

# CE 401 – PROJECT PLANNING AND CONSTRUCTION MANAGEMENT

## INTRODUCTION

### WHAT IS A PROJECT?

“A temporary endeavor undertaken to create a unique product or service”

definite beginning and end with specific objectives.

different owner, designers, contractors, location (may have repetitive elements from previous projects).

Composed of jobs, activities, functions or tasks that are related one to the other in some manner, and all of these should be completed in order to complete the project.

# **INTRODUCTION**

## **WHAT IS PROJECT MANAGEMENT?**

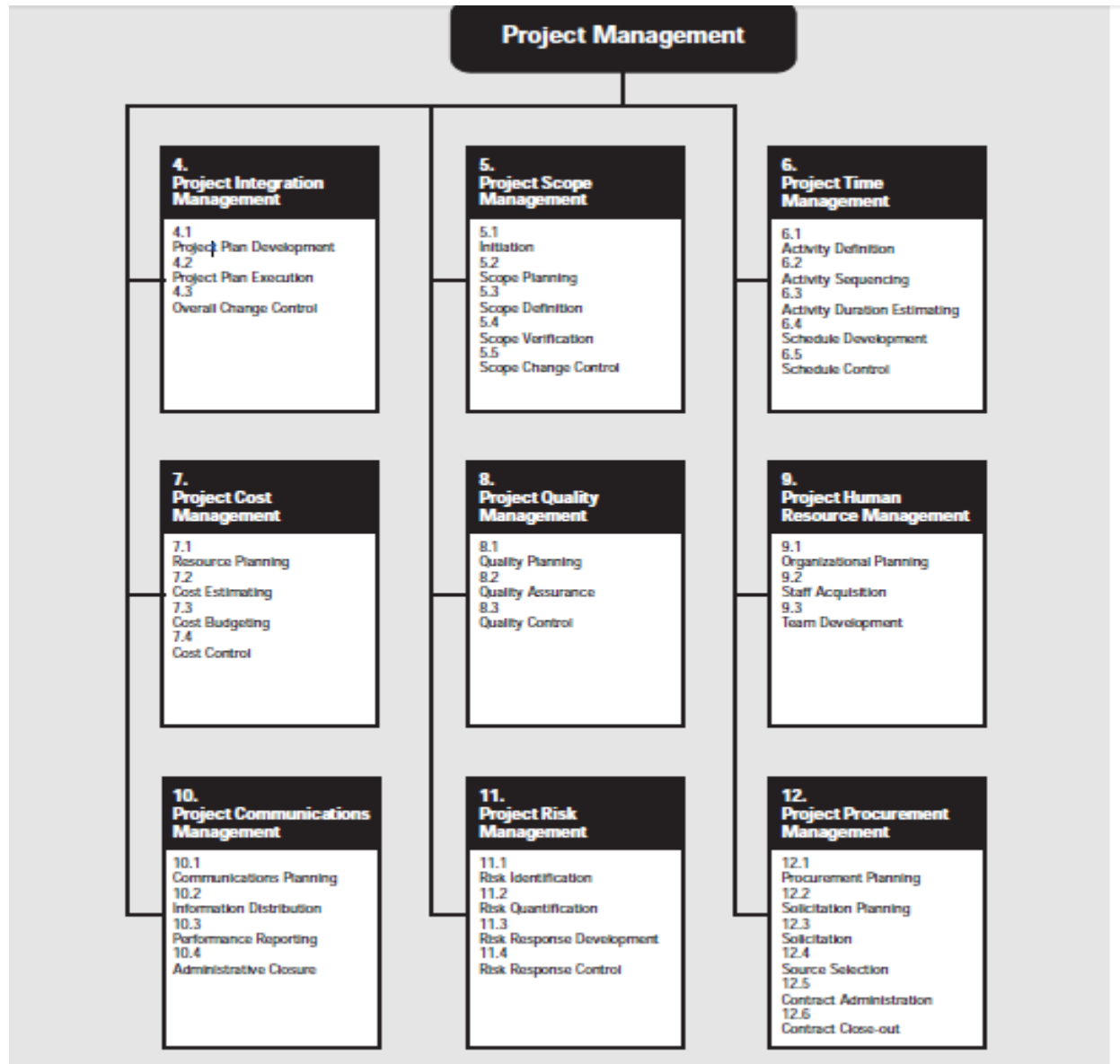
**Application of Knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholders expectations from the project**

**Balancing competing demands among**

- Scope, time, cost and quality**
- Stakeholders with differing needs and expectations**
- Identified requirements ( needs) and unidentified requirements (expectations)**

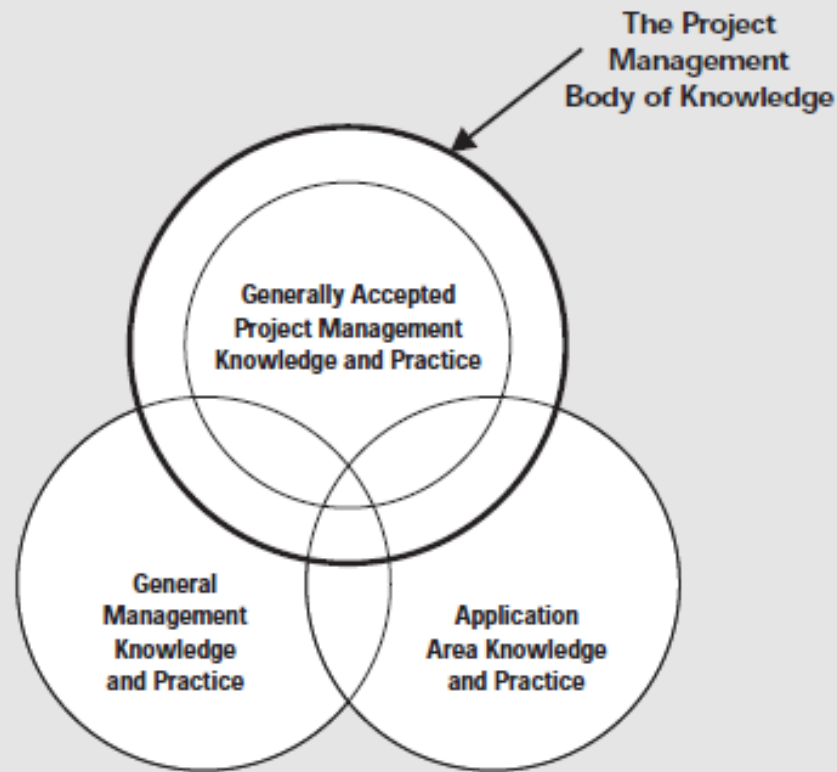
# PM Knowledge Areas and Processes

CE 401



# Relationship To Other Management Disciplines

Figure 1-2. Relationship of Project Management to Other Management Disciplines



# Areas of Expertise Required

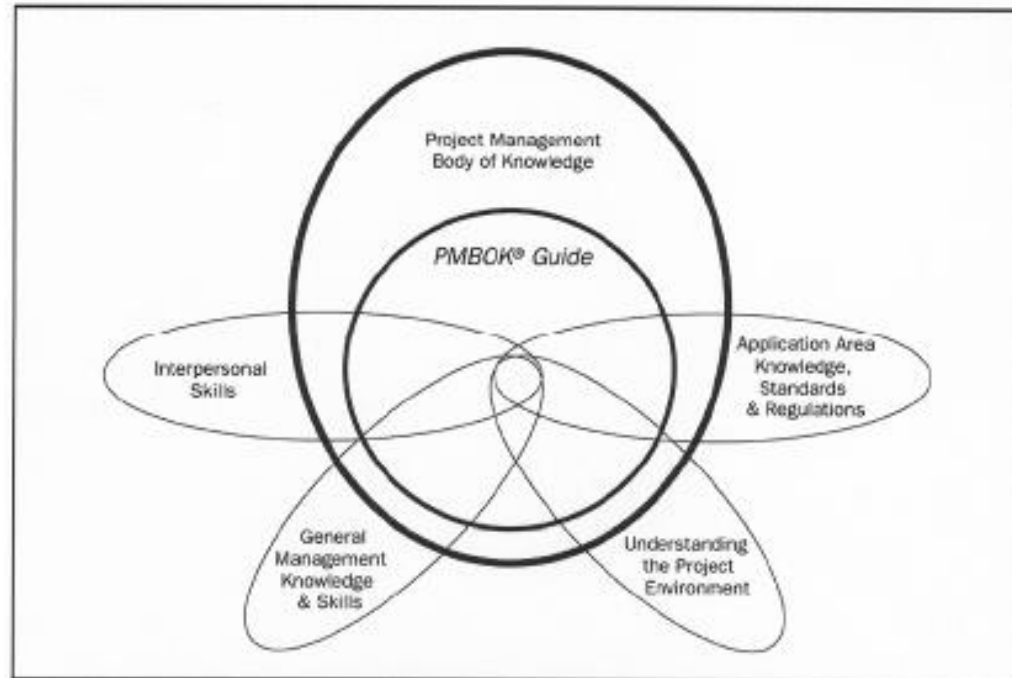


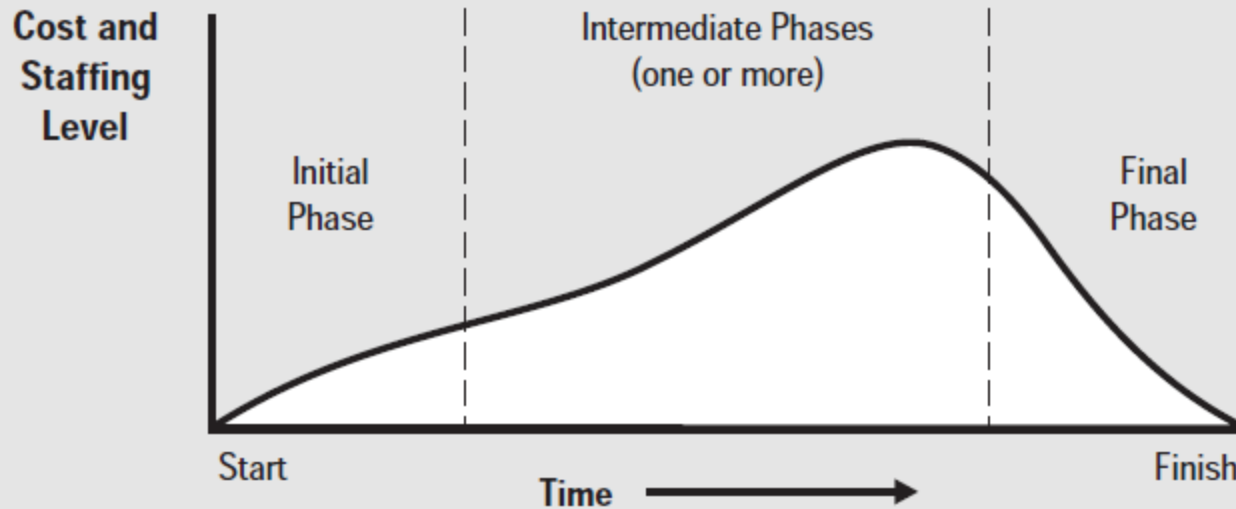
Figure 1-2. Areas of Expertise Needed by the Project Team

## The Project Management Context

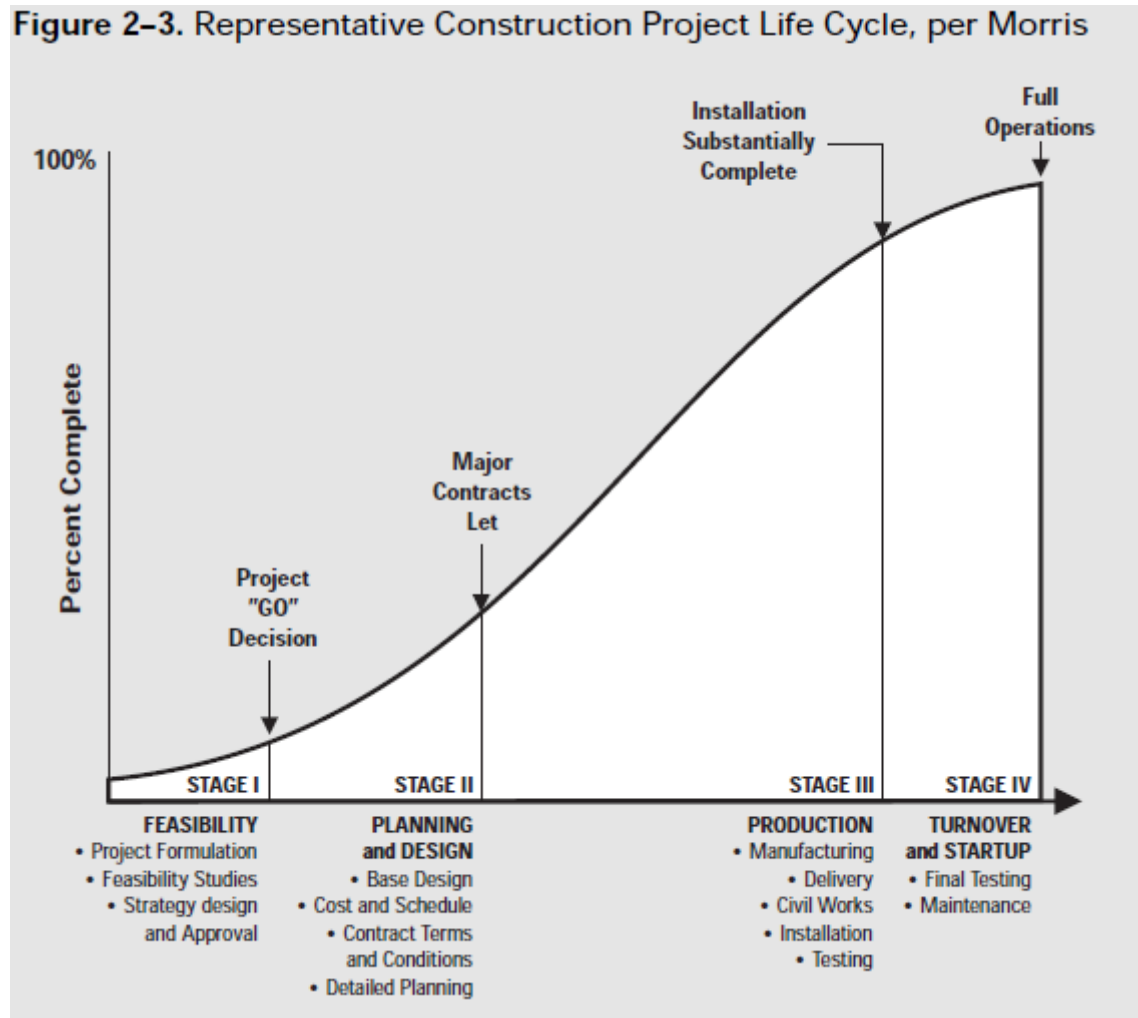
- Project Phases and the Project Life Cycle
- Project stakeholders
- Organizational Influence
- Key General Management Skills
- Socioeconomic Influences

# Project Phases and Project Life cycle

Figure 2-1. Sample Generic Life Cycle



# Representative Construction Project Life Cycle



## Representative Construction Project Life Cycle

- **Feasibility** – Project formulation, feasibility studies, and strategy design and approval

**Planning and Design** – base design, cost and schedule, contract terms and conditions and detailed planning. Major contracts are let

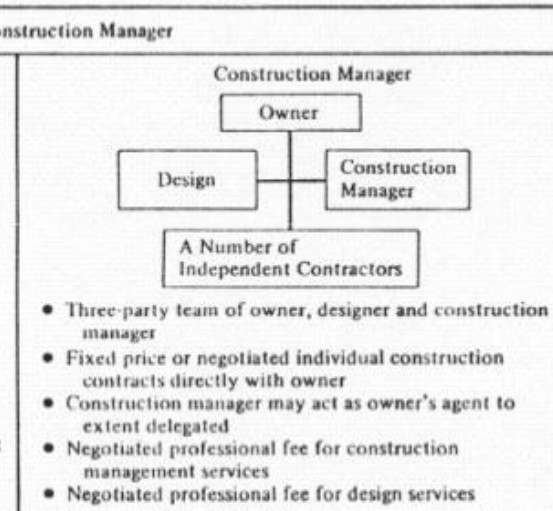
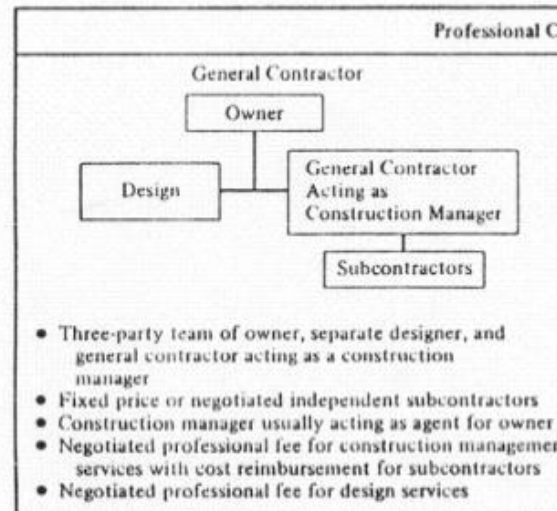
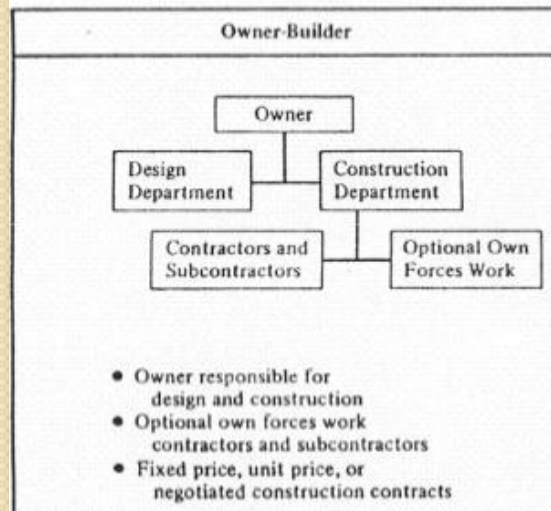
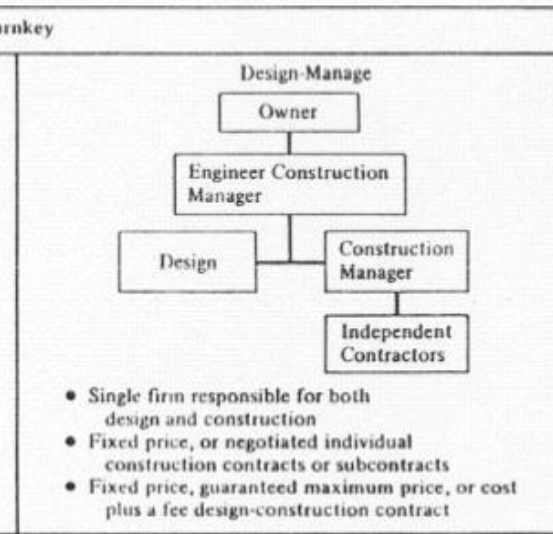
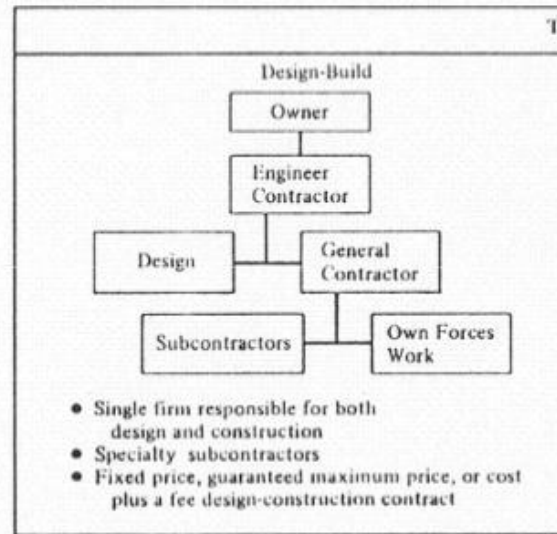
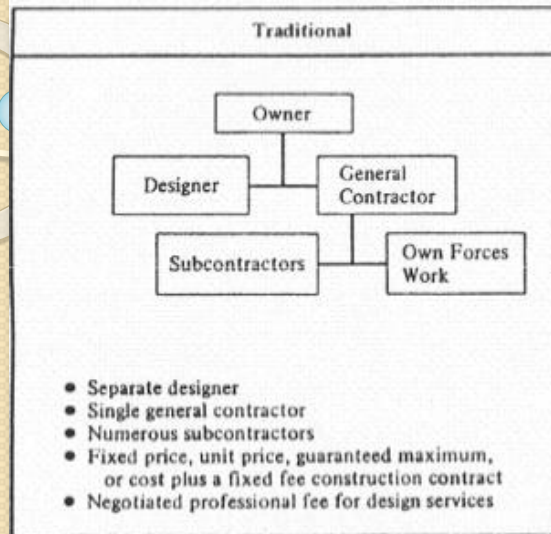
**Production** – manufacturing, delivery, civil works, installation and testing. The facility is substantially complete at the end of this phase

**Turnover and start-up** – final testing and maintenance. The facility is in full operation at the end of this phase

## Project Stakeholders

- **Project Manager**
- **Customer**
- **Performing Organization**
- **Project Team Member**
- **Sponsor**

## Contractual Relationships



# Key General Management Skills

- Leading
- Communicating
- Negotiating
- Problem Solving
- Influence the Organization

# **SOCIAL-ECONOMIC-ENVIRONMENTAL INFLUENCES**

- Standard and Regulations
- Internationalization
- Cultural Influences
- Social – Economic- Environmental  
Sustainability

## **Project Organization**

- Projects are typically part of organization larger than
  - Government agencies
  - Corporation
  - Healthcare institution

Joint ventures, Partnering

# Project Organization

## Systems

- Derive revenue from projects
- Management by projects

Non-project based organization –  
manufacturing company, financial service  
firm (will have departments and other  
sub-units that operate as project-based  
organization)

# Project Organization

## Organizational Culture and style

- Unique and describable culture
- Reflected in their shared values, norms, belief and expectations

(i.e. team proposing high risk will get approval from Aggressive organization)

# Project Organization

## Organizational Structure

-Can be characterized as spanning a spectrum from 'functional' to 'projectized', with variety of matrix structure in between

Figure 2-6. Organizational Structure Influences on Projects

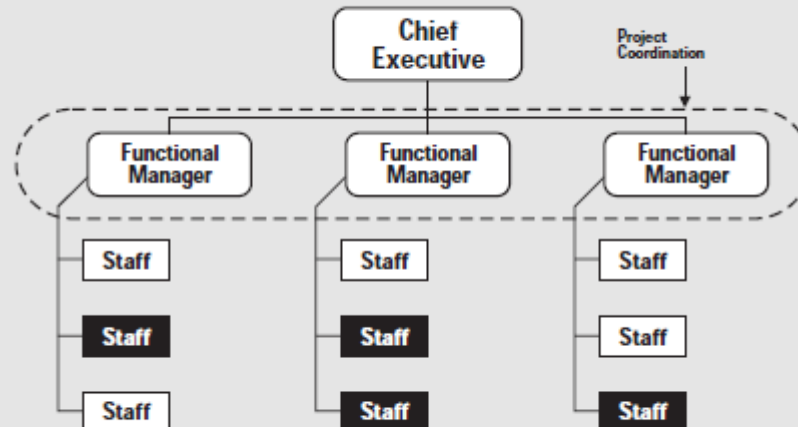
Project Characteristics	Organization Type	Matrix			Projectized
		Functional	Weak Matrix	Balanced Matrix	
Project Manager's Authority	Little or None	Limited	Low to Moderate	Moderate to High	High to Almost Total
Percent of Performing Organization's Personnel Assigned Full-time to Project Work	Virtually None	0-25%	15-60%	50-95%	85-100%
Project Manager's Role	Part-time	Part-time	Full-time	Full-time	Full-time
Common Titles for Project Manager's Role	Project Coordinator/ Project Leader	Project Coordinator/ Project Leader	Project Manager/ Project Officer	Project Manager/ Program Manager	Project Manager/ Program Manager
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time

# Project Organization

## Organizational Structure

### Classic Functional Organization

Figure 2-7. Functional Organization



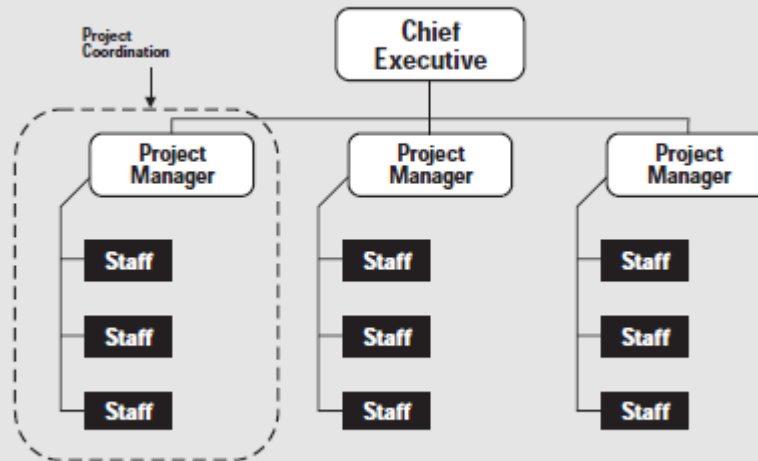
(Black boxes represent staff engaged in project activities.)

# Project Organization

## Organizational Structure

### Projectized Organization

Figure 2-8. Projectized Organization



(Black boxes represent staff engaged in project activities.)

## Matrix Organization

Figure 2-9. Weak Matrix Organization

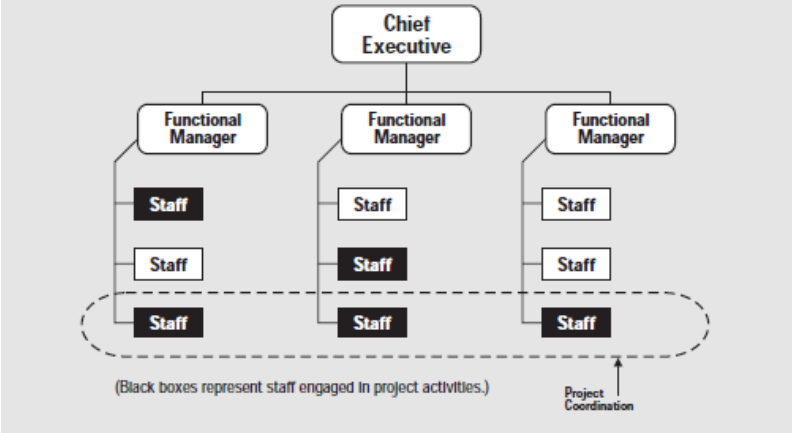
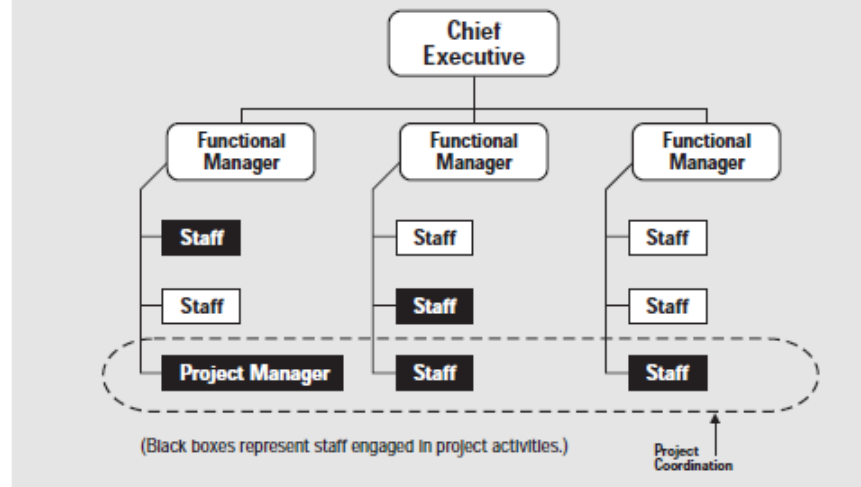


Figure 2-10. Balanced Matrix Organization



## Matrix Organization

Figure 2-11. Strong Matrix Organization

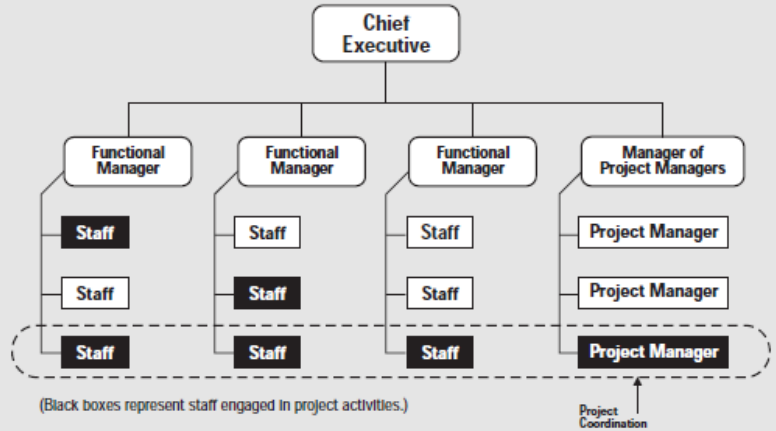
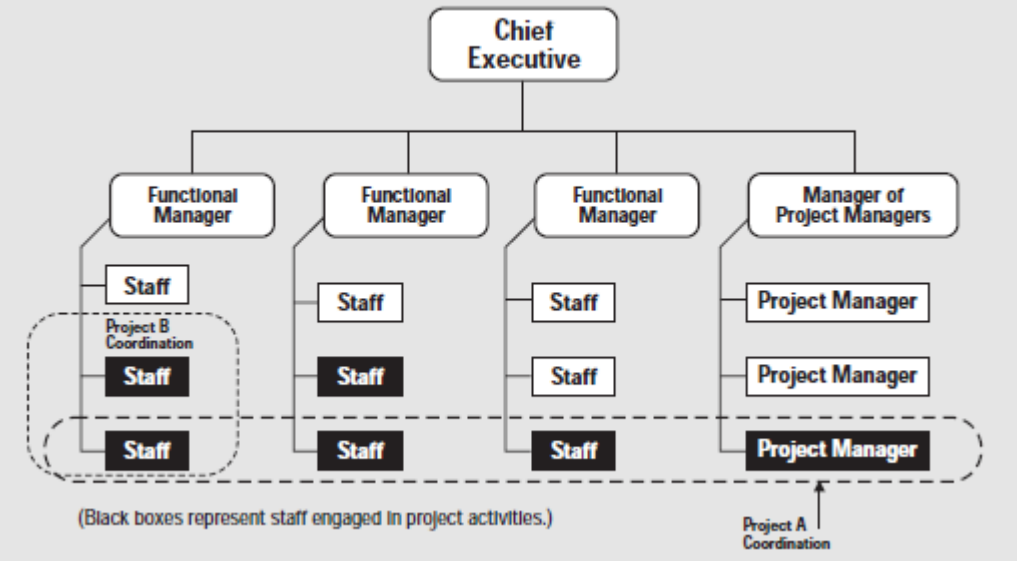


Figure 2-12. Composite Organization



## Organization Planning

Involves *identifying, documenting* and *assigning* project roles, responsibilities and reporting relationships to individuals or to group

## Inputs to Organization Planning

### 1. Project Interfaces

- Organizational Interfaces
- Technical Interfaces
- Interpersonal Interfaces

### 2. Staffing Requirements

### 3. Constraints

- Organizational structures of the performing organization
- Collective bargaining agreements
- Preferences of the project management team
- Expected staff assignments

## Tools and Techniques for Organization Planning

1. Templates
2. Human Resource Practices
3. Organizational Theory
4. Stakeholder Analysis

## Output from Organization Planning

1. Roles and responsibility assignment
2. Staffing Management Plan
3. Organization Chart
4. Supporting details