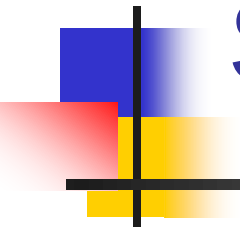
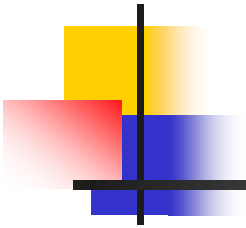


SWE 205 - Introduction to Software Engineering

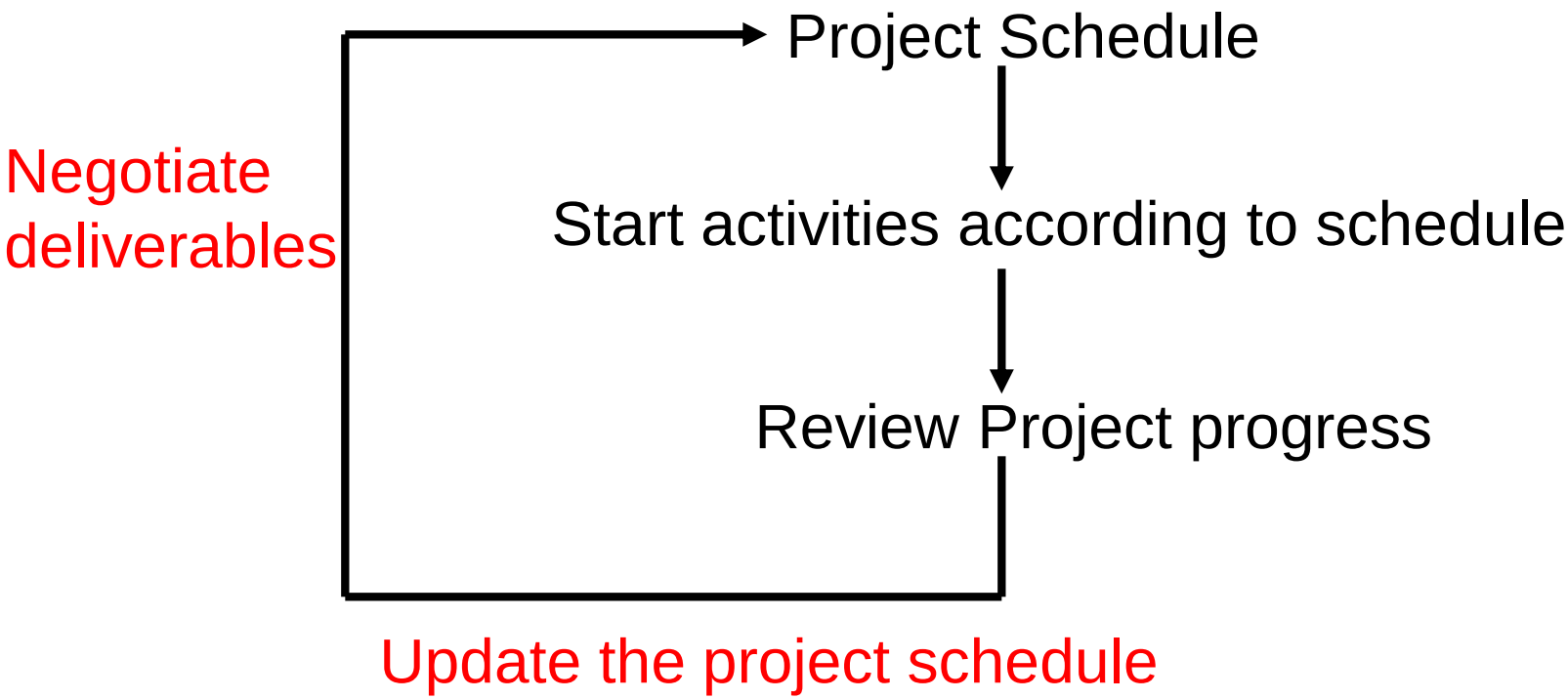
Lecture 7 - Software Project Management



Lecture Objectives

- To discuss project planning and planning process.
- To show how graphical schedule representations are used by project management
- To discuss the notion of risks and the risk management process

Project Management process

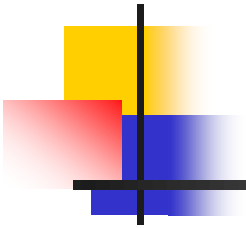


The Project Plan

- The project plan sets out:
  - The resources available to the project;
  - The work breakdown;
  - A schedule for the work.

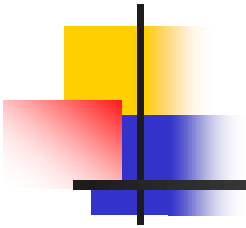
The Project Plan

Quality Plan	→	Quality Procedures and Standards
Validation Plan	→	Approach, Resources, Schedule
Configuration Plan	→	Configuration Management Process
Maintenance Plan	→	Maintenance Process, cost, required effort
Staff Development Plan	→	How skills and experience of the Project team will be developed



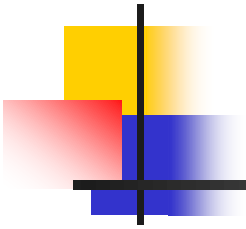
Project Plan Structure

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



Milestones & Deliverables

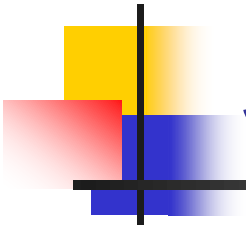
- Activities in a project should be organised to produce tangible outputs for management to judge progress.
- *Milestones* are the end-point of a process activity.
- *Deliverables* are project results delivered to customers.



Project Scheduling

- Split project into tasks and estimate time and resources required to complete each task.
- Organize tasks concurrently to make optimal use of workforce.
- Minimize task dependencies to avoid delays caused by one task waiting for another to complete.

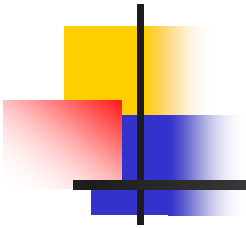
Dependent on project managers intuition and experience.



Scheduling Challenges

- 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.



Bar charts & Activity Networks

- Graphical notations used to illustrate the project schedule.
- Show project breakdown into tasks.
  - Tasks should not be too small. For example, they should take about a week or two.
- Activity charts show task dependencies and the the critical path.
- Bar charts show schedule against calendar time.

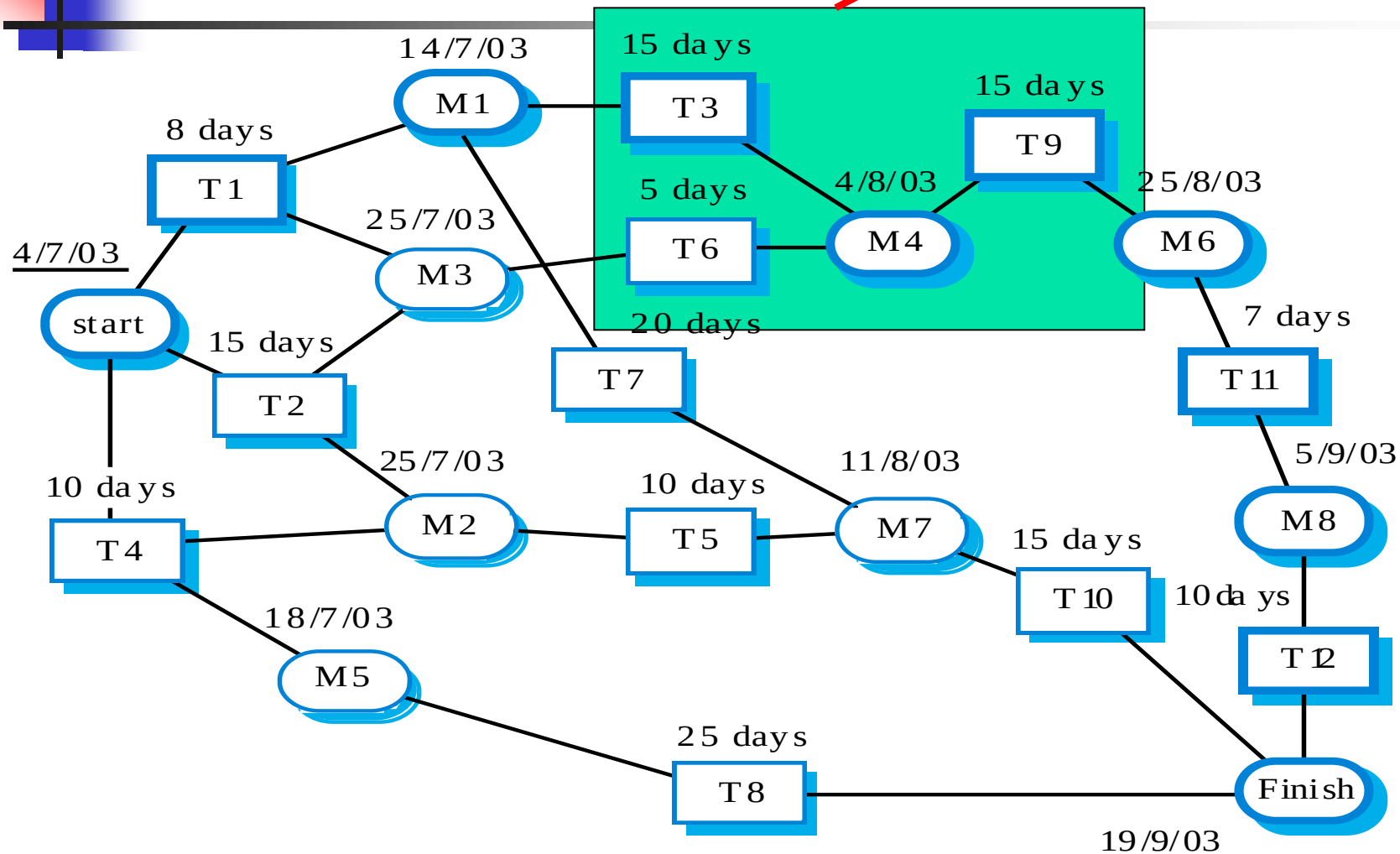
Task Durations & Dependencies

Task	Duration (days)	Dependencies
T1	8	
T2	15	
T3	10	T1

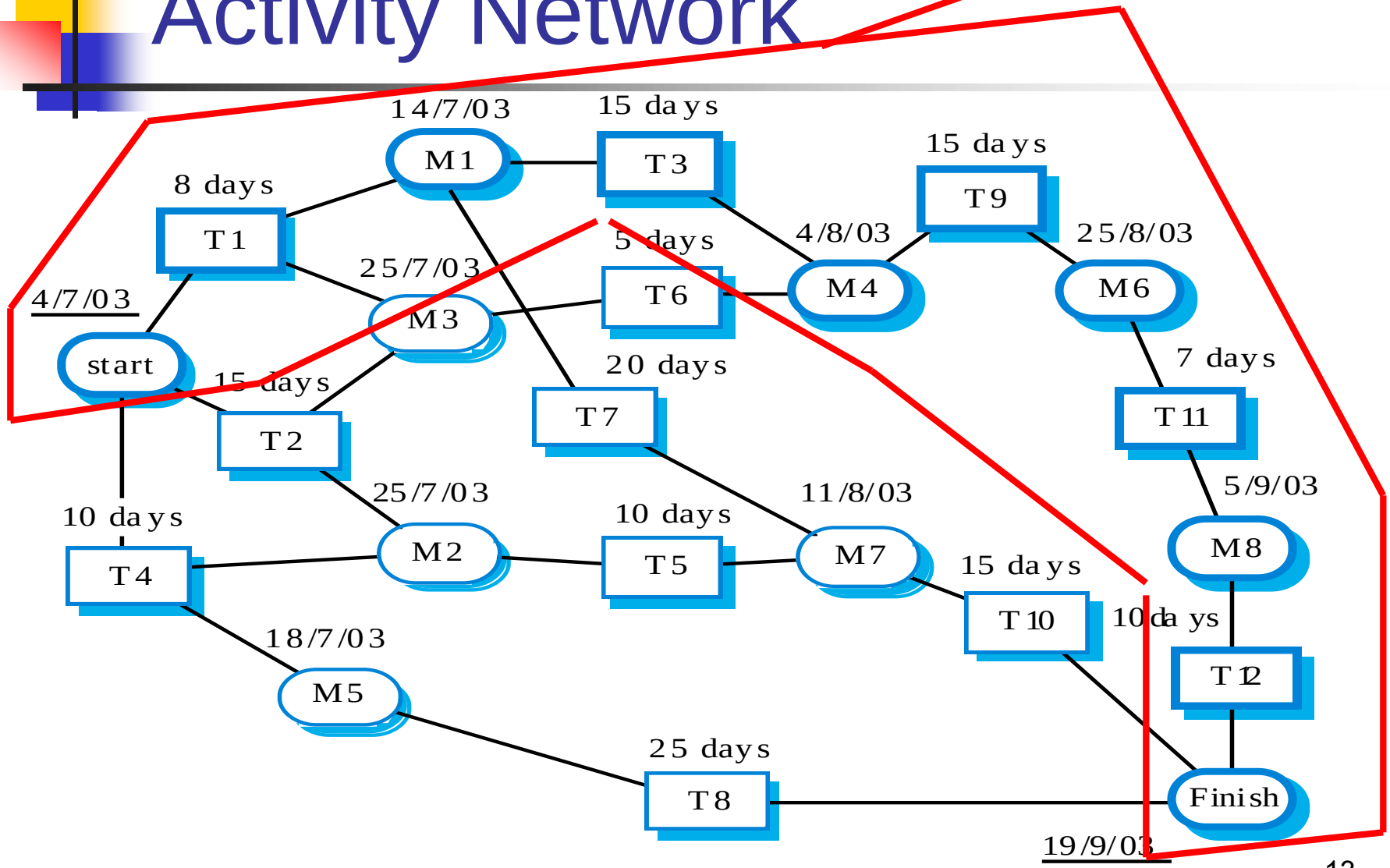
Component-A Design

Component-A Implementation

Activity Network

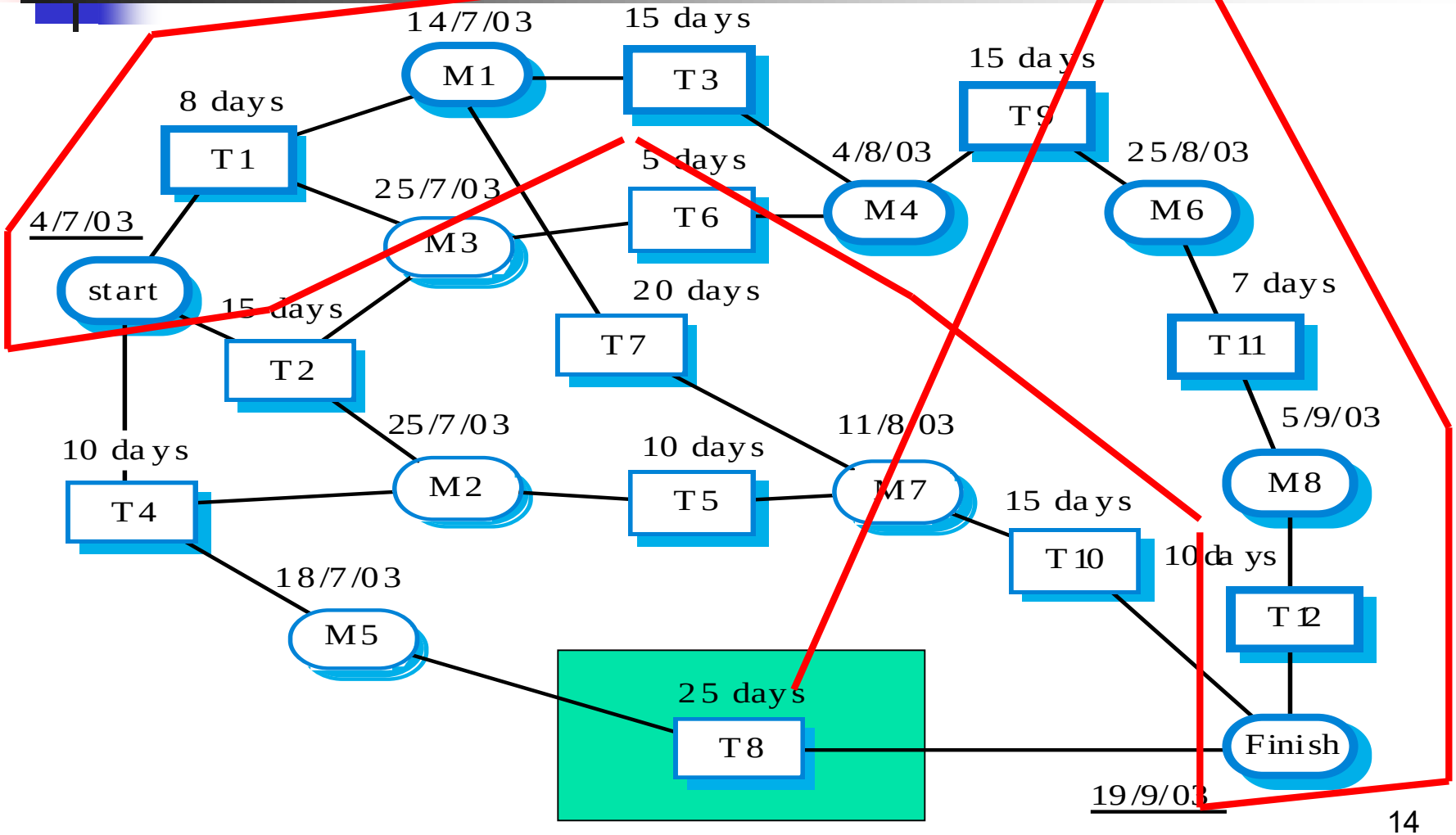


Activity Network

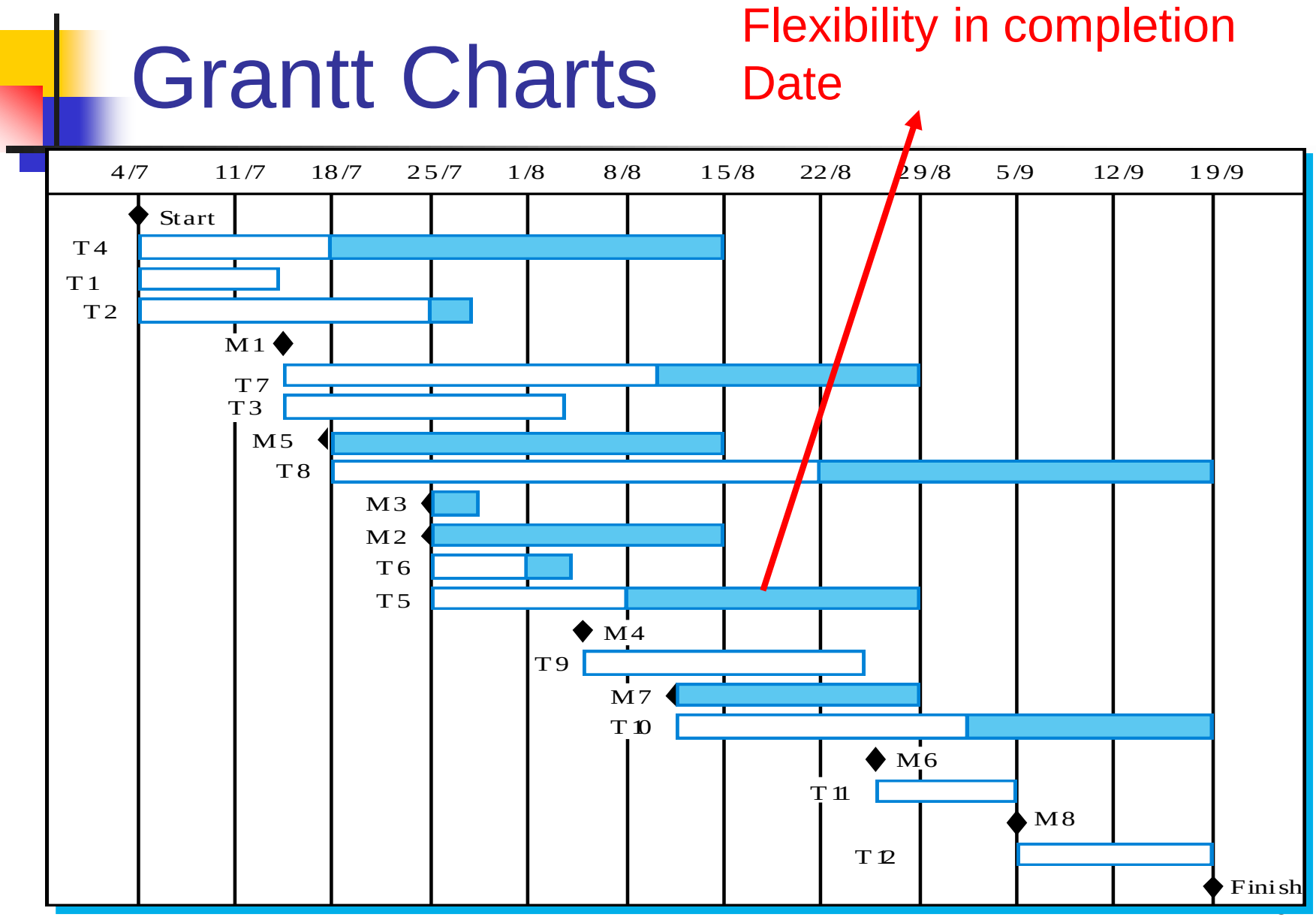


Less chances of causing delay in project schedule.

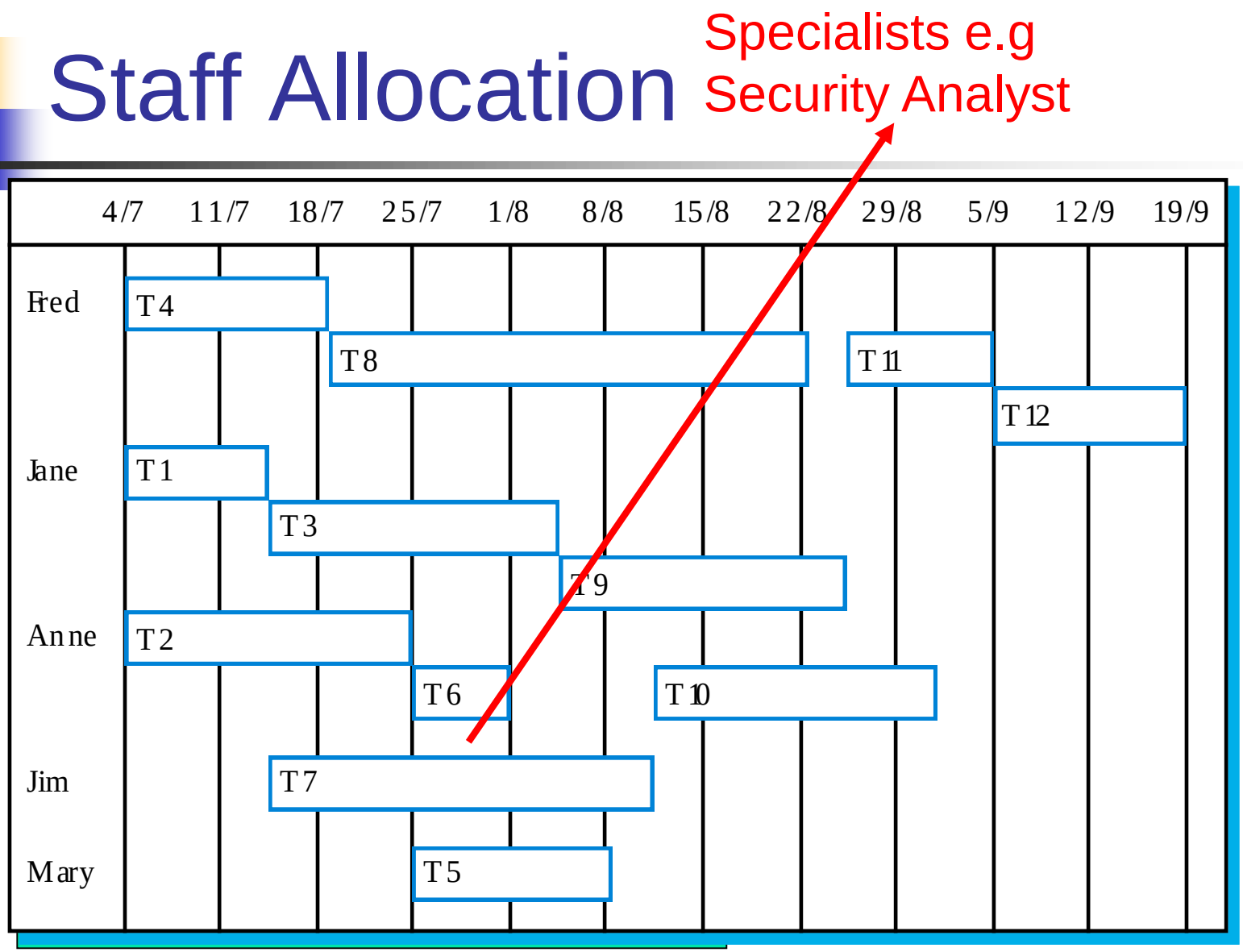
Activity Network

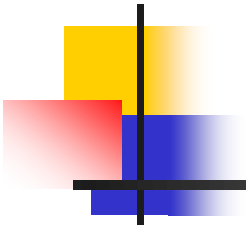


Grantt Charts



Staff Allocation





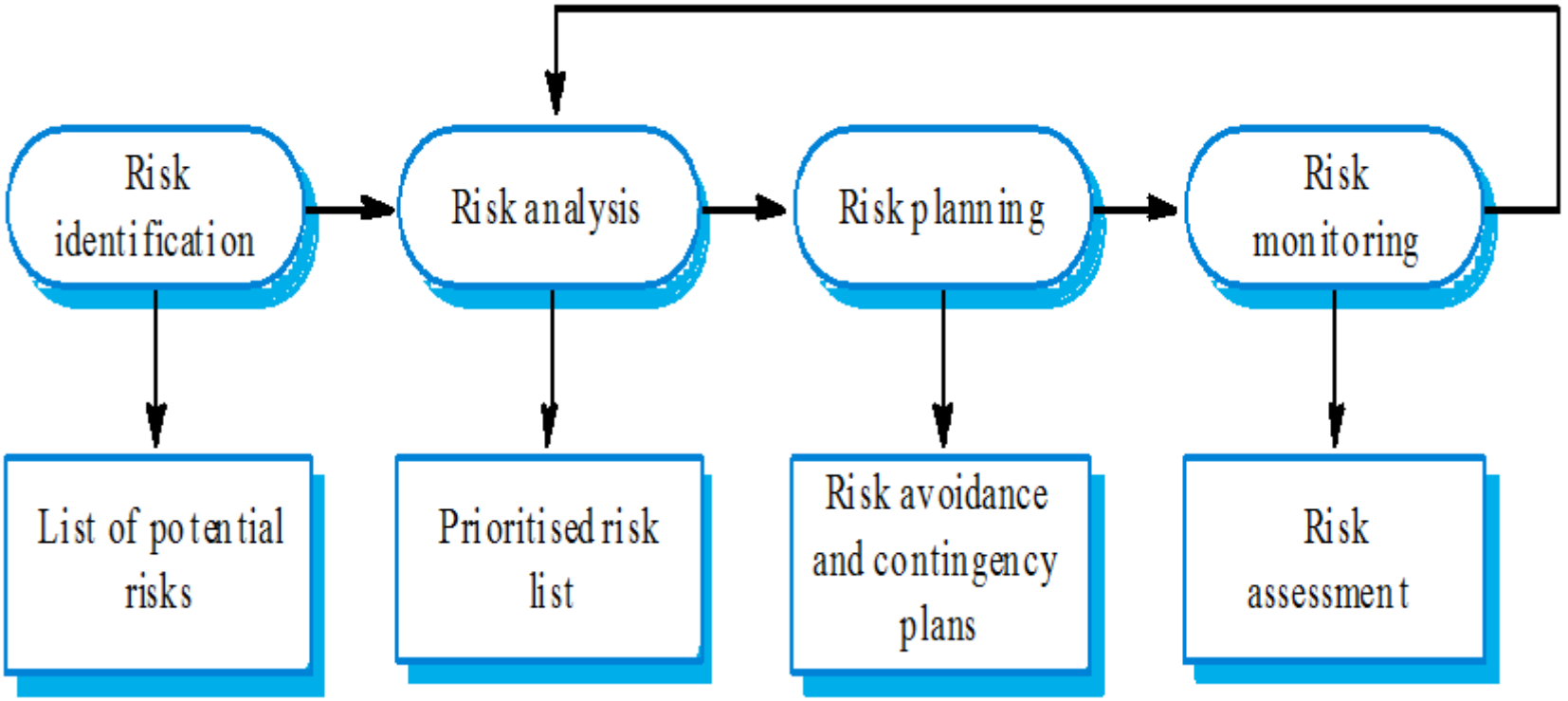
Risk Management

- Risk management is concerned with identifying risks and drawing up plans to minimise their effect on a project.
- A risk is a probability that some adverse circumstance will occur
  - Project risks affect schedule or resources;
  - Product risks affect the quality or performance of the software being developed;
  - Business risks affect the organisation developing or procuring the software.

Risk Management - Example

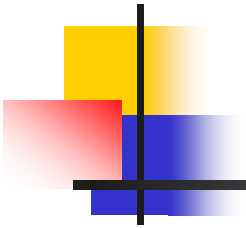
- An experience Programmer leaves a project.
  - Project risk - possible delay in system delivery.
  - Product risk - Replacement may be less experienced and more chances of errors.
  - Business risk - Programmer’s experience is not available for future products.

Risk Management Process



Risk Indicators

Risk type	Potential indicators
Technology	Late delivery of hardware or support software, many reported technology problems
People	Poor staff morale, poor relationships amongst team member, job availability
Organisational	Organisational gossip, lack of action by senior management
Tools	Reluctance by team members to use tools, complaints about CASE tools, demands for higher-powered workstations
Requirements	Many requirements change requests, customer complaints
Estimation	Failure to meet agreed schedule, failure to clear reported defects



Key Points

- Planning and estimating are iterative processes which continue through out the course of a project.
- Project scheduling involves preparing various graphical representations showing project activities, their durations and staffing.
- Risk management is concerned with identifying risks which may affect the project and planning to ensure that these risks do not develop into major threats.