



Project Management

Project Management Processes

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Project Management Processes

- Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.
- This application of knowledge requires the effective management of the project management processes.
- A process is a set of interrelated actions and activities performed to create a pre-specified product, service, or result.
- Each process is characterized by its inputs, the tools and techniques that can be applied, and the resulting outputs.

- As explained in Section 2, the project manager needs to consider organizational process assets and enterprise environmental factors.
- These should be taken into account for every process, even if they are not explicitly listed as inputs in the process specification.
- Organizational process assets provide guidelines and criteria for tailoring the organization's processes to the specific needs of the project.
- Enterprise environmental factors may constrain the project management options.

- In order for a project to be successful, the project team should:
 - Select appropriate processes required to meet the project objectives;
 - Use a defined approach that can be adapted to meet requirements;
 - Establish and maintain appropriate communication and engagement with stakeholders;
 - Comply with requirements to meet stakeholder needs and expectations; and
 - Balance the competing constraints of scope, schedule, budget, quality, resources, and risk to produce the specified product, service, or result.

- The project processes are performed by the project team with stakeholder interaction and generally fall into one of two major categories:
 - **Project management processes.** These processes ensure the effective flow of the project throughout its life cycle. These processes encompass the tools and techniques involved in applying the skills and capabilities described in the Knowledge Areas.
 - **Product-oriented processes.** These processes specify and create the project's product. Product-oriented processes are typically defined by the project life cycle (as discussed in previous Section) and vary by application area as well as the phase of the product life cycle. The scope of the project cannot be defined without some basic understanding of how to create the specified product. For example, various construction techniques and tools need to be considered when determining the overall complexity of the house to be built.

- Project management processes are grouped into five categories known as Project Management Process Groups (or Process Groups):
 - **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.
 - **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.
 - **Executing Process Group.** Those processes performed to complete the work defined in the project management plan to satisfy the project specifications.
 - **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.
 - **Closing Process Group.** Those processes performed to finalize all activities across all Process Groups to formally close the project or phase.

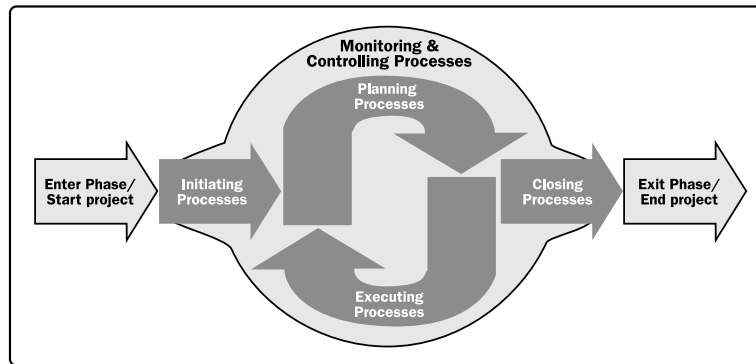


Figure 3-1. Project Management Process Groups

Common Project Management Process Interactions

- The project management processes are presented as discrete elements with well-defined interfaces. However, in practice they overlap and interact in ways that are not completely detailed in this course.
- Most experienced project management practitioners recognize there is more than one way to manage a project. The required Process Groups and their processes are guides for applying appropriate project management knowledge and skills during the project.
- The application of the project management processes is iterative, and many processes are repeated during the project.

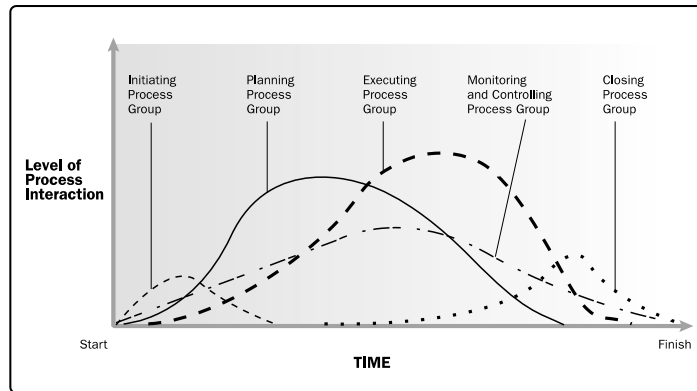


Figure 3-2. Process Groups Interact in a Phase or Project

Project Management Process Groups

- The five Process Groups have clear dependencies and are typically performed in each project and highly interact with one another.
- These five Process Groups are independent of application areas or industry focus.
- Individual Process Groups and individual processes are often iterated prior to completing the project and can have interactions within a Process Group and among Process Groups.
- The nature of these interactions varies from project to project and may or may not be performed in a particular order.
- **The Process Groups are not project life cycle phases.**

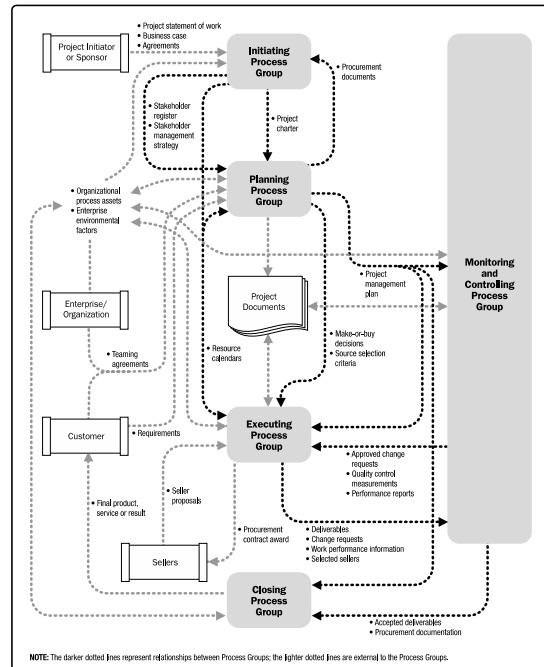


Figure 3-3. Project Management Process Interactions

Initiating Process Group

- The Initiating Process Group consists of 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.
- Within the Initiating processes, the initial scope is defined and initial financial resources are committed.
- Internal and external stakeholders who will interact and influence the overall outcome of the project are identified. If not already assigned, the project manager will be selected.
- Although the project management team may help write the project charter, this standard assumes that business case assessment, approval, and funding are handled externally to the project boundaries (Figure 3-4).
- A project boundary is defined as the point in time that a project or project phase is authorized to its completion.

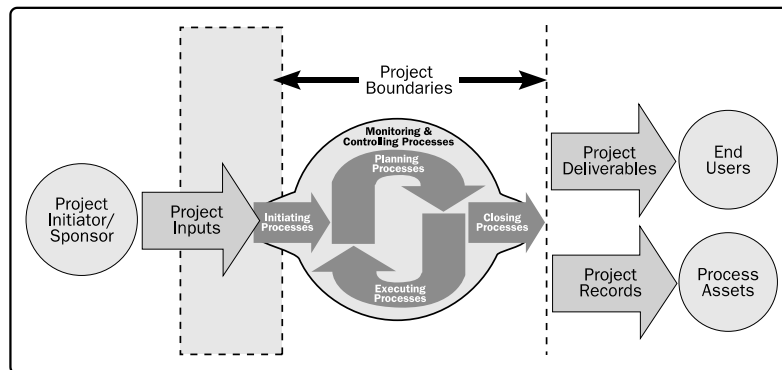


Figure 3-4. Project Boundaries

Planning Process Group

- The Planning Process Group consists of those processes performed to establish the total scope of the effort, define and refine the objectives, and develop the course of action required to attain those objectives.
- The Planning processes develop the project management plan and the project documents that will be used to carry out the project.
- The complex nature of project management may require the use of repeated feedback loops for additional analysis.
- As more project information or characteristics are gathered and understood, additional planning will likely be required. Significant changes occurring throughout the project life cycle trigger a need to revisit one or more of the planning processes and possibly some of the initiating processes.

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- The project team seeks input and encourages involvement from all stakeholders when planning the Project and developing the project management plan and project documents.
- While the act of collecting feedback and refining the documents cannot continue indefinitely, procedures set by the organization dictate when the initial planning ends.
- These procedures will be affected by the nature of the project, the established project boundaries, appropriate monitoring and controlling activities, as well as the environment in which the project will be performed.

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.

- During project execution, results may require planning updates and rebaselining.
- This may 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.

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.

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 of 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 having a critical situation.
 - In specific cases, when some contracts cannot be formally closed (e.g. claims, termination clauses, etc.) or some activities are to be transferred to other organizational units, specific hand-over procedures may be arranged and finalized.
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- 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 procurement activities ensuring termination of all relevant agreements, and
 - Perform team members' assessments and release project resources.

Project Information

- Throughout the life cycle of the project, a significant amount of data and information is collected, analyzed, transformed, and distributed in various formats to project team members and other stakeholders.
 - Project data are collected as a result of various Executing processes and are shared within the project team.
 - The collected data are analyzed in context, and aggregated and transformed to become project information during various Controlling processes.
 - The information may then be communicated verbally or stored and distributed as reports in various formats.
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- The project data are continuously collected and analyzed during the dynamic context of the project execution.
 - As a result, the terms data and information are often used interchangeably in practice.
 - The indiscriminate use of these terms can lead to confusion and misunderstandings by the various project stakeholders.

- The following guidelines help minimize miscommunication and help the project team use appropriate terminology:
 - **Work performance data.** The raw observations and measurements identified during activities performed to carry out the project work. Examples include reported percent of work physically completed, quality and technical performance measures, start and finish dates of schedule activities, number of change requests, number of defects, actual costs, actual durations, etc.
 - **Work performance information.** The performance data collected from various controlling processes, analyzed in context and integrated based on relationships across areas. Examples of performance information are status of deliverables, implementation status for change requests, and forecasted estimates to complete.
 - **Work performance reports.** The physical or electronic representation of work performance information compiled in project documents, intended to generate decisions or raise issues, actions, or awareness. Examples include status reports, memos, justifications, information notes, electronic dashboards, recommendations, and updates.

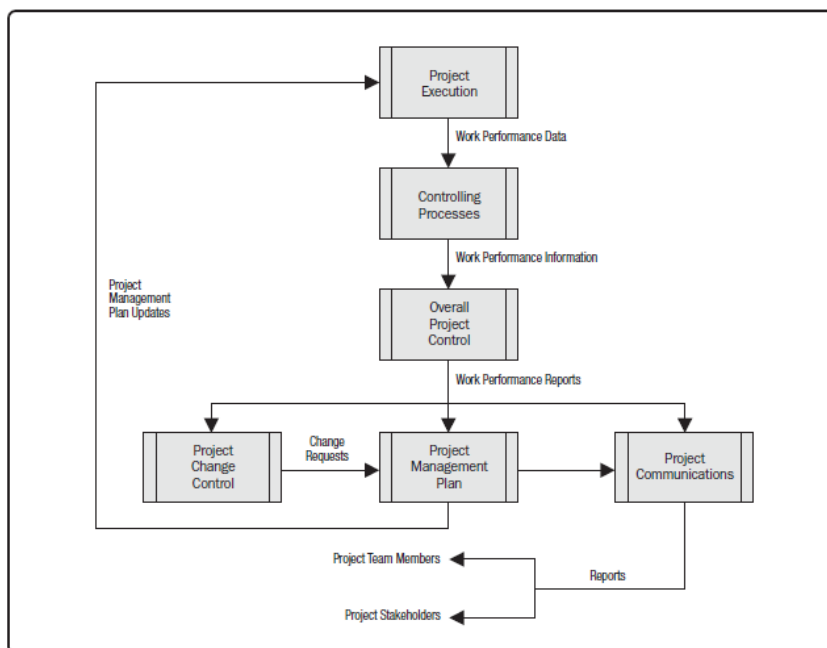


Figure 3-5. Project Data, Information and Report Flow

Table 3-1. Project Management Process Group and Knowledge Area Mapping

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	

8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

- Questions?