



The Unified Modelling Language (UML)

What is UML ?



Unified Modeling Language (UML)

- **Standardized** (by the Object Management Group – OMG) **specification language** for **object-oriented modelling**.
Actually, the UML is a **collection** of languages.
- Mostly **visual syntax** (diagrams), though the Object Constraint Language – OCL has textual syntax.
- UML has notations for describing **requirements**, **design** (down to **code** level if desired), and **deployment**.

What is it not?

- A **programming language**, but it can be used to generate code in some programming language if enough detailed information is specified.

Modelling is usually done at a **higher abstraction level** than coding.

- A **process**. The Rational Unified Process (RUP) is the companion development process.

Unified Modelling Language

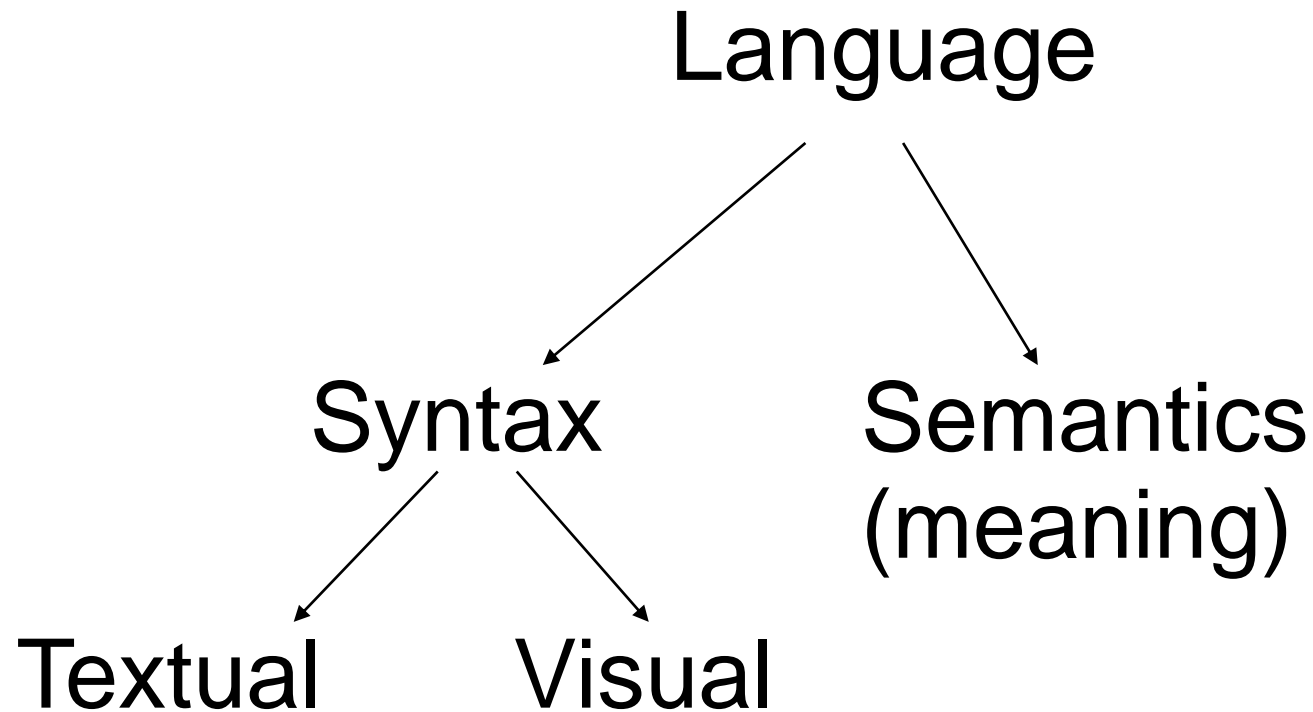
← reading left to right →

	An A is always associated with one B	An A is always associated with one or more B	An A is associated with zero or one B	An A is associated with zero, one, or more B
<i>Booch</i> (1st ed.)				
<i>Booch</i> (2nd ed.)*				
<i>Coad</i>				
<i>Jacobson</i> **				
<i>Martin/Odell</i>				
<i>Shlaer/Mellor</i>				
<i>Rumbaugh</i>				
<i>Unified</i>				

* may be unidirectional
 ** unidirectional

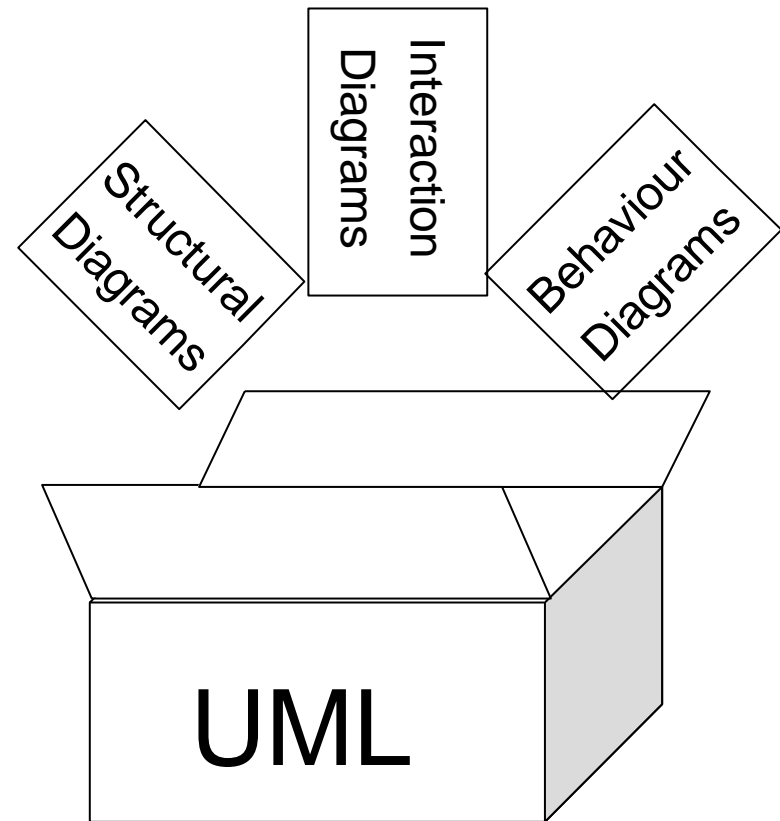
(from UML Distilled - Fowler)

Unified Modelling Language



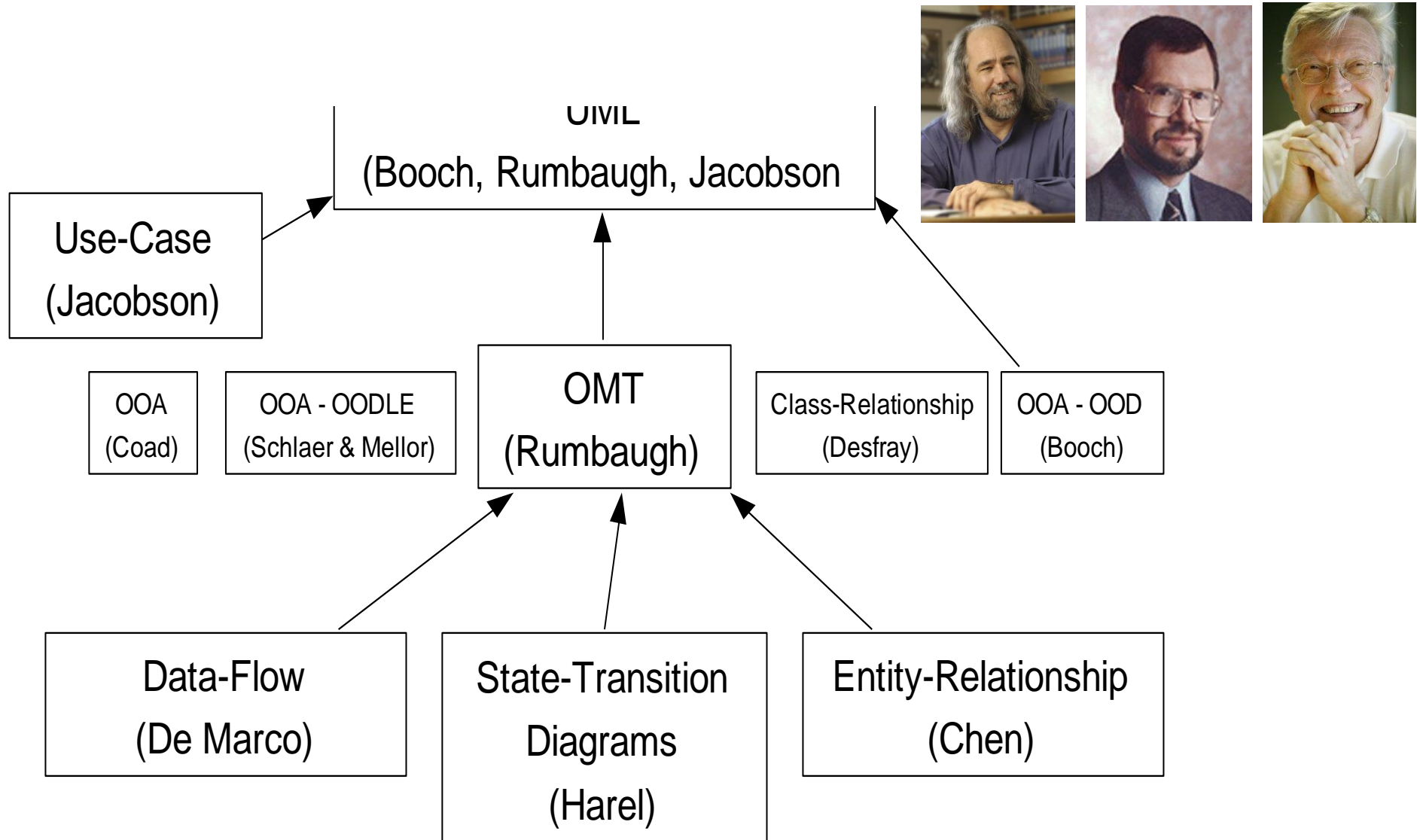
UML: collection of notations/languages

- **Requirements:**
 - ◆ Use Case Diagram
- **Structural:**
 - ◆ Class Diagram
 - ◆ Package Diagram
 - ◆ Component Diagram
- **Interaction:**
 - ◆ Communication Diagram
 - ◆ Sequence Diagram
- **Behaviour:**
 - ◆ Activity Diagram
 - ◆ State Machine Diagram (Statechart)
- **Deployment:**
 - ◆ Deployment Diagram



- Mid- to late- 1990's
- “3 AMIGOS”
(Grady Booch, Jim Rumbaugh and Ivar Jacobson)
- Joined together to unify their individual ventures
- Each was working on some sort of O.O. modeling technique/process

History



CamelCase

- Practice of writing compound words or phrases where the words are joined without spaces, and each word is capitalized within the compound.
 - ◆ CsGames,LinkedList, eBay, PowerBook, WestJet
- The terms UpperCamelCase and lowerCamelCase are used to distinguish two types of CamelCase.
 - ◆ UpperCamelCase
 - ◆ lowerCamelCase



UML 2.0 (main) Views

■ Structure

- ◆ Use Case
 - *Use Case Diagram* (Requirements)
- ◆ Design
 - *Class Diagram* (Model, Entities and their Relationships)
 - *Component Diagram* (Interface, Entry/Exit Point)

■ Behaviour

- ◆ State Machine
 - *Statecharts* (State/Transition, Reaction)
- ◆ Activity
 - *Activity Diagram* (Workflow)
- ◆ Interaction
 - *Communication Diagram* (Relationships, Implementation of operation)
 - *Sequence Diagram* (Scenario, Along time)

■ Deployment

- *Deployment Diagram* (Physical, Files, Machines)