and knowledge bases that are specific to and used by the performing organization.

Organizational Project Management Maturity. The level of an organization's ability to deliver the desired strategic outcomes in a predictable, controllable, and reliable manner.

Output. A product, result, or service generated by a process. May be an input to a successor process.

Parametric Estimating. An estimating technique in which an algorithm is used to calculate cost or duration based on historical data and project parameters.

Pareto Diagram. A histogram, ordered by frequency of occurrence, that shows how many results were generated by each identified cause.

Path Convergence. A relationship in which a schedule activity has more than one predecessor.

Path Divergence. A relationship in which a schedule activity has more than one successor.

Payment Systems. The system used to provide and track supplier's invoices and payments for services and products.

Percent Complete. An estimate expressed as a percent of the amount of work that has been completed on an activity or a work breakdown structure component.

Perform Integrated Change Control. The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition.

Perform Qualitative Risk Analysis. The process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.

Perform Quality Assurance. The process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used.

Perform Quantitative Risk Analysis. The process of numerically analyzing the effect of identified risks on overall project objectives.

Performance Measurement Baseline. An approved, integrated scope-schedule-cost plan for the project work against which project execution is compared to measure and manage performance. The PMB includes contingency reserve, but excludes management reserve.

Performance Reporting. See *work performance reports*.

Performance Reports. See *work performance reports*.

Performance Reviews. A technique that is used to measure, compare, and analyze actual performance of work in progress on the project against the baseline.

Performing Organization. An enterprise whose personnel are most directly involved in doing the work of the project or program.

Pessimistic Duration. Estimate of the longest activity duration that takes into account all of the known variables that could affect performance.

Phase. See *project phase*.

Phase Gate. A review at the end of a phase in which a decision is made to continue to the next phase, to continue with modification, or to end a project or program.

Plan Communications Management. The process of developing an appropriate approach and plan for project communications based on stakeholder's information needs and requirements and available organizational assets.

Plan Cost Management. The process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs.

Plan Human Resource Management. The process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan.

Plan Procurement Management. The process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.

Plan Quality Management. The process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements.

Plan Risk Management. The process of defining how to conduct risk management activities for a project.

Plan Risk Responses. The process of developing options and actions to enhance opportunities and to reduce threats to project objectives.

Plan Schedule Management. The process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.

Plan Scope Management. The process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled.

Plan Stakeholder Management. The process of developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests, and potential impact on project success.

Planned Value (PV). The authorized budget assigned to scheduled work.

Planning Package. A work breakdown structure component below the control account with known work content but without detailed schedule activities. See also *control account*.

Planning Process Group. Those processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.

Plurality. Decisions made by the largest block in a group, even if a majority is not achieved.

Policy. A structured pattern of actions adopted by an organization such that the organization's policy can be explained as a set of basic principles that govern the organization's conduct.

Portfolio. Projects, programs, subportfolios, and operations managed as a group to achieve strategic objectives.

Portfolio Management. The centralized management of one or more portfolios to achieve strategic objectives.

Practice. A specific type of professional or management activity that contributes to the execution of a process and that may employ one or more techniques and tools.

Precedence Diagramming Method (PDM). A technique used for constructing a schedule model in which activities are represented by nodes and are graphically linked by one or more logical relationships to show the sequence in which the activities are to be performed.

Precedence Relationship. The term used in the precedence diagramming method for a logical relationship. In current usage, however, precedence relationship, logical relationship, and dependency are widely used interchangeably, regardless of the diagramming method used. See also *logical relationship*.

Precision. Within the quality management system, *precision* is a measure of exactness.

Predecessor Activity. An activity that logically comes before a dependent activity in a schedule.

Predictive Life Cycle. A form of project life cycle in which the project scope, and the time and cost required to deliver that scope, are determined as early in the life cycle as possible.

Preferential Logic. See *discretionary dependency*.

Preferred Logic. See *discretionary dependency*.

Preventive Action. An intentional activity that ensures the future performance of the project work is aligned with the project management plan.

Prioritization Matrices. A quality management planning tool used to identify key issues and evaluate suitable alternatives to define a set of implementation priorities.

Probability and Impact Matrix. A grid for mapping the probability of each risk occurrence and its impact on project objectives if that risk occurs.

Procedure. An established method of accomplishing a consistent performance or result, a procedure typically can be described as the sequence of steps that will be used to execute a process.

Process. A systematic series of activities directed towards causing an end result such that one or more inputs will be acted upon to create one or more outputs.

Process Analysis. A process analysis follows the steps outlined in the process improvement plan to identify needed improvements.

Process Decision Program Charts (PDPC). The PDPC is used to understand a goal in relation to the steps for getting to the goal.

Process Improvement Plan. A subsidiary plan of the project management plan. It details the steps for analyzing processes to identify activities that enhance their value.

Procurement Audits. The review of contracts and contracting processes for completeness, accuracy, and effectiveness.

Procurement Documents. The documents utilized in bid and proposal activities, which include the buyer's Invitation for Bid, Invitation for Negotiations, Request for Information, Request for Quotation, Request for Proposal, and seller's responses.

Procurement Management Plan. A component of the project or program management plan that describes how a project team will acquire goods and services from outside the performing organization.

Procurement Performance Reviews. A structured review of the seller's progress to deliver project scope and quality, within cost and on schedule, as compared to the contract.

Procurement Statement of Work. Describes the procurement item in sufficient detail to allow prospective sellers to determine if they are capable of providing the products, services, or results.

Product. An artifact that is produced, is quantifiable, and can be either an end item in itself or a component item. Additional words for products are material and goods. Contrast with *result*. See also *deliverable*.

Product Analysis. For projects that have a product as a deliverable, it is a tool to define scope that generally means asking questions about a product and forming answers to describe the use, characteristics, and other the relevant aspects of what is going to be manufactured.

Product Life Cycle. The series of phases that represent the evolution of a product, from concept through delivery, growth, maturity, and to retirement.

Product Scope. The features and functions that characterize a product, service, or result.

Product Scope Description. The documented narrative description of the product scope.

Program. A group of related projects, subprograms, and program activities managed in a coordinated way to obtain benefits not available from managing them individually.

Program Evaluation and Review Technique (PERT). A technique for estimating that applies a weighted average of optimistic, pessimistic, and most likely estimates when there is uncertainty with the individual activity estimates.

Program Management. The application of knowledge, skills, tools, and techniques to a program to meet the program requirements and to obtain benefits and control not available by managing projects individually.

Progressive Elaboration. The iterative process of increasing the level of detail in a project management plan as greater amounts of information and more accurate estimates become available.

Project. A temporary endeavor undertaken to create a unique product, service, or result.

Project Based Organizations. A variety of organizational forms that involve the creation of temporary systems for the performance of projects. PBOs conduct the majority of their activities as projects and/or provide project over functional approaches.

Project Calendar. A calendar that identifies working days and shifts that are available for scheduled activities.

Project Charter. A document issued by the project initiator or sponsor that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

Project Communications Management. Project Communications Management includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information.

Project Cost Management. Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.

Project Funding Requirements. Forecast project costs to be paid that are derived from the cost baseline for total or periodic requirements, including projected expenditures plus anticipated liabilities.

Project Governance. The alignment of project objectives with the strategy of the larger organization by the project sponsor and project team. A project's governance is defined by and

must fit within the larger context of the program or organization sponsoring it, but is separate from organizational governance.

Project Human Resource Management. Project Human Resource Management includes the processes that organize, manage, and lead the project team.

Project Initiation. Launching a process that can result in the authorization of a new project.

Project Integration Management. Project Integration Management includes the processes and activities needed to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups.

Project Life Cycle. The series of phases that a project passes through from its initiation to its closure.

Project Management. The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

Project Management Body of Knowledge. An inclusive term that describes the sum of knowledge within the profession of project management. As with other professions, such as law, medicine, and accounting, the body of knowledge rests with the practitioners and academics that apply and advance it. The complete project management body of knowledge includes proven traditional practices that are widely applied and innovative practices that are emerging in the profession. The body of knowledge includes both published and unpublished materials. This body of knowledge is constantly evolving. PMI's *PMBOK® Guide* identifies a subset of the project management body of knowledge that is generally recognized as good practice.

Project Management Information System. An information system consisting of the tools and techniques used to gather, integrate, and disseminate the outputs of project management processes. It is used to support all aspects of the project from initiating through closing, and can include both manual and automated systems.

Project Management Knowledge Area. An identified area of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools, and techniques.

Project Management Office (PMO). An organizational structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

Project Management Plan. The document that describes how the project will be executed monitored, and controlled.

Project Management Process Group. A logical grouping of project management inputs, tools and techniques, and outputs. The Project Management Process Groups include initiating processes, planning processes, executing processes, monitoring and controlling processes, and closing processes. Project Management Process Groups are not project phases.

Project Management Staff. The members of the project team who perform project management activities such as schedule, communications, risk management, etc.

Project Management System. The aggregation of the processes, tools, techniques, methodologies, resources, and procedures to manage a project.

Project Management Team. The members of the project team who are directly involved in project management activities. On some smaller projects, the project management team may include virtually all of the project team members.

Project Manager (PM). The person assigned by the performing organization to lead the team that is responsible for achieving the project objectives.

Project Organization Chart. A document that graphically depicts the project team members and their interrelationships for a specific project.

Project Phase. A collection of logically related project activities that culminates in the completion of one or more deliverables.

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 and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken.

Project Risk Management. Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling 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 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, assumptions, and constraints.

Project Stakeholder Management. Project Stakeholder Management includes the processes required to identify all people or organizations impacted by the project, analyzing stakeholder expectations and impact on the project, and developing appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

Project Statement of Work. See *statement of work*.

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

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

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

Projectized Organization. Any organizational structure in which the project manager has full authority to assign priorities, apply resources, and direct the work of persons assigned to the project.

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.

Quality. The degree to which a set of inherent characteristics fulfills requirements.

Quality Audits. A quality audit is a structured, independent process to determine if project activities comply with organizational and project policies, processes, and procedures.

Quality Checklists. A structured tool used to verify that a set of required steps has been performed.

Quality Control Measurements. The documented results of control quality activities.

Quality Function Deployment (QFD). A facilitated workshop technique that helps to determine critical characteristics for new product development.

Quality Management and Control Tools. They are a type of quality planning tools used to link and sequence the activities identified.

Quality Management Plan. A component of the project or program management plan that describes how an organization's quality policies will be implemented.

Quality Management System. The organizational framework whose structure provides the policies, processes, procedures, and resources required to implement the quality management plan. The typical project quality management plan should be compatible to the organization's quality management system.

Quality Metrics. A description of a project or product attribute and how to measure it.

Quality Policy. A policy specific to the Project Quality Management Knowledge Area, it establishes the basic principles that should govern the organization's actions as it implements its system for quality management.

Quality Requirement. A condition or capability that will be used to assess conformance by validating the acceptability of an attribute for the quality of a result.

Quantitative Risk Analysis and Modeling Techniques. Commonly used techniques for both event-oriented and project-oriented analysis approaches

Questionnaires and Surveys. Written sets of questions designed to quickly accumulate information from a large number of respondents.

RACI. A common type of responsibility assignment matrix that uses responsible, accountable, consult, and inform statuses to define the involvement of stakeholders in project activities.

Records Management System. A specific set of processes, related control functions, and tools that are consolidated and combined to record and retain information about the project.

Regression Analysis. An analytic technique where a series of input variables are examined in relation to their corresponding output results in order to develop a mathematical or statistical relationship.

Regulation. Requirements imposed by a governmental body. These requirements can establish product, process, or service characteristics, including applicable administrative provisions that have government-mandated compliance.

Reporting Systems. Facilities, processes, and procedures used to generate or consolidate reports from one or more information management systems and facilitate report distribution to the project stakeholders.

Request for Information (RFI). A type of procurement document whereby the buyer requests a potential seller to provide various pieces of information related to a product or service or seller capability.

Request for Proposal (RFP). A type of procurement document used to request proposals from prospective sellers of products or services. In some application areas, it may have a narrower or more specific meaning.

Request for Quotation (RFQ). A type of procurement document used to request price quotations from prospective sellers of common or standard products or services. Sometimes used in place of request for proposal and, in some application areas, it may have a narrower or more specific meaning.

Requested Change. A formally documented change request that is submitted for approval to the integrated change control process.

Requirement. A condition or capability that must be present in a product, service, or result to satisfy a contract or other formally imposed specification.

Requirements Documentation. A description of how individual requirements meet the business need for the project.

Requirements Management Plan. A component of the project or program management plan that describes how requirements will be analyzed, documented, and managed.

Requirements Traceability Matrix. A grid that links product requirements from their origin to the deliverables that satisfy them.

Reserve. A provision in the project management plan to mitigate cost and/or schedule risk. Often used with a modifier (e.g., management reserve, contingency reserve) to provide further detail on what types of risk are meant to be mitigated.

Reserve Analysis. An analytical technique to determine the essential features and relationships of components in the project management plan to establish a reserve for the schedule duration, budget, estimated cost, or funds for a project.

Residual Risk. A risk that remains after risk responses have been implemented.

Resource. Skilled human resources (specific disciplines either individually or in crews or teams), equipment, services, supplies, commodities, material, budgets, or funds.

Resource Breakdown Structure. A hierarchical representation of resources by category and type.

Resource Calendar. A calendar that identifies the working days and shifts on which each specific resource is available.

Resource Histogram. A bar chart showing the amount of time that a resource is scheduled to work over a series of time periods. Resource availability may be depicted as a line for comparison purposes. Contrasting bars may show actual amounts of resources used as the project progresses.

Resource Leveling. A technique in which start and finish dates are adjusted based on resource constraints with the goal of balancing demand for resources with the available supply.

Resource Optimization Techniques. A technique that is used to adjust the start and finish dates of activities that adjust planned resource use to be equal to or less than resource availability.

Resource Smoothing. A technique which adjusts the activities of a schedule model such that the requirement for resources on the project do not exceed certain predefined resource limits.

Responsibility. An assignment that can be delegated within a project management plan such that the assigned resource incurs a duty to perform the requirements of the assignment.

Responsibility Assignment Matrix (RAM). A grid that shows the project resources assigned to each work package.

Result. An output from performing project management processes and activities. Results include outcomes (e.g., integrated systems, revised process, restructured organization, tests, trained personnel, etc.) and documents (e.g., policies, plans, studies, procedures, specifications, reports, etc.). Contrast with *product*. See also *deliverable*.

Rework. Action taken to bring a defective or nonconforming component into compliance with requirements or specifications.

Risk. An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.

Risk Acceptance. A risk response strategy whereby the project team decides to acknowledge the risk and not take any action unless the risk occurs.

Risk Appetite. The degree of uncertainty an entity is willing to take on, in anticipation of a reward.

Risk Audits. Examination and documentation of the effectiveness of risk responses in dealing with identified risks and their root causes, as well as the effectiveness of the risk management process.

Risk Avoidance. A risk response strategy whereby the project team acts to eliminate the threat or protect the project from its impact.

Risk Breakdown Structure (RBS). A hierarchical representation of risks according to their risk categories.

Risk Categorization. Organization by sources of risk (e.g., using the RBS), the area of the project affected (e.g., using the WBS), or other useful category (e.g., project phase) to determine the areas of the project most exposed to the effects of uncertainty.

Risk Category. A group of potential causes of risk.

Risk Data Quality Assessment. Technique to evaluate the degree to which the data about risks is useful for risk management.

Risk Management Plan. A component of the project, program, or portfolio management plan that describes how risk management activities will be structured and performed.

Risk Mitigation. A risk response strategy whereby the project team acts to reduce the probability of occurrence or impact of a risk.

Risk Reassessment. Risk reassessment is the identification of new risks, reassessment of current risks, and the closing of risks that are outdated.

Risk Register. A document in which the results of risk analysis and risk response planning are recorded.

Risk Threshold. Measure of the level of uncertainty or the level of impact at which a stakeholder may have a specific interest. Below that risk threshold, the organization will accept the risk. Above that risk threshold, the organization will not tolerate the risk.

Risk Tolerance. The degree, amount, or volume of risk that an organization or individual will withstand.

Risk Transference. A risk response strategy whereby the project team shifts the impact of a threat to a third party, together with ownership of the response.

Risk Urgency Assessment. Review and determination of the timing of actions that may need to occur sooner than other risk items.

Role. A defined function to be performed by a project team member, such as testing, filing, inspecting, or coding.

Rolling Wave Planning. An iterative planning technique in which the work to be accomplished in the near term is planned in detail, while the work in the future is planned at a higher level.

Root Cause Analysis. An analytical technique used to determine the basic underlying reason that causes a variance or a defect or a risk. A root cause may underlie more than one variance or defect or risk.

Scatter Diagram. A correlation chart that uses a regression line to explain or to predict how the change in an independent variable will change a dependent variable.

Schedule. See *project schedule* and see also *schedule model*.

Schedule Baseline. The approved version of a schedule model that can be changed only through formal change control procedures and is used as a basis for comparison to actual results.

Schedule Compression. Techniques used to shorten the schedule duration without reducing the project scope.

Schedule Data. The collection of information for describing and controlling the schedule.

Schedule Forecasts. Estimates or predictions of conditions and events in the project's future based on information and knowledge available at the time the schedule is calculated.

Schedule Management Plan. A component of the project management plan that establishes the criteria and the activities for developing, monitoring, and controlling the schedule.

Schedule Model. A representation of the plan for executing the project's activities including durations, dependencies, and other planning information, used to produce a project schedule along with other scheduling artifacts.

Schedule Network Analysis. The technique of identifying early and late start dates, as well as early and late finish dates, for the uncompleted portions of project schedule activities. See also *backward pass*, *critical path method*, *critical chain method*, and *resource leveling*.

Schedule Network Templates. A set of activities and relationships that have been established that can be used repeatedly for a particular application area or an aspect of the project where a prescribed sequence is desired.

Schedule Performance Index (SPI). A measure of schedule efficiency expressed as the ratio of earned value to planned value.

Schedule Variance (SV). A measure of schedule performance expressed as the difference between the earned value and the planned value.

Scheduling Tool. A tool that provides schedule component names, definitions, structural relationships, and formats that support the application of a scheduling method.

Scope. The sum of the products, services, and results to be provided as a project. See also *project scope* and *product scope*.

Scope Baseline. The approved version of a scope statement, work breakdown structure (WBS), and its associated WBS dictionary, that can be changed only through formal change control procedures and is used as a basis for comparison.

Scope Change. Any change to the project scope. A scope change almost always requires an adjustment to the project cost or schedule.

Scope Creep. The uncontrolled expansion to product or project scope without adjustments to time, cost, and resources.

Scope Management Plan. A component of the project or program management plan that describes how the scope will be defined, developed, monitored, controlled, and verified.

Secondary Risk. A risk that arises as a direct result of implementing a risk response.

Selected Sellers. The sellers which have been selected to provide a contracted set of services or products.

Seller. A provider or supplier of products, services, or results to an organization.

Seller Proposals. A vendor that has undergone a prior selection process to be one of a select few that can compete or qualify for future procurements.

Sensitivity Analysis. A quantitative risk analysis and modeling technique used to help determine which risks have the most potential impact on the project. It examines the extent to which the uncertainty of each project element affects the objective being examined when all other uncertain elements are held at their baseline values. The typical display of results is in the form of a tornado diagram.

Sequence Activities. The process of identifying and documenting relationships among the project activities.

Seven Basic Quality Tools. A standard toolkit used by quality management professionals who are responsible for planning, monitoring, and controlling the issues related to quality in an organization.

Simulation. A simulation uses a project model that translates the uncertainties specified at a detailed level into their potential impact on objectives that are expressed at the level of the total project. Project simulations use computer models and estimates of risk, usually expressed as a probability distribution of possible costs or durations at a detailed work level, and are typically performed using Monte Carlo analysis.

Soft Logic. See *discretionary dependency*.

Source Selection Criteria. A set of attributes desired by the buyer which a seller must meet or exceed to be selected for a contract.

Specification. A document that specifies, in a complete, precise, verifiable manner, the requirements, design, behavior, or other characteristics of a system, component, product, result, or service and the procedures for determining whether these provisions have been satisfied. Examples are: requirement specification, design specification, product specification, and test specification.

Specification Limits. The area, on either side of the centerline, or mean, of data plotted on a control chart that meets the customer's requirements for a product or service. This area may be greater than or less than the area defined by the control limits. See also *control limits*.

Sponsor. A person or group who provides resources and support for the project, program, or portfolio and is accountable for enabling success.

Sponsoring Organization. The entity responsible for providing the project's sponsor and a conduit for project funding or other project resources.

Staffing Management Plan. A component of the human resource plan that describes when and how project team members will be acquired and how long they will be needed.

Stakeholder. An individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project.

Stakeholder Analysis. A technique of systematically gathering and analyzing quantitative and qualitative information to determine whose interests should be taken into account throughout the project.

Stakeholder Management Plan. The stakeholder management plan is a subsidiary plan of the project management plan that defines the processes, procedures, tools, and techniques to effectively engage stakeholders in project decisions and execution based on the analysis of their needs, interests, and potential impact.

Stakeholder Register. A project document including the identification, assessment, and classification of project stakeholders.

Standard. A document that provides, for common and repeated use, rules, guidelines, or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

Start Date. A point in time associated with a schedule activity's start, usually qualified by one of the following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.

Start-to-Finish (SF). A logical relationship in which a successor activity cannot finish until a predecessor activity has started.

Start-to-Start (SS). A logical relationship in which a successor activity cannot start until a predecessor activity has started.

Statement of Work (SOW). A narrative description of products, services, or results to be delivered by the project.

Statistical Sampling. Choosing part of a population of interest for inspection.

Subnetwork. A subdivision (fragment) of a project schedule network diagram, usually representing a subproject or a work package. Often used to illustrate or study some potential or proposed schedule condition, such as changes in preferential schedule logic or project scope.

Subproject. A smaller portion of the overall project created when a project is subdivided into more manageable components or pieces.

Successor Activity. A dependent activity that logically comes after another activity in a schedule.

Summary Activity. A group of related schedule activities aggregated and displayed as a single activity.

SWOT Analysis. Analysis of strengths, weaknesses, opportunities, and threats of an organization, project, or option.

Tailor. The act of carefully selecting process and related inputs and outputs contained within the *PMBOK® Guide* to determine a subset of specific processes that will be included within a project's overall management approach.

Team Members. See *project team members*.

Technique. A defined systematic procedure employed by a human resource to perform an activity to produce a product or result or deliver a service, and that may employ one or more tools.

Templates. A partially complete document in a predefined format that provides a defined structure for collecting, organizing, and presenting information and data.

Threat. A risk that would have a negative effect on one or more project objectives.

Three-Point Estimate. A technique used to estimate cost or duration by applying an average of optimistic, pessimistic, and most likely estimates when there is uncertainty with the individual activity estimates.

Threshold. A cost, time, quality, technical, or resource value used as a parameter, and which may be included in product specifications. Crossing the threshold should trigger some action, such as generating an exception report.

Time and Material Contract (T&M). A type of contract that is a hybrid contractual arrangement containing aspects of both cost-reimbursable and fixed-price contracts. Time and material contracts resemble cost-reimbursable type arrangements in that they have no definitive

end, because the full value of the arrangement is not defined at the time of the award. Thus, time and material contracts can grow in contract value as if they were cost-reimbursable-type arrangements. Conversely, time and material arrangements can also resemble fixed-price arrangements. For example, the unit rates are preset by the buyer and seller, when both parties agree on the rates for the category of senior engineers.

Time-Scaled Schedule Network Diagram. Any project schedule network diagram drawn in such a way that the positioning and length of the schedule activity represents its duration. Essentially, it is a bar chart that includes schedule network logic.

To-Complete Performance Index (TCPI). A measure of the cost performance that must be achieved with the remaining resources in order to meet a specified management goal, expressed as the ratio of the cost to finish the outstanding work to the remaining budget.

Tolerance. The quantified description of acceptable variation for a quality requirement.

Tornado Diagram. A special type of bar chart used in sensitivity analysis for comparing the relative importance of the variables.

Tool. Something tangible, such as a template or software program, used in performing an activity to produce a product or result.

Total Float. The amount of time that a schedule activity can be delayed or extended from its early start date without delaying the project finish date or violating a schedule constraint.

Tree Diagram. A systematic diagram of a decomposition hierarchy used to visualize as parent-to-child relationships a systematic set of rules.

Trend Analysis. An analytical technique that uses mathematical models to forecast future outcomes based on historical results. It is a method of determining the variance from a baseline of a budget, cost, schedule, or scope parameter by using prior progress reporting periods' data and projecting how much that parameter's variance from baseline might be at some future point in the project if no changes are made in executing the project.

Trigger Condition. An event or situation that indicates that a risk is about to occur.

Unanimity. Agreement by everyone in the group on a single course of action.

Validate Scope. The process of formalizing acceptance of the completed project deliverables.

Validated Deliverables. Deliverables that are result of executing quality control process to determine correctness.

Validation. The assurance that a product, service, or system meets the needs of the customer and other identified stakeholders. It often involves acceptance and suitability with external customers. Contrast with verification.

Value Engineering. An approach used to optimize project life cycle costs, save time, increase profits, improve quality, expand market share, solve problems, and/or use resources more effectively.

Variance. A quantifiable deviation, departure, or divergence away from a known baseline or expected value.

Variance Analysis. A technique for determining the cause and degree of difference between the baseline and actual performance.

Variance At Completion (VAC). A projection of the amount of budget deficit or surplus, expressed as the difference between the budget at completion and the estimate at completion.

Variation. An actual condition that is different from the expected condition that is contained in the baseline plan.

Velocity. A measure of a team's productivity rate at which the deliverables are produced, validated, and accepted within a predefined interval. Velocity is a capacity planning approach frequently used to forecast future project work.

Verification. The evaluation of whether or not a product, service, or system complies with a regulation, requirement, specification, or imposed condition. It is often an internal process. Contrast with *validation*.

Voice of the Customer. A planning technique used to provide products, services, and results that truly reflect customer requirements by translating those customer requirements into the appropriate technical requirements for each phase of project product development.

WBS Dictionary. A document that provides detailed deliverable, activity, and scheduling information about each component in the work breakdown structure.

Weighted Milestone Method. An earned value method that divides a work package into measurable segments, each ending with an observable milestone, and then assigns a weighted value to the achievement of each milestone.

What-If Scenario Analysis. The process of evaluating scenarios in order to predict their effect on project objectives.

Work Authorization. A permission and direction, typically written, to begin work on a specific schedule activity or work package or control account. It is a method for sanctioning project work to ensure that the work is done by the identified organization, at the right time, and in the proper sequence.

Work Authorization System. A subsystem of the overall project management system. It is a collection of formal documented procedures that defines how project work will be authorized (committed) to ensure that the work is done by the identified organization, at the right time, and in the proper sequence. It includes the steps, documents, tracking system, and defined approval levels needed to issue work authorizations.

Work Breakdown Structure (WBS). 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.

Work Breakdown Structure Component. An entry in the work breakdown structure that can be at any level.

Work Package. The work defined at the lowest level of the work breakdown structure for which cost and duration can be estimated and managed.

Work Performance Data. The raw observations and measurements identified during activities being performed to carry out the project work.

Work Performance Information. The performance data collected from various controlling processes, analyzed in context and integrated based on relationships across areas.

Work Performance Reports. The physical or electronic representation of work performance information compiled in project documents, intended to generate decisions, actions, or awareness

Workaround. A response to a threat that has occurred, for which a prior response had not been planned or was not effective.

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