

Architectural Documentation

- Kruchten's 4+1 Views
 - Philippe B. Kruchten. "The 4+1 View Model of Architecture." *IEEE Software*, 12(6):42-50, November 1995
 - Logical, developmental, process, physical, use case
 - Features, non-functional requirements, bug reporting, context, utility

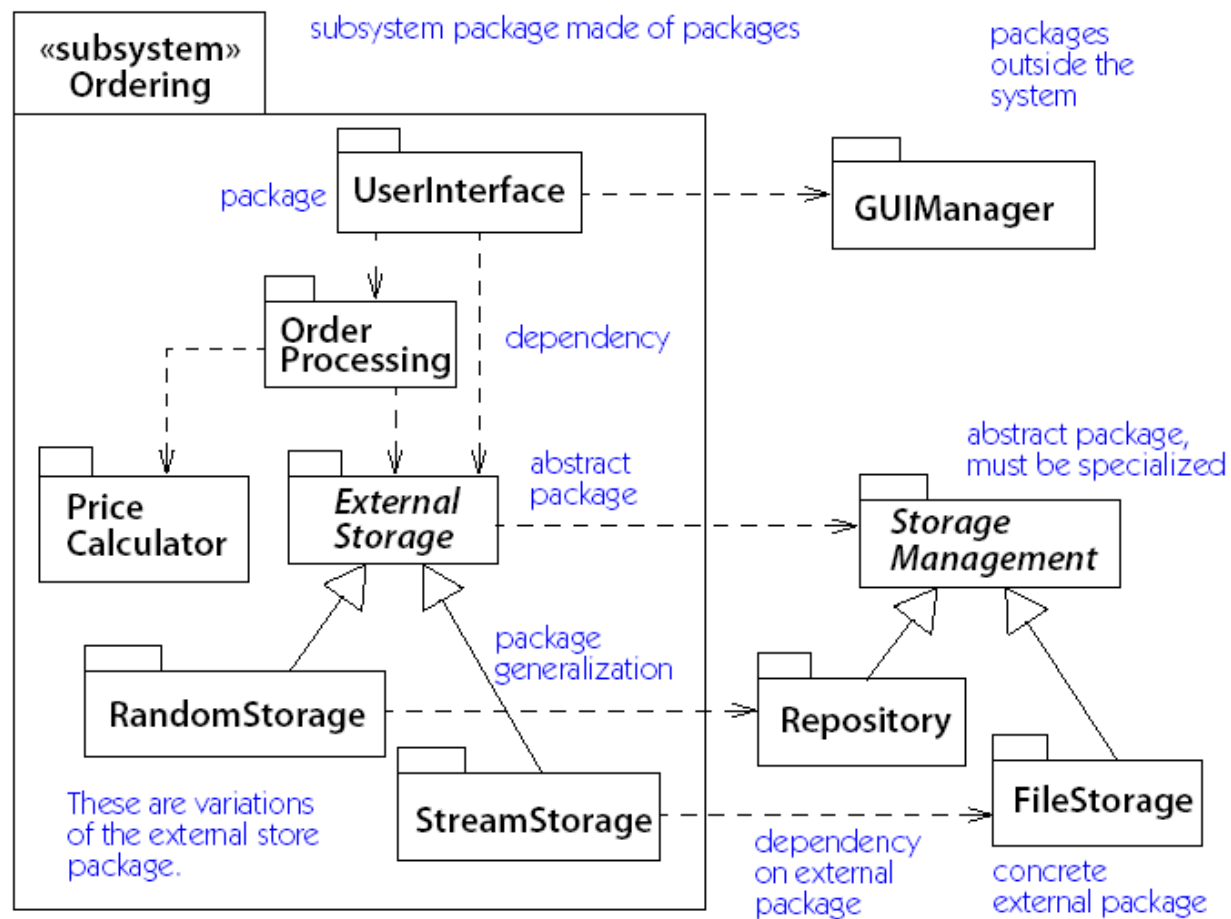
Logical View

- Structural breakdown of computational, communicational and behavioral responsibilities
- Diagrams:
 - Box and arrow
 - Components and connectors (ADLs)
 - UML Class model diagram
 - UML Interaction Overview diagram
 - UML Collaboration diagram

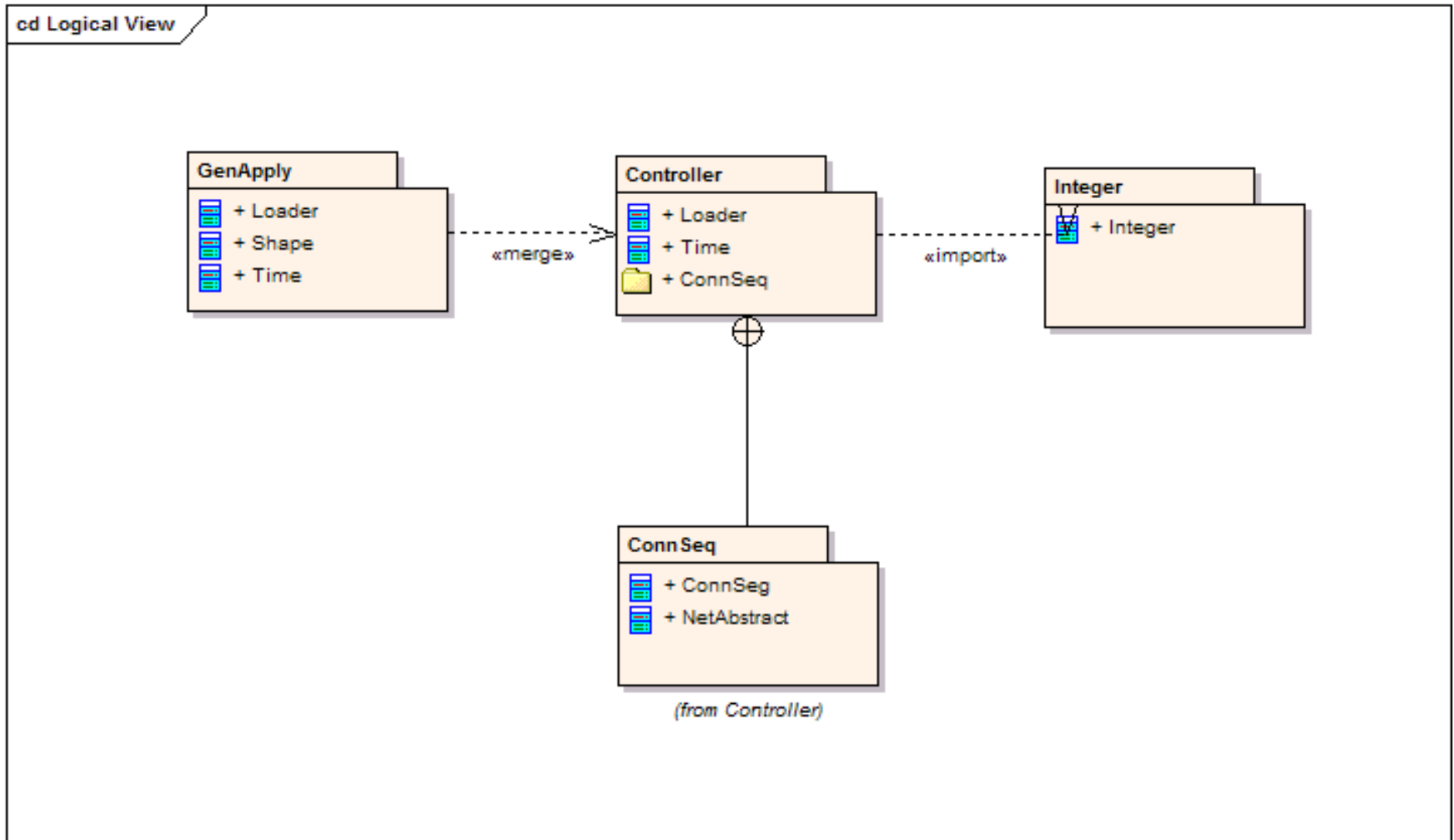
Developmental View

- Units of source code
 - Packages, classes, subsystems, libraries, files
- Diagrams
 - UML Package diagram
 - UML Component diagram
 - CVS modules

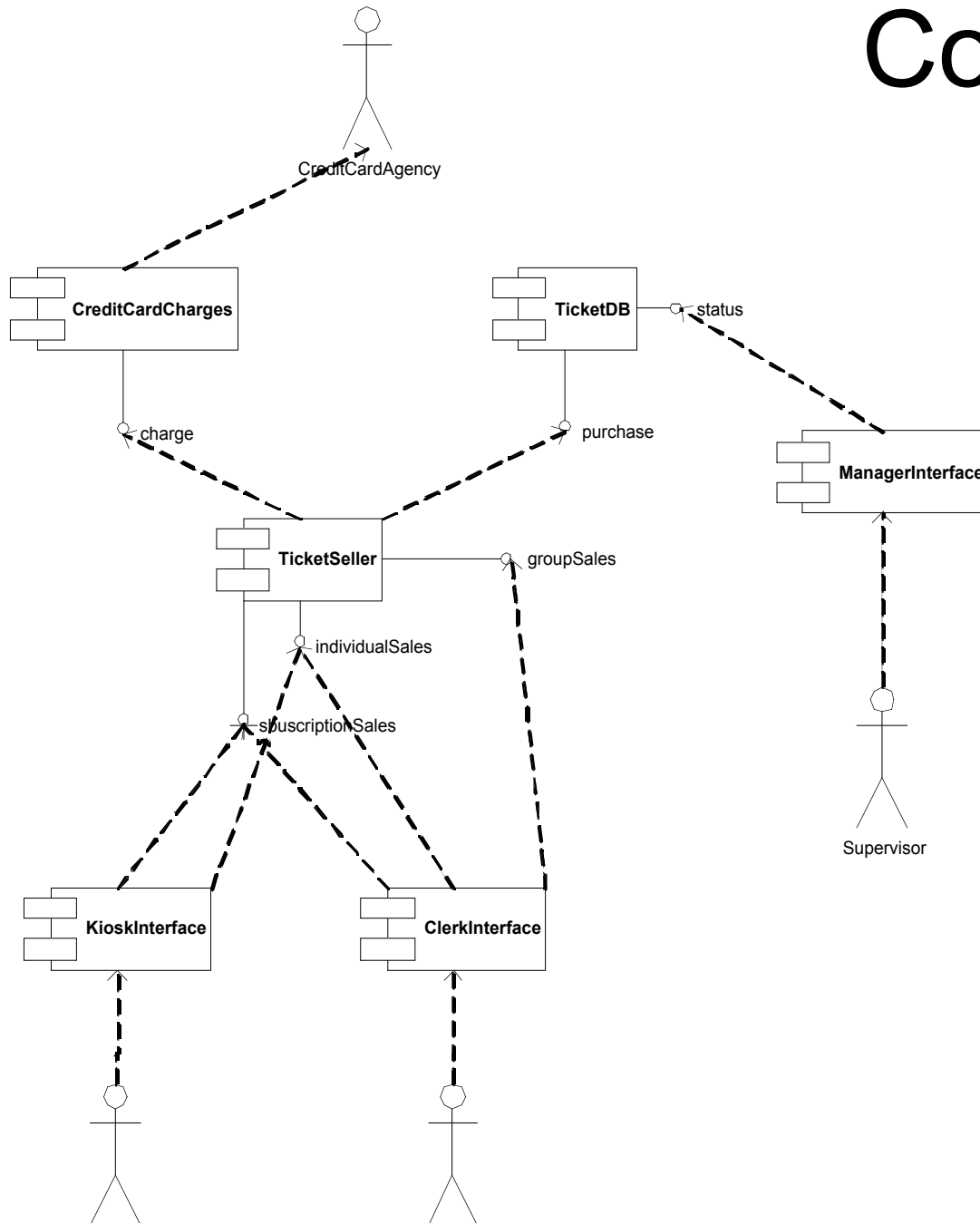
Example Class Diagram with Packages



Package Diagram



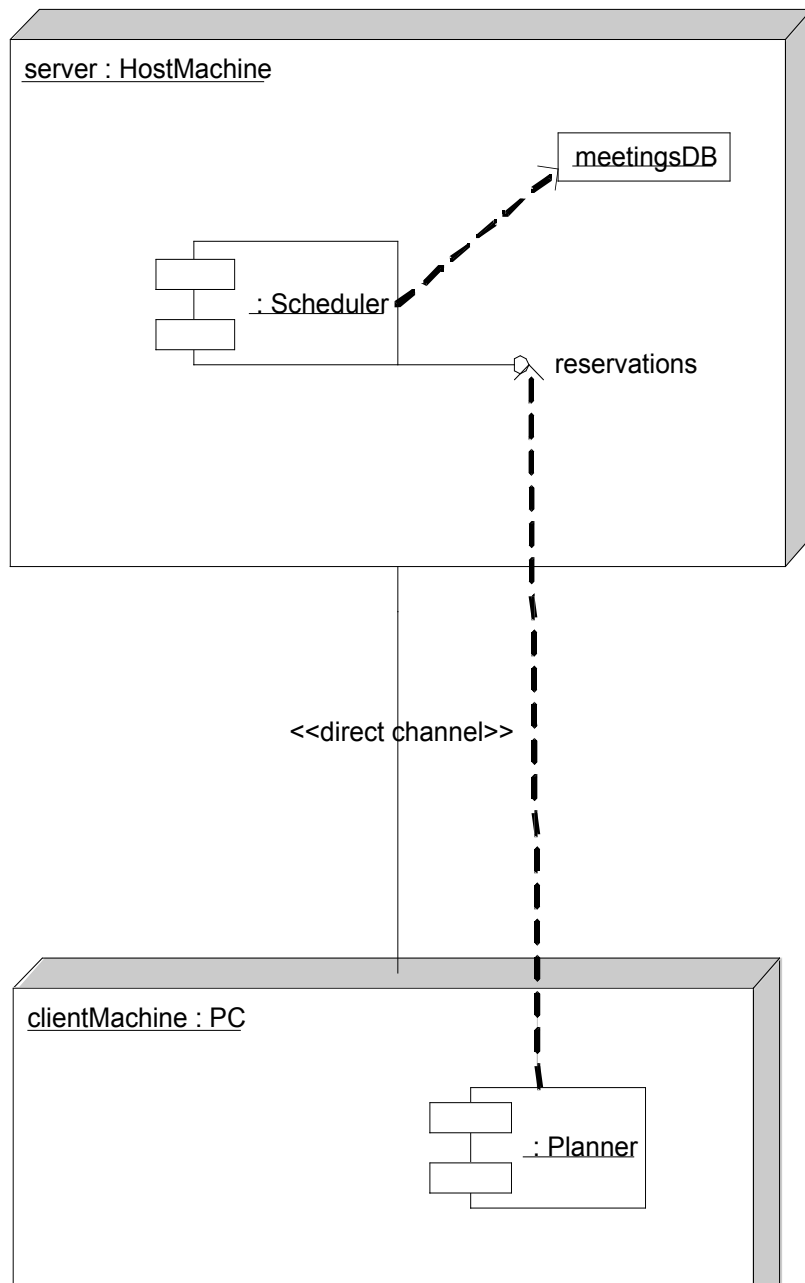
Component Diagram



Process View

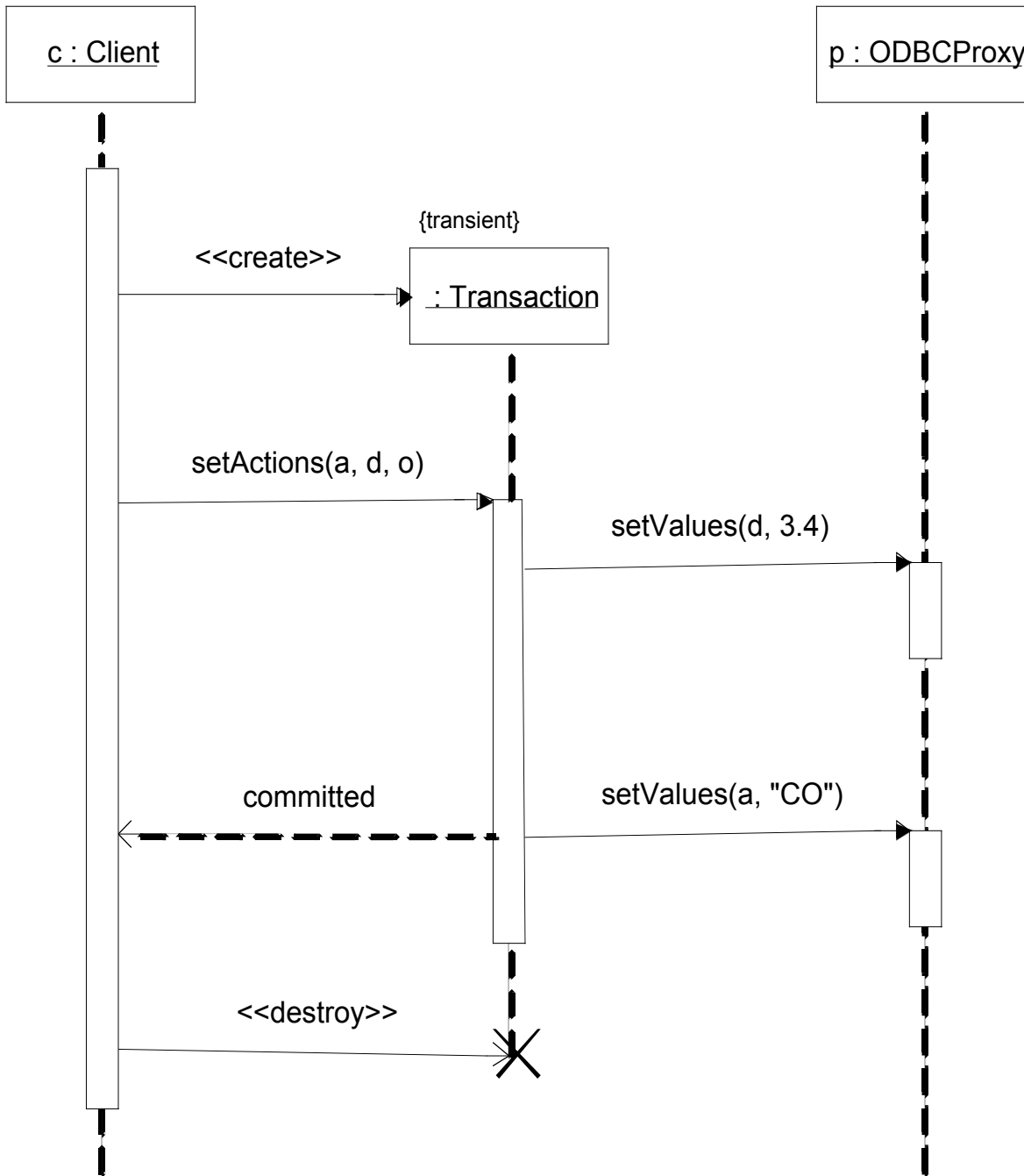
- Processes and threads into which execution is divided
- Diagrams
 - UML Deployment diagram

Example Deployment Diagram



Physical View

- Machines used for system execution and how processes are allocated to them
- Diagrams
 - UML Deployment diagram
 - UML Sequence diagram

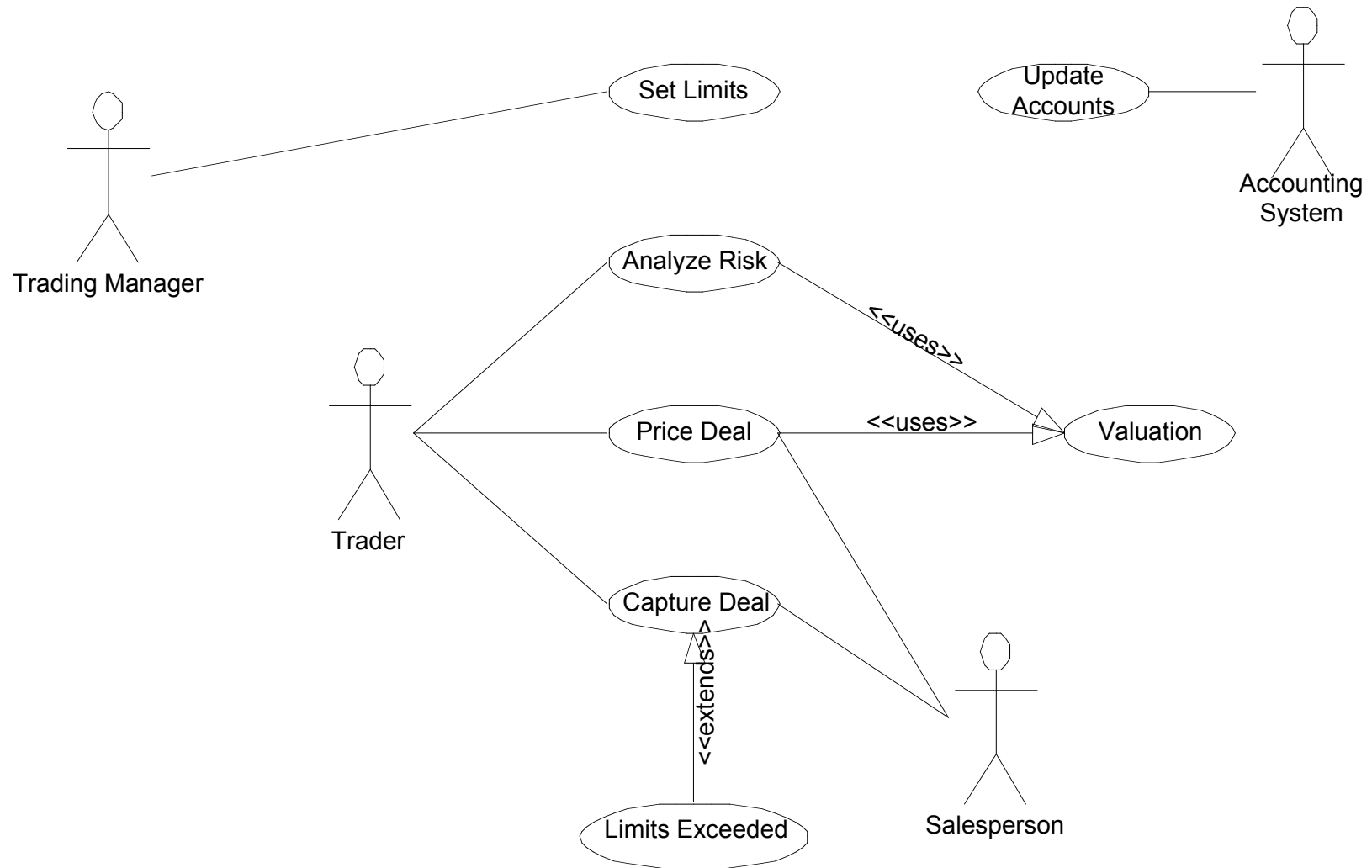


Example Sequence Diagram

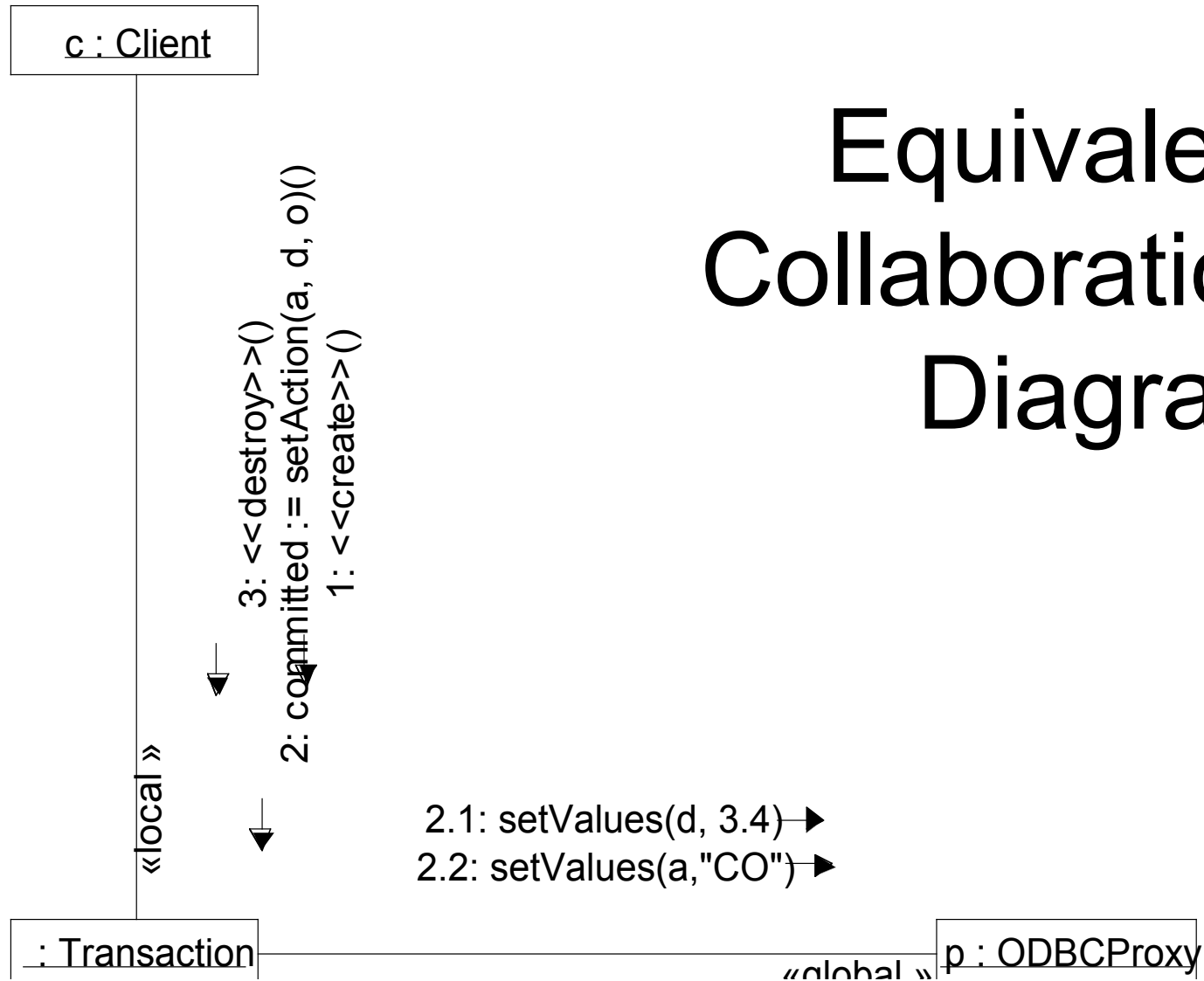
Use Case View

- Important execution sequences from the external actors' points of view
- Diagrams
 - UML Use Case diagram
 - UML Communication (Collaboration) diagram
 - UML Sequence diagram
 - UML Activity diagram
 - Structured text

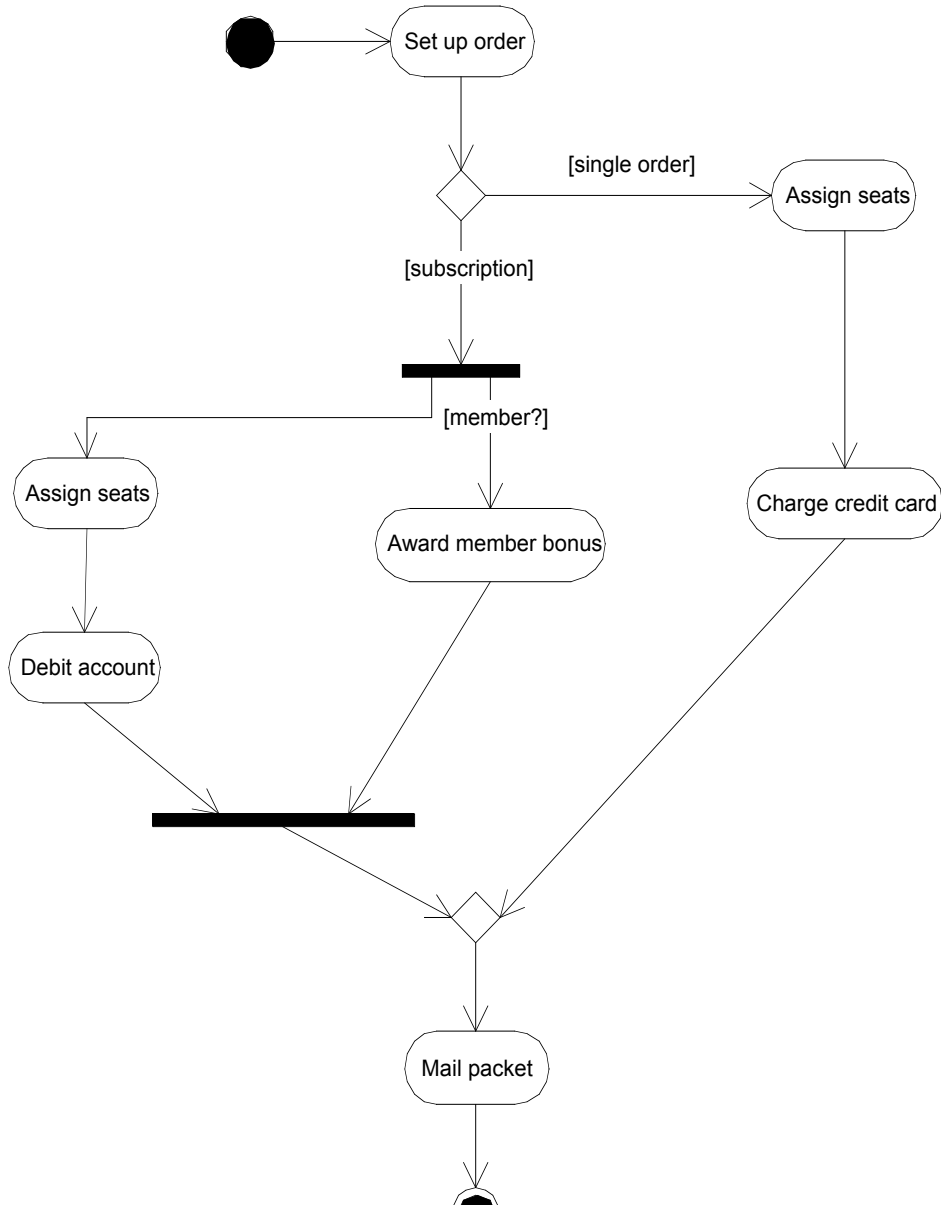
Example Use Case Diagram



Equivalent Collaboration Diagram



BoxOffice::ReceiveOrder

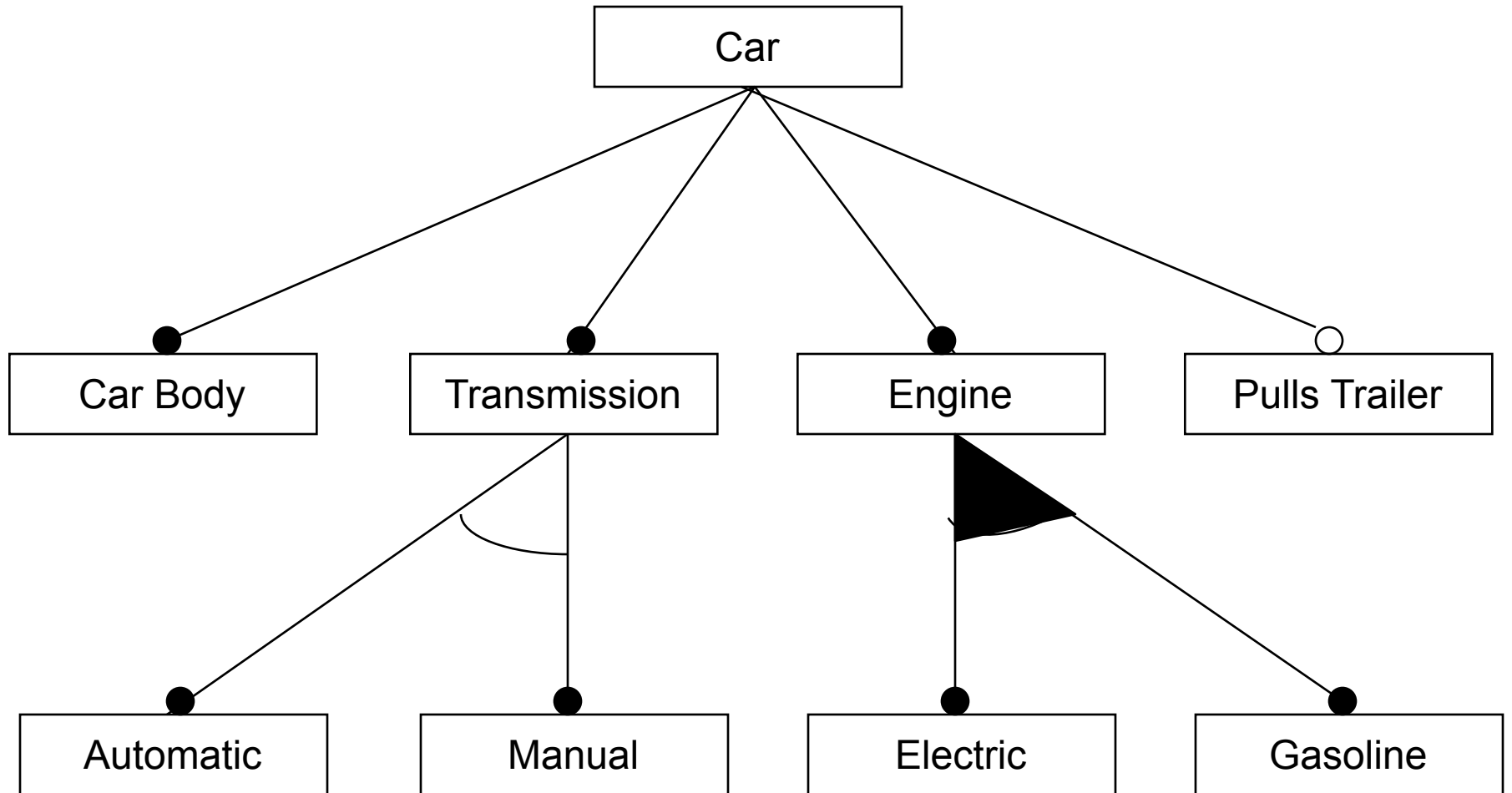


Example Activity Diagram

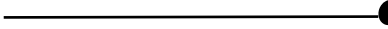
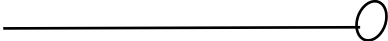
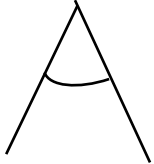
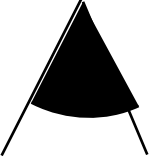
Feature View

- Conceptual units from the user's point of view
- Diagrams
 - Feature diagram
 - Inter-feature constraints

Example



Notation

- Mandatory features: 
- Optional features: 
- Alternative features:
 - Choose exactly one 
- Or features:
 - Choose a subset 

Non-Functional View

- How non-functional requirements affect the software architecture
 - Explicit tradeoffs
- Tabular text

Bug Reporting

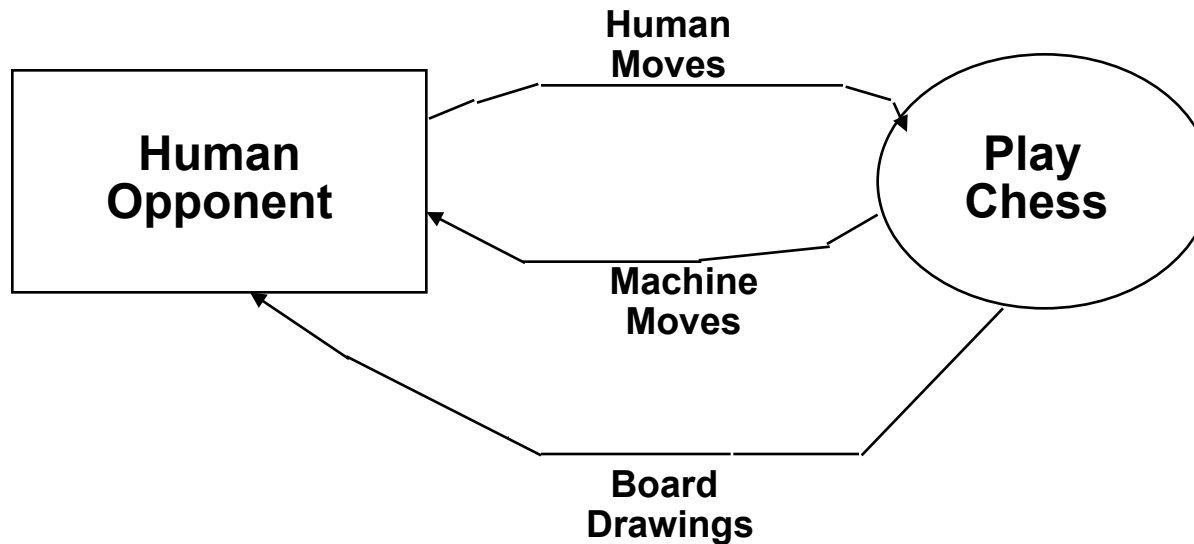
- Units to which bugs are allocated
 - Consequences with respect to Developmental view
 - Consequences with respect to Feature view
- Bugzilla components

Context View

- Relationship of a system to its environment
 - External actors, events and percepts
- (Data flow) Context diagram

CONTEXT DIAGRAMS

- The top level data flow diagram is called the context diagram
- It contains exactly one process node denoting the overall function of the system



Utility View

- Supporting software
 - Installation scripts
 - Log file analysis
 - Statistical processing
- Tabular text