

LifeSync

Problem Statement

Heart-risk and elderly patients often experience unnoticed cardiac emergencies due to missing real-time alerts. Existing devices depend on smartphones/internet, are difficult for elderly users, and fail to notify caregivers instantly.

Existing Solutions

Apple Watch, Fitbit ECG, Withings, Zio Patch, and similar devices offer ECG/screening but rely on apps, need manual operation, or are costly and unsuitable for continuous elderly use. They do not provide simple, instant caregiver alerts.

Gaps in Existing Solutions

- No internet-free alerting
- No instant caregiver notification
- Complex for elderly users
- Short battery life and bulky design
- Limited real-time emergency detection.

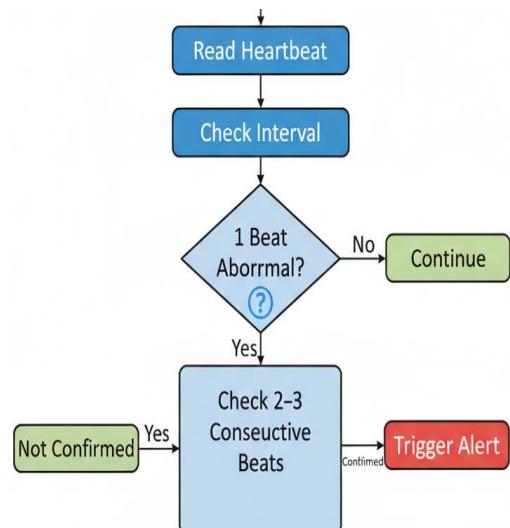
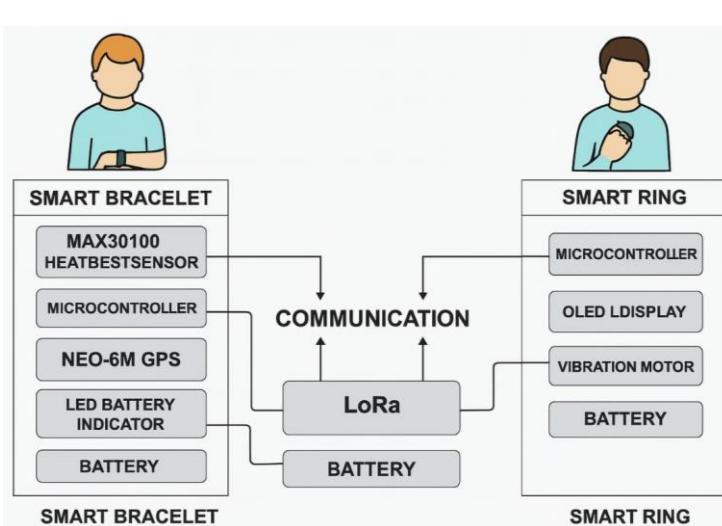
Proposed Solution

The Life Sync Bracelet–Ring system uses RF-based communication for 24/7 heartbeat monitoring and immediate caregiver alerts without smartphones or internet. The bracelet detects abnormal beats and the caregiver's ring vibrates and displays a QR code for quick response.

Components

Heartbeat sensor (MAX30100), microcontroller, LoRa/RF module, OLED display, GPS module, vibration motor, rechargeable battery, LED battery indicator.

Block Diagram & Flow Chart



Market Potential

Large demand among elderly patients, caregivers, and home healthcare. Global wearable market rising to \$195B by 2030; strong need in rural areas due to internet-free operation. USP: low cost, real-time alerts, long battery life.

Feasibility

Estimated cost: ₹3,000–₹4,000. Easily scalable with minimal hardware changes and no network requirements. Challenges (sensor errors, comfort, delays) addressed through filtered sensing, ergonomic design, and LoRa connectivity.