

PM Ideas: Processes and Knowledge Areas

The goal of this article is to outline Project Management Processes and PM Knowledge Areas of a project that you will encounter in class. Here I have presented to you a summary of some of the things that will be taught. You will cover five project management process groups and nine PM Knowledge Areas. You will also list 44 major processes that comprise each process group and learn how these processes align with PM Knowledge Areas. Finally, I will summarise each process.

Project Management Processes of a Project

Project management is achieved via processes. A Project Management Process is defined as *"a set of interrelated actions and activities that are performed to achieve a pre-specified set of products, results, or services"* (PMBOK® Guide, Chapter 3).

Almost all projects usually use the same set of processes to accomplish project management successfully. The Project Management team is responsible for selecting appropriate processes to meet/comply with project requirements and balance the "triple constraints" (time, scope, and budget) of a project.

Each process and its inputs and outputs should serve as a high-level guide for a project management team. The project management team should "tailor" each process to the individual needs of a project. Project Management Processes deal with initiation, execution, monitoring, control, and closing a project. All processes interact throughout the project via their constituent inputs and outputs. *"Successful project management includes actively managing these interactions to successfully meet stakeholder requirements."* (PMBOK® Guide, Chapter 3)

Project Management Process Groups

The management processes are aggregated into five project management process groups:

1. **Initiating Process Group:** Defines and authorizes the project or a project phase
2. **Planning Process Group:** Defines and refines objectives, and plans the course of action required to attain the objective and scope
3. **Executing Process Group:** Integrates people and resources to carry out the project management plan for the project
4. **Monitoring and Controlling Initiating Process Group:** Measures and monitors progress to identify if the correction action can be taken to meet project objectives
5. **Closing Process Group:** Formalizes acceptance of the product, services, or result and brings the project or a project phase to an orderly end

The interaction among five process groups is depicted by the following figure that is derived from a simpler Plan-Do-Check-Act (PDCA) cycle diagram.

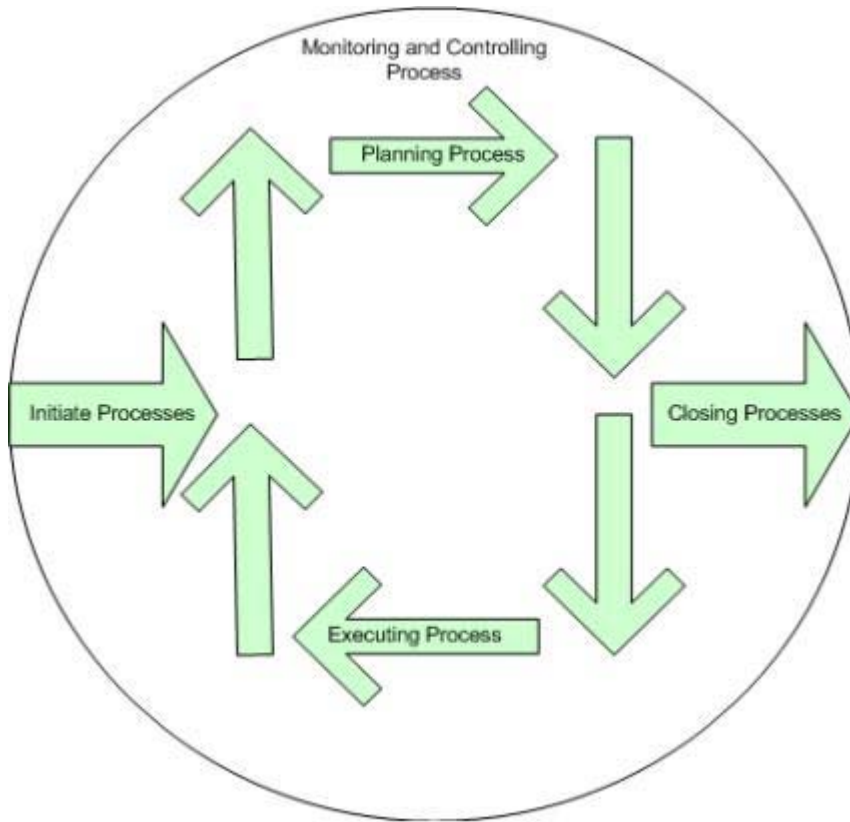


Figure 1: Modified PDCA Cycle Diagram

Project Management Knowledge Areas

There are nine Project Management Knowledge Areas. These areas group 44 Project Management Processes. The following list briefly describes each PM Knowledge Area:

1. **Project Integration Management:** Deals with processes that integrate different aspects of project management. This knowledge area deals with developing Project Charter, Preliminary Project Scope, and Project Management Plan. It also deals with monitoring and controlling project work, integrated change control, and closing a project.
2. **Project Scope Management:** Encapsulates processes that are responsible for controlling project scope. It consists of Scope Planning, Definition, Verification, and Control.
3. **Project Time Management:** Includes processes concerning the time constraints of the project. It deals with Activity definition, sequencing, resource estimating, and duration estimating. It also deals with schedule development and control.
4. **Project Cost Management:** Includes processes concerning the cost constraints of the project. Some of the processes that are part of this knowledge area are Cost Estimating, Budgeting, and Control.
5. **Project Quality Management:** Describes the processes that assure that the project meets its quality obligations. It consists of Quality Planning, Quality Assurance, and Quality Control.

6. **Project Human Resources Management:** Includes the processes that deal with obtaining and managing the project team. Some of the processes of this knowledge area are Human Resource Planning, Acquire Project Team, Develop Project Team, and Manage Project Team.
7. **Project Communication Management:** Describes the processes concerning communication mechanisms of a project, namely, Communication Planning, Performance Reporting, and Information Distribution.
8. **Project Risk Management:** Describes the processes concerned with project-related risk management. It consists of Risk Identification, Quantitative and Qualitative Risk Analysis, Risk Response Planning, and Risk Monitoring.
9. **Project Procurement Management:** Includes all processes that deal with obtaining products and services needed to complete a project. It consists of Plan Contracting, Select Seller Responses, Select Seller, and Contract Closer.

Project Management Process Mapping

As I stated earlier in the article, Project Management is composed of 44 processes that are mapped to one of nine Project Management Knowledge Areas listed in the previous section. The following table maps 44 processes to process groups and knowledge areas.

Knowledge Area Processes	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
Project Management Integration	Develop Project Charter Develop Preliminary Project Scope Statement	Develop Project Management Plan	Direct and Manage Project Execution	Monitor and Control Project Work Integrated Change Control	Close Project
Project Scope Management		Scope Planning Scope Definition Scope WBS		Scope Verification Scope Control	
Project Time Management		Activity Definition Activity Sequencing Activity Resource Estimating		Schedule Control	

		Activity Duration Estimation			
		Schedule Development			
Project Cost Management		Cost Estimating		Cost Control	
		Cost Budgeting			
Project Quality Management		Quality Planning	Perform Quality Assurance	Perform Quality Control	
Project Human Resources Management		Human Resources Planning	Acquire Project Team Develop Project Team	Manage Project Team	
Project Communication Management		Communications Planning	Information Distribution	Performance Reporting Manage Stakeholders	
Project Procurement Planning		Plan Purchase and Acquisitions Plan Contracting	Request Seller Responses Select Sellers	Contract Administration	Contract Closure
Project Risk Management		Risk Management Planning Risk Identification Qualitative Risk Analysis Quantitative Risk Analysis Risk Response Planning		Risk Monitoring and Control	

Figure 2: Mapping of 44 processes to process groups and knowledge areas

Initiating Process Group

Initiating process group includes two major processes:

1. **Develop Project Charter:** Consists of contract, project statement of work, enterprise environmental factors, and organizational process assets.
2. **Develop Preliminary Project Scope:** Consists of project charter, project statement of work, enterprise environmental factors, and organizational process assets.

Planning Process Group

The Planning Process group includes 21 major processes:

1. **Develop Project Management Plan:** This process integrates all the subsidiary plans from the various knowledge areas into one plan. This complete, consistent, and coherent document is the project management plan. It is crucial that the project manager and the project team spend sufficient time creating the project management plan because this document serves to reduce project uncertainty, improve the efficiency of work, provide a better understanding of the project objectives, and provide a basis for monitoring and controlling. This key document also serves as a communication and educational tool for stakeholders on the project.
2. **Scope Planning:** The process formally specifying the project deliverables.
3. **Scope Definition:** The process deals with creating a hierarchical, comprehensive description of the project work.
4. **Create WBS:** A work breakdown structure is accomplished by defining the scope of the project and breaking the work down into components that can be scheduled and estimated and easily monitored and controlled.
5. **Activity Definition:** In this process, the project team documents the activities resulting from the lowest level of the project work breakdown structure (WBS) and assigning an owner to each activity.
6. **Activity Sequencing:** In this process, the project team determines dependencies between project activities.
7. **Activity Resource Estimating:** This process concerns primarily with human resources. It allows the project manager to understand the type(s) and quantity of each required skill set.
8. **Activity Duration Estimating:** This process deals with forecasting durations for all identified project activities.
9. **Schedule Development:** This process creates a project schedule based on calendar dates.
10. **Cost Estimating:** This process deals with estimating the resources required to complete the project work. The estimate is typically quantitative and can be presented in detail against the WBS components, or summarized in terms of a grand total according to various phases of the project, or its major deliverables.
11. **Cost Budgeting:** This process deals with assigning a cost to an individual work package. The goal of this process is to assign costs to the work in the project so it can be measured for performance.
12. **Quality Planning:** This process captures the whole process of determining how a product or service will be developed, not simply the tests and measures to inspect the product downstream and to avoid rework and waste.

13. **Human Resources Planning:** Includes defining team member roles and responsibilities, establishing an appropriate structure for team reporting, securing the right team members, and bringing them on the project as needed for the appropriate length of time. Human resources planning results are achieved through the development of an organization plan coupled with the acquisition of the staff necessary to complete the project.
14. **Communication Planning:** Developing communication strategy with project members and stakeholders.
15. **Risk Management Planning:** A process in which the project manager and project team identify project risks, analyze and rank them, and determine what actions, if any, need to be taken to avert these threats. Associated with this process are the costs, time, and quality concerns of the project brought about by the solutions to those risks. In addition, the reactions to risks are analyzed for any secondary risks the solutions may have created.
16. **Risk Identification:** A process of identifying risks that can hinder the project's success.
17. **Qualitative Risk Analysis:** A process of assessing and prioritizing known project risks.
18. **Quantitative Risk Analysis:** The process of assessing risk severity in numerical terms, such as time, cost, or effort.
19. **Risk Response Planning:** A process of determining how best to deal with high-severity known risks, preventable risks, and contingency plans for other risks.
20. **Plan Purchase and Acquisitions:** A process of identifying what goods or services you're going to purchase from outside of the organization and which project needs can be met by the project team.
21. **Plan Contracting:** Procurement documents are a primary output of the plan contracting process. These documents are prepared by the buyer to tell the seller its needs and to solicit proposals.

Executing Process Group

The Planning Process group includes seven major processes:

1. **Direct and Manage Project Execution:** This process is used to identify problems and issues so that corrective action can be taken. As the product of the project is created, performance against project baselines must be monitored and reported.
2. **Perform Quality Assurance:** This process enforces structured reviews to ensure the project will comply with the planned quality standards. This is usually done by Quality Audit. There are five quality audit techniques such as Deming, Crosby Absolutes of Quality, Juran Trilogy, Total Quality Management (TQM), Continuous Improvement Process (CIP) or Kaizan, and Taguchi. You will learn more of these in more detail in the class.
3. **Acquire Project Team:** This process involves selecting the right people. The selection is usually done by the project manager.
4. **Develop Project Team:** This outgoing process involves developing individual team members as well as interactions between them. The results are archived through team building methods and leadership techniques.
5. **Information Distribution:** This process provides timely status information to the project team, stakeholders, managers, and others and achieves periodic, accurate reports and presentations, and a thorough, accessible archive for project data
6. **Request Seller Responses:** This process obtains responses, such as bids and proposals, from prospective sellers on how project requirements can be met. The

prospective sellers, normally at no direct cost to the project or buyer, expend most of the actual effort in this process.

7. **Select Sellers:** This process receives bids or proposals and applies evaluation criteria, as applicable, to select one or more sellers who are both qualified and acceptable as a seller.

Monitoring and Controlling Process Group

The Planning Process group includes 12 major processes:

1. **Monitor and Control Project Work:** This process includes collecting, measuring, and assessing measurement and trends. The monitoring and control happens throughout all phases of a project (initiating, planning, executing, and closing). Continuous monitoring gives the project management team insight into how well the project is progressing and can point to areas that can be improved. Some of the tasks in this process include comparing actual results with expected results, working with project risk, keeping track of documentation, providing information to support project status and forecasting, and monitoring implementation of approved changes.
2. **Integrate Change Control:** This process, performed throughout the project's lifecycle, deals with determining whether changes are beneficial, determining if a change has occurred, and managing the approved occurred and not-yet-occurred changes.
3. **Scope Verification:** This process deals with obtaining formal acceptance of project deliverables. The result of this process is a signed-off (by stakeholders) scope document.
4. **Scope Control:** This process deals with managing specification change to the project deliverables. The result is an acceptance or rejection or deferral of proposed changes.
5. **Schedule Control:** This process deals with managing specification change to the project deliverables. The result is an acceptance or rejection or deferral of proposed changes.
6. **Cost Control:** This process deals with monitoring project costs and resources. The outcome of this process is a record of project costs and adjustments to the budget according to expectations.
7. **Quality Control:** This process deals with monitoring project works compared with plans.
8. **Manage Project Team:** This process involves tracking and appraising team member performance, resolving issues, providing feedback, and managing conflicts.
9. **Performance Reporting:** This process involves collecting and distributing status reporting, progress measurement, and forecasting.
10. **Manage Stakeholders:** This process involves communicating and resolving issues with stakeholders.
11. **Risk Monitoring and Control:** This process involves tracking identified project risk triggers and responding preemptively. This process reduces the number of surprises in a project.
12. **Contract Administration:** This process deals with relationships between buyers and sellers, tracking seller's performance. Also, it might involve managing relationships with outside buyers of the project.

Closing Process Group

The Planning Process group includes two major processes:

1. **Close Project:** This process involves activities across all process groups. The process delivers administrative closure procedure, final product, service or result, and contract closure procedure.
2. **Contract Closure:** This is the process necessary for completing and settling each contract, including the resolution of any open items, and closing each contract applicable to the project or a project phase.

Documentation

There are three major documents produced throughout the project:

1. Project Charter

Charters vary in specific *content*, but most include:

- Project objective statement
- Project priorities
- High-level scope statement, describing all expected deliverables
- Description of the expected users or customers
- The business case for the project (benefit or return on investment analysis)
- Rough cost estimates
- Target milestones and deadlines
- Project leader and initial staffing information
- Identified dependencies
- Key constraints and assumptions
- Known issues and high-level risks

2. Project Scope Statement

"The scope statement provides a documented basis for making future project decisions and for confirming or developing common understanding of *project scope* among the *stakeholders*. As the *project* progresses, the scope statement may need to be revised or refined to reflect approved changes to the *scope* of the *project*".

3. Project Management Plan

The Project Management Plan documents the procedures and processes that are in effect to provide timely information to the project decision makers to effectively manage the scope, costs, schedules, and quality of the project.

All three documents are composed using various project management processes. These documents will be described in more detail in the subsequent articles in this series.

Summary

In this article, you defined and identified nine project management knowledge areas. You also identified 44 project management processes for a project and the mapping between processes and knowledge areas. In the class you will discover the project management

context and project lifecycle. You also will be able to define who stakeholders are and summarize characteristics of different organizational structures.

Hope this summary will help you prepare for the class before you join us! Thank you.

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* This material is adapted from a white paper by a world renowned project manager, Aleksey Shevchenko.