Silicon Labs' Social Entrepreneurship Challenge

Inter IIT Tech Meet | Team 11

FINFLOW

IoT Enabled Smart Pond Monitoring System

Pitch

Background

INDUSTRY INSIGHTS

$ 23 B

Size of Fish Industry

$ 16 B

Size of Inland Fish Market in 2020.

10.5%

CAGR, The industry is further expected to grow.

Background

BACKYARD FISHING

70%

Contribution in overall fish production by inland fisheries.

0.05 - 0.1 Ha Size

1.5 - 2.0 m Depth

of an Artificial fish pond.

Typical Fish farmers are:

-Not skilled with cutting-edge water monitoring technology.
-Financially backward: access to insurance, credit, and information is limited.

HEALTH OF THE FISH IS DIRECTLY AFFECTED BY WATER QUALITY

As a Fish farmer, I need to know status of my water pond on real time basis so that if there are any discrepancies, I can prevent further losses.

CORE USER NEED

PROBLEMS

Water quality which is checked by parameters like

NH_4^+

Ammonia

NO_3^-

Nitrate

pH

Turbidity

NO_2^-

Nitrite

O_2

Dissolved Oxygen

Salinity

Temperature

Production Loss of **26%** due to diseases and poor management in the freshwater aquaculture sector.

WATER HEALTH SERVICES DO EXIST BUT...

Unavailablitiy and infrequency of such consultancies

INR 30,000

Consultancies for water monitoring charge per pond per year

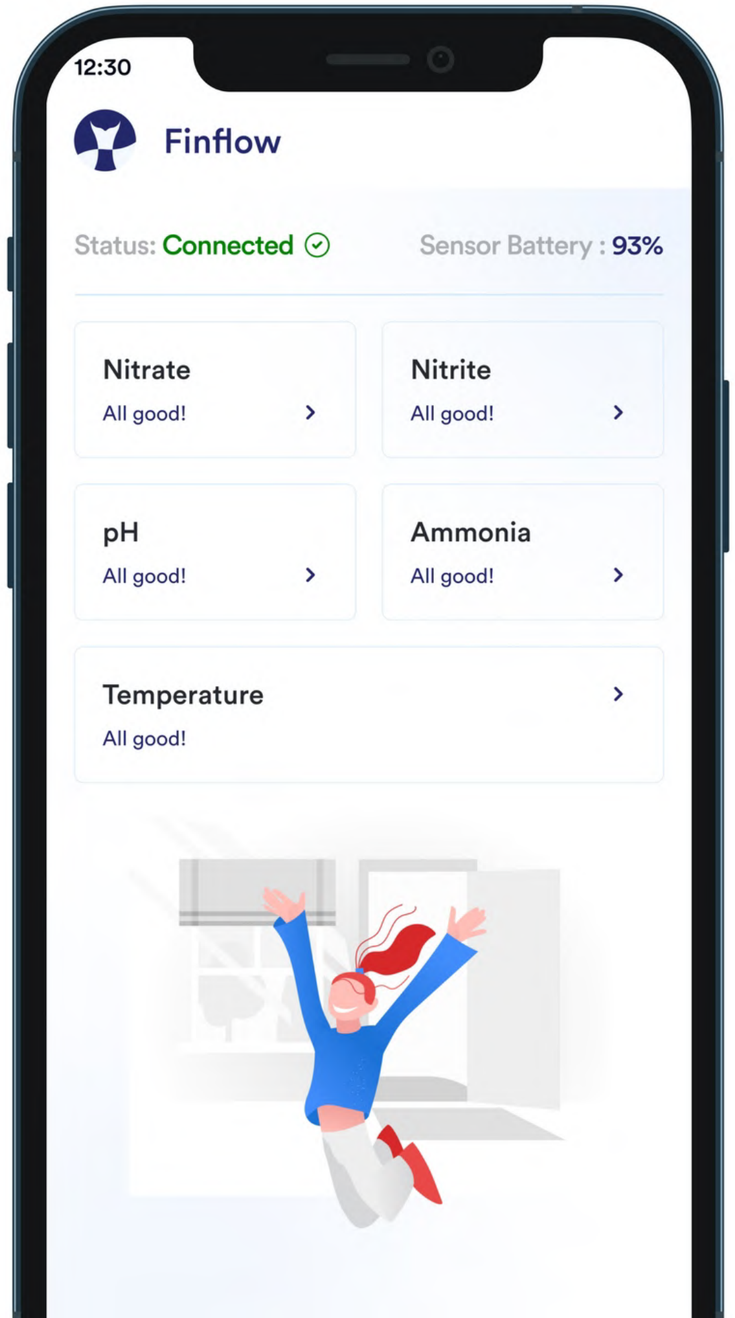
High end water monitoring systems are:

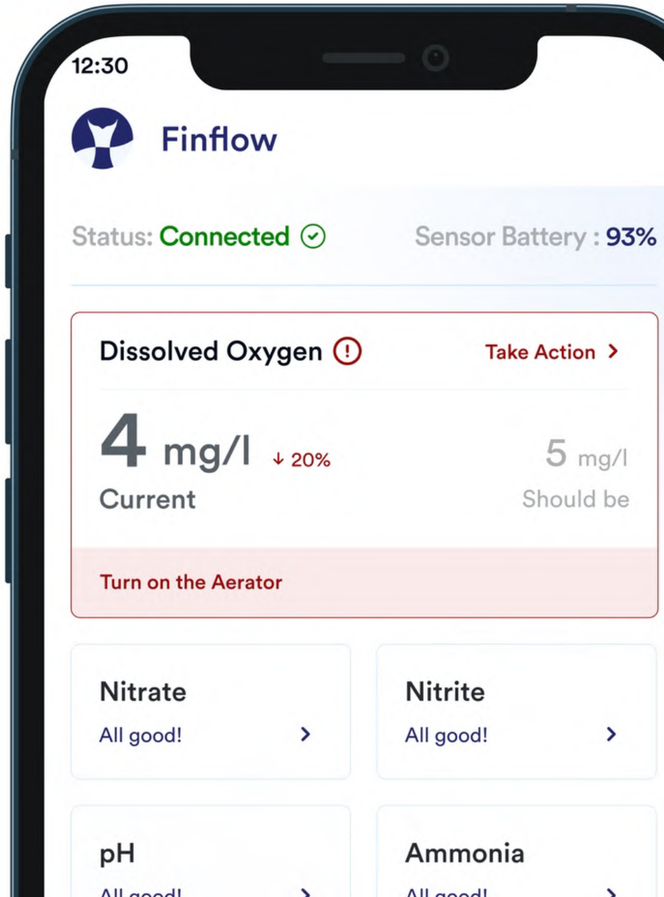
- Too expensive
- Not vertically intergrated
- Do not give actionable feedback.

Solution

FINFLOW

IoT Enabled Smart Pond Monitoring System





Solution

PRESENTING - FINFLOW

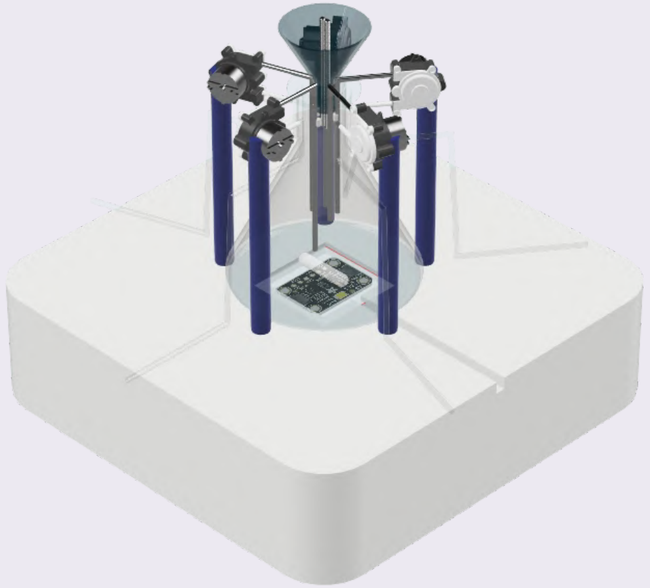
Provides real time insights into contaminants of the water body through phone Interface.

Provides actionable feedback on the status.

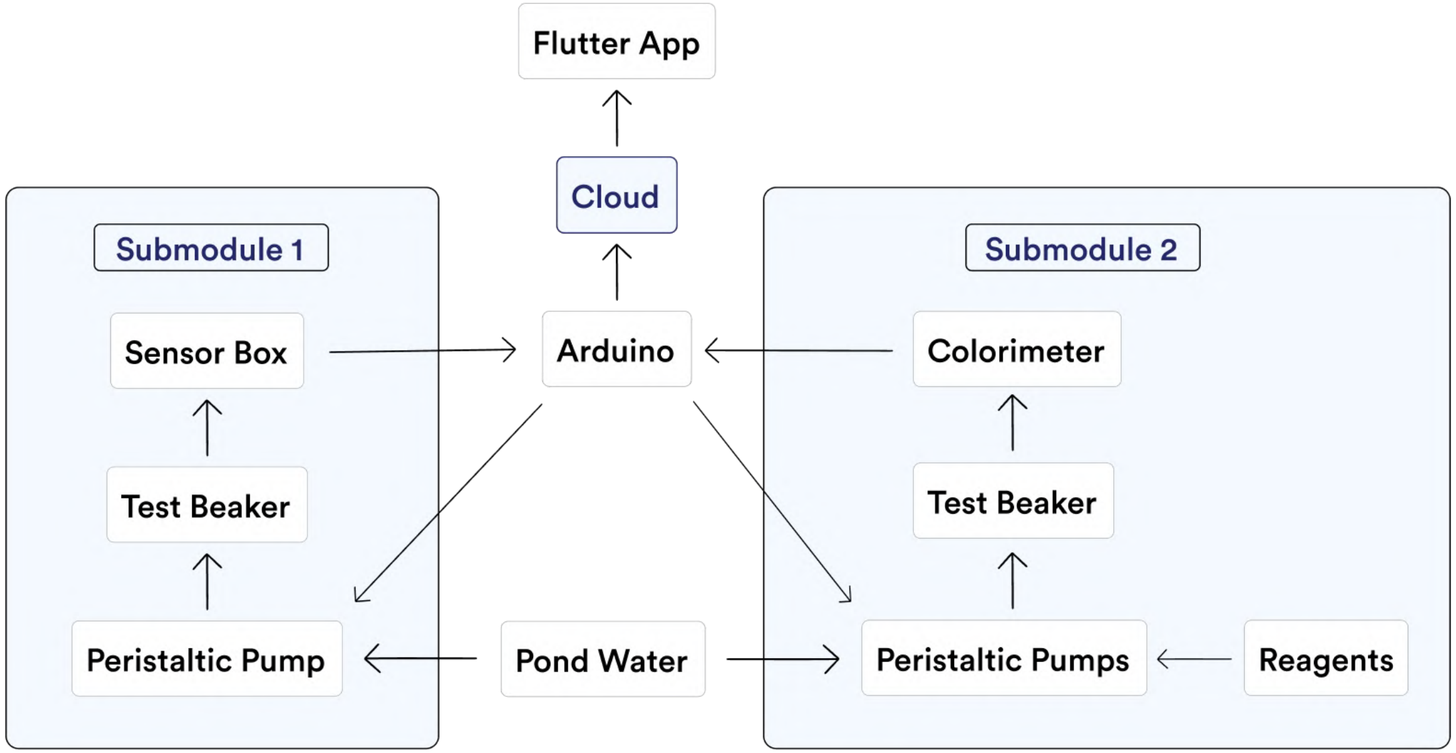
Creates an ecosystem for the fish farmers that can be expanded to open up insurance, marketplace, credit and other opportunities for the Fish Farmers within the app.

Solution

HARDWARE IOT DEVICE



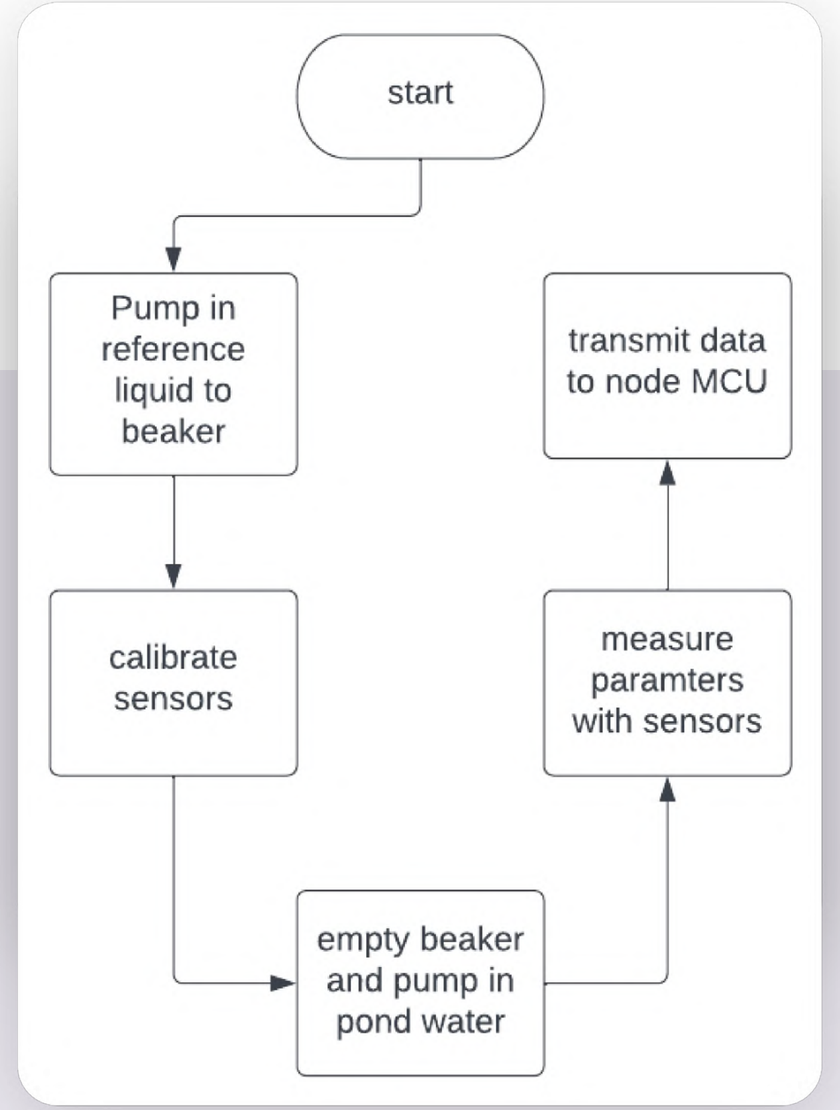
THE ENTIRE SETUP IS DIVIDED INTO TWO SUBMODULES, ONE WHICH USES **VOLUMETRIC TITRATION**, AND THE OTHER **USES DIRECT SENSORS** FOR MEASUREMENT.



Workflow of different Modules

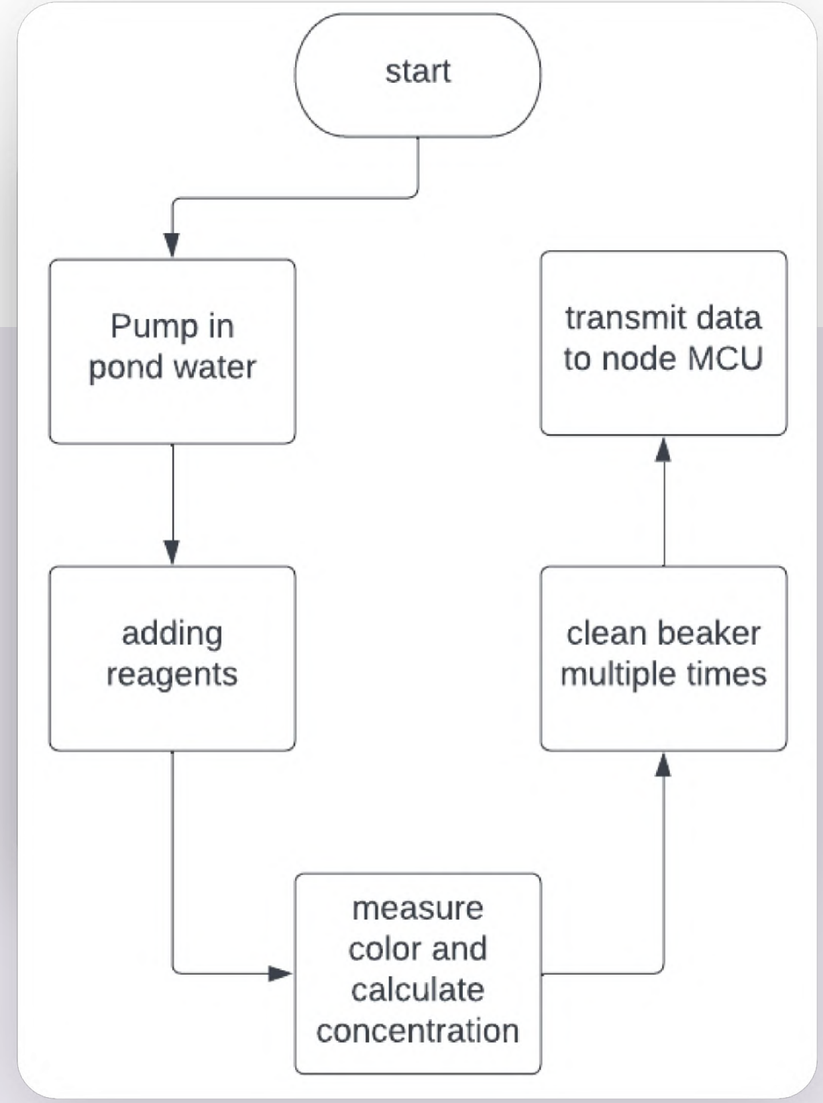
Submodule 1

SENSOR MEASUREMENTS



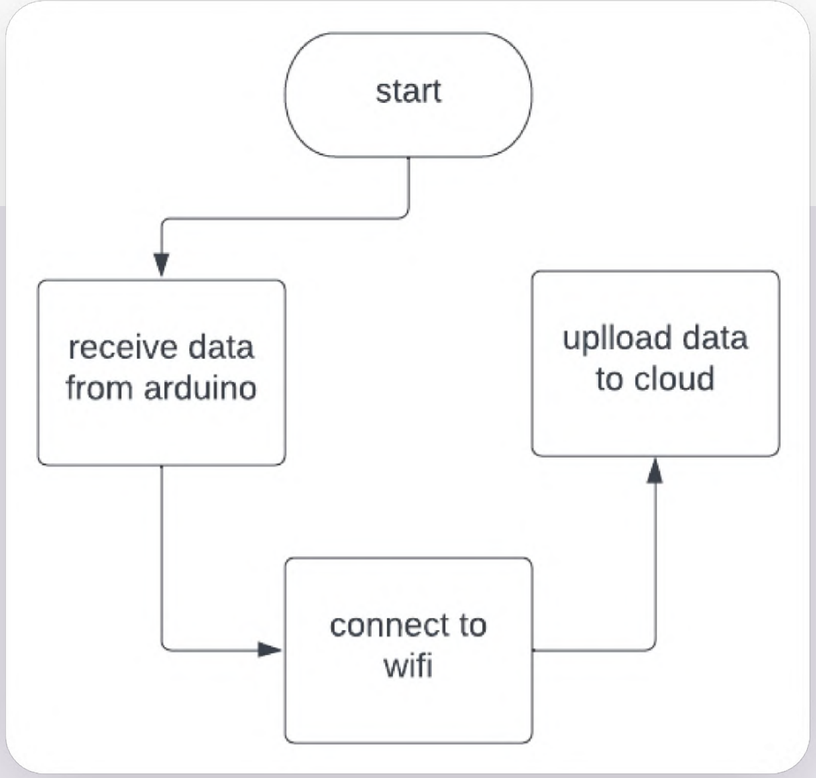
Submodule 2

VOLUMETRIC ANALYSIS



Submodule 3

UPLOADING TO CLOUD



Solution

SOFTWARE IMPLEMENTATION

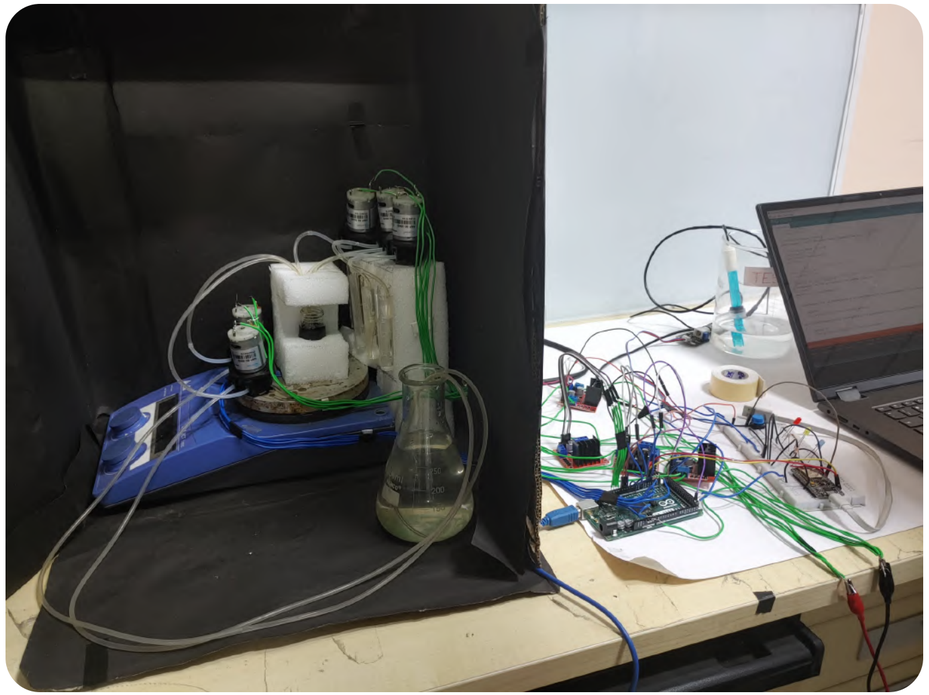
Android app, made on flutter.

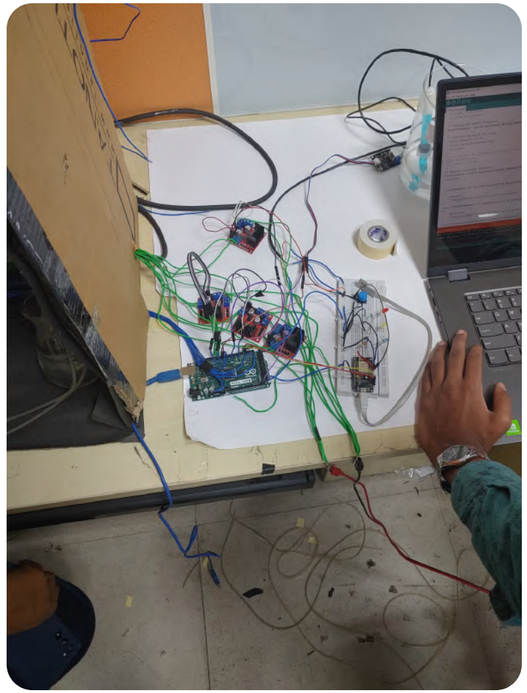
The app fetches data from firebase cloud and performs computations to alert users if any parameter is above or below threshold values.

User will be suggested actionable to restore the parameter/s value into the ideal range

Technical Details

PROTOTYPE

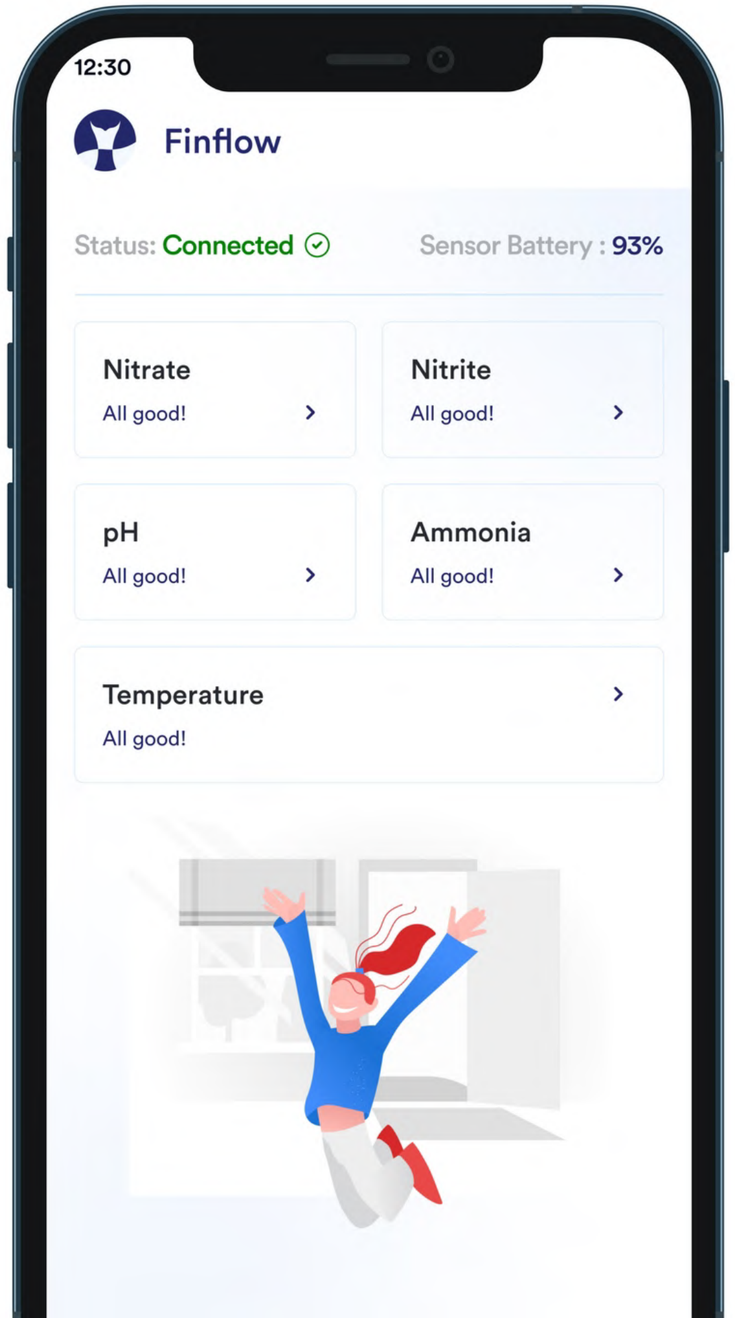


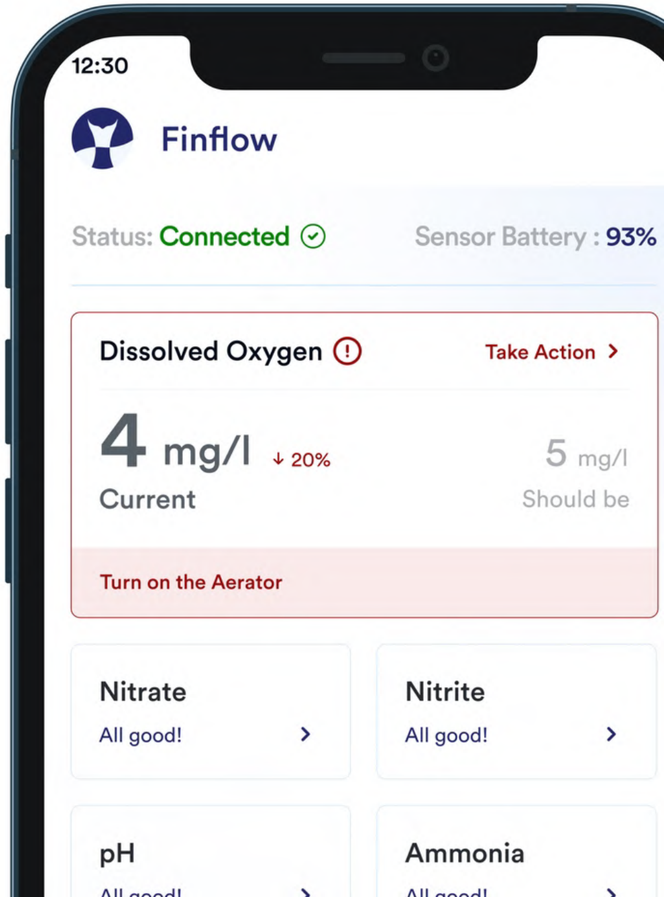


Link: Prototype

Solution

USER INTERFACE

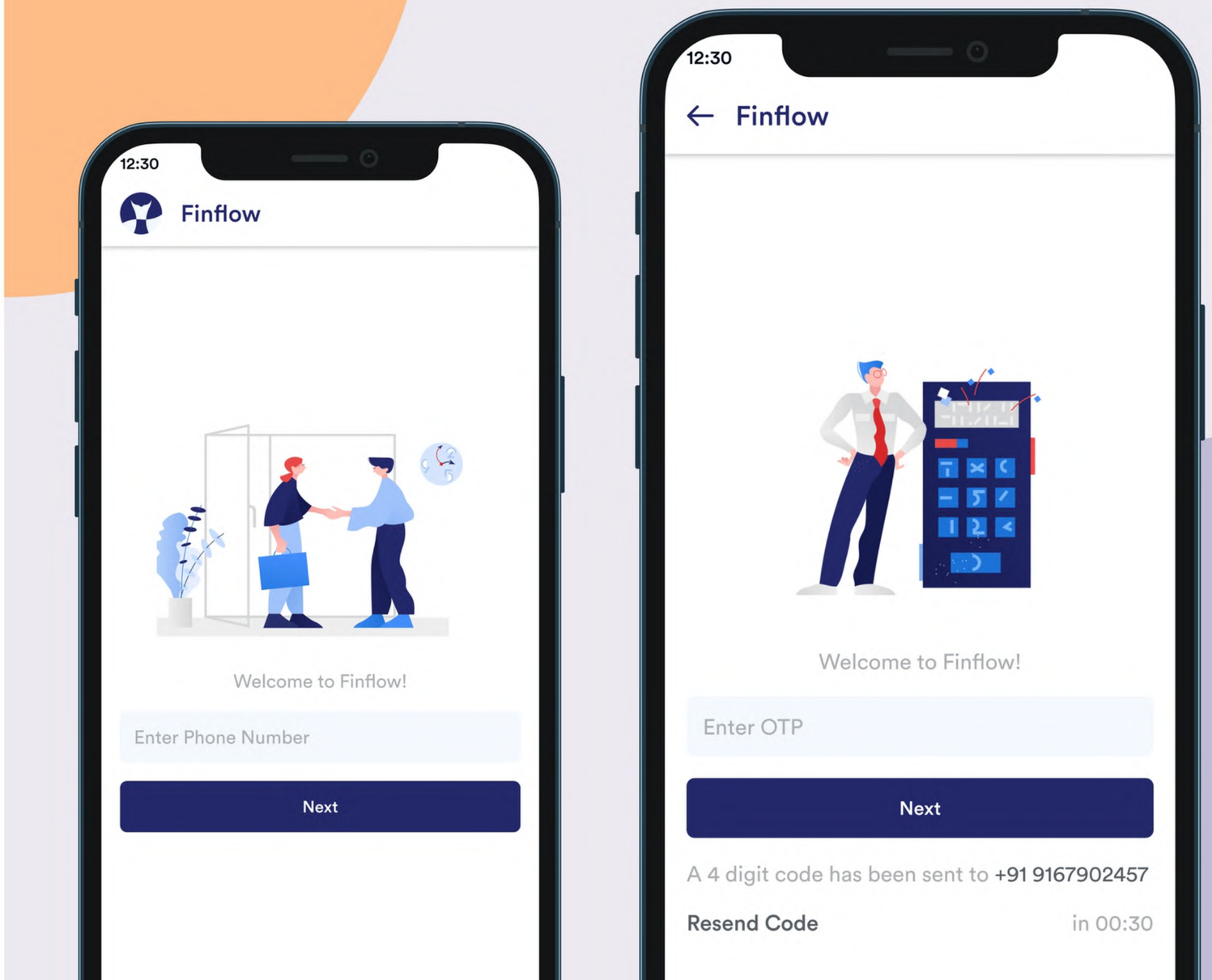




Software and UI Implementation

LOG IN

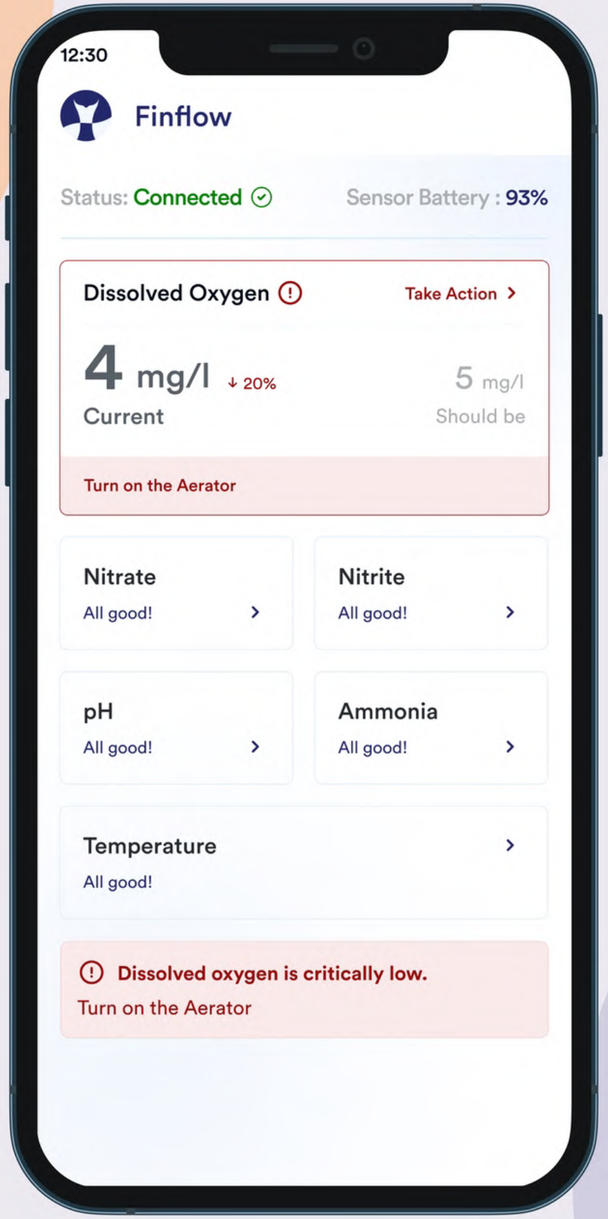
A mobile number will be the unique identifier of the user.



Software and UI Implementation

DASHBOARD

- Real-time parameters are shown on the dashboard.
- A parameter card gets highlighted when its value deviates from standard values.

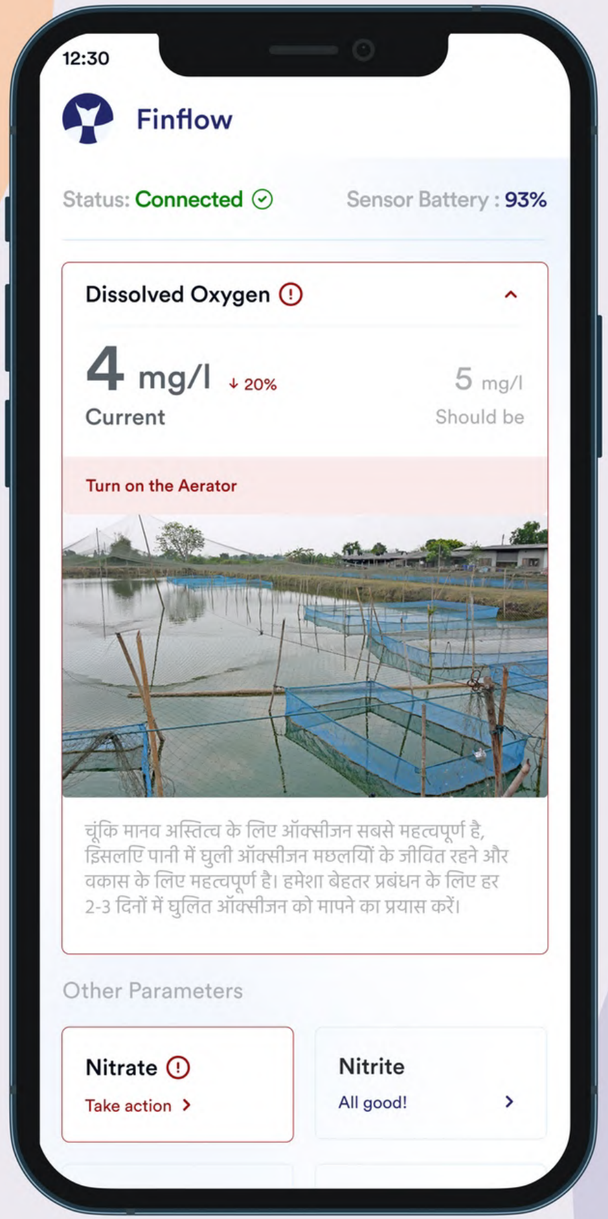


Software and UI Implementation

DASHBOARD

Upon clicking the parameter card,

- User can see the image of the actionable required to control that parameter.
- Additionally, user can read some basic information about the significance of that parameter.



BUSINESS OVERLOOK

Small-Scale inland fish farmers

Pricing
Rs. 25,000

TAM = 1.3 M x 25,000
= Rs. 33Billion

Initial Target Audience:

West Bengal

Telengana

Odisha

Andhra Pradesh

DISTRIBUTION PLAN

1. Fisheries Equipment stores:

#Stores in 735 districts *
150 shops = 100K shops

Commision

10%

2. Awareness and Direct Sell

Awareness and demonstration of our products through exhibitions at mandi, FFDAs (Fish Farmers Development Agencies), KVKs (Kishan Vigyan Kendra).

COST AND EXPENSES

COST ANALYSIS

COST

RS. 15,000

Our distribution channels will be existing stores of fishery products and equipment.

Other expenses per product = 2500 (fixed commission) + 2000*10% (referral cost) + 500-1000 (variable cost: transportation + marketing) = Rs. 4000

COST TABLE

Sensor probes	Cost (in INR)
Dissolved oxygen	2400
ph	2000
Turbidity	1000
Salinity (TDS)	1500
Temperature	100
Volumetric Analysis Probe for Nitrate and Ammonia	4300
Arduino	1300
Other Costs	2400

REVENUE DETAILS

PRICING

Rs		Rs		Rs		Rs
25,000	-	(15,000	+	4,000)	=	6,000
		Cost of Manufacturing		Marketing and distribution		Profit

GROSS MARGIN

40%

NET MARGIN

24%

Referral program: Referrer and the referred person can get the monetary value up to Rs. 1000.

Social Proof works well in Rural areas.

REVENUE PROJECTIONS

First

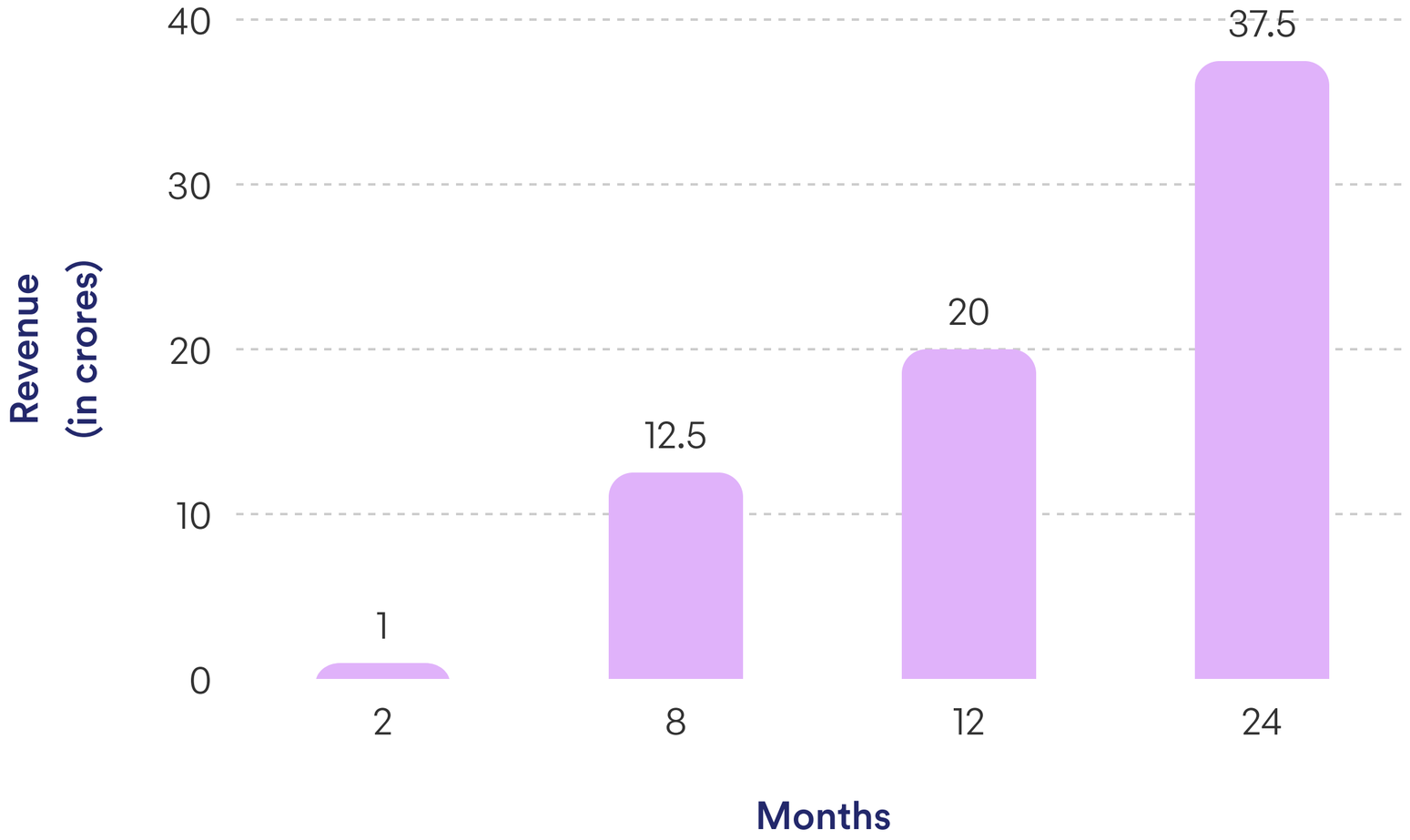
400

customers in 2 months:
10 districts from each of 4 prominent fishery states

Next

5000

customers in the next 6 months.



Future Plan

ONE-STOP FISHERY SUPPORT ECOSYSTEM

By leveraging:

- The data of water quality
- Already acquired users

Insurance

Affordable premium using our water quality data

Lending

Providing organized credit required for expansion and upgradation

Marketplace

Taking mandi online

Service Contact

Doctor, mud services, labour etc.

Future Plan

FINFLOW 2.0

Moving to the next target segment:

Medium and Large scale farmers

A premium product which will include:

Automated fish feeding

Automatic parameter control

Disease detection

Automated detection of residue antibiotics and chemicals used.

Density determination

THANK YOU

REFERENCES

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