ISHIK UNIVERSITY - ERBIL
FACULTY OF ENGINEERING
ARCHITECTURAL ENGINEERING DEPARTMENT

PROJECTS MANAGEMENT

LECTURE 001 - INTRODUCTION

FIFTH STAGE / SPRING SEMESTER 2018

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What is a Project?

Unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost, quality and resources"

- A Project is a planned set of activities
- A Project has a scope
- A Project has time, cost, quality and resource constraints

What is Project Management?

The art of organising, leading, reporting and completing a project through people

What is Project Management?

- A project is a planned undertaking
- A project manager is a person who causes things to happen
- Therefore, project management is causing a planned undertaking to happen.

Project Manager Role

A Good Project Manager

- Takes ownership of the whole project
- Is proactive not reactive
- Adequately plans the project
- Is Authoritative (**NOT** Authoritarian)
- Is Decisive
- Is a Good Communicator
- Manages by data and facts not uniformed optimism
- Leads by example
- Has sound Judgement
- Is a Motivator
- Is Diplomatic
- Can Delegate

Stakeholder

"A person or group of people who have a vested interest in the success of an organization and the environment in which the organization operates"

Stakeholder Engagement process

Identify Stakeholders

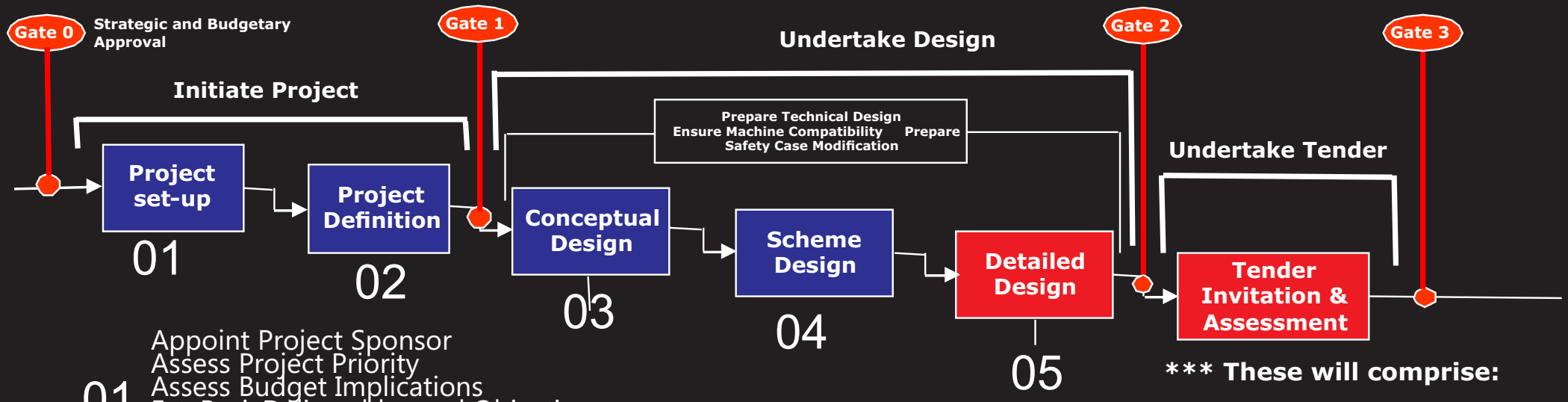
Assess needs

Define actions

Establish communication channels

Gather feedback

Monitor and review



01
Appoint Project Sponsor
Assess Project Priority
Assess Budget Implications
Est. Proj. Deliverables and Objectives
Appoint Project Leader
Approve Project Setup

02
Draft Statement of Requirements (SoR)
Review & Approve SoR Identify
Resources Appoint Project
Team Produce & Maintain Procurement Plans
Undertake Project Risk Assessment
Prepare Project Boundary Document
Develop Project Management Plan (PMP)*
Prepare Preliminary Conceptual Design**

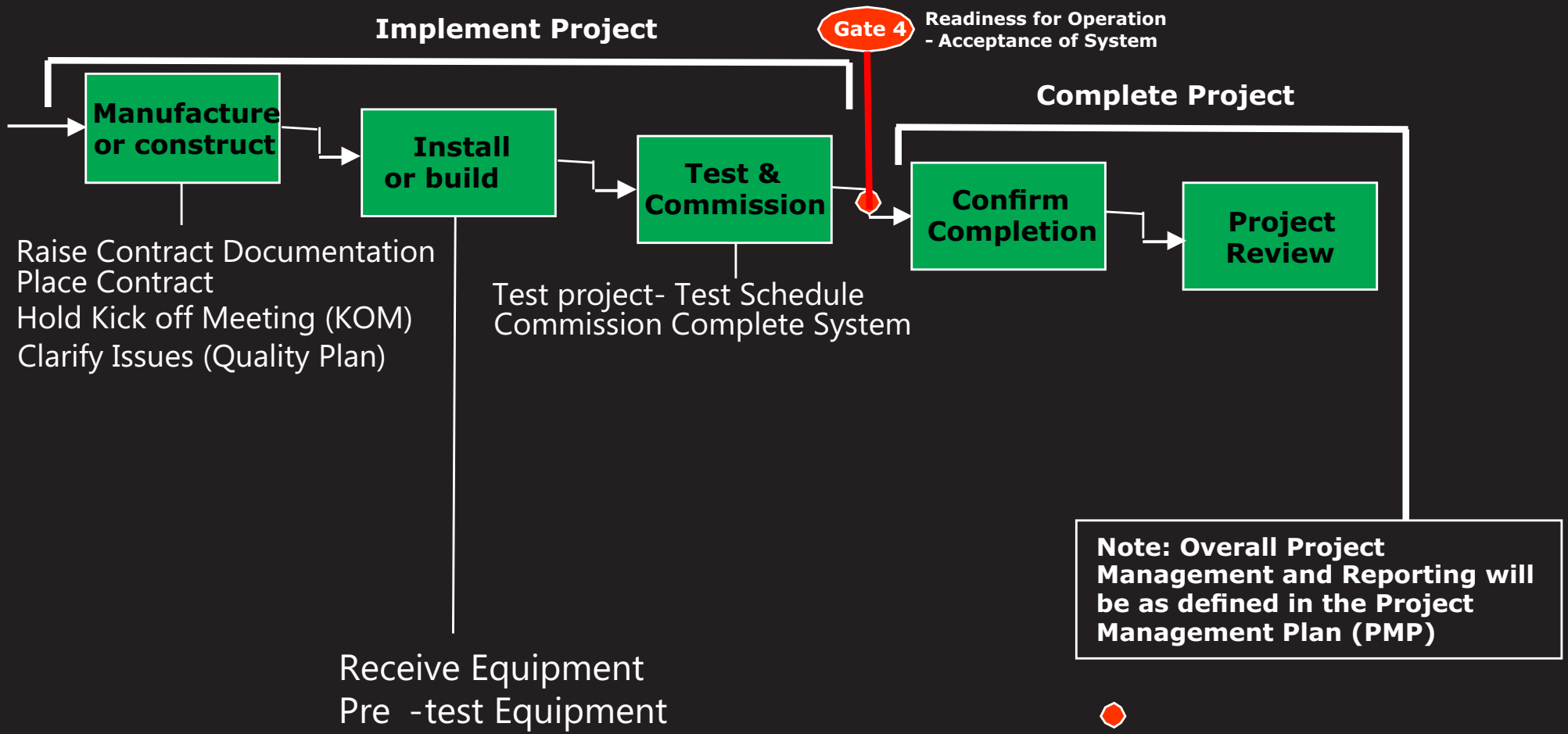
03
Prepare Outline Conceptual Design
Define Design Constraints Prepare
Project Requirements Spec.
Finalise Conceptual Design
Hold Conceptual Design Review (CDR)
Initiate Modification Safety Case
Approve Proceed to Detailed Design
Update PMP

04
Raise/Extend Sub
Project PCD
Agree Classifications & Interfaces
system Scheme Design Hold Sub
system Scheme Design Review (SDR)
Update PMP

05
Extend TCD
Detailed Design Review (DDR)
Prepare Final Documents including:
Design Documents., Machine Compatibility
Documents., Safety Case Modification

***** These will comprise:**

- **Technical Specification**
- **Drawings**
- **Contractual Requirements**


Implement Project
Gate 4
Readiness for Operation
- Acceptance of System
Complete Project
Manufacture or construct
Install or build
Test & Commission
Confirm Completion
Project Review
Raise Contract Documentation
Place Contract
Hold Kick off Meeting (KOM)
Clarify Issues (Quality Plan)
Test project- Test Schedule
Commission Complete System
Receive Equipment
Pre -test Equipment
Install equipment
Note: Overall Project Management and Reporting will be as defined in the Project Management Plan (PMP)

Key Points in Project Set-up and Definition

- Create Project Management Plan (PMP)
- Be clear of scope and objectives
- Establish clear statement of what is to be done (WBS)
- Establish Risks to be Managed
- Establish Costs and Durations
- Establish Resources Required

- **Master Document for Project**
- **Defines the following:-**
  - Project Objectives, Scope, Deliverables
  - Stakeholders (Internal & External)
  - Work to be done (WBS)
  - Project Organisation and Resources (OBS)
  - Project Costings (CBS)
  - Project Schedule
  - Procurement/Contract Strategy
  - Risk Management
  - Quality management
  - Change Management

Project Planning

Adequate planning leads to the correct completion of work

Planning

Inadequate planning leads to frustration towards the end of the project & poor project performance

Work Breakdown Structure (WBS)

The Work Breakdown Structure is the foundation for effective project planning, costing and management.
It is the most important aspect in setting-up a Project

It is the foundation on which everything else builds

Work Breakdown Structure - Definition

"A Work Breakdown Structure (WBS) is a hierarchical (from general to specific) tree structure of deliverables and tasks that need to be performed to complete a project."

Project Planning – WBS

- Lowest Level of WBS is the Work Package (WP)
- WP can be clearly defined allowing package to be costed, scheduled and resourced
- WP contains a list of Tasks to be Performed that form the basis for the Schedule
- WP allows assignment of responsibilities (Work Package Manger, WPM)

Project Planning

A word about Scheduling

- Schedules (task durations) can have a wide variation
- There is no unique answer. Rather, there is a statistical variation depending on assumptions

Need to understand the basis of scheduling (Most challenging; Most likely; Absolute certainty - bet your life on it!)

Most people are very optimistic/naive

Project Planning WBS (1)

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Project Planning WBS (2)

- WBS allows hierarchical build-up of costs and schedule
- Cost and Schedule can be reported at any level of the WBS
- WBS facilitates strong management during project execution (Cost and Schedule control)
- WBS can be used for many other things -
- Document Management, Risk Management etc.

Project Planning

A word about Scheduling

- Schedules (task durations) can have a wide variation
  There is no unique answer. Rather, there is a statistical variation depending on assumptions
- Need to understand the basis of scheduling (Most challenging; Most likely; Absolute certainty - bet your life on it!)
- Most people are very optimistic/naive

The project management challenge

Meeting or exceeding stakeholder needs and expectations invariably involves balancing competing demands among:

1. Scope, time, cost, and quality.
2. Stakeholders with differing needs and expectations.
3. Identified needs and unidentified expectations—**"client relations challenge"**

Stakeholder

"A person or group of people who have a vested interest in the success of an organization and the environment in which the organization operates".

Project Stakeholders

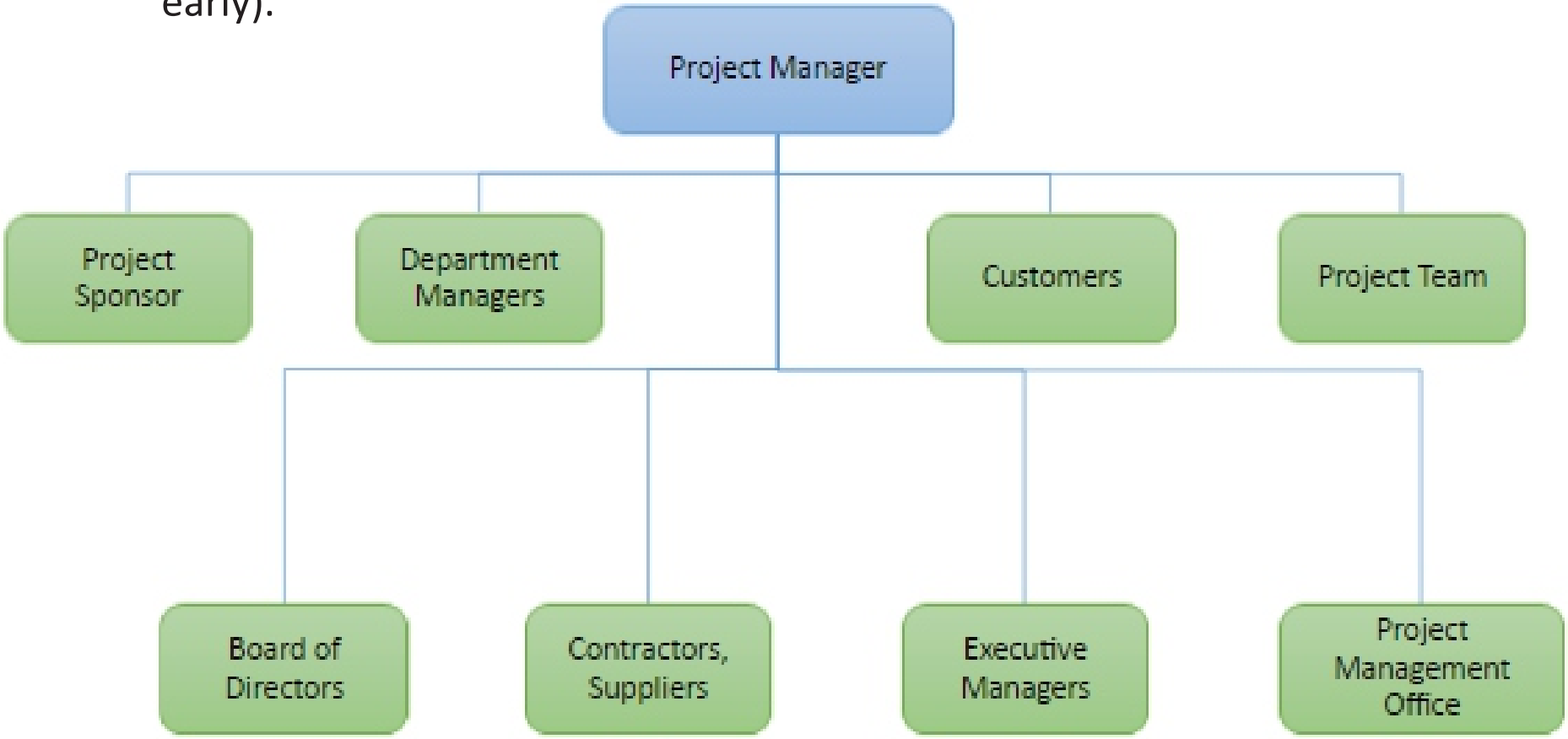
Project stakeholders are:

1. Individuals and organizations that are actively involved in the project.
   Ex: **(architects, engineers, owner)**
2. Individuals and organizations whose interests may be positively or negatively affected as a result of project execution or project completion.
   Ex: **(surrounding neighbours).**
3. They may also exert influence over the project and its results.
   Ex: **(government, decision makers).**

Good To Know:

- **Project management team must**:

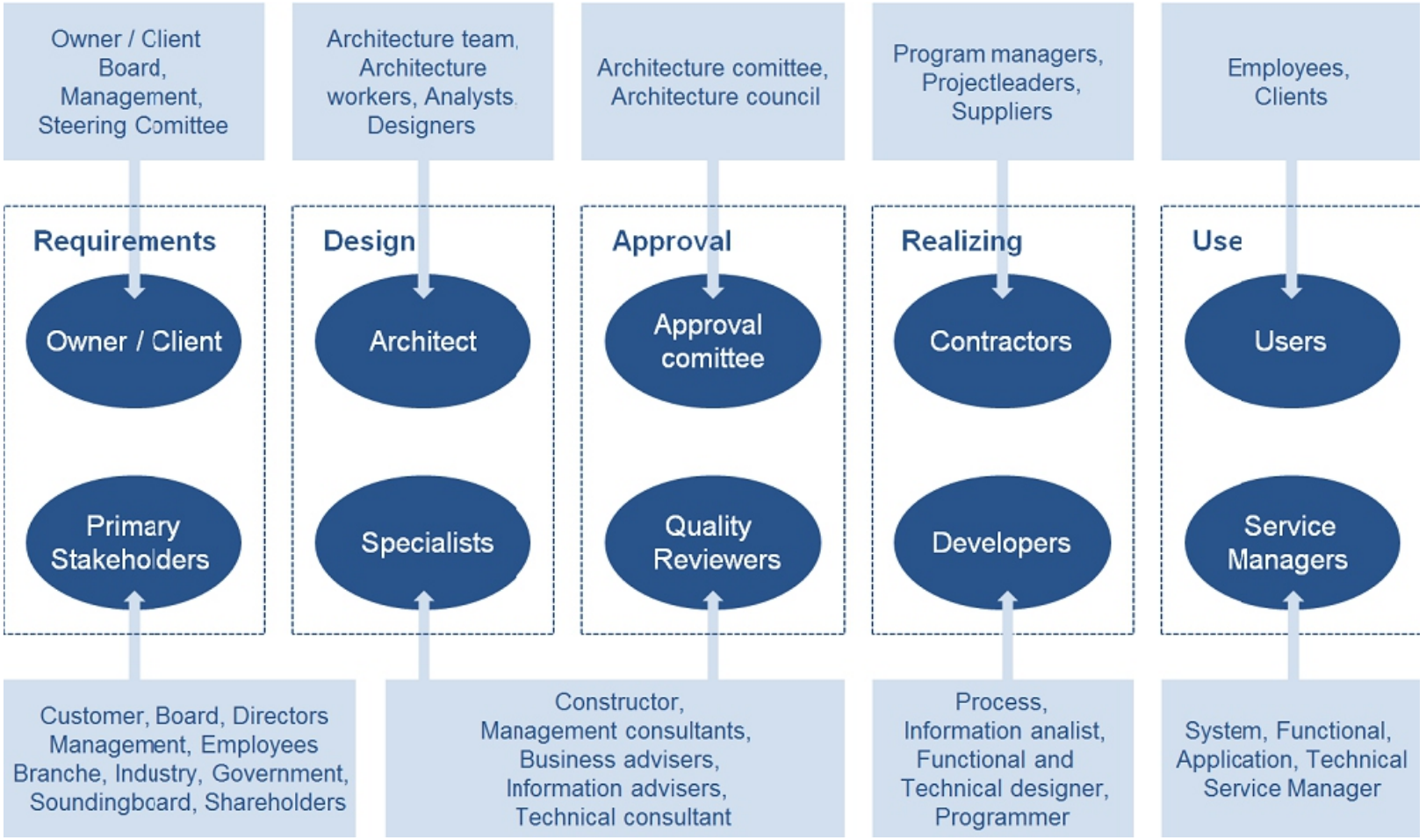
1. **Identify the stake-holders** (Taking in mind that this is **Critical to identify** early).



Good To Know:

- **Project management team must:**

2. **Determine their requirements (Analyze their interests, importance, influence .)**



Good To Know:

- **Project management team must**:

    3. **Manage and influence those requirements to ensure a successful project** (Classify stakeholders and prioritize relationships building accordingly).

Stakeholder identification is often especially difficult.

Key stakeholders on every project include:

1. **Project manager:** the individual responsible for managing the project.

2. **Customer:** the individual or organization that will use the project's product.

3. **Performing organization:** the enterprise whose employees are most directly involved in doing the work of the project.

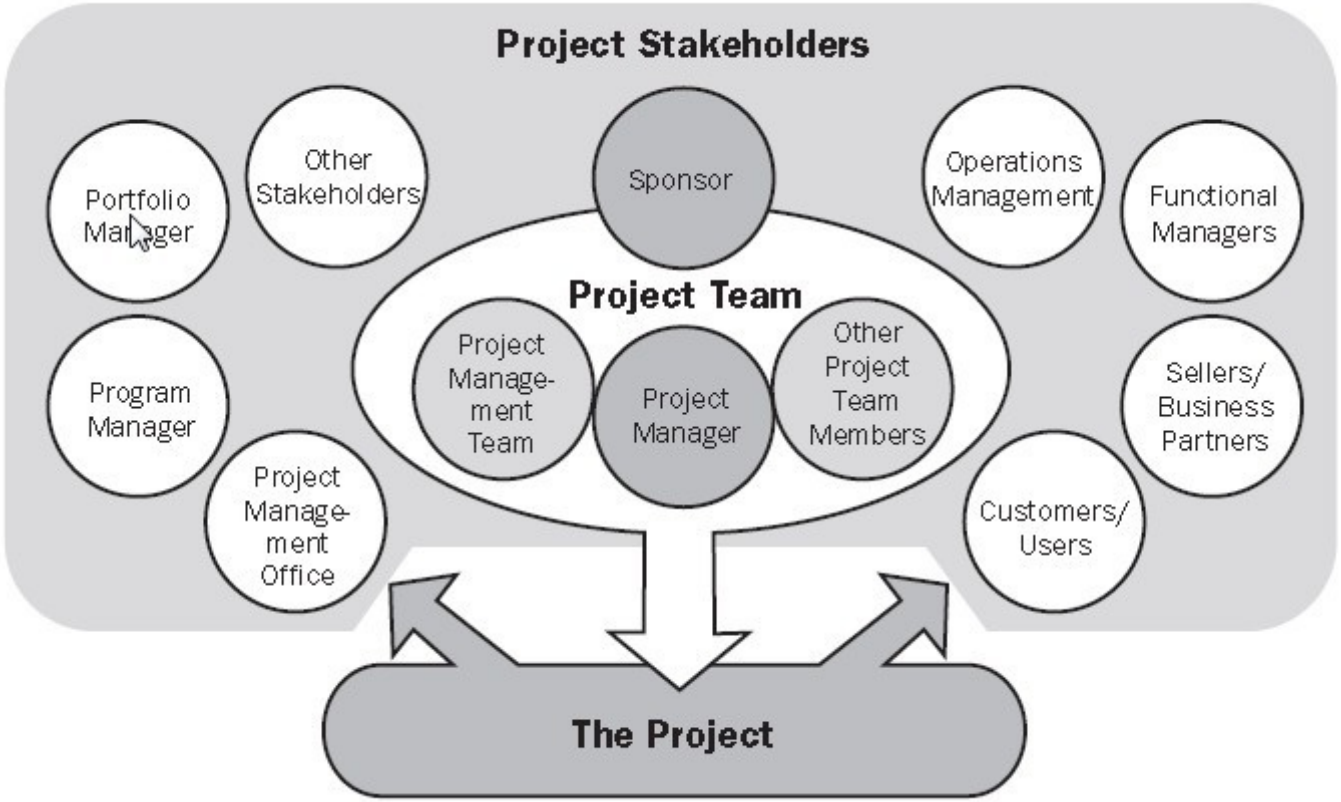
4. **Project team member:** the group that is performing the work of the project.

5. **Sponsor/ Client:** the individual or group within or external to the performing organization that provides the financial resources.

Others

Others Typical Stakeholders

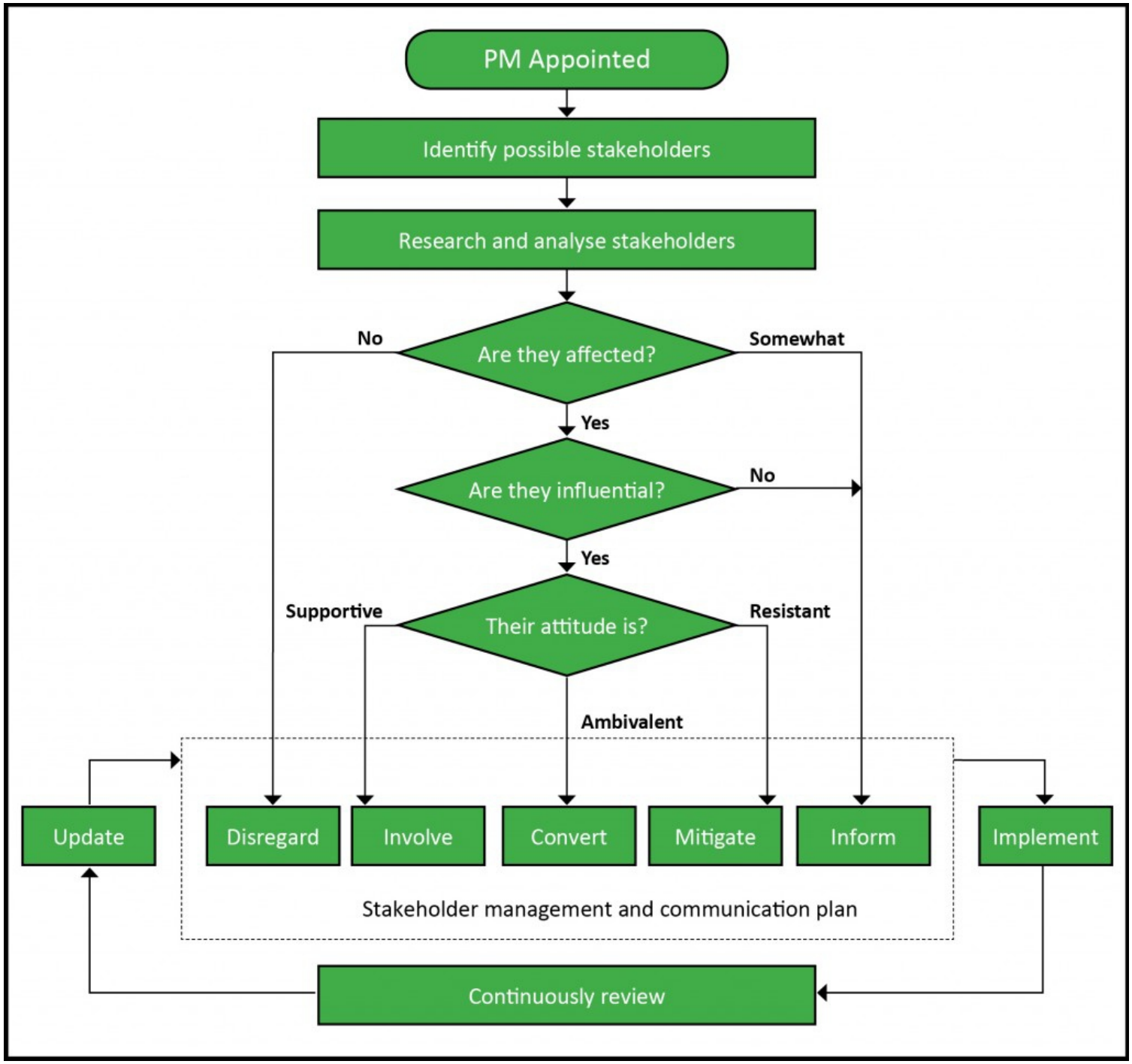
- Funding Body.
- Suppliers.
- End User.
- Environmental Agency.
- Maintenance Team.
- Neighbours/Community.



Project Stakeholders

Managing stakeholder expectations may be **difficult** because stakeholders often have very different objectives that may come into conflict.

For example: System may desire low cost, the system architect may emphasize technical excellence, and the programming contractor may be most interested in maximizing its profit.


PM Appointed
Identify possible stakeholders
Research and analyse stakeholders
Are they affected?
No
Somewhat
Yes
Are they influential?
No
Yes
Their attitude is?
Supportive
Resistant
Ambivalent
Update
Disregard
Involve
Convert
Mitigate
Inform
Implement
Stakeholder management and communication plan
Continuously review

Communication Matrix-Stakeholder

Stakeholder	Business Specific Meetings	Project Working Committee (PWC) Meetings	Project Steering Committee (PSC) Meetings	Project Status Reports (PSR)	News Bulletin	Personal Updates
Project Sponsor			Yes	Yes	Yes	Yes
Project Manager	Yes	Yes	Yes	Yes	Yes	Yes
IT Manager	Yes	Yes	Yes	Yes		
Finance Manager			Yes	Yes		
Business Manager/ Consultant	Yes	Yes	Yes			
Staff & Customers					Yes	

Communication Mode

Mode	Working Committee Meetings	Steering Committee Meetings	Status Reports	News Bulletin	Personal Updates
Announcement/ Reminders	Minutes/ Email	Minutes/ Email			Verbal
Distribution			Hard copies/ Email	Hard copies/ email	Verbal
Meeting Modes	On-site	On-site			

1.2 STRUCTURE OF METHODOLOGY

1.2 Structure of methodology

1. Define the Objective

Why?

To minimize the risk of getting off the right track.

1.2 Structure of methodology

The methodology for **setting up projects** and **applying Project Management principles** follows the following **guidelines**:

1. Define the Objective.
2. Establish a Project Organization.
3. Install Project Controls.

1.2 Structure of methodology

1. Define the Objective

How?

a) **Defining management's intent in undertaking the project.**

b) **Outlining the scope of the project**, that is, identifying the:

1. departments, companies,
2. functions
3. staff involved

And their approximate degree of their involvement.

c) **Describing the end results of the project** and its permanent effects, if any, on the company or division.

1.2 Structure of methodology

2. Establish a Project Organization

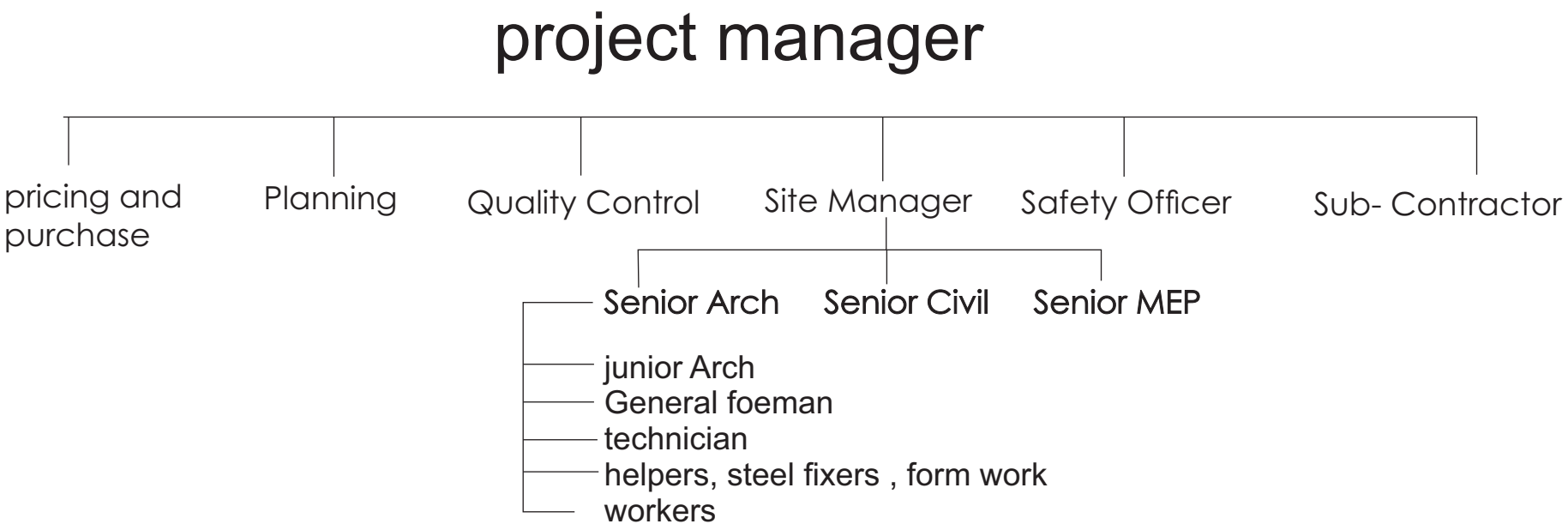
This includes:

a) Appointment of an experienced manager to run the project full time.

b) Organization of the project management function in terms of responsibilities.

c) Assignment of a limited number of staff to the project team.

d) Maintenance of balance of power between functional heads of departments and the project manager.


project manager
pricing and purchase
Planning
Quality Control
Site Manager
Safety Officer
Sub- Contractor
Senior Arch
Senior Civil
Senior MEP
junior Arch
General foeman
technician
helpers, steel fixers , form work
workers

1.2 Structure of methodology

3. Install Project Controls

compared to routine reports. These include:

a) Time Control.
b) Cost Control.
c) Quality Control.

1.2 Structure of methodology

a) Time Control.

Normally applied with:

1. Network scheduling (Critical Path Method
   best time control for the project.
2. Other techniques such as Program evaluation and Review
   Technique (PERT
   each activity.

1.2 Structure of methodology

b) Cost Control:

Project control techniques, though not formalized to the same degree as time controls, can be followed if these steps are followed:

- Break the comprehensive cost summary into work packages.
- Devise commitment reports for technical decision makers.
- Act on early, approximate data.
- Concentrate talent on major problems and opportunities.

What is better? Doing excavations with labours
or professional drilling machines.

Pouring concrete, precast or traditional technique or install prefabricated concrete

1.2 Structure of methodology

c) Quality Control:

It comprises three elements:

- Defining performance criteria.
- Expressing the project objective in terms of quality standards.
- Monitoring progress towards these standards.

Break test concrete

Pressure test

1.2 Structure of methodology

Project Management activities include:

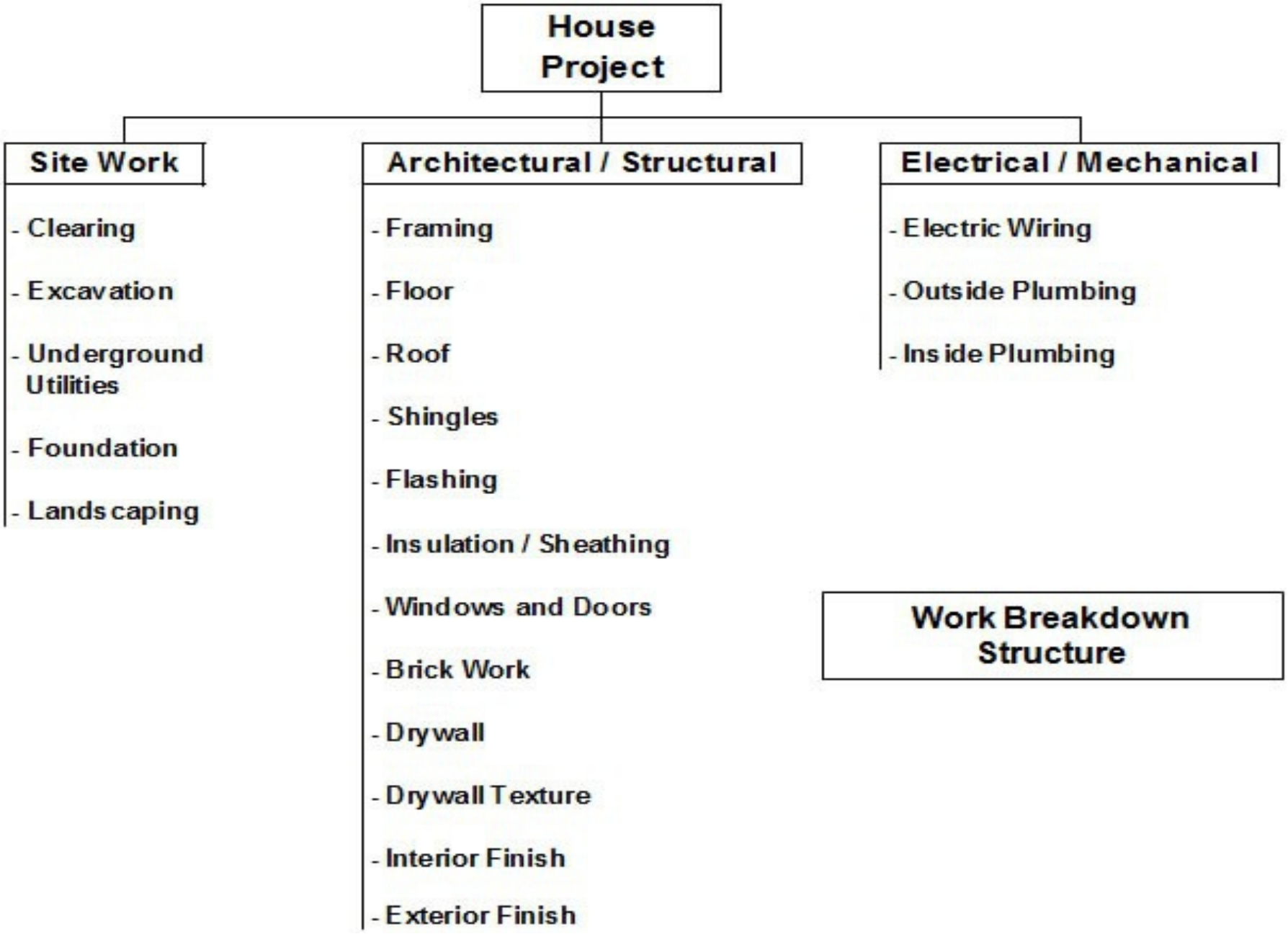
b) Dependency Analysis

Orders the project tasks established by WBS, determining those, which must be done in sequential order, and those, which can go on simultaneously

Activity A is the predecessor of Activity B.
Activity B is the successor of Activity A.

Example:
Block work → plaster → paint
Excavation → blind casting → foundation casting →

Example of Work Breakdown Structure (WBS)



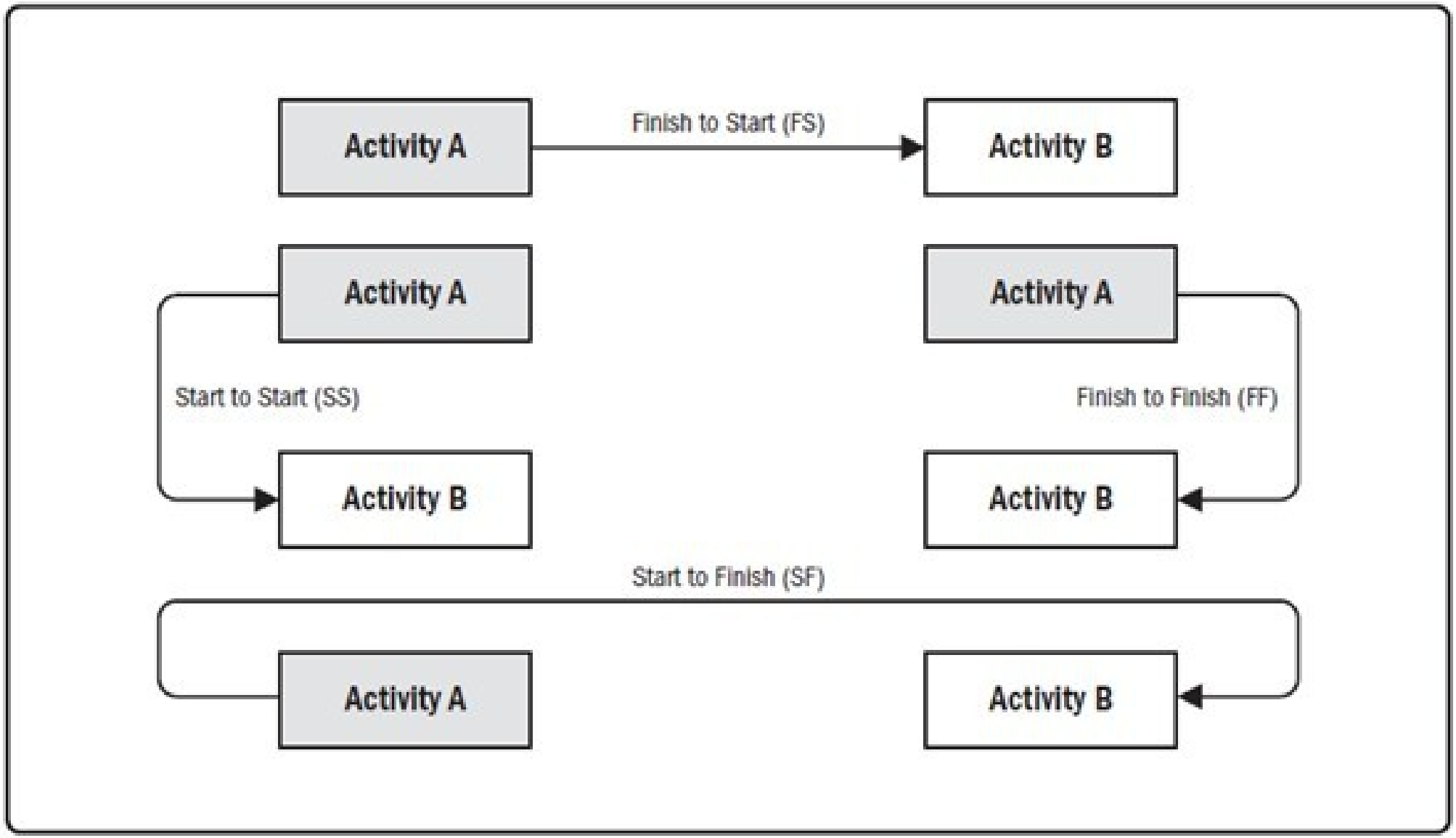


Figure 6-9. Precedence Diagramming Method (PDM) Relationship Types

1.2 Structure of methodology

c) Network Development

Portrays 'ordered' tasks graphically using a 'network' diagram.

- Example: primavera, Microsoft Project Manager …

d) Resource Commitment / Allocation

- Commits the appropriate individual who has the proper skills and expertise to the tasks requiring those skills.
- Allocates those resources over time to determine the 'build up' and the 'phase out' of the resources over the life of the project

- Example: the exercise at the end of this lecture.

1.2 Structure of methodology

e) Time Estimates

Estimates based on one of several techniques ranging from the forecast method to the quantitative method, the constraint method, or the unit of work method.

No matter which method is used, two categories of time are considered:

- Effort: Energy exerted
- Calendar: Elapsed duration

Example: elapsed duration (out of our hands, we cannot manage it,

1.2 Structure of methodology

f) Budgeting

Allocates the project development costs spread over the duration of the project.

Example: Project Budget = Cost (Overhead + Cost of material+ labor) + Profit

g) Status Reporting

Takes the baselines developed above (schedules, resource loading and budgets) and turns them into a work-in-progress reports which track the plan against the actual.

Example: Daily report, Weekly report, Monthly report

1.2 Structure of methodology

- With respect to organization, project management calls for the appointment of one man, the project manager, who has the responsibility for the detailed planning, coordination and ultimate outcome of the project.

1.2 Structure of methodology

- It is common that company staff itself implements project management principles once it adopts project management philosophy.

- However, it often happens that small (and sometimes large organizations) subcontract project management to more experienced companies or individuals who practice project management.

Alternative solutions

ALTERNATIVES

- In essence there are no alternatives to Project Management techniques.
- An organization would decide to formalize and implement project management to accomplish various tasks, or it may continue to work at *random*.
- Work done individually will be based on specific tasks assigned to the individual and the outcome of the work would be joined by other pieces of work by other individual.

1.3. EXPECTED RESULTS / BENEFITS

1.3. Expected results / benefits

- Implementation of project management technique can have significant results such as:
    - Cost reduction.
    - Time reduction.
    - Recourses allocation.
    - Increased quality.

- These factors are the most important concerning the competitiveness and the profitability of any organization.

1.3. Expected results / benefits

As mentioned, project management is a powerful technique and it can be used to small as well as very large projects.

Project management technique is very popular in several business activities, such as:

- constructions,
- manufacturing,
- servicing, etc.

Because of multiple and useful benefits that can be achieved from its application.

1.3. Expected results / benefits

Using project management technique we can divide one large project in many isolated tasks (projects) and sub-tasks, so cost and time resources are more controllable, as well as quality.

Other benefits include:

- Failures reduction.
- Reduction of inappropriate tasks.
- Close examination of the sub-tasks.
- Scheduling.
- Integration.
- Communication.

1.4. CHARACTERISTICS OF FIRMS

ORGANIZATIONS / SERVICE PROVIDERS

1.4. Characteristics of firms

organizations / service providers

- There are hundreds of organizations, institutes and consultant companies worldwide specialized in project management research and implementation.

- The successful implementation of any kind of project depends primarily on the ability and the experience of the consultant company that it has the responsibility.

- Consultant companies have great experience in large construction projects. They employ expert staff specialized in project initiation, planning, scheduling, cost ant time control in any business activity.