

UML Diagram Types

Behavioral Models

- activity diagrams
- *statechart diagrams*
- interaction diagrams
 - sequence diagrams
 - collaboration diagrams
- *use case diagrams*

Structural Models

- *class diagrams*
- object diagrams
- packages

Architectural Models

- component diagrams
- deployment diagrams

Software Engineering Process Models

Models to be discussed

- Sequential/Waterfall Model
- Prototype Model
- Incremental Model
- Spiral Model

Generic Parts of Each Model

- System Engineering: establishing requirements for how system being designed fits into larger system
- Requirements Analysis: focus on specific software implementation and what the software system must do
- Design: focus on how the software system will be implemented
 - data structure
 - software architecture
 - interface representations
 - algorithmic detail
- Code: writing software
- Test: testing software against some criteria (requirements, design, etc)

Sequential/Waterfall Model

Stepped process of:

- analysis
- design
- code
- test

■ Cons

- projects rarely follow described path
- often difficult to state requirements upfront
- working version not available to the end

Prototype Model

Build, then throw away

Quick design to show capability

■ Cons

- customer want apparent working system
- implementation compromises to obtain quick working system

Incremental Model

- Pipelined waterfall model
- Move resources at completion of increment
- Primary core path, followed by add'l functionality paths
- Pros
 - specialization and redeployment of implementation teams
 - gradual increase of personnel
 - increments planned to manage technical risks

Spiral Model

- Evolutionary combination of prototyping and waterfall models
- Communication key to success
- Pros
 - realistic approach to large-scale systems
 - systematic stepwise refinement of software

Summary

Common Partitions of Each Model

- System Engineering
- Requirements Analysis
- Design
- Code
- Test

Summary

Suggested Process Models

- Sequential/Waterfall Model
- Prototype Model
- Incremental Model
- Spiral Model

Seldom is any one model followed 'purely'
