

Explanation of the Takatuf System Development Methodology

The methodology adopted for developing the **Takatuf System** is a **hybrid methodology** that combines three core elements:

Agile, ERD, and OOAD.

First: Agile

The Agile approach was adopted because it perfectly suits the nature of student projects. The requirements were not fixed from the beginning; instead, they evolved and changed gradually based on feedback received from supervisors and instructors.

Second: ERD (Entity–Relationship Diagram)

ERD was used to design the database in a structured and organized manner. It helped us understand the system entities such as donors, people in need, and transactions, as well as define the relationships between different tables.

The primary goal of using ERD was to ensure transparency and ease of data tracking.

Project Methodology

Third: OOAD (Object-Oriented Analysis and Design) Using UML

Due to the presence of multiple entities and complex, interrelated functions within the project, we adopted the OOAD methodology and used UML tools such as:

- Use Case Diagram
- Class Diagram
- Sequence Diagram
- Activity Diagram

This helped us accurately represent system behavior and user interactions, making the programming process clearer and allowing for easier future expansion.

Project Methodology

Scrumban

Scrumban is a hybrid approach that combines **Scrum** and **Kanban**. It was chosen because it merges the structured planning of Scrum with the continuous workflow flexibility of Kanban.

This approach is particularly suitable for a student project like Takatuf, where requirements frequently change and time is limited.

Advantages of Scrumban

- Supports change at any time without the need for complete rescheduling.
 - Does not rely on strict time-boxed cycles like sprints.
 - Using a Kanban board provides clear visibility of task status (*Backlog* → *To Do* → *In Progress* → *Review* → *Done*).
 - Limiting Work In Progress (WIP) reduces pressure and improves focus.
 - Suitable for irregular schedules such as university projects.
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Disadvantages of Scrumban

- There is no fixed deadline, which may lead to delays in completing some tasks.
- It is difficult to accurately predict feature completion times.
- It relies heavily on team self-discipline and continuous communication.

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