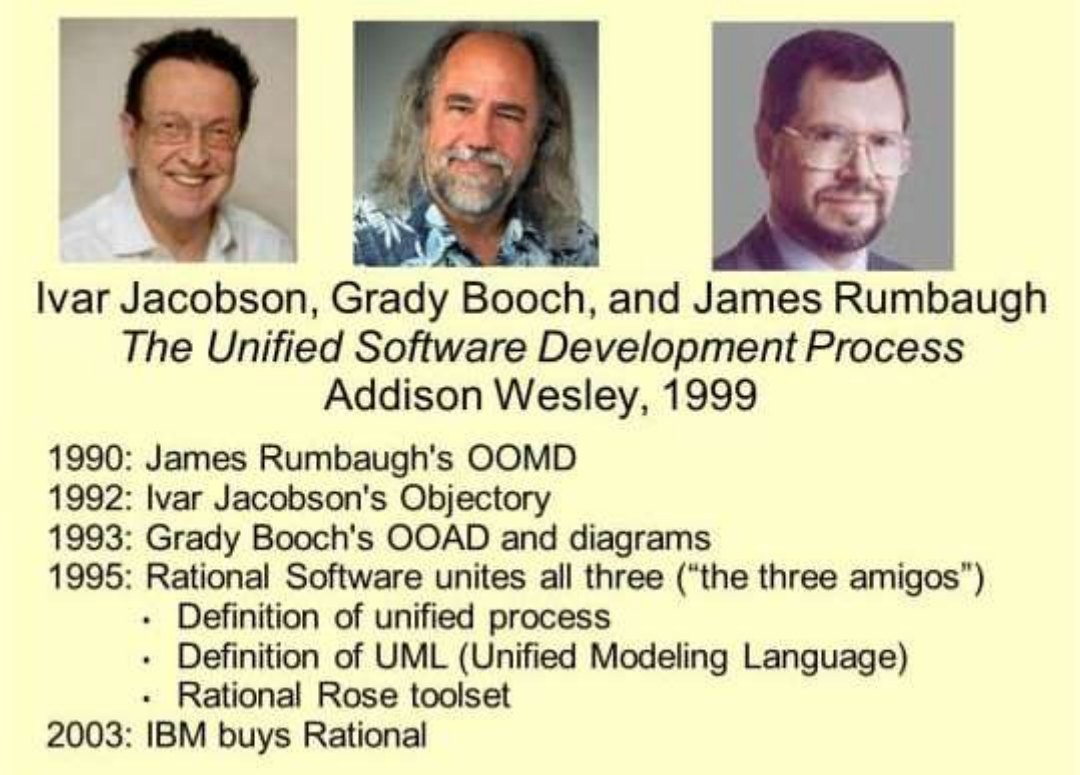
Brainstorming Session Report: The "Three Amigos" and Unified Modeling

Date :- 07/07/2025

Objective

The primary goal of this session is to use **brainstorming** to connect the historical information in the below image (The "Three Amigos" and the development of UML/USDP) with current concepts in **software engineering**, **object-oriented programming (OOP)**, and **system design**.

- **Pedagogical Method:** Brainstorming (unstructured idea generation, group discussion).
- **Topic Focus:** History and significance of **UML** and the **Rational Software Development Process**.



Brainstorming Prompts (Questions for Students)

Divide the class into small groups and assign a few of the following open-ended questions. Encourage them to write down *all* ideas, no matter how wild, for a set time(5 to 7 Min)

Prompt Set A: Historical Significance & Merger

1. Why was it important for these three different methods (OOMD, Objectory, OOAD) to **unite** into a single standard (UML) in 1995? What problems does a lack of standardization create in software development?

2. The image mentions **"OOAD and diagrams."** Why are *diagrams* so crucial to communicating complex software design, and how is this similar to other fields (e.g., architecture, electrical engineering)?
3. **IBM bought Rational in 2003.** What does this acquisition signify about the value and importance of the methodologies and tools (like Rational Rose) developed by "The Three Amigos"?

Prompt Set B: Conceptual Application

1. **UML Use Cases:** Brainstorm as many real-world scenarios as possible where a **UML Use Case Diagram** (detailing user interaction with a system) would be essential before writing any code. (e.g., ATM transaction, online shopping cart).
2. **Object-Oriented Thinking:** How does the concept of **"object-oriented"** differ from traditional, sequential (procedural) programming? Provide analogies for objects (e.g., a car is an object with methods like `accelerate()` and attributes like `color`).
3. **Process vs. Language:** The image lists both a unified *process* (USDP/RUP) and a *language* (UML). What is the difference between a **process** (how you do it) and a **language** (how you document it) in software development?

Brainstorming Activity Report: RUP in Practice

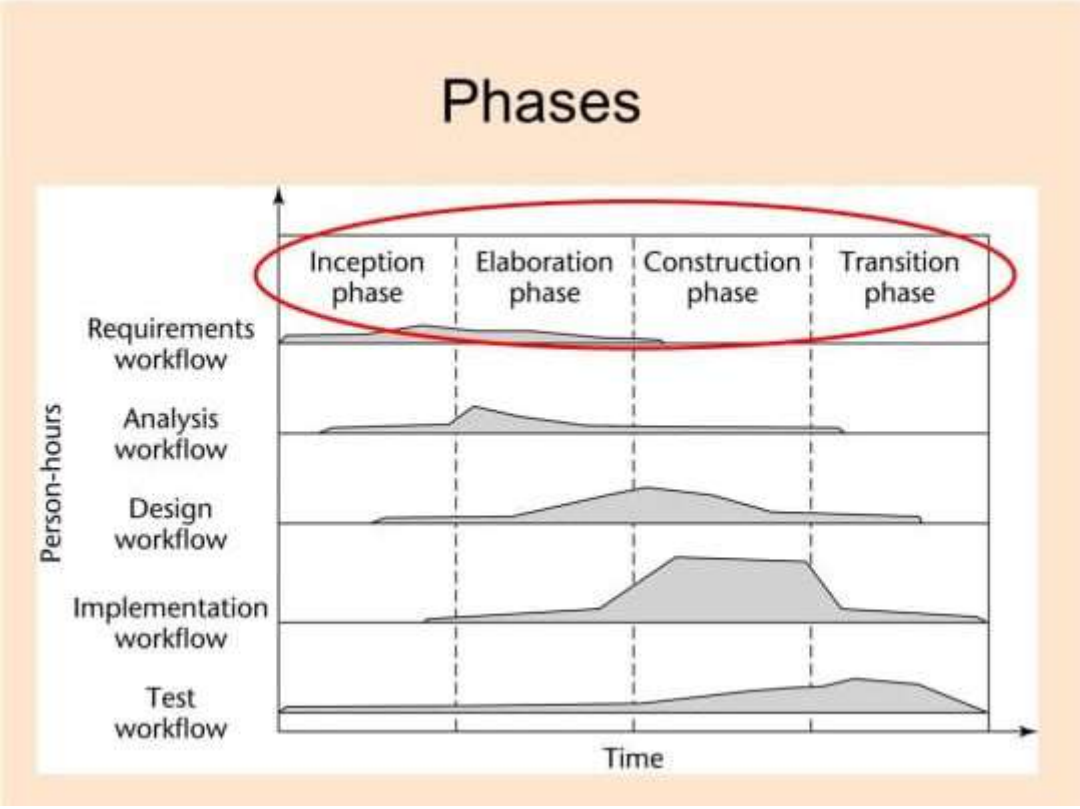
Date :- 28/07/2025

Activity Goal

To apply the abstract concepts of the **Rational Unified Process (RUP) Phases** (Inception, Elaboration, Construction, Transition) and **Workflows** (Requirements, Design, Implementation, Test) to a concrete, real-world project scenario.

Setup and Structure:-

- **Group Size:** Students are organized into teams of 4–5.
- **Time Allotment:** 25 minutes total (5 minutes per phase/topic).
- **Scenario: "Designing and launching a new Mobile App for tracking fitness goals and sharing progress."**
- **Tool:** Large poster paper or a shared digital canvas divided into the four RUP phases.



Phase 1: Inception Brainstorm (5 Minutes)

Goal: Defining the vision and confirming feasibility.

Prompt	Key Questions for Groups	Expected Output (Sample Ideas)
Business Case & Scope	What is the core problem we are solving? Who is the target user? What is the *must-have* feature for version 1.0?	*Target users: Young adults, post-COVID fitness drop-off. Must-have: Basic activity logging (steps/distance). Non-goal: Integrating with 50 different smartwatches.*

Prompt	Key Questions for Groups	Expected Output (Sample Ideas)
Risks	What are the biggest technical or business risks we face?	*Risk 1: Inaccurate GPS tracking. Risk 2: High cost of server maintenance for user data. Risk 3: Competitor already dominates the market.*
Workflow Focus	Which RUP workflow dominates this phase?	**Requirements Workflow** (Initial high-level understanding).

Phase 2: Elaboration Brainstorm (5 Minutes)

Goal: Establishing a stable, functional architecture.

Prompt	Key Questions for Groups	Expected Output (Sample Ideas)
Key Use Cases	What are three critical interactions we must model in detail using UML diagrams?	*1. Logging a Workout. 2. Viewing a Friend's Profile. 3. Resetting a Password.*
Architectural Decisions	What major technical decisions must be made now to support the app's growth? (e.g., cloud platform, database type)	*Architecture: Microservices vs. Monolithic. Technology: Choose between AWS/GCP/Azure. Decision: Use a NoSQL database for flexible user data.*
Workflow Focus	Which RUP workflow dominates this phase?	**Analysis & Design Workflow** (Defining the structure).

Phase 3: Construction Brainstorm (5 Minutes)

Goal: Implementing the core features and testing functionality.

Prompt	Key Questions for Groups	Expected Output (Sample Ideas)
Implementation Sprints	What are three main feature sets that can be built and tested in separate *sprints* (mini-iterations)?	*Sprint 1: User Login and Profile Creation. Sprint 2: Real-time GPS Tracking Module. Sprint 3: Social Sharing Integration.*
Measurement	How do we measure the progress of the development team?	*Metrics: Code coverage (Unit Tests), Number of features delivered per sprint, Number of critical bugs found/fixed.*
Workflow Focus	Which RUP workflow dominates this phase?	**Implementation Workflow** (Writing and integrating code).

Phase 4: Transition Brainstorm (5 Minutes)

Goal: Releasing the product and ensuring user adoption.

Prompt	**Key Questions for Groups**	**Expected Output (Sample Ideas)**
Release Activities	What steps must happen right before and after the official launch?	*Pre-Launch: Final security audit, Load Testing (Can it handle 10,000 users?), User Acceptance Testing (UAT). Post-Launch: Monitoring server logs, establishing a 24/7 support channel.*
User Feedback	What is the fastest way to collect feedback from the first 1,000 users?	*In-app survey prompt after 3 uses. Dedicated email support line. Reviewing App Store comments.*
Workflow Focus	Which RUP workflow dominates this phase?	**Test Workflow** (System and Acceptance Testing).

This activity uses brainstorming to turn the static diagram into a dynamic plan, reinforcing the practical application of RUP in software development.