

## Test Discipline - Outline

### ♦ Relating Testing to Quality

- Timeliness of Testing
- Quality Attributes Gauge by Testing
- Roles

### ♦ Defining Test Discipline Activities

### ♦ Elaborating the Test Discipline

### ♦ Evaluating Testing Activities

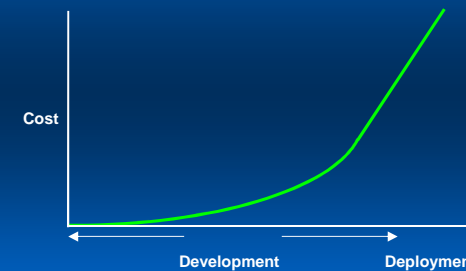
© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-1

## Early Testing Reduces the Cost of Quality

*Software problems are much more costly to find and repair after the software is deployed*



**UPEDU Concept: Product Quality**

© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-2

## Quality Attributes

Type	Why?	How?
<b>Functionality</b>	Is the application doing what is required?	Create test cases for each scenario implemented
<b>Reliability</b>	Is the application leaking memory?	Use analysis tools and code instrumentation
<b>Application Performance</b>	Is the application responding acceptably?	Check performance for each use-case/scenario implemented
<b>System Performance</b>	Is the system performing under production load?	Test performance of all use-cases under authentic and worst-case load

© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-3

## Test Discipline - Outline

### ♦ Relating Testing to Quality

### ♦ Defining Test Discipline Activities

- Types of Testing
- Test Planning and Design Activities
- Test Implementation Activities
- Test Execution Activities

### ♦ Elaborating the Test Discipline

### ♦ Evaluating Testing Activities

© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-4

## Levels of Testing Discipline

Level	Product Target	Activity Tested
Debugging	Chunk of source code	Programmer workmanship
Unit	Designed product unit	Implementer design realization
Integration	Architected product units	Implementer product realization
System	Product environment	Implementer product operation
Acceptance Alpha testing	Product functionality	Client product understanding
Beta testing	Product usability	Users product

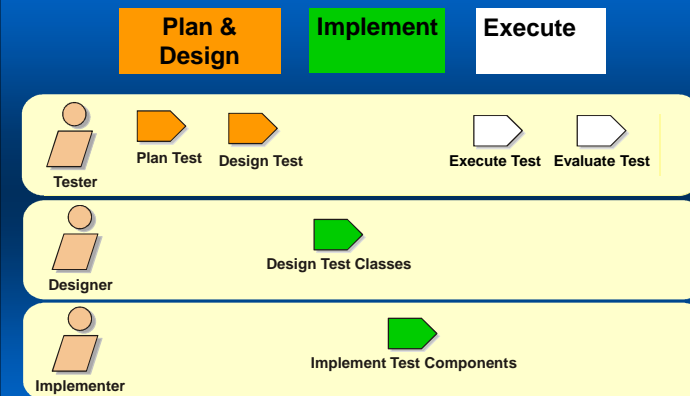
UPEDU Concept: Stages of Test  
UPEDU Concept: Acceptance Testing

© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-5

## Test Discipline Involves Many Activities

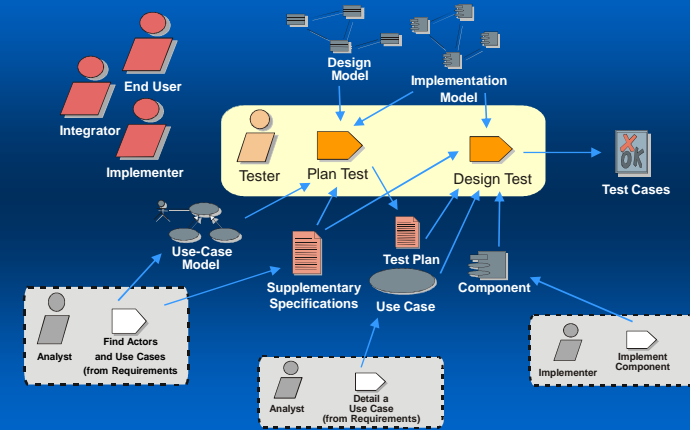


© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-6

## Test Planning and Design Activity

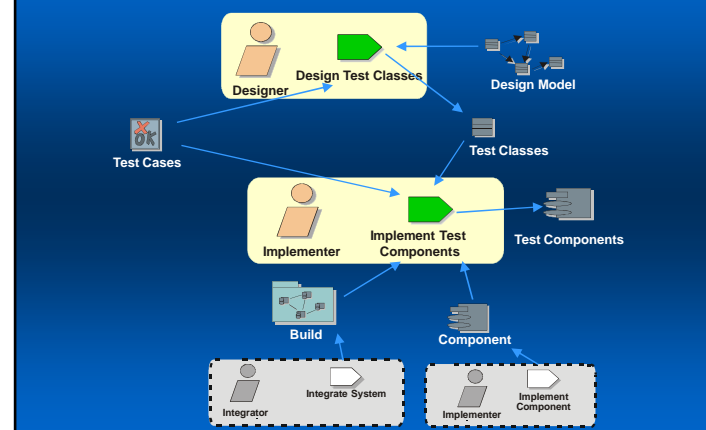


© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-7

## Test Implementation Activities



© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-8

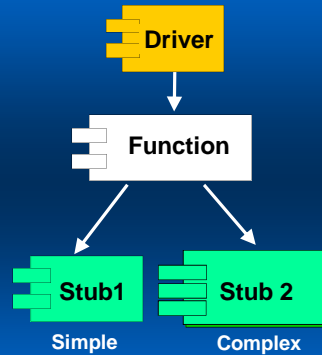
## The Functions of the Stubs & Drivers

### Driver:

An upstream software or interface that provides access to the Function

### Stub:

Software that simulates a downstream process

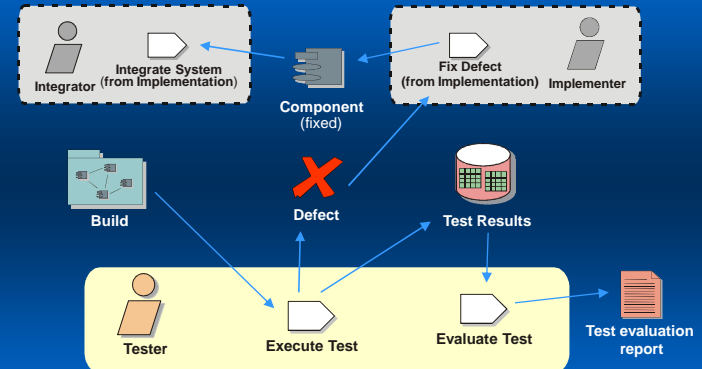


© 2000 École Polytechnique de Montréal & Rational Software

Learning software process with UPEDU

Slide 7-9

## Test Execution Activities

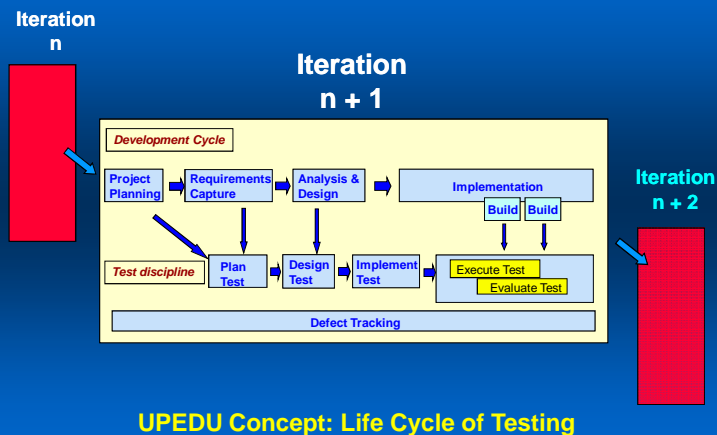


© 2000 École Polytechnique de Montréal & Rational Software

Learning software process with UPEDU

Slide 7-10

## Regression Testing is Emphasized



UPEDU Concept: Life Cycle of Testing

© 2000 École Polytechnique de Montréal & Rational Software

Learning software process with UPEDU

Slide 7-11

## Test Discipline - Outline

- ♦ Relating Testing to Quality
- ♦ Defining Test Discipline Activities

### ♦ Elaborating the Test Discipline

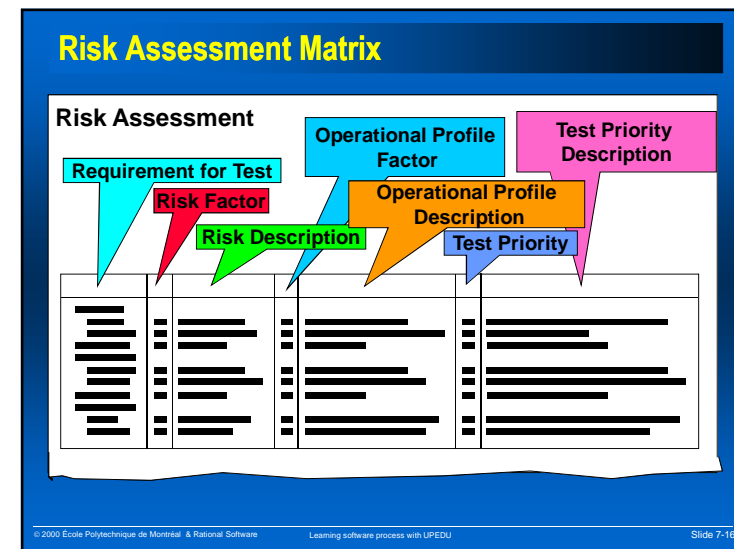
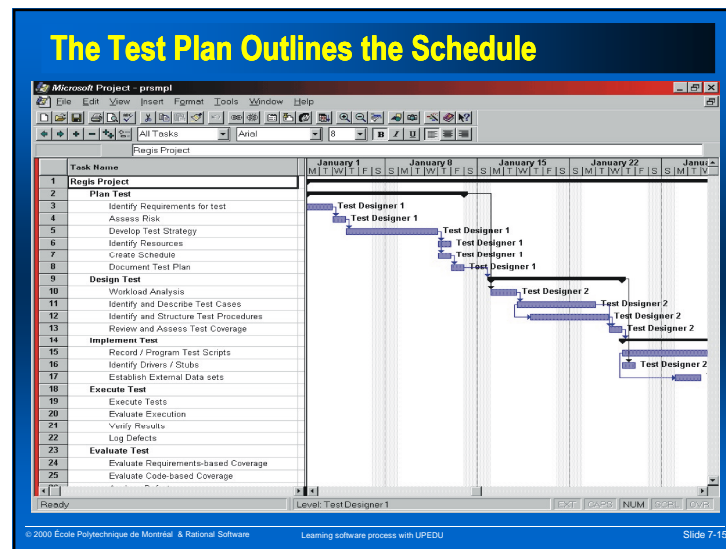
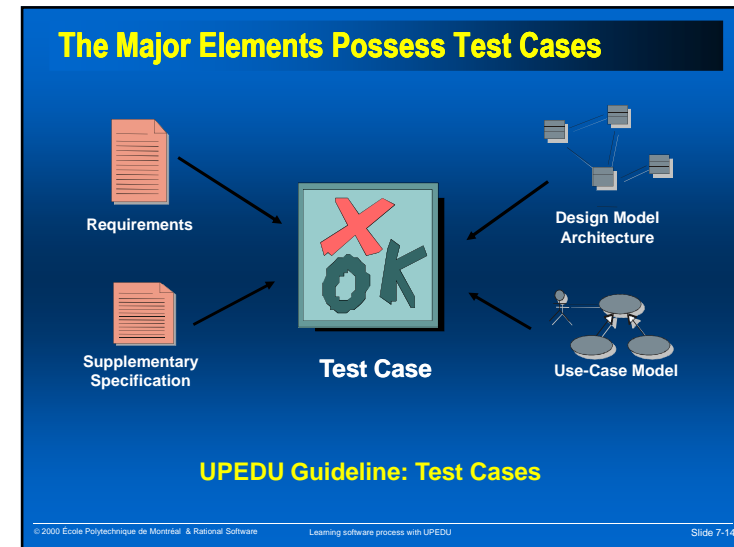
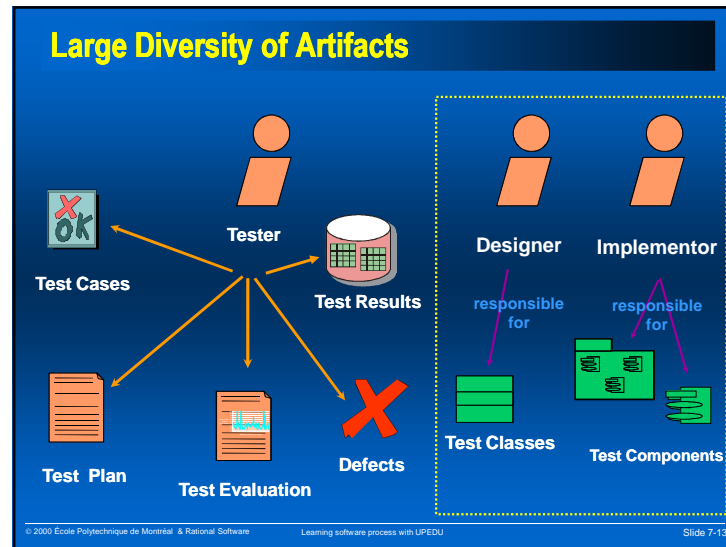
- Tests Cases
- The Test Plan
- The Risk Assessment Matrix
- Defect and Evaluation Reports

- ♦ Evaluating Testing Activities

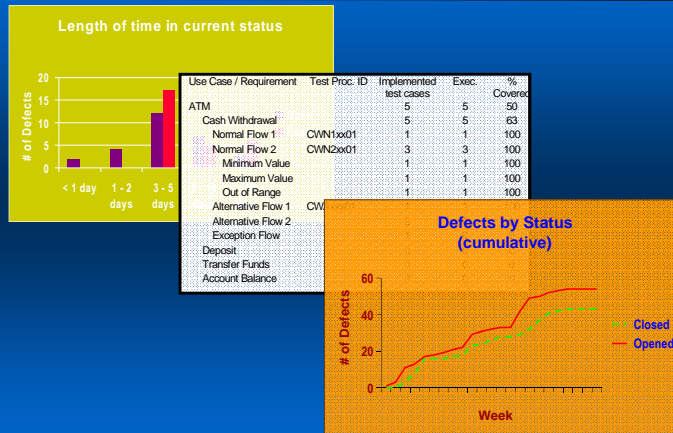
© 2000 École Polytechnique de Montréal & Rational Software

Learning software process with UPEDU

Slide 7-12



## A Defect Evaluation Report



© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-17

## Test Discipline - Outline

- ♦ Relating Testing to Quality
- ♦ Defining Test Discipline Activities
- ♦ Elaborating the Test Discipline

### ♦ Evaluating Testing Activities

- Are Defects Significant?
- Are Testing Activities Reliable?
- Is the Product Quality Met?

© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-18

## Four Main Parameters in Defect Analysis

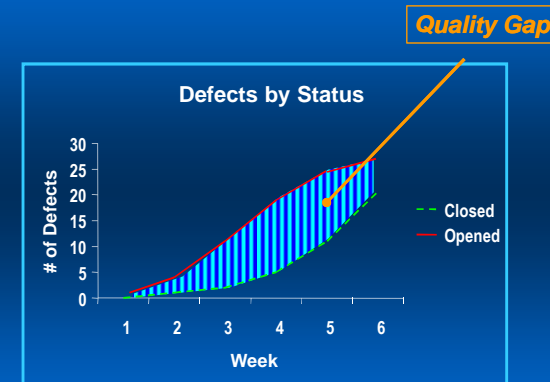
- ♦ Status
  - Open, being fixed, closed, etc..
- ♦ Priority
  - Resolve immediately, high priority, normal queue, low priority.
- ♦ Severity
  - Fatal error, major function not performed, minor annoyance.
- ♦ Source
  - Requirement, architecture, module N, lib.

© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-19

## Trend Reports Identifies Defect Rates



© 2000 École Polytechnique de Montréal &amp; Rational Software

Learning software process with UPEDU

Slide 7-20

