Architectural Documentation

• Graphical (views) and textual

• Kruchten's 4+1 Views
  – Logical, developmental, process, physical, use case

• Other useful information
  – 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
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
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

Trading Manager

Set Limits

Update Accounts

Accounting System

Analyze Risk

Price Deal

Valuation

Capture Deal

Limits Exceeded

Trader

Salesperson

<<uses>>

<<uses>>

<<extends>>
BoxOffice::ReceiveOrder

Example Activity Diagram
Feature View

• Conceptual units from the user's point of view

• Diagrams
  – Feature diagram
  – Inter-feature constraints
Example

Car
- Car Body
  - Automatic
- Transmission
  - Manual
- Engine
  - Electric
- Pulls Trailer
  - Gasoline
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