Project Management

- Software management is distinct and often more difficult from other engineering managements mainly because:
  - Software product is intangible
  - There are no standard software processes
  - Large software projects are usually different from previous projects

Management Activities

Most managers do some or all of the following regularly at all times:

- Proposal writing
- Project planning and scheduling
- Project costing
- Project monitoring and reviews
- Personnel selection and evaluation
- Report writing and presentation

Project planning

- Effective management depends on planning the progress of the project in detail and allow for deviations

- Project plan evolves as project progresses and better information becomes available

- Project Constraints, milestones and deliverables must be identified clearly and timely

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Project planning process

Establish project constraints

Make initial assessment of the project parameters

Define project Milestones and deliverables

While (project has not been completed or cancelled) **Loop**

    Draw up project schedule

    Initial activities according to schedule

    Wait (for a while) ➔ review project progress

    Revise estimate of project parameters ➔ update project plan

    Renegotiate project constraints and deliverables

    If (problem arise) **Then**

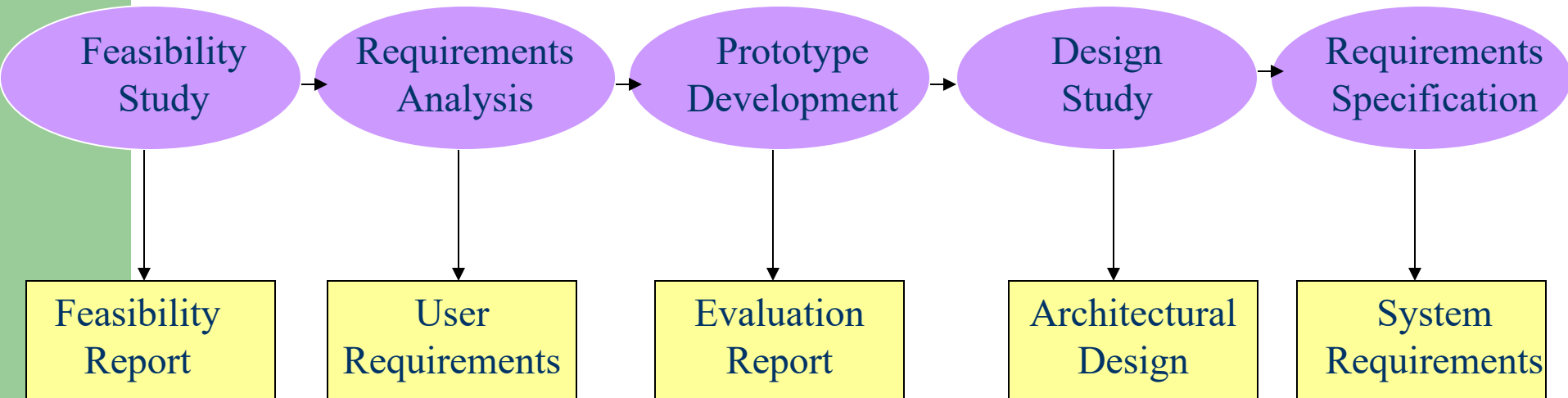   Initiate technical review and possible revision

End loop

Project Plan Sections:

1. Introduction (objective, constraints→ time, budget)
2. Project Organization (People, teams, roles)
3. Risk Analysis
4. Hardware & Software resource requirements
5. Work breakdown (tasks, milestones, deliverables)
6. Project schedule (time estimates per task, people allocation, task dependencies, milestone dates)
7. Monitoring and reporting mechanism (reports)

Milestones and Deliverables

TASKS (ACTIVITIES)

```
Feasibility    →    Requirements    →    Prototype       →    Design      →    Requirements
Study               Analysis             Development          Study            Specification
   |                    |                     |                  |                  |
   ↓                    ↓                     ↓                  ↓                  ↓
Feasibility         User                 Evaluation        Architectural       System
Report              Requirements         Report            Design              Requirements
```

MILESTONES

Task Durations and Dependencies

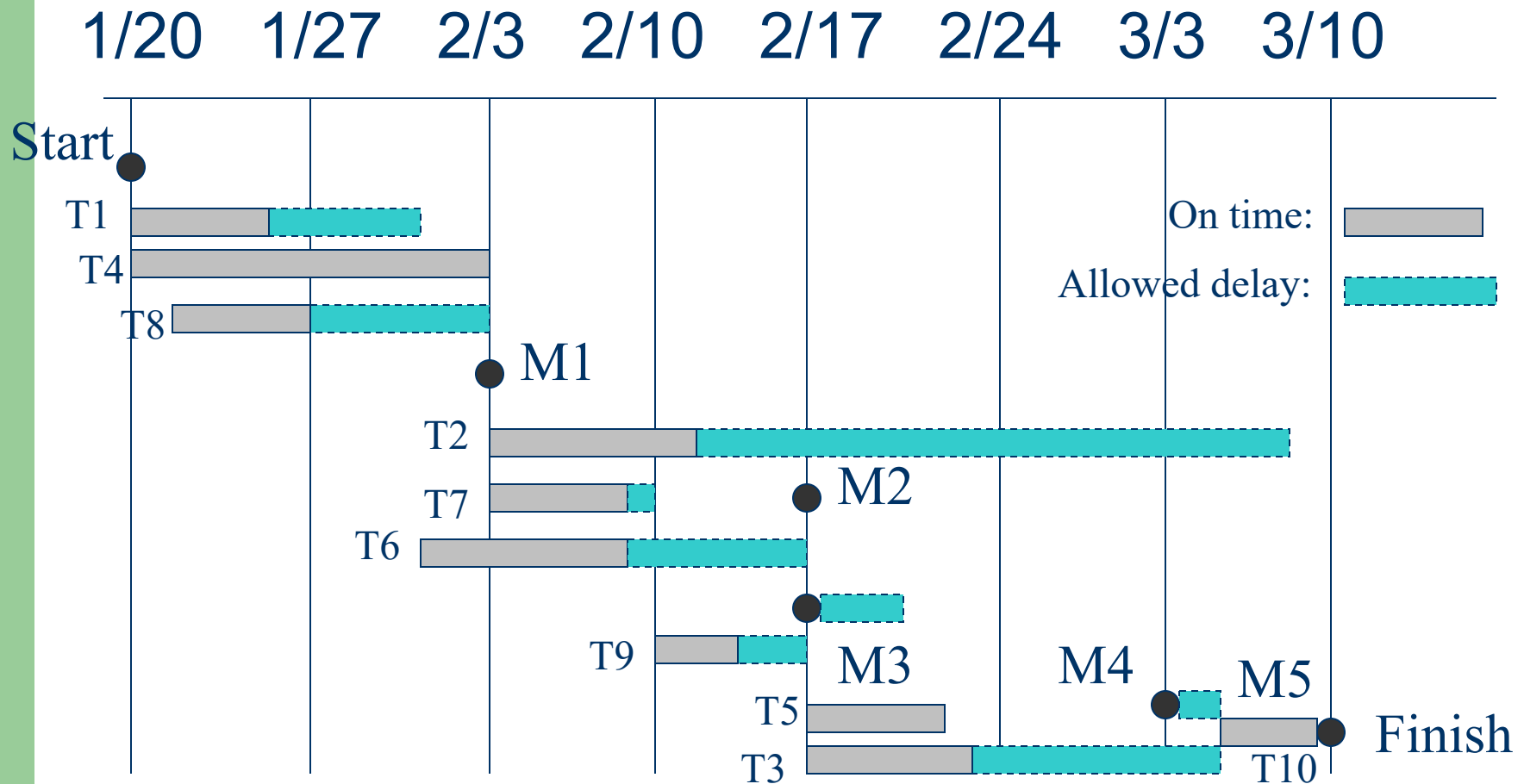| TASK	Duration (days)	Dependencies
T1	8	
T2	6	T1
T3	20	T4, T5, M1
T4	9	T1
T5	17	T3, M2

Activity Network
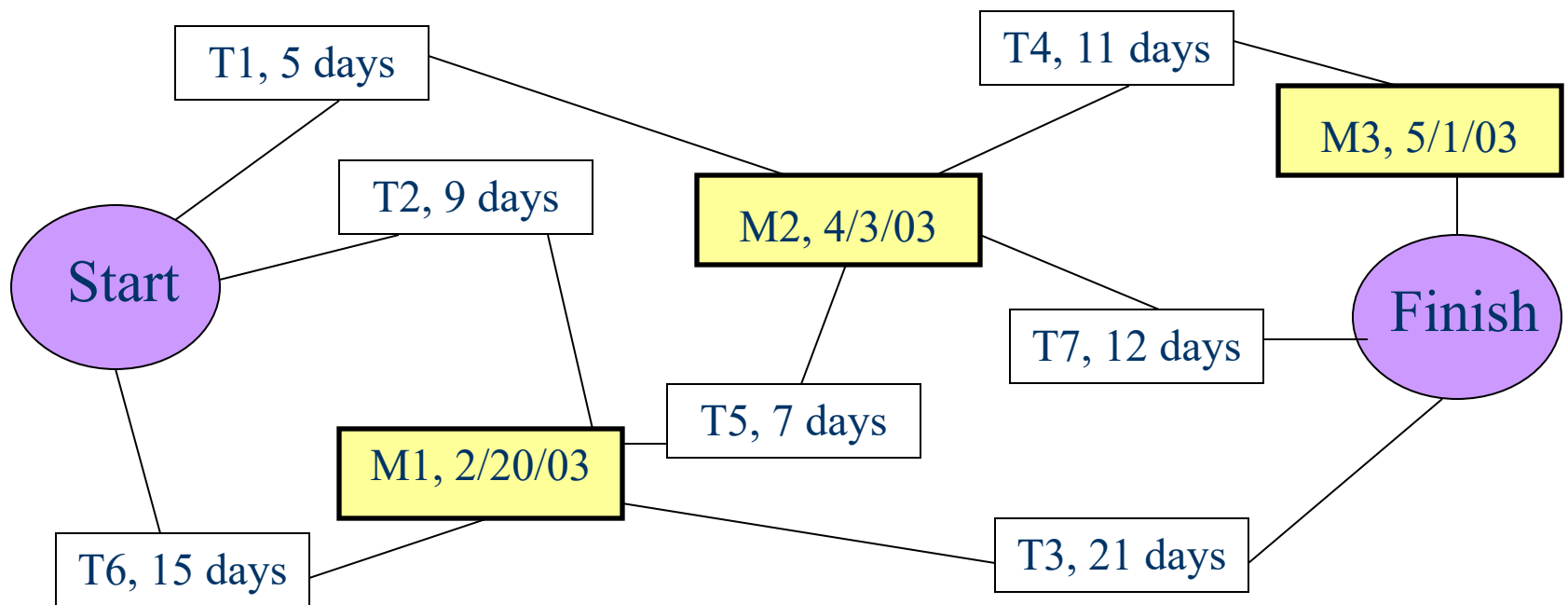
Activity Network

Example of a Project Schedule Network Diagram
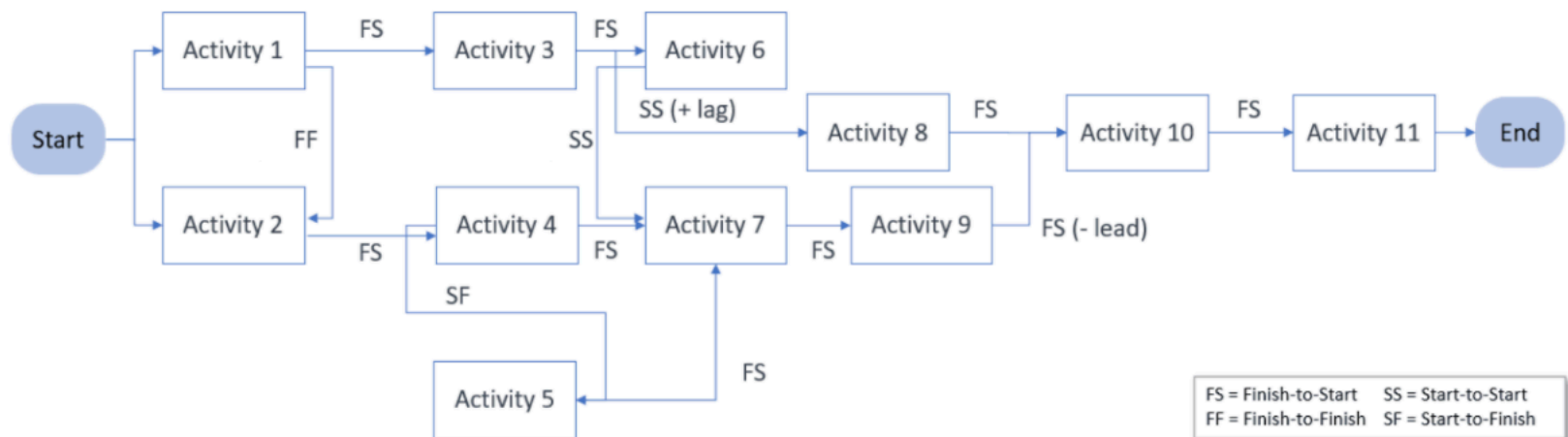
Activity Bar (Gantt) Chart

Risk Management

Stages for managing risks:

1. Risk Identification (project, product, business, technology)

2. Risk Analysis (likelihood and consequences, low/medium/high)

3. Risk Planning (avoiding, minimizing risk effects, contingency planning)

4. Risk Monitoring (constant assessment, mitigation i.e. reduce risk severity)

Ford Edsel

A 1958 Edsel convertible made by Ford