

Introduction to UML

Comp 47480: Object Oriented Design

What is UML?

UML stands for **U**nified **M**odeling **L**anguage.



UML is a standard general-purpose modeling language used to create visual models of object-oriented software systems.

It can be used to model:

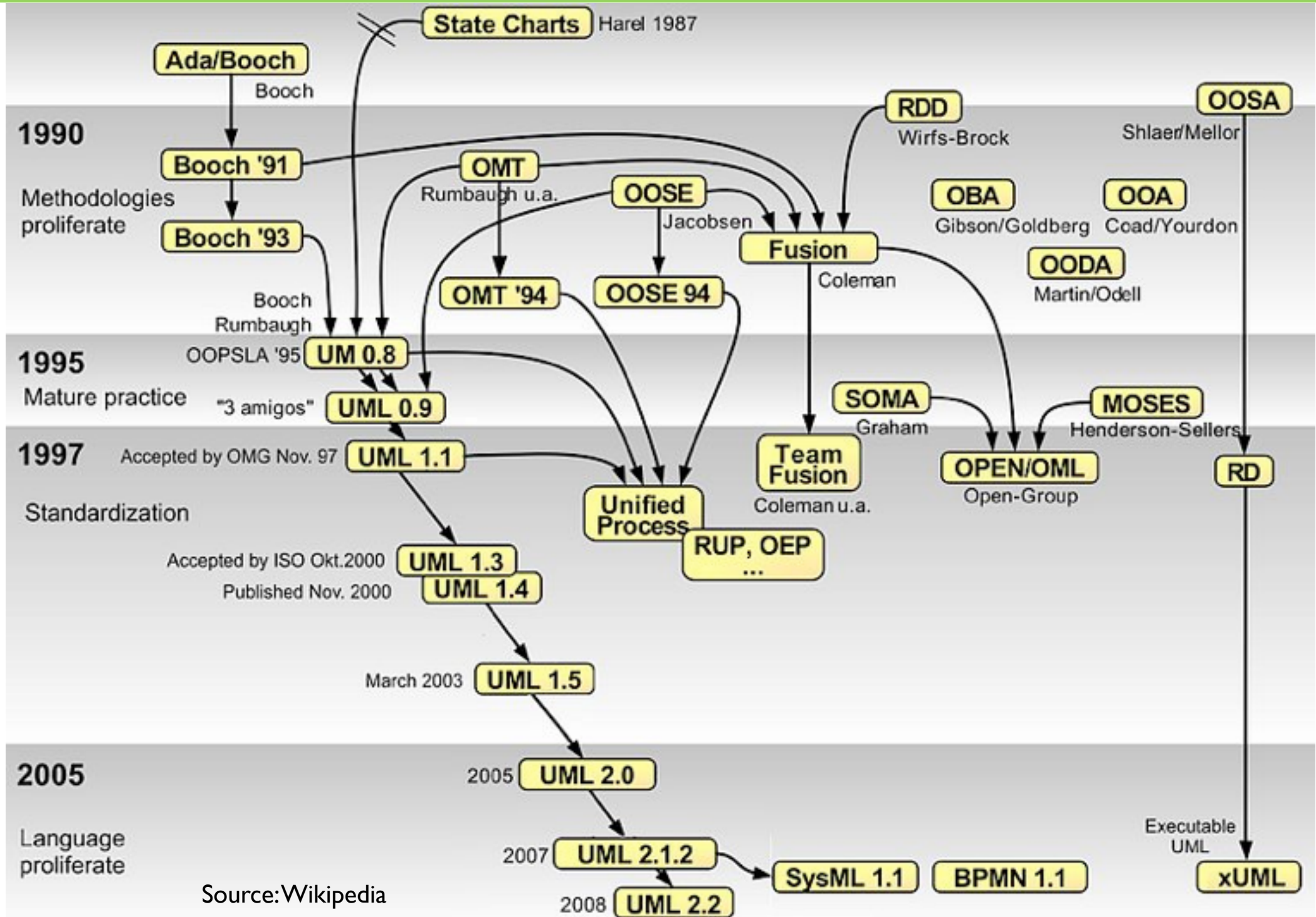
- system structure

- system behaviour

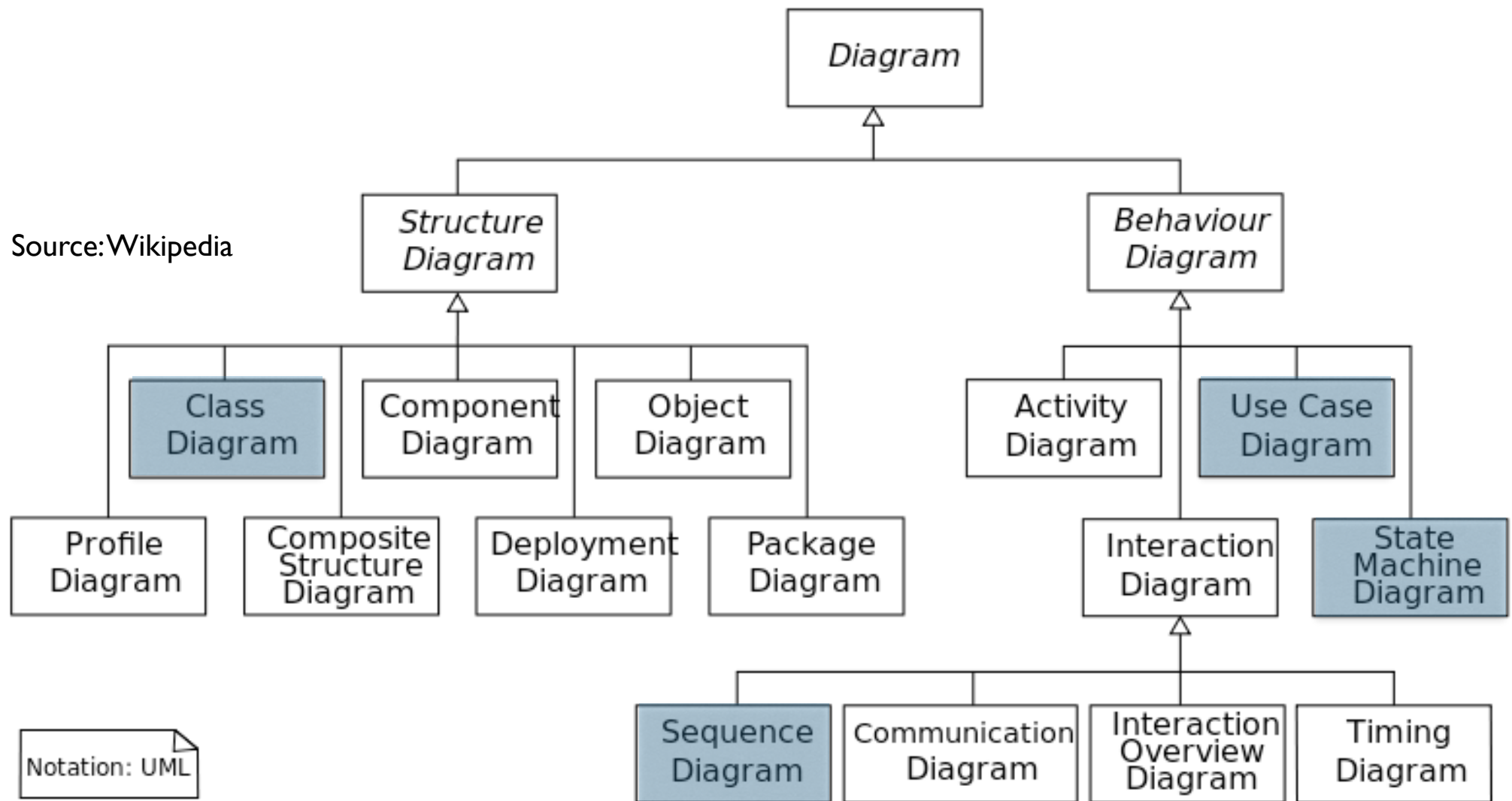
- system architecture

and more.

Where did UML come from?

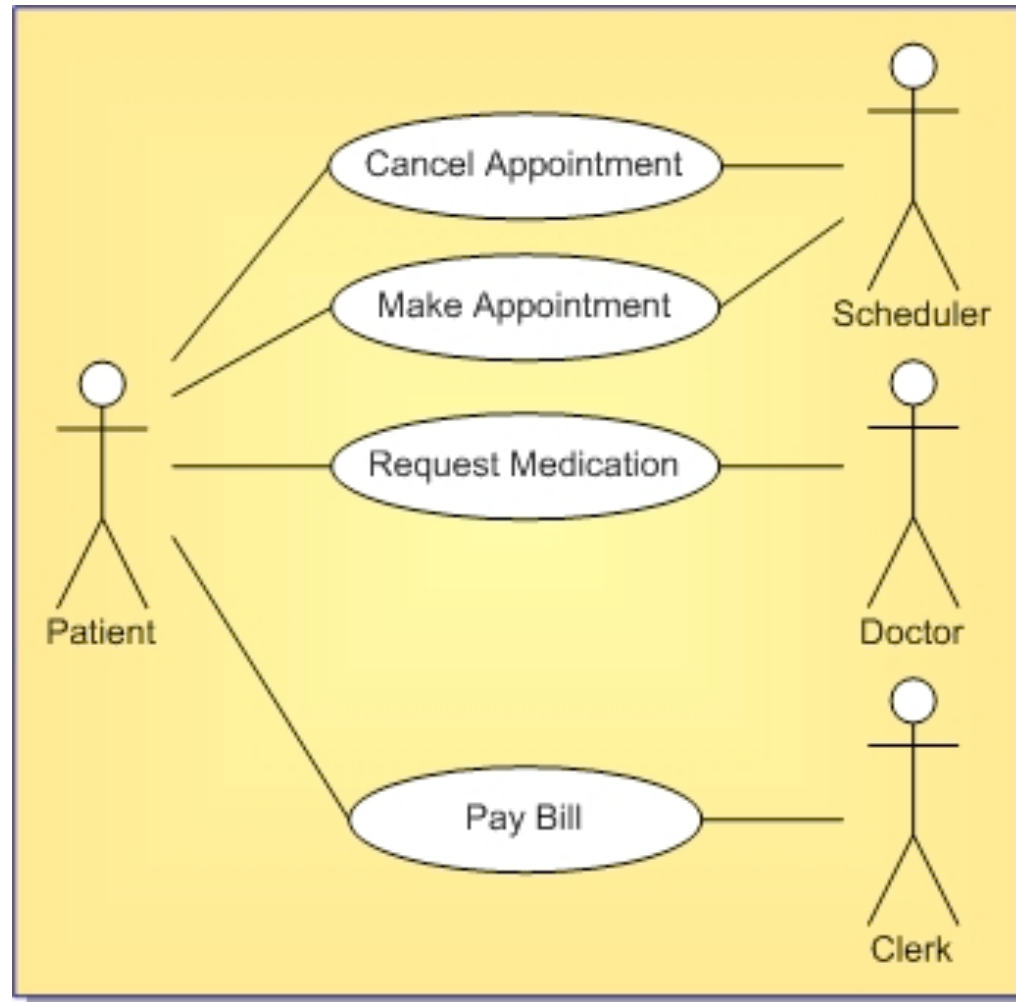


UML Diagram Types



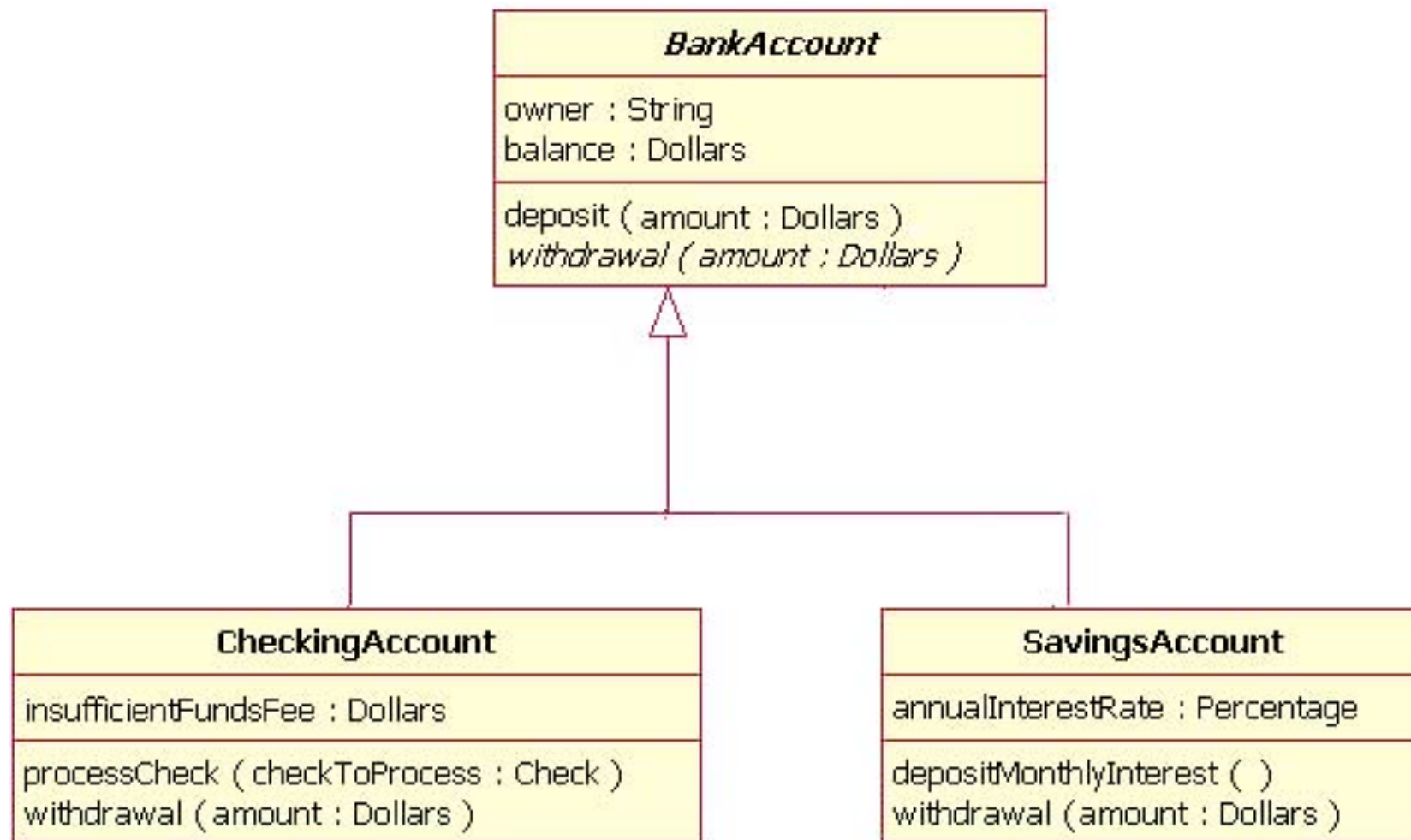
14 diagram types in total! We'll examine only a small number of them (shaded).

Sample UML Use Case Diagram



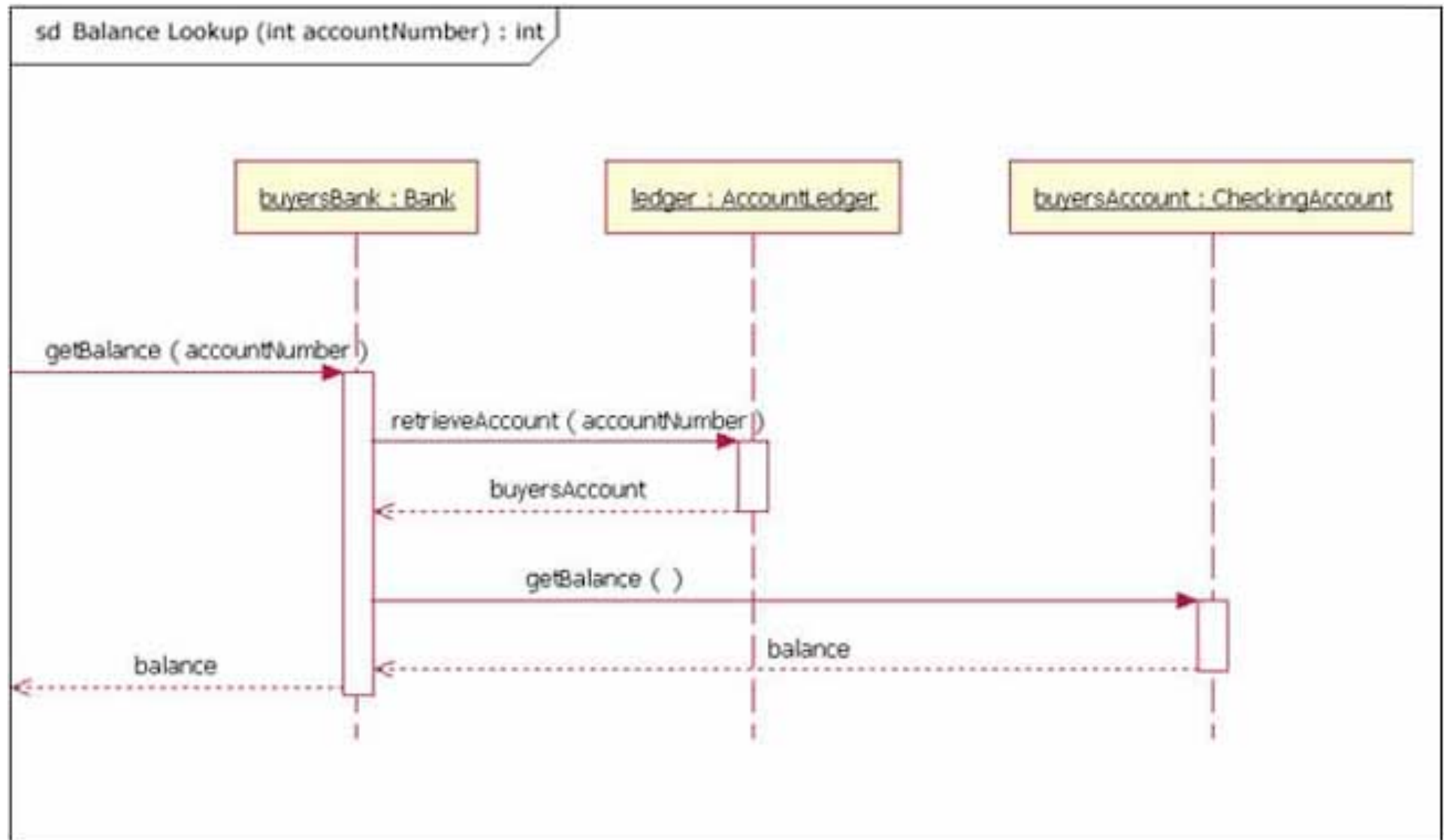
Source: Embarcadero Technologies

Sample UML Class Diagram



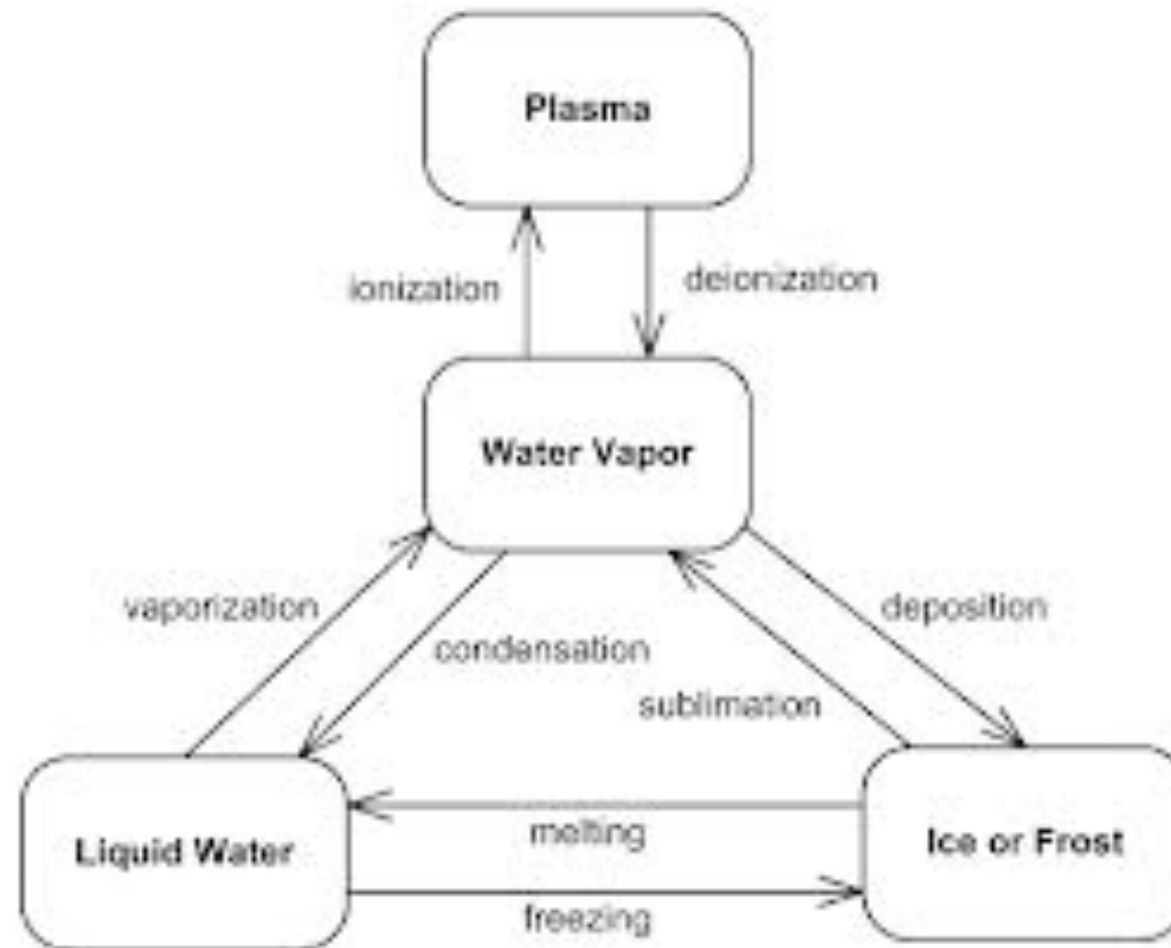
Source: Rational

Sample UML Sequence Diagram



Source: Rational

Sample UML State Machine



Source: uml-diagrams.org

Empirical data on UML Usage

Summary of a 2013 study of UML usage:

TABLE I. DECLARED CURRENT UML USE AMONG 50 PROFESSIONAL SOFTWARE DEVELOPERS FROM 50 COMPANIES.

Category of UML Use	Instances of Declared Current Use
no UML	35
retrofit	1
automated code generation	3
selective	11
wholehearted	0

However, all practicing software developers know basic UML and use it to communicate, e.g. in discussing alternative designs.

Source: Petre, Marian, UML in practice, In: 35th International Conference on Software Engineering (ICSE 2013), 18-26 May 2013, San Francisco, pp. 722–731.

Some Practical Notes

UML is a **large** standard that covers all aspects of OO modelling and metamodeling.

Many of the diagram types are not used much in practice.

Few companies actually use UML to create a design that is used to drive the software implementation.

However, all practicing software developers know basic UML and use it to communicate, e.g. in discussing alternative designs.

In the coming lectures, we'll explore the most commonly-used UML diagram types.