Software Development Process

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Software Development Process

□ **Engineering Practices**
- ➤ Requirements
- ➤ System Architecture
- ➤ Software Design

□ **Project Management**
- ➤ WBS
- ➤ Meeting Minutes
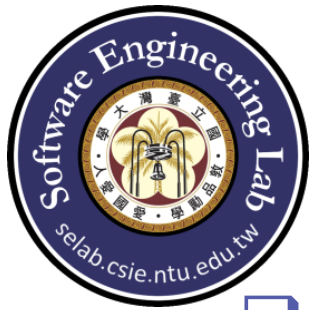
Engineering Practices

❑ Requirements:

➢ How to elicit and refine requirements: never complete, always vague, and change all the time

➢ How to document requirements: functional, nonfunctional, interface requirements

❑ System Architecture

➢ Why do we need a system architecture?

➢ How do we iterate between requirements and architecture?

❑ Software Diagram

➢ Initial Design: based on requirements and system architecture

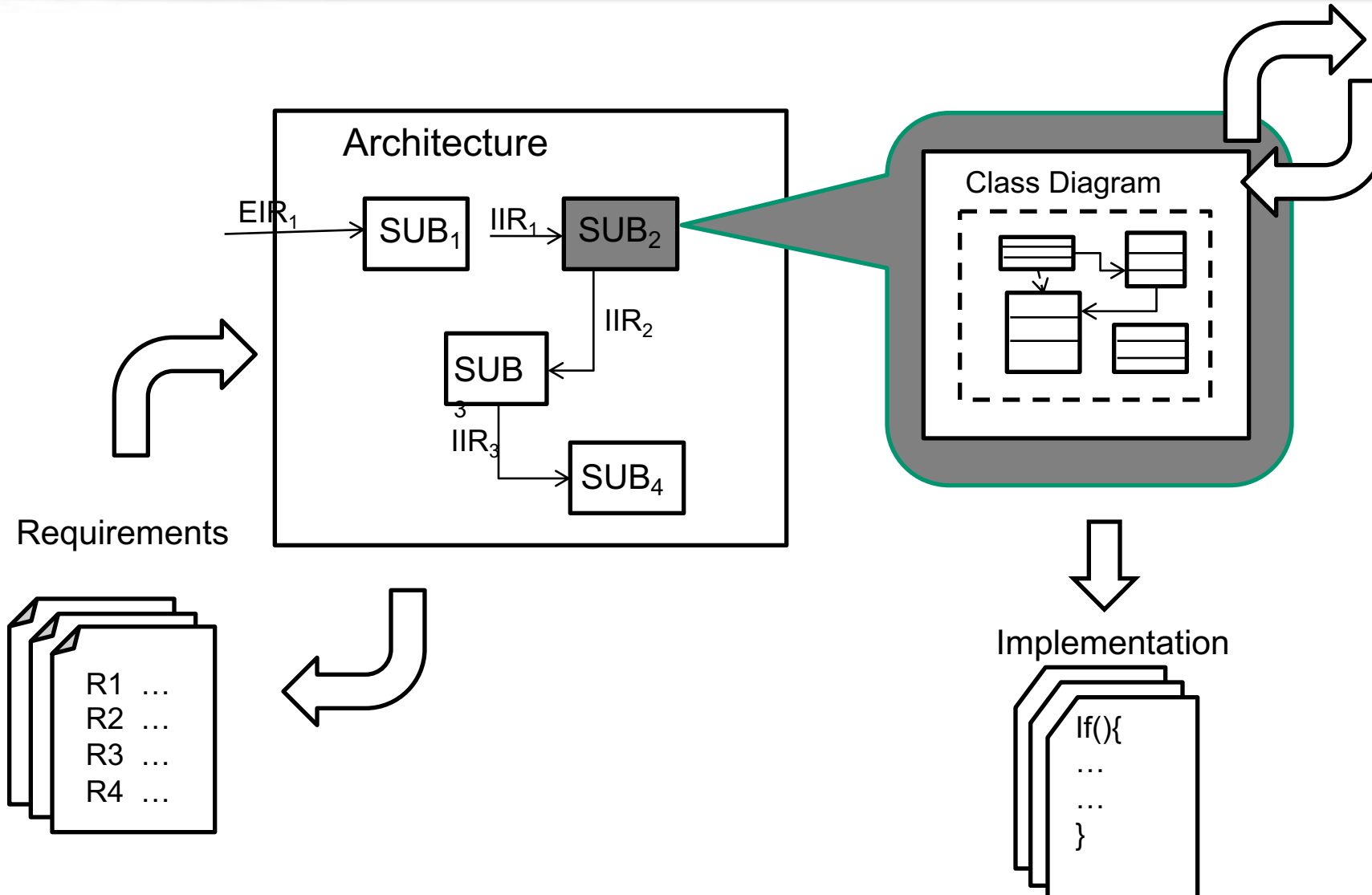➢ Redesign: Design issues and design principles
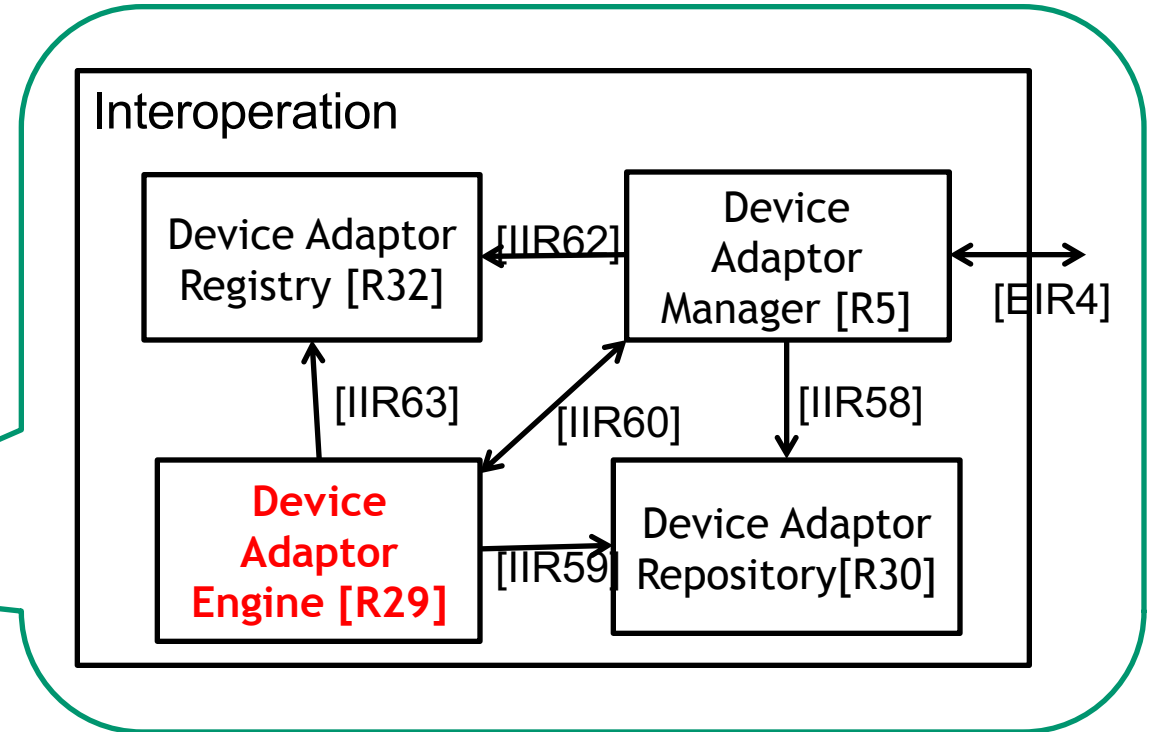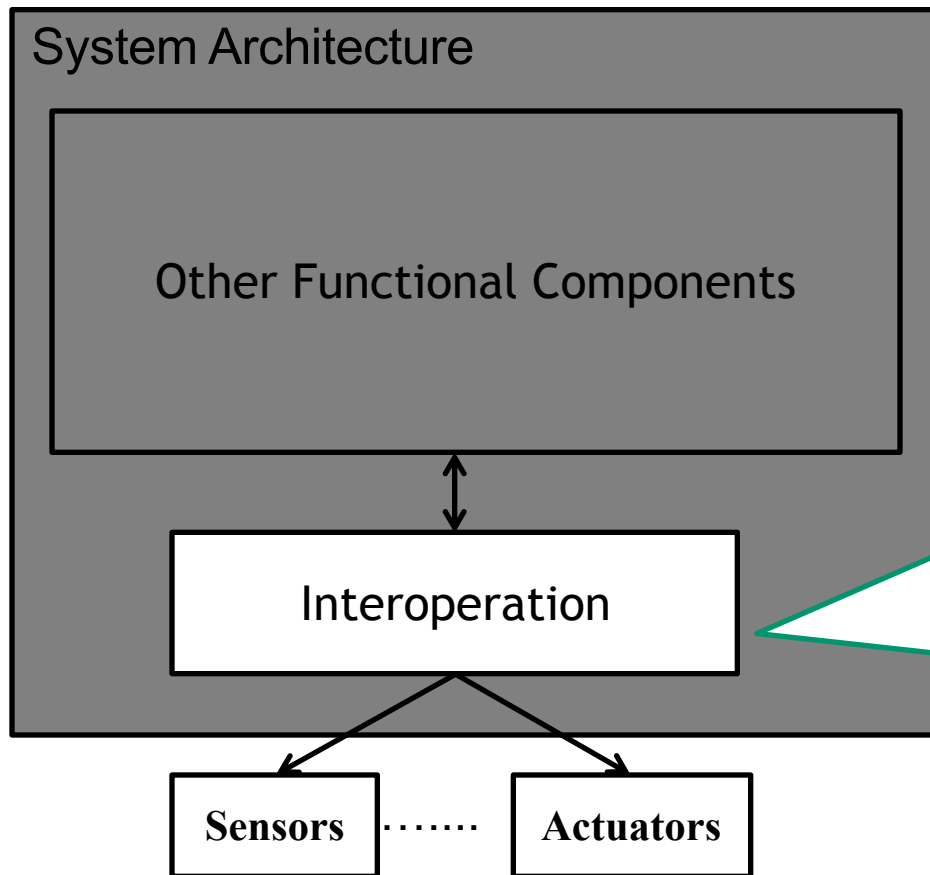
Engineering Practices Illustration

EIR: External Interface Requirement

IIR: Internal Interface Requirement

SUB: Sub-System

Architecture

EIR_1 → SUB_1 IIR_1 → SUB_2

IIR_2

SUB_3

IIR_3

SUB_4

Class Diagram

Requirements

R1 …
R2 …
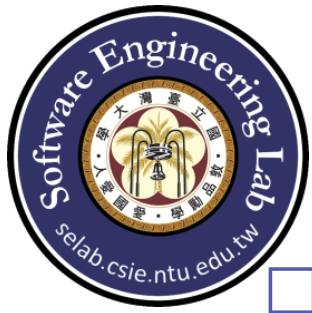R3 …
R4 …

Implementation

If(){
…
…
}

Refine System Architecture

Software Design

1. Requirements Statements: functional and nonfunctional requirements

2. Initial Design: noun, verb, and multiplicity

3. Redesign based on the design process:
    - Encapsulation: attribute, method, method body
    - Abstraction: interface or abstract class
    - Composition/Delegation.

Project Management

❑Project Plan: Work Breakdown Structure (WBS)

➢ Tasks breakdown

➢ Estimation: effort, system size, schedule, cost

➢ Responsibility: task assignment and commitment

➢ Team Work

❑Project Monitoring and Control: Meeting minutes (Example)

➢ Objective

➢ Agenda: from WBS or team members' responsibility or risks ..

➢ Issues: technical review, verification and validation, schedule deviation

➢ Action Items: open, ongoing, suspended, close