

Introduction to Project Management

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What is a Project?

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

- Temporary: it has a start and an end
- Unique Product, Service or Result
- Progressive Elaboration

Project v. Operational Work

Work can be categorised as either projects or operations, although there may be an overlap.

Shared Characteristics:

- Performed by people
- Constrained by resources
- Planned, executed and controlled

Project v. Operational Work

Design of a new car

Manufacture of a car

Design of a building

Construction of a building

Annual Accounts of a building company

Project v. Operational Work

Design of a new car – Project

Manufacture of a car – Operations

Design of a building – Project (overlap?)

Construction of a building – Project (overlap?)

Annual Accounts of a building company – Operations

What is Project Management?

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

Managing Projects includes:

- Identifying Requirements
- Establishing clear **and achievable** objectives
- Balancing quality, scope, time and cost
- Adaptation of specs, plans, and approach to meet the requirements of project stakeholders

Project Management

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

Areas of Expertise:

- Project Management Body of Knowledge
- Application Area Knowledge, standards and Regulations (in our case construction)
- Understanding the Project Environment
- General Management knowledge and skills
- Interpersonal Skills

Areas of Expertise

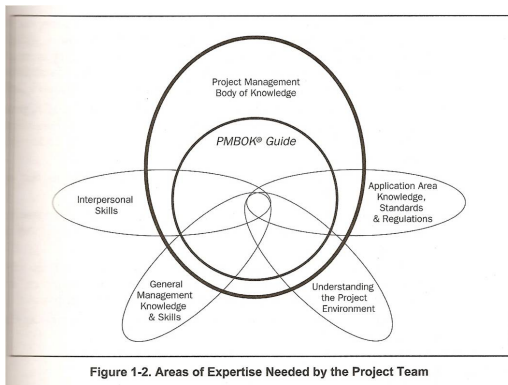


Figure: Ref: Project Management Institute (2004) A Guide to the Project Management Body of Knowledge (PMBOK Guide), 3rd Edition; Project Management Institute, ISBN 978-1-930699-45-8

Application Area Knowledge

Functional Departments and Supporting Disciplines

- legal, finance, marketing, logistics

Technical Elements

- engineering, etc.

Management Specialization

- contracting, new products, etc.

Industry Groups

- Construction, Financial Services, Automotive, etc.

Project Environment

Cultural & Social Environment

- How will the project effect people and/or how will people effect the project? *Shell to Sea*

International & Political Environment

- Impact of Local Legislation; Stability of political regime *Do you want to be a contractor in Iraq, Syria, Afghanistan?*

Physical Environment

- Impact on local ecology, geography, historical sites etc.

General Management Knowledge & Skills

Financial Management & Accounting

Purchasing & Procurement

Sales & Marketing

Contracts & Commercial Law

Logistics & Supply Chain

...

Interpersonal Skills

Effective Communication
Influencing the Organisation
Leadership
Motivation

- self and others

Negotiation & Conflict Management
Problem solving

- Skill and judgment, not just authority to make decisions

Project Management Body of Knowledge (PMBOK®)

Consists of Ten (10) Knowledge Areas

- 1 Project Integration Management
- 2 Project Scope Management
- 3 Project Time Management
- 4 Project Cost Management
- 5 Project Quality Management
- 6 Project Human Resource Management
- 7 Project Communications Management
- 8 Project Risk Management
- 9 Project Procurement Management
- 10 Project Stakeholder Management

Areas of Expertise

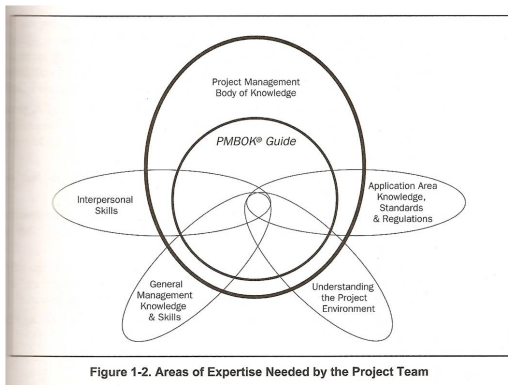


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Project Management Context

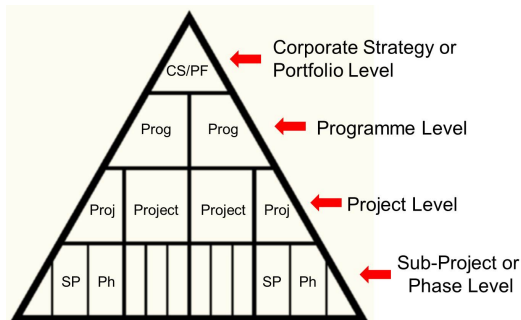


Figure: Project Management tends to exist within a larger framework

Project Management Context

Portfolio

- Collection of Projects or Programs grouped together to facilitate effective management

Program

- Group of related projects managed in a coordinated way in order to obtain benefits not available from managing individually

Sub-Project

- Projects in their own right, but form part of a larger overall project.

Project Life Cycle

Any project can be broken down into several discrete phases. These phases then make up the overall Project Life Cycle. Knowledge of the project life cycle will give an insight into:

- Cash flow projections
- Resource projections
- Stakeholder influence
- Cost of changes
- Etc.

Characteristics of the Project Life Cycle

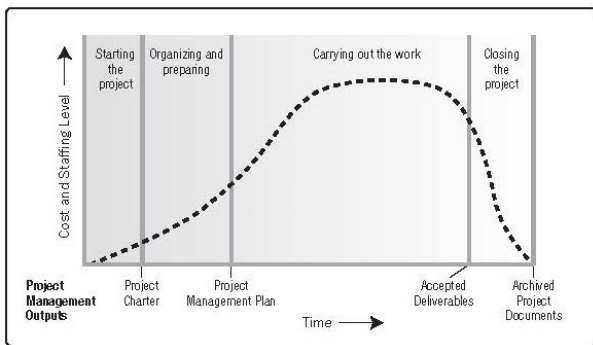


Figure 2-8. Typical Cost and Staffing Levels Across a Generic Project Life Cycle Structure

Characteristics of the Project Life Cycle

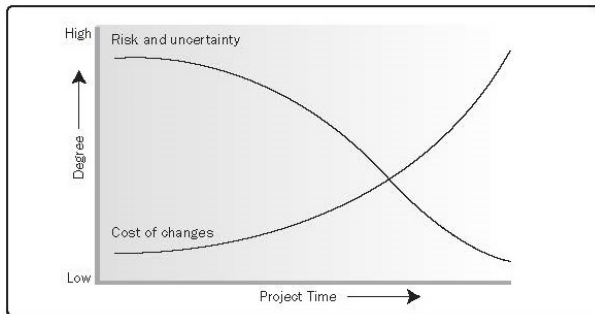


Figure 2-9. Impact of Variable Based on Project Time

Characteristics of the Project Phases

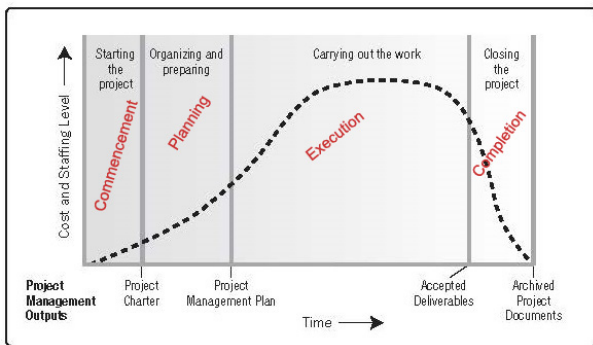


Figure 2-8. Typical Cost and Staffing Levels Across a Generic Project Life Cycle Structure

Characteristics of the Project Life Cycle

Phases Generally Define

- What technical work to undertake in each phase such as Feasibility, Design, Tender, Construction, Handover
- What the deliverables are for each phase i.e Feasibility Report, Design and Tender Specifications, Completed Building or Infrastructure, Taking-Over-Cert.
- Who is involved, such as Finance House, Architects, Consultant Engineers, Contractors, Project Sponsor etc.
- How to Control & Improve each phase

Characteristics of Project Phases

Phases generally:

- are sequential
- have specific deliverables
- may be sub-divided
- conclude with a review
 - 'proceed to next' or 'kill point'
- Can be 'fast-tracked'
 - Commencement of next phase before completion of preceding; carries increased risk
- Formal Phase Completion does not include authorising the next phase commencement

Characteristics of Project Phases

General Comments

- Likelihood of Project Completion is low at the start, and increases over the life cycle; even with huge cost overruns
 - Panama Canal, Concorde, Dublin Port Tunnel
- Decisions made early in the project life-cycle have a profound effect on project costs
- Costs of Change increase through the project lifecycle
- Phase completion and/or commencement should be controlled

Relevance to Project Planning

- Life Cycle Phasing not intended to 'handcuff' the Project Manager
- the life-cycle phase approach provides a methodology for uniformity in project planning.
- allows for the use of standardised checklists, procedures, activities etc.
- allows for phase control - (project gates)
 - At the end of each phase there is a meeting of the project manager, sponsor, senior management to review the phase completed, and to obtain authorisation to proceed to the next phase.

Phase Control - Gating the Project

'end of phase' meeting'

- Work to date is assessed
- Budgets affirmed or updated
- Schedules affirmed or updated
- Decision to proceed or otherwise is made.

Possible Decisions

- Proceed to next phase based on approved funding level
- Proceed to next with new or modified objectives
- Postpone approval: More information required; major budget review; etc
- Terminate Project: Off-ramp, Kill Point

Example of Life Cycle & Phasing

Consider a company that has defined the following life-cycle

- Conceptualisation
- Feasibility
- Preliminary Planning
- Detail Planning
- Execution
- Commissioning & Handover

Example of Life Cycle & Phasing

Procedures for Conceptualisation could include:

- Brainstorming to identify as many solutions to a particular problem as possible
- Describe problem solutions in detail

Procedures for Feasibility could include:

- Evaluation of all alternatives identified above
- Evaluation of Market Potential
- Evaluation of Cost Effectiveness
- Evaluation of Technical Issues
- Selection of Optimum Solution
- Preparation of Project Goals and Objectives
- Prepare Preliminary Cost Estimates and development Plan

Example of Life Cycle & Phasing

Procedures for Preliminary Planning could include:

- Implementation of Development Plan as derived previously
- Completion of the Following Elements
 - General Scope of Works
 - Contractors Tasks
 - Performance Requirements
 - Documentation Requirements
 - Risk Assessment

Example of Life Cycle & Phasing

Conceptualisation	→→→ Gate 1
Feasibility	→→→ Gate 2
Preliminary Planning	→→→ Gate 3
Detail Planning	→→→ Gate 4
Execution	→→→ Gate 5
Commissioning & Handover	→→→ Gate 6

The Kill Point

Abandoning a project gets more difficult as time progresses
Sometimes abandoning a project is the most pragmatic business decision.

So why to stakeholders continue?

- **Principle of Irrational Escalation**
- Personally invested
- Emotion; ego; refuse to admit defeat; reputation; etc.
- Time; cannot turn back; delivery deadline
- Money; non-recoverable investment
- Failure to recognise abandonment as an viable option

Project Stakeholders

Stakeholders are individuals or organisations that are actively involved in the project, or whose interests may be effected as a result of the project execution or completion. (PMBOK Defn.)

- They may exert influence over the project

Project Management Teams must identify and manage them.

- Cannot ignore them

Project Stakeholders

Stakeholders have varying levels of responsibility, authority, and input.

These levels can change over the course of the project

- General Population can exert a great influence during the planning stage (Jury's Hotel Dublin)
- Influence of Population greatly diminished once planning is obtained, however may disrupt progress on other issues, such as noise, dust, traffic etc.

Project Stakeholders

Stakeholders are not always easy to identify

Failure to Identify Key Stakeholders can have a serious negative effect on a project

- UK NHS IT Project (NPfIT)

Stakeholders can have a **negative** or **positive** effect on the project

- **Positive Stakeholders** are those who will benefit from the successful outcome of the project
 - Usually easy to identify
- **Negative Stakeholders** are those who will see negative outcomes from the projects success.
 - A New Hotel Project will have a negative effect on the trade of nearby hotels
 - A new factory may have negative effect on an existing factory's ability to retain workers

Project Stakeholders

Positive Stakeholders

- Their interests are best served by helping the project to succeed

Negative Stakeholders

- Their interests are best served by impeding project progress

Ignoring Negative Stakeholders can put an entire project at risk of failure; suspension; financial ruin; or worse.

Project Stakeholders

Key Stakeholders on every Project include:

- **Project manager.** The person responsible for managing the project.
- **Customer/user.** The person or organization that will use the project's product. There may be multiple layers of customers. For example, the customers for a new pharmaceutical product can include the doctors who prescribe it, the patients who take it and the insurers who pay for it.
- **Performing organization.** The enterprise whose employees are most directly involved in doing the work of the project.
- **Project team members.** The group that is performing the work of the project.

Project Stakeholders

Key Stakeholders on every Project include:

- **Project management team.** The members of the project team who are directly involved in project management activities.
- **Sponsor.** The person or group that provides the financial resources, in cash or in kind, for the project.
- **Influencers.** People or groups that are not directly related to the acquisition or use of the project's product, but due to an individual's position in the customer organization or performing organization, can influence, positively or negatively, the course of the project.
- **PMO.** If it exists in the performing organization, the PMO can be a stakeholder if it has direct or indirect responsibility for the outcome of the project.

Project Stakeholders

Stakeholders can be further categorized into:

- Internal
- External
- Owners
- Investors
- Sellers
- Contractors
- Government agencies
- Lobbying organisations

Stakeholders roles can overlap

- Construction of new fabrication unit for a factory
- Self Financed (Sponsor); End User; PM Team Members etc.

Project Stakeholders

Project Managers must manage stakeholders;

- This is not an easy task as often stakeholders interests oppose each other.

Example: Wind Farms:

- Most people when asked say they agree that wind farms are necessary; green energy etc.
- Traditionally it was very difficult to obtain PP from local authorities. Legislation had to be enacted to change this. Kerry CC, Slaheny Energy Ltd., March 2003

Responsibility of a Project Manager to Stakeholders

Rooted in Ethics and Ethical Behaviour

- Truthful representation of all information
- Full disclosure of all information
- Protection of company-proprietary information
- Responsibility to report violations
- Full disclosure, and in a timely manner of all conflicts of interest
- Ensure that all PM team members comply with the above

Ethical Behaviour may be either voluntary, or imposed by Company Policy.

Managing Stakeholders

- Responsibility for Managing Stakeholders rests firmly with the Project Management Team; and the PM Team stand to lose the most if it not effective
- Primary Requirement is Open Communications and Managed Expectations

Managing Stakeholders

Managing Expectations:

- **Always** build Contingency into your plans
 - Be ready to offer alternatives/options that continue to meet project objectives
- **Never** offer an alternative or bow to stakeholder pressure unless you are sure that your (or their) alternative will work
 - Request time to evaluate alternatives
 - If you don't, you run the very real risk of signing up to 'mission impossible' and causing real damage to the trust between parties
- **Beware** of modifying yours, or others, estimates on time/cost/complexity etc.
 - Estimates are often used as the first point of attack on a plan. i.e. 'You are too conservative here; you can shave a week off that ...'

Managing Stakeholders

Giving Commitments

At some point you have to give a commitment, **so...**

- Never commit [to a deadline] too early
- Make sure you know what the customer is **expecting**; this is normally based on what you have led them to believe
- Know what elements on your project have no **margin for error**, and make sure that nothing goes wrong with them.
- When giving a commitment, make sure that you can **at least meet it**, and hopefully exceed it.
- If you are going to fail to meet a commitment, make sure you have a **fallback** position.

Project Stakeholders

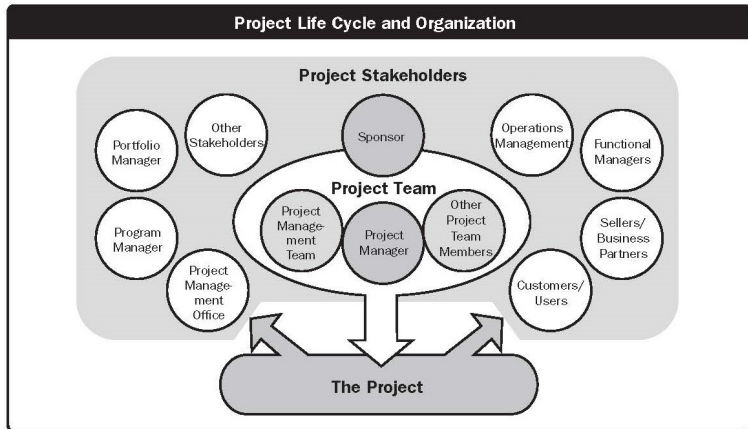


Figure 2-7. The Relationship Between Stakeholders and the Project

Project Organization

Table 2-1. Influence of Organizational Structures on Projects

<div>Organization Structure</div> <div>Project Characteristics</div>	Functional	Matrix			Projectized
		Weak Matrix	Balanced Matrix	Strong Matrix	
Project Manager's Authority	Little or None	Low	Low to Moderate	Moderate to High	High to Almost Total
Resource Availability	Little or None	Low	Low to Moderate	Moderate to High	High to Almost Total
Who manages the project budget	Functional Manager	Functional Manager	Mixed	Project Manager	Project Manager
Project Manager's Role	Part-time	Part-time	Full-time	Full-time	Full-time
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time

Organisational Influences

Projects are typically part of an organisation that is larger than the project

- HSE is bigger than a new hospital

The maturity of an organisations Project Management Systems can (and normally does) influence the project

Key Aspects of these organisations are their:

- Organisational Systems
- Organisational Cultures and Styles
- Organisational Structures

Organisational Systems

Organisational Systems can be:

- Financial Systems
- Reporting Systems
- Procurement Systems
- IT Systems
- Communications Systems
- Departments

In basic terms, the organisational infrastructure required to support projects

- PMBOK® refers to many of these as **Organisational Process Assets**

Organisational Systems

Project-based organisations are those whose operations consist primarily of projects

Two categories:

- Organisations that derive their revenue primarily from performing projects for others under contract
- Organisations that have adopted Management by Projects

Non-Project based organisations often lack the management systems to support projects effectively.

Organisation Cultures and Styles

Cultures and Styles can be

- Shared Values, norms, beliefs and expectations
- Policies and Procedures
- View of Authority Relationships
- Work ethic and work hours

Such as:

- Entrepreneurial Leadership: More likely to take on high risk project
- Bureaucratic Style: Less likely to take on risk
- Participative Style: Assists in project communications and ultimately project success

Project Management

- Up to now we have been 'setting the scene', i.e. looking at what a project is, who is involved, what organisation structures best support projects & project managers, etc.
- This lecture presents an overview of the project management processes used in industry.
- Over the coming weeks & months these areas are going to be presented in detail.

Project Management Processes

Project Management is accomplished through **processes**, using PM knowledge, skills, tools and techniques that:

- Receive inputs
- Generate outputs

Project Management Processes

- In order for a project to be successful, the PM team must
- Select appropriate Processes
- Use a **defined** approach to adapt specifications and plans to meet project (and/or product) requirements
- Comply with requirements to meet stakeholders needs, wants and expectations
- Balance the demands of Scope, Time, Cost, Quality, Resources, and Risk.

Project Management Process Groups

There are 5 process groups:

- 1 Initiating Process Group
- 2 Planning Process Group
- 3 Executing Process Group
- 4 Monitoring and Controlling Process Group
- 5 Closing Process Group

PROCESS GROUPS ARE NOT PROJECT PHASES

Project Management Process Groups - Overview

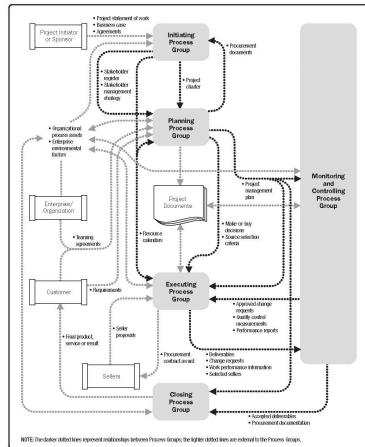


Figure 3-3. Project Management Process Interactions

Initiating Process Group

- The Initiating Process Group Consists of the processes that facilitate the formal authorisation to start a new project or phase.
- Elements are often carried out external to the project scope of control;
 - i.e. before embarking on a project an organisation may document its requirements, evaluate alternatives, and chose one; a project scope statement may also be generated.
- This can 'blur' the boundary between the original investigation (feasibility study) and the formal initiation of the project

Initiating Process Group

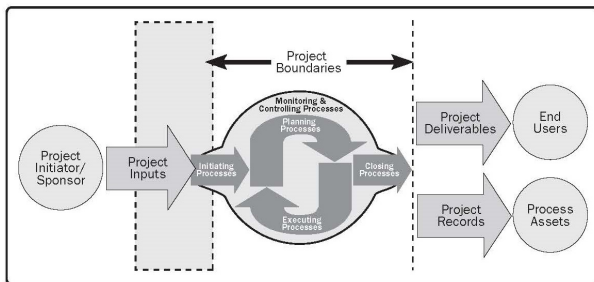


Figure 3-4. Project Boundaries

Initiating Process Group

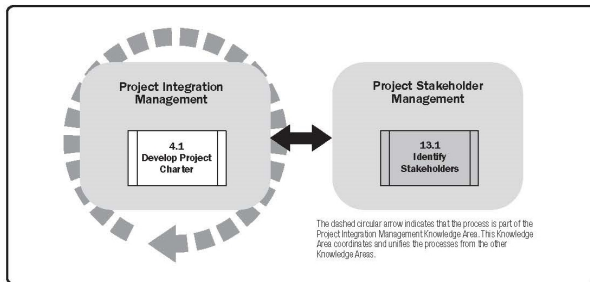


Figure A1-4. Initiating Process Group

Initiating Process Group

- This is the formal commencement of the Project
- Used to validate the assumptions, decisions and constraints previously made and identified (Kill Point?)
- Project Manager is usually appointed at this stage

Planning Process Group

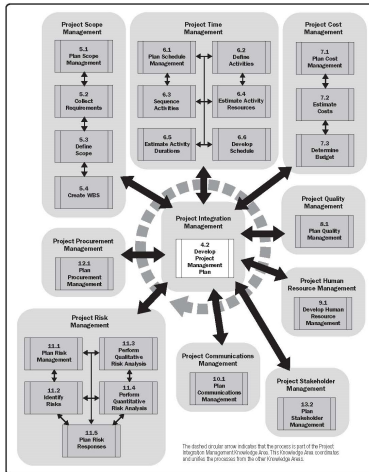


Figure A1-7. Planning Process Group

Planning Process Group

Thought by many to be the most important

- it is vital, but pointless if not integrated into all other aspects of Project Management Process Groups

PP Group is used to develop the PM Plan

These processes identify, define and mature the project scope, cost, and schedule

The PP Group should involve all relevant stakeholders - NPfIT

Project failed in this respect

It is an iterative process

- For instance a schedule risk may not be identified until 'activity duration estimating' has been completed

Cannot continue indefinitely; the executing organisation should set a date for completion, dependant on the nature of the project. (General Management Issue)

Executing Process Group

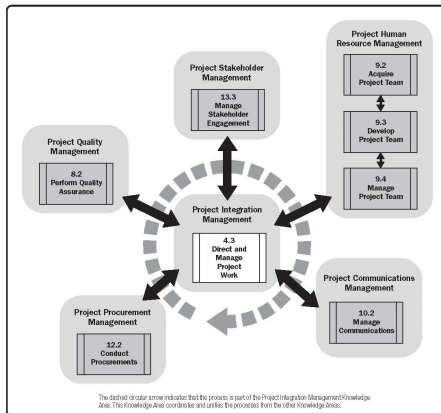


Figure A1-32. Executing Process Group

Executing Process Group

- This process group consists of processes used to complete the work defined in the project management plan.
- The Executing P.G. involves coordination of people and resources, as well as integrating and performing the activities in accordance with the PM Plan
- This process group also addresses issues of Scope and change control.
- Normally, execution will cause changes to planning; identify previously unknown risks; etc. Not all changes effect the PM Plan, but usually require analysis
- The vast majority of the Project Budget is expended in performing the Executing Process Group.

Monitoring & Controlling Process Group

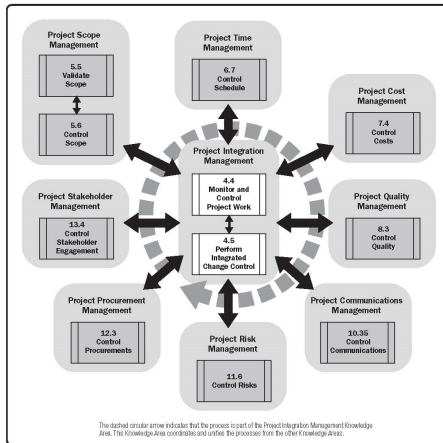


Figure A1-41. Monitoring and Controlling Process Group

Monitoring & Controlling Process Group

- The M&C process group consists processes used to **observe** project execution.
 - Used to identify potential problems, corrective actions, and control project execution.
- The output of these processes are compared with the project plan
- Also includes Change Control, Preventative Actions,
- It is a continuous process, providing an insight into the status of the entire project at any given time
- This information may necessitate the modification of the overall project plan.

Closing Process Group

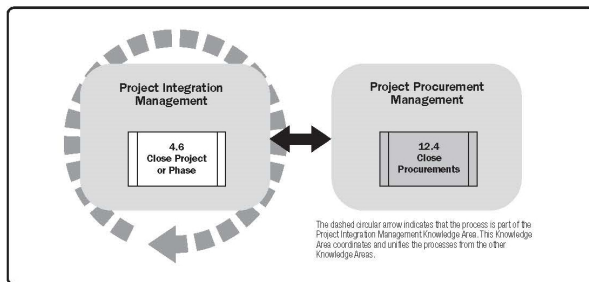


Figure A1-53. Closing Process Group

Closing Process Group

- The closing process group includes processes used to **formally** terminate all activities of a project or project phase
- When completed, this process group verifies that all processes defined within the other process groups are completed, and formally establishes that the project or project phase is finished.

Process Interactions

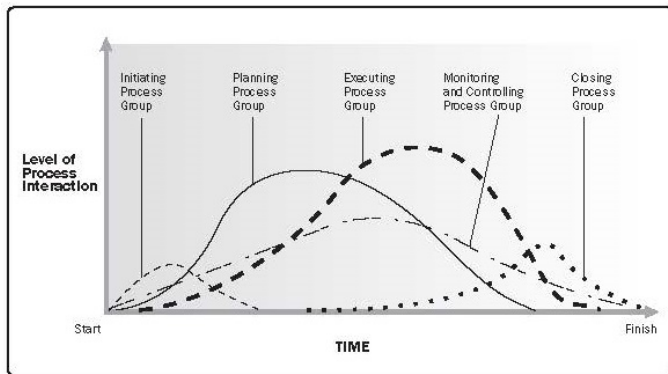


Figure 3-2. Process Groups Interact in a Phase or Project

Process Interactions

- The Process Groups are linked; they are not independent of each other.
- Generally the output of one process becomes the input of another process
- Processes Groups are seldom, if ever, discrete events; often overlap with other groups.
- The level of interaction generally depends on how far the project has progressed.
- If a project is split into formal phases, these interactions may cross over project phases.
 - Tends to present difficulties when it does.

Process Interactions

- Not all processes are required on all projects; not all process interactions are present on all projects
- The PM team must decide which processes to run and how to run them.
 - (may be governed/dictated by PMO, or Company Protocol)

Single Phase Project

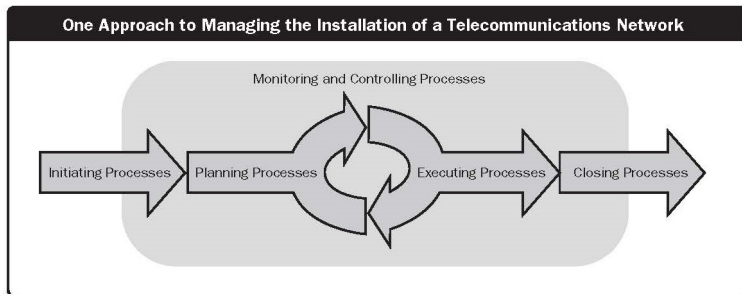


Figure 2-10. Example of a Single-Phase Project

Multiphase project



Figure 2-11. Example of a Three-Phase Project

Overlapping Phases

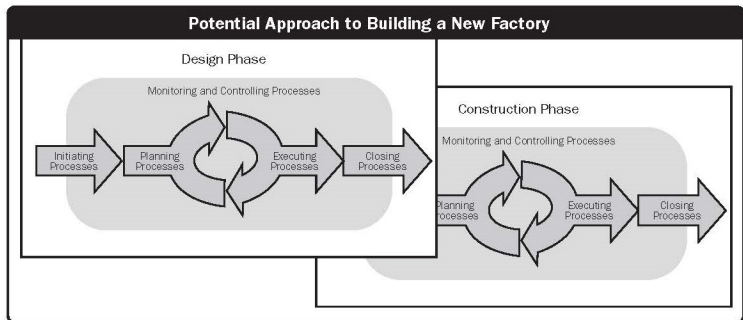


Figure 2-12. Example of a Project with Overlapping Phases