🚀 Final Integration & Deployment Plan for VeriHarvest

## **📌 1. Integration of All Modules**

Each component needs to communicate smoothly. Here’s how:

### **🔹 Backend API Integration**

✅ Ensure **FastAPI backend** is running:

uvicorn veriharvest\_backend:app --reload

✅ Frontend connects to FastAPI (http://localhost:8000).

### **🔹 IoT Data Integration**

✅ IoT sensors publish data to the **MQTT broker** (veriharvest/sensor).  
 ✅ Backend listens for sensor alerts and updates **food batch compliance**.

### **🔹 Blockchain Smart Contract Integration**

✅ Deploy the **Solidity smart contract** to **Polygon Mumbai Testnet**.  
 ✅ Fetch **food batch verification status** from **Ethereum/Hyperledger**.

## **📌 2. Deployment Strategy**

### **🔹 Smart Contract Deployment**

Deploy Solidity contract to **Ethereum Testnet**:

npx hardhat run scripts/deploy.js --network mumbai

### **🔹 Backend Deployment**

✅ Host on **AWS EC2 / Railway.app / Heroku**:

gunicorn -w 4 -k uvicorn.workers.UvicornWorker veriharvest\_backend:app

### **🔹 Frontend Deployment**

✅ Deploy to **Vercel / Netlify**:

npm run build

vercel deploy

or

netlify deploy

## **📌 3. Final Testing & Launch**

✅ **Test API Calls:**

curl -X GET "https://veriharvest-backend.com/get\_batch/1"

✅ **Check UI Functionality (Vercel/Netlify Link)** ✅ **Scan QR code in Consumer App for verification**