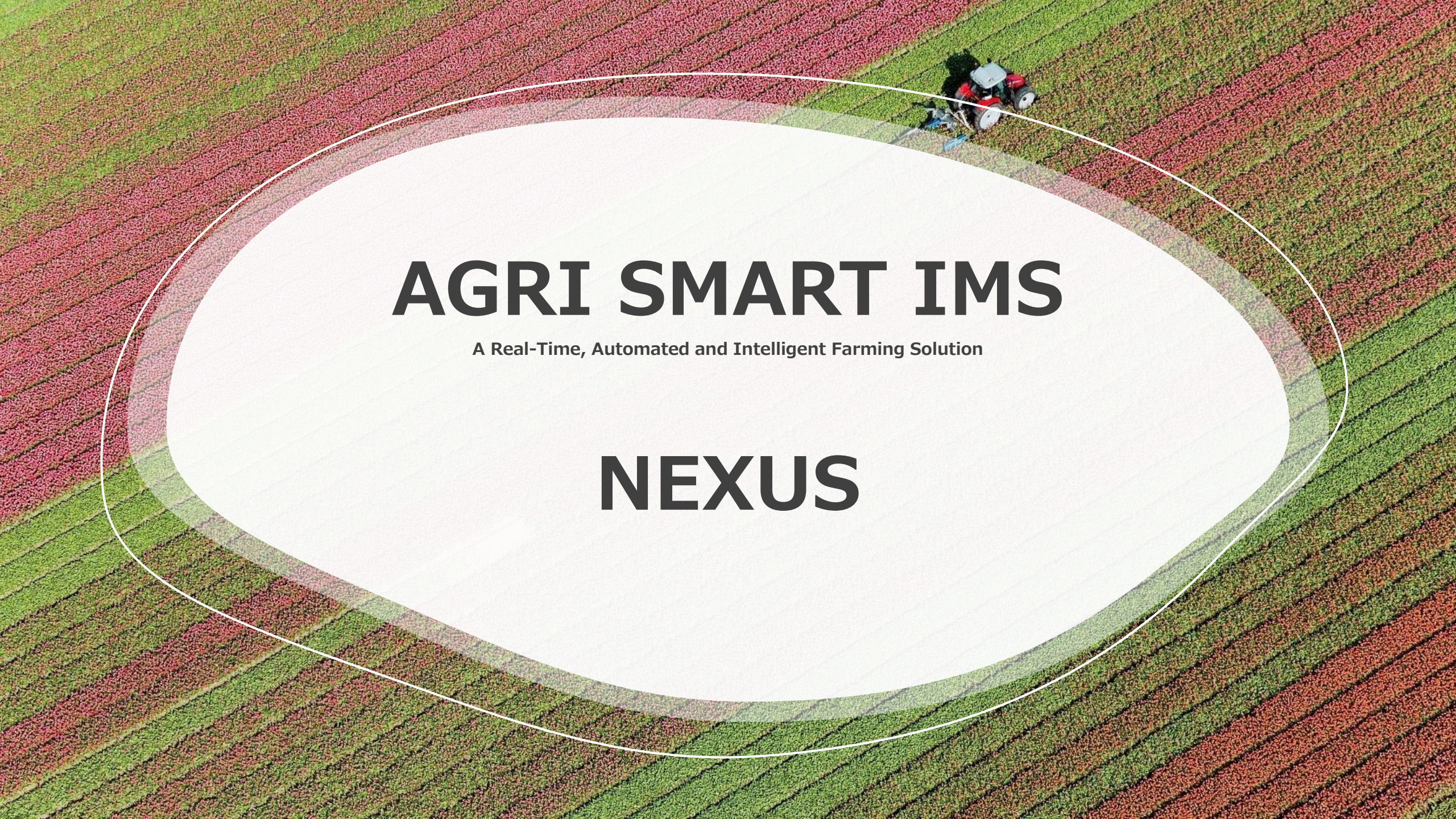


AGRI SMART IMS

A Real-Time, Automated and Intelligent Farming Solution

NEXUS

Agenda

Introduction

Understanding the problem statement

Our Solution

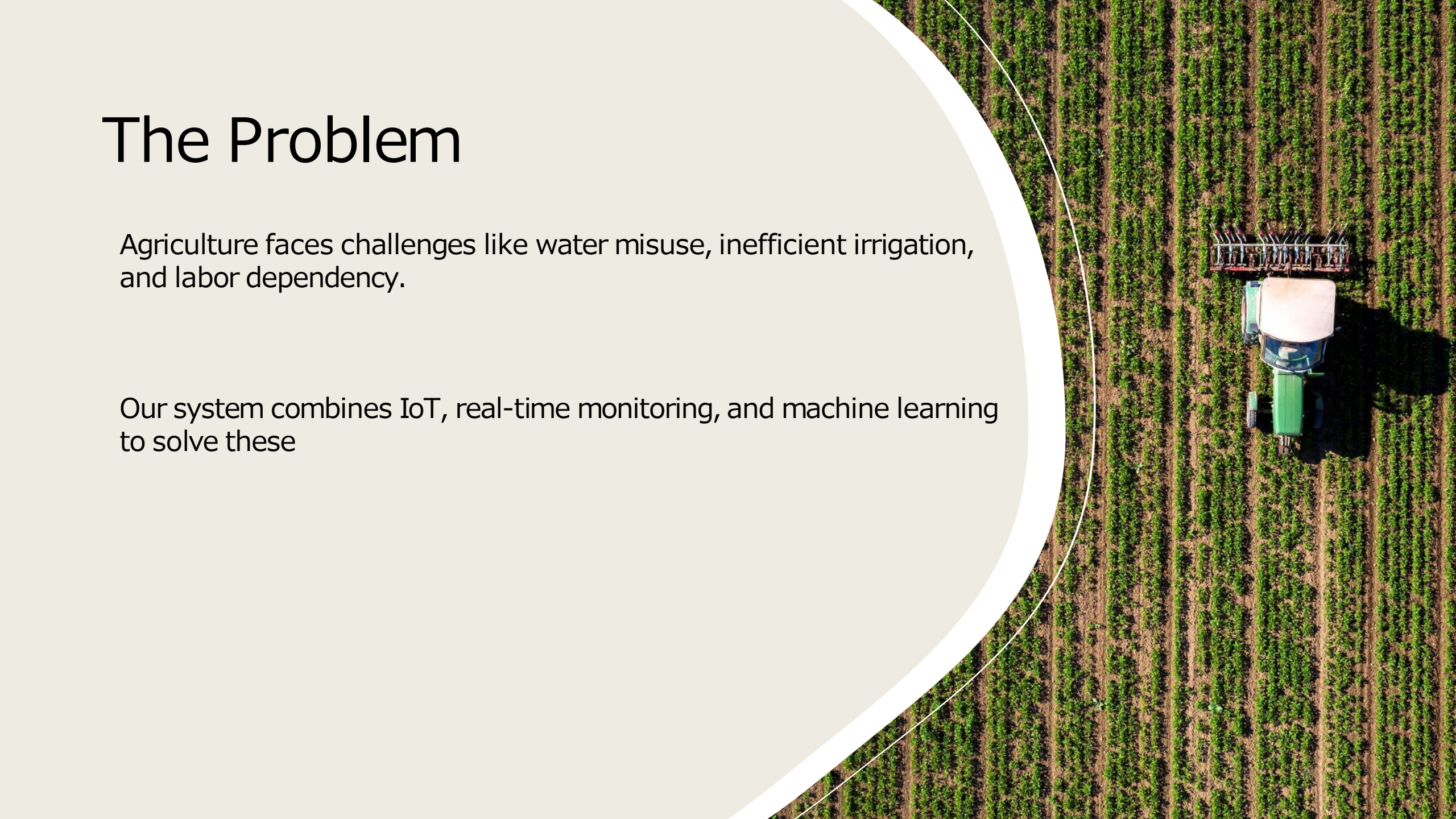
Feature highlight

Impact

The Problem

Agriculture faces challenges like water misuse, inefficient irrigation, and labor dependency.

Our system combines IoT, real-time monitoring, and machine learning to solve these



Farmers struggle with a lot of agricultural requirements . One of which and the most important is irrigation.

So we provide a solution where a farmer can access his fields from anywhere around the word!

Sounds saturated?? We also provide ML analysis to detect sensor faults .

Also a farmer will have manual button control to his farm.

Objectives

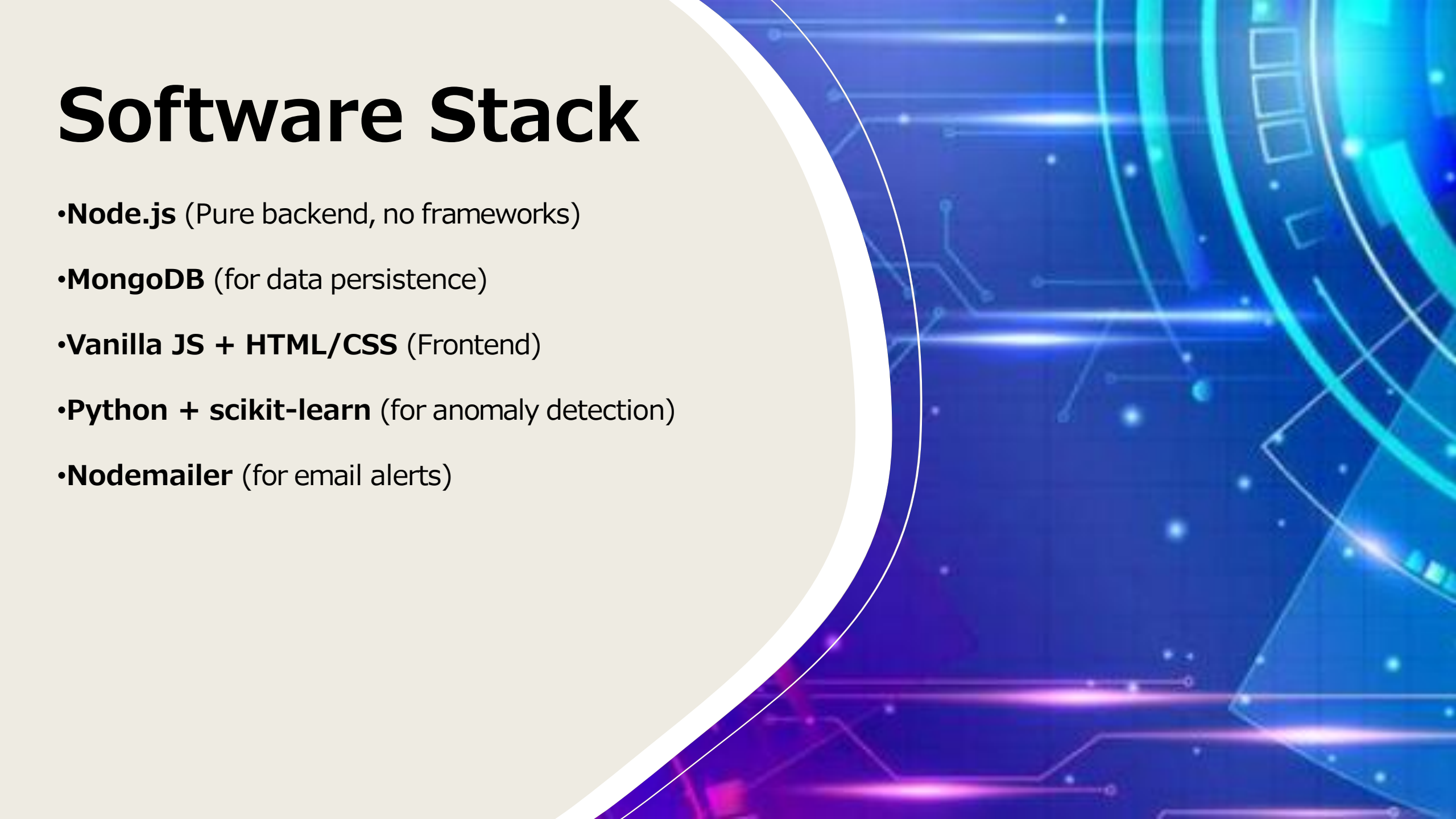
- Automate irrigation based on moisture/water levels.
- Enable remote manual control of motors.
- Provide real-time weather and rain updates.
- Detect sensor anomalies.
- Minimize water waste and human intervention.

Hardware Components

- **NodeMCU ESP8266** (WiFi-enabled microcontroller)
- **Moisture Sensor** (for vegetative fields)
- **Ultrasonic Sensor** (for paddy water levels)
- **Rain Sensor** (instant rain detection)
- **DHT11** (temperature & humidity sensor)
- **Motor and transistor circuit** (for field irrigation)

Software Stack

- **Node.js** (Pure backend, no frameworks)
- **MongoDB** (for data persistence)
- **Vanilla JS + HTML/CSS** (Frontend)
- **Python + scikit-learn** (for anomaly detection)
- **Nodemailer** (for email alerts)

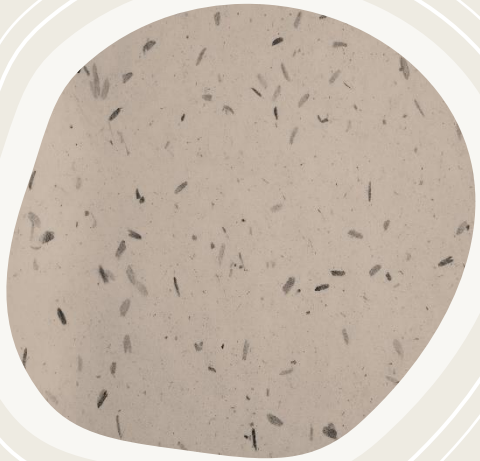
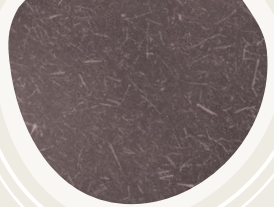


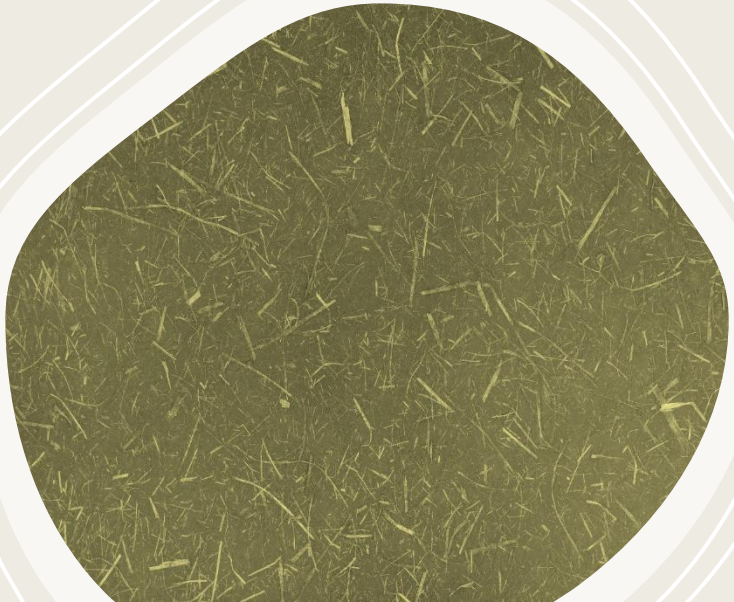
Architecture

- Data push : Sensor Data -> Node.js server -> Data base
- Data pull : Nodemcu(GET) -> Nodejs server ->DB ->Nodejs ->Nodemcu.
- All data are logged periodically in the DB to ensure little to no data loss.

Were Do We Stand Out :

- Dual Field Support with Sensor-Specific Logic
- Manual + Automatic Hybrid Irrigation
- Live Web Dashboard (Not Just Mobile App)
- Real-Time Monitoring via Polling
- Anomaly Detection via ML
- Full Offline-First Architecture
- Expandable & Modular



Thank You

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TEAM17