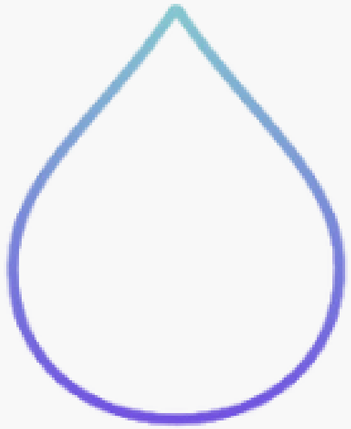
NUS
National University
of Singapore



HydroMind

The ultimate water-saving system

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Special thanks to:
Prof Zhang Jian Wen

Mission

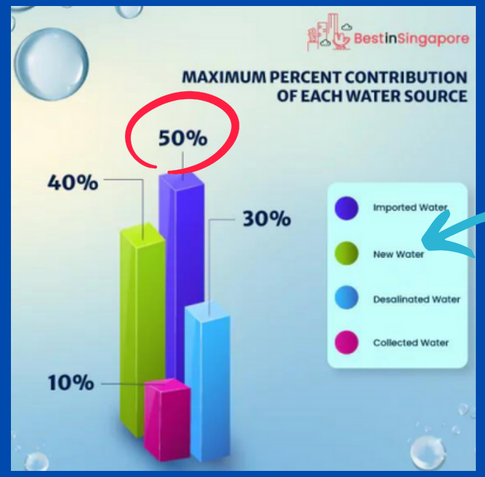
To provide people with the ultimate water-saving system that is affordable, engaging and intuitive.

Vision

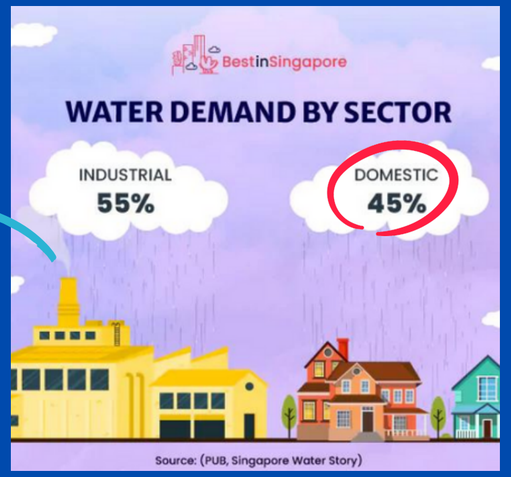
To achieve water sustainability both locally and globally through innovative water conservation efforts.

Rationale

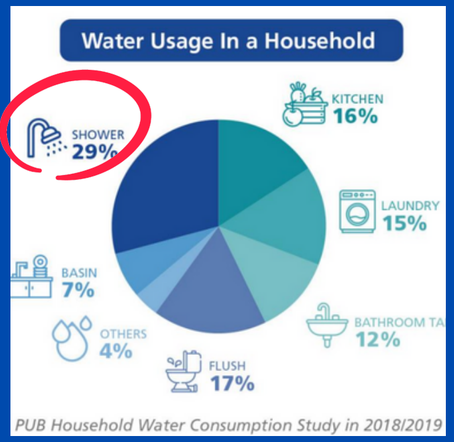
01. Local



Up to **50%** are imported water



Up to **45%** are domestic usage



Up to **29%** are shower usage

02. Global

This is also in line with **Goal 6** of WHO's Sustainable Development Goals which is to **ensure availability and sustainable management of water and sanitation for all.**

Overview of HydroMind

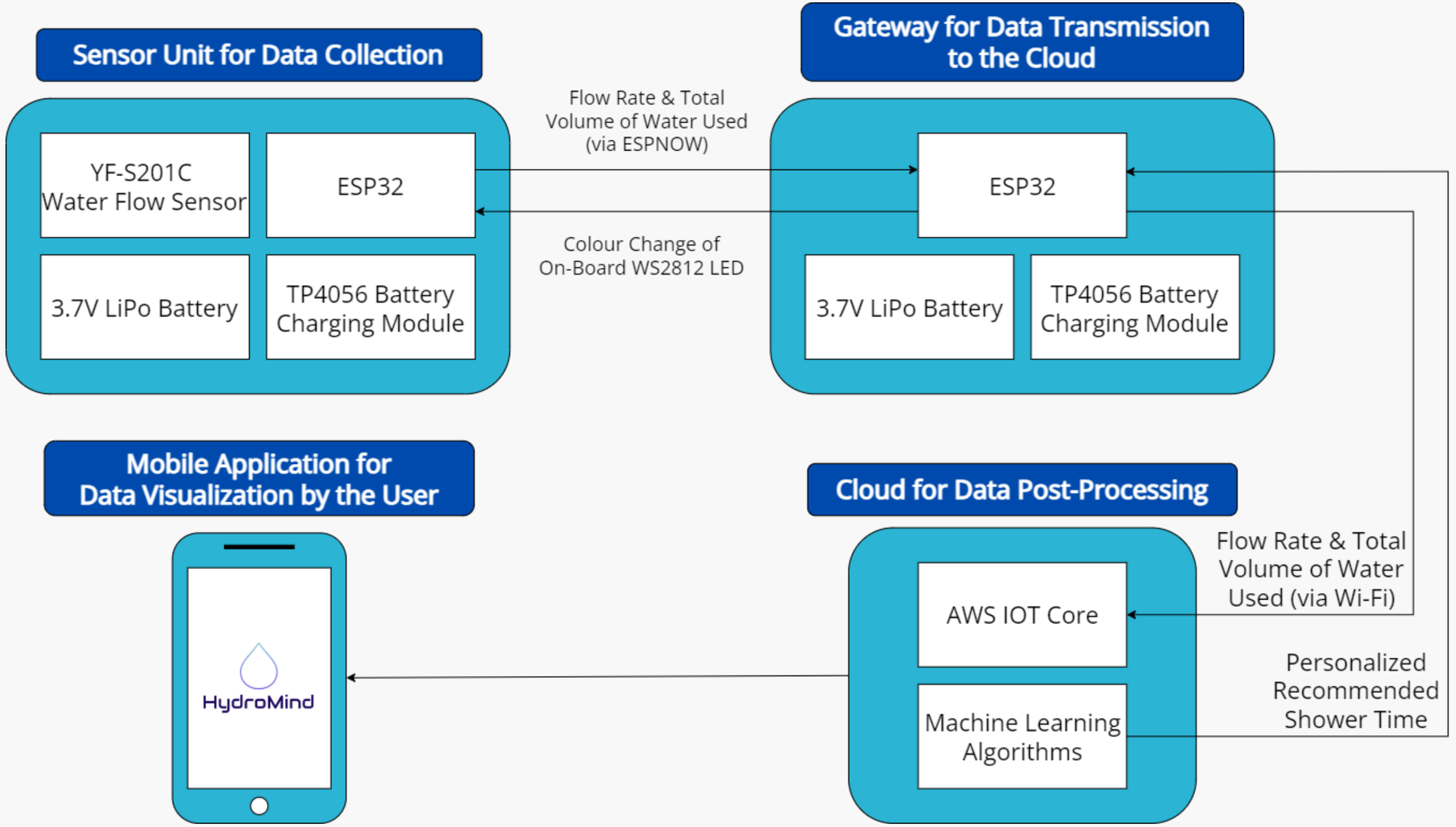
Measure water flow rate using YF-S201C hall-effect sensor

1. Collect data using ESP32 microcontrollers

2. Process data using our machine learning algorithm through cloud server

3. Recommend steps to users through our mobile app to achieve the PUB standard

Overview of HydroMind



Cost Breakdown for Our Product

Per-Unit Cost

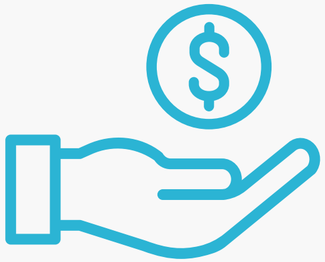
1. ESP32 microcontrollers --> $ 5.15
2. Acrylic Box Cover --> $ 0.15 ($72 for 1.22m x 1.44m acrylic sheet, can cut into approximately 1000 units of the container box cover)
3. PLA box (3D-printed) --> $ 1.00 ($30 for 1kg PLA filament)
4. Cloud Services for Data Storage --> $ 5.00

Total Per-Unit Cost= $ 11.30

Why HydroMind stands out from existing products?

User Engagement

Easy & Intuitive to use



Affordable

Challenges Faced & Solution

01. Privacy & Data Security Concerns

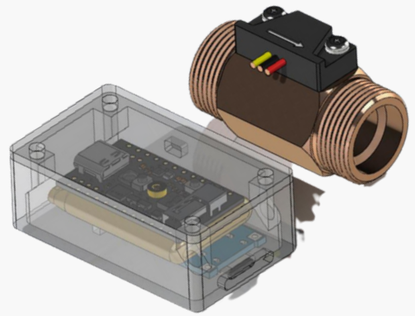
Two-factor authentication is required. Beyond the first layer of username and password, the app could **prompt the users to enter their choice of 4 digits code or FaceID when accessing sensitive information** such as address/DOB

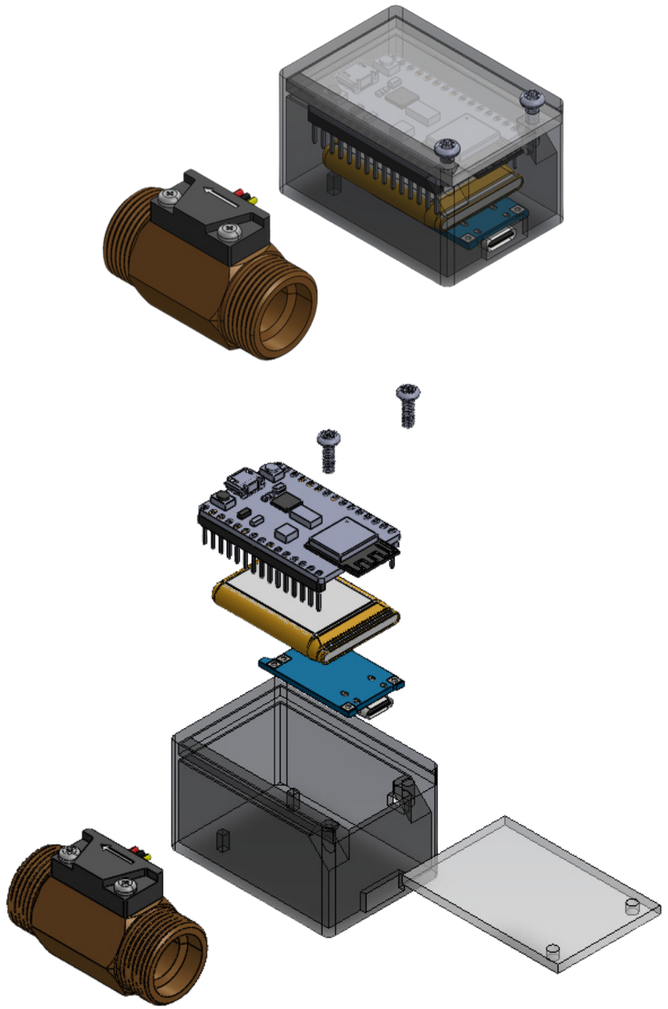
02. Software Glitches

Monthly software updates can be conducted to **eliminate any bugs in the software**

03. Risk of Electrocution

An **isolated container box that is created** to contain all the necessary peripherals within the **watertight box.**

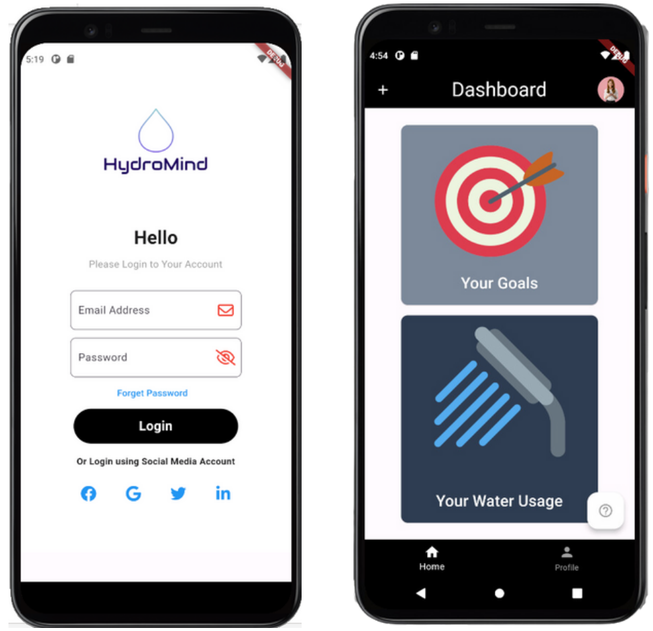




Colour-Changing Feedback System

HydroMind

Source code:
https://github.com/Lo-Yan/HydroMind-App



Mobile Application