YILDIZ TECHNICAL UNIVERSITY

PROJECT MANAGEMENT

What is a PROJECT?

A project is a **temporary** endeavour undertaken to create a **unique product**, **service or result**.

- **Progressive elaboration** is characteristic of projects that accompanies the concepts of temporary and uniqueness.

A project can create:

- A product that can be either a component of another item or an end item in itself.
- A capability to perform a service (e.g., a business function that supports production or distribution).
- A result or document (e. g., a research project)

Examples of projects

- Developing a new product or service,
- Performing a change in the structure, personnel or style of an organization,
- Developing or acquiring a new or revamped information system,
- Constructing a building or an infrastructure,
- Implementing a new business process or procedure.

What is Project Management?

Project management is the application of **knowledge, skills, tools and techniques** to perform **project activities** to meet the project requirements.

Processes are:

- Initiation,
- Plan,
- Progress,
- Monitor and Control,
- Closure.

Managing a project typically includes:

- Identifying requirements,
- Addressing the various needs, concerns and expectations of the stakeholders as the projects planned and carried out,
- Balancing the project constraints contrary to each other including, but not limited to:
  - Scope
  - Quality
  - Schedule
  - Budget
  - Resources
  - Risk

Projects and Strategic Planning

- A market demand (an oil company authorizes a project to build a new refinery in response to chronic gasoline shortages)
- An organizational need (a training company authorizes a project to create a new course in order to increase its revenues)
- A customer request (an electric utility authorizes a project to build a new substation to serve a new industrial park)
- A technological advance (software firm authorizes a new project to develop a new generation of video games after the introduction of new game-playing equipment by electronics firms)
- A legal requirement (a paint manufacturer authorizes a project to establish guidelines for the handling of a new toxic material)

Project Manager

- Project manager is the one who is assigned by project organization to achieve the tasks of project.
- Requires understanding and application of knowledge, tools and techniques perceived as best practices.
- For effective project management,
  - Knowledge (what the project manager knows about project management)
  - Performance (the capability of performing project management knowledge)
  - Personality (behavior, basic personal characteristics, leadership etc .)

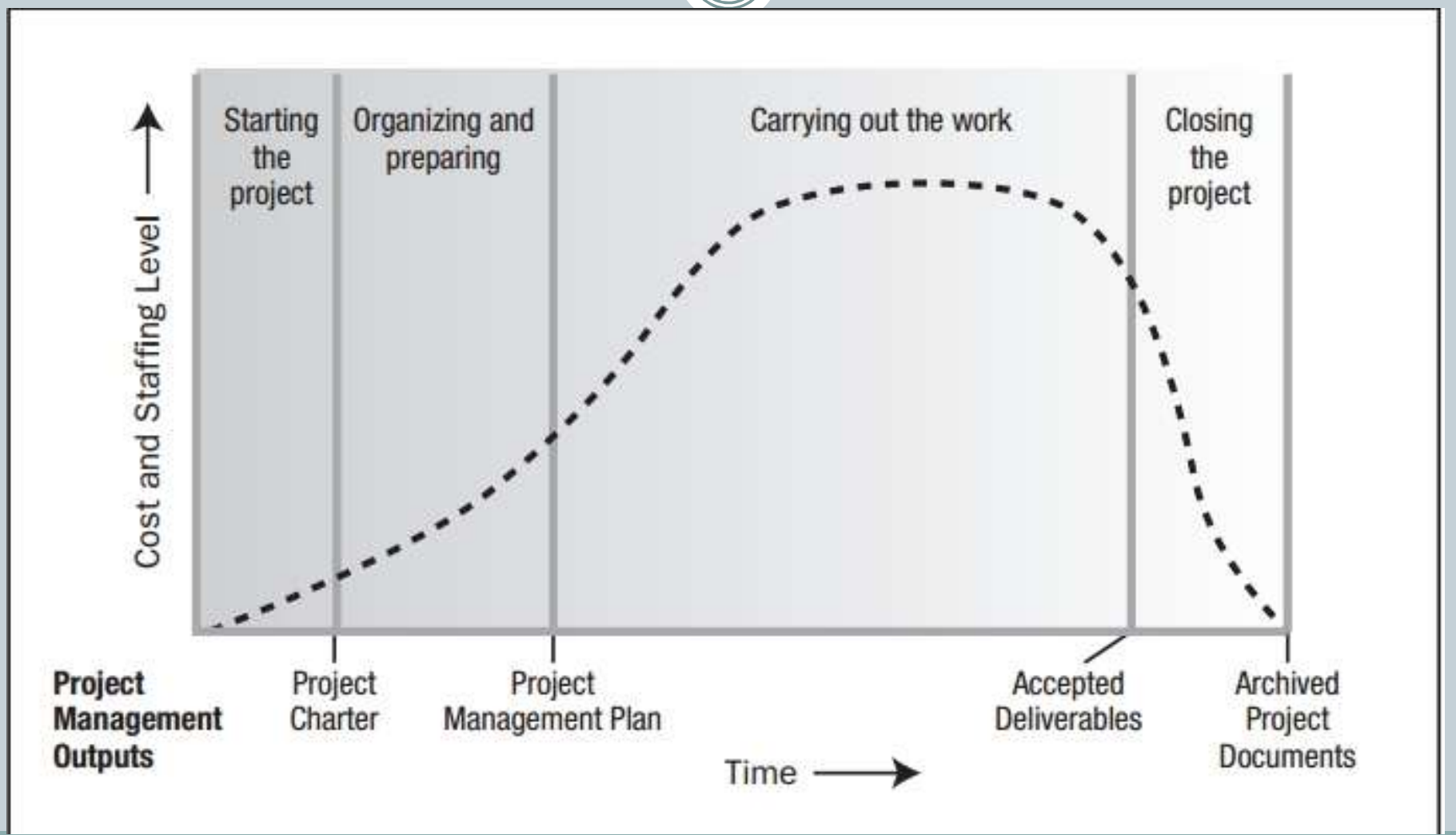
Environmental Factors Affecting the Project

- Organizational culture
- Standards proposed by state or private sector
- Infrastructure
- Available human resources
- Human resource management
- Company's business approval systems
- Market conditions
- Stakeholders' risk policy
- Political atmosphere
- Communication channels of the organization
- Commercial databases
- Project management information systems

Project

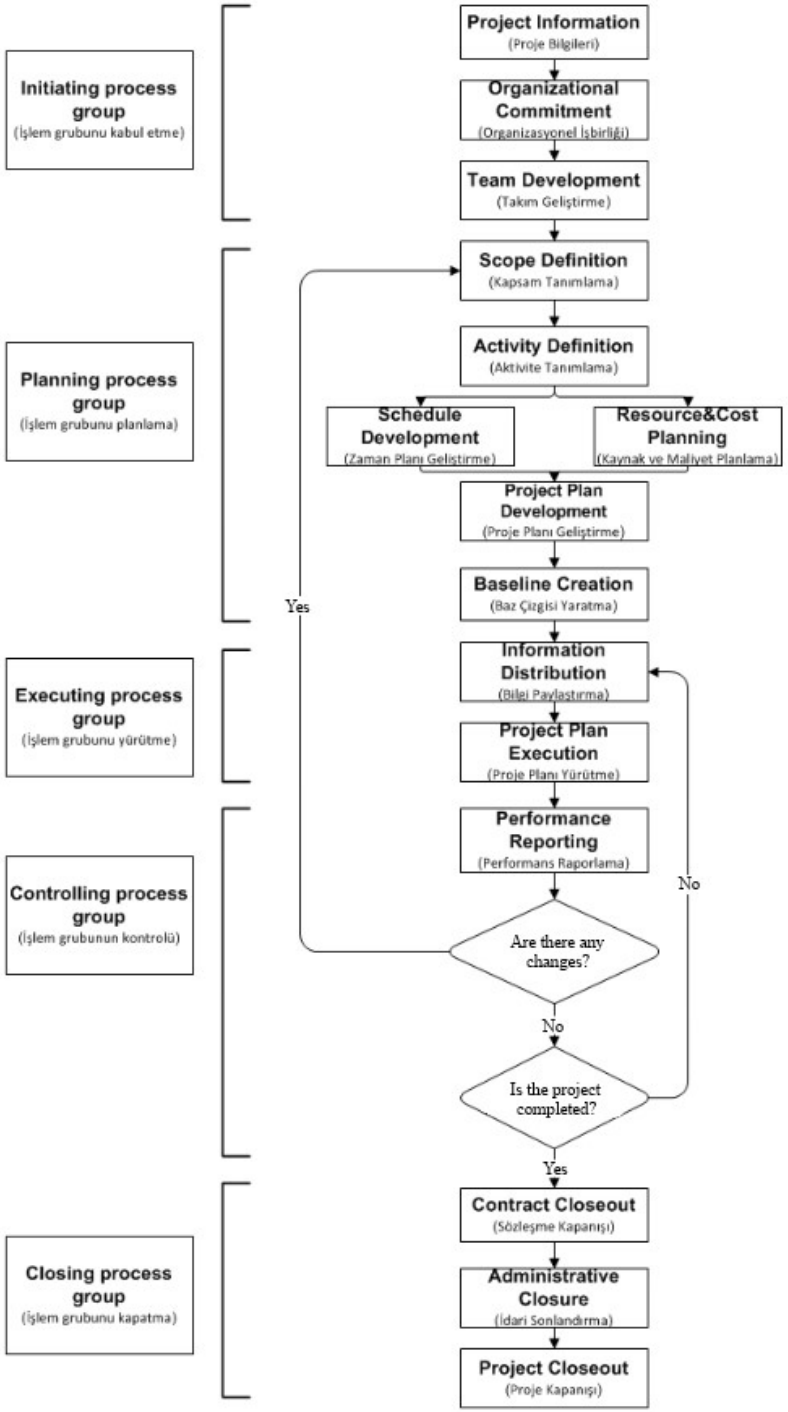
- Project Life Cycle
- Project Management Life Cycle

Project Life Cycle



Project management life cycle

- Five categories known as Project management process groups
  - Initiating process group
  - Planning process group
  - Executing process group
  - Monitoring and controlling process group
  - Closing process group

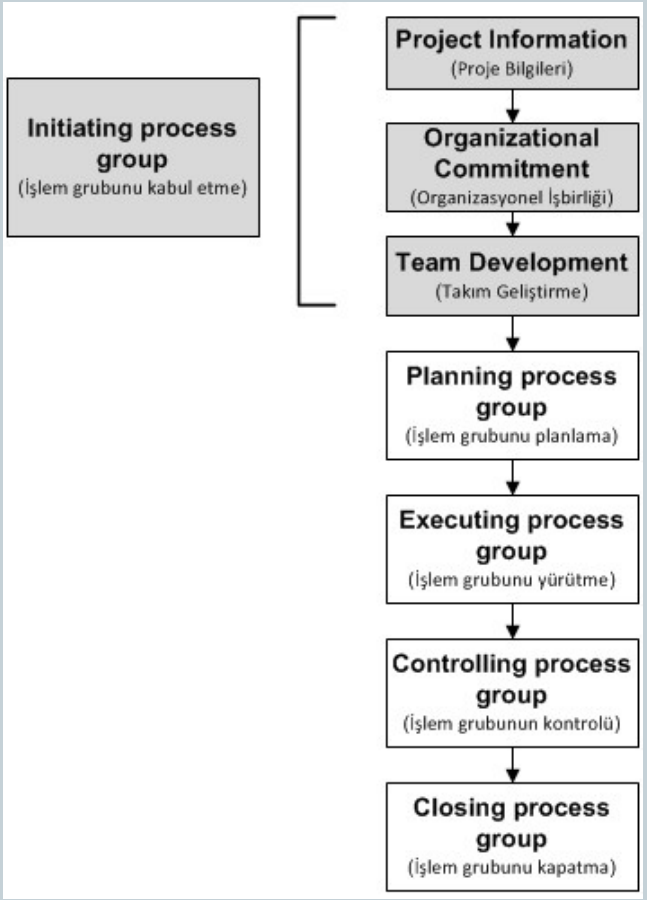

Initiating process group
(İşlem grubunu kabul etme)
Planning process group
(İşlem grubunu planlama)
Executing process group
(İşlem grubunu yürütme)
Controlling process group
(İşlem grubunun kontrolü)
Closing process group
(İşlem grubunu kapatma)
Project Information
(Proje Bilgileri)
Organizational Commitment
(Organizasyonel İşbirliği)
Team Development
(Takım Geliştirme)
Scope Definition
(Kapsam Tanımlama)
Activity Definition
(Aktivite Tanımlama)
Schedule Development
(Zaman Planı Geliştirme)
Resource&Cost Planning
(Kaynak ve Maliyet Planlama)
Project Plan Development
(Proje Planı Geliştirme)
Baseline Creation
(Baz Çizgisi Yaratma)
Information Distribution
(Bilgi Paylaştırma)
Project Plan Execution
(Proje Planı Yürütme)
Performance Reporting
(Performans Raporlama)
Are there any changes?
Yes
No
Is the project completed?
No
Yes
Contract Closeout
(Sözleşme Kapanışı)
Administrative Closure
(İdari Sonlandırma)
Project Closeout
(Proje Kapanışı)

Initiating process group

- Those processes performed to define a new project or a new phase of an existed project by obtaining authorization to start the project or phase.
- The initial scope is defined and initial financial resources are committed.
- Internal and external stakeholders are identified.
- The influence and objectives of the project stakeholders are identified.
- Feasibility analysis is performed by considering the availability of the resources and applicability of the objectives of the stakeholder.

Stakeholder= all the people and organizations that are affected by the existence of the project and project's outcomes.

Initiating process group



The Initiating Process Group consists of the following steps:

- ☐ Collect Project Information.
- ☐ Organizational Commitment.
- ☐ Team Development.

Purpose of Initiation Process

- To commit the organization to a project or phase
- To set the overall solution direction
- To define top-level project objectives
- To secure the necessary approvals and resources
- To validate alignment with overall business objectives
- To assign a project manager

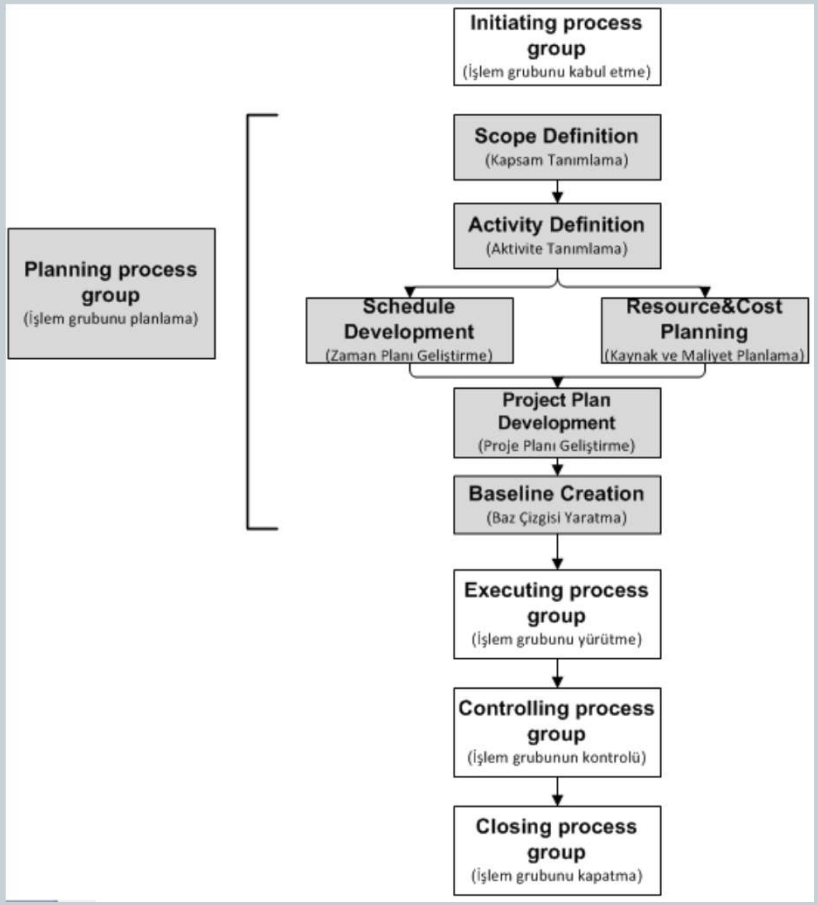
Project Proposal Content

- Scope definition
- Project objectives and benefits
- Project deliverables
- Acceptance criteria for project
- Assumptions
- Constraints
- Role definition and key staff
- High level schedule, budget
- Acceptance

Planning process group

- Consists of those processes performed to establish the scope of the project, refine the objectives and define the course of action required to achieve those objectives.
- The multi-dimensional nature of project management creates repeated feedback loops for additional analysis.
- Due to the significant changes occurring throughout the project, the planning processes are revisited to make modifications on the plans developed.
- Planning process is iterative and ongoing processes.

Planning process group



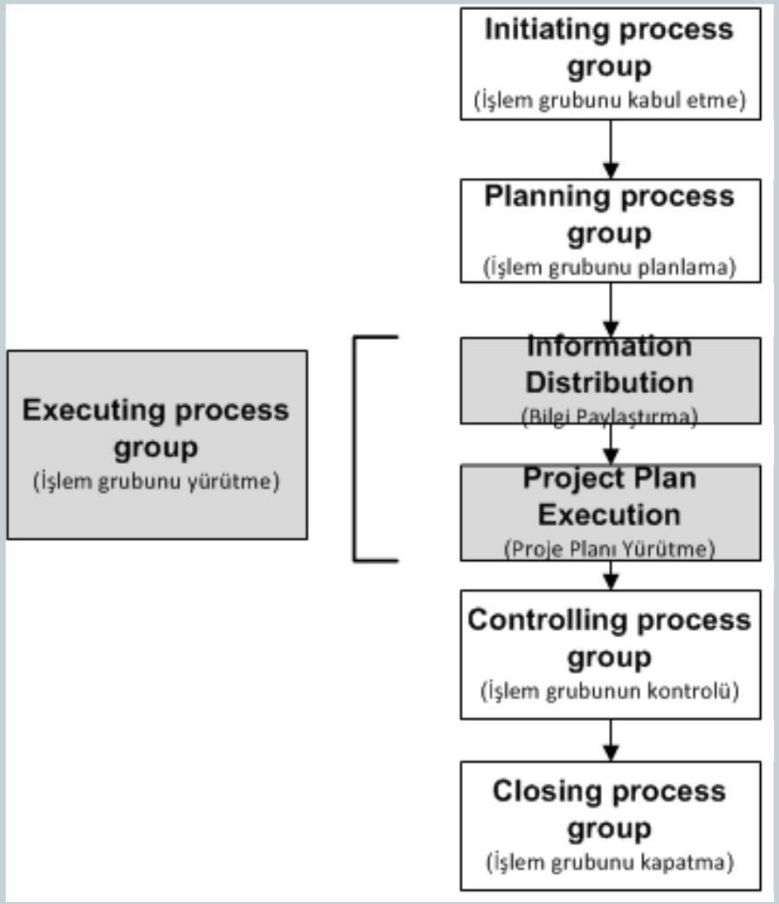
The Planning Process Group consists of the following steps:

- ☐ Scope Definition.
- ☐ Activity Definition.
- ☐ Schedule Development.
- ☐ Resource Planning.
- ☐ Cost Planning.
- ☐ Project Plan Development.
- ☐ Baseline Creation.

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, as well as integrating and performing the activities of the project in accordance with project management plan.

Executing Process Group



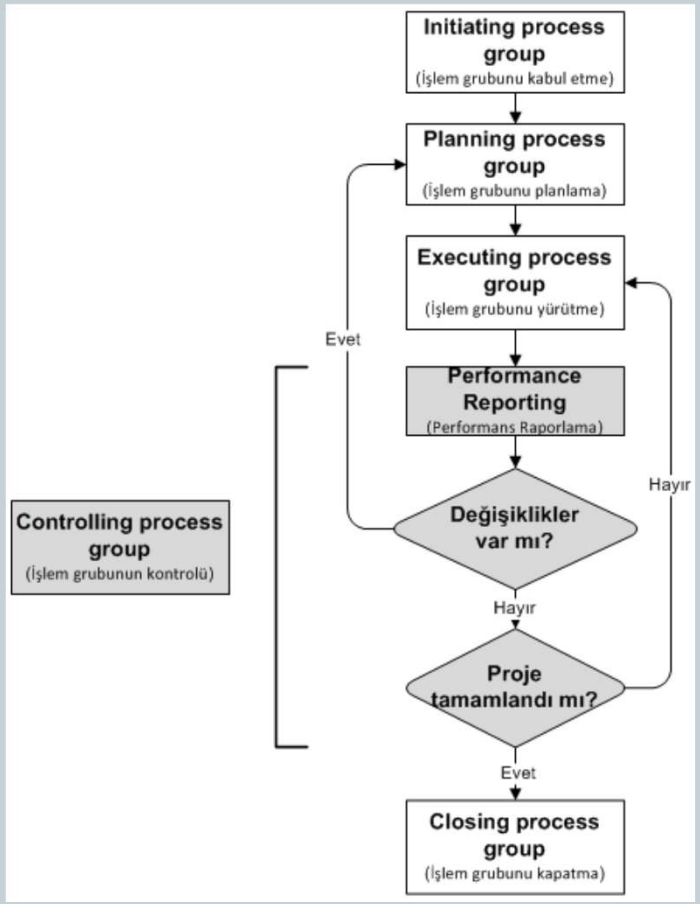
The Executing Process Group consists of the following steps:

- ☐ Information Distribution.
- ☐ Project Plan Execution.

Monitoring and controlling process group

- Consists of 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.
- The key benefit of this process group is that the project performance is observed and measured regularly and consistently to identify variances from the project management plan.

Controlling Process Group



The Controlling Process Group consists of the following steps:

- ☐ Analysis and evaluation of the project.
- ☐ Recommendation of necessary actions.
- ☐ Change the project with the realistic data.
- ☐ Re-estimation of the schedule.
- ☐ Convey of the performance of the project to the project team.

Closing process group

- Consists of processes performed to finalize all activities across all Process groups to formally close the project or phase.
- Project Closing – Elements:
  - Administrative Close Out – Generating, gathering, disseminating information to formalize phase or project completion, including evaluating the project, compiling lessons learned for use in planning future phases or projects
  - Contract Close Out – Completion and settlement of the contact including resolution of any open items.

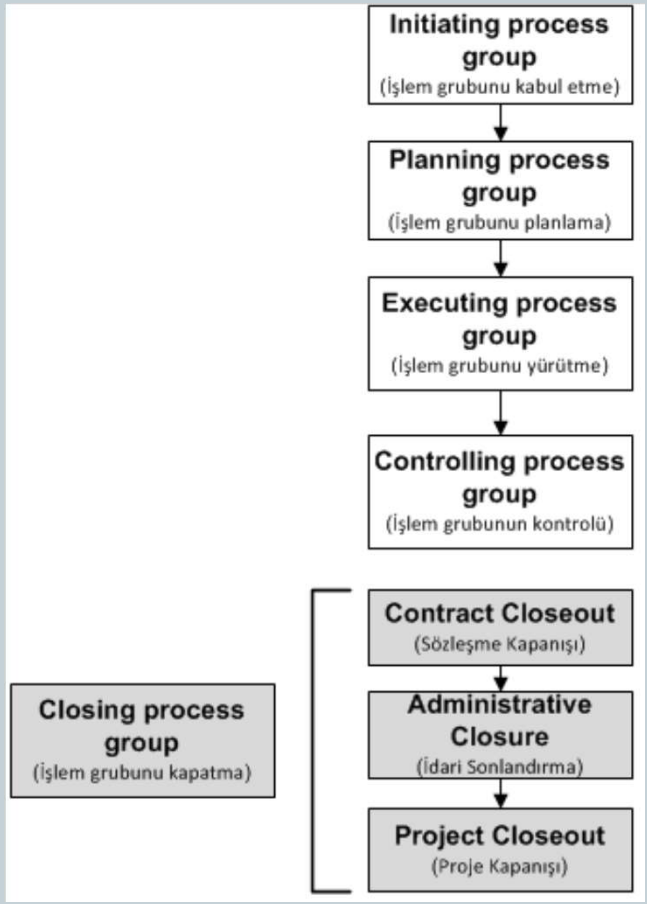
Contract Close Out Activities:

- Verify product/service acceptance
- Update records based on final contract results
- Archive contract documentation of completed work results
- Notification to end-user of contract completion
- Obtain formal acceptance

Administrative Close Out Activities:

- Collect all project records
- Document performance measures resulting from performance reviews, variance, trends and earned value analysis
- Formalize acceptance/signoff of the product by the sponsor, client, customer
- Archive project documentation
- Verifying project results in preparation for formal acceptance
- Create and Complete Punch List
- Conduct and Document the lessons learned
- Perform final appraisal review of team members

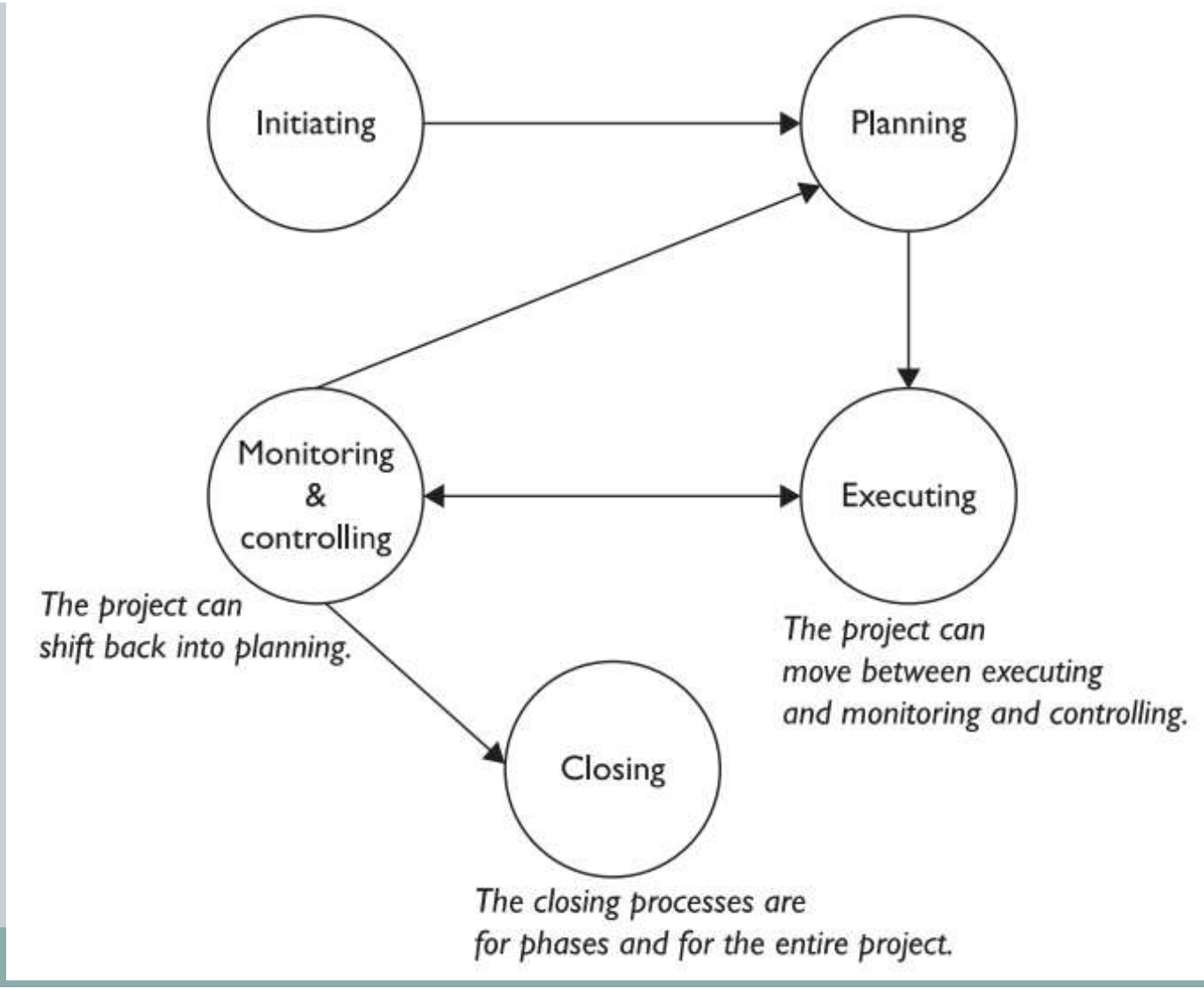
Closing Process Group



The Closing Process Group consists of the following steps:

- Contract Closeout
- Administrative closure
- Project Closeout

Project Management Life Cycle Methods



The Project Management Knowledge Areas

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communication Management
- Project Risk Management
- Project Procurement Management

Project Integration Management

- The 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.

- In the project management context, integration includes characteristics of unification, consolidation, articulation, and integrative actions that are crucial to project completion, successfully managing stakeholder expectations, and meeting requirements.

Project Integration Management

- Project Integration Management entails making choices about resource allocation, making trade-offs among competing objectives and alternatives, and managing the interdependencies among the project management knowledge areas.

- The project management processes are usually presented as discrete processes with defined interfaces while, in practice, they overlap and interact.

Project Integration Management

- **Develop project charter:** Developing a document that formally authorizes a project or a phase and documenting initial requirements that satisfy the stakeholder's needs and expectations.

- **Develop project management plan:** Documenting the actions necessary to define, prepare, integrate and coordinate all subsidiary plans.

- **Direct and manage project execution:** Perform the work defined in project management plan

Project Integration Management

- **Monitor and control project work:** track, review and regulate the progress to meet the performance objectives.
- **Perform integrated change control:** Review all change requests and manage changes to the organizational process assets, project documents and project management plan.
- **Close project or phase:** Finalize all activities across all project management process groups.

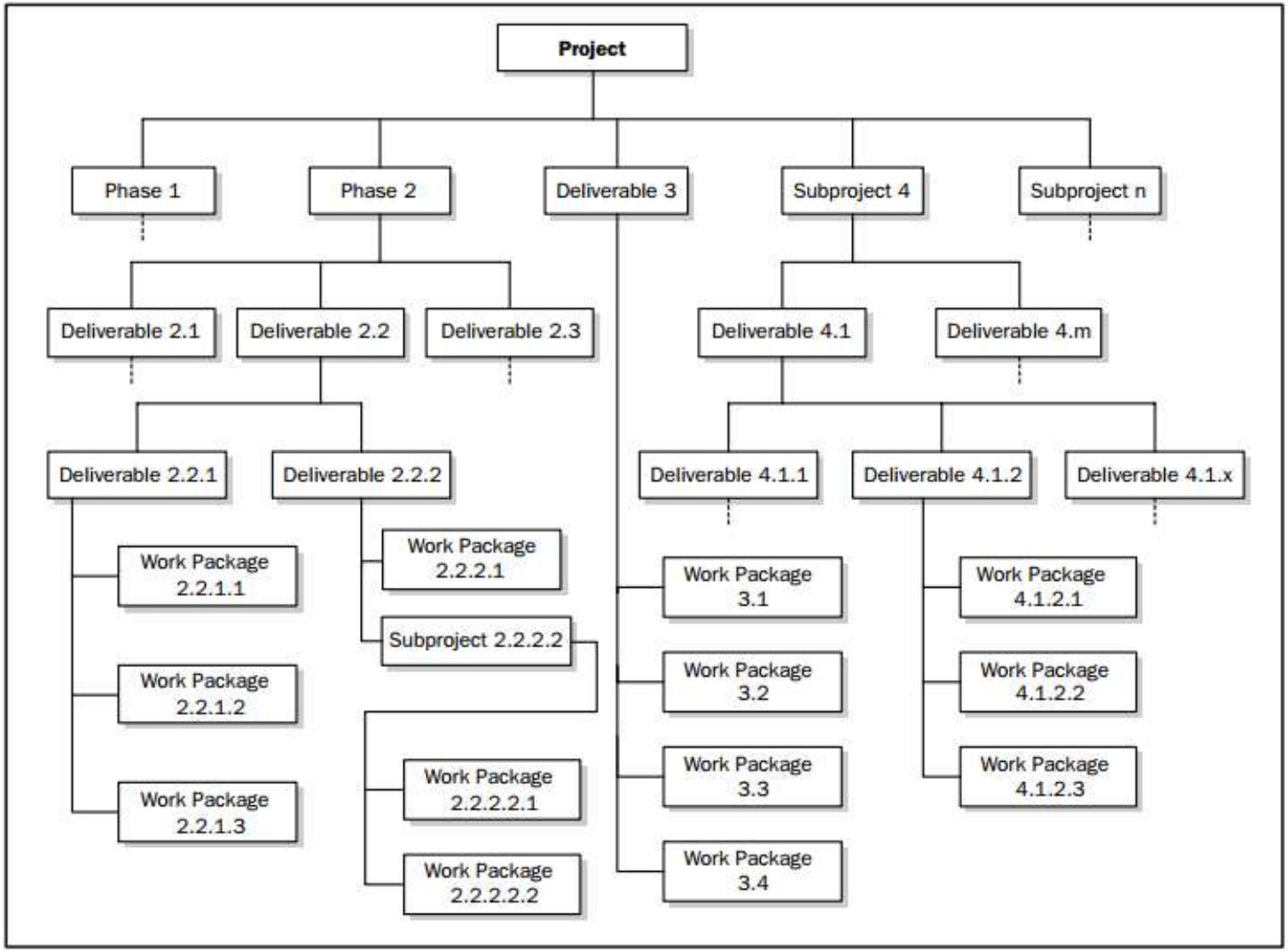
Project Scope Management

- 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.
- Managing the project scope is primarily concerned with defining and controlling what is and what is not included in the project.
- In the project context, the term scope can refer to:
  - Product scope: the features and functions that characterize a product, service or result.
  - Project scope: the work needs to be accomplish to deliver a product service or result.

Project Scope Management

- **Collect requirements:** Define and document stakeholders' needs to meet the project objectives.
- **Define scope:** Develop a detailed description of the project and product
- **Create Work Breakdown Structure (WBS):** Subdivide project deliverables and project work into smaller, more manageable components.

Work Breakdown Structure



Project Scope Management

- **Verify scope:** Formalize acceptance of the completed project deliverables.
- **Control scope:** Monitor the status of the project and product scope and manage changes to the scope baseline.

Project Time Management

- The Project Time Management processes include the following:
  - Activity definition- process of identifying the specific actions to be performed to produce the project deliverables
  - Activity sequencing-process of identifying and documenting the relationships among the project activities
  - Activity resource estimating – process of estimating the type and quantities of material, people, equipment or supplies required to perform each activity.

Project Time Management

- Activity duration estimation- process of approximating the number of work periods needed to complete the individual activities with the estimated resources.

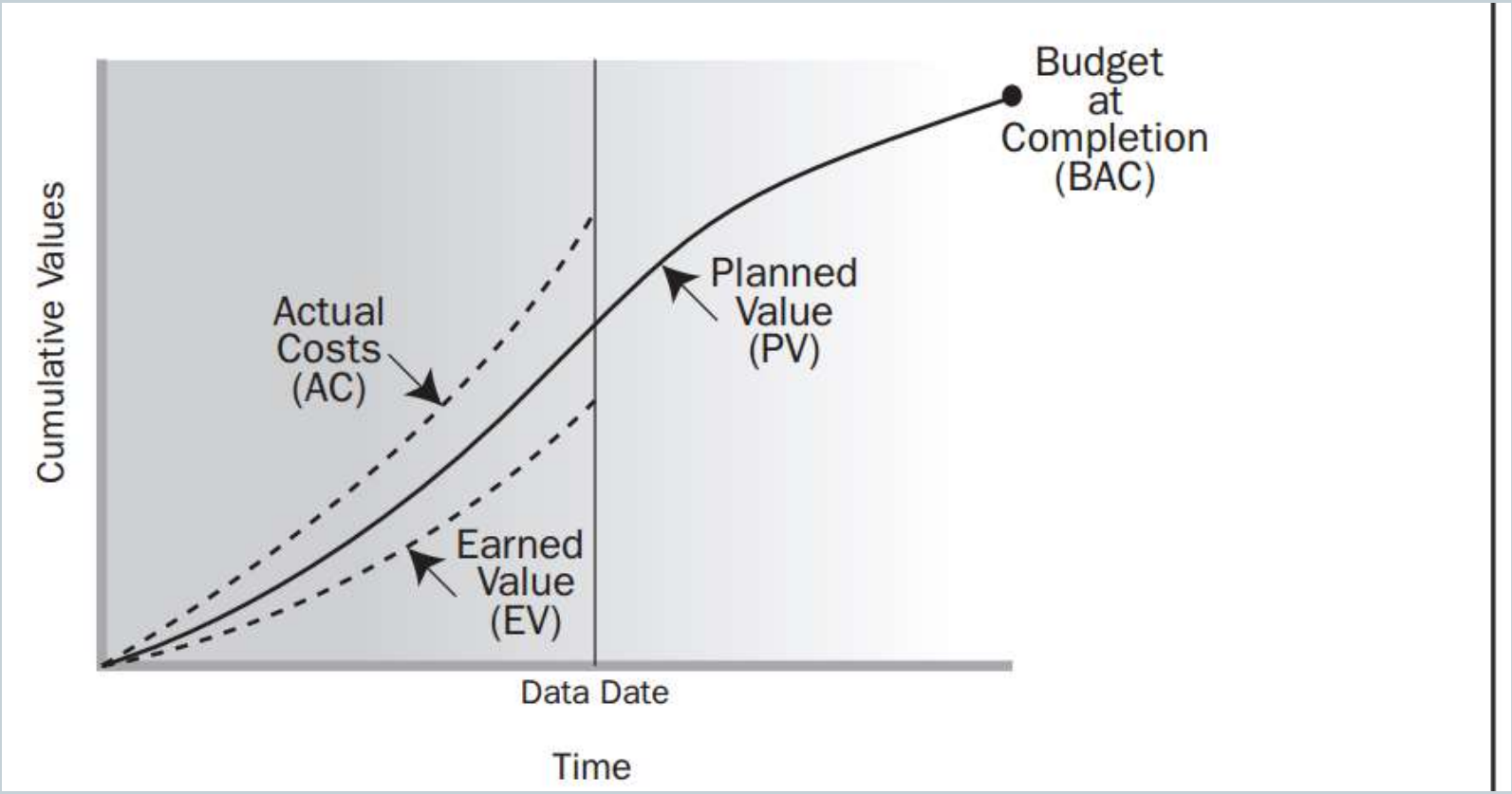
- Schedule development – process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule.

- Schedule control - process of monitoring the status of the project to update project progress and manage changes to schedule baseline.

Project Cost Management

- Project Cost Management includes the processes involved in planning, estimating, budgeting and controlling costs so that the project can be completed within the approved budget.
  - Cost estimating – developing an approximation of the monetary resources needed to complete project activities.
  - Cost budgeting – aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.
  - Cost control – monitoring the status to the project to update budget and managing changes to the cost baseline.

Project Cost Management



Project Quality Management

- Project Quality Management processes include all the 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.
  - Plan Quality – process of identifying quality requirements and/or standards for the project and product, and documenting how the project will demonstrate compliance.
  - Perform Quality Assurance – process of auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used.
  - Perform Quality Control – process of monitoring and recording the results of executing the quality activities to assess performance and recommend necessary changes.

Project Human Resource Management

- Project Human Resource Management includes the processes that organize, manage and lead the project team.
  - Develop Human Resource Plan – process of identifying and documenting project roles, responsibilities, and required skills, reporting relationships and creating a staff management plan.
  - Acquire Project Team – process of confirming human resource availability and obtaining team necessary to complete project assignments.

Project Human Resource Management

- Develop project team – process of improving the competencies, team interaction, and the overall team environment to enhance project performance.

- Manage project team – process of tracking team member performance, providing feedback, resolving issues and managing changes to optimize project performance.

Project Communications Management

- Project Communications Management is the Knowledge area that employs the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of project information.
  - Identify Stakeholders - involves the identification of all stakeholders that can impact the project. This Project Management Communication process involves documenting their level of interest, power, influence, and project impact.
  - Plan Communications - involves documenting the communication needs of the stakeholders identified in the Identify Stakeholders process.

Project Communications Management

- Distribute Information – involves making relevant information available to project stakeholders as planned.
- Manage Stakeholder Expectations - involves using the various communication methods, interpersonal skills and management skills to ensure the communication needs of stakeholders are met.
- Report Performance - involves ensuring performance, progress and forecast information are communicated to the identified stakeholders.

Project Risk Management

- Project Risk Management includes the processes concerned with conducting risk management planning, identification, analysis, responses and monitoring and control on a project.
- Objective: increase the probability and impact of positive events, and decrease the probability and impact of negative events.
  - Plan risk management – process of defining how to execute the risk management activities of a project
  - Identify risks – process of determining which risks may affect the project and documenting their characteristics.

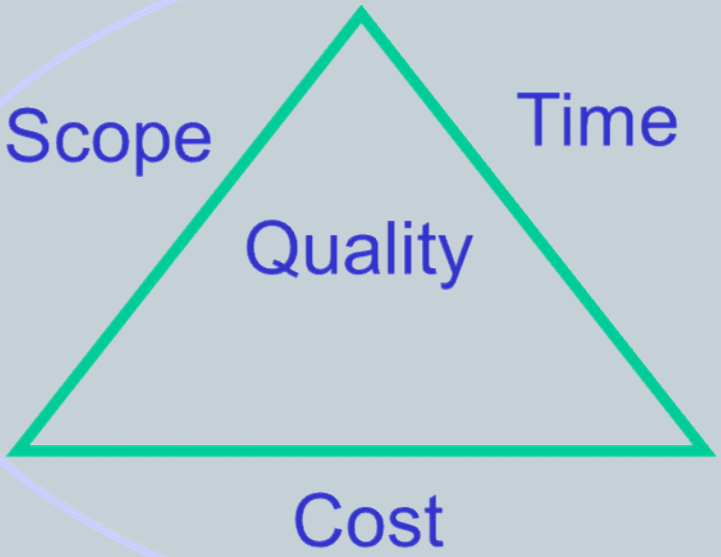
Project Risk Management

- Perform qualitative risk analysis – process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.
- Perform quantitative risk analysis – process of numerically analyzing the effect of identified risks on overall project objectives.
- Plan risk responses – process of developing options and actions to enhance opportunities and to reduce threats to project objectives.
- Monitor and control risks – process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.

Project Procurement Management

- Project Procurement Management includes the processes to purchase or acquire the products, services or results needed from outside the project team to perform the work.
  - Plan procurements - documenting purchasing decisions, specifying the approach and identifying the potential sellers
  - Conduct procurements - obtaining seller responses, selecting a seller and awarding a contract
  - Administer procurements - – managing procurement relationships, monitoring contract performance, and making changes and corrections as needed
  - Close procurements - completing each project procurement

Review Knowledge Areas



Facilitative functions:

- Human Resource Mgt
- Communications Mgt
- Risk Management
- Contract/Procurement Mgt

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & 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 Execution	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 Collect Requirements 5.2 Define Scope 5.3 Create WBS		5.4 Verify Scope 5.5 Control Scope	
6. Project Time Management		6.1 Define Activities 6.2 Sequence Activities 6.3 Estimate Activity Resources 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
7. Project Cost Management		7.1 Estimate Costs 7.2 Determine Budget		7.3 Control Costs	
8. Project Quality Management		8.1 Plan Quality	8.2 Perform Quality Assurance	8.3 Perform Quality Control	
9. Project Human Resource Management		9.1 Develop Human Resource Plan	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management	10.1 Identify Stakeholders	10.2 Plan Communications	10.3 Distribute Information 10.4 Manage Stakeholder Expectations	10.5 Report Performance	
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 Monitor and Control Risks	
12. Project Procurement Management		12.1 Plan Procurements	12.2 Conduct Procurements	12.3 Administer Procurements	12.4 Close Procurements