

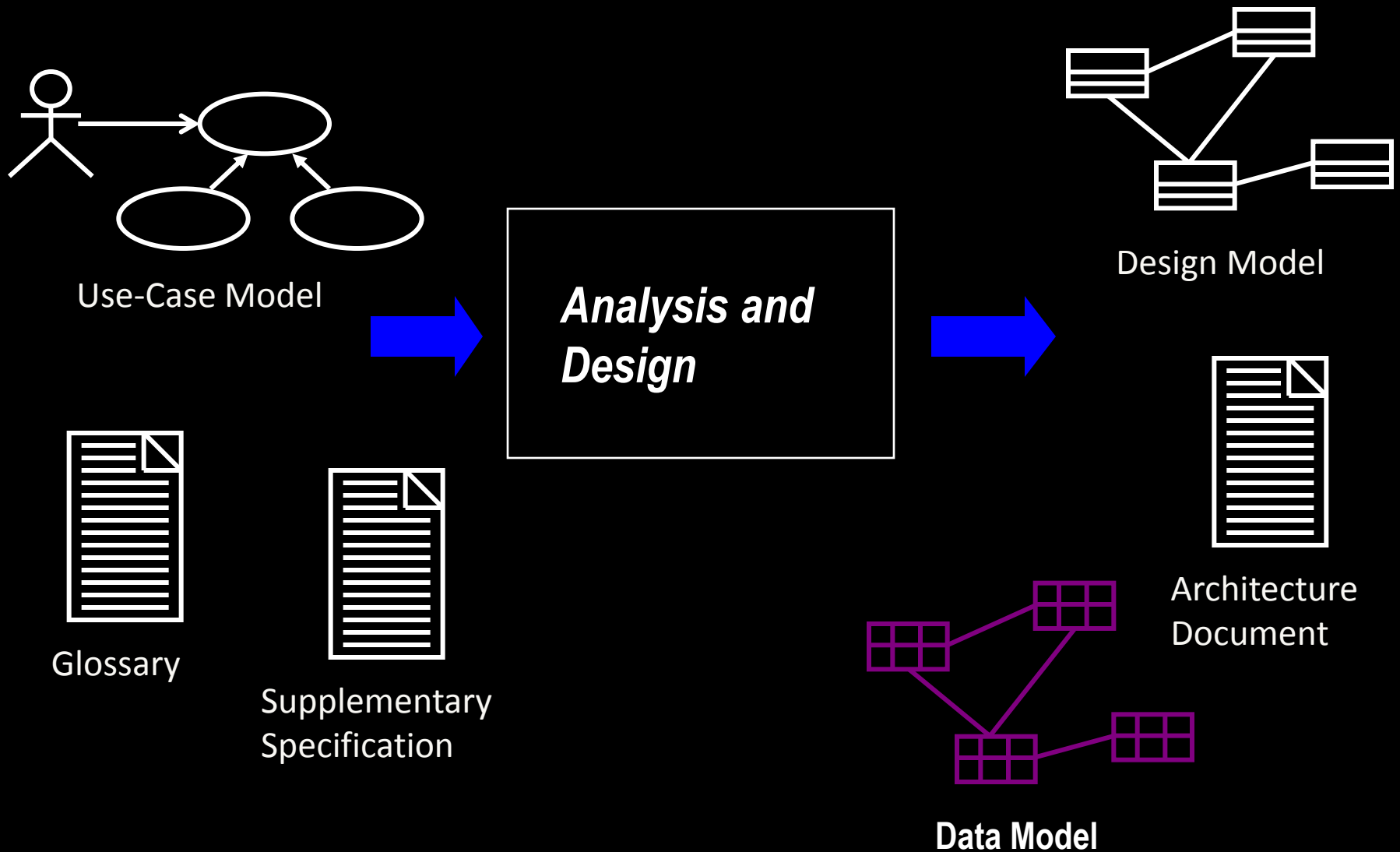
# LECTURE-7

# 00 A&D Overview

# The purposes of Analysis and Design

- ❑ To transform the requirements into a design of the system to-be
- ❑ To evolve a robust architecture for the system
- ❑ To adapt the design to match the implementation environment, designing it for performance

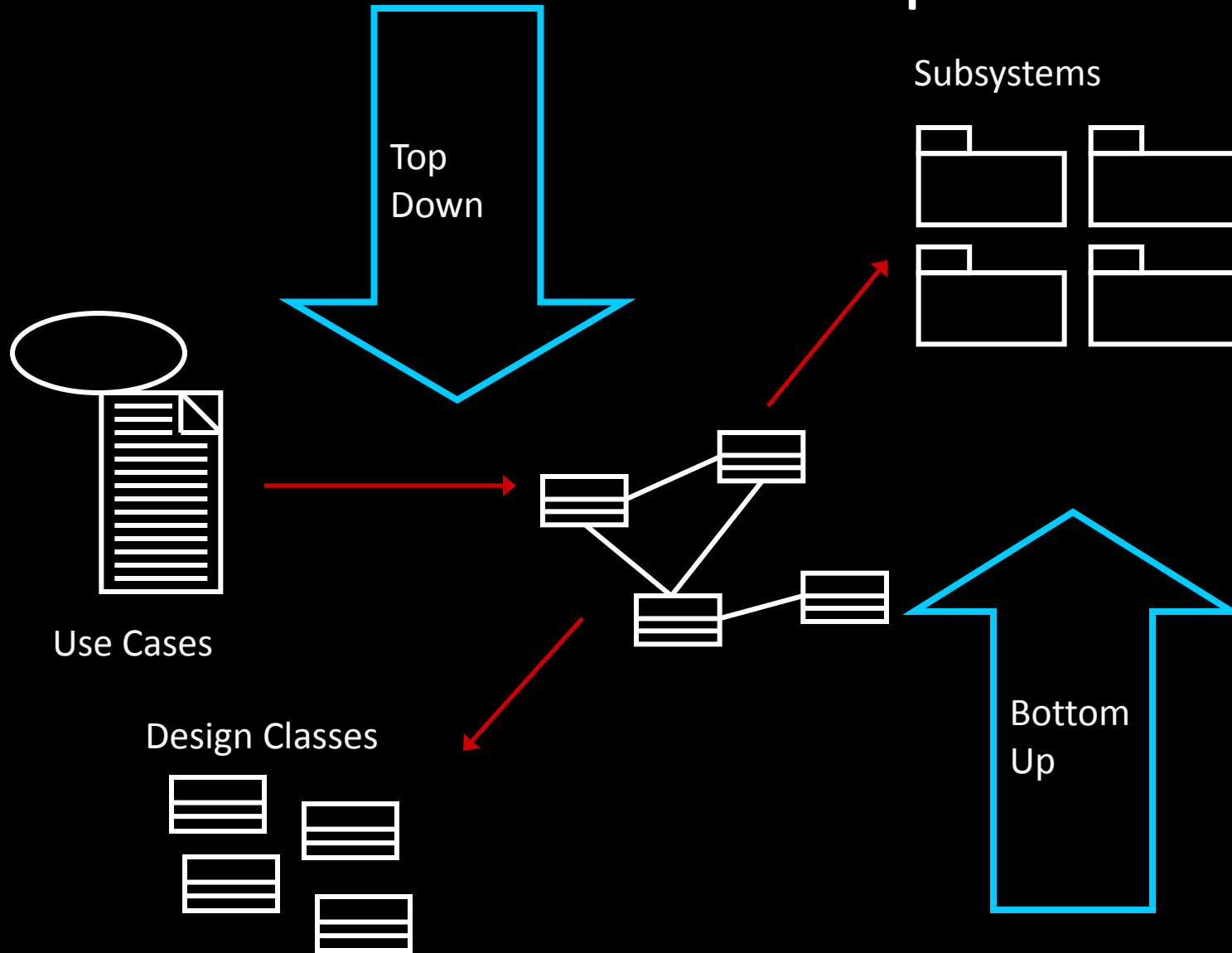
# Analysis and Design Overview



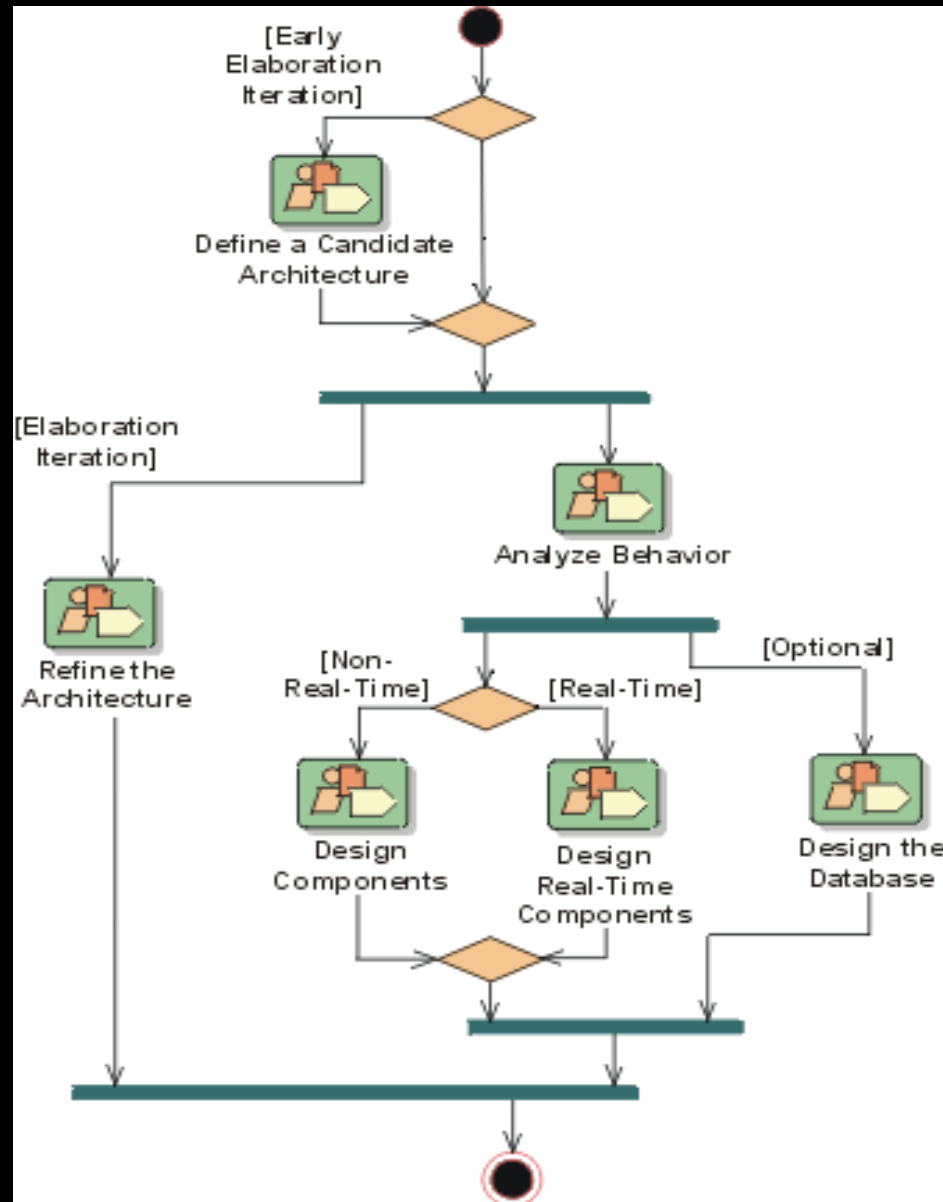
# Analysis Versus Design

- Analysis
  - Focus on understanding the problem
  - Idealized design
  - Behavior
  - System structure
  - Functional requirements
  - A small model
- Design
  - Focus on understanding the solution
  - Operations and Attributes
  - Performance
  - Close to real code
  - Object lifecycles
  - Non-functional requirements
  - A large model

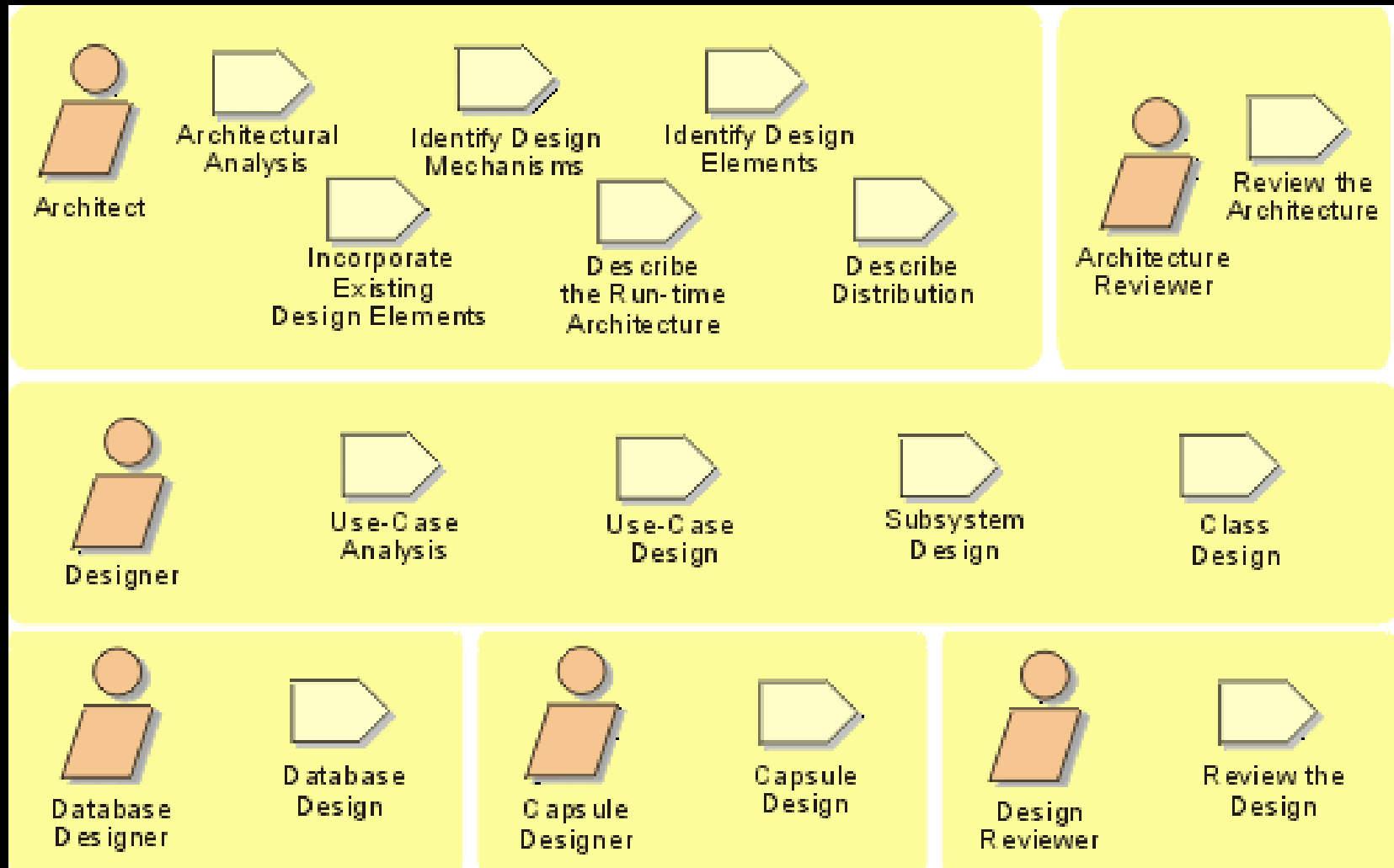
# Analysis and Design is not Top-Down or Bottom-Up



# Analysis and Design Workflow

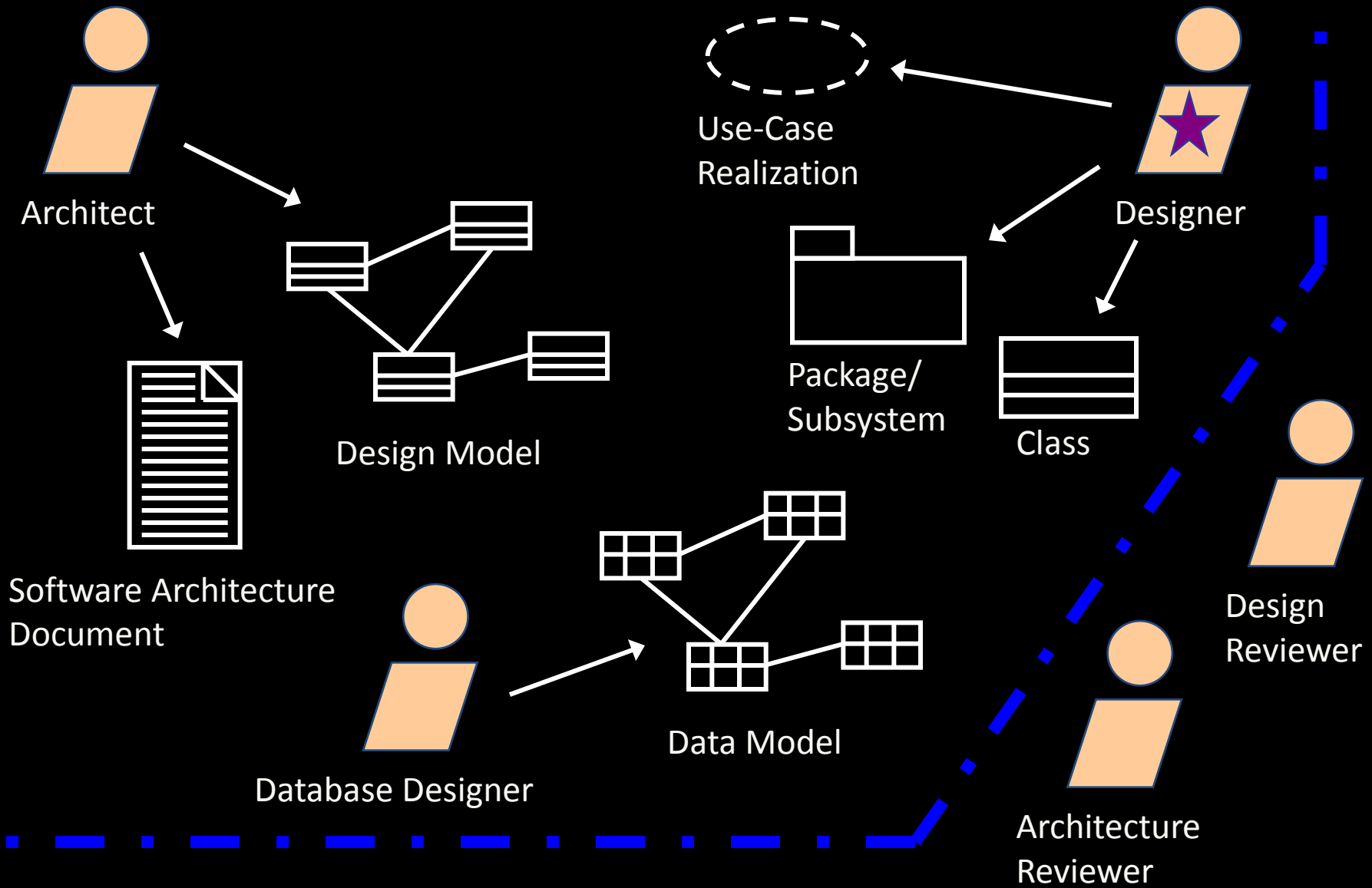


# Analysis and Design Activity Overview





# Workers and Their Responsibilities



# 1.4 Component and CBSD

- **Component**
- **CBSD**

# Component

- Definition of a (Software) Component
  - A non-trivial, nearly independent, and replaceable part of a system that fulfills a clear function in the context of a well-defined architecture.
  - A component conforms to and provides the physical realization of a set of interfaces.
  - A physical, replaceable part of a system that packages implementation and conforms to and provides the realization of a set of interfaces.
  - A component represents a physical piece of implementation of a system, including software code (source, binary or executable) or equivalents such as scripts or command files.

# CBSD - Component-Based Software Development

- Resilient
  - Meets current and future requirements
  - Improves extensibility
  - Enables reuse
  - Encapsulates system dependencies
- Component-based
  - Reuse or customize components
  - Select from commercially-available components
  - Evolve existing software incrementally

# Purpose of a CBSD

- Basis for reuse
  - Component reuse
  - Architecture reuse
- Basis for project management
  - Planning
  - Staffing
  - Delivery
- Intellectual control
  - Manage complexity
  - Maintain integrity

