

Project management

- ◆ Organising, planning and scheduling software projects

Software management distinctions

- ◆ The product is **intangible**
- ◆ The product is uniquely **flexible**
- ◆ Software engineering is not recognized as an engineering discipline with the same status as mechanical, electrical engineering, etc.
- ◆ The software development process is not standardised
- ◆ Most software projects are ‘**one-off**’ projects (1回限り)

Management activities (管理者の仕事)

- ◆ Proposal writing (提案書を書く)
- ◆ Project costing (費用見積り)
- ◆ Project planning and scheduling (計画、スケジュール)
- ◆ Project monitoring and reviews (監視とレビュー)
- ◆ Personnel selection and evaluation (要員確保と評価)
- ◆ Report writing and presentations (報告作成とプレゼンテーション)

Project staffing

- ◆ May not be possible to appoint the ideal people to work on a project
 - Project budget may not allow for the use of highly-paid staff
 - Staff with the appropriate experience may not be available
 - An organisation may wish to develop employee skills on a software project

Types of project plan

Plan	Description
Quality plan (品質計画)	Describes the quality procedures and standards that will be used in a project.
Validation plan (検証計画)	Describes the approach, resources and schedule used for system validation.
Configuration management plan (構成管理計画)	Describes the configuration management procedures and structures to be used.
Maintenance plan (保守計画)	Predicts the maintenance requirements of the system, maintenance costs and effort required.
Staff development plan (訓練計画).	Describes how the skills and experience of the project team members will be developed.

Project planning process

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Establish the project constraints
Make initial assessments of the project parameters
Define project milestones and deliverables
while project has not been completed or canceled loop
    Draw up project schedule
    Initiate activities according to schedule
    Wait (for a while)
    Review project progress
    Revise estimates of project parameters
    Update the project schedule
    Re-negotiate project constraints and deliverables
    if (problems arise) then
        Initiate technical review and possible revision
    end if
end loop
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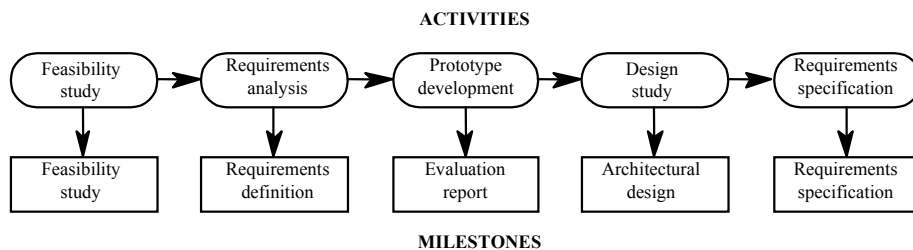
Project plan structure

- ◆ Introduction
- ◆ Project organisation
- ◆ Risk analysis
- ◆ Hardware and software resource requirements
- ◆ Work breakdown
- ◆ Project schedule
- ◆ Monitoring and reporting mechanisms

Activity organization

- ◆ Activities in a project should be organised to produce tangible outputs for management to judge progress
- ◆ *Milestones* (マイルストーン) are the end-point of a process activity
- ◆ *Deliverables* (配布成果物) are project results delivered to customers
- ◆ The waterfall process allows for the straightforward definition of progress milestones

Milestones and deliverables



Scheduling problems

- ◆ Estimating the difficulty of problems and hence the cost of developing a solution is hard
- ◆ Productivity is not proportional to the number of people working on a task
- ◆ Adding people to a late project makes it later because of communication overheads
- ◆ The unexpected always happens. Always allow contingency in planning

Task durations and dependencies

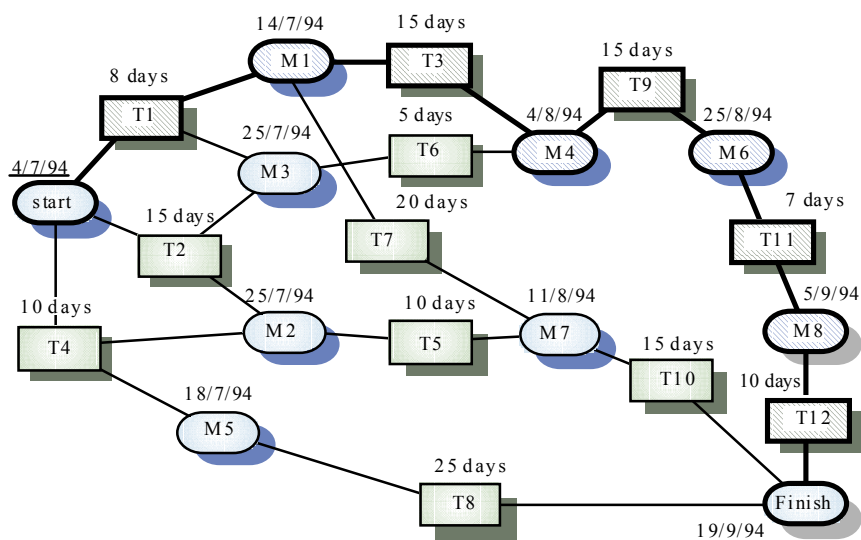
Task	Duration (days)	Dependencies
T1	8	
T2	15	
T3	15	T1
T4	10	
T5	10	T2, T4
T6	5	T1, T2
T7	20	T1
T8	25	T4
T9	15	T3, T6
T10	15	T5, T7
T11	7	T9
T12	10	T11

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Activity network

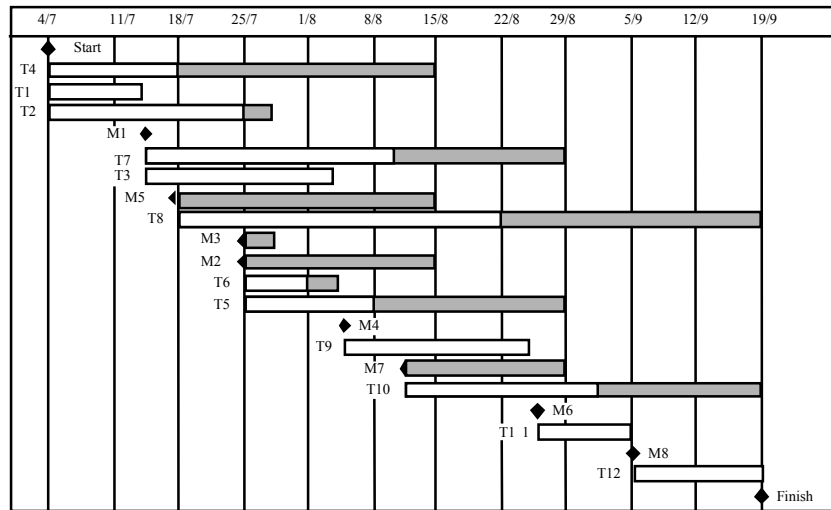


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Activity timeline

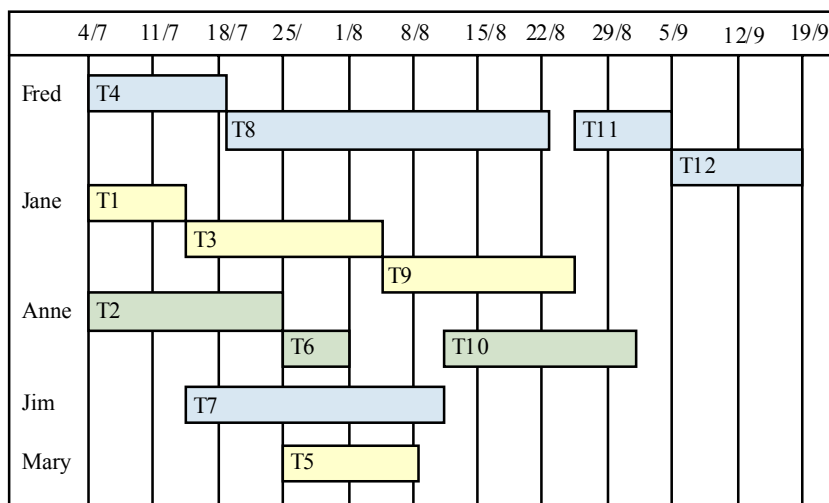


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Staff allocation



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Key points

- ◆ Good project management is essential for project success
- ◆ The intangible nature of software causes problems for management
- ◆ Managers have diverse roles but their most significant activities are planning, estimating and scheduling
- ◆ Planning and estimating are iterative processes which continue throughout the course of a project

Key points

- ◆ A project milestone is a predictable state where some formal report of progress is presented to management.
- ◆ Activity charts and bar charts are graphical representations of a project schedule