

# AI for Bharat Hackathon

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**Team Name : TEAM VISTARA**

**Team Leader Name : N ROHITH REDDY**

**Problem Statement : Lack of affordable, farm-specific precision agriculture tools for India's smallholder farmers.**

**Brief about the Idea:** CropTwin is a sensor-less digital twin platform that creates virtual representations of smallholder farms using public data such as satellite imagery, soil datasets, and weather information. These digital twins continuously simulate crop conditions and generate localized advisories for farmers without requiring any physical hardware.

**Your solution should be able to explain the following:**

How different is it from any of the other existing ideas? :

- No IoT devices or sensors required
- Designed for fragmented Indian farms
- Works in low-connectivity regions

How will it be able to solve the problem? :

- Uses public datasets to model farm conditions
- Provides farm-specific advisories instead of generic alerts

USP of the proposed solution :

- Digital twins without hardware
- Offline-first advisory delivery
- Scalable to millions of farms

## List of features offered by the solution :

Virtual farm twin creation

Crop stress & pest risk alerts

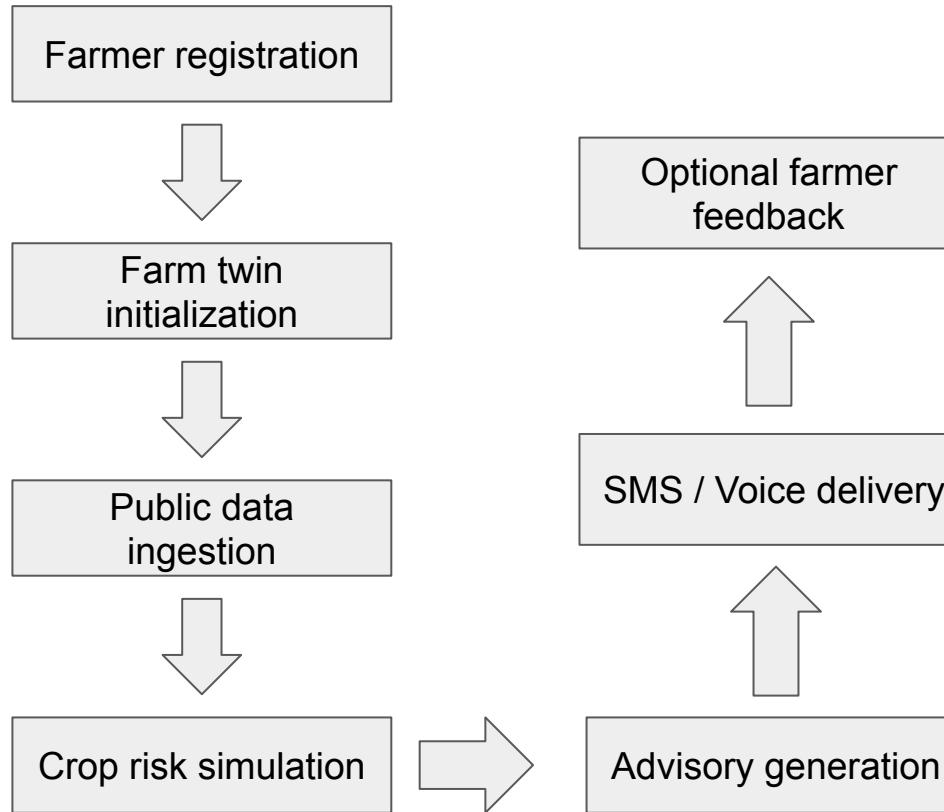
SMS / IVR / voice-based advisories

Regional agricultural insights

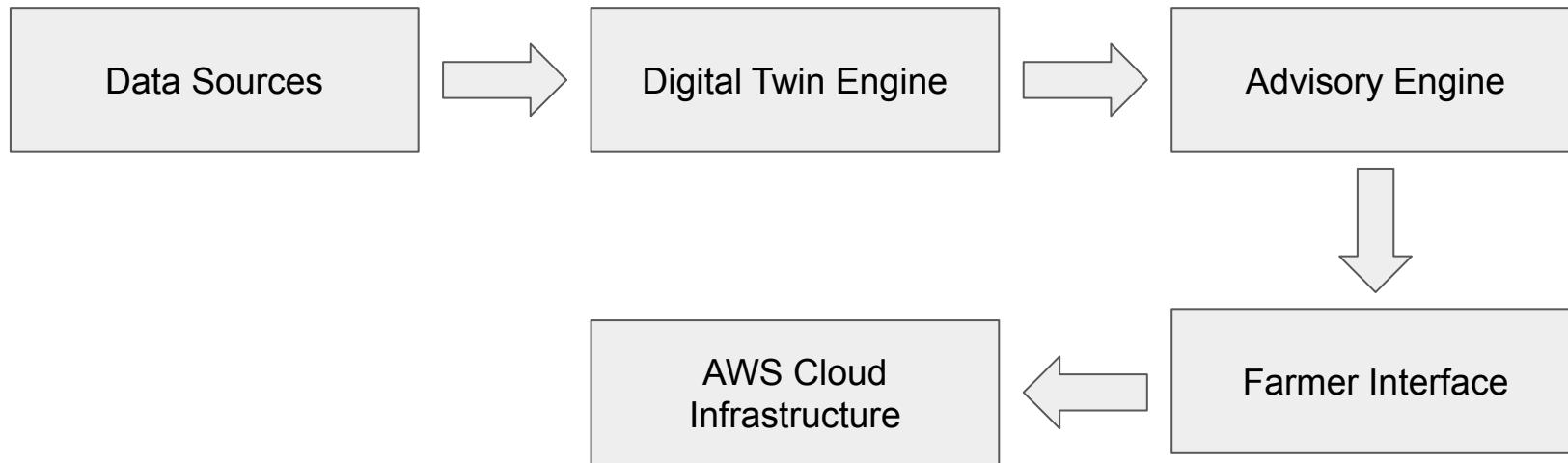
Multi-language support

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## Process flow diagram or Use-case diagram



## Architecture diagram of the proposed solution:



## Technologies to be used in the solution:

- AWS Lambda
- AWS Step Functions
- Amazon DynamoDB
- Amazon S3
- Amazon EventBridge
- Amazon SNS
- API Gateway

## Estimated implementation cost (optional):

- Low initial cost due to no hardware
- Pay-as-you-go cloud infrastructure
- Cost efficient at national scale

## Add as per the requirements for the hackathon

### **Impact:**

- Reduced crop loss
- Inclusion of marginal farmers
- Data-driven agriculture for India

### **Conclusion:**

CropTwin enables precision agriculture without barriers, making advanced farming intelligence accessible to every Indian farmer

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