Applying UML in
The Unified Process

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Before the UML

- **1960’s - 70’s**
  - COBOL, FORTRAN, C
  - Structured analysis and design techniques

- **1980’s - early 1990’s**
  - Smalltalk, Ada, C++, Visual Basic
  - Early generation OO methods

- **Mid/late 1990’s**
  - Java
  - UML
  - Unified Process
A model is a complete description of a system from a particular perspective.
But, the UML Is Not Enough

- Team-Based Development
- Modeling Language
- Unified Process
Creating the Unified Process

Rational Unified Process 5.0
1998

Rational Objectory Process 4.1
1996-1997

Objectory Process 1.0-3.8
1987-1995

The Ericsson Approach

The Rational Approach

Functional testing
Performance testing
Requirements mgmt
Conf. and change mgmt
Business engineering
Data engineering
UI design

UML
What Is a Process?

- Defines **Who** is doing **What**, **When** to do it, and **How** to reach a certain goal.
Overview of the Unified Process

The Unified Process is

- Iterative and incremental
- Use case driven
- Architecture-centric
**Lifecycle Phases**

- **Inception**
  - Define the scope of the project and develop business case

- **Elaboration**
  - Plan project, specify features, and baseline the architecture

- **Construction**
  - Build the product

- **Transition**
  - Transition the product to its users
Major Milestones

Inception | Elaboration | Construction | Transition

Vision | Baseline Architecture | Initial Capability | Product Release

time
An iteration is a sequence of activities with an established plan and evaluation criteria, resulting in an executable release.
Iterations and Workflow

Core Workflows
- Requirements
- Analysis
- Design
- Implementation
- Test

Phases
- Inception
- Elaboration
- Construction
- Transition

Iterations
- Preliminary Iteration(s)
- iter. #1
- iter. #2
- iter. #n
- iter. #n+1
- iter. #n+2
- iter. #m
- iter. #m+1

An iteration in the elaboration phase
UML diagrams provide views into each model.

Each workflow is associated with one or more models.
Use Case Model

Use Case Model

Analysis Model

Design Model

Depl. Model

Impl. Model

Test Model

Use Case Diagrams

Class Diagrams

Object Diagrams

Component Diagrams

Deployment Diagrams

Sequence Diagrams

Collaboration Diagrams

Statechart Diagrams

Activity Diagrams
Test model refers to all other models and uses corresponding diagrams.
Use Case Driven

Use Cases bind these workflows together
Use Cases Drive Iterations

- **Drive a number of development activities**
  - Creation and validation of the system’s architecture
  - Definition of test cases and procedures
  - Planning of iterations
  - Creation of user documentation
  - Deployment of system

- **Synchronize the content of different models**
Architecture-Centric

- Models are vehicles for visualizing, specifying, constructing, and documenting architecture.
- The Unified Process prescribes the successive refinement of an executable architecture.
Architecture and Models

Architecture embodies a collection of views of the models

Models

Use Case Model  Analysis Model  Design Model  Depl. Model  Impl. Model  Test Model

Views

Architecture embodies a collection of views of the models
Function versus Form

- Use case specify function; architecture specifies form
- Use cases and architecture must be balanced
The Unified Process is Engineered

- **Worker**: A role played by an individual or a team.
- **Activity**: Describe a Use Case.
- **Artifact**: A piece of information that is produced, modified, or used by a process.
- **Analyst**: A role played by an individual or a team.
- **Use case**: A piece of information that is produced, modified, or used by a process.
- **Use case package**: A role played by an individual or a team.
The Unified Process is a Process Framework

There is NO Universal Process!

- The Unified Process is designed for flexibility and extensibility
  - allows a variety of lifecycle strategies
  - selects what artifacts to produce
  - defines activities and workers
  - models concepts
Two Parts of a Unified Whole

The Unified Modeling Language
- OMG standard

The Unified Process
- Convergence in the future
- Convergence through process frameworks