Chapter 2
The Process
A Layered Technology

Software Engineering

tools

methods

process model

a “quality” focus

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A Common Process Framework

Common process framework

Framework activities
- work tasks
- work products
- milestones & deliverables
- QA checkpoints

Umbrella Activities
Umbrella Activities

- Software project management
- Formal technical reviews
- Software quality assurance
- Software configuration management
- Document preparation and production
- Reusability management
- Measurement
- Risk management
Process as Problem Solving

status quo

problem definition

technical development

solution integration
The Process Model: Adaptability

- the framework activities will always be applied on every project ... BUT

- the tasks (and degree of rigor) for each activity will vary based on:
  - the type of project (an “entry point” to the model)
  - characteristics of the project
  - common sense judgment; concurrence of the project team
The Primary Goal: High Quality

Remember:

High quality = project timeliness

Why?

Less rework!
The Linear Model

System/information engineering

analysis → design → code → test
Iterative Models

Prototyping

Customer test-drives mock-up

Build/revise mock-up

Listen to customer

RAD

60 - 90 days
The Incremental Model

increment 1

analysis → design → code → test

delivery of 1st increment

increment 2

analysis → design → code → test

delivery of 2nd increment

increment 3

analysis → design → code → test

delivery of 3rd increment

increment 4

analysis → design → code → test

delivery of 4th increment

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An Evolutionary (Spiral) Model
Still Other Process Models

- Component assembly model—the process to apply when reuse is a development objective
- Concurrent process model—recognizes that different part of the project will be at different places in the process
- Formal methods—the process to apply when a mathematical specification is to be developed
- Cleanroom software engineering—emphasizes error detection before testing