

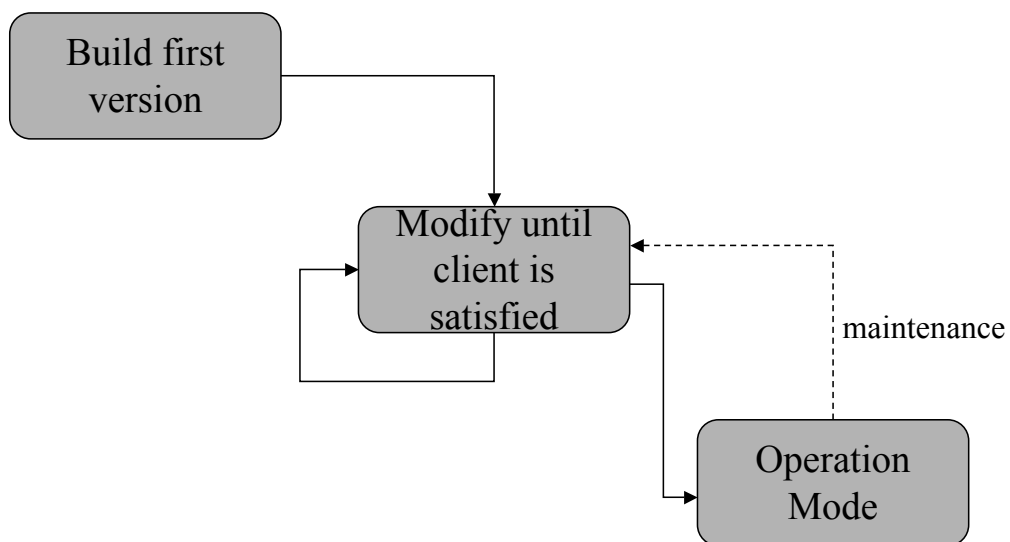
# Software Process

## Types of Process Models

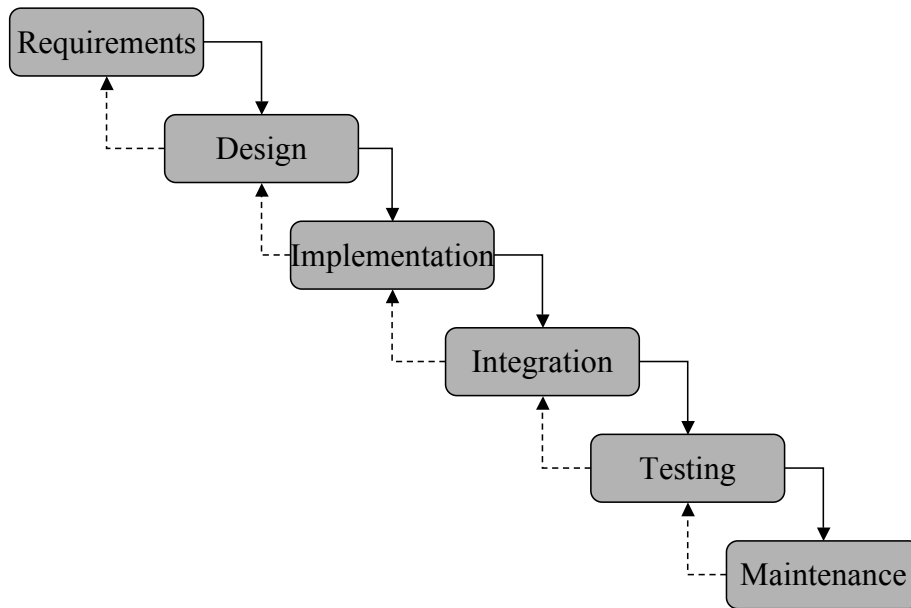
- **Universal**
  - Describe the basic process steps and provide general guidance on their role and order (e.g., Waterfall and Spiral Model). Permit global understanding and provide a framework for policies.
- **Worldly**
  - Guide the sequence of tasks, define task prerequisites and results, specify who does what when, models anticipate results, measure and key checkpoints. Guide daily work.
- **Atomic**
  - Precise data definitions, algorithmic specifications, information flows and user procedures. Atomic process definitions are often embodied in process standards and conventions. Provide atomic detail for training and task mechanization.

# Universal Models

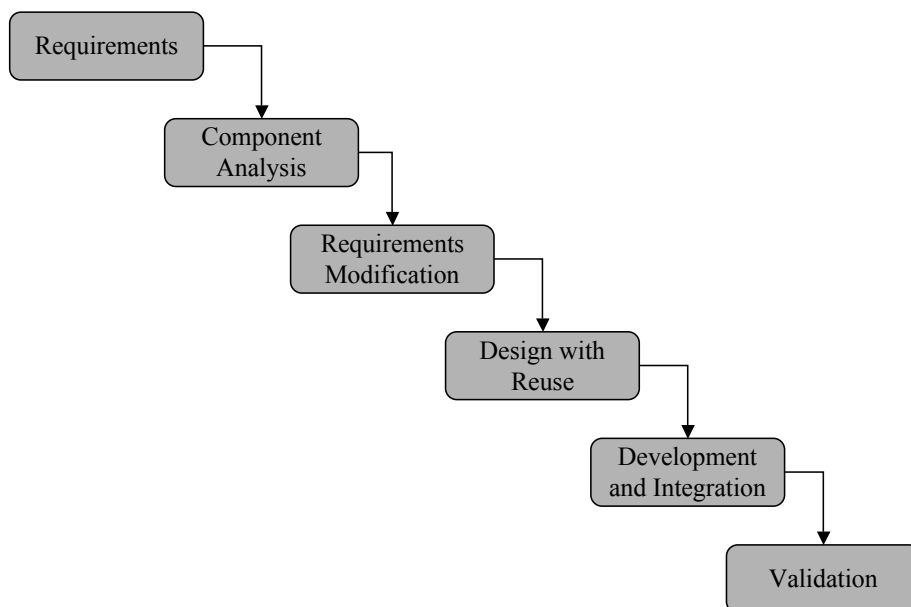
## Build-and-Fix Model



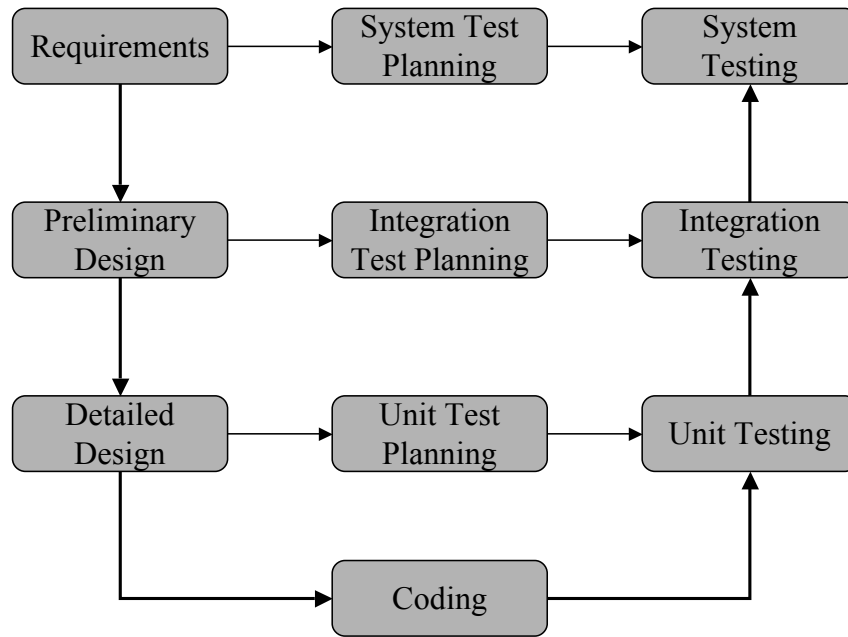
# Waterfall Model



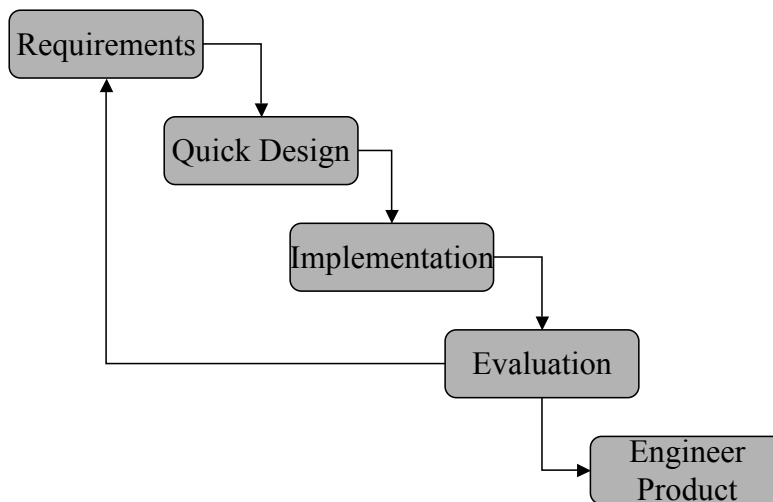
# Reuse-Oriented Development



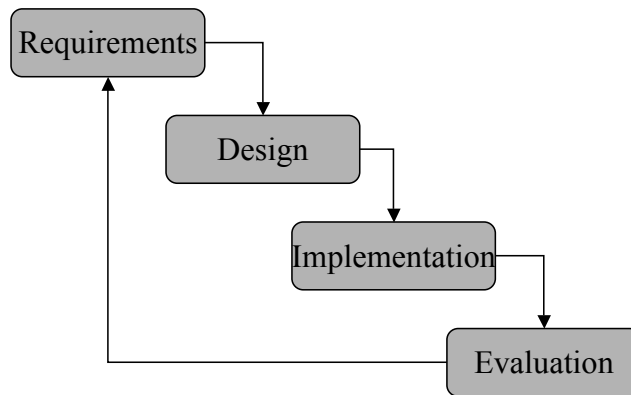
# Waterfall Model?



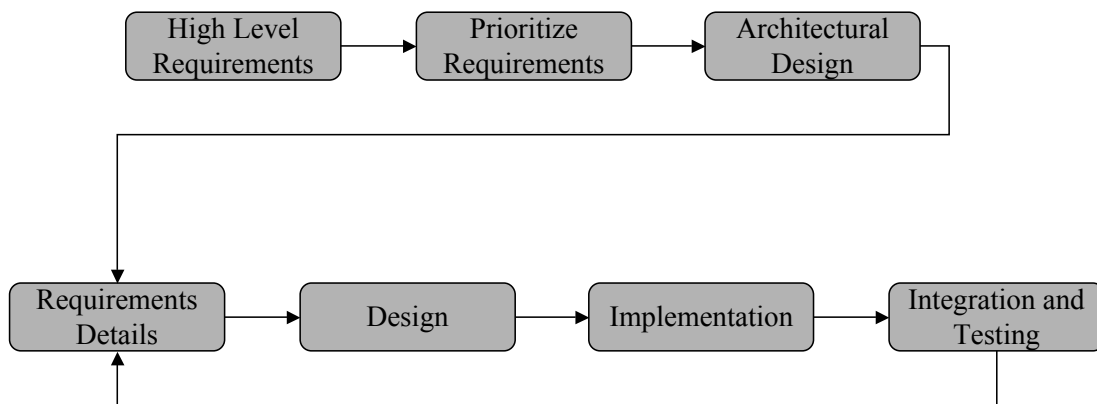
# Rapid Prototyping



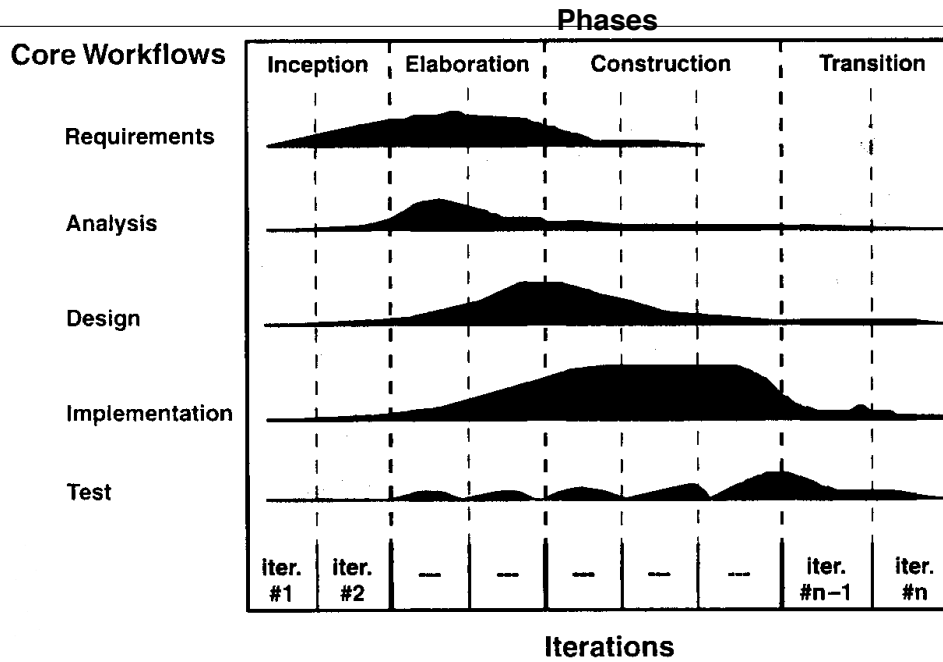
# Evolutionary Prototyping



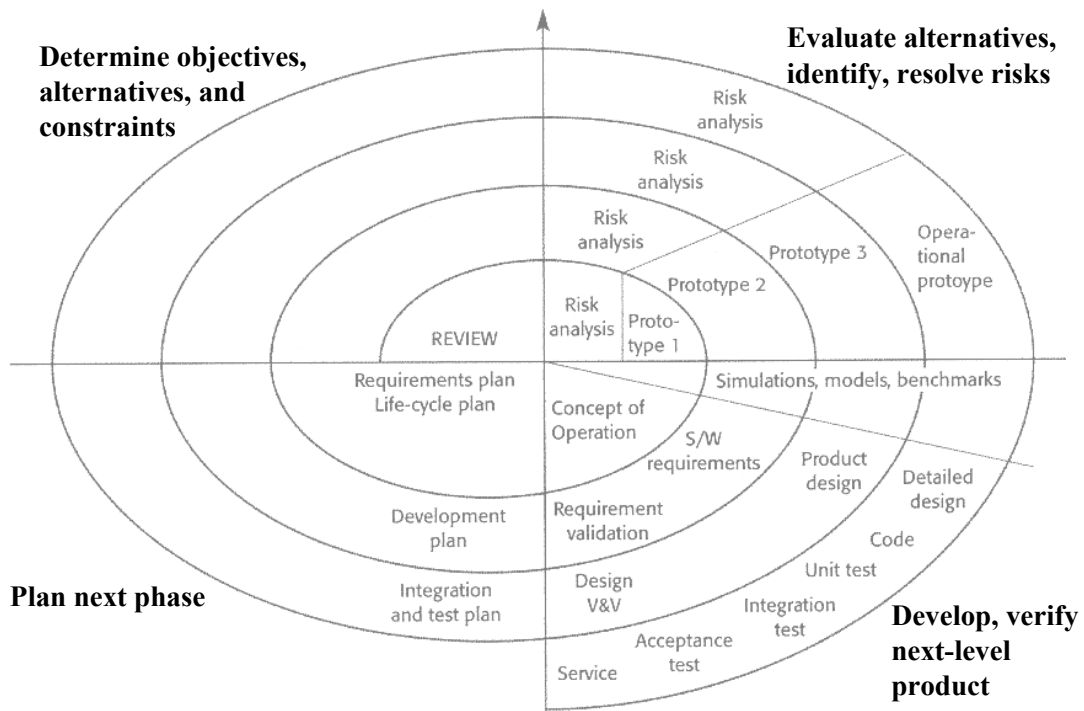
# Incremental Development



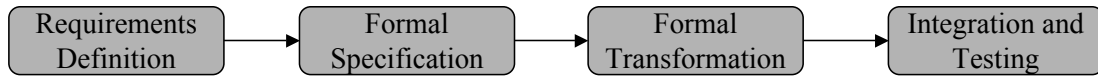
# Release Cycle Phases



# Spiral Model

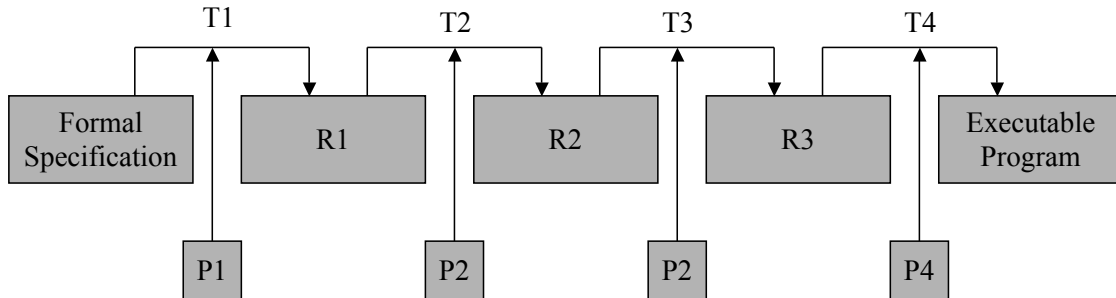


# Formal Systems Development



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## Program Transformations



## Worldly Model Example

# Software Process Example

## PLANNING INITIATION

(Software Engineering Process Office, Space and Naval Warfare Systems Center, San Diego, CA)

- PURPOSE
- ROLE AND RESPONSIBILITY
- ENTRY CRITERIA
- INPUT
- PROCESS ACTIVITY
- OUTPUT
- EXIT CRITERIA
- PROCESS METRICS

## Purpose

- The purpose of this process step is ensure that the necessary requirements have been met in order to properly carry out the planning activities.

## Role and Responsibility

- The project manager is responsible for carrying out this process step.



# Entry Criteria

- A Software Project Manager is designated to be responsible for developing software size, cost, schedule, and resource estimates; preparing project planning documents; and negotiating commitments.
- Those responsible for preparing the project planning documents are skilled or have received training in software project planning and software estimating.
- The Statement of Work (SOW) or tasking statement has been documented. The SOW or task statement should include the scope of the work, technical goals and objectives, identification of customers and end users, imposed standards, assigned responsibilities, cost and schedule constraints and goals, dependencies between the software project and other organizations, resource constraints and goals, and other constraints and goals for development and/or maintenance.
- Initial allocated requirements have been documented.

## Entry Criteria (2)

- Adequate resources and budget for software project planning have been identified and allocated. Adequate budget generally means 1-2% of the software project budget.
- Customer/sponsor required documentation (e.g. Computer Resources Life Cycle Management Plan, Software Support Requirements Analysis, Transition Plan, Acquisition Plan, etc.) is available and complete.
- SSC San Diego Software Project Planning Policy has been reviewed.

## Input

- Planning budget and trained personnel. SSC San Diego Software Project Planning Policy. Project's documented software requirements.
- Documented SOW or tasking statement.

# Process Activity

- **Develop Estimates**
  - Review the "SSC San Diego Software Project Tracking and Oversight Process" document to determine the measurement data to be collected for project tracking and oversight.
  - Review the statement of work and the initial allocated requirements to scope the effort.
  - Make initial estimates of software size, cost and schedule using the "SSC San Diego Software Size, Cost, and Schedule Estimation Process" document.
  - Estimate the project's critical computer resources. Critical computer resources may be in the host environment, in the integration and testing environment, in the target environment, or in any combination of these.
  - Estimate the space requirements for the project's software engineering facilities and make a preliminary identification of the hardware, support tools and associated costs (e.g., license fees, maintenance cost) required for the target environment, the host environment and the integration and test environment.

## Process Activity (cont.)

- **Plan Software Activities**
  - Perform an initial assessment of the following:
    - Software objectives, allocated requirements and interface requirements. The "Requirements Management Guidebook" available for downloading from the SEPO Home page will assist in this step.
    - Customer delivery schedule requirements.
    - Customer budget limitations.
    - System technical constraints.
    - Staffing constraints (in-house and contractors).
    - Contracting needs.
    - Resource constraints.
    - Software development environment.
    - Software processes to be used.
    - Design, programming, software engineering and test requirements and standards.
    - Configuration management requirements.
    - Quality assurance requirements.
    - Non-deliverable software and hardware requirements.
    - Risks and risk reduction strategies for the project.
    - Documentation requirements.

# Output

- Initial planning data including a Project budget and/or WBS that includes a line item for the SPP task and the project organization chart identifies the project's Software Project Manager (SPM).

# Exit Criteria

- A Project Software Manager for the project has been identified. Adequate resources, funding have been allocated to perform the planning task, and an initial understanding of the scope of the effort has been accomplished

# Process Metrics

- Effort expended in planning work efforts.