IIT ROORKEE

NPTEL ONLINE CERTIFICATION COURSE

Project Management for Managers

Lec – 33

Project Time Management - Introduction

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PROJECT TIME MANAGEMENT

Project Time Management includes the processes required to manage the **timely completion** of the project.

1 Plan Schedule Management—The process of establishing the policies, procedures, and documentation for *planning*, *developing*, *managing*, *executing*, and *controlling* the project **schedule.**

2 Define Activities—The process of identifying and documenting the specific actions to be performed to produce the project deliverables.

3 Sequence Activities—The process of identifying and documenting relationships among the project Activities.

4 Estimate Activity **Resources—The** process of estimating the type and quantities of material, human resources, equipment, or supplies required to perform each activity.

5 Estimate Activity **Durations—The** process of estimating the number of work periods needed to complete individual activities with estimated resources.

6 Develop Schedule—The process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.

7 Control Schedule—The process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.

Project Time Management Overview

6.1 Plan Schedule Management

.1 Inputs
- .1 Project management plan
- .2 Project charter
- .3 Enterprise environmental factors
- .4 Organizational process assets

.2 Tools & Techniques
- .1 Expert judgment
- .2 Analytical techniques
- .3 Meetings

.3 Outputs
- .1 Schedule management plan

6.2 Define Activities

.1 Inputs
- .1 Schedule management plan
- .2 Scope baseline
- .3 Enterprise environmental factors
- .4 Organizational process assets

.2 Tools & Techniques
- .1 Decomposition
- .2 Rolling wave planning
- .3 Expert judgment

.3 Outputs
- .1 Activity list
- .2 Activity attributes
- .3 Milestone list

6.3 Sequence Activities

.1 Inputs
- .1 Schedule management plan
- .2 Activity list
- .3 Activity attributes
- .4 Milestone list
- .5 Project scope statement
- .6 Enterprise environmental factors
- .7 Organizational process assets

.2 Tools & Techniques
- .1 Precedence diagramming method (PDM)
- .2 Dependency determination
- .3 Leads and lags

.3 Outputs
- .1 Project schedule network diagrams
- .2 Project documents updates

6.4 Estimate Activity Resources

.1 Inputs
- .1 Schedule management plan
- .2 Activity list
- .3 Activity attributes
- .4 Resource calendars
- .5 Risk register
- .6 Activity cost estimates
- .7 Enterprise environmental factors
- .8 Organizational process assets

.2 Tools & Techniques
- .1 Expert judgment
- .2 Alternative analysis
- .3 Published estimating data
- .4 Bottom-up estimating
- .5 Project management software

.3 Outputs
- .1 Activity resource requirements
- .2 Resource breakdown structure
- .3 Project documents updates

6.5 Estimate Activity Durations

.1 Inputs
- .1 Schedule management plan
- .2 Activity list
- .3 Activity attributes
- .4 Activity resource requirements
- .5 Resource calendars
- .6 Project scope statement
- .7 Risk register
- .8 Resource breakdown structure
- .9 Enterprise environmental factors
- .10 Organizational process assets

.2 Tools & Techniques
- .1 Expert judgment
- .2 Analogous estimating
- .3 Parametric estimating
- .4 Three-point estimating
- .5 Group decision-making techniques
- .6 Reserve analysis

.3 Outputs
- .1 Activity duration estimates
- .2 Project documents updates

6.6 Develop Schedule

.1 Inputs
- .1 Schedule management plan
- .2 Activity list
- .3 Activity attributes
- .4 Project schedule network diagrams
- .5 Activity resource requirements
- .6 Resource calendars
- .7 Activity duration estimates
- .8 Project scope statement
- .9 Risk register
- .10 Project staff assignments
- .11 Resource breakdown structure
- .12 Enterprise environmental factors
- .13 Organizational process assets

.2 Tools & Techniques
- .1 Schedule network analysis
- .2 Critical path method
- .3 Critical chain method
- .4 Resource optimization techniques
- .5 Modeling techniques
- .6 Leads and lags
- .7 Schedule compression
- .8 Scheduling tool

.3 Outputs
- .1 Schedule baseline
- .2 Project schedule
- .3 Schedule data
- .4 Project calendars
- .5 Project management plan updates
- .6 Project documents updates

6.7 Control Schedule

.1 Inputs
- .1 Project management plan
- .2 Project schedule
- .3 Work performance data
- .4 Project calendars
- .5 Schedule data
- .6 Organizational process assets

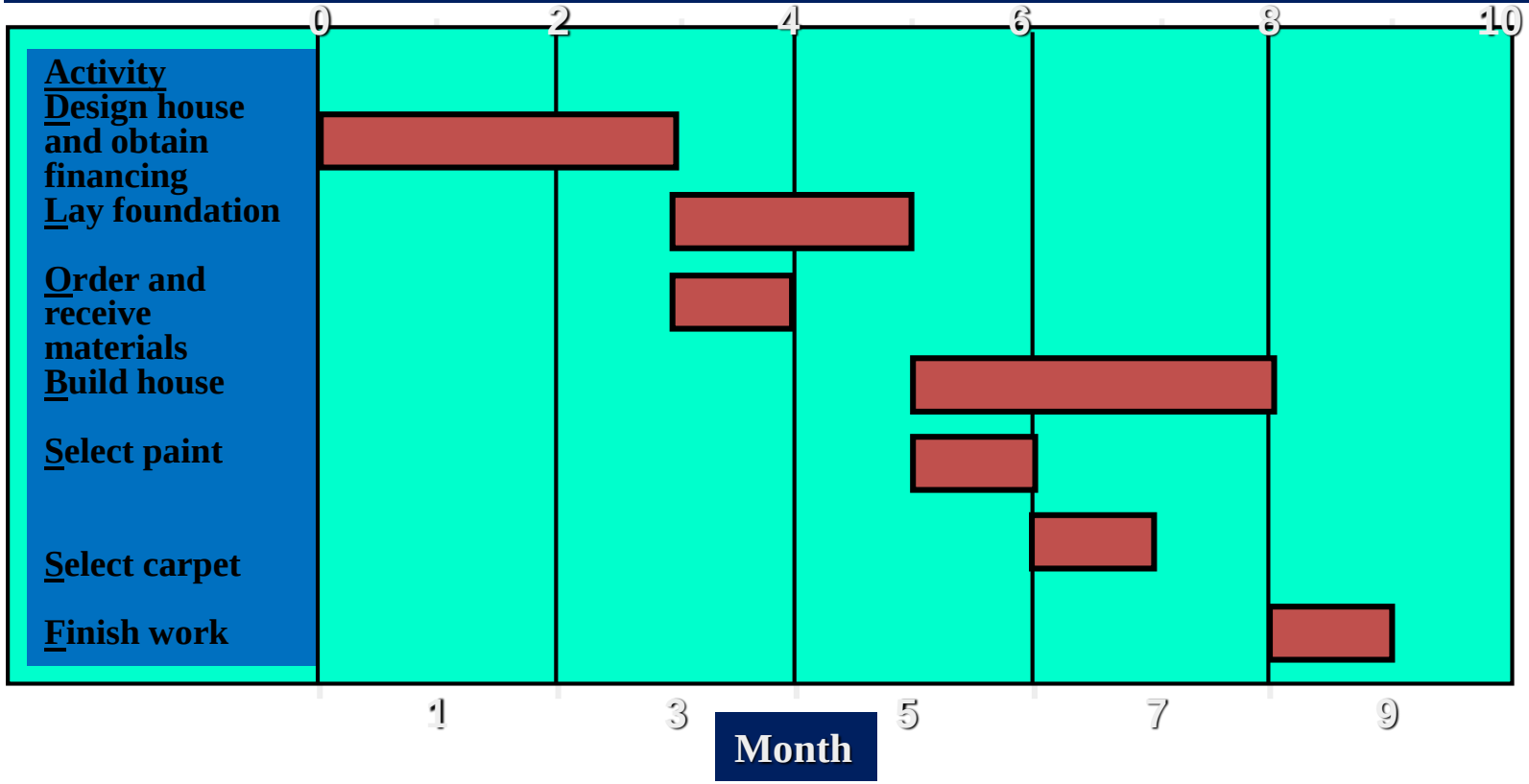
.2 Tools & Techniques
- .1 Performance reviews
- .2 Project management software
- .3 Resource optimization techniques
- .4 Modeling techniques
- .5 Leads and lags
- .6 Schedule compression
- .7 Scheduling tool

.3 Outputs
- .1 Work performance information
- .2 Schedule forecasts
- .3 Change requests
- .4 Project management plan updates
- .5 Project documents updates
- .6 Organizational process assets updates

Project scheduling and controlling techniques

1. Bar charts
2. Life cycle curves
3. Line of balance (LOB)
4. Network techniques (PERT/CPM)

A Gantt / Bar Chart



Gantt Charts

- ✓ Establish a time-phased network
- ✓ Can be used as a tracking tool

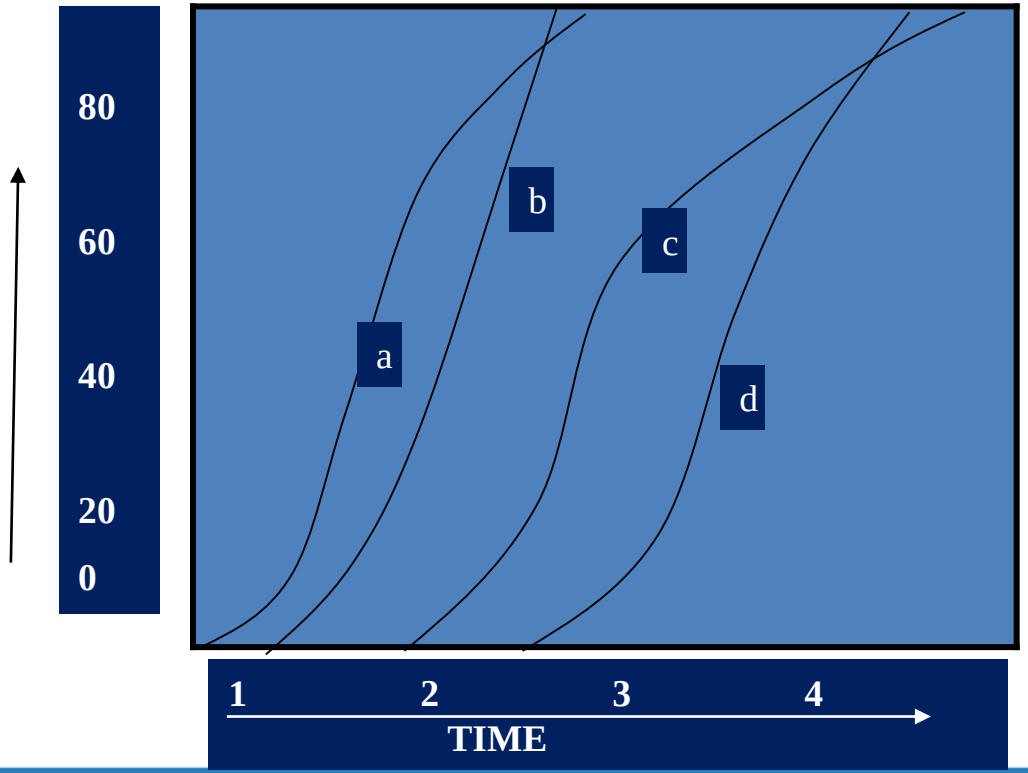
Benefits of Gantt charts

1. **Easy** to create and comprehend
2. Identify the schedule **baseline** network
3. Allow for **updating** and **control**
4. Identify **resource needs**

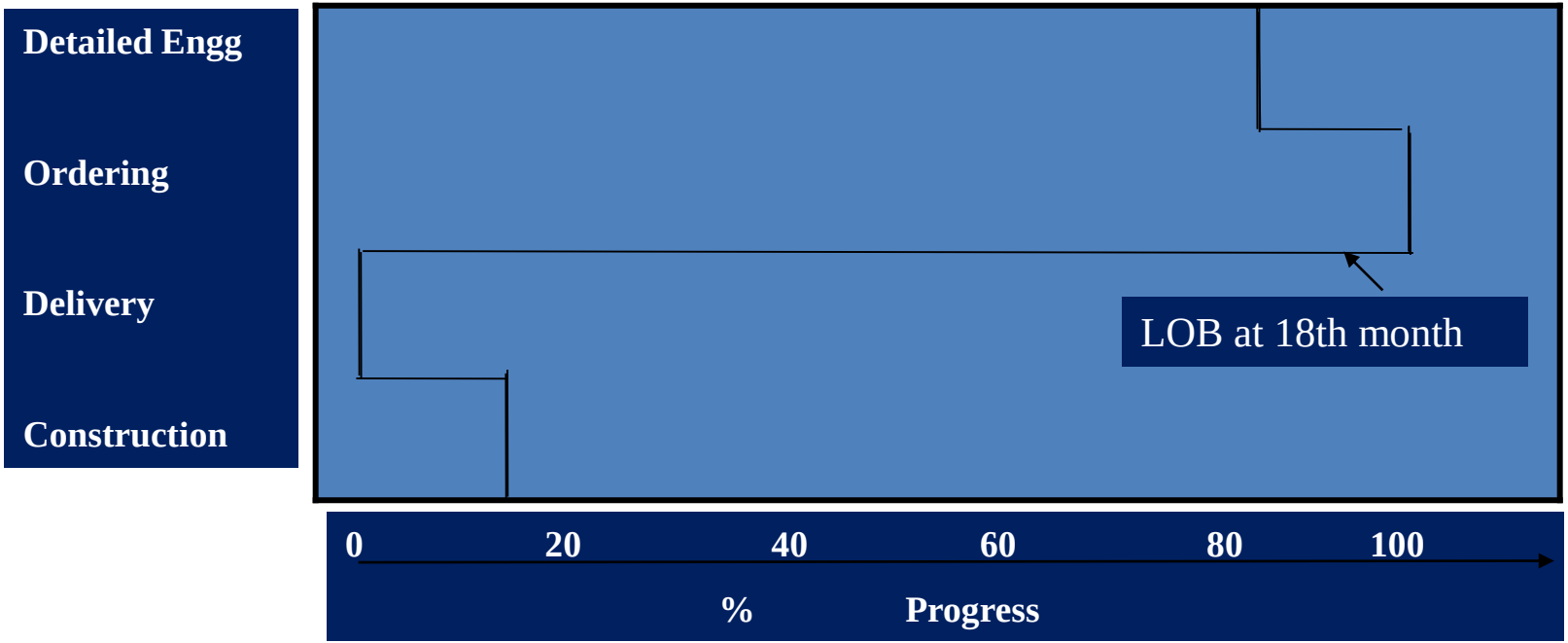
Create a Gantt chart based on the activities listed in the table.

Task	Time	Pred
Z	8	--
Y	5	Z
X	8	Z
W	4	Y,X
V	5	W
U	3	W
T	6	V
S	7	U,T
R	9	S

Life cycle curves



LINE OF BALANCE

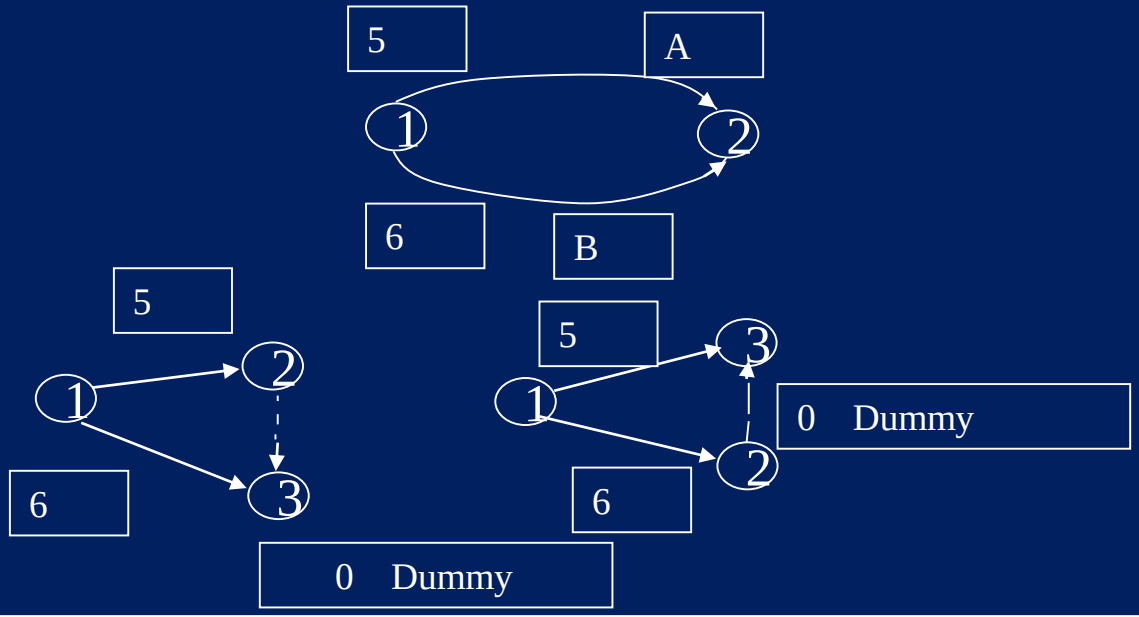


Network : We represent activities of a project through networks. It takes care of precedence relationships.

CPM	PERT
1.The time durations are **deterministic** (MBA degree).	1.The time durations are **probabilistic** (Ph. D. degree, DRDO,ISRO, CSIR Labs)
2.The duration of the project is fixed. And for a fixed duration it gives the most economical schedule.	2.There is expected duration of the project.
2.Looping and probabilistic events are not allowed in the network.	3.Simulation can be used to PERT network.

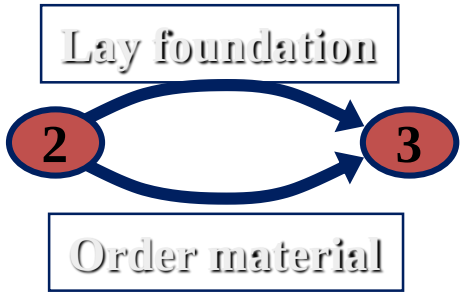
1. Each activity must be represented by one and only one arrow, an activity (i-j) “ i” is the staring node and “j” is terminal node.

2. No two activities should not have the same initial and same terminal nodes.

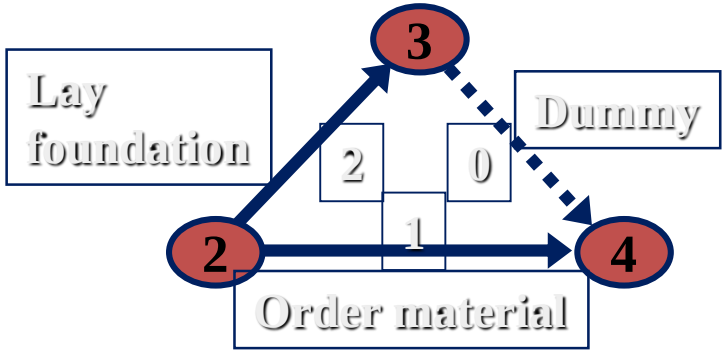


Dummy activity: does not consume time and resource

No two activities should have the same initial and same terminal nodes.



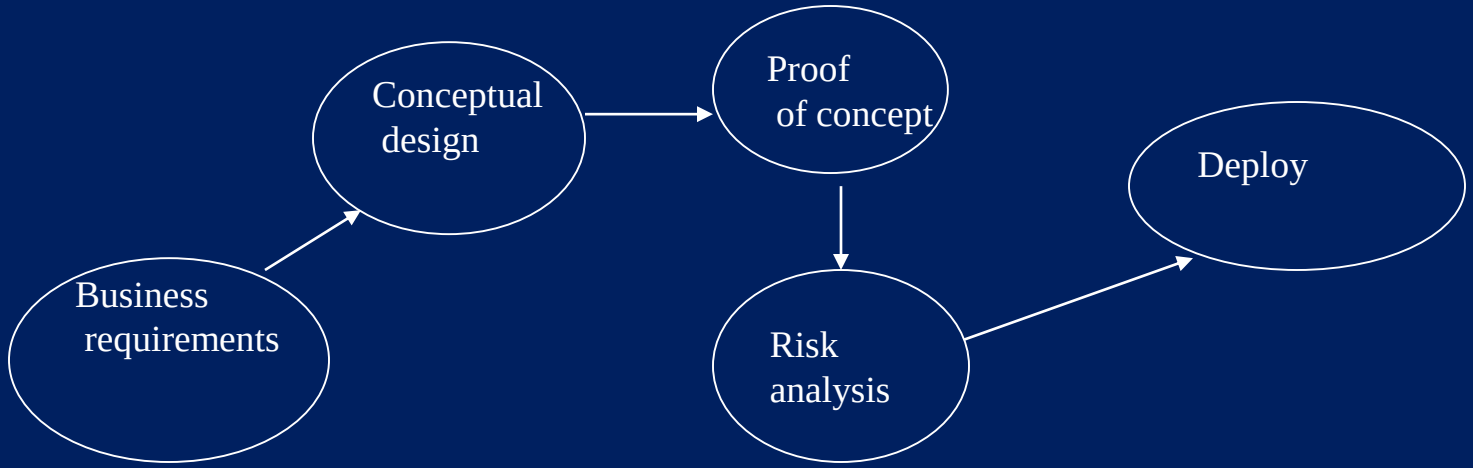
(a) Incorrect precedence relationship



(b) Correct precedence relationship

Software Project

Number	Event
1	Business requirements
2	Conceptual design
3	Proof of concept
4	Risk analysis
5	System requirements
6	Logical design
7	First build
8	Evaluation
9	Subsystem requirements
10	Physical design
11	Second build
12	Evaluation
13	Unit requirements
14	Final design
15	Final build
16	Test
17	Deploy

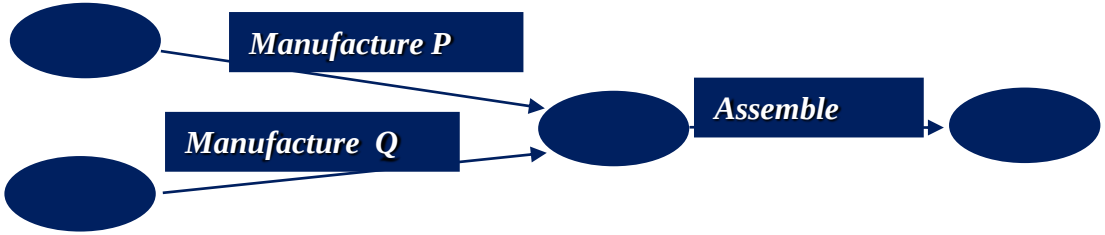


Event

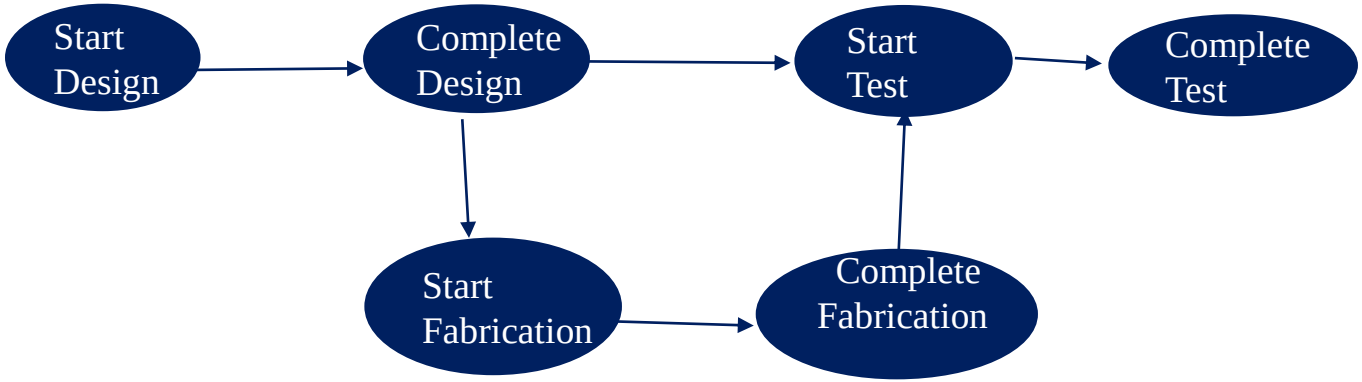
Activity

Event based network (PERT)

Activity based network (CPM)



Activity based network



Event based network (PERT)

Project Scheduling Terms

- Successors
- Predecessors
- Network diagram
- Serial activities
- Concurrent activities

- Merge activities
- Burst activities
- Node
- Path