

FarmPulse

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Research

What problem was I trying to solve?

- Farmers often struggle to track farm activities, weather, inventory, and costs in one place.

The Question I Asked Farmers:

- *"What's the biggest challenge you face when managing your farm day-to-day?"*

Main Response:

- *"Keeping track of everything in one place is tough—weather, costs, activities, and equipment."*

Filling the Gap:

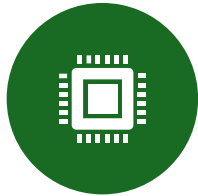
- I wanted my app to combine key tools like weather updates, activity logs, inventory management, and more, all in one place, so it's designed to save time and make farming more efficient.

• This one question, along with Teagasc studies allowed me to dive deeper into what technologies to use to achieve this goal. I researched multiple API documents, technologies and libraries which are mentioned throughout this powerpoint.

Academic/Technical Content



**React – React Hooks,
Context API**



**RESTful API development
– CRUD operations, Error
handling and route
separation**



**Database Architecture –
MongoDB, Express.js,
node.js, Multer**



**Security – Bcrypt
password hashing**



**API Integration – Google
Maps API,
OpenWeatherMap API,
Serp API**



**Axios for HTTP requests
with timeout handling**



UI Design – CSS styling

Demonstration Of Understanding

Fullstack app with **React**, **Express**, and **MongoDB**, with **multer** also in backend for easy image uploads

Live weather and **5-day forecast** using **OpenWeather API**

Interactive farm map powered by **Google Maps API**

Product search inside the app using **SerpAPI**

Cost/income graphs and **weather graphs** built with **Recharts**

Login system with protected pages

Light/dark mode toggle using **React Context**

Fast and reliable API calls with error handling

Mobile-friendly and **optimized** with memoized components

Organisation



- **Jira – Used for project managements – define deadlines and goals**
- **One Note – used for weekly logs and teamwork logs**
- **GitHub – manage source code and track progress overtime**

References



Google Maps API
Docs



OpenWeatherMap
API website



Serp API Docs



Open AI (All areas it
was used are
referenced in report)



NPM Docs (multer,
bcrypt)



Teagasc website