CEBU INSTITUTE OF TECHNOLOGY
UNIVERSITY

IT317-G1 PROJECT MANAGEMENT

FUNCTIONAL REQUIREMENTS SPECIFICATION (FRS)

Project Title: LabangOnline

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1. Introduction

This FRS document outlines the detailed functional requirements for the development of **LabangOnline**, a web-based digital services platform dedicated exclusively to the residents of **Barangay Labangon, Cebu City**. The purpose of this document is to define the features, behaviors, and interactions that the system must support in order to meet the needs of both residents and barangay administrators.

LabangOnline aims to digitize and streamline essential barangay services, including certificate requests, complaint filing, service tracking, and public announcements. By clearly specifying the system's expected functionality, this document serves as a reference for the development team, project stakeholders, testers, and future maintenance personnel.

This FRS is intended for the following groups:

- **Project sponsors and barangay officials** – to understand and validate the system's capabilities.
- **Developers and technical team members** – to implement the system as specified.
- **Quality assurance and testers** – to verify that the system meets the defined requirements.
- **End-user support and training personnel** – to prepare help materials and support documentation.

2. Project Overview

Barangay Labangon currently relies on **manual, paper-based processes** for service delivery such as requesting certificates, lodging complaints, and disseminating announcements. These outdated workflows result in **long wait times, inefficiencies, and limited transparency**. With the growing emphasis on digital transformation through national initiatives like the **e-Governance Act** and **Digital Cities 2025**, there is a pressing need for barangay-level digital solutions.

LabangOnline seeks to:

- **Digitize key barangay services** (Barangay Clearance, Certificate of Indigency, Certificate of Residency).

- **Improve transparency** and tracking of requests and complaints.
- **Enhance community engagement** through timely updates and announcements.
- **Support web accessibility** for broader user reach.

The project focuses exclusively on **Barangay Labangon** and involves developing a web-based platform powered by **Django** (backend) and a **REST API**, with **Supabase** as the database and a frontend built using **HTML, CSS,** and **JavaScript**. Key features include:

- Online request and tracking of barangay documents.
- Complaint and incident reporting.
- Official barangay announcements and notifications.
- A secure and user-friendly interface accessible via desktop and laptop browsers only.

By narrowing the focus to a single barangay, the project ensures a tailored, efficient, and scalable solution that can serve as a model for future implementations in other communities.

3. Team

Name	Role
Andre D. Salonga	Product Owner
Christian Andrey V. Reyes	Business Analyst
Kean Maverick W. Saligue	Scrum Master
Lenon Lee O. Natividad	Lead Developer
Bryne Kendrick P. Nuñez	Developer
Moniquo Nicole C. Mosende	Developer

4. Functional Requirements

FR-1: User Registration and Authentication

The system shall allow residents of Barangay Labangon to register using personal details (e.g., name, address, valid ID) and verify residency eligibility.

- Registration should be **exclusive to verified Barangay Labangon residents**.
- A login system shall use a **username/email and password**.
- Passwords shall be securely encrypted and stored.

FR-2: Certificate Request Submission

The system shall allow registered users to request barangay-issued certificates, including:

- Barangay Clearance
- Certificate of Indigency
- Certificate of Residency

Users should be able to select the certificate type, input purpose, and upload supporting documents.

FR-3: Request Tracking System

The system shall allow users to view the status of their requests in real time.

- Statuses may include: *Pending, Under Review, Approved, Ready for Pickup, Completed*.
- Users shall receive **notifications or updates** for every status change.

FR-4: Online Complaint and Report Submission

The system shall provide a digital form for users to submit complaints or reports.

- Fields should include the type of complaint, location, and a message field.
- Complaints shall be tracked similarly to certificate requests.

FR-5: Barangay Announcements and Notifications

The system shall allow barangay administrators to post announcements, including:

- Community events
- Public advisories
- Relief distributions

Users shall be notified via a **dashboard or notification area** upon login.

FR-6: Administrator Dashboard

The system shall provide barangay staff/admins with a dashboard to manage resident accounts, review requests, and respond to reports.

- Admins can approve/reject certificate requests.
- Admins can post/edit announcements.
- Admins can manage submission queues and download reports.

FR-7: Walk-In Submission Support (Manual Entry by Staff)

The system shall allow barangay staff to encode walk-in submissions into the system.

- Manual records shall be tagged as “walk-in” for tracking purposes.
- These will also appear in the general request dashboard for consistency.

FR-8: Secure Backend and Data Management

The system shall maintain a secure backend using Django, with user data stored securely in the database.

- The backend shall use **REST API** for communication with the frontend.
- LabangOnline will use **Supabase** as the database.
- Data integrity and validation checks shall be implemented.

FR-9: Responsive Web Interface

- While the frontend supports responsive design, the system is only officially supported on desktops/laptops.

FR-10: Payment Handling with GCash QR Support and Counter Payment

- For certificate requests requiring fees, the system shall display a **GCash QR code** to residents.
- Users shall complete the payment via the GCash mobile application and enter their transaction reference number into the system.
- Barangay staff shall have a dashboard feature to verify the submitted reference number before processing the request.
- Alternatively, **residents without GCash may opt to pay directly at the barangay counter**. Staff will then manually mark the request as “Paid” in the system before processing.

5. Non-Functional Requirements

Performance Requirements

- **NFR-1: Response Time**
  The system shall load all pages and respond to user interactions (e.g., form submissions, page loads) within **two (2) seconds** under normal load.

- **NFR-2: Concurrent Users**
  The system shall support at least **50 concurrent users** without performance degradation during peak hours (e.g., community announcements or relief distributions).

- **NFR-3: Uptime**
  The platform shall maintain **95% uptime**, excluding scheduled maintenance, to ensure service availability to residents.

Security Requirements

- **NFR-4: Authentication and Authorization**
  Only registered users shall be allowed to access request features, and administrative functionalities shall be restricted to authorized barangay staff.

- **NFR-5: Data Protection**
  User data, including personally identifiable information (PII), shall be stored securely using **encryption and secure password hashing** (e.g., bcrypt or Django's default PBKDF2).

- **NFR-6: Secure Communication**
  All data exchanges between client and server shall use **HTTPS** to ensure data privacy and integrity.

- **NFR-7: Input Validation**
  The system shall validate all user inputs (e.g., forms, uploads) to prevent **XSS, and other common web vulnerabilities**.

- **NFR-8: Session Management**
  User sessions shall timeout after **15 minutes of inactivity** to prevent unauthorized access on shared devices.

Usability Requirements

- **NFR-9: Desktop Responsiveness**
  The system's user interface shall adapt seamlessly to desktop using **responsive design principles**.

- **NFR-10: Accessibility**
  The system shall follow **basic accessibility guidelines** (e.g., contrast, keyboard navigation, alt text for images) to support users with disabilities.

- **NFR-11: User Support**
  The platform shall include **help documentation or FAQs** to assist first-time users in navigating the system.

- **NFR-12: Language**
  The primary language of the interface shall be **English.**

Maintainability and Scalability

- **NFR-13: Code Modularity**
  The backend code shall follow **modular architecture** (e.g., Django apps) to simplify maintenance and future expansion.

- **NFR-14: API Design**
  The REST API shall be **well-documented** and follow consistent naming conventions for ease of integration.

- **NFR-15: Scalability**
  The system shall be designed to **scale horizontally**, allowing for deployment to cloud platforms if needed in future barangays.

- **NFR-16: Supabase Database Management**
  The system shall utilize Supabase as the managed database platform, ensuring secure storage, real-time synchronization, and simplified maintenance. The database schema shall be designed with normalization and indexing to support efficient queries, scalability, and potential future migration to other cloud environments.

Legal and Regulatory Compliance

- **NFR-17: Data Privacy Compliance**
  The system shall comply with the **Philippine Data Privacy Act of 2012**, ensuring that all resident data is handled responsibly and transparently.

6. Use Cases

The primary use cases for the **Resident User** and the **Barangay Admin** with their corresponding functionalities are described below. A visual representation of these interactions is provided in Figure 1: LabangOnline Use Case Diagram.

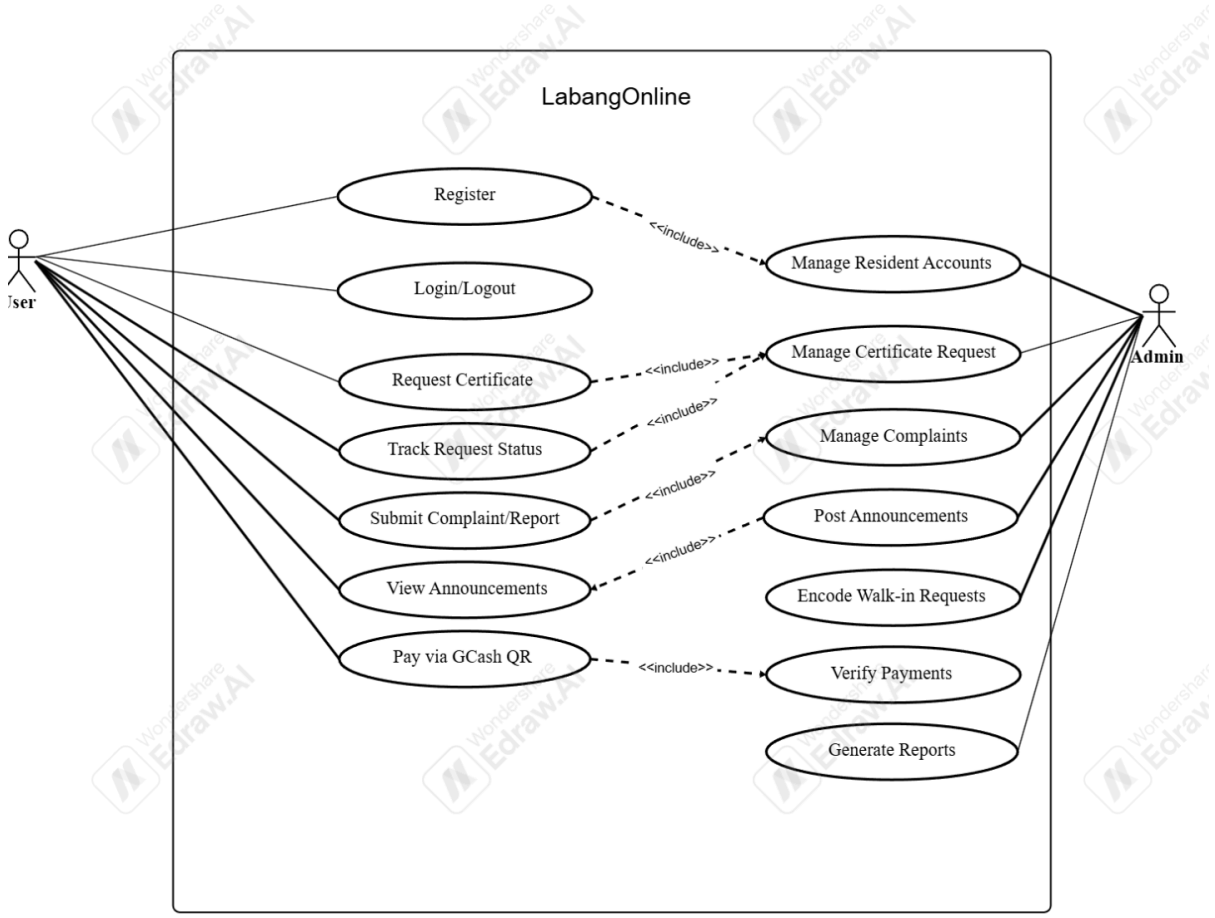

Figure 1. LabangOnline Use Case Diagram

Use Case 1: Register

- **Actor:** Resident User
- **Description:** Residents register by providing personal details (e.g., name, address, valid ID) to verify residency.
- **Precondition:** User must be a verified resident of Barangay Labangon.
- **Postcondition:** Account created, pending admin approval if required.

Use Case 2: Login/Logout

- **Actor:** Resident User
- **Description:** Residents log in using email/username and password to access services, and log out after use.
- **Precondition:** User must have a valid account.
- **Postcondition:** User gains or ends session access.

Use Case 3: Request Certificate

- **Actor:** Resident User
- **Description:** Residents request barangay certificates (e.g., Clearance, Indigency, Residency) online by filling forms and uploading supporting documents.
- **Postcondition:** Request is logged into the system and available for admin review.

Use Case 4: Track Request Status

- **Actor:** Resident User
  Description: Residents monitor the progress of their submitted requests (statuses: Pending, Under Review, Approved, Ready for Pickup, Completed).
- **Postcondition:** User receives updated status in real time.

Use Case 5: Submit Complaint/Report

- **Actor:** Resident User
- **Description:** Residents file complaints or incident reports by filling out an online form.
- **Postcondition:** Complaint submitted to barangay staff for review and action.

Use Case 6: View Announcements

- **Actor:** Resident User
- **Description:** Residents access barangay announcements such as events, advisories, and relief distributions.
- **Postcondition:** User is updated with official barangay news.

Use Case 7: Pay via GCash QR

- **Actor:** Resident User
- **Description:** Residents pay for services requiring fees using GCash by scanning a QR code and submitting a reference number.
- **Postcondition:** Transaction reference stored, pending admin verification.

Use Case 8: Manage Resident Accounts

- **Actor:** Barangay Admin
- **Description:** Admin reviews, approves, or deactivates resident accounts.
- **Postcondition:** Only verified residents gain access to system services.

Use Case 9: Manage Certificate Requests

- **Actor:** Barangay Admin
- **Description:** Admin reviews certificate requests, approves/rejects them, and marks status accordingly.
- **Postcondition:** Certificate requests move through workflow until completion.

Use Case 10: Manage Complaints

- **Actor:** Barangay Admin
- **Description:** Admin reviews submitted complaints, takes necessary actions, and provides feedback to residents.
- **Postcondition:** Complaints are addressed and tracked.

Use Case 11: Post Announcements

- **Actor:** Barangay Admin
- **Description:** Admin posts announcements for residents (events, advisories, emergency notices).
- **Postcondition:** Announcements appear on resident dashboards.

Use Case 12: Encode Walk-in Requests

- **Actor:** Barangay Admin
- **Description:** Admin manually enters requests made by walk-in residents into the system for tracking consistency.
- **Postcondition:** Walk-in requests are integrated with digital system records.

Use Case 13: Verify Payments

- **Actor:** Barangay Admin
- **Description:** Admin verifies GCash payment reference numbers before approving certificate requests.
- **Postcondition:** Payment confirmation allows requests to proceed.

Use Case 14: Generate Reports

- **Actor:** Barangay Admin
- **Description:** Admin generates reports (e.g., number of requests, complaints, payments) for recordkeeping and decision-making.

- **Postcondition:** Reports available in downloadable format.

7. System Interfaces

The LabangOnline system will interface with the following external systems, where applicable:

1. **Web Browsers** – Users (residents and barangay staff) will access the system through modern web browsers on desktop and laptop devices.
2. **Notification Services** – The system will integrate with an email service (e.g., an SMTP provider) to send account-related notifications, such as password resets, request status updates, and important barangay announcements.
3. **Cloud-Hosted Database (Supabase)** – All user data, request records, complaints, and announcements will be securely stored in a cloud-hosted Supabase database. This setup ensures real-time synchronization, secure storage, and scalability for future expansion.

8. Assumptions and Constraints

System Assumptions

1. **Barangay Labangon leadership is committed to digital transformation**
   It is assumed that barangay officials and staff are supportive of transitioning from manual to digital processes and will participate in onboarding and training.
2. **Residents have basic access to internet and Desktops**
   It is assumed that most users have access to desktops capable of accessing a responsive web application.
3. **Residents will provide accurate and truthful information**
   It is assumed that residents submitting requests or reports will supply valid data and required documentation (e.g., proof of residency).
4. **Barangay staff will validate and process submissions manually**
   It is assumed that human validation (e.g., checking uploaded ID or documentation) will remain a part of the approval process, and automation of these tasks is not expected.

5. **No integration with national or city-wide systems is required**
   It is assumed that the system will operate independently from other barangay, LGU, or national government databases.

6. **Services are limited to the needs of Barangay Labangon residents**
   It is assumed that only residents of Barangay Labangon will be allowed to register and use the system, with no need for cross-barangay data sharing or access..

7. **Basic infrastructure (power, internet, and office equipment) is available**
   It is assumed that the barangay hall has functioning computers, printers, and internet connectivity for staff to access the system.

8. **Payment Handling (GCash QR or Counter Payment)**
   It is assumed that there will be no automated verification with the GCash API, and barangay staff will manually validate payment reference numbers submitted by residents. For requests requiring fees, a GCash QR code will be displayed for residents to complete their payment through the GCash app. Those without GCash access may pay directly at the barangay counter, where staff will record the payment manually and mark the request as “Paid” in the system.

System Constraints

1. **Limited to Web-Based Access**
   Deployment is limited to web-based access; no dedicated kiosk or native mobile app is included in scope.

2. **No Offline Functionality**
   The platform requires an active internet connection for access and use.

3. **User Registration Limited to Verified Residents**
   Only users who can prove they are residents of Barangay Labangon are allowed to register. There is no plan for automated verification through national ID systems.

4. **Development Timeframe: Three (3) Months (Until November 2025)**
   All core features must be developed, tested, and deployed within a three-month timeline, prioritizing essential functionality.

5. **Manual Printing of Documents**
   The system does not integrate directly with printers. Certificate printing is done manually by staff after approval through the dashboard.

6. **Data Privacy Compliance**
   All data handling must comply with the Philippine Data Privacy Act of 2012, including consent, storage, and access protocols.

7. **Scalability Limited to One Barangay**
   The platform is purpose-built for Barangay Labangon and does not support scaling to multiple barangays without significant modification.

9. Acceptance Criteria

The LabangOnline system will be accepted as **complete and operational** when all of the following conditions are met. These criteria ensure the system meets the functional, non-functional, and project objectives defined during the planning and requirements phases.

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1. Core Features Are Fully Implemented and Functional

The following **"Must Have" features** (as defined in the project backlog) must be fully developed, tested, and verified:

a. User Access & Security

- Resident registration and login with verification specific to Barangay Labangon.
- Secure password setup, login, and reset functionalities.
- Role-based access control for admin and resident accounts.
- Social login (if implemented) and session management.

b. Certificate Request System

- Online submission of certificate requests (Barangay Clearance, Indigency, Residency).

- Upload of supporting documents.
- Admin dashboard for reviewing, approving, or rejecting requests.
- Generation of printable certificates (PDF or print view).
- Resident view of pending, approved, or rejected requests.

c. Complaint/Report Submission

- Online complaint form submission.
- Admin dashboard to manage reports.
- Basic report tracking and resident feedback mechanism.

d. Dashboard and Notification Features

- Admin dashboard for managing requests and sending announcements.
- Resident dashboard with request history and current status.
- Display of barangay announcements and events.

e. Backend and Deployment

- REST API integration between frontend and backend.
- Secure and normalized database structure.
- Backend deployment on Heroku and frontend on Netlify (or equivalent).
- Working backup and data recovery mechanism.
- Working implementation of Supabase as the database.
- Payment workflows are functional for both GCash QR (reference number validation) and counter payment (manual staff entry).

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2. Functional Testing Is Complete

- End-to-end testing of all major workflows (e.g., registration, login, request submission, complaint handling).
- All critical bugs identified during internal testing must be resolved.
- Test cases for all "Must Have" user stories have passed.

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3. Usability Requirements Are Met

- The platform is fully responsive and functional on desktop browsers.
- Interface elements (forms, buttons, navigation links) work without errors.
- Users receive immediate and understandable feedback on their actions (e.g., form submission, login errors).

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4. Performance and Security Requirements Are Satisfied

- All pages must load within two to three seconds under normal load.
- The system uses HTTPS for secure communication.
- Passwords are encrypted using industry-standard hashing algorithms.
- Session timeout is implemented after a period of user inactivity.
- Input validation is in place to protect against common vulnerabilities (e.g., XSS, SQL injection).

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5. Documentation and Training Materials Are Delivered

- User documentation for both residents and barangay staff (manuals, FAQs, or walkthroughs).
- Technical documentation including API specifications, deployment procedures, and database schema.
- Complete and up-to-date README in the project repository.

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6. Successful Pilot Test Execution

- At least 15–20 residents of Barangay Labangon have registered and successfully completed a service request.

- Barangay staff have used the system to process at least one request and post at least one announcement or report.

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7. Production Deployment and Final Review

- The system is deployed and accessible via a public domain.
- A final smoke test confirms that all major routes, forms, and features are accessible and working without errors.
- Barangay staff have verified system access and basic functionality for day-to-day use.

10. Approval Sign-off

	Full Name	Signature	Date
Prepared By:	Christian Andrey V. Reyes		Oct. 4, 2025
Developer	Moniquo Nicole C. Mosende		Oct. 4, 2025
Developer	Bryne Kendrick P. Nuñez		Oct. 4, 2025
Lead Developer	Lenon Lee O. Natividad		Oct. 4, 2025
Reviewed By:	Andre D. Salonga		Oct. 4, 2025
Reviewed By:	Kean Maverick W. Saligue		Oct. 4, 2025
Approved By:	Mr. Joemarie C. Amparo		
Approved By:	Mr. Frederick Revilleza		

11. Appendices

Appendix A. Glossary of Terms

Term	Definition
Admin (Barangay Admin)	A barangay staff member with administrative privileges to manage user accounts, approve or reject requests, post announcements, and oversee system operations.
Announcement	An official barangay communication or update posted on the system, such as events, public advisories, or relief distribution notices.
API (Application Programming Interface)	A set of rules and protocols that allow different software components to communicate. LabangOnline uses a REST API for backend-frontend interaction.
Backend	The server-side part of the application responsible for processing requests, managing data, implementing business logic, and handling data storage.
Barangay	The smallest administrative division in the Philippines, functioning as a local government unit (LGU). Barangay Labangon is the focus of this system.
Barangay Clearance	An official document issued by the barangay certifying that an individual has no pending cases or obligations within the community.

Browser Compatibility	The ability of a web application to function correctly across different web browsers.
Certificate of Indigency	A barangay-issued document certifying that a resident belongs to a low-income household or is financially incapable.
Certificate of Residency	An official barangay document verifying that an individual is a resident of the barangay.
Complaint/Report	A submission by a resident to report incidents, concerns, or issues to barangay authorities through the online system.
Data Privacy Act of 2012 (Republic Act No. 10173)	A national law that protects individual personal information and ensures that data is collected, processed, stored, and shared responsibly and securely. LabangOnline must comply with this law in handling resident data.
Dashboard	The system interface where users (residents or admin) can view, manage, and interact with key features such as requests, complaints, and announcements.
Deployment	The process of making the system available for use by uploading it to a live server or hosting platform.
Digital Cities 2025	A Philippine government program spearheaded by DICT, IBPAP, and LGUs that aims to accelerate digital transformation and economic growth in

	cities by promoting technology adoption, infrastructure development, and digital service delivery.
Django	A Python-based web framework used to build the backend of the LabangOnline system.
e-Governance Act	A national initiative aimed at modernizing and digitizing public services to improve government efficiency, transparency, and accessibility. LabangOnline supports this initiative by providing digital access to barangay services.
Frontend	The client-side part of the application that users interact with directly, built using HTML, CSS, and JavaScript.
GCash	A mobile payment platform in the Philippines used in the system for electronic payment of service fees via QR code.
HTTPS (Hypertext Transfer Protocol Secure)	A secure version of HTTP used for encrypted communication between the client and server.
Input Validation	The process of checking user input for correctness, format, and security before processing.

Manual Verification	The process by which barangay staff check submitted documents, IDs, or payment references before approval.
Payment Reference Number	A unique identifier generated after a GCash payment, used by staff to verify and validate the transaction.
Request Status	The current stage of a submitted certificate or complaint (e.g., Pending, Under Review, Approved, Ready for Pickup, Completed).
Resident Dashboard	The user interface where residents can view the status of their requests, submitted complaints, and official announcements.
Resident User	A verified individual living within Barangay Labangon who uses LabangOnline to request services, submit complaints, or view announcements.
REST API (Representational State Transfer API)	A web service architecture that enables communication between the frontend and backend of the system over HTTP.
Scalability	The system's ability to handle increased load, users, or data without performance degradation.
Session	A period during which a user is logged into the system and actively accessing services. Sessions automatically expire after a period of inactivity.

Session Timeout	A security feature that automatically logs out users after a period of inactivity.
SMTP (Simple Mail Transfer Protocol)	A protocol used for sending emails. The system uses SMTP services to deliver notifications such as password resets and status updates.
Supabase	A cloud-hosted backend-as-a-service (BaaS) platform used as the database for storing user data, requests, complaints, and announcements.
Uptime	The amount of time the system remains operational and accessible without interruption.
User Authentication	The process of verifying a user's identity before granting access to the system, typically through a username/email and password.
Walk-in Request	A manual submission entered into the system by barangay staff on behalf of residents who visit the barangay office in person.
Web-Based Application	A software application accessed through a web browser over the internet, without requiring installation on a local device.