

PULSE – Public Unified Local Health Engine

Product Requirements Document (Structured Version)

1. PROBLEM STATEMENT

1.1 Problem Statement

Barangay Health Workers (BHWs) are responsible for monitoring the health of large populations within their barangays. However, most barangay health operations still rely on **paper-based records, manual tracking, and fragmented reporting systems**. This results in:

- Delayed identification of high-risk residents
- Missed follow-ups for seniors, pregnant women, children, and PWDs
- Reactive health interventions instead of preventive care
- Inefficient reporting and planning at the LGU level

There is currently no lightweight, secure, and barangay-focused digital system that helps health workers **prioritize which residents need attention first**.

1.2 Target Users

Primary Users - Barangay Health Workers (BHWs)

Secondary Users - LGU / City or Municipal Health Administrators - Barangay Officials (monitoring and reporting)

Non-Users - Patients (no direct access) - Doctors (not a clinical system)

2. VALUE PROPOSITION

2.1 Proposed Solution

PULSE is a **web-based health decision-support system** that digitizes barangay health records and applies an **explainable risk prioritization mechanism** to help health workers identify residents who require immediate follow-up.

The system is designed as a **support tool**, not a diagnostic or treatment platform.

2.2 Project Explanation

PULSE enables LGUs and BHWs to:

- Register and manage residents per barangay
- Log health visits and observed symptoms
- Automatically categorize residents into Low, Medium, or High risk
- View real-time dashboards summarizing barangay health conditions

All access is **LGU-provisioned**, role-based, and barangay-isolated to ensure privacy, accountability, and governance.

2.3 Tech Stack Flow (Conceptual Data Flow)

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graph TD; A[Barangay Health Worker] --> B[Web Application (React)]; B --> C[Secure Backend & Database (Supabase)]; C --> D[Risk Prioritization Logic]; D --> E[Dashboards & Reports];
```

3. TARGET MARKET

3.1 Market Size

- The Philippines has **42,000+ barangays nationwide**
- Each barangay employs Barangay Health Workers responsible for hundreds to thousands of residents
- All barangays require health record management and reporting

This represents a **nationwide market** for barangay-level digital health systems.

3.2 Facts and Evidence

- Barangay Health Workers serve as the **frontline of preventive healthcare**
- Manual record-keeping remains prevalent in local health units
- Delayed follow-ups contribute to preventable health complications

Improving prioritization and data visibility at the barangay level directly supports national public health objectives.

3.3 Competitors and Differentiation

Existing Approaches - Paper-based logbooks - Spreadsheet-based reporting - Hospital-focused Electronic Medical Record (EMR) systems

PULSE Differentiation - Designed specifically for barangay workflows - Lightweight and low-cost - Explainable prioritization instead of black-box AI - LGU-controlled access and barangay data isolation - Scalable from barangay to city to national level

4. EXECUTION PLAN

4.1 Project Cost

- Built using open-source technologies
 - Minimal cloud infrastructure requirements
 - Can operate within existing LGU IT resources
 - Suitable for pilot-based and phased deployment
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4.2 Team Competence and Skills

The team consists of four developers with strengths in:

- Rapid full-stack web development
- UI/UX design for accessibility and simplicity
- Backend logic, data modeling, and security concepts
- System integration and live demo execution

This enables fast development while maintaining system reliability.

4.3 Future Plans and Project Timeline

Phase 1 – Hackathon MVP - Resident registry - Visit and symptom logging - Risk prioritization logic - Barangay dashboard

Phase 2 – LGU Pilot - SMS reminders for follow-ups - City-level analytics - User onboarding and training

Phase 3 – Expansion and Scaling - Enhanced decision-support logic - Inter-barangay analytics - National-level reporting support

4.4 Project Viability

PULSE is viable because it:

- Solves a real and persistent public health problem
 - Requires minimal technical infrastructure
 - Aligns with LGU governance and data privacy requirements
 - Avoids medical risk by focusing on prioritization, not diagnosis
 - Can be deployed incrementally and scaled sustainably
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5. Summary

PULSE provides a practical, secure, and scalable solution for barangay-level health monitoring. By combining structured data management with explainable prioritization, the system empowers health workers and LGUs to act earlier and plan more effectively—without replacing human judgment.

From raw data to timely care.