UML: From Use Case to User Acceptance

NAACCR 2002 Annual Meeting

Cancer Informatics Workshop

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Toronto, Canada

Session Outline

- The Use Case Model
- Specifying Activities
- What are Classes?
- How UML Becomes Software
- Keys to Success
- The Value of Iteration
- Interactive UML Group Activity
  - Developing a Model for Electronic Cancer Finding (E-Path)

30 Minutes

30-60 Minutes

Contact Information

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The Use Case Model

- Specifies all types of users
- Specifies all types of user interactions
- Describes the results of user interactions

The Use Case Model tells us who the <u>users</u> are and how they <u>interact</u> with the system.

The Essence of a Use Case

What is the system supposed to do
<u>for each type of user</u>?

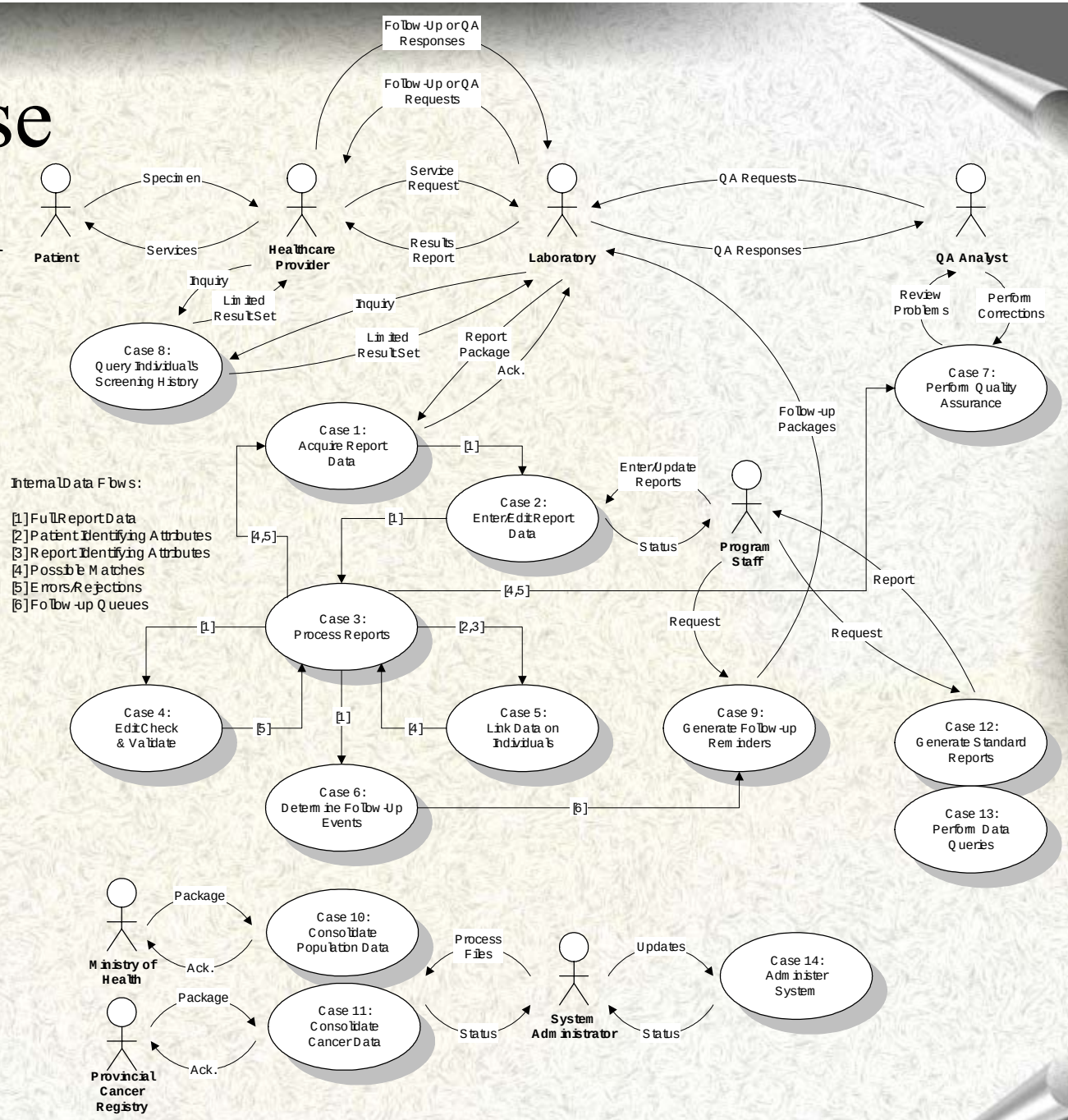
- Identifies a user interaction
- Specifies any pre-conditions
- Specifies the results/products of the interaction
- Lists the functional requirements of the interaction
- Lists policy and business rules (if any)

Example Use Case Model

Tracking, follow-up and prevention of cervical cancer.

Source:

AIM Inc.
ISIS-CSP Software Specifications
Copyright © 1996-2002



Activity Diagrams

- Describe a sequence of actions (workflow)
- Describe responsibility (who does what)
- Describe conditions and branches

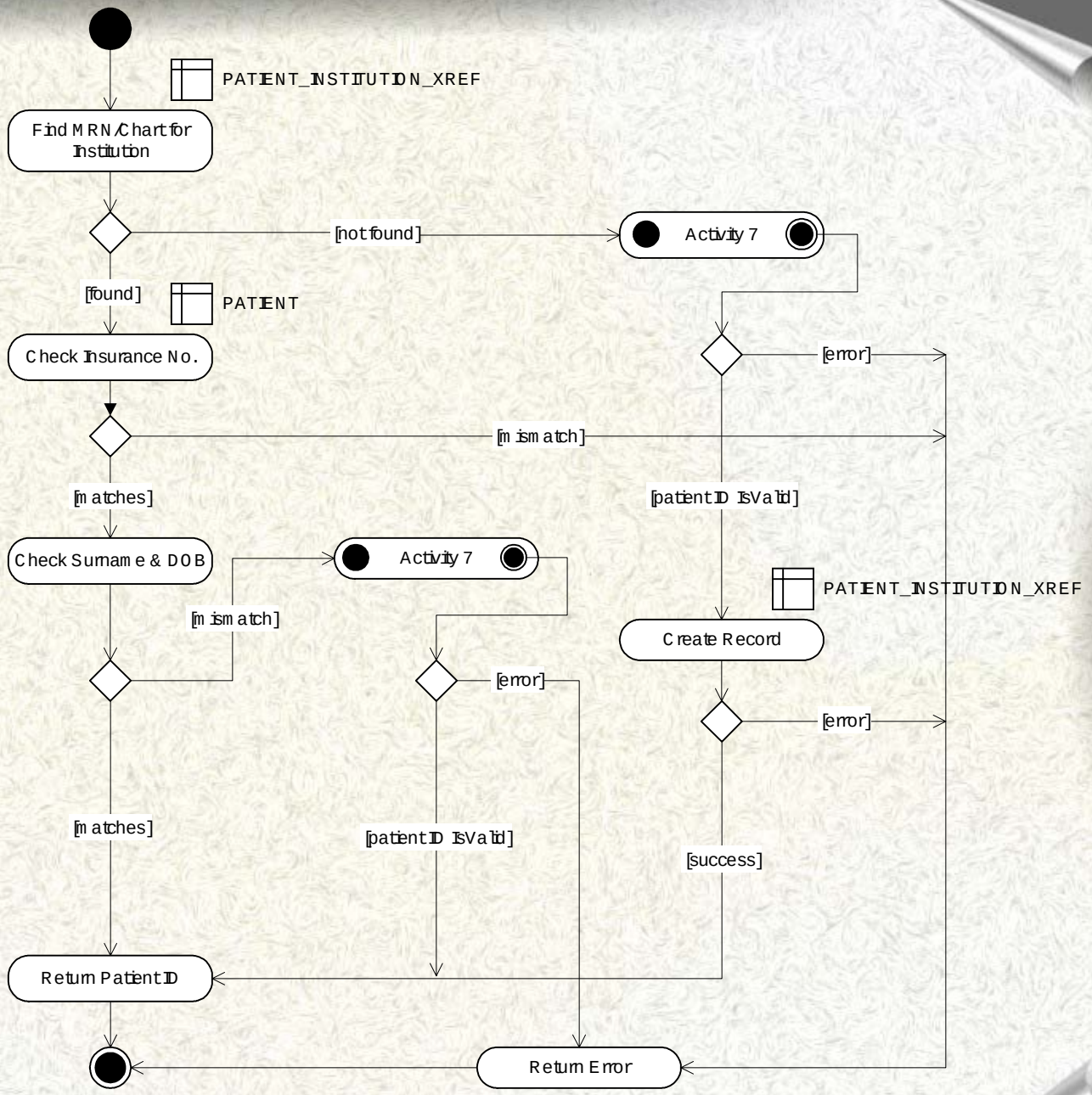
Activity diagrams tell us <u>how</u> things are done and according to <u>what rules</u>.

Example Activity Diagram

Automated Record Linkage

Source:

AIM Inc.
ISIS-Registrar (Enterprise)
Copyright © 1998 - 2002



What is a Class?

- A class is an abstraction of something
- A class is described by attributes
- A class can perform operations
- An instance of a class is a specific thing

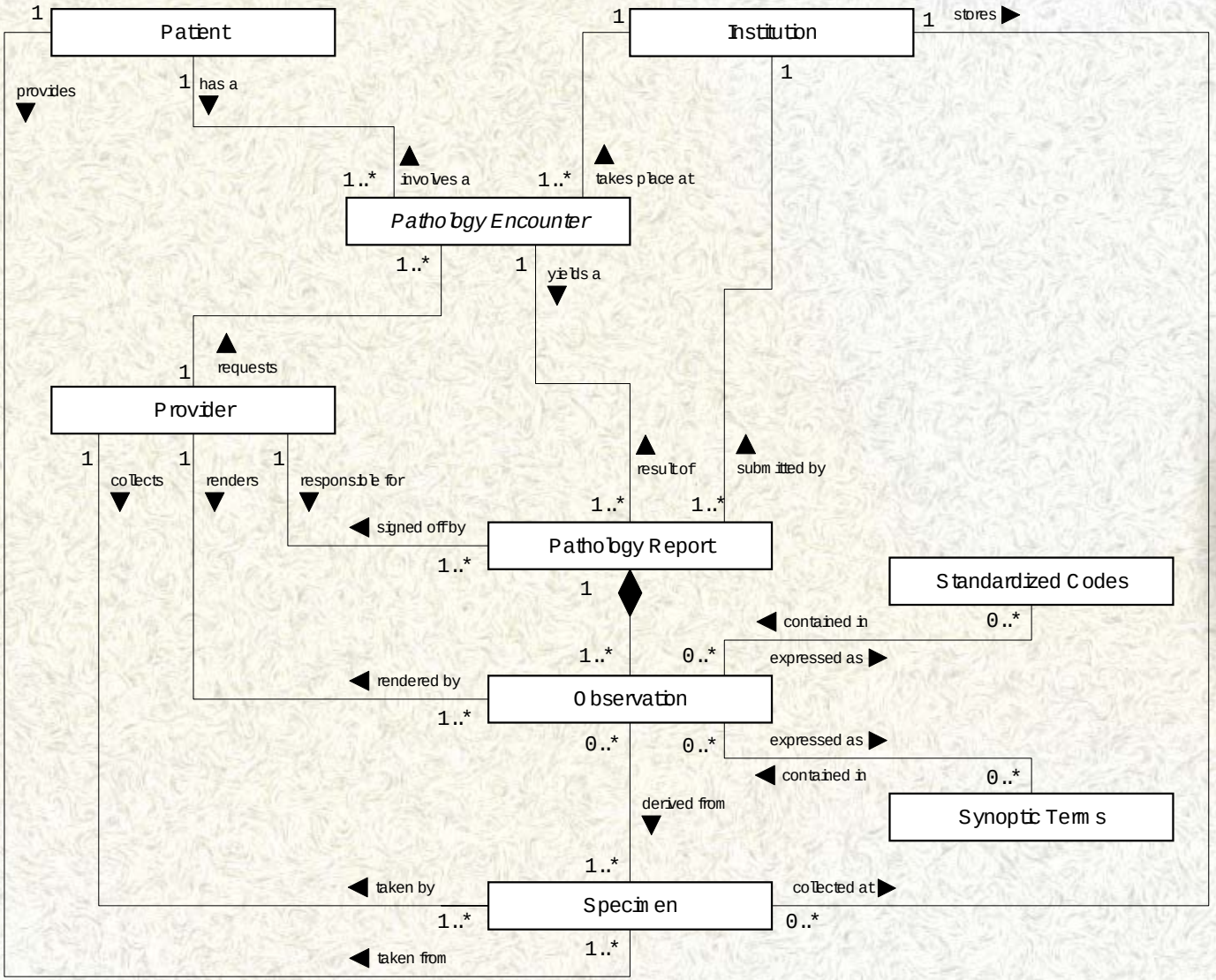
Class diagrams describe system <u>components</u>, what they're for, and what they do.

Example Class Diagram

Histology Entity Relationships

Source:

AIM Inc.
E-Path Design
Copyright © 1998 - 2002

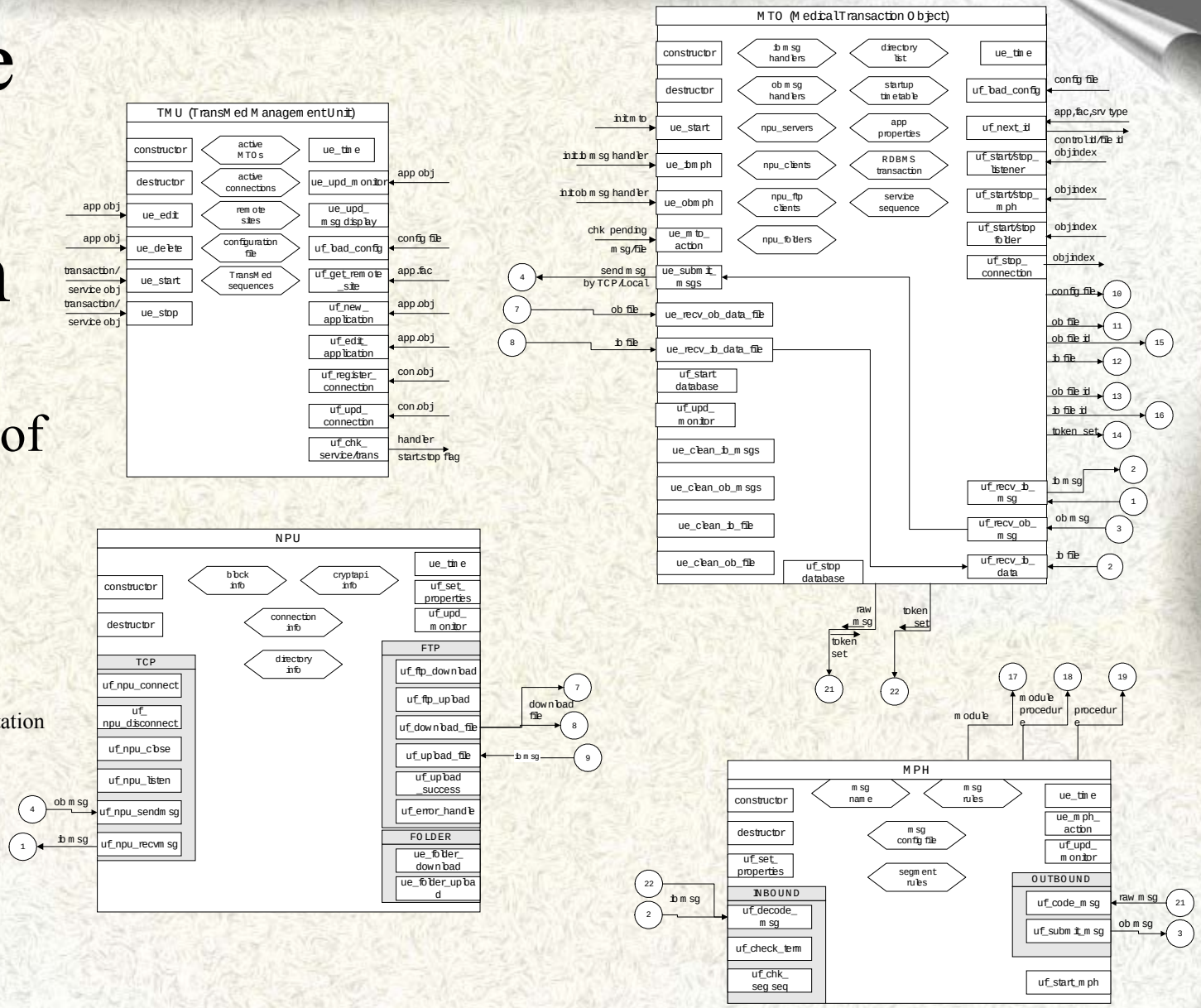


Example Class Diagram

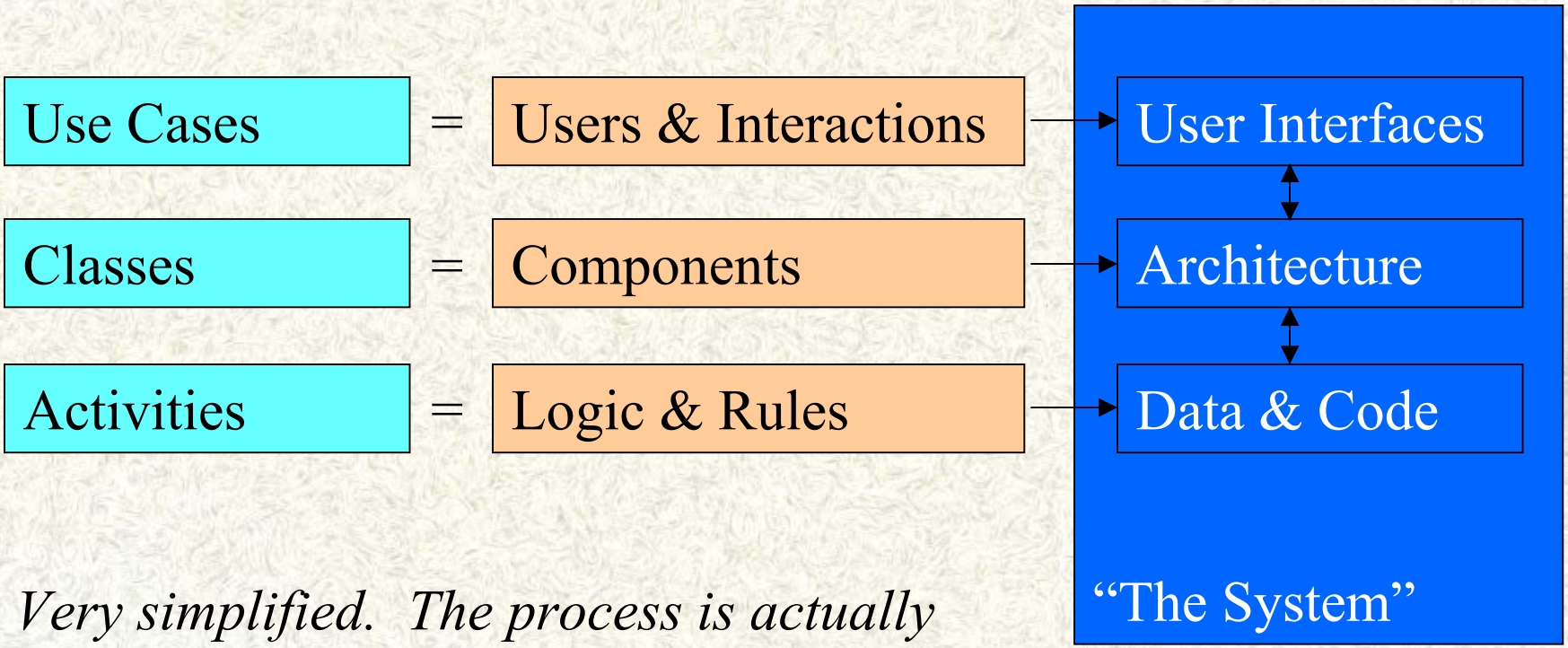
Electronic Transmission of Pathology Reports

Source:

AIM Inc.
TransMed EDI Design Documentation
Copyright © 1996-2002



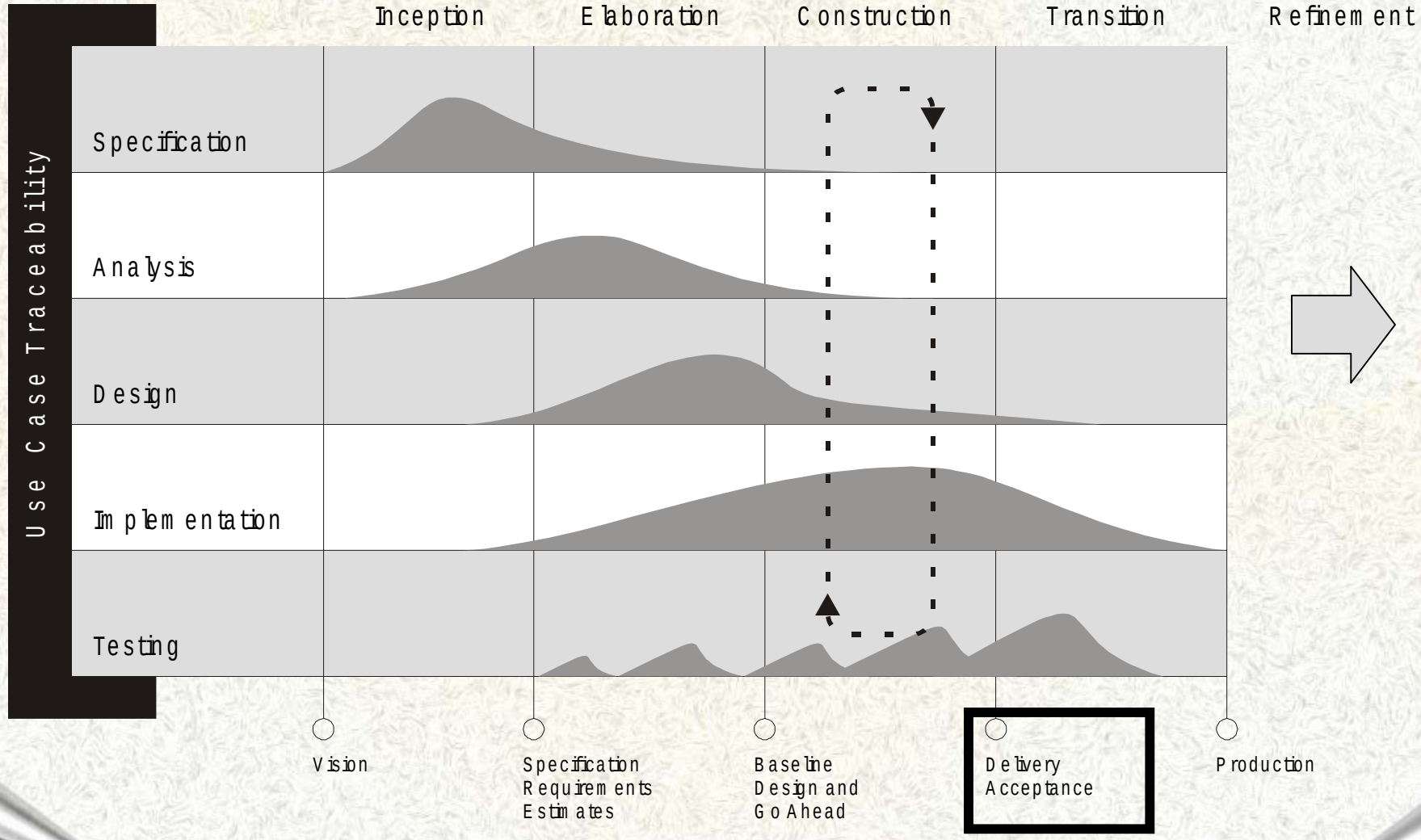
How UML Becomes Software



Very simplified. The process is actually more complex and usually iterative.

Use Case Driven Development

Source: The Unified Software Development Process: Jacobsen, Booch, Rumbaugh, 1999



Keys to Success

- Specifications & analysis come first.
- Design before you build.
- Test early and often.
- Document all components.
- Acceptance doesn’t mean the end.

The Value of Iteration

- Recognize that not everything can be specified in advance.
- New ideas emerge as systems are developed.
- Anything that can go wrong, will!
- Iteration identifies and mitigates risk.
- “Iterative” is not the same as “endless”.

The Unified Process

- "Unified" means client and vendor are working together using a common framework*.
- Focused on value (use case driven)
- Architecture centric (reusability, scalability)
- Iterative (mitigate risk)

*Unification actually refers to the consolidation of the original object oriented design methods developed by Jacobson, Rumbaugh and Booch, but I propose that what UML also accomplishes is a unification between client and vendor in the understanding of a system.

Hands-On Exercise

Statement of Objectives

Developing a Use Case Model

Writing Use Case Specifications

Writing User Acceptance Criteria

Objective

A cancer registry wishes to improve the process of cancer case finding and data consolidation in its jurisdiction. The metrics to be used in assessing success are:

- Timeliness of Case Finding
- Completeness and Quality of Data
- Operating Costs

The Use Case Model

- Who are the actors?
- What work is performed as-is?
- Identify problems/issues with the as-is model.
- What can we change? Improve?
- Develop the to-be model

Writing Specifications

- Use Case ID
- Context
- Actors
- Work/Process Description
- List of Functional Requirements
- List of Policies/Rules

User Acceptance

- Use Case ID
- Implementation Notes
- Fulfillment of Functional Requirements
- Policy/Rule Validation
- Acceptance Status

The End

Thank you for your attention.