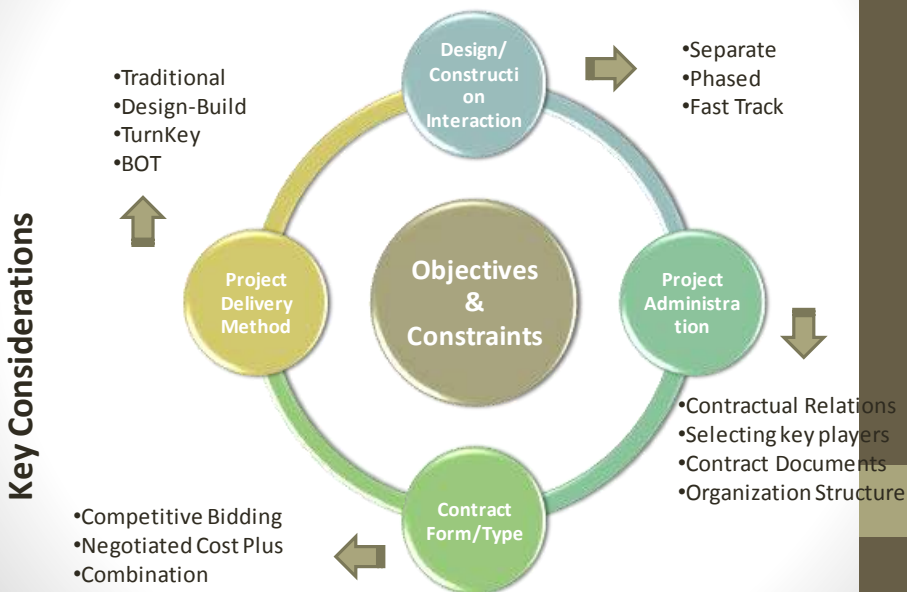


Project Contract Strategy

Owner, CM	A/E, CM, Owner	Bidders	Owner, CM	Contractor	O & M Staff
<ul style="list-style-type: none"> - Need - Feasibility - Project Definition - Owner Approval 	<ul style="list-style-type: none"> - Conceptual Design - Owner Approval - Soil Reports - Preliminary Design - Detailed Design - Quantities - Work Documents Select Project Contract Strategy 	<ul style="list-style-type: none"> - Prepare Bid Proposal + Baseline - Collect data (site, quantities, specs, resources, tools, etc) - Planning - Time & Cost Estimation - Scheduling - Resource Management: Adjustments for Resource Constraints & Deadline - Bidding Strategy & Markup Estimation - Cash flow analysis - Submit Bid 	<ul style="list-style-type: none"> - Evaluate Bids and Select General Contractor 	<ul style="list-style-type: none"> - Start Construction - Detailed planning, estimating & resource management - Schedule Updating - Progress Evaluation - Time, Cost, & Quality Control - Commissioning 	<ul style="list-style-type: none"> - O & M - Demolition at end of service life
CONCEPT	DESIGN	BIDDING		CONSTRUCTION	O & M

Project Contract Strategy



Objectives and Constraints

- **Time**: Need for early start to the construction phase for political reasons and/or a need for minimum project duration to maximize economic return. If this objective is top ranked by the owner, the contracting strategies that allow speedy project delivery, such as overlapping design and construction, may become desirable.
- **Cost**: Need for minimum project cost to ensure adequate economic return, a need for minimum total cost incorporating operation and maintenance costs, or a need to observe a maximum limit on monthly expenditure. The selected contracting strategy, therefore, should be flexible to the owner's requirement, while also maintaining the other objectives.
- **Performance**: An appropriate functional performance of each component in a project can be defined as the minimum acceptable to the owner and to society. To attain this objective, a "Value Engineering" program may be adopted by the project management team at the design stage to reevaluate the design components, thus introducing changes that save cost without sacrificing performance. If this objective is top ranked by the owner, a contracting strategy that accommodates changes and to a teamwork approach may become desirable.

Objectives and Constraints

- **Project constraints**: All construction projects will have constraints that influence the achievement of project objectives. These constraints should therefore be considered when choosing an appropriate contract strategy. Some of the project constraints are:

- Conditions of contract	- Target dates of the project	- Access to the site
- Method of tender	- Possibility of design changes	- Number of contractors willing to tender
- Project size and duration	- Availability of construction resources	- Inflation
- Project location	- Freedom to choose designers and contractors	- Exchange-rate
- Relationship to other projects	- Adequacy of site investigation	- Union Regulations
- Possession of land	- Seasonal working	
- Number of work packages		

Project Delivery Methods

- **Traditional Approach:**

Design has to be completed before construction can start. Design and construction are usually performed by two different parties who interact directly and separately with the owner.

- **a) Owner direct force**
- **b) General Contractor (G.C.)**

Advantages	Disadvantages
<ul style="list-style-type: none"> - Price competition - Total cost is known before construction starts - Well documented approach used in most government projects done for public works 	<ul style="list-style-type: none"> - Long time - Design does not benefit from construction experience - Conflicts between owner & G.C. and between A/E & G.C. - Changes may lead to disputes and claims

- **Design-Build:**

Single organization is responsible for performing both design and construction and, in some cases, providing a certain “know-how” for the project.

Design strongly influenced by the method of construction.

Advantages	Disadvantages
<ul style="list-style-type: none"> - One contract that may include know-how - Minimum owner involvement - Time can be reduced if the design-build company overlaps design and construction - Possible coordination between design and construction - Easier implementation of changes - Less adversary relationships 	<ul style="list-style-type: none"> - Cost may not be known until the end of design - High risk to contractor and more cost to owner - Design-Build company may reduce quality to save cost - Due to minimal owner involvement, result may not be to his satisfaction

- **Turnkey:**

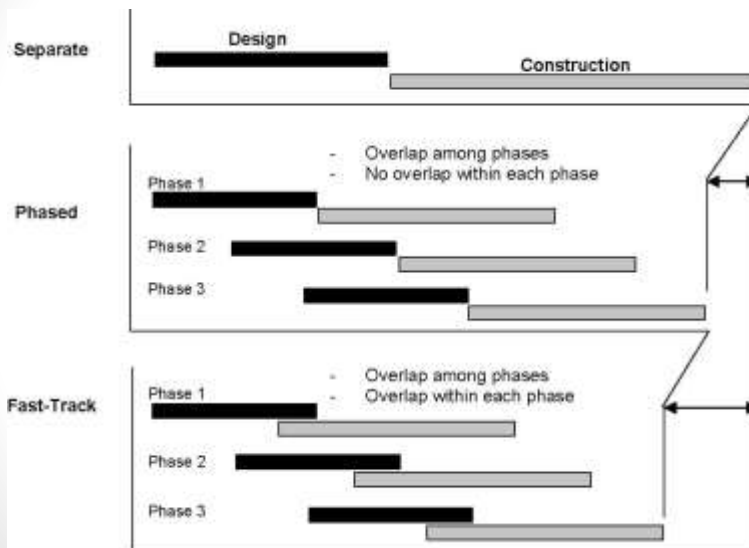
Similar to the design-build approach but with the organization being responsible for performing both design, construction, know-how (if any), and project financing. Owner payment is then made at the completion (when the contractor turns over the “key”).

Franchise projects in which a new branch of a restaurant chain needs to maintain the same design, construction quality, and food service quality.

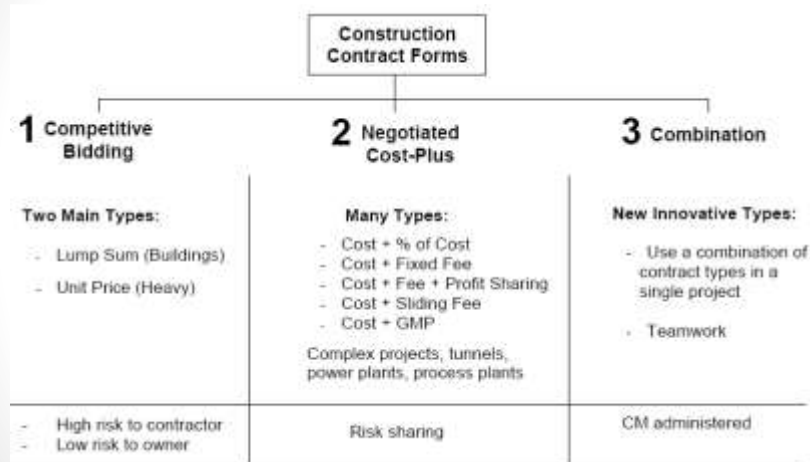
Others

- Build-Operate-Transfer (BOT)
- Professional Construction Management (PCM)
- A+B
- Lane Rental

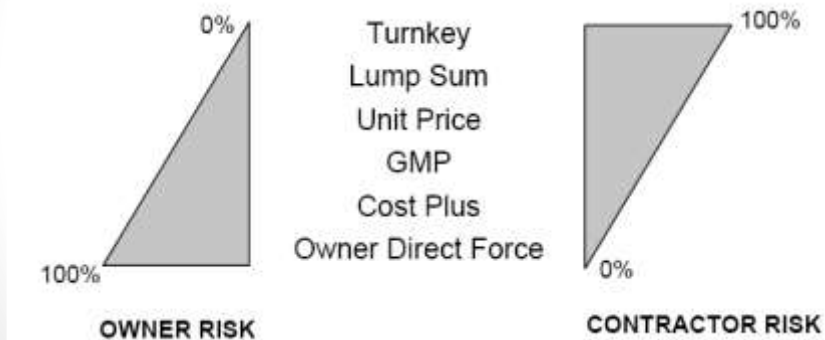
Design/Construction Interaction



Construction Contract Form/Type



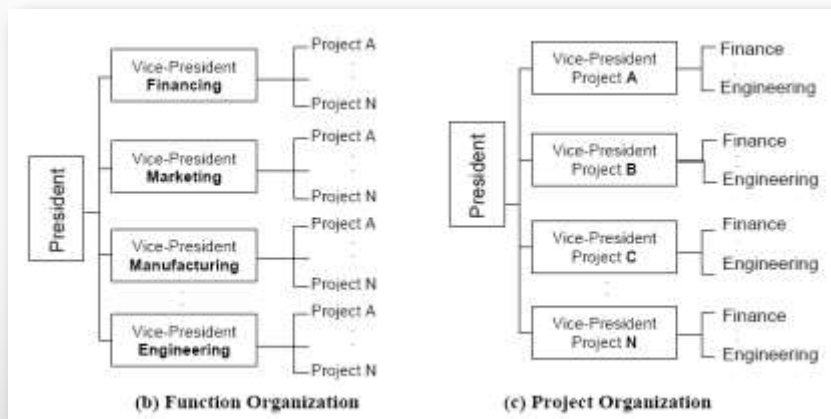
Owner and Contractor Risk

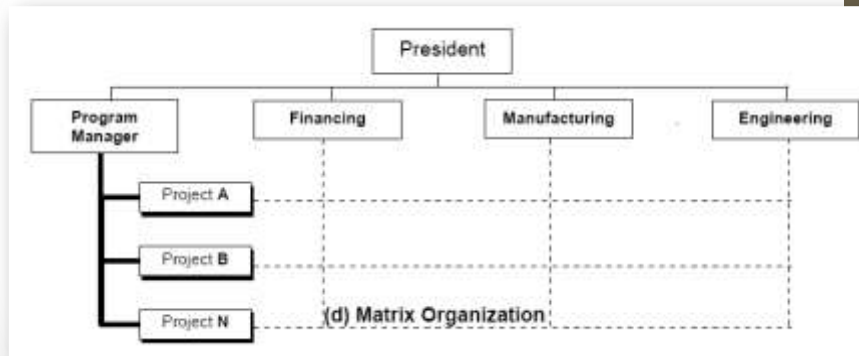


Organization Structures

- There are three main forms of organization structures:
 - Traditional Organization Structure (also known as Classical, Functional or Departmental).
 - Project (Program) Organization Structure.
 - Matrix Organization Structure.

• Project Organization Structure

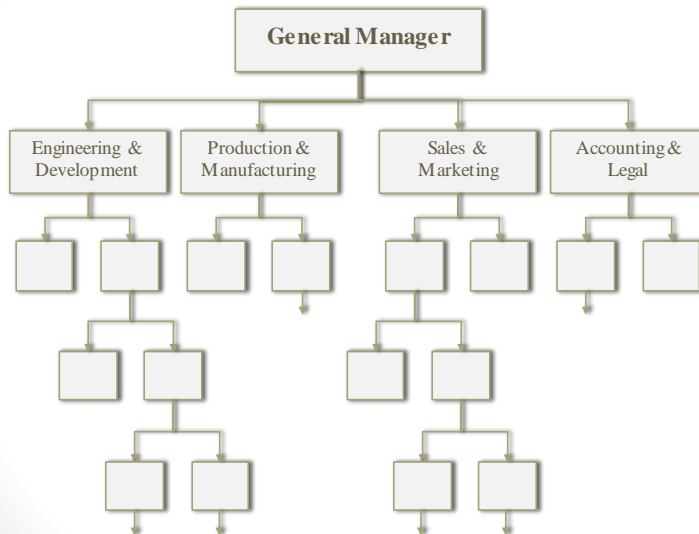




<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; width: 100%; height: 100%; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; border-bottom: 1px solid black;"></div> <div style="position: absolute; bottom: 0; left: 0; right: 0; border-top: 1px solid black;"></div> </div> </div>	Function	Project is assigned to relevant functional areas.
	Function – Matrix	A PM limited authority coordinates across different functional areas.
	Balanced Matrix	A PM shares responsibility and authority with functional managers.
	Project – Matrix	A PM is the prime authority. Functional personnel are used if needed.
	Project	A PM is in charge of a team of personnel from functional areas.

(a) Comparison of Organization Structures

Traditional Organization Structure



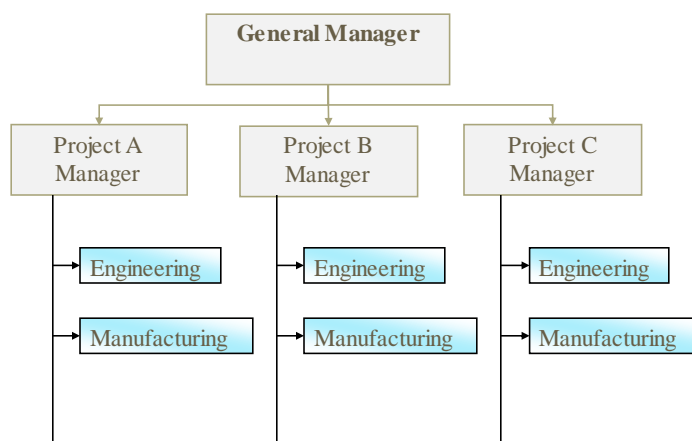
Pros and Cons

- Easier budgeting and cost control
- Better technical control
- Specialists can be grouped to share knowledge and responsibility.
- Personnel can be used on many different projects.
- All projects will benefit from the most advanced technology.
- It provides flexibility in the use of manpower.
- Policies, procedures, and lines of responsibility are easily defined and understandable.
- Good control over personnel, since each employee has one and only one person to report to.
- Communication channels are vertical and well established.

Disadvantages of Traditional Organization Structure

- Decisions normally favor the strongest functional groups.
- No one individual is directly responsible for the total project.
- There is no customer focal point.
- Response to customer needs is slow.
- There is difficulty in pinpointing responsibility, this is the result of little or no direct project reporting, very little project-oriented planning and no project authority.
- Motivation and innovation are decreased.
- Ideas tend to be functionally oriented with little regard for ongoing projects.
- Difficulty in identifying profitable from unprofitable projects.
- Develop strong resistance to change

Project (Product) Organization Structure



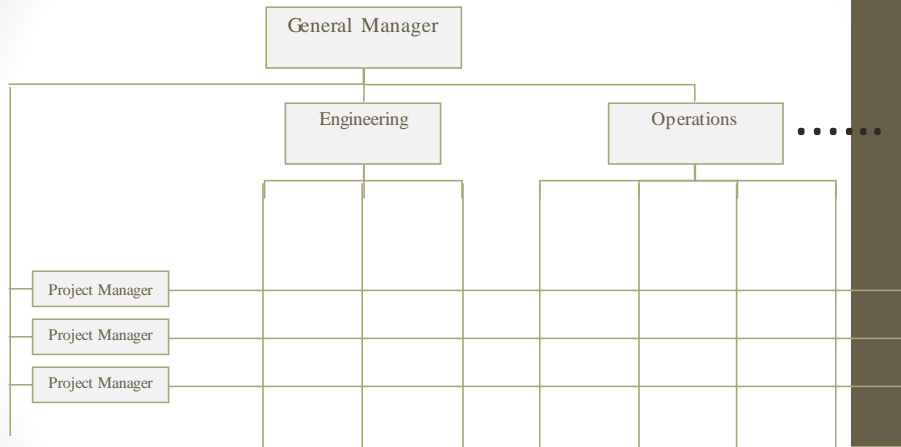
Advantages of Project Organization Structure

- It provides complete line authority over the project.
- The project participant work directly for the project manager.
- Unprofitable projects are easily identified and can be eliminated.
- Strong communications channels.
- Personnel are loyal to the project.
- Focal point for out of company customer relations.
- Flexibility in determining time (schedule), cost and performance trade-offs.
- Upper-level management maintains more free time for executive decision making.

Disadvantages of Project Organization Structure

- Inefficient usage of resources (duplication of effort, facilities and personnel).
- Tendency to retain personnel on a project long after they are needed.
- Technology suffers because of no strong functional groups.
- Lack of opportunities for technical interchange among projects.

Matrix Organization Structure



Advantages of Matrix Organization Structure:

- The project Manager maintains maximum project control.
- The project manager has the authority to commit company resources.
- Each person has a "home" after project completion.
- A strong technical base can be developed.
- Functional organization exists primarily as support for the project
- Key people can be shared ----> program cost is minimized
- Authority and responsibility are shared.
- Stress is distributed among the team.
- Procedures can be set up independently for each project.

Disadvantages of Matrix Organization Structure

- Multidimensional information / work flow.
- Double reporting.
- Potential for continuous conflict and conflict resolution
- Management goals differ from project goals.
- Difficulty in monitoring and controlling.
- More effort and time are needed initially to define procedures.
- Functional manager maybe biased according to their own sets priorities.
- Balance of power between functional and project organization must be watched.

The informal organization

