Trường Đại học Khoa Học Tự Nhiên
Khoa Công Nghệ Thông Tin
Bộ môn Công Nghệ Phần Mềm

CTT526 - Kiến trúc phần mềm
Tài liệu kiến trúc phần mềm

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KHOA CÔNG NGHỆ THÔNG TIN
TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

☐ Nội dung của bài giảng sử dụng:

Session 6:

Documenting a Software Architecture

trong bộ slide Software Architecture Essential

của GS. Ian Gorton

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Architecture Documentation

- Architecture documentation is a thorny issue
- Commonly there is no documentation covering the architecture.
  - If it is, it's out-of-date, inappropriate and basically not very useful.
- Also projects that have masses of architecture related information
  - Sometimes invaluable, but often it's out-of-date, inappropriate and not very useful!

Documenting an Architecture is good!

☐ Others can understand/evaluate the design.

☐ We can understand the design after a period of time.

☐ Others in the project team and development organization can learn from the architecture.

☐ We can do analysis on the design, perhaps to assess its likely performance, or to generate standard metrics.

But it's difficult …

- ☐ No universally accepted architecture documentation standard.
- ☐ An architecture can be complex, and documenting it in a comprehensible manner is time consuming and non-trivial.
- ☐ An architecture has many possible views. Documenting all the potentially useful ones is time consuming and expensive.
- ☐ An architecture design often evolves Keeping the architecture documents current is often forgotten, especially with time and schedule pressures in a project.

Think carefully about what to document

- Project complexity
  - A small project may only need a 'marketecture'
- Project longevity
  - One-off stop gap software?
  - Strategic, long-term, will evolve?
- Needs of stakeholders
  - Small team, a whiteboard might be ok
  - Large, dislocated team needs more
  - Integrators? Testers? Programmers?
- Need to spend documentation dollars/euros wisely on high value products

UML 2.0

- ☐ UML is a powerful way to document an architecture
- ☐ Provides a relatively formal, unambiguous description
- ☐ New features in UML 2.0 appropriate for architectures
- ☐ Good tools available, some free
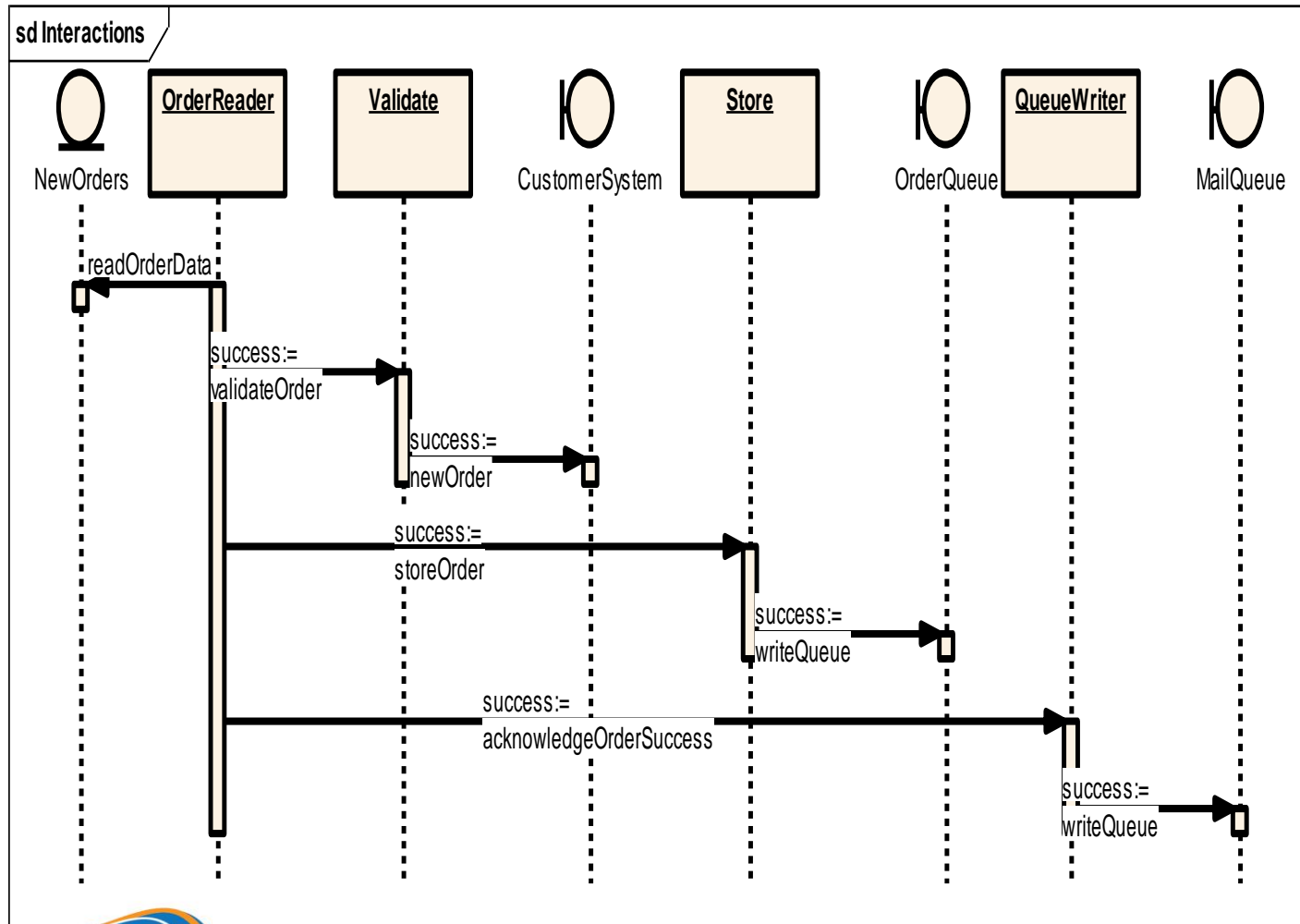- ☐ Can be used to depict various structural/behavioral architecture views
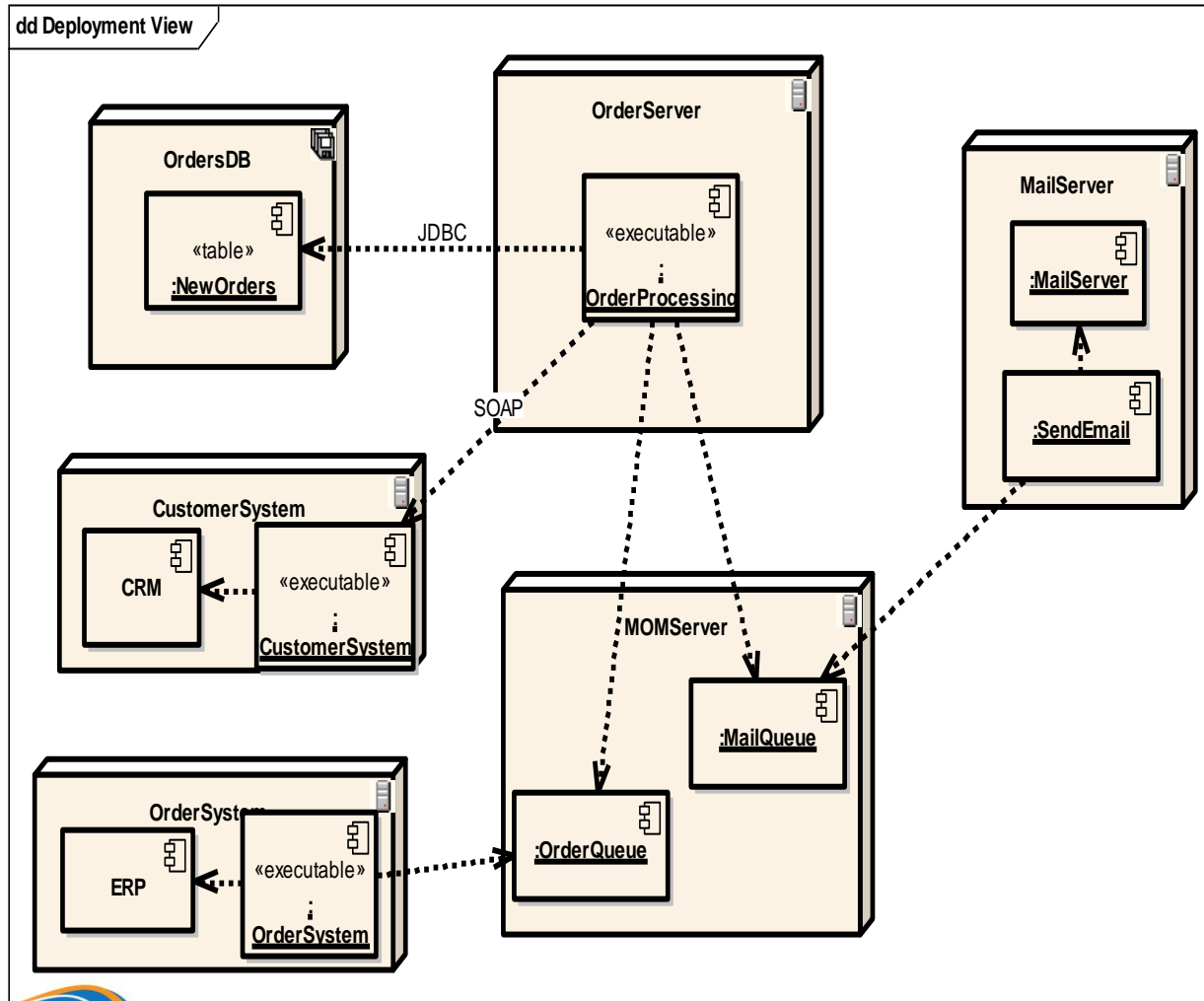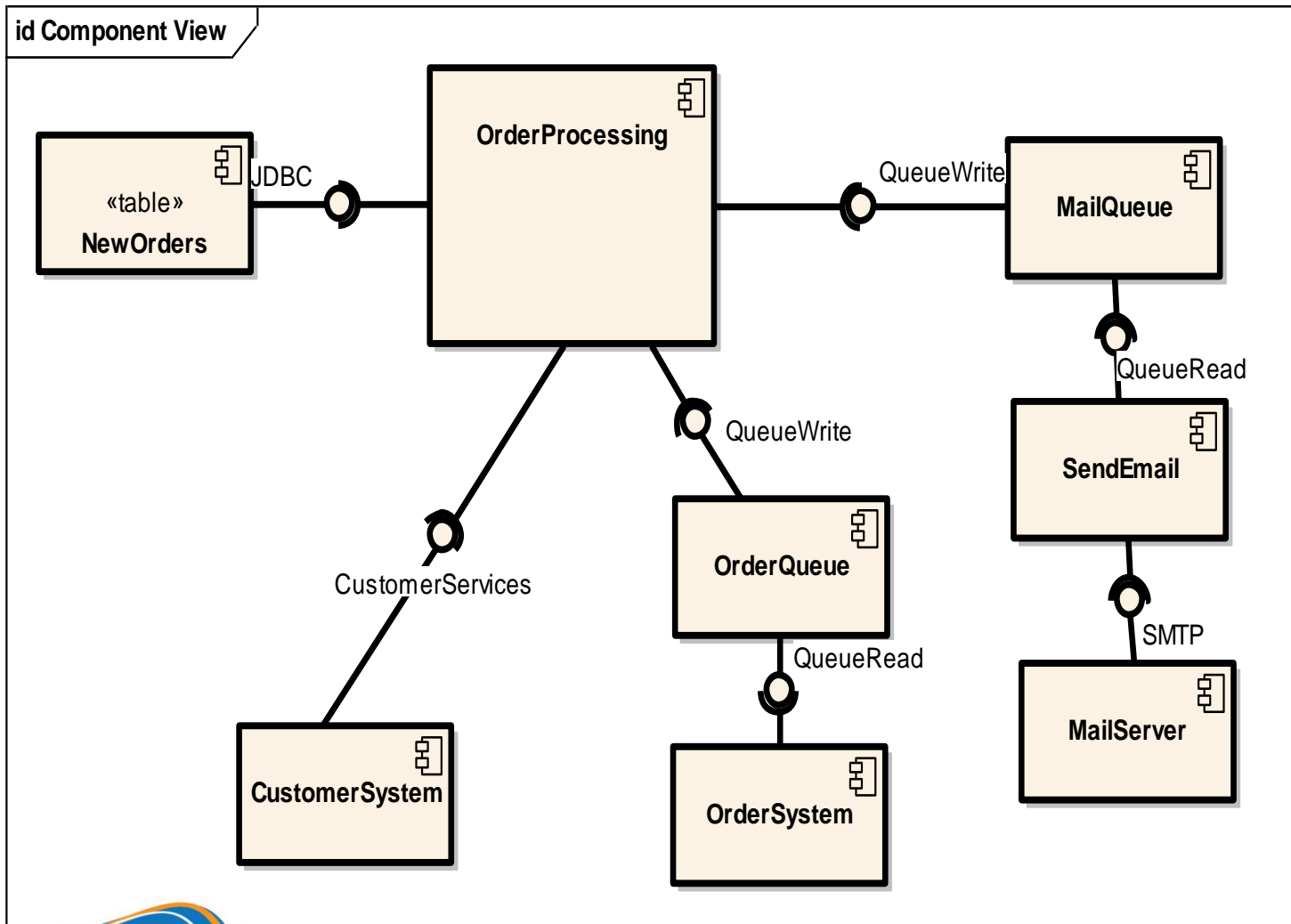
Component Diagram
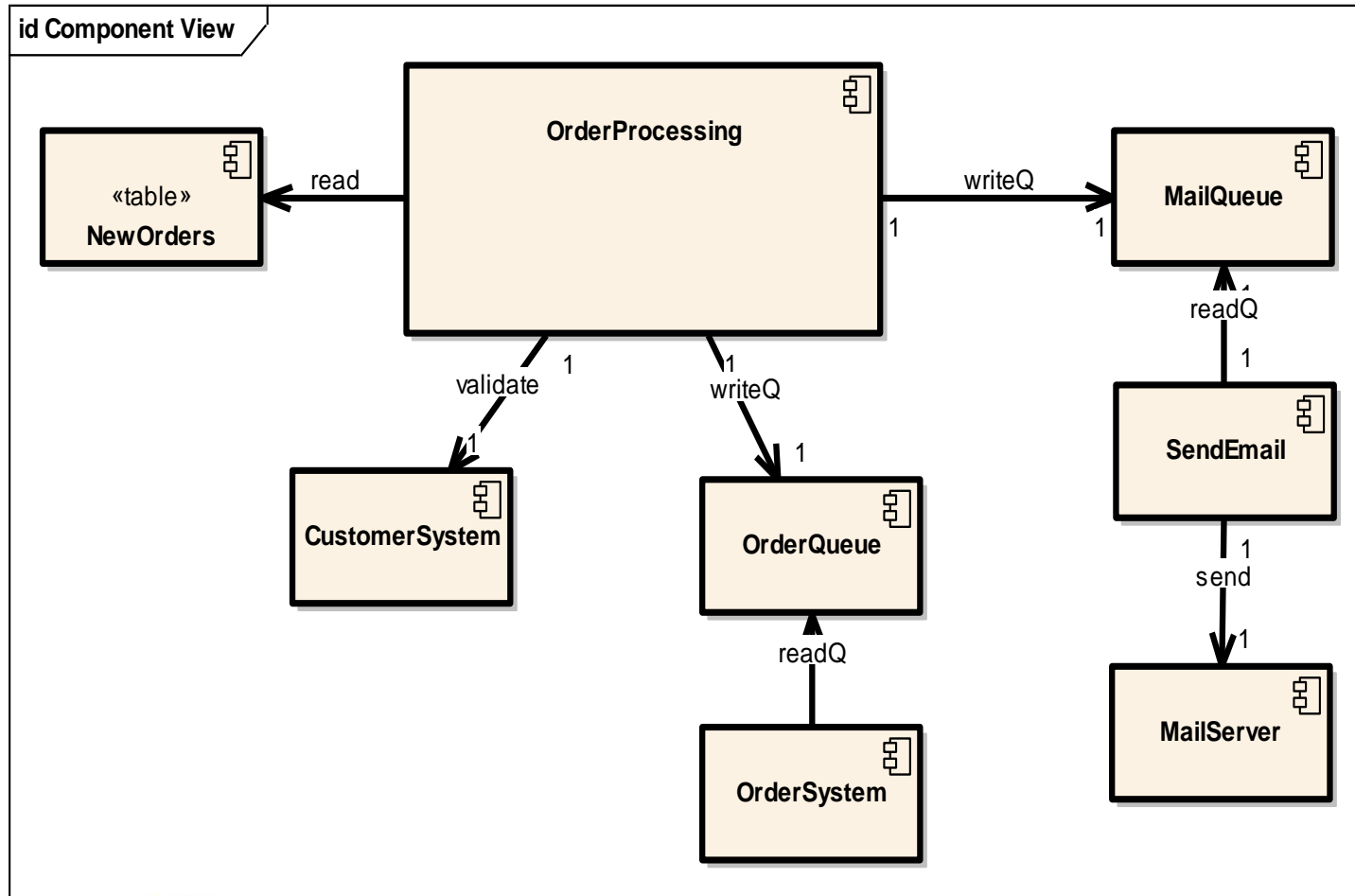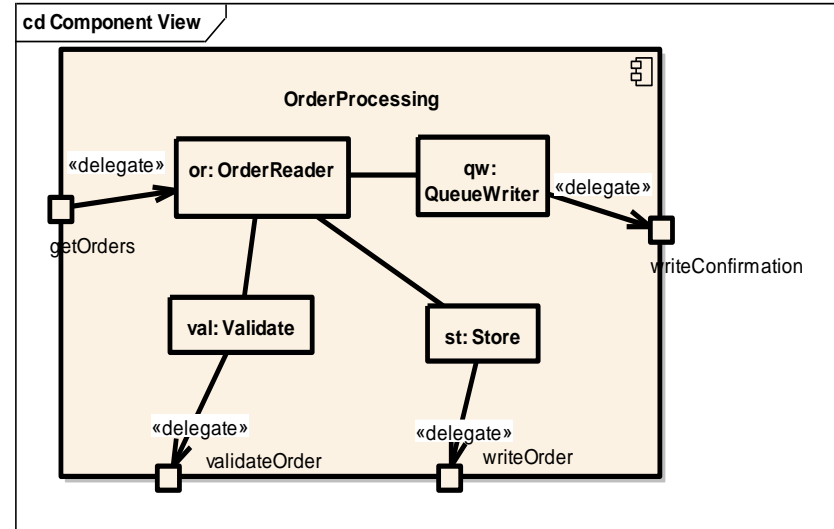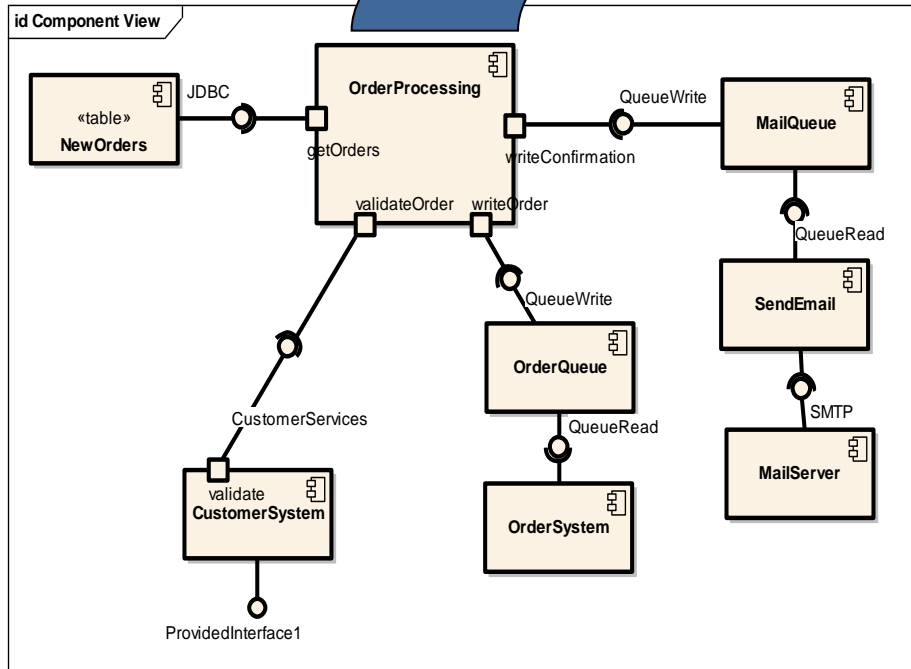
Class Diagram
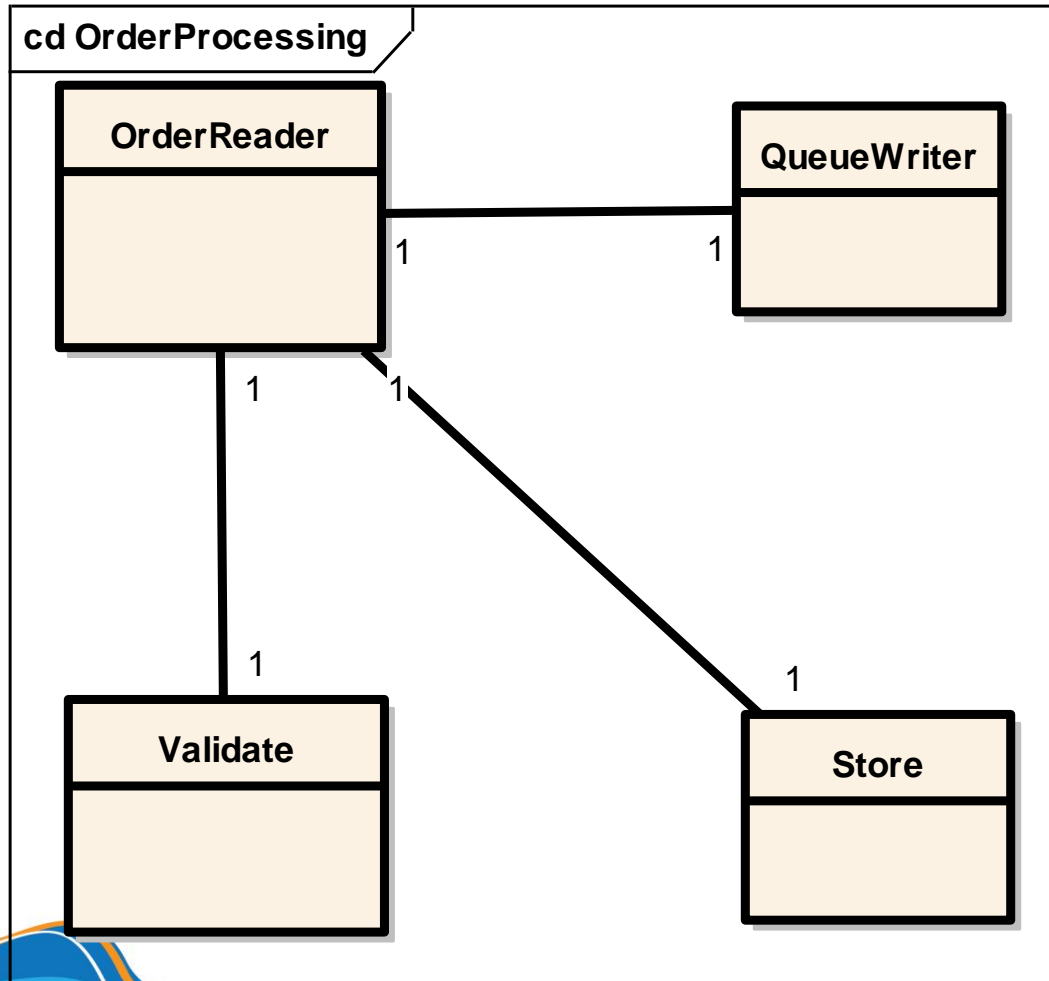
Sequence Diagram

Deployment Diagram

Component Interfaces

Component Decomposition

Document Template

- Documentation is easier if there's a template to use
  - Reduces start-up time for projects by providing ready-made document structures
  - familiarity gained with the document structure aids in the efficient capture of project design details.
  - help with the training of new staff

Template Headings

Architecture Documentation Template
Project Name: XXX

1   Project Context
2   Architecture Requirements
2.1   Overview of Key Objectives
2.2   Architecture Use Cases
2.3   Stakeholder Architectural Requirements
2.4   Constraints
2.5   Non-functional Requirements
2.6   Risks
3   Solution
3.1   Relevant Architectural Patterns
3.2   Architecture Overview
3.3   Structural Views
3.4   Behavioral Views
3.5   Implementation Issues
4   Architecture Analysis
4.1   Scenario analysis
4.2   Risks

Summary

- Some documentation is nearly always a good idea
- Trick is to produce 'just enough' and no more
    - requires upfront planning and thinking
    - Commitment to keeps docs current
- UML 2.0 makes architecture documentation easier
- Some good UML 2.0 tools, try 'em out.