

# Concept of the **dudhya** project

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## 1 Introduction

The **dudhya** project researches, and implements where possible, the resurrection of older smartphones: giving them a second life running an open-source operating system, so they can be repurposed as embedded systems and sources of sensor telemetry rather than discarded.

This document defines the project’s goal, scope, and boundaries. It is a living document and will be updated as the project evolves. Decisions that shape the content of this document are recorded with rationale in [ResearchJournal.pdf](#).

## 2 Motivation

Older phones accumulate as people upgrade to newer ones, and each one is a small, self-contained computer with a battery, a radio, a screen, and a genuinely rich set of sensors — accelerometer, gyroscope, magnetometer, GPS, and more — discarded well before any of that hardware has actually failed. Resurrecting one gives it a real second purpose rather than letting it sit unused.

### 3 Goal

Run an older phone on an open-source operating system, preferably GNU/Linux, so it can be repurposed as an embedded system and a source of sensor telemetry.

## 4 How the project's artifacts attain this goal

Each real deliverable below addresses one concrete part of taking a phone from "discarded" to "usefully repurposed":

- **Reviving the phone itself.** [Dudhya.pdf](#) is the step-by-step procedure document: which devices are viable candidates, how to unlock, flash, and boot an open-source OS (postmarketOS) on each, and what was actually confirmed working (sensors, networking, GPS) versus still open, per device.
- **Getting a usable, up-to-date install onto the device.** `dudhya-host-connect` (run on a host machine) and `dudhya-device-update` (run on the device itself) bring a fresh install online and up to date, over either a direct USB cable or the device's own radio, without requiring a pre-existing network to already be configured.
- **Making the device network-flexible once revived.** `dudhya-wifi-mode` switches a device between acting as a normal WiFi client (`station` mode) and as its own access point (`ap` mode), so a repurposed device can either join an existing network or serve as one, depending on where it ends up deployed.
- **Turning the phone into a source of sensor telemetry.** `dudhya-sensord` reads the device's own real sensors and publishes the readings over MQTT, so a repurposed phone can act as a genuine embedded telemetry source rather than just an idle computer.
- **Freeing the device from its own aging battery.** A real, ERC-verified KiCad schematic and breadboard-style diagram (both generated by packpay, this project's own netlist-driven schematic and diagram engine, extracted into its own independent project) design the external, regulated power circuitry needed to run a candidate device without depending on its own battery, whose capacity only degrades with age. See Dudhya.org's own "Power management: running without a battery" section for the real design.

See the project's own README for how to build and use each of these, and [Index](#) for the full set of project documents.

## 5 Name of the project

The name is an abbreviation of the Sanskrit phrase: दूरतः ध्वनिः यन्त्रपुनरुत्थानम् (duratah dhvaniḥ yantrapunarutthanam), approximately "sound from afar device resurrection" — fitting for a project about reviving phones as remote sensor devices. Incidentally, "dudhya" also means milk in some Indic languages, a coincidence rather than a deliberate reference.