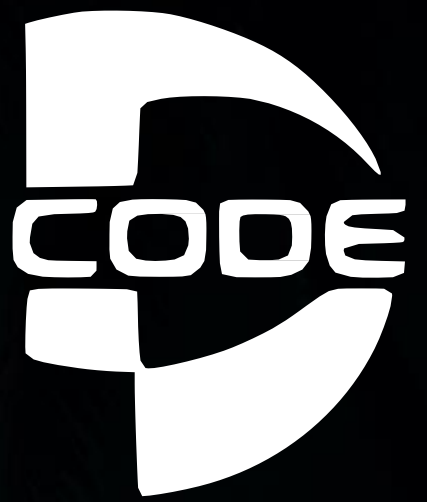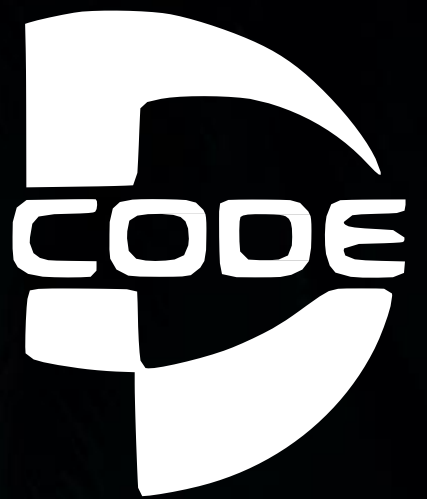# PROBLEM STATEMENT

India's agricultural sector is dominated by small farmers who struggle to afford expensive machinery like harvesters, seeders, and crop residue–to–fodder converters. While large farmers often own such equipment, it remains idle for much of the year. This results in underutilized assets, reduced productivity for small farmers, and harmful practices like stubble burning, which contribute to severe air pollution in regions such as Delhi-NCR. Lack of affordable access to modern tools limits crop yield, resource efficiency, and income potential for millions of farmers.
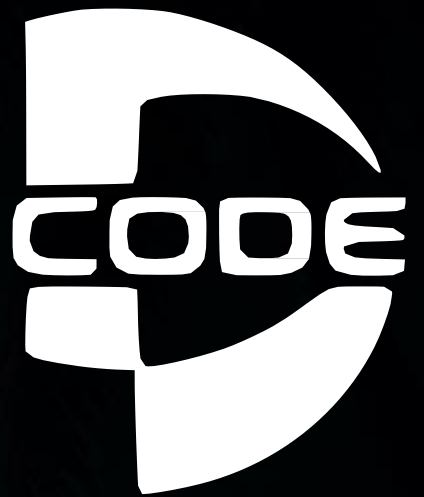
SOLUTION

AgriConnect is a digital platform that connects large farmers willing to rent out their machinery or agricultural property with small farmers in need. The platform enables equipment booking, secure transactions, and efficient scheduling. By promoting the use of crop residue–to–fodder machines, it reduces stubble burning and minimizes pollution. Integrated features like a multilingual chatbot, crop yield prediction, and market price forecasts provide farmers with actionable insights, helping them make informed decisions, improve productivity, and adopt sustainable farming practices.
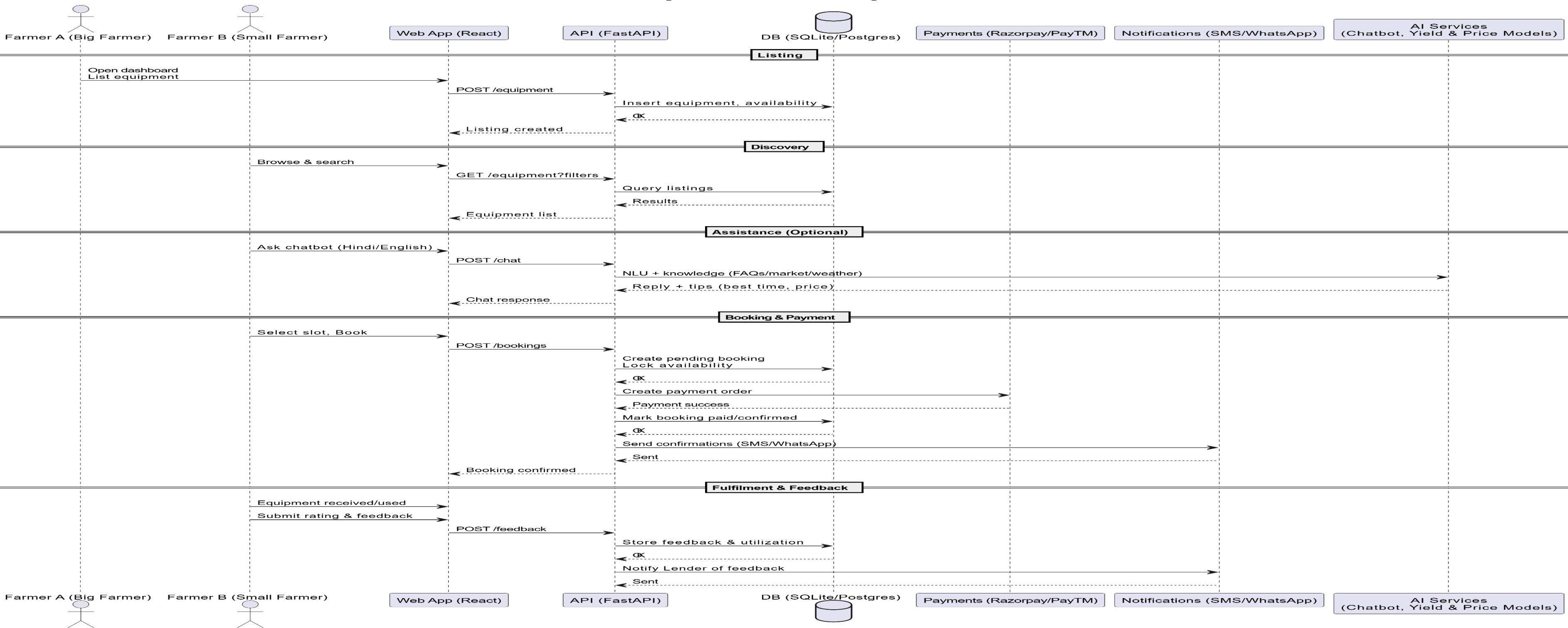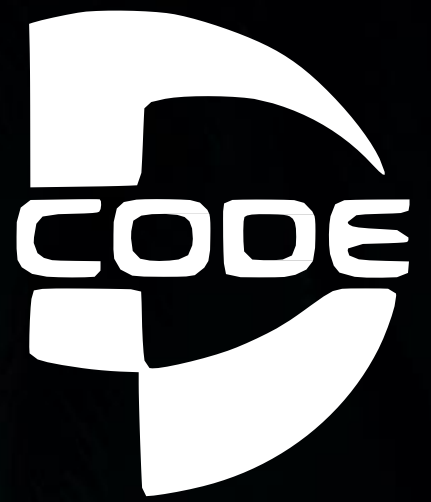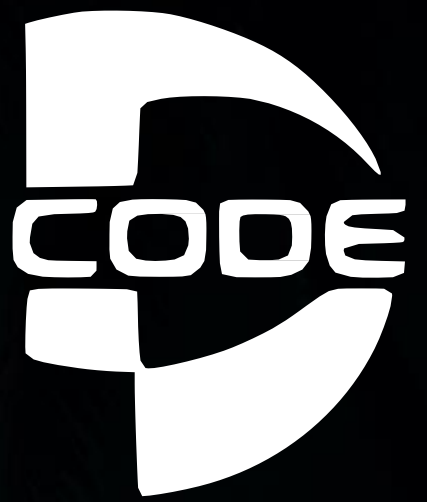
ARTITECHURE

AgriConnect - End-to-End Booking Flow

Farmer A (Big Farmer) | Farmer B (Small Farmer) | Web App (React) | API (FastAPI) | DB (SQLite/Postgres) | Payments (Razorpay/PayTM) | Notifications (SMS/WhatsApp) | AI Services (Chatbot, Yield & Price Models)

Listing

Open dashboard
List equipment

POST /equipment

Insert equipment, availability

OK

Listing created

Discovery

Browse & search

GET /equipment?filters

Query listings

Results

Equipment list

Assistance (Optional)

Ask chatbot (Hindi/English)

POST /chat

NLU + knowledge (FAQs/market/weather)

Reply + tips (best time, price)

Chat response

Booking & Payment

Select slot, Book

POST /bookings

Create pending booking
Lock availability

OK

Create payment order

Payment success

Mark booking paid/confirmed

OK

Send confirmations (SMS/WhatsApp)

Sent

Booking confirmed

Fulfilment & Feedback

Equipment received/used

Submit rating & feedback

POST /feedback

Store feedback & utilization

OK

Notify Lender of feedback

Sent

Farmer A (Big Farmer) | Farmer B (Small Farmer) | Web App (React) | API (FastAPI) | DB (SQLite/Postgres) | Payments (Razorpay/PayTM) | Notifications (SMS/WhatsApp) | AI Services (Chatbot, Yield & Price Models)

TECHNOLOGY USED

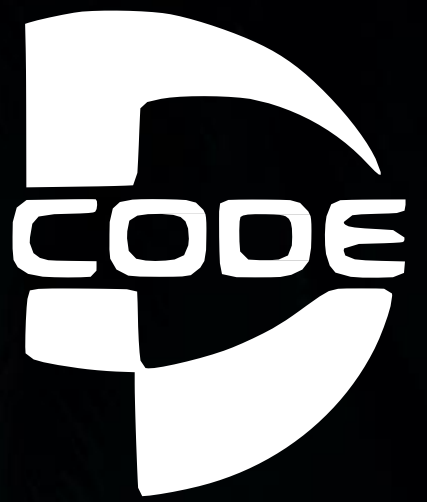| Layer	Technology Used
Frontend	React.js + Tailwind CSS
Backend	**FastAPI and SpringBoot**
Database	SQLite
Auth	JWT (FastAPI dependency)
Payment	Razorpay (optional later)
Chatbot	FastAPI + OpenAI/HuggingFace
Voice Assistant	Whisper / Google Speech API
Weather API	OpenWeatherMap
Hosting	Railway / Vercel / Render
Version Control	GitHub

FEATURE/USP

- **Farmer-to-Farmer Equipment Sharing** – Direct rental marketplace where big farmers lend underutilized machinery to small farmers, reducing idle time and increasing rural income.
- **Pollution Reduction with Fodder Conversion** – Promotes use of machines that convert crop residue into fodder, tackling stubble burning and helping reduce Delhi-NCR air pollution.
- **Multilingual AI Chatbot** – Voice/text chatbot in regional languages to guide farmers on equipment use, crop planning, and government schemes.
- **Integrated Prediction Tools** – AI-powered crop yield forecasting and market price predictions to help farmers make data-driven decisions.
- **Affordable & Accessible** – Pay-per-use rentals remove the high capital barrier for small farmers to access modern agricultural technology.
- **Sustainability Focus** – Encourages circular farming by converting waste into useful byproducts and improving resource utilization.
- **Offline + Low Bandwidth Friendly** – Designed for rural areas with intermittent internet access, ensuring inclusivity.

THANK YOU!