# Service Desk for Agriculture

AN INTELLIGENT AGRICULTURAL CALL CENTER WITH MULTIPLE AGENTS AND SECURE AUTOMATION

**Large agribusinesses, cooperatives, and corporate farms receive hundreds of repetitive calls every day. with several exceeding the mark of 3,000 employees or members.**

"My planter has a faulty sensor, what now?"

"I need an urgent agronomic report."

"My fertilizer stock is low."

"I want to know what pest is attacking my corn."

# Problem

| Organization | Sector | No. of Employees | No. of Members/Associates | Note |
|---|---|---|---|---|
| Coamo | Grains (soy, corn, wheat) | +9,000 | +30,000 | Largest agro-industrial cooperative in Latin America |
| Aurora Coop | Meat and dairy | +35,000 | +100,000 | One of the largest in Brazil |
| Copersucar | Sugarcane, ethanol | Thousands (exact figures not public) | +1,000 producer associates | Largest sugar and ethanol cooperative in the world |
| Cocamar | Diversified (soy, corn, coffee) | +3,000 | +16,000 | Strong presence in Paraná |
| Sugarcane sector (mills) | Sugarcane, sugar, ethanol | ~690,000 direct jobs | — | Average per mill: between 3,000 and 10,000 employees |

# Agro Solution

Introducing the **AgroHelpdesk** for Agribusiness and Agriculture, an intelligent service center built on a multi-agent architecture and focused on secure automation, full transparency, and proper scalability.

The platform allows producers, technicians, and collaborators to request any type of support via chat, web, WhatsApp, Teams, or even voice, by sending messages, photos, or audio.

# How Its Works

**01** **FieldSense Agent** → Identifies the intent of the request (e.g., pest diagnosis, machine failure, input request, technical report).
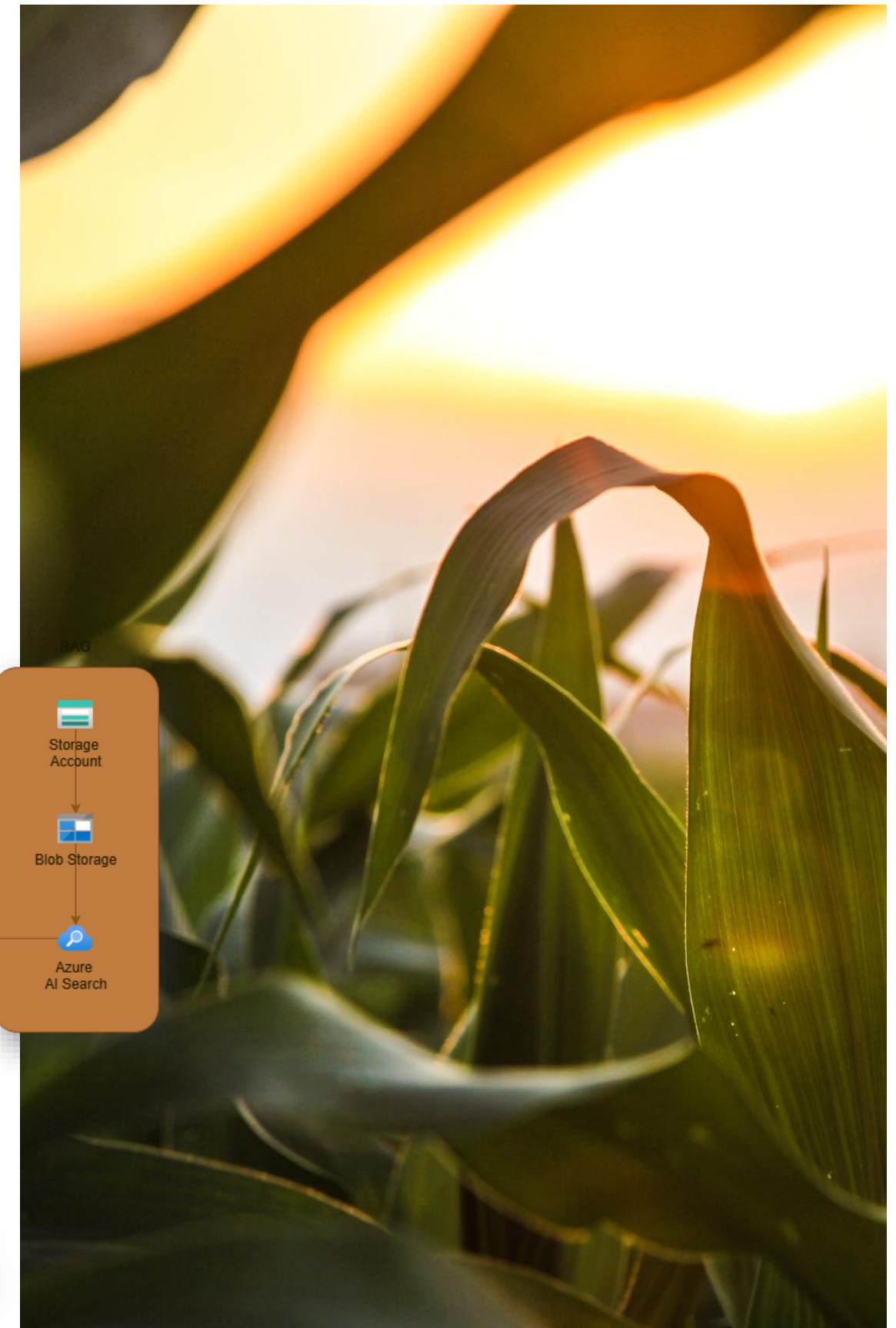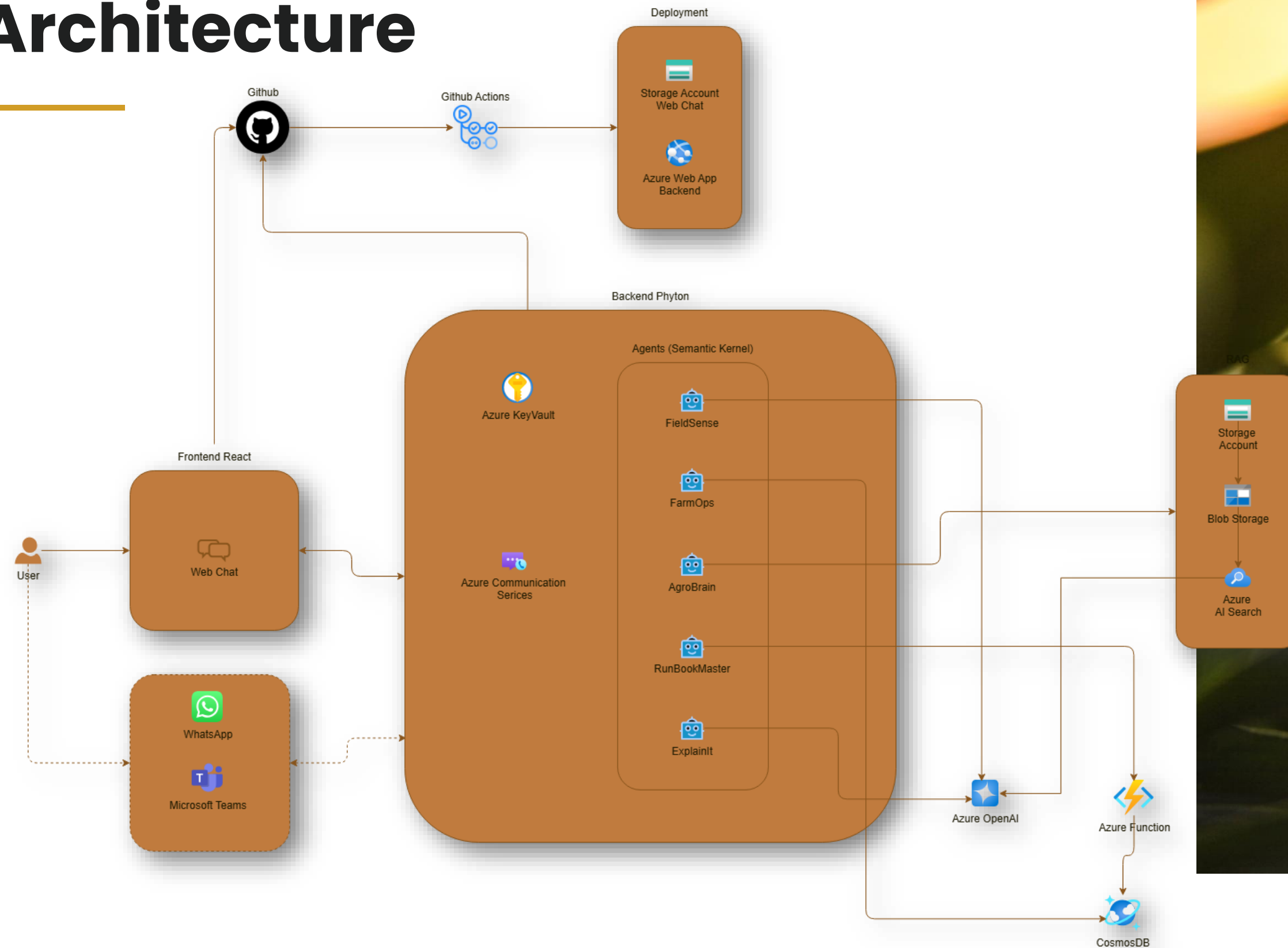
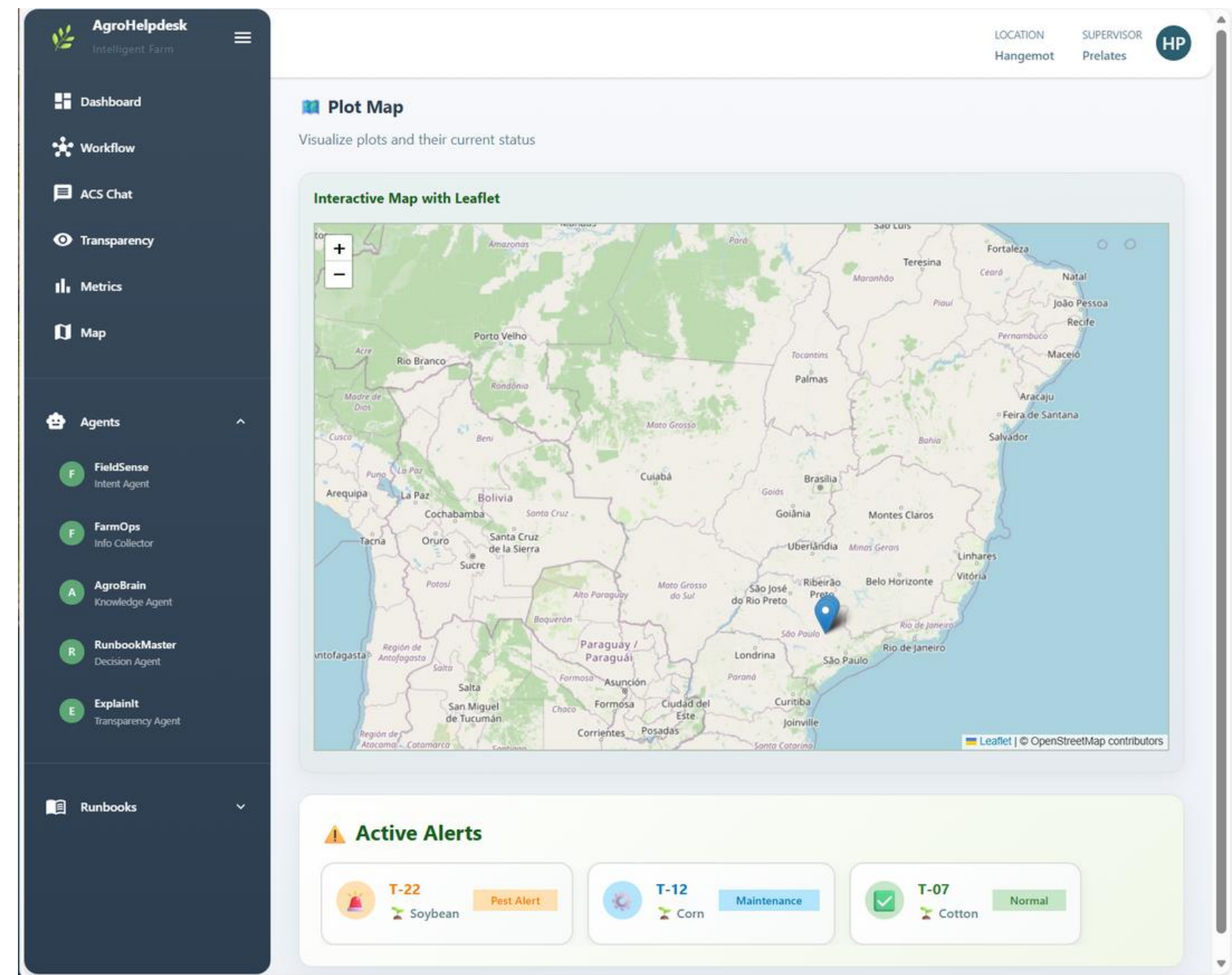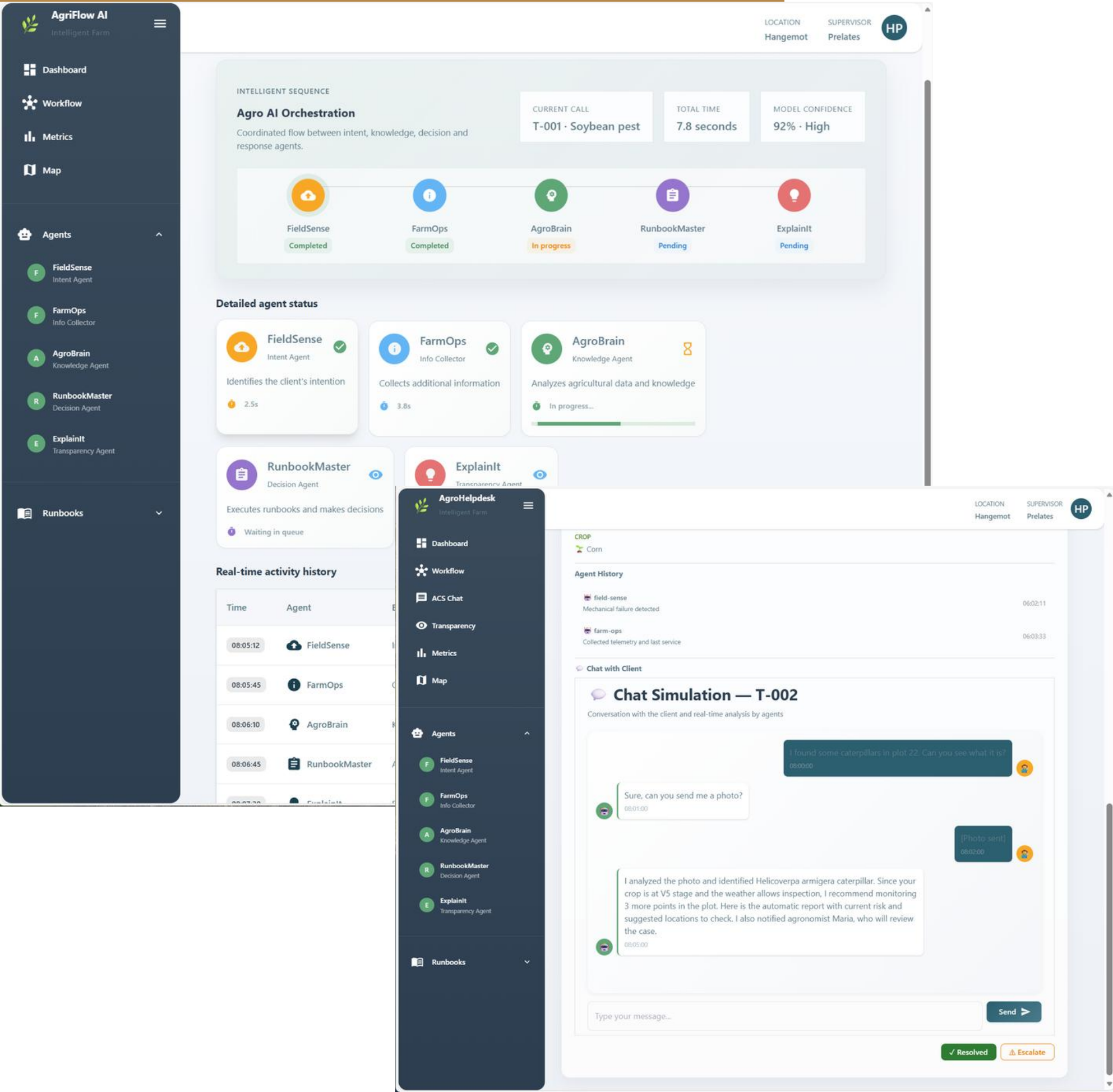**02** **FarmOps Agent** → Information collection and context enrichment.

**03** **AgroBrain** → Consults phytosanitary bulletins, farm history, IoT sensors, and equipment manuals. (RAG)

**04** **RunbookMaster Agent** → Decision-making and automation.

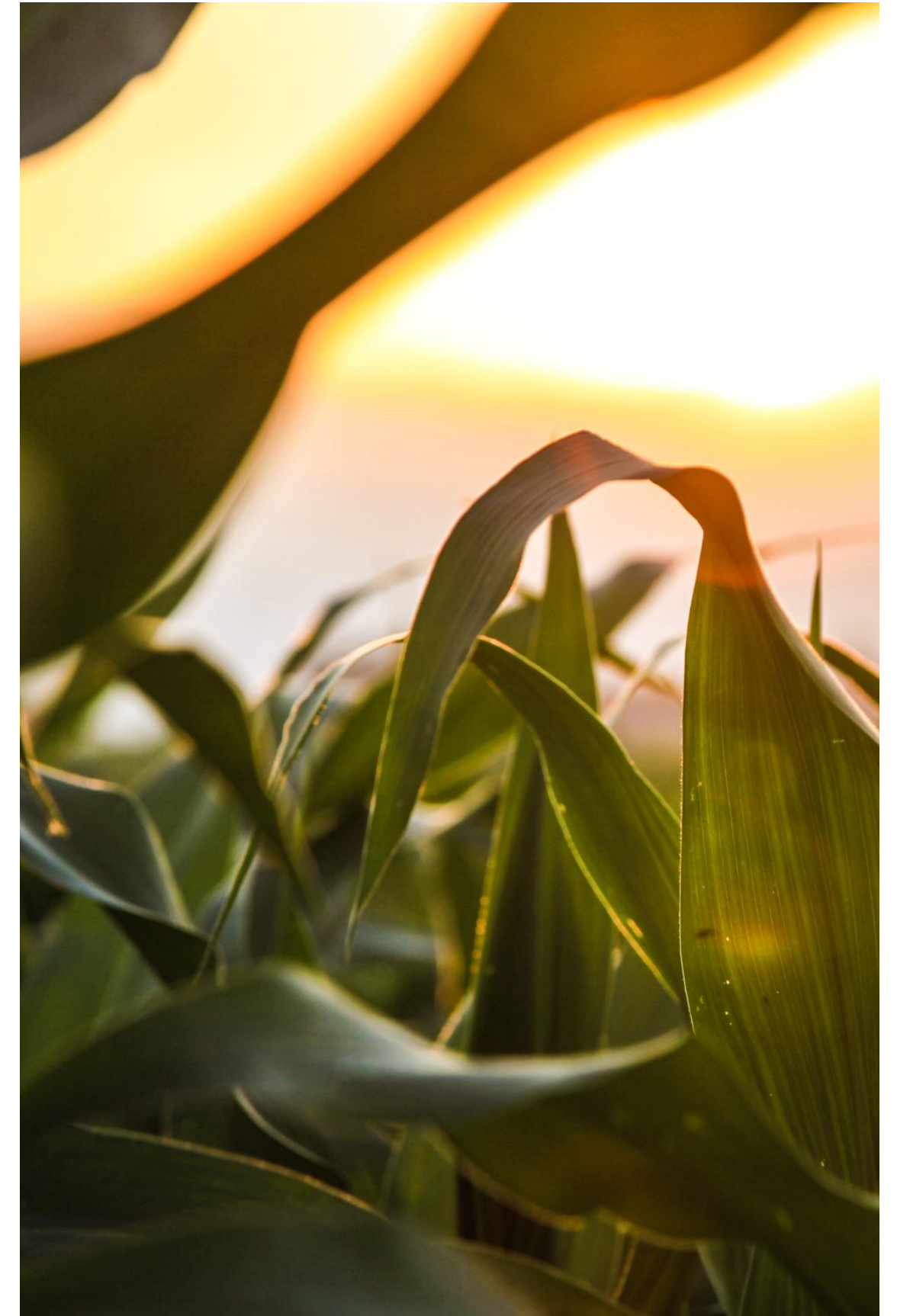**04** **ExplainIt Agent** → Full transparency and audit trails.

**AgroHelpdesk**

# Architecture

AgroHelpdesk

**AgriFlow AI**
Intelligent Farm

- Dashboard
- Workflow
- Metrics
- Map

**Agents**
- FieldSense — Intent Agent
- FarmOps — Info Collector
- AgroBrain — Knowledge Agent
- RunbookMaster — Decision Agent
- ExplainIt — Transparency Agent

**Runbooks**

LOCATION Hangemot  SUPERVISOR Prelates  HP

INTELLIGENT SEQUENCE
**Agro AI Orchestration**
Coordinated flow between intent, knowledge, decision and response agents.

CURRENT CALL: T-001 · Soybean pest
TOTAL TIME: 7.8 seconds
MODEL CONFIDENCE: 92% · High

FieldSense — Completed
FarmOps — Completed
AgroBrain — In progress
RunbookMaster — Pending
ExplainIt — Pending

**Detailed agent status**

FieldSense — Intent Agent — Identifies the client's intention — 2.5s
FarmOps — Info Collector — Collects additional information — 3.8s
AgroBrain — Knowledge Agent — Analyzes agricultural data and knowledge — In progress...

RunbookMaster — Decision Agent — Executes runbooks and makes decisions — Waiting in queue
ExplainIt — Transparency Agent

**Real-time activity history**

| Time | Agent | |
|---|---|---|
| 08:05:12 | FieldSense | |
| 08:05:45 | FarmOps | |
| 08:06:10 | AgroBrain | |
| 08:06:45 | RunbookMaster | |

**AgroHelpdesk** — Intelligent Farm

- Dashboard
- Workflow
- ACS Chat
- Transparency
- Metrics
- Map

**Agents**
- FieldSense — Intent Agent
- FarmOps — Info Collector
- AgroBrain — Knowledge Agent
- RunbookMaster — Decision Agent
- ExplainIt — Transparency Agent

**Runbooks**

CROP: Corn

**Agent History**
- field-sense — Mechanical failure detected — 06:02:11
- farm-ops — Collected telemetry and last service — 06:03:33

**Chat with Client**

**💬 Chat Simulation — T-002**
Conversation with the client and real-time analysis by agents

I found some caterpillars in plot 22. Can you see what it is? 00:00:00

Sure, can you send me a photo? 00:01:00

[Photo sent] 00:02:00

I analyzed the photo and identified Helicoverpa armigera caterpillar. Since your crop is at V5 stage and the weather allows inspection, I recommend monitoring 3 more points in the plot. Here is the automatic report with current risk and suggested locations to check. I also notified agronomist Maria, who will review the case. 00:05:00

Type your message...  Send ➤

✓ Resolved   ⚠ Escalate

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**AgroHelpdesk** — Intelligent Farm

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**Runbooks**

🗺 **Plot Map**
Visualize plots and their current status

**Interactive Map with Leaflet**

Leaflet | © OpenStreetMap contributors

⚠ **Active Alerts**

| T-22 🌱 Soybean | Pest Alert |
| T-12 🌽 Corn | Maintenance |
| T-07 🌱 Cotton | Normal |

**Runbook Sample**

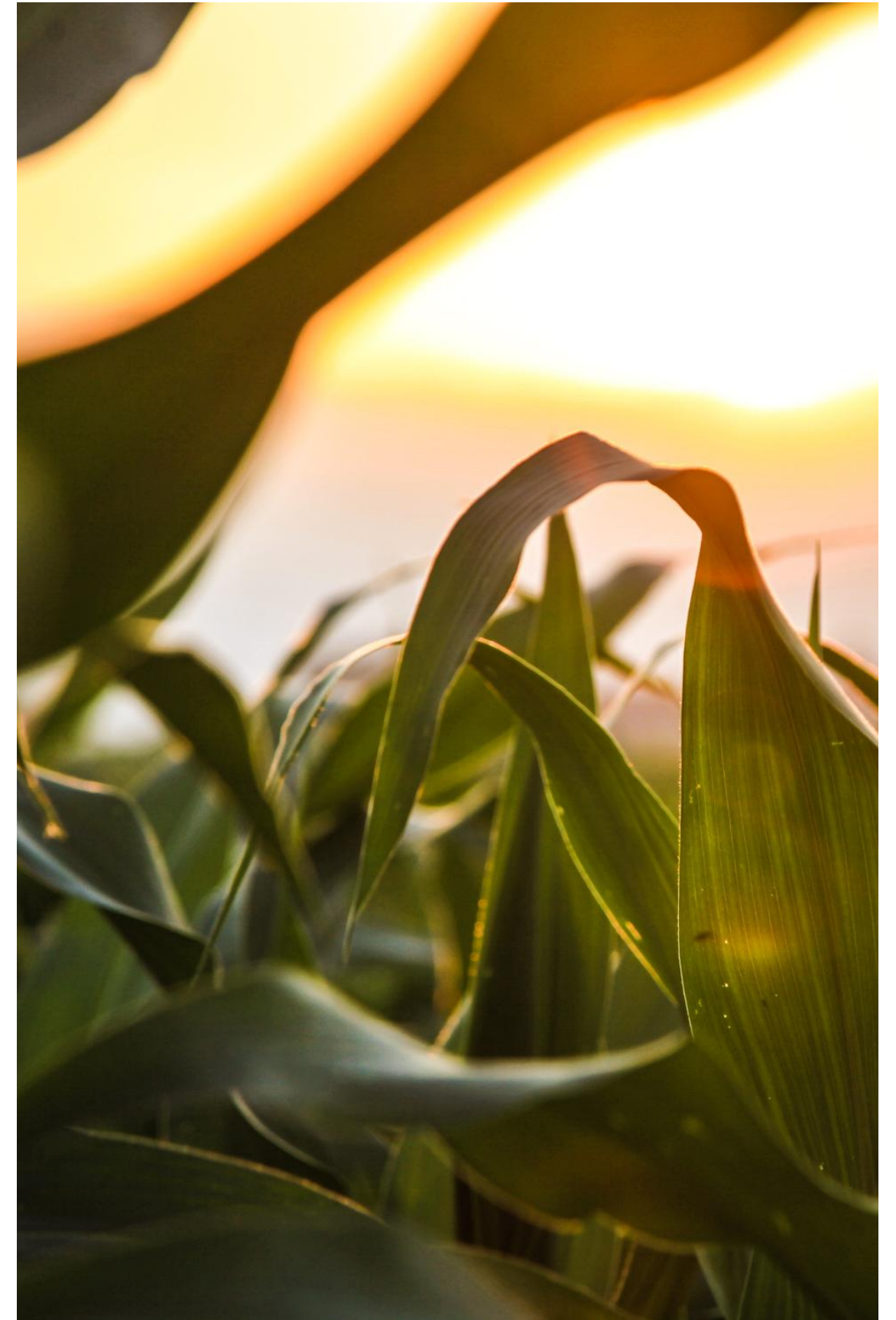| ID | Name | Safety | Auto-Execute | Description |
|---|---|---|---|---|
| RB-01 | Generate Pest Report | Safe | ✅ Yes | Creates comprehensive pest analysis report |
| RB-02 | Open Urgent Work Order | Critical | ❌ No | Opens high-priority maintenance ticket |
| RB-03 | Inventory Check | Safe | ✅ Yes | Verifies stock levels and availability |
| RB-04 | Pre-fill ART Report | Critical | ❌ No | Prepares regulatory compliance document |
| RB-05 | Compliance Check | Safe | ✅ Yes | Validates licenses and environmental permits |

# Azure Services

- Azure Communication Services
- Azure Functions
- Azure Key Vault
- Azure OpenAI
- Azure AI Search
- Azure Storage Account
- Blob Storage
- Azure Cosmos DB
- Azure Monitor
- Azure Web App

# Responsible AI

- **ExplainIt Agent** → justified decisions
- **Responsible AI Dashboard**
- **Azure Content Safety** on inputs and outputs
- **Human-in-the-loop** for critical actions
- **Risk mitigation policies**

# Impact

- Up to 80% reduction in response time

- Automation of repetitive tasks

- Greater operational safety

- Traceable and auditable actions

- Digital, standardized, and scalable

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# Thank You

A G R O H E L P D E S K