**Objective:** To develop a chat application similar to WhatsApp using three different software development methodologies: Test-Driven Development (TDD), Behavior-Driven Development (BDD), and Feature-Driven Development (FDD).

**Methodology:**

**1. Test-Driven Development (TDD):**

* **Step 1: Write Test Case:**
  + Features that will be included in this chat will be:
    - Chat
    - Video call
    - Voice call
    - Multimedia transfer
    - End to end encryption
  + Writing test cases for the application:
    - Chat must be sent and received
    - Voice call should work over wifi as well mobile data.
    - Multimedia must be discovered and must have no problem over sharing the media to the receiver.
* **Step 2: Write Code to Pass Tests:**
  + Writing the code:
    - {  
        
      Implementing the   
      code here//  
        
      }
  + Code the program for easy and simple testing
* **Step 3: Restructure and Repeat:**
  + Restructure the code to improve readability, efficiency, and maintainability.
  + Repeat the process for each new feature or functionality.

**2. Behavior-Driven Development (BDD):**

* **Step 1: Define User Stories:**
  + Set-up a meeting with the clients to define user stories, outlining the desired behaviors and functionalities of the chat application.
  + Each user story should be written from the perspective of a user.
* **Step 2: Write Feature Files:**
  + Translate user stories into feature files using a BDD framework like Cucumber.
  + Define scenarios and steps for each feature, focusing on the behavior rather than implementation details.
* **Step 3: Implement Step Definitions:**
  + Write step definitions for each scenario, mapping them to the corresponding code.
  + Implement the code to make the scenarios pass, adhering to the behavior specified in the feature files.
* **Step 4: Review and Refine:**
  + Review the feature files and step definitions with stakeholders to ensure alignment with user expectations.
  + Refine and iterate on the implementation based on feedback.

**3. Feature-Driven Development (FDD):**

* **Step 1: Identify Features:**
  + Break down the overall chat application into smaller, manageable features such as user authentication, message encryption, group chats, etc.
* **Step 2: Develop Feature Sets:**
  + Assign feature sets to development teams based on their expertise and availability.
  + Each feature set should include one or more features that can be developed independently.
* **Step 3: Design and Build Features:**
  + Design the architecture and interfaces for each feature set.
  + Implement the features using incremental development cycles, focusing on delivering working functionality.
* **Step 4: Integrate and Validate:**
  + Integrate the developed features into the main codebase regularly.
  + Validate the integrated features through testing and user feedback.
* **Step 5: Iterate and Enhance:**
  + Iterate on the development process, incorporating feedback and addressing any issues or enhancements.
  + Continuously enhance the chat application by adding new features or improving existing ones.

**Conclusion:** By following a combination of Test-Driven Development (TDD), Behavior-Driven Development (BDD), and Feature-Driven Development (FDD), we aim to develop a robust and feature-rich chat application that meets the requirements and expectations of the users. This iterative and collaborative approach ensures the delivery of high-quality software with a focus on functionality, behavior, and user experience.