Software Life Cycle Models

- Let us review the main steps
  - Problem Definition (define the problem)
  - Feasibility study (establish **cost effectiveness** of the solution we proposed to)
  - Analysis (try to clearly define **the responsibility or functions** that the software must undertake)
  - System Design
  - Detailed Design
  - Implementation or Coding
  - Maintenance

Software Life Cycle Models

- A separate planning step for large applications may be introduced after feasibility (or part of feasibility)

- Study the outputs of the steps

Problem Definition

- To answer: What is the Problem?
- Where and by whom is the problem felt?
  - Where in the organization particularly the problem has been felt
- Meet users and management and obtain their agreement that there is a problem

Problem Definition

- If problem exists, and it need to be resolved
  - It becomes a project
  - Commitment of funds implied

The objective is to clearly define goal for the project and establish as a project

Problem Definition

- Prepares a brief statement of problem (small document not extensive but important, it is the first deliverable)
  - Avoids misunderstandings
  - Get concurrence from user/management
  - Usually short: 1 or 2 pages
- Estimate cost and schedule for the next feasibility step

Problem Definition

- Estimate roughly overall project cost to give users a sense of project scope. The estimates become more refined in later steps.
  - misconception by the user that the project will be done with the cost in his mind
  - roughly estimated cost is acceptable by the user
  - it is preliminary and based on the experience of analyst or computer experts

Problem Definition

- This step is short; lasts a day or two
  - do not involve cost and we just invite an expert from the development industry to make him understand the problem and give a scope
- Proper understanding and characterization of problem essential
  - To discover cause of the problem
  - To plan directed investigation
  - Else, success is unlikely (end up solving a wrong problem and user may not accept)

Problem Definition

- Possible initial characterization of problems
  - Existing system has poor response time, i.e., user is unable to process a transaction or take too large time.
  - Unable to handle workload (so many transactions or users making transactions at same time and long queue of users)
  - Problem of cost: existing system uneconomical
  - Problem of accuracy and reliability
  - Requisite information is not produced by system
  - Problem of security

Ex: Railways Reservation System

Problem Definition Document

- Short document called problem statement document
  - **Project Title**
  - **Problem Statement**: Concise statement of problem, possibly in a few lines
  - **Project Objectives**: state objective of the project defined for the problem
  - **Preliminary Ideas discussion with the user or past experience**: possible solutions, if any, occurring to user and/or analyst could be stated here
  - **Project Scope:** give overall cost estimate as rough figure
  - **Feasibility Study:** indicate time and cost for the next step

Problem Definition Document

Note:

- Do not confuse between problems and solutions e.g., ‘develop computerized payroll’ cannot be a problem
- No commitment is implied to preliminary ideas (may explore many ideas during analysis)