3. Development Methodology (Agile Scrum)

3.1 SDLC Model (Agile Scrum)

The development of the Lost & Found Board (LFB) system will follow the Agile methodology, which focuses on flexibility, iteration, and continuous feedback. The process is divided into short development cycles called sprints, allowing the team to deliver working features step by step and adapt to any changes efficiently.

3.1.1 Requirements

User needs are collected through interviews and surveys, then converted into user stories and prioritized in the product backlog

3.1.2 Sprint Planning

The team selects the highest-priority user stories from the backlog and defines the goals and tasks for the upcoming sprint.

3.1.3 Design & Implementation

Features are designed and developed in small, manageable parts. Each sprint focuses on delivering functional components of the system

3.1.4 Testing

Testing is carried out continuously during development. Each feature is verified to ensure it meets the acceptance criteria and works as intended

3.1.5 Review & Feedback

User needs are collected through interviews and surveys, then converted into user stories and prioritized in the product backlog

3.1.6 Deployment & Improvement

The team selects the highest-priority user stories from the backlog and defines the goals and tasks for the upcoming sprint.

4. System Requirements

4.1 Functional Requirements(FR)

1. User Management

FR 1.1 : The system shall allow users to register with a unique email and password, and add ID nationality.

FR 1.2 : The system shall allow users to log in and out securely.

FR 1.3 : The system shall allow users to update their profile information (e.g., name, contact number).

FR 1.4 : The system shall support password reset functionality.

FR 1.5 : Users can upload proof of ownership (photo, receipt, serial number) when claiming a lost item, and the system automatically verifies it against the post description.

2. Post Managemen

FR 2.1 : The system shall allow users to create a Lost Item post with details including: Item name, Description, Date/time lost, Location lost, Image upload.

FR 2.2 : The system shall allow users to create a Found Item to post with similar details.

FR 2.3 : The system shall allow users to edit or delete their own posts.

FR 2.4 : The system shall store all posts in a searchable database.

FR 2.5 : When a user wants to claim an item, the system compares their information with the post description.

FR 2.6 : If the information matches, the post automatically updates to "Claimed" without Admin intervention.

FR 2.7 : If the information is unclear or suspicious, the system notifies the admin only.

3. Search and Filter

FR 3.1 : The system shall allow users to search for posts based on:

- · Item name
- · Category (Lost / Found)
- · Location
- · Date range

FR 3.2 : The system shall allow users to filter results by post type, date, or location.

FR 3.3 : The system automatically flags any suspicious claims, and the Admin sees only these cases.

4. Notifications and Contact

FR 4.1 : The system shall allow users to express interest in a post (e.g., "I found this item" or "This belongs to me").

FR 4.2 : The system shall send a notification/email to the post creator when someone shows interest.

FR 4.3 : The system shall provide a way for users to contact each other (email sharing).

FR 4.4 : After verifying a valid claim, the system displays temporary contact information (phone or email) to the users to coordinate item handover, which can be hidden after completion.

5. Admin Functions

FR 5.1 : The system shall allow admins to view all users and their activities.

FR 5.2 : The system shall allow admins to manage all lost and found posts.

FR 5.3 : The Admin can review only the suspicious claims.

3.4.1.2 Non-Functional(NFR)

1.Performance Requirements:

NFR 1.1 : The main dashboard page should fully load within 2

seconds standard broadband connection (10 Mbps) after a successful login.

NFR 1.2 : The system shall support at least 100 concurrent users without noticeable performance degradation (< 10% increase in response time)..

NFR 1.3 : Added a requirement specifying that automatic verification processes (proof of ownership, claim matching) should execute quickly, e.g., within 3 seconds per claim.

2.Usability Requirements

NFR 2.1 : The website should be easy to use for both students and staff.

NFR 2.2 : The design should work well on desktops and tablets.

NFR 2.3 : Clear instructions should be available for main features like posting and searching.

NFR 2.4 : Added a requirement to ensure users clearly understand how to upload proof of ownership and claim items safely

3.Reliability Requirements

NFR 3.1 : The system should be available and work at least 99.5% of the time.

NFR 3.2 : If there's an error while submitting a post, user data should not be lost.

NFR 3.3: Added a requirement to ensure the automatic verification process is reliable and accurate, preventing wrongful claims.

4.Availability Requirements

NFR 4.1 : The system should be accessible 24/7, except during scheduled maintenance.

NFR 4.2 : Maintenance should not happen during busy campus hours.

5.Security Requirements

NFR 5.1 : Only verified university users can access the WBA.

NFR 5.2 : Passwords should be stored securely (encrypted).

NFR 5.3 : Users shall be automatically logged out after 15 minutes of inactivity for security purposes..

NFR 5.4 : Admins should be able to manage content and users.

NFR 5.5 : Temporary contact information must be visible only to verified users and automatically hidden after the process is completed.

NFR 5.6 : Uploaded files (images, proofs) must be scanned for viruses or security threats.

6.Maintainability Requirements

NFR 6.1. The system should be easy to update and fix when needed

NFR 6.2. Errors should be logged for future debugging.

7. Portability Requirements

NFR 7.1 : The system should work on all common web browsers (Chrome, Firefox, Safari,   Edge).

NFR 7.2 : It should run on different operating systems, like Windows and Linux.

8. Compatibility Requirements

NFR 8.1 : The system should accept standard image formats (JPG, PNG).

NFR 8.2 : It should work with university email or login systems.

9. Scalability Requirements

NFR 9.1 : The system should handle more users and posts in the future without issues.

NFR 9.2 : The automatic verification and claim processing must scale efficiently as the number of users increases.

10. Compliance Requirements

NFR 10.1 : User data should be kept private and used responsibly.

NFR 10.2 : Users should agree to terms of use before posting or using the web-based application.

NFR 10.3 : The system must comply with university policies regarding data storage and privacy.