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IBM Software Group

# Rational Unified Process

Rational software

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# Dit is NIET ….

- ◆ Dit is geen marketing presentatie
- ◆ Dit is geen volledige RUP cursus
- ◆ Dit is geen training!
- ◆ Niet specifiek voor test(ers)
- ◆ Aangepast aan laatste stand van RUP 7.0
- ◆ Een selectie uit heel veel informatie
- ◆ Geen advies over combinaties zoals…
  - ▪ RUP – TMAP
  - ▪ RUP – Prince2
- ◆ Etc etc etc…

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## Dit is wel ….

Een presentatie ter kennismaking met
Rational Unified Process voor



TEST·NET

♦ Gebaseerd op officiële RUP trainings materialen

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## Agenda

- ♦ Best practices
- ♦ RUP – Process
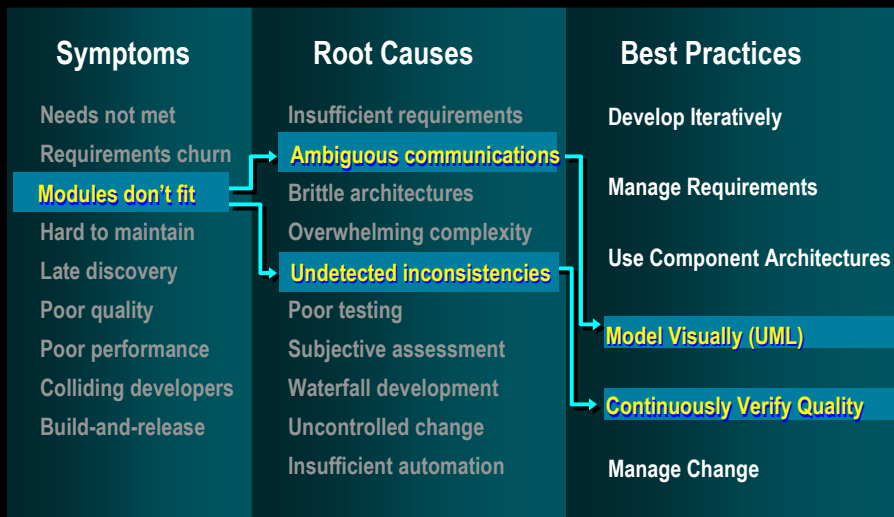- ♦ RUP knowledge base

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## Symptoms of Software Development Problems

- ✓ **User or business needs not met**
- ✓ **Requirements churn**
- ✓ **Modules don't integrate**
- ✓ **Hard to maintain**
- ✓ **Late discovery of flaws**
- ✓ **Poor quality or end-user experience**
- ✓ **Poor performance under load**
- ✓ **No coordinated team effort**
- ✓ **Build-and-release issues**

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## Trace Symptoms to Root Causes

| Symptoms | Root Causes | Best Practices |
|---|---|---|
| Needs not met | Insufficient requirements | Develop Iteratively |
| Requirements churn | Ambiguous communications | |
| Modules don't fit | Brittle architectures | Manage Requirements |
| Hard to maintain | Overwhelming complexity | Use Component Architectures |
| Late discovery | Undetected inconsistencies | |
| Poor quality | Poor testing | Model Visually (UML) |
| Poor performance | Subjective assessment | |
| Colliding developers | Waterfall development | Continuously Verify Quality |
| Build-and-release | Uncontrolled change | |
| | Insufficient automation | Manage Change |

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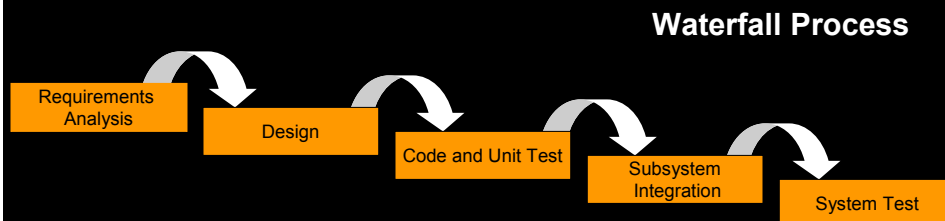
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## Practice 1: Develop Iteratively

**Best Practices**
*Process Made Practical*

**Develop Iteratively**

Manage Requirements

Use Component Architectures

Model Visually (UML)

Continuously Verify Quality

Manage Change

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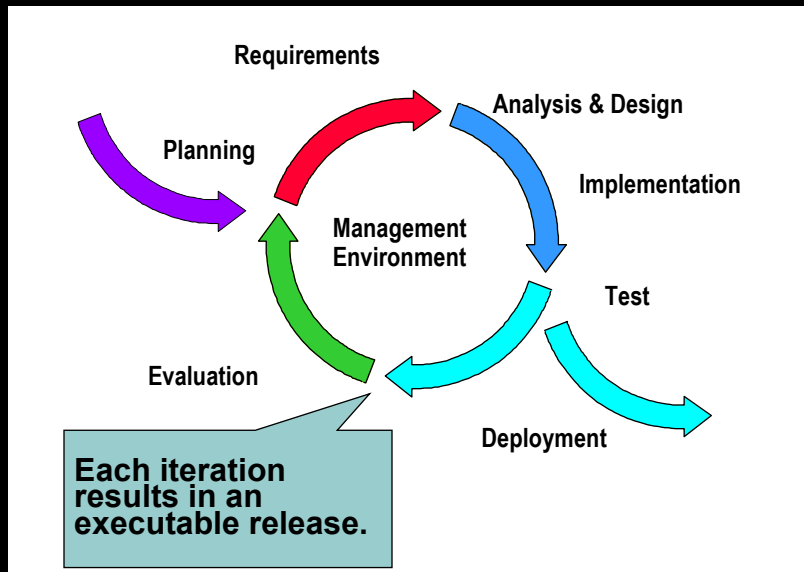
## Waterfall Development Characteristics

**Waterfall Process**

Requirements Analysis → Design → Code and Unit Test → Subsystem Integration → System Test

- ◆ Delays confirmation of critical risk resolution
- ◆ Measures progress by assessing work-products that are poor predictors of time-to-completion
- ◆ Delays and aggregates integration and testing
- ◆ Precludes early deployment
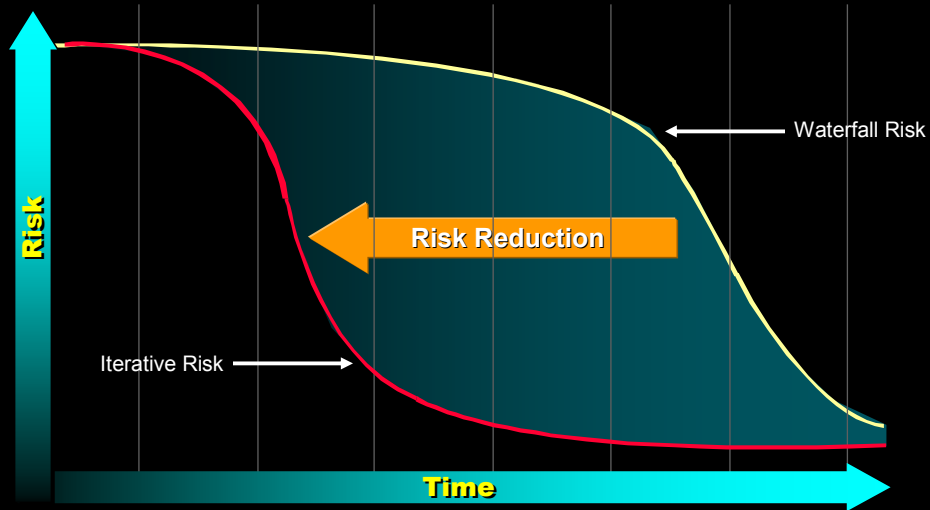- ◆ Frequently results in major unplanned iterations

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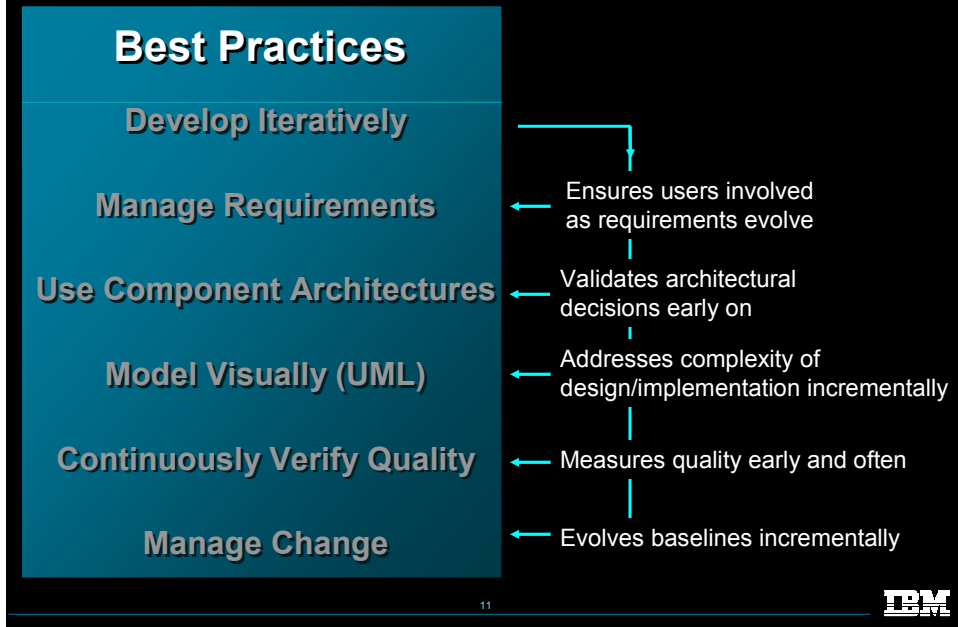## Iterative Development Produces Executables

Requirements

Planning

Analysis & Design

Implementation

Management
Environment

Test

Evaluation

Deployment

**Each iteration results in an executable release.**

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## Risk Profiles

Waterfall Risk

Risk

**Risk Reduction**

Iterative Risk

**Time**

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## Best Practices Reinforce Each Other: An Example

### Best Practices

**Develop Iteratively**

**Manage Requirements** ← Ensures users involved as requirements evolve

**Use Component Architectures** ← Validates architectural decisions early on

**Model Visually (UML)** ← Addresses complexity of design/implementation incrementally

**Continuously Verify Quality** ← Measures quality early and often

**Manage Change** ← Evolves baselines incrementally

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## RUP Implements Best Practices

RUP®
Rational Unified Process®

→

**Best Practices**
*Process Made Practical*

**Develop Iteratively**
**Manage Requirements**
**Use Component Architectures**
**Model Visually (UML)**
**Continuously Verify Quality**
**Manage Change**

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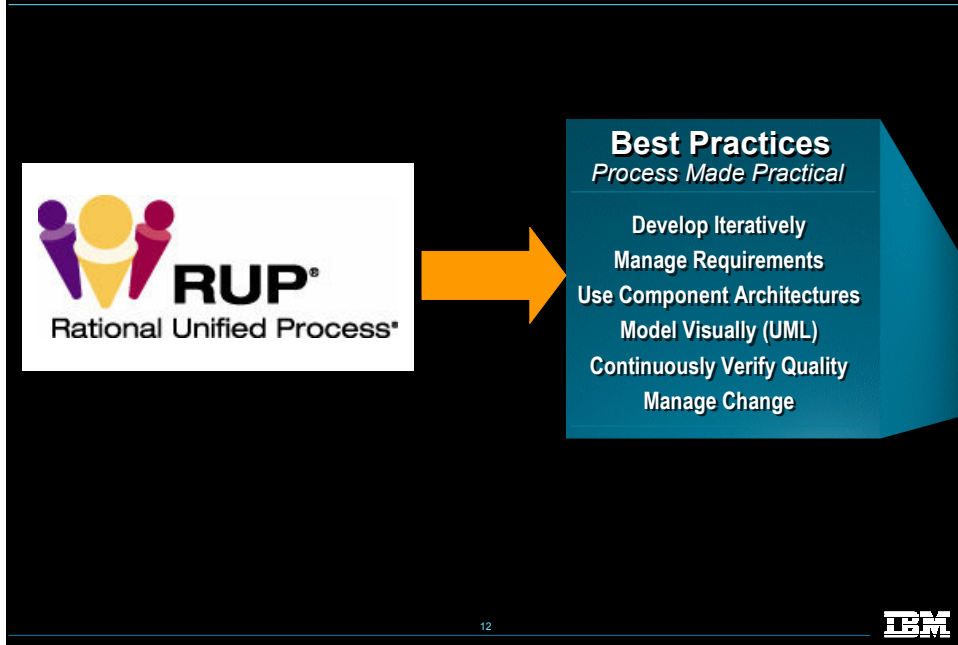
## Achieving Best Practices Through a Process

- ◆ Iterative approach
- ◆ Guidance for activities and artifacts
- ◆ Process focus on architecture
- ◆ Use cases which drive design and implementation
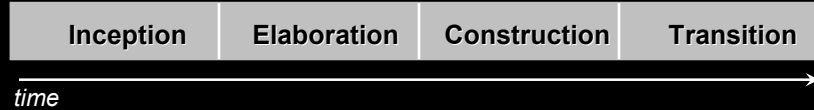- ◆ Models which abstract the system



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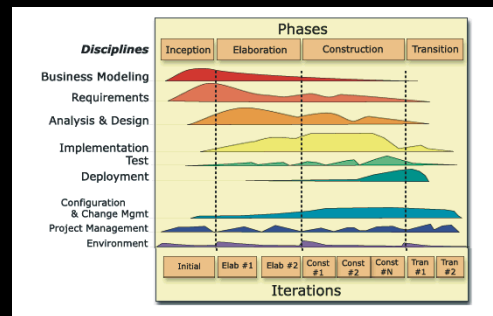
## RUP Organization

RUP is organized:

- ◆ By time
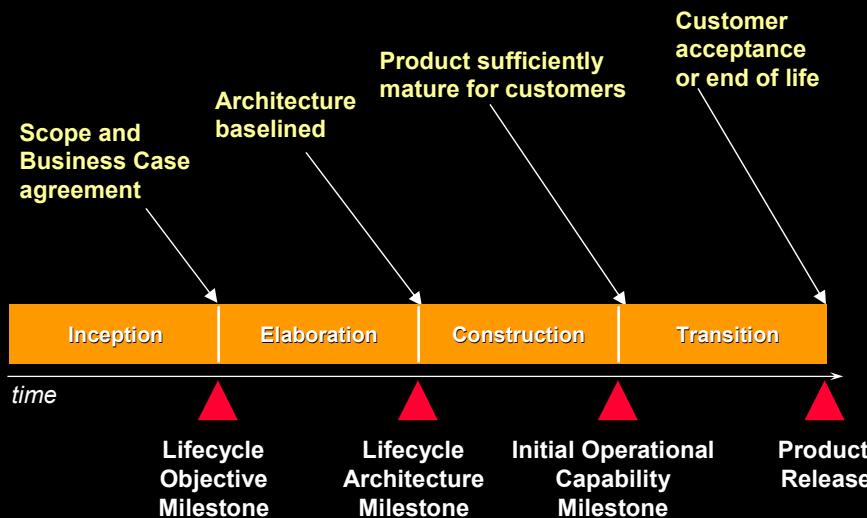  - ▪ Phases and iterations

- ◆ By content
  - ▪ Disciplines

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## RUP Organization By Time

| Inception | Elaboration | Construction | Transition |
|-----------|-------------|--------------|------------|

*time* →

**Rational Unified Process has four phases:**

- **Inception:** Define the scope of project
- **Elaboration:** Plan project, specify features, baseline architecture
- **Construction:** Build the product
- **Transition:** Transition the product into end-user community
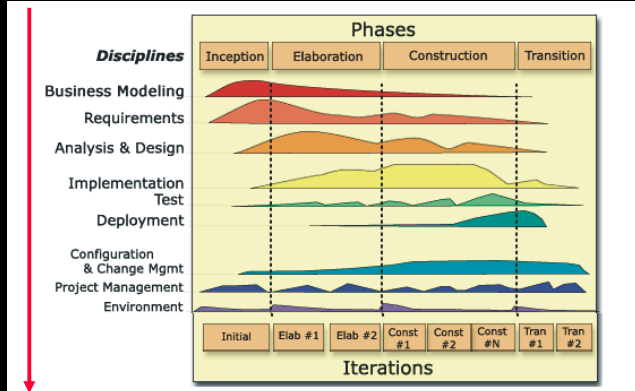
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## Major Milestones: Business Decision Points



Scope and Business Case agreement

Architecture baselined

Product sufficiently mature for customers

Customer acceptance or end of life

| Inception | Elaboration | Construction | Transition |
|-----------|-------------|--------------|------------|

*time* →

Lifecycle Objective Milestone

Lifecycle Architecture Milestone

Initial Operational Capability Milestone

Product Release

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## RUP Organization By Content

RUP content is organized into **disciplines**.

A **discipline** is a collection of activities that are all related to a major 'area of concern'.
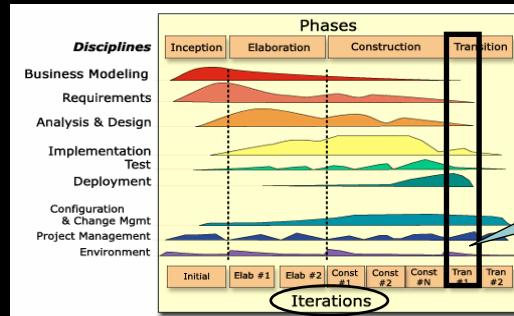


## RUP Disciplines



**RUP has disciplines.**

**Artifacts from each discipline evolve over the iterative process.**

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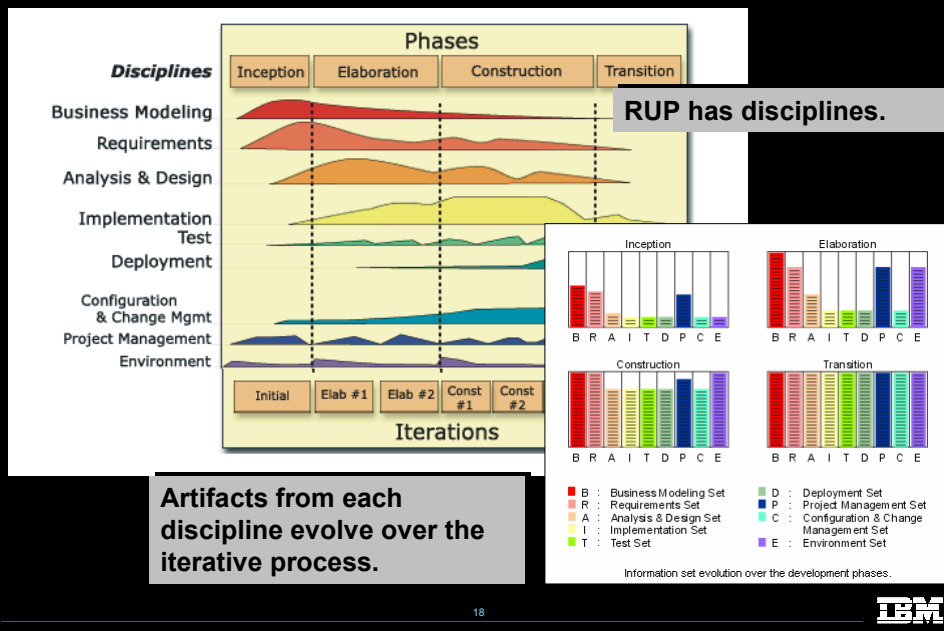
## What Is an Iteration?



In an **iteration**, you walk through all disciplines.

Iteration: A distinct sequence of activities with a baselined plan and evaluation criteria resulting in a release (internal or external).

An iteration is time boxed!

A phase has one or more iterations.

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## Concepts That Drive Iterative Development

Some important concepts that affect iterative development are:

◆ Early mitigation of risk

◆ Early baselining of architecture

◆ Use of objective metrics

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## Risk Profiles
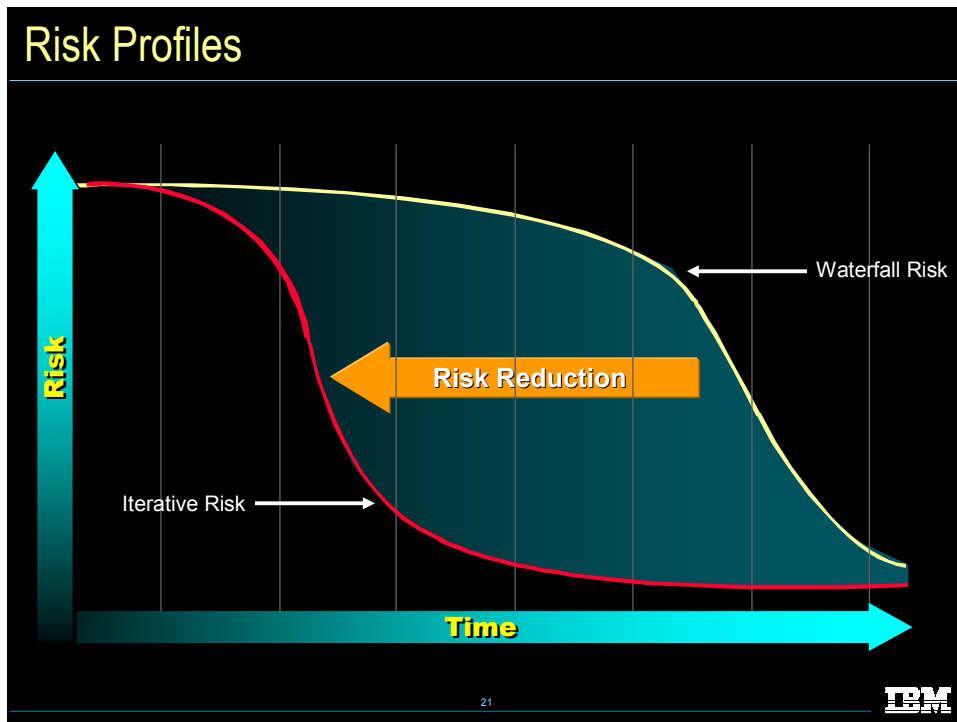


## Risk Reduction Drives the Iterative Lifecycle

- ◆ Early iterations should address the risks of highest magnitude.

- ◆ Risk assessment is a continuous process; risks change over time.

- ◆ An updated Risk List is input to the activity Develop Iteration Plan.
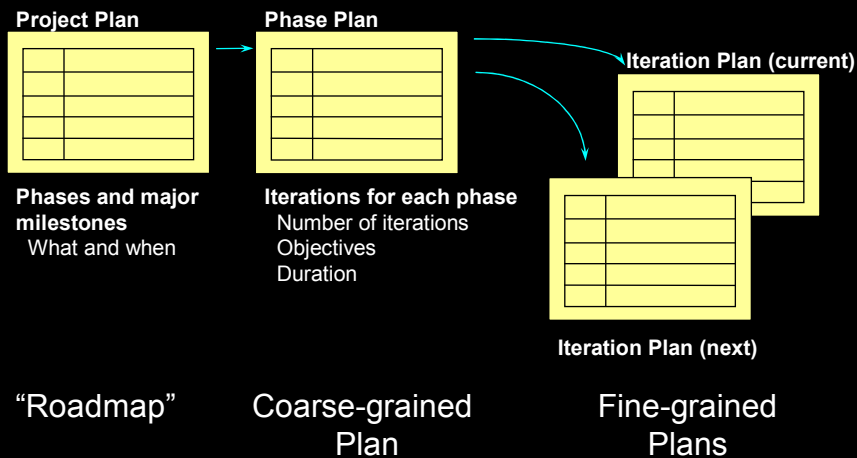
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## An Executable Architecture

- ◆ A (testable) validation of the architecture
  - ▪ Tested via architecturally-significant use cases
- ◆ The baseline for the rest of development
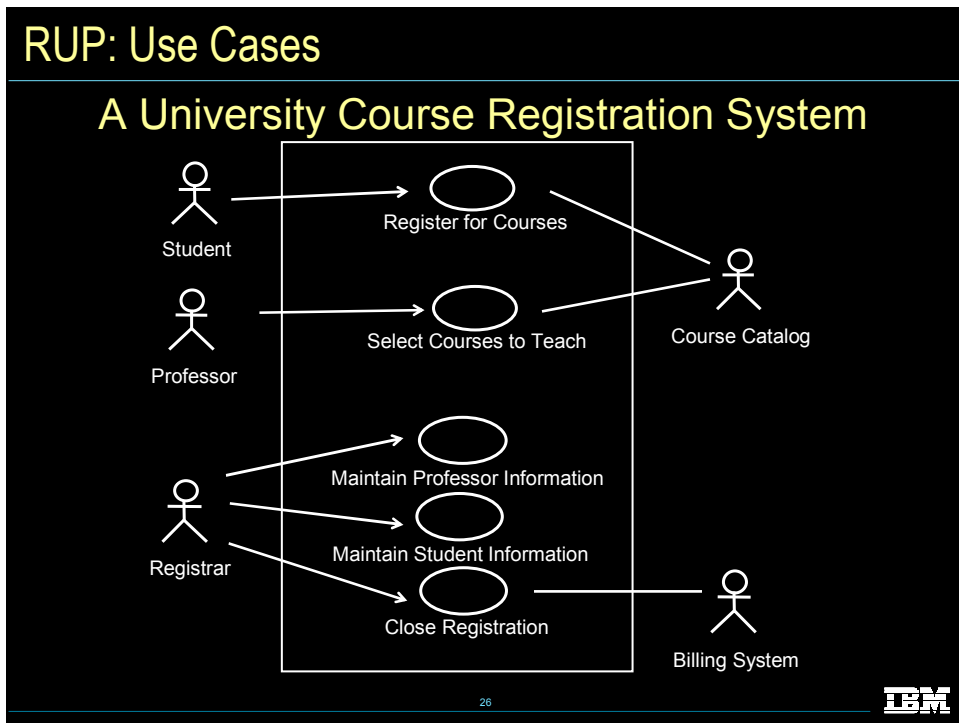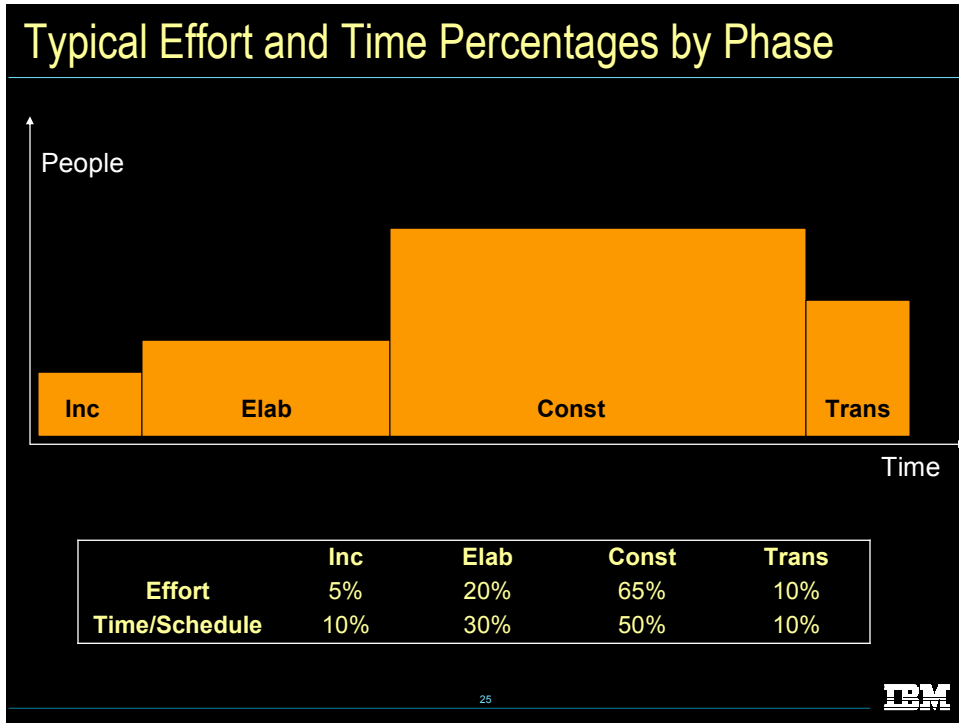- ◆ Provides mitigation for numerous risks

Application-specific

Business-specific

Middleware

System-software

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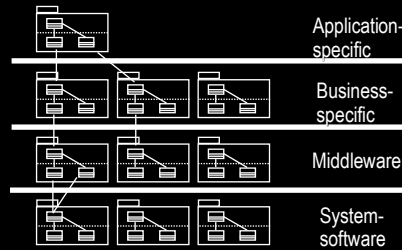
## Planning for Iterative Development

**Project Plan**

**Phase Plan**

Iteration Plan (current)

**Phases and major milestones**
What and when

**Iterations for each phase**
Number of iterations
Objectives
Duration

Iteration Plan (next)

"Roadmap"

Coarse-grained Plan

Fine-grained Plans

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## Typical Effort and Time Percentages by Phase

People

|              | Inc  | Elab | Const | Trans |
|--------------|------|------|-------|-------|
| Effort       | 5%   | 20%  | 65%   | 10%   |
| Time/Schedule| 10%  | 30%  | 50%   | 10%   |

Time

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## RUP: Use Cases

### A University Course Registration System

Student → Register for Courses

Professor → Select Courses to Teach

Course Catalog

Registrar → Maintain Professor Information

Maintain Student Information

Close Registration — Billing System

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## Use Cases as a Basis for Test Planning

The complete behavior of a use case is tested using Test Scripts and Test Suites.

Test Script

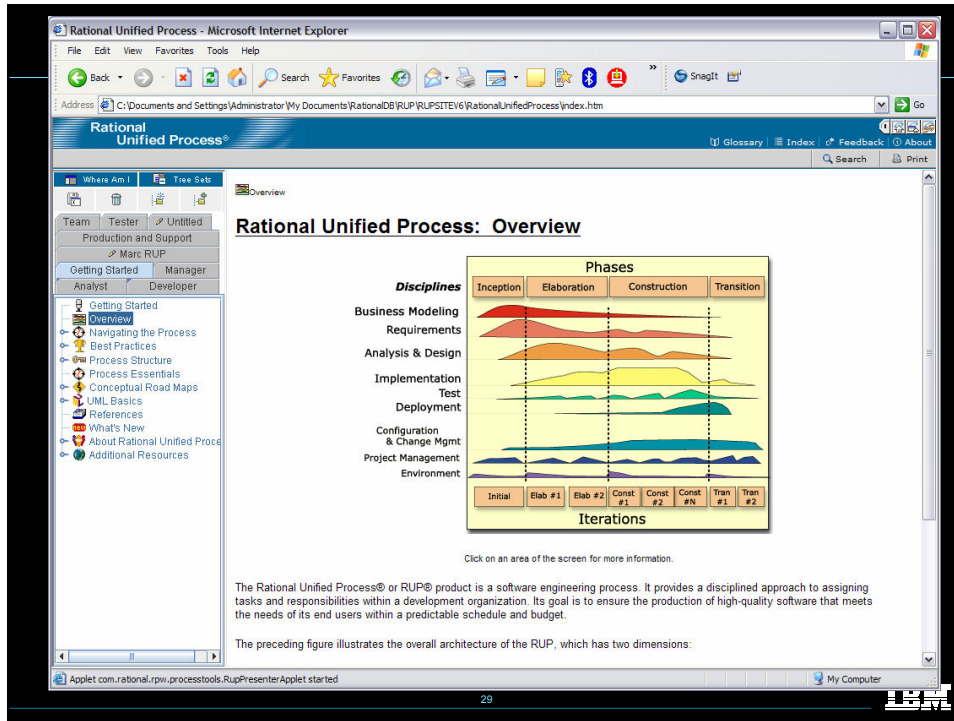Test Script

Test Suite

Test Suite

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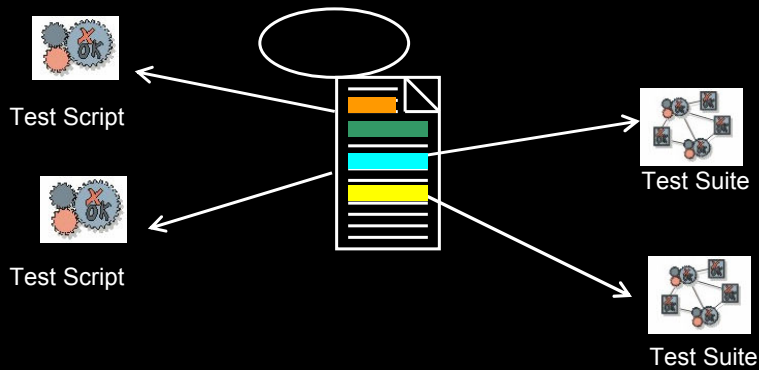
## RUP Knowledge base

- ◆ 'Jump start'
- ◆ Customizable
- ◆ Guidance
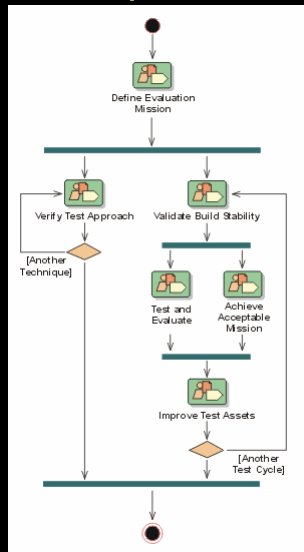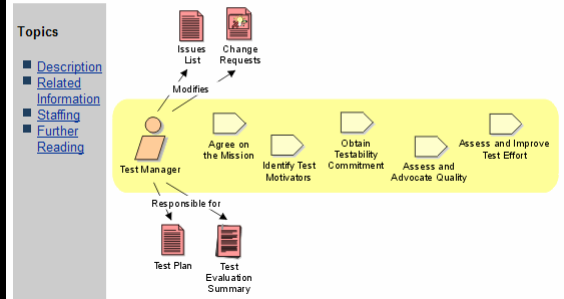  - ▪ Process (time)
  - ▪ Roles (discipline)

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Thank You

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