Model Management

What is Model Management?

- Packages, Subsystems, and Models
  - Group model elements in the system together for better organization and management
  - Each groups elements for a different reason (providing different semantics)
- Other grouping elements in UML include:
  - Components
  - Classes

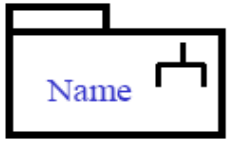
Modeling Tips – Subsystem

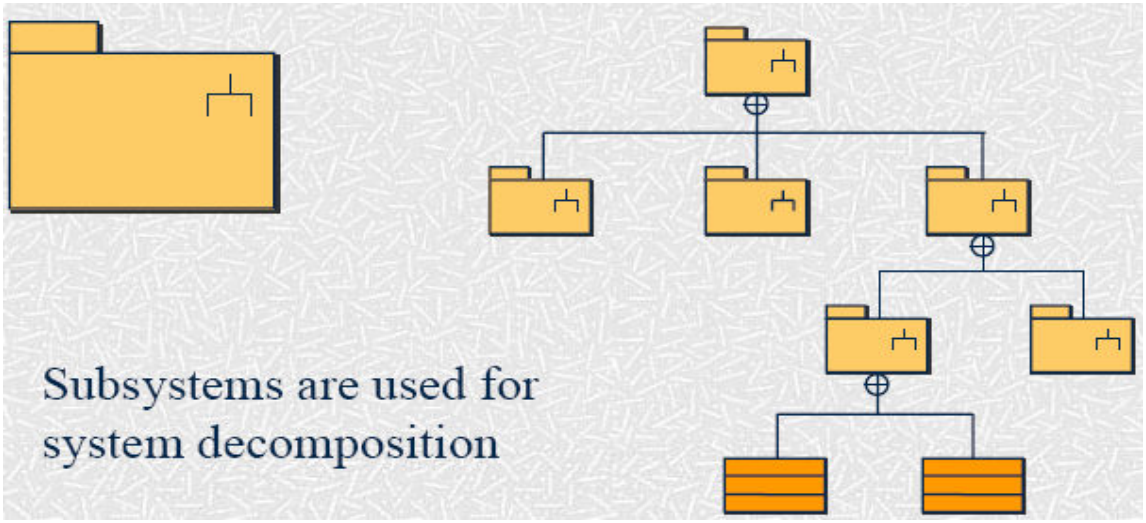
- Define a subsystem for each separate part of a large system
- Choose specification technique depending on factors like kind of system and kind of subsystem
- Realize each subsystem independently, using the specification as a requirements specification

When to Use Subsystems

- To express how a large system is decomposed into smaller parts
- Distributed development
- To express how a set of modules are composed into a large system
- For component based development

Subsystems

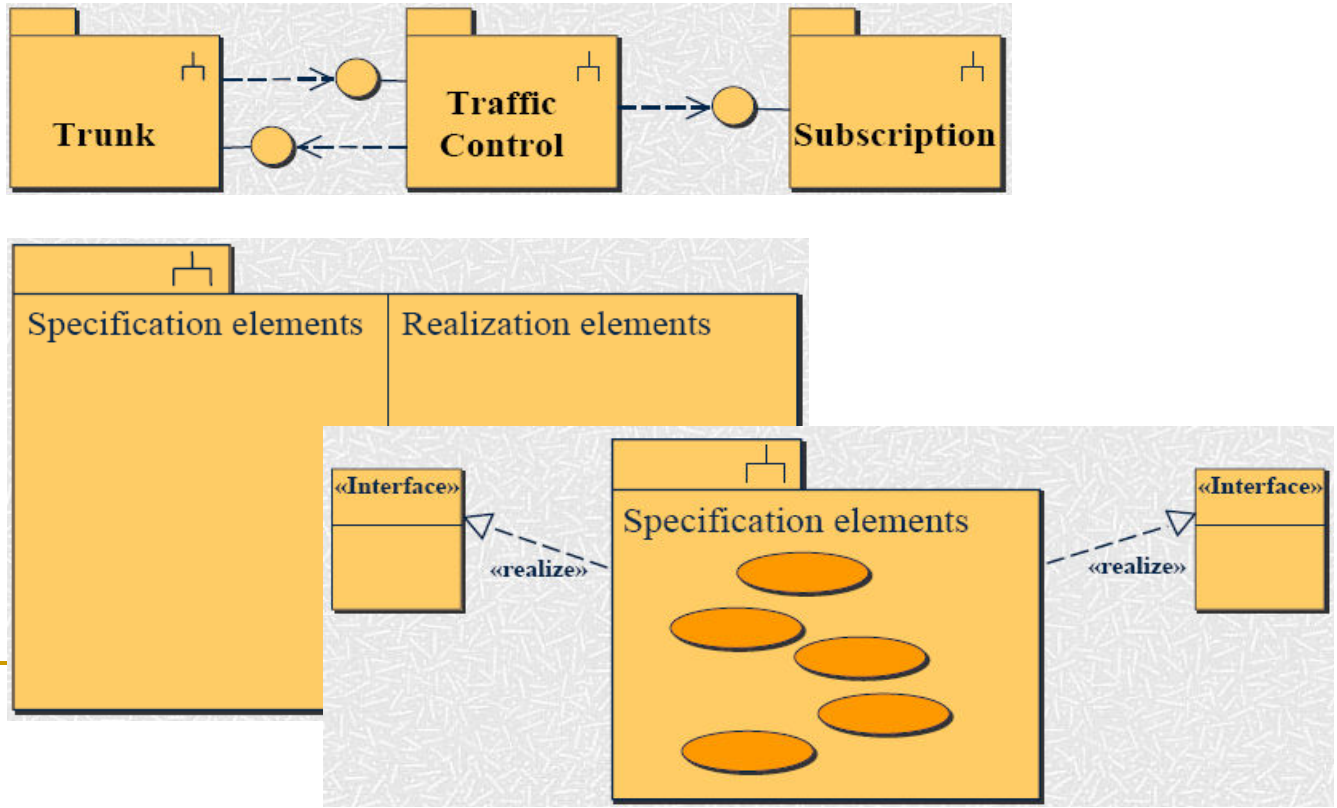
Construct	Description	Syntax
Subsystem	A grouping of model elements that represents a behavioural unit in a physical system.	



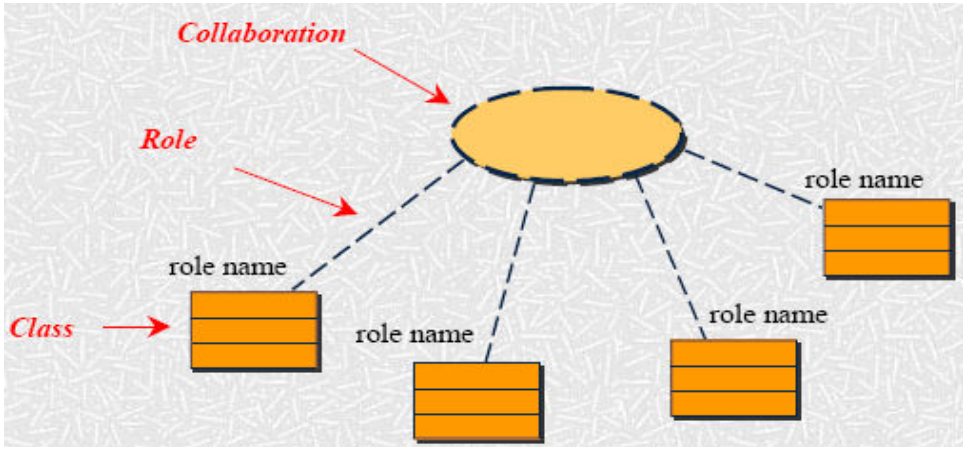
Subsystems and Interfaces

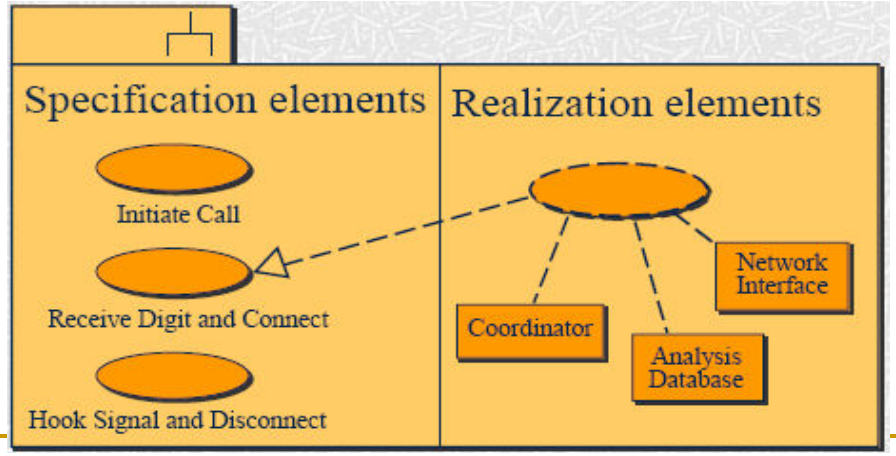
- A subsystem has two aspects:
  - An external view, showing the **services provided** by the subsystem
  - An internal view, showing the **realization** of the subsystem
- There is a mapping between the two aspects

A subsystem has a specification and a realization to represent the two views

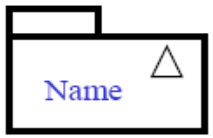


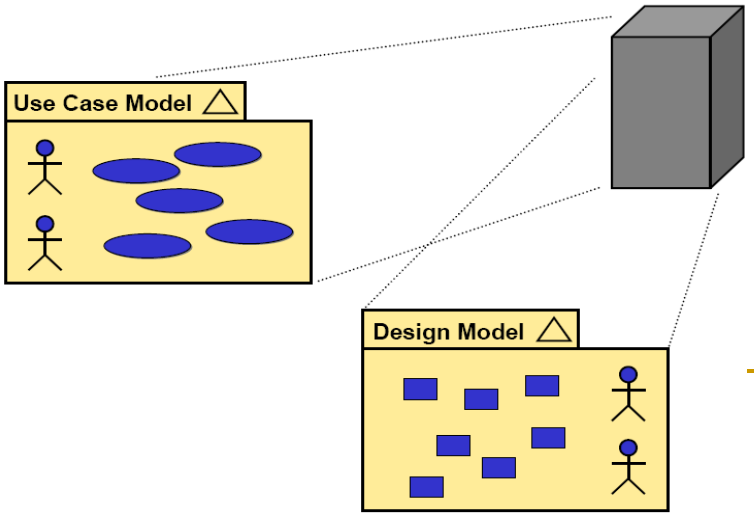
Subsystems, Use Cases & Collaboration

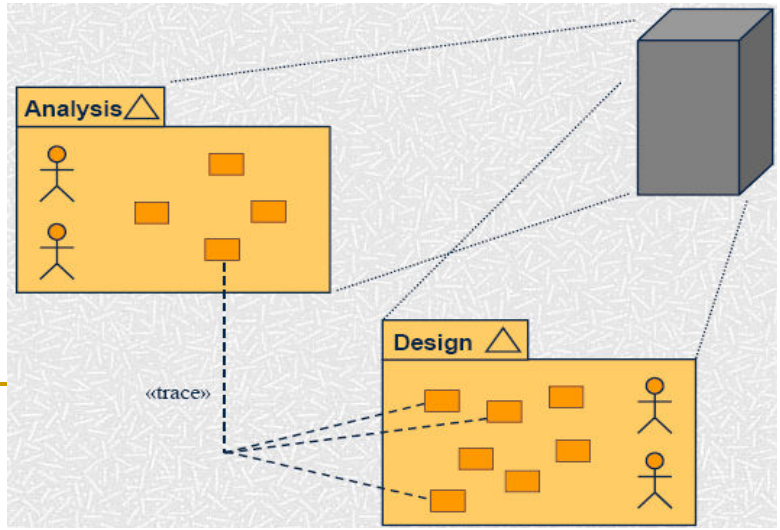




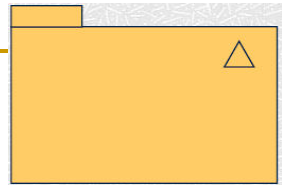
Models & Traceability

Construct	Description	Syntax
Model	A view of a system, with a certain purpose determining what aspects of the system are described and at what level of detail.	
Trace	A dependency connecting model elements that represent the same concept within different models. Traces are usually non-directed.	«trace»





Models & Traceability



A model is an abstraction of a system, specifying the system from a certain viewpoint and at a certain level of abstraction

Modeling Tips –Model

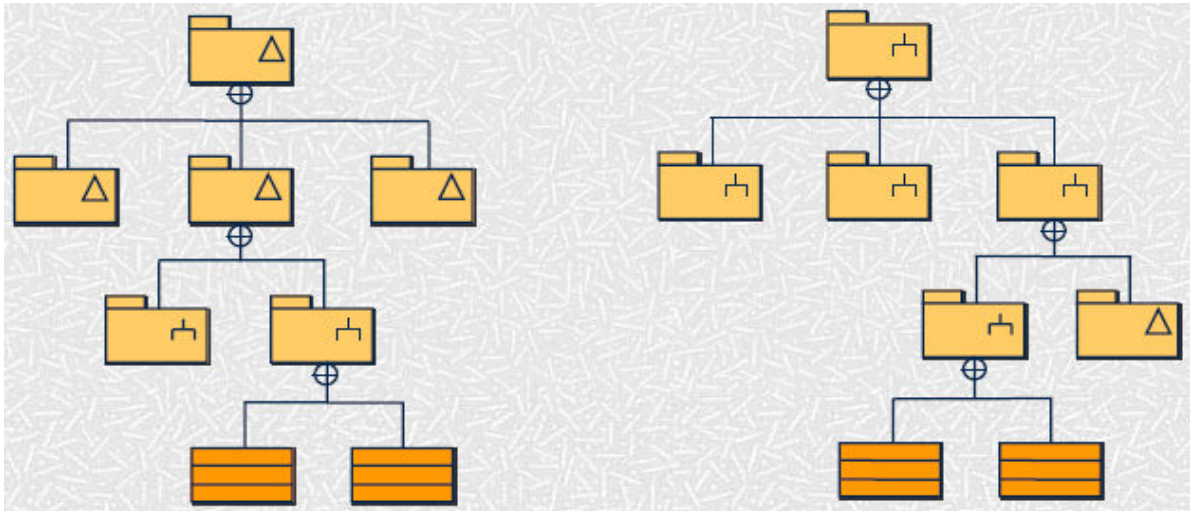
- Define the purpose for each model
- A model must give a complete picture of the system, within its purpose
- Focus on the purpose of the model; omit irrelevant information

When to Use Models

- To give different views of a system to different stakeholders
- To focus on a certain aspect of a system at a time
- To express the results of different stages in a software development process

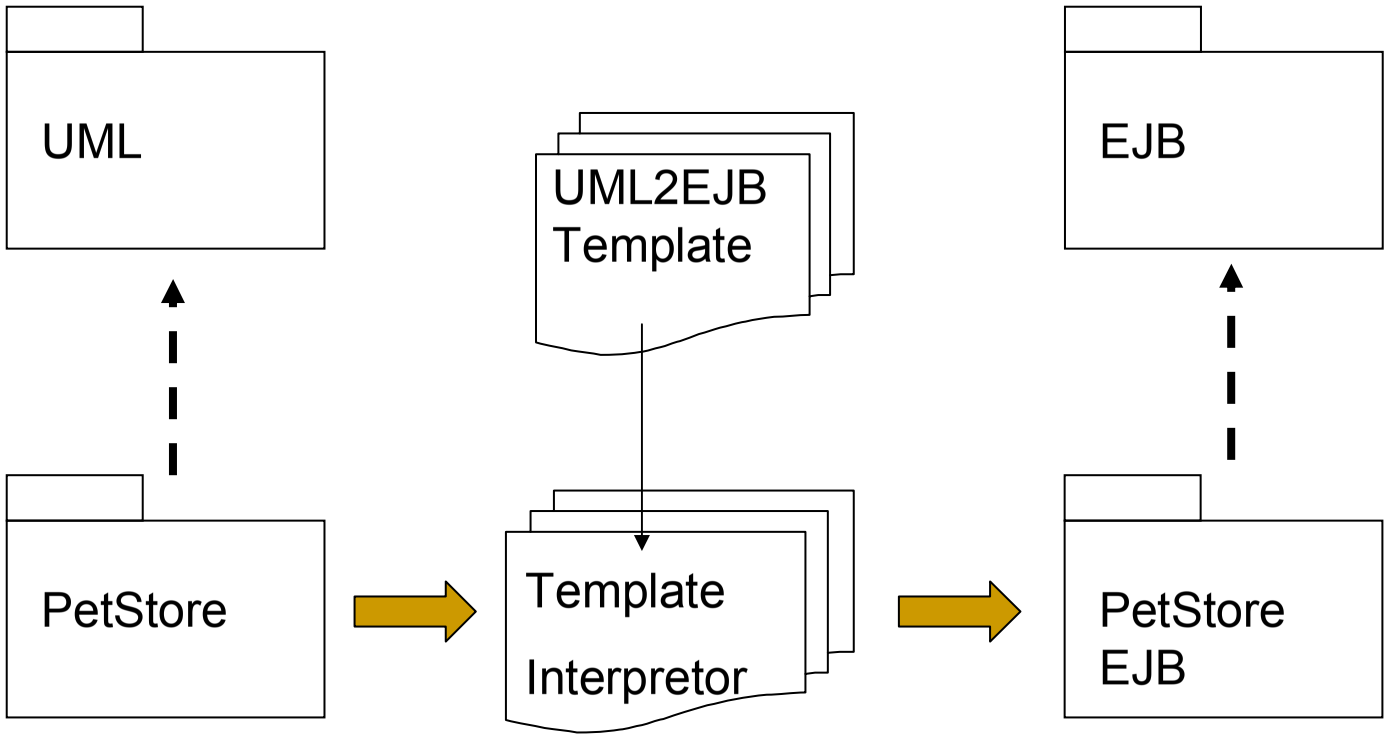
Model & System Hierarchy

- Models and subsystems can be combined in a hierarchy:



Template

- Model transformation is a template written in a dedicated language



Model transformations are based on meta-models
- Any UML component gives an EJB component.