Section 7
Software Management

1. Project management
2. Software development processes
3. Configuration management

Software Management

- Learning outcomes
  - understand basic project management activities
  - understand the different software development processes
    - waterfall, V-model, spiral, agile
  - understand the need for software management processes and tools, including:
    - configuration management
    - version management
    - system building
    - release management

Section 7.1
Project Management

1. Overview
2. Classic project management
3. Agile project management

7.1.1 Overview

- Project consists of:
  - outcome
    - work product or group of work products
    - work products for client are *deliverables*
  - work
    - work to be performed to achieve outcome
    - broken down into tasks or activities
  - schedule
    - maps units of work to a timeline
    - goal is to maximize concurrent work
  - resources
    - participants (people)
    - equipment
    - facilities

Project Management Activities

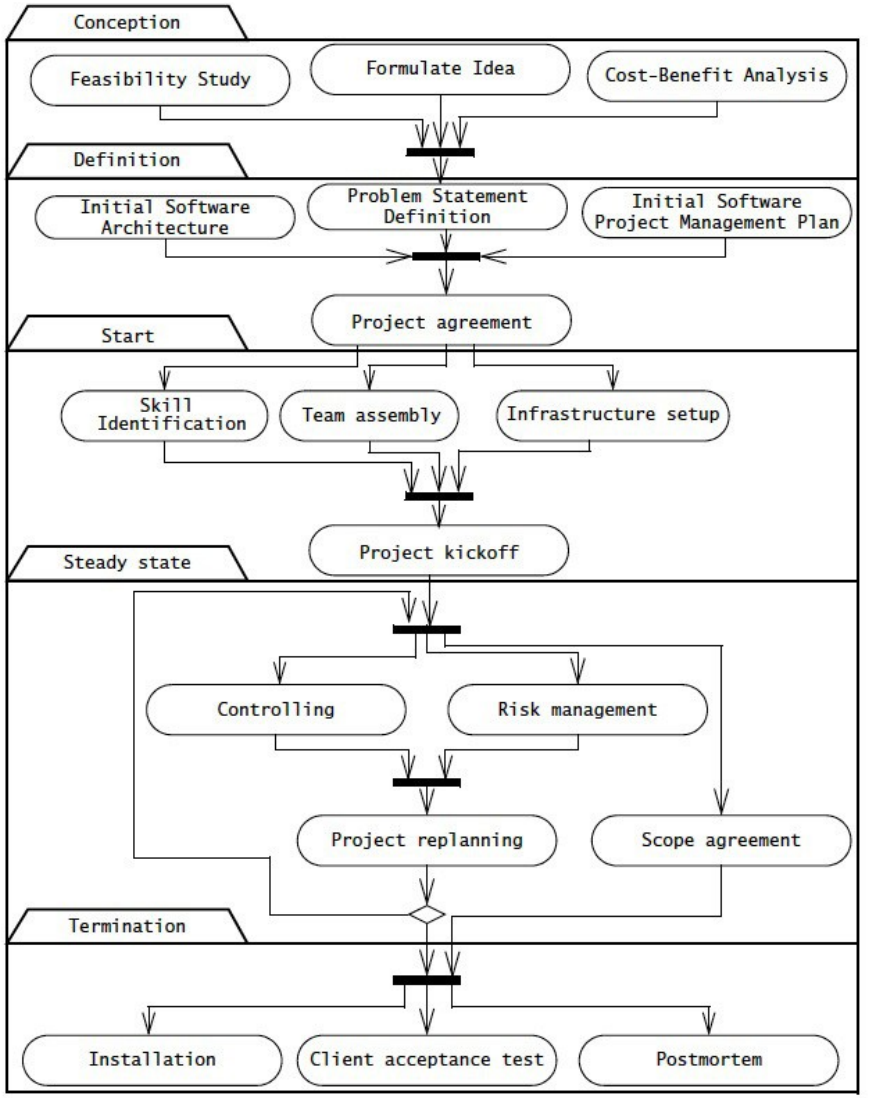

Figure 14-2 Management activities in a software project (UML activity diagram).

7.1.2 Classic Project Management

- Project management activities
  - planning
    - definition phase
  - organizing
    - beginning phase
  - controlling
    - steady state phase
  - terminating
    - end phase

Classic Project Management (cont.)

- Planning
  - develop the problem statement
  - define the top-level design
  - identify the work breakdown structure
  - create the initial schedule

Classic Project Management (cont.)

- Organizing
  - set up communications infrastructure
  - identify skills
  - assign roles (management and technical)
  - deal with skills shortages
  - select team sizes
  - assemble the teams
  - kick-off meeting
  - agree on project scope

Classic Project Management (cont.)

- Controlling
  - meetings
  - metrics
  - manage risks

Classic Project Management (cont.)

- Terminating
  - accept the system
  - installation
  - postmortem

7.1.3 Agile Project Management

- Scrum approach
  - sprint
    - short iteration during which a release is developed
    - timeboxed to a fixed duration
  - sprint backlog
    - project requirements to be implemented during sprint
  - product increment
    - potentially shippable work resulting from a sprint

Agile Project Management (cont.)

- Planning
  - brainstorm the first version of product requirements
  - prioritize requirements into *product backlog*
  - at the beginning of each sprint:
    - select requirements from product backlog for next iteration
    - these become the sprint backlog
  - at the end of each sprint:
    - completed work is the *product increment*
    - product increment is reviewed
    - unfinished work is returned to product backlog

Agile Project Management (cont.)

- Organizing
  - three roles
    - product owner
      - responsible for requirements
      - represents client and users
    - Scrum master
      - management role responsible for process
    - Scrum team
      - responsible for developing product increment

Agile Project Management (cont.)

- Controlling
  - Scrum meetings
    - daily meeting at the beginning of the day
    - team members report on:
      - status (work done since the last meeting)
      - new issues and problems
      - new action items

Agile Project Management (cont.)

- Controlling (cont.)
  - burn down chart
    - shows estimate of remaining effort and time for current sprint
    - revised daily

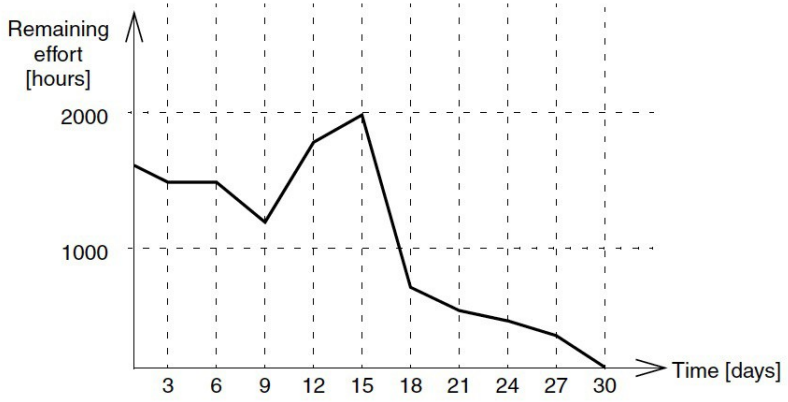

Figure 14-15 Assessing progress trend with a burn down chart. An increase corresponds to an upward revision of estimated work (new work, tasks initially underestimated). A decrease corresponds to a downward estimate of remaining work (work completed, obsolete tasks taken out of the plan).

Agile Project Management (cont.)

- Terminating
  - sprint review
    - review product backlog
    - revise requirements and assign new priorities
    - make changes to Scrum team