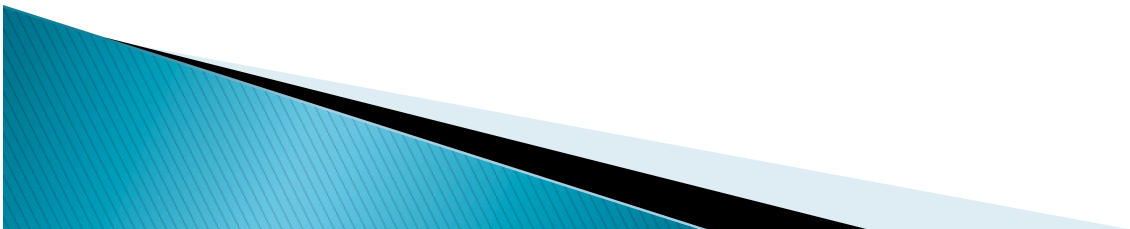


COMP 4004/5104
Quality in OO Software
Development

Course Outline

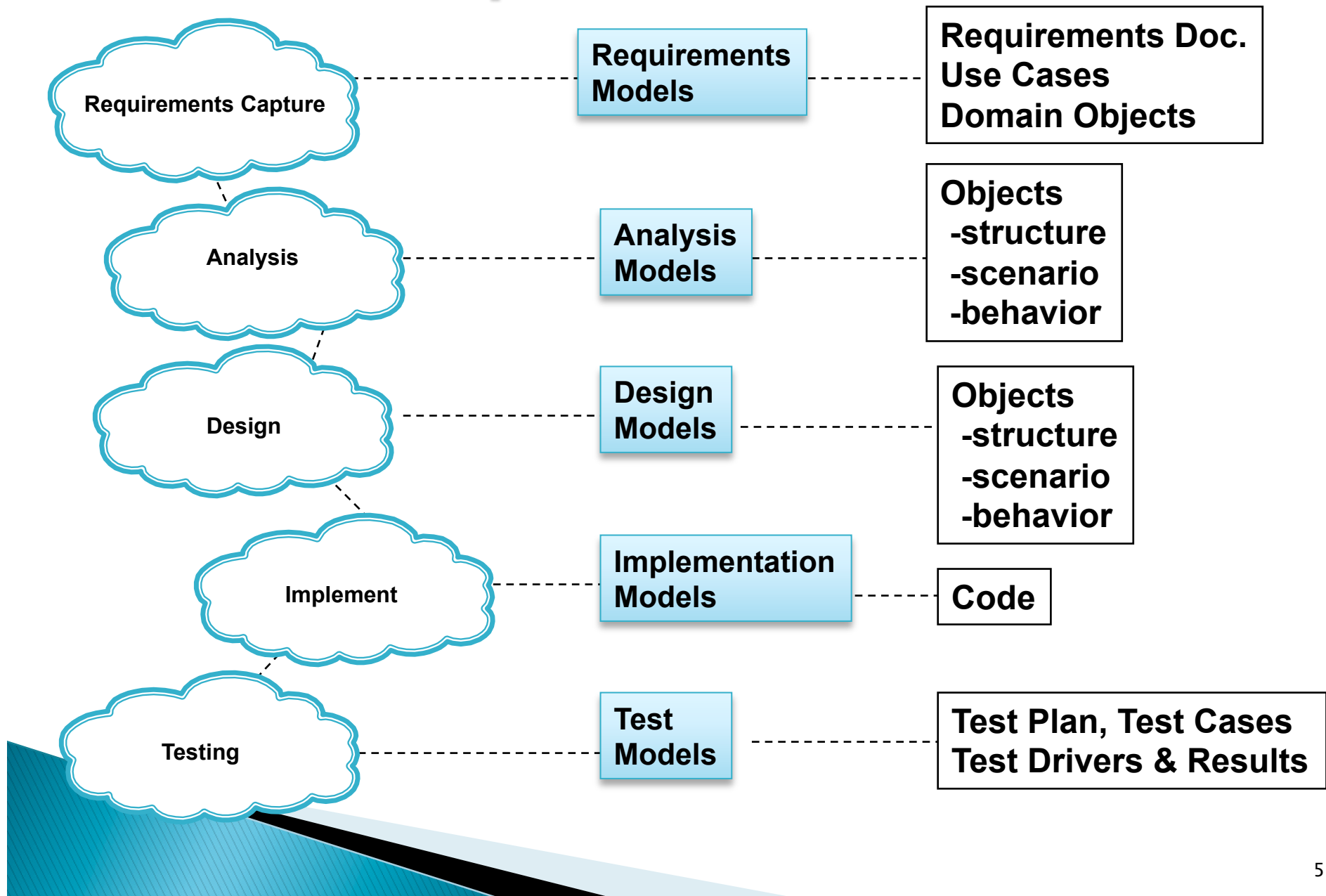
Learning Objectives

- ▶ Understand the pros and cons of TDD and of refactoring in Java
- ▶ Gain a basic understanding of metrics, xUnit patterns and Model Based Testing (MBT)
- ▶ Gain experience with JUnit and Cucumber AND some other testing tools
- ▶ Understand the pros and cons of state-based MBT
- ▶ Understand the basics of scenario testing and the challenges concurrency introduces...

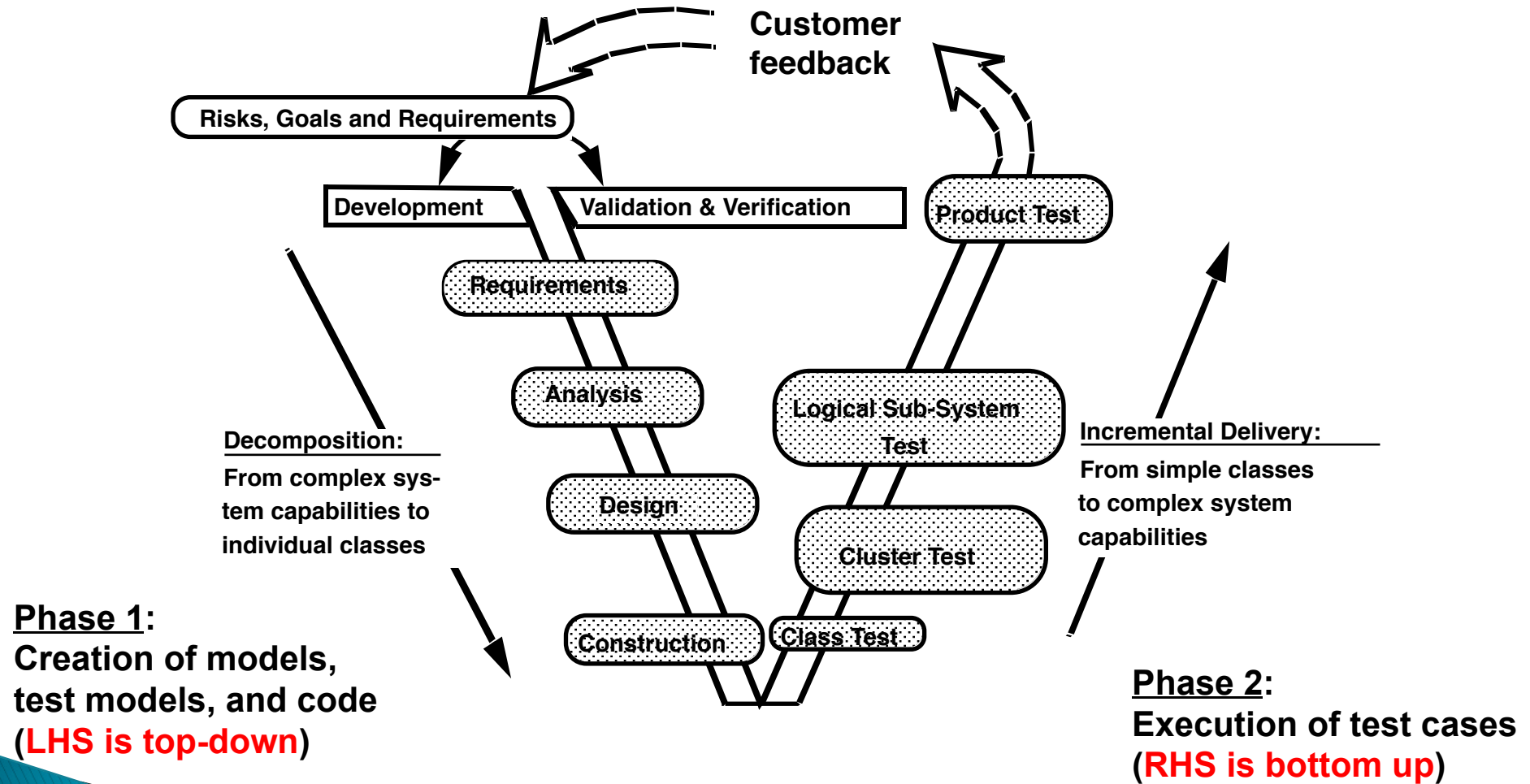


Activities, Process, and Models

OO Development Overview

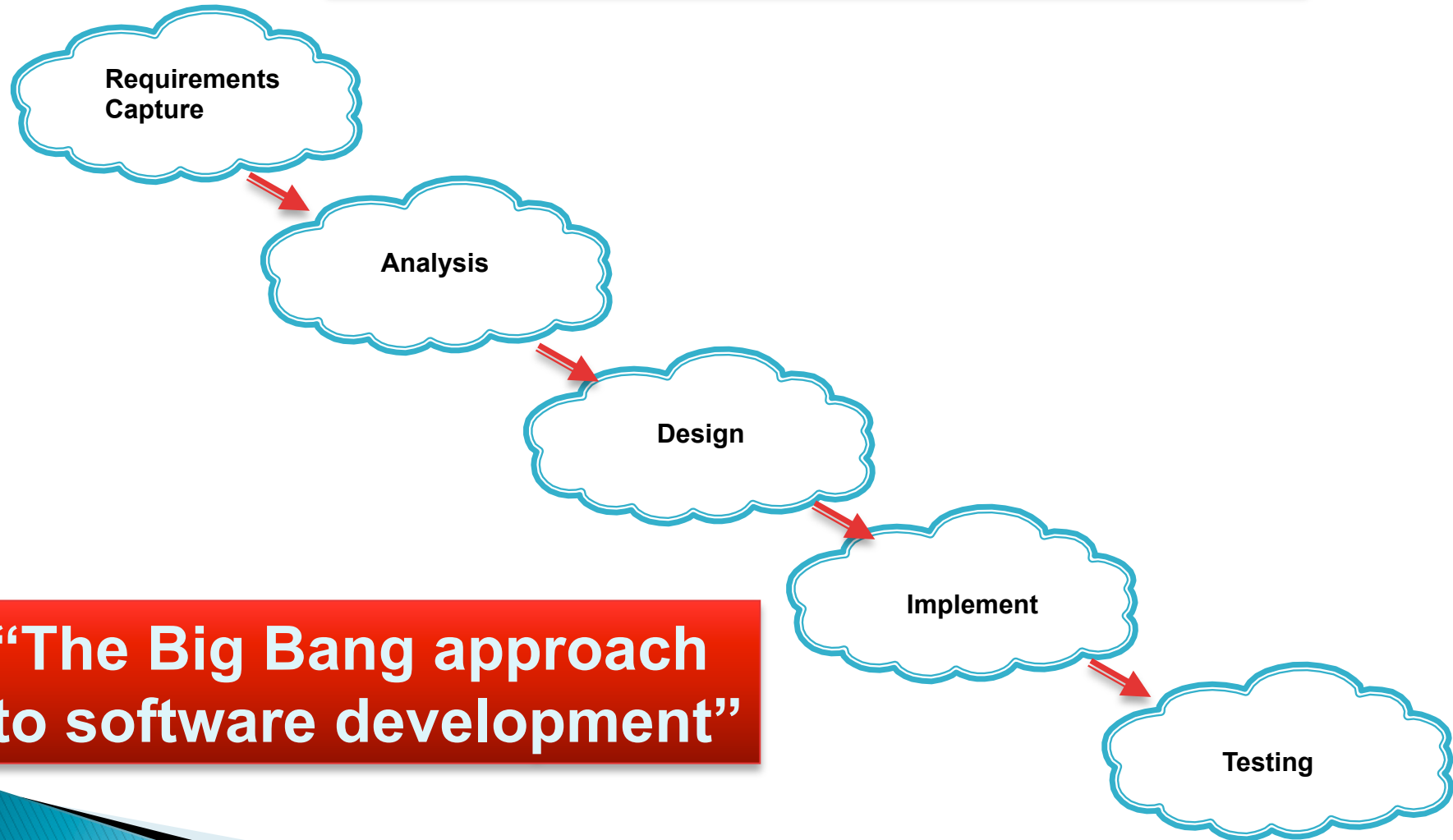


A Certification Iteration



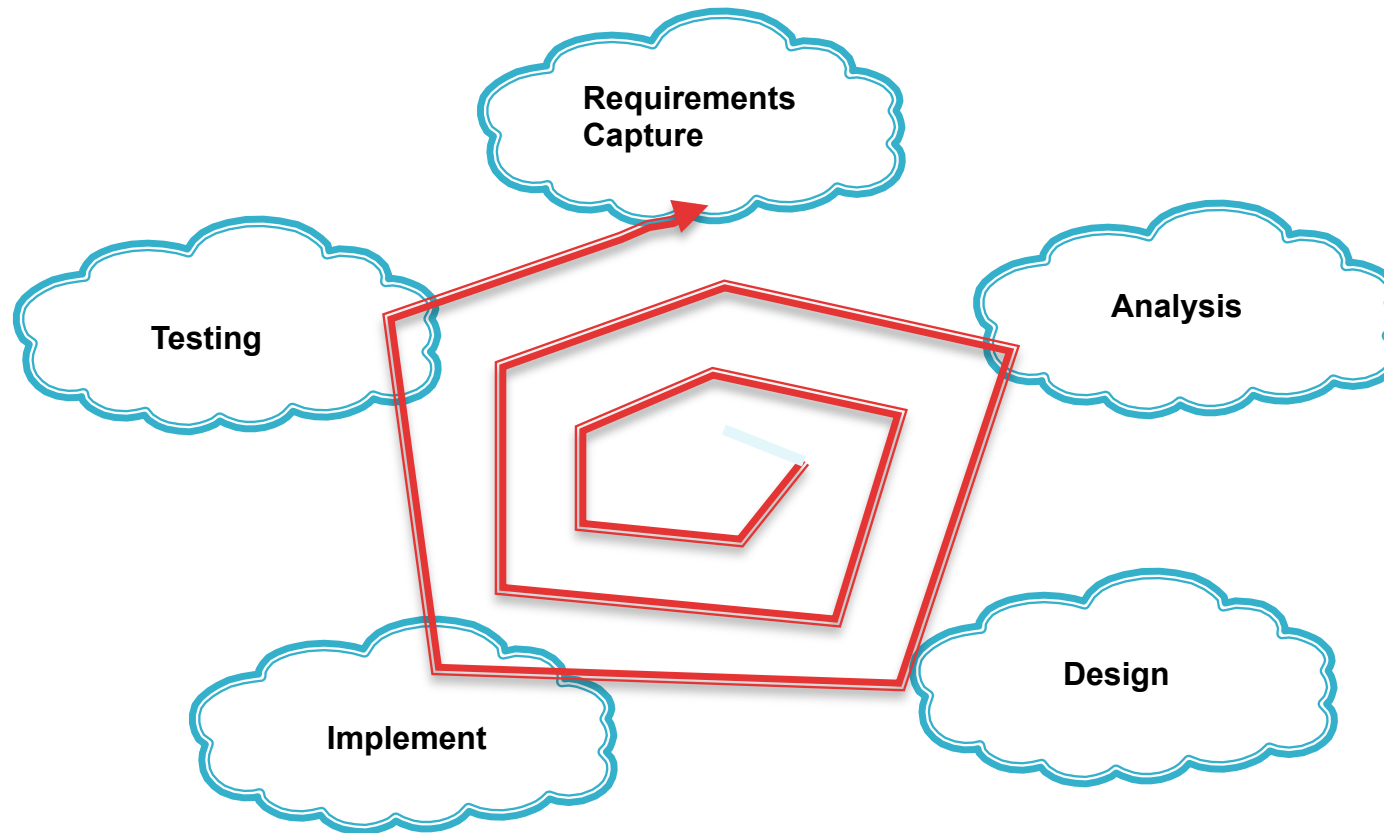
Waterfall Development

Activities carried out one after the other as steps



Incremental-Iterative Development

The Spiral Model

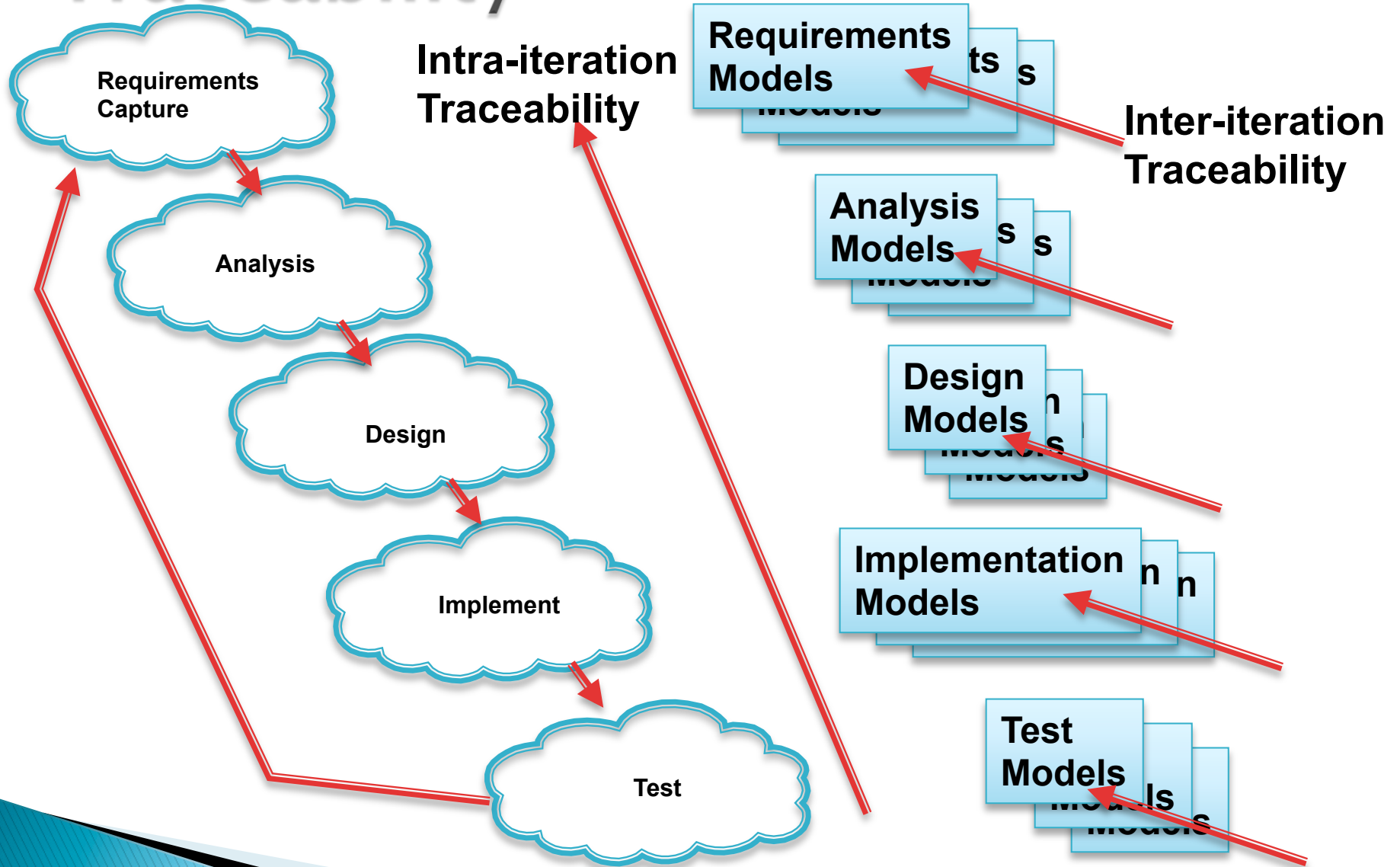


Can have macro and micro iterations but needs to **converge towards a solution**

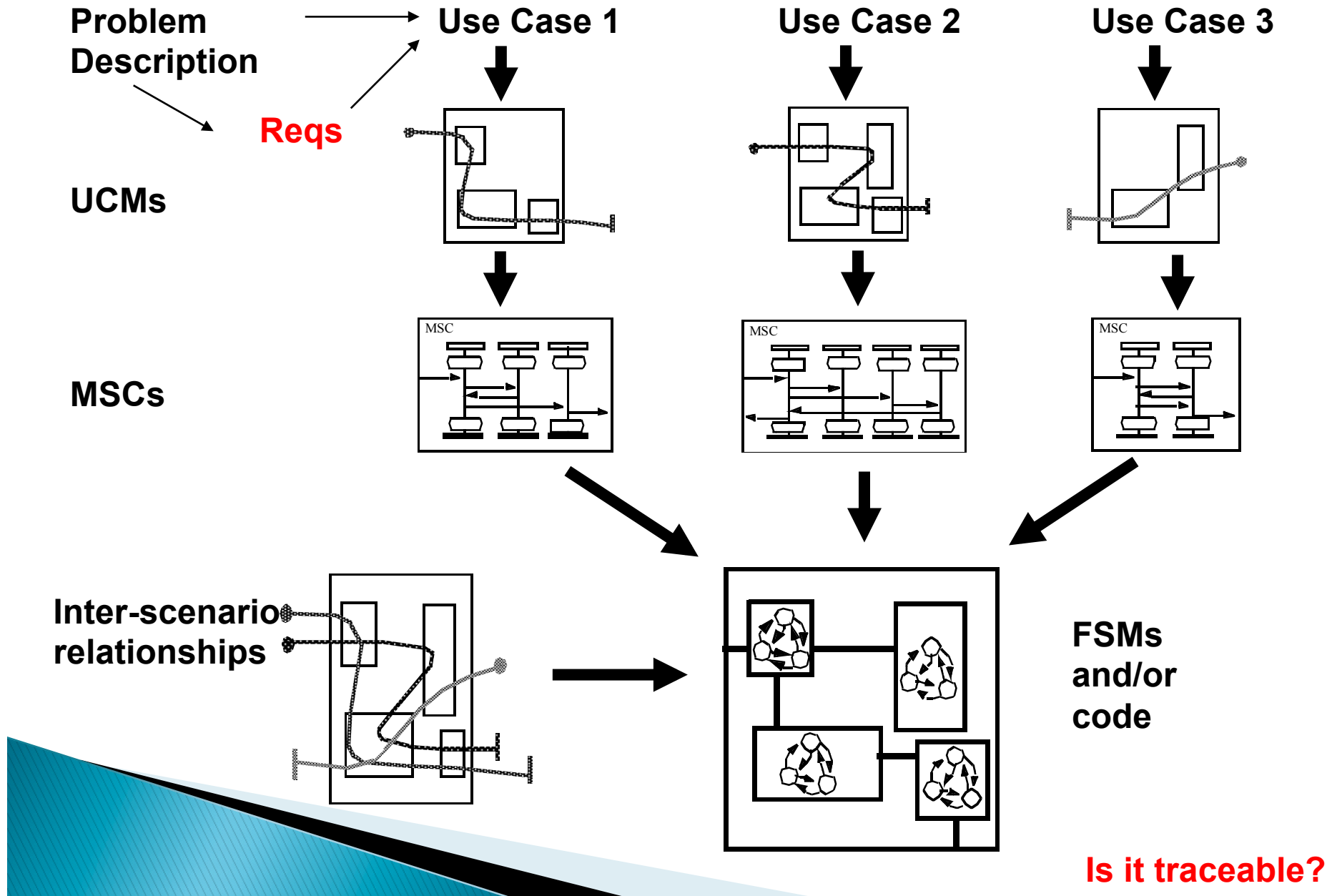
Aiming for Traceability

- ▶ Traceability is required to achieve convergence:
 - We must document the *continuity* that must exist between the work-products of different activities.
 - At least required for **regression testing (ie what used to work still does)**
 - In turn, continuity enables completeness and consistency checks.
- ▶ Within a particular activity, the work-products must be ***consistent***:
 - e.g., the structural, scenario and behavior models must be consistent
 - For example, if an interaction diagram shows an object receiving a message, then the FSM of this object must reflect this possibility
- ▶ Work-products must also be ***complete*** with respect to the current requirements.

Traceability



A Scenario Driven Modeling Approach



The Agile Manifesto—a statement of values

Individuals and interactions

over

Process and tools

Working software

over

Comprehensive documentation

Customer collaboration

over

Contract negotiation

Responding to change

over

Following a plan

Source: www.agilemanifesto.org

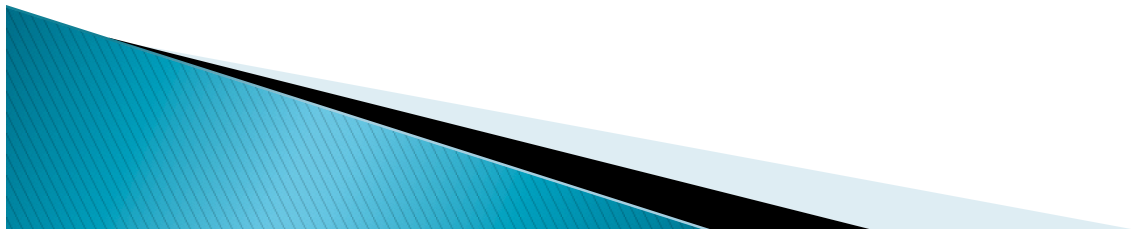
The Core of Agile Modeling

Some Core Principles

- Assume Simplicity
- Expect Incremental Change
- Enabling the Next Effort is Your Secondary Goal
- Model With a Purpose
- Use Multiple Models
- Maximize Stakeholder Investment
- **Value Quality first**
- Get Rapid Feedback
- **Software Is Your Primary Goal**

Some Core Practices

- Active Stakeholder Participation
- Apply the Right Artifact(s)
- **Collective Ownership**
- Create Several Models in Parallel
- Create Simple Content
- Depict Models Simply
- Display Models Publicly
- **Model in Small Increments**
- Model With Others
- **Prove it With Code**
- Use the Simplest Tools



Scrum

