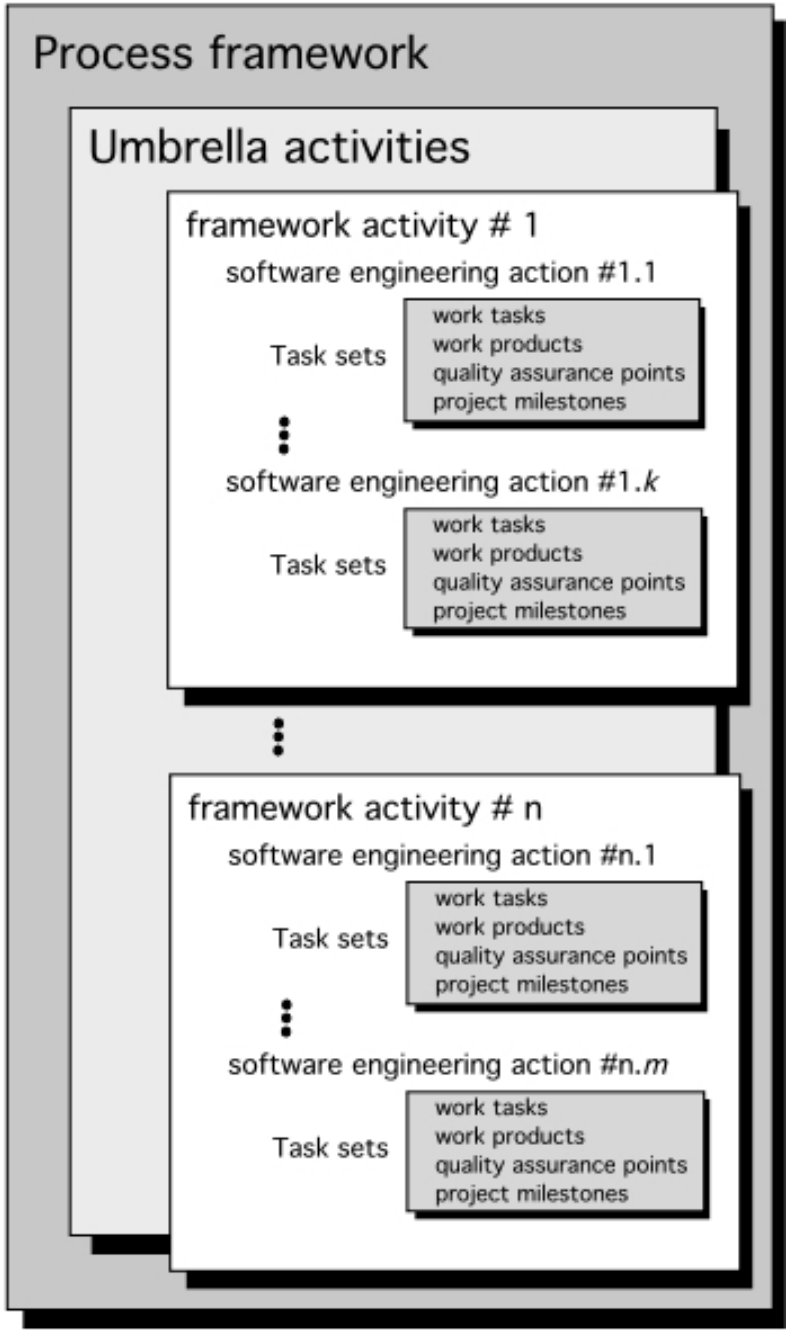
# Software Process Models

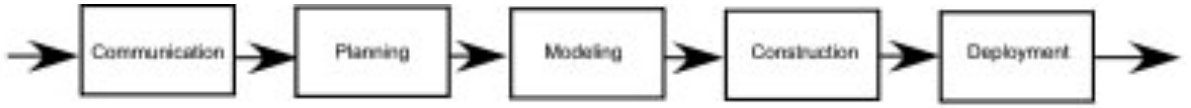
Dr. Taimoor Khan

Software process

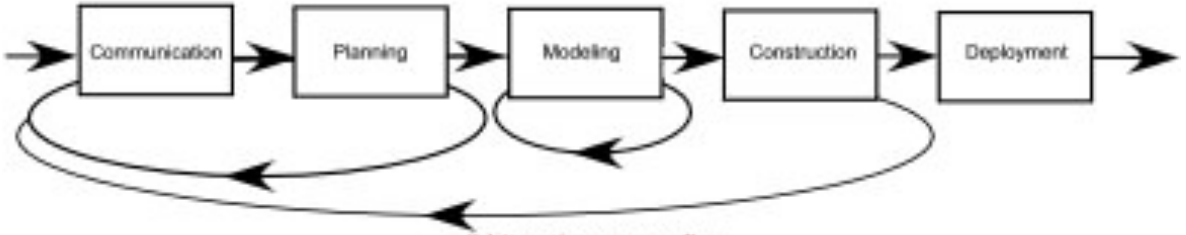


# Identifying a Task Set

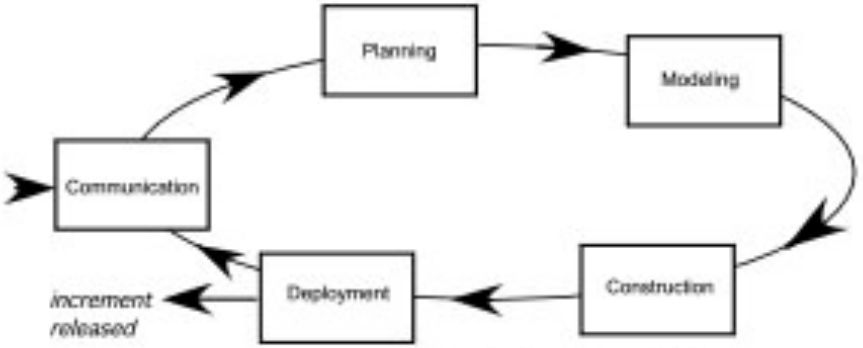
- A task set defines the actual work to be done to accomplish the objectives of a software engineering action.
  - A list of the task to be accomplished
  - A list of the work products to be produced
  - A list of the quality assurance filters to be applied



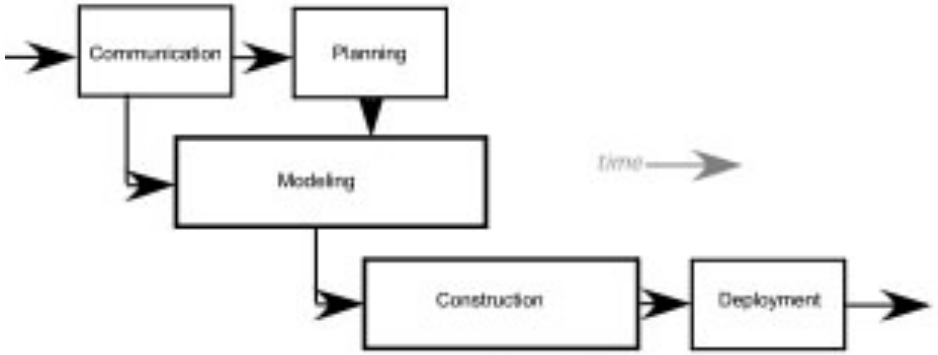

(a) linear process flow




(b) iterative process flow




(c) evolutionary process flow

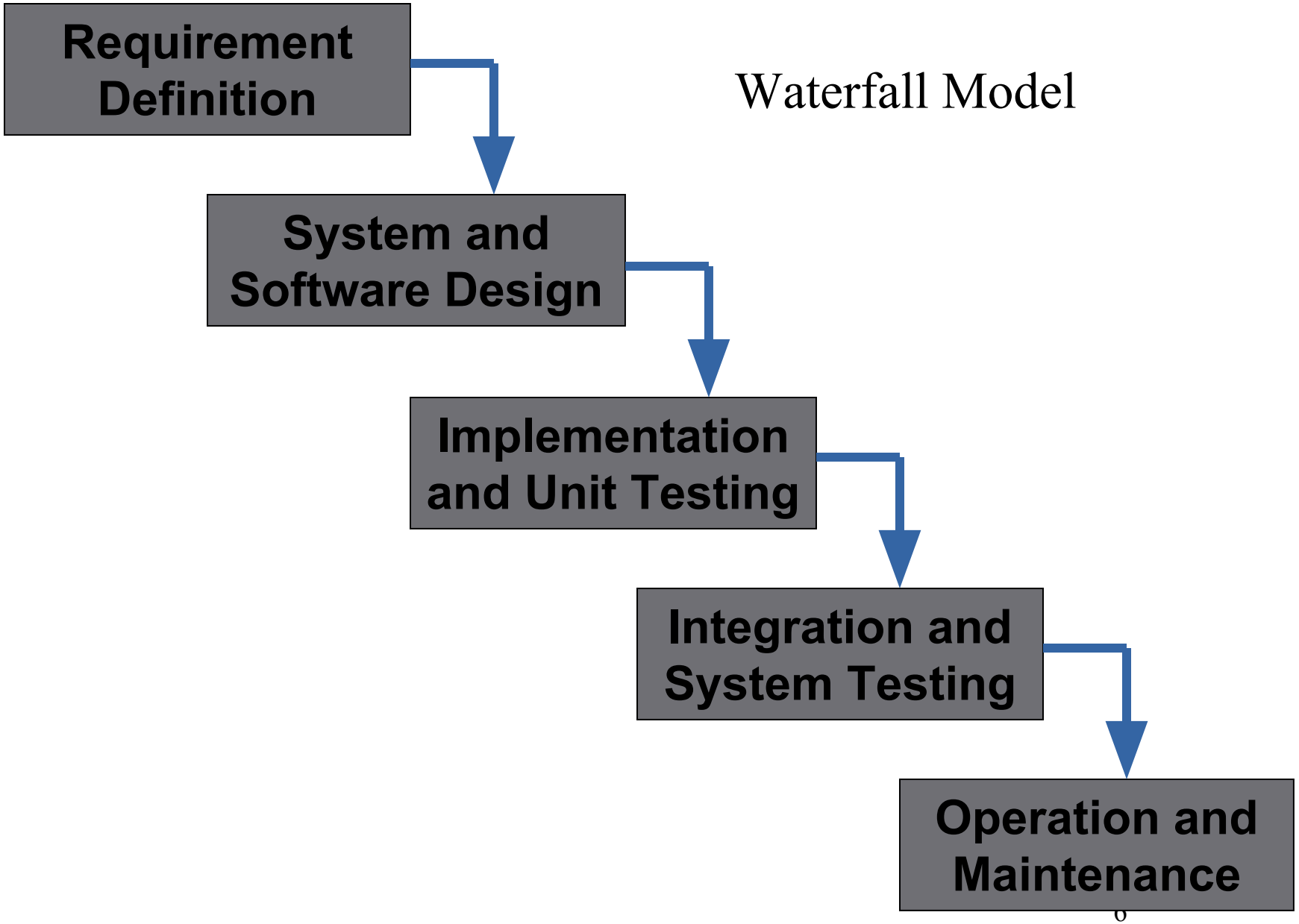



(d) parallel process flow

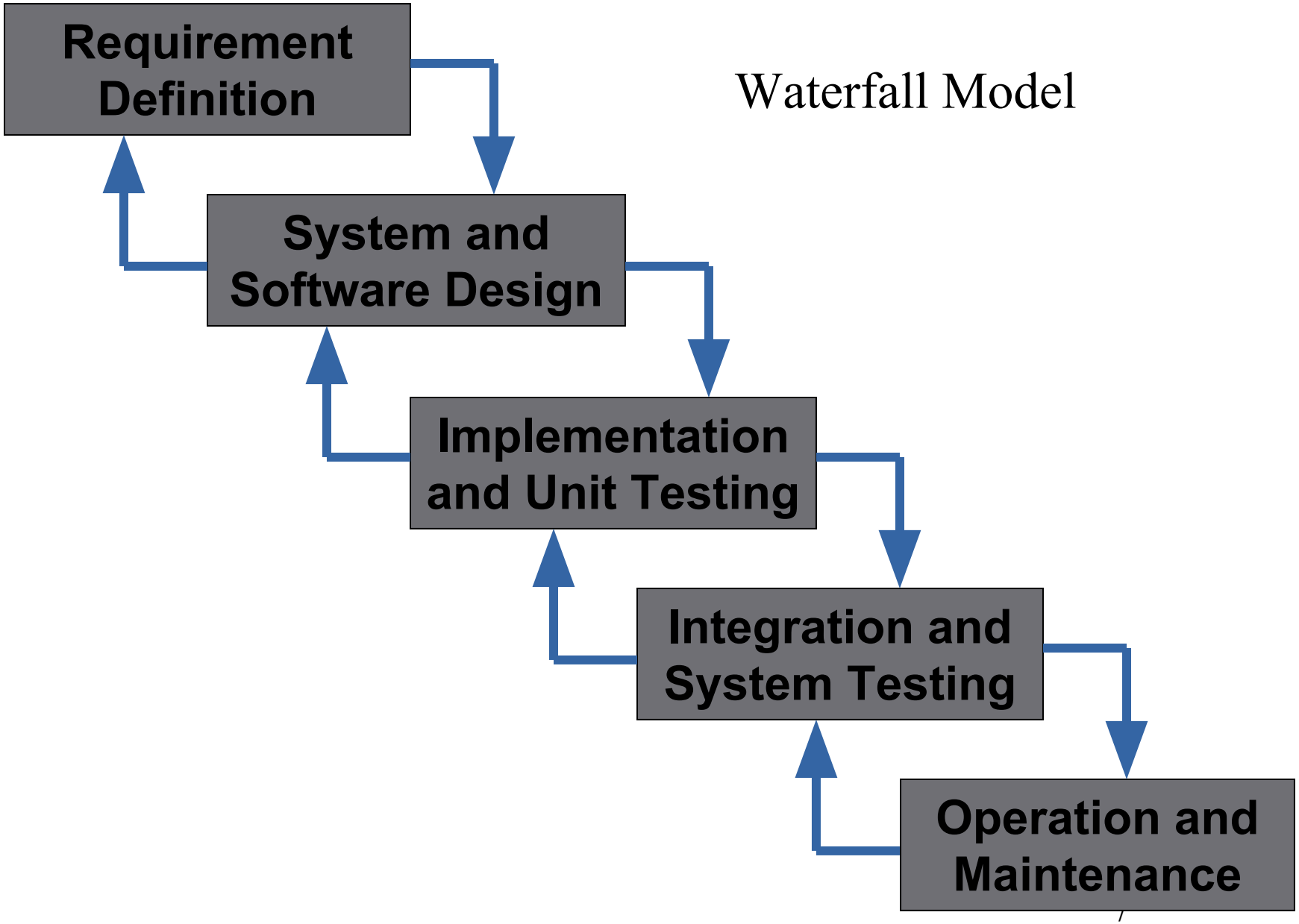
# Phases of Software Process Model

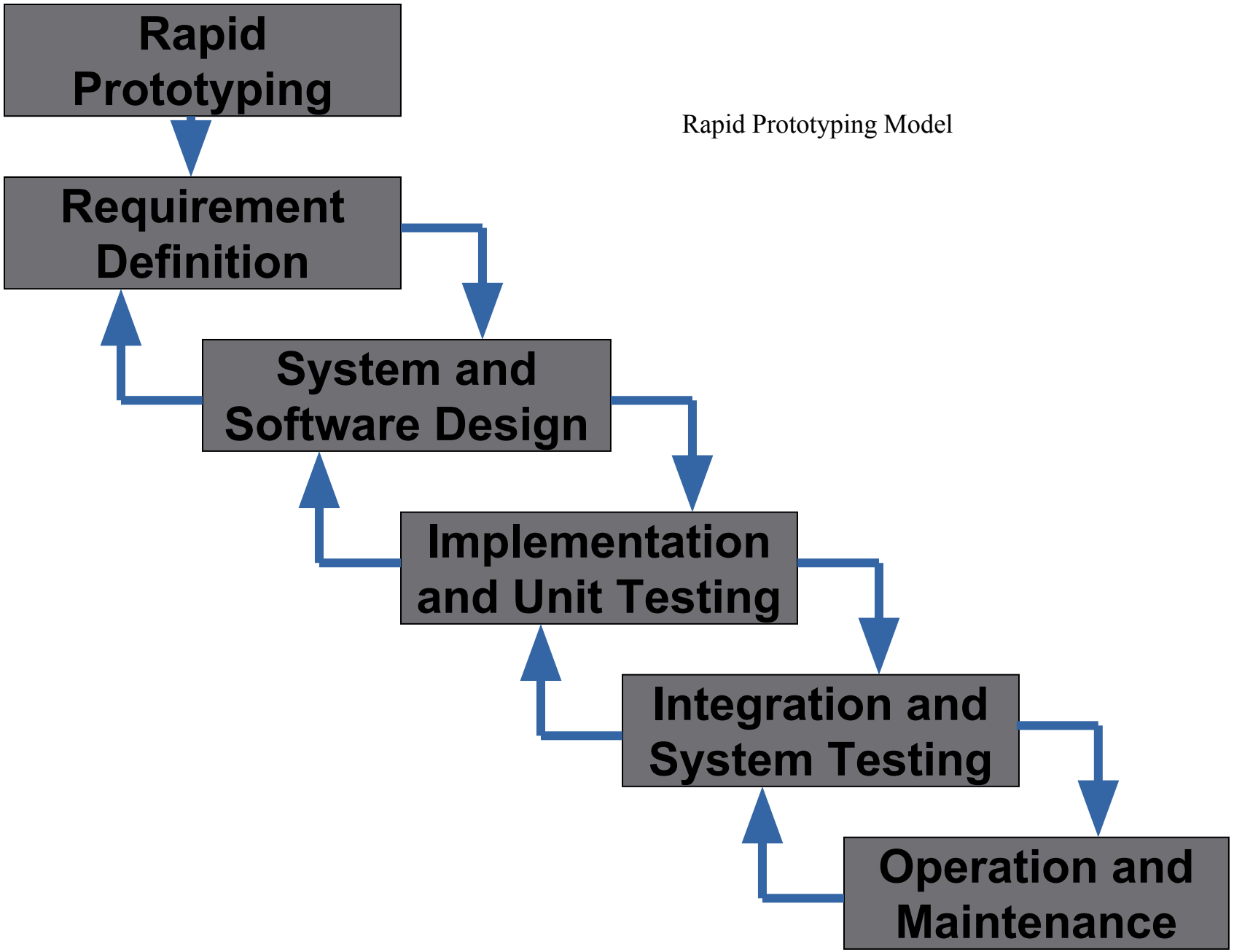
- Requirements phase
- Specification phase
- Design phase
- Implementation phase
- Integration phase
- Maintenance phase
- Retirement

# Waterfall Model



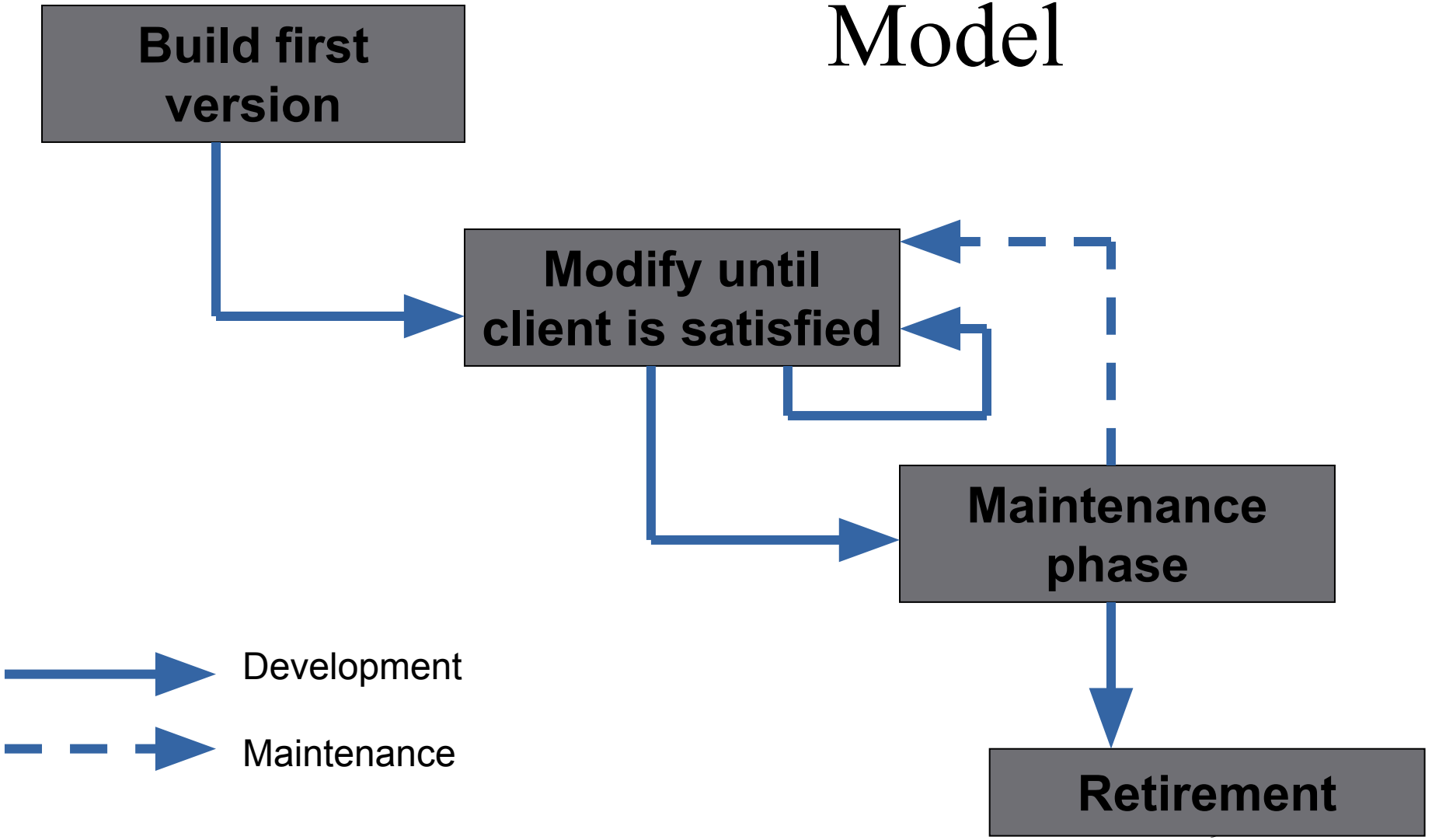
# Waterfall Model



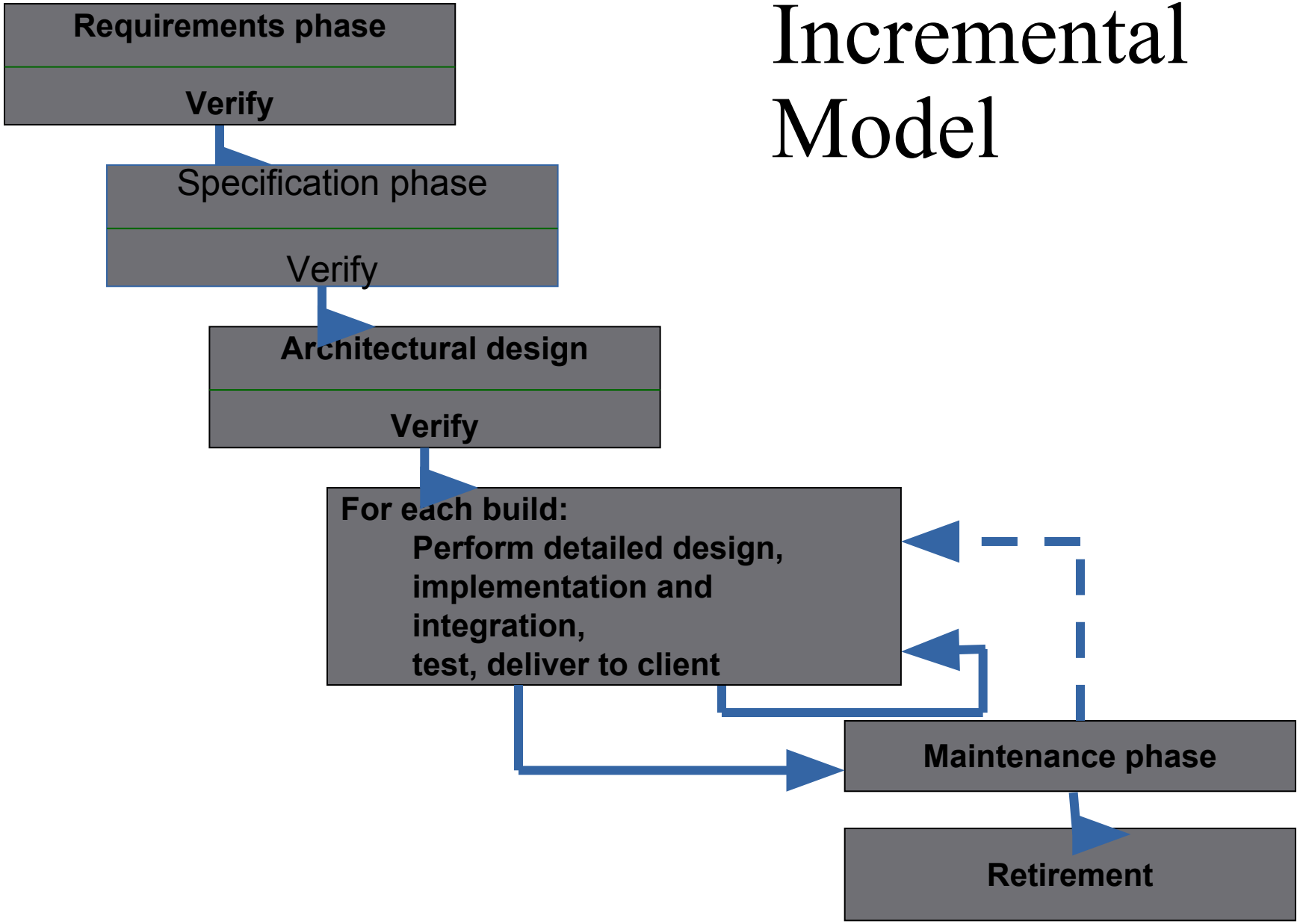



Rapid Prototyping Model

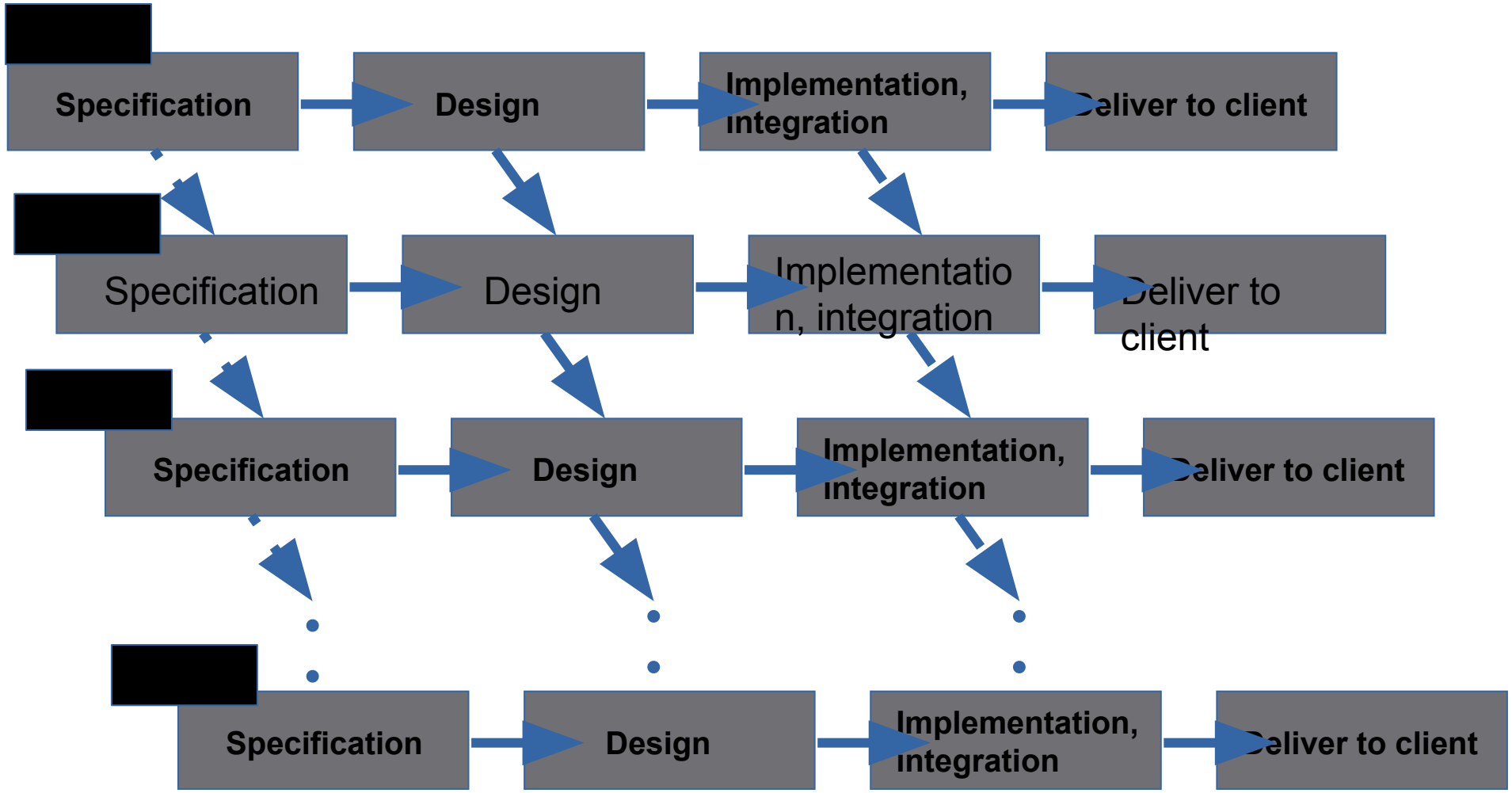
# Build and Fix Model



# Incremental Model



# Incremental Model (cont.)

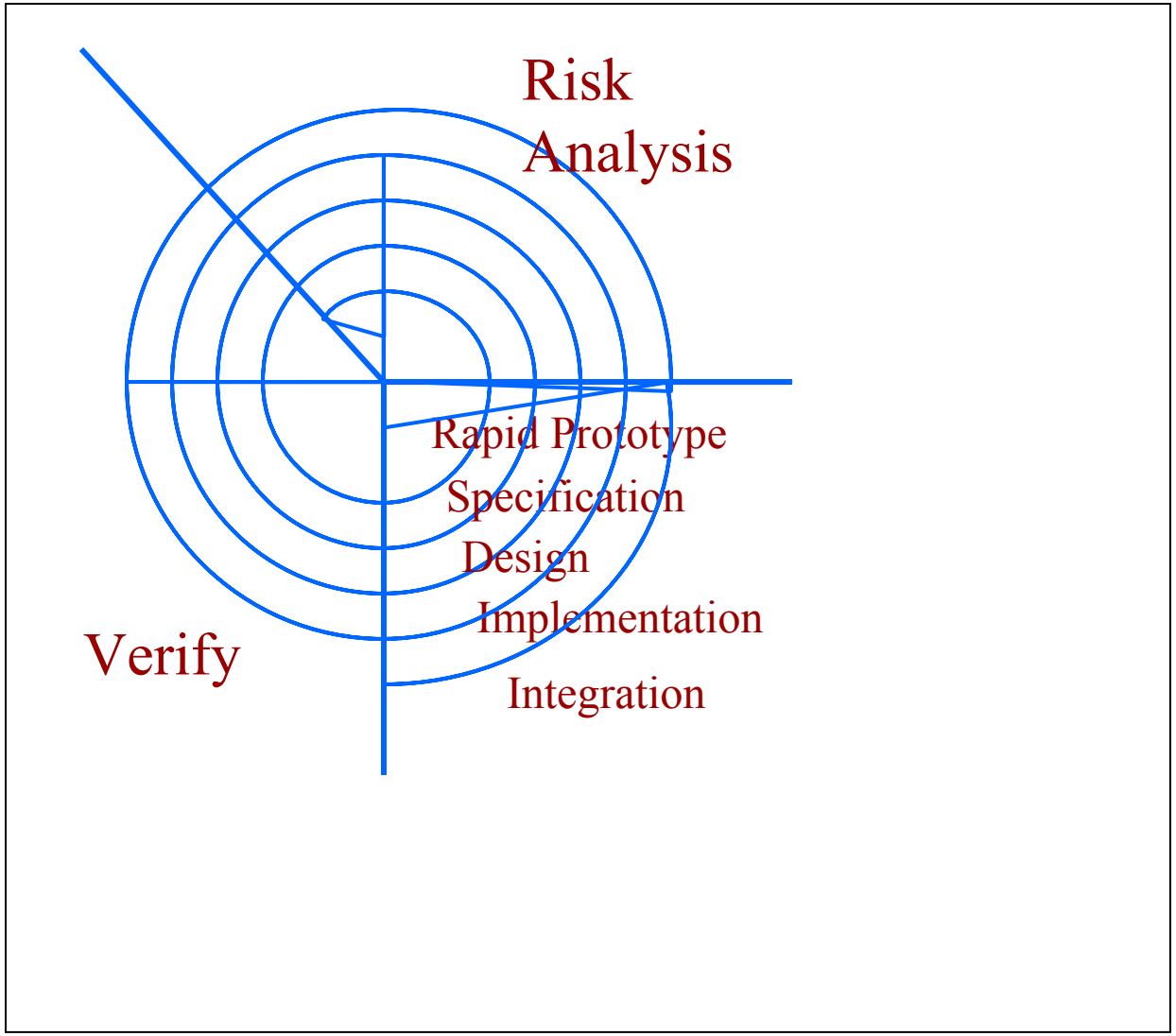



**Specification team**

**Implementation, integration team**

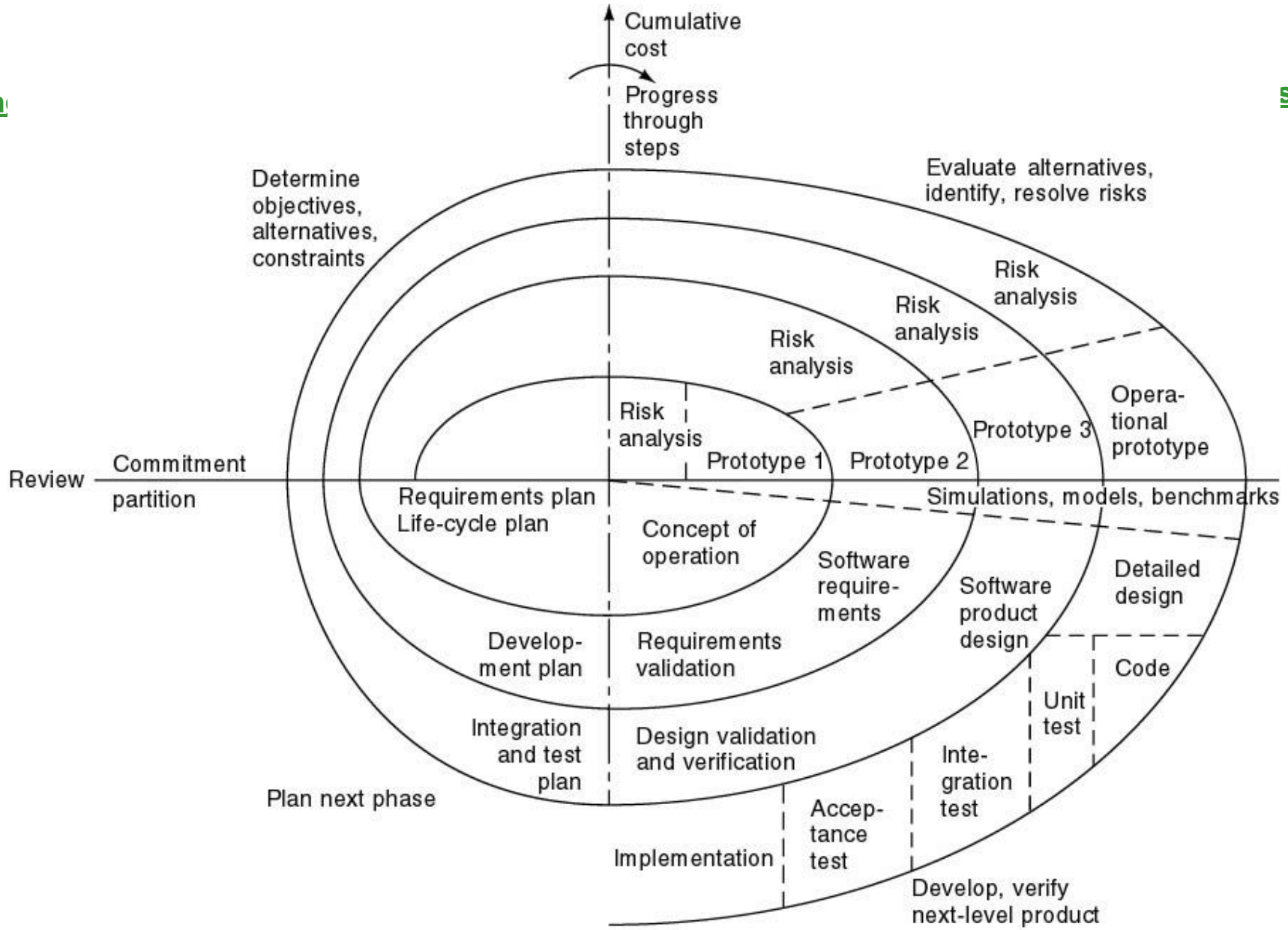
# Simplified Spiral Model

- If risks cannot be resolved, project is immediately terminated

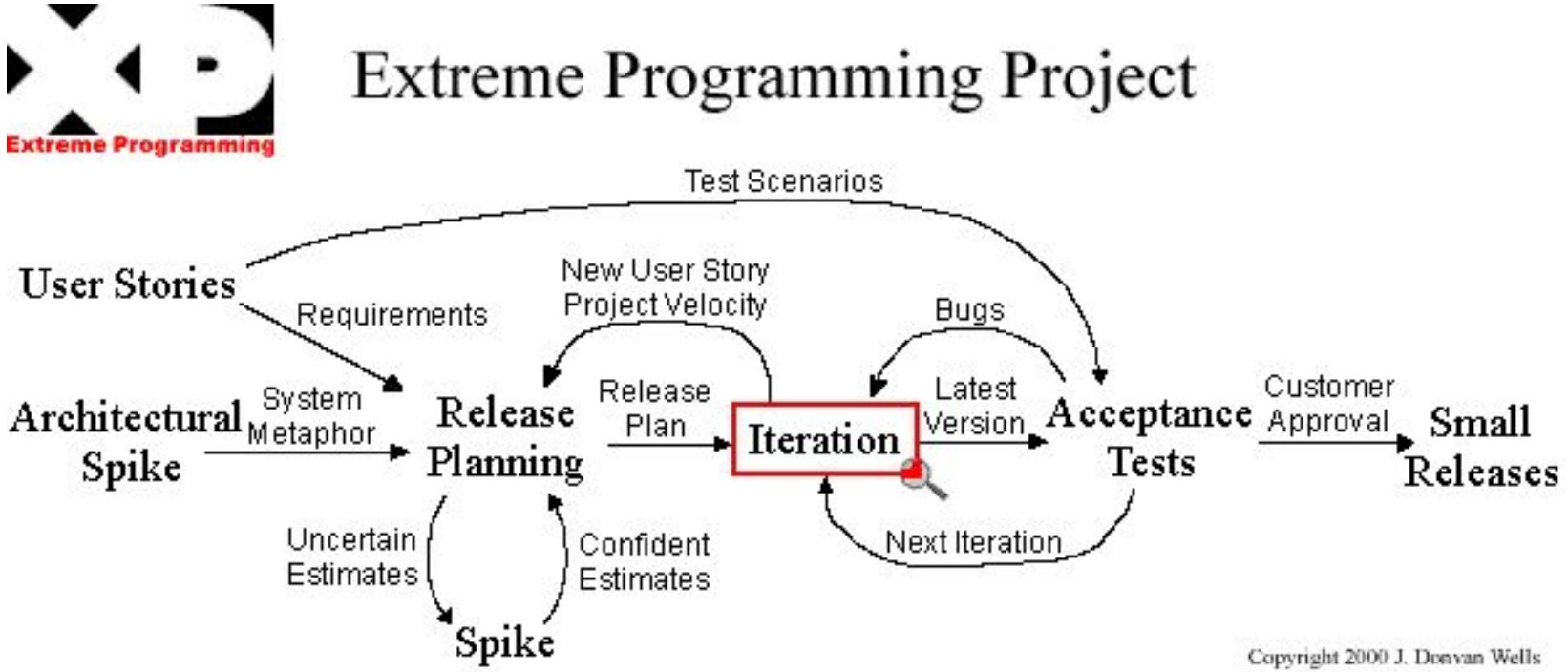


# Full Spiral Model

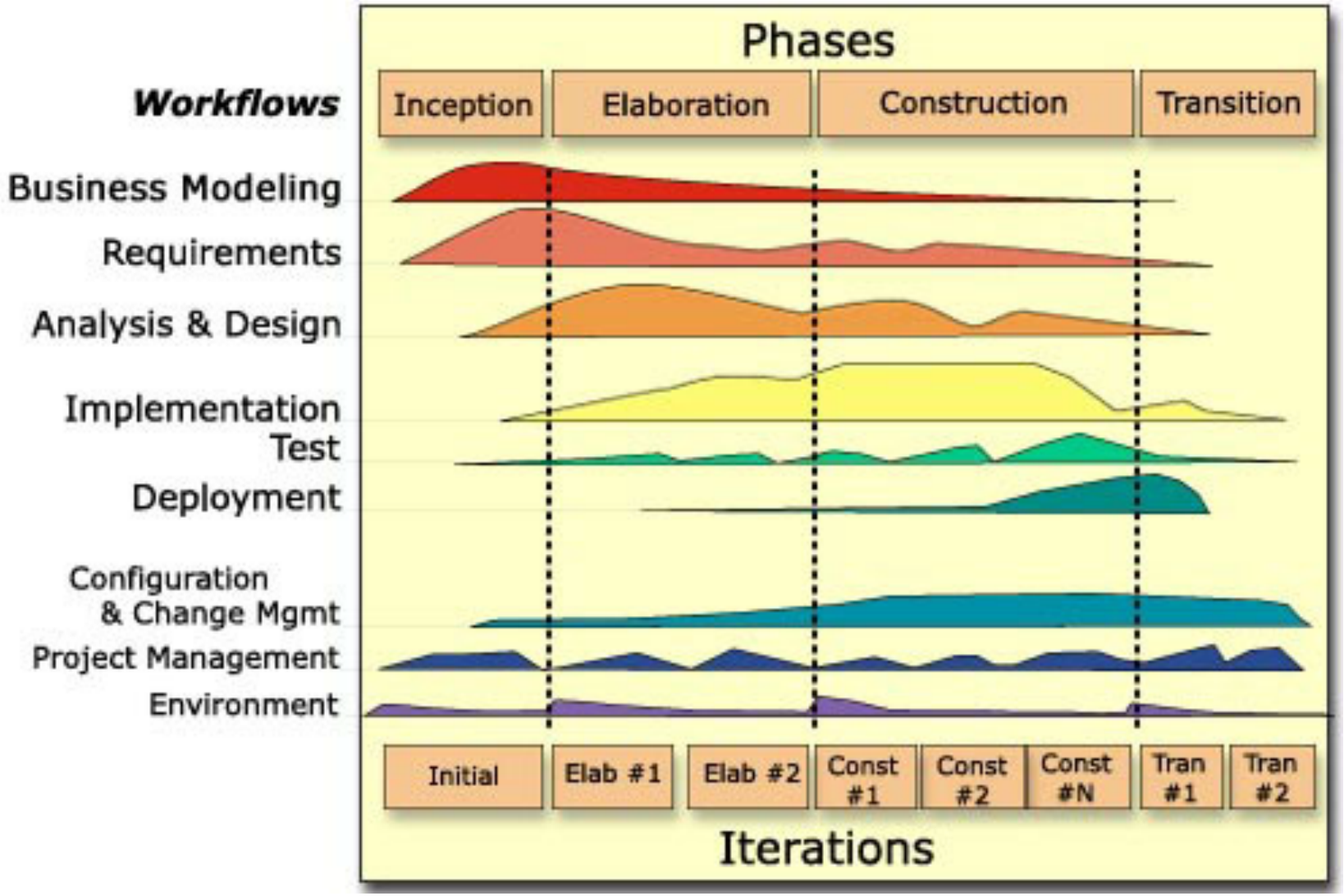
An st)



# Extreme Programming



# Rational Unified Process




(this Figure is from P. Krutchen's paper)

# Documentation Phase?

- There is NO documentation phase
- Every phase must be fully documented before starting the next phase
  - Postponed documentation may never be completed
  - The responsible individual may leave
  - The product is constantly changing—we need the documentation to do this
  - The design (for example) will be modified during development, but the original designers may not be available to document it

| | | |
|---|---|---|
| **Requirement Definition** | • **Rapid prototype, or**<br>• **Requirements document** | • **Rapid prototype**<br>• **Reviews** |
| **Functional Specification** | • **Specification document (specifications)**<br>• **Software Product Management Plan** | • **Traceability**<br>• **FS Review** |
| **Design** | • **Architectural Design**<br>• **Detailed Design** | • **Traceability**<br>• **Review** |
| **Coding** | • **Source code**<br>• **Test cases** | • **Traceability**<br>• **Review**<br>• **Testing** |
| **Integration** | • **Source code**<br>• **Test cases** | • **Integration testing**<br>• **Acceptance testing** |
| **Maintenance** | • **Change record**<br>• **Regression test cases** | • **Regression testing** |

# Traceability matrix

| Requirement ID | Use Case ID | UID | Class/ function | Test Case ID |
|---|---|---|---|---|
| | | | | |