

Imagine that you are in 2030 and the world is progressing at a rapid pace.

Identify a potential problem in this world and solve it using an innovative product of the future.

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- What do you think will be a 2030 problem and why do you think so?
- Who will you solve for first and why?
- What part of the problem will you solve for first and how will you solve it using the tech of tomorrow?
- Comment on the feasibility of your solution by 2030.
- How will you measure the success of your product and what are the potential pitfalls in your solution?

Problem Statement

The agricultural industry faces a critical challenge—limited connectivity infrastructure and slow digital tool adoption. This impedes efficiency, sustainability, and resilience, hindering its ability to meet the increasing food demands.



Key Problems

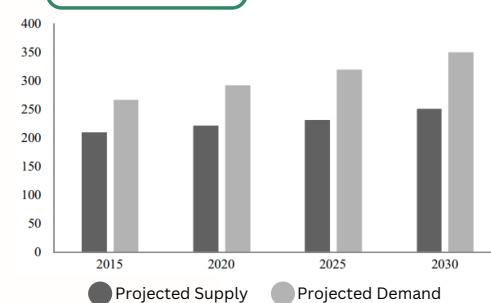
Technology Adoption

China needs **1/4th** of land to grow as much cotton as India because of technology adoption



Food Scarcity

80Mn+ Indians projected to be at risk of hunger by 2030



Internet Penetration

1.3Bn+ Internet users in India



Knowledge Gap

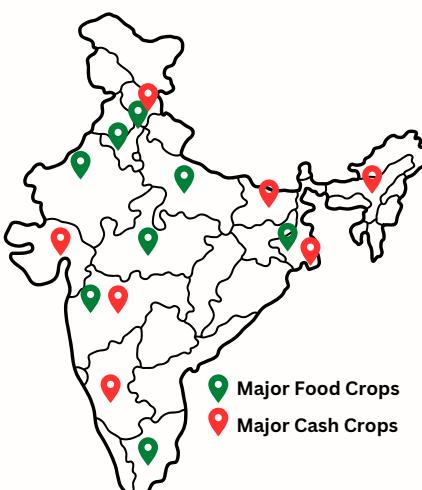
Tech adoption vital for Indian agriculture; aims **\$600B GDP** contribution by 2030, **50% increase** from 2020, unlocking growth and productivity



Water Scarcity

60%
Farmers rely on rain for agriculture
Cultivable land size **down by 0.43%** in past 5 years. India's agriculture uses **80-90%** of total water and is responsible for 25% groundwater depletion

India produces two primary types of crops across various states, with a distribution of 40:60, yet still struggles with profitability



Weather Conditions

60%
Farmers lack weather apps and real-time data, with **10% income affected** by extreme weather and up to **30% losses** due to imprecise weather information.



Non Ideal prices

1/7 contribution to **GDP** by farming, still giving **livelihood to half** of India's **1.4B** population. Leading to **income disparity** and **inequality**



Farmer Inefficiency

Poor farming practices, low-yield varieties and fragmented farms result in **35-50 per cent** lower yields against global benchmarks

Problems

Deep Dive

Solution device

App Integration

User Journey

Metrics and Pitfalls

Potential

- By 2030, India will be the **world's most populous** nation, with over **half its population under 40**.
- Potential shortfall of nearly **42 million tons** of fruits and vegetables.
- Rapid technological advancements** offer a chance to **revolutionize** farming.

Challenges

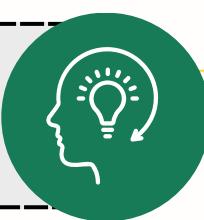
- Traditional agricultural knowledge transfer** is **declining**.
- Lack** of access to **real-time data leads** to inefficiencies, crop losses, and financial instability.
- Data Highlight: Pests and diseases cause a **20-40%** reduction in global crop yields

Need for it

- Advanced device** with sensors providing **real-time** crop, soil, and weather data.
- An **integrated app** offering insights, market analysis, and direct selling platforms.
- Data Highlight: Efficient irrigation can reduce water use by **8-20%**

Deep Dive

By 2030, bolstered internet penetration and technology adoption will empower us to enhance agricultural efficiency, bridge knowledge gaps, and advance weather forecasting in the farming sector.



User Personas



Demographics

Age: 45
Gender: Male
Location: Haryana, India
Education: High School

Age: 38
Gender: Female
Location: Telangana, India
Education: Primary School

Age: 33
Gender: Male
Location: Karnataka, India
Education: Secondary School

Background

- Manages a **vast farmland** that is been profitable over years

- Manages a **small plot** of land, inherited from her parents

- Owns a **small plot** of land with **limited resources**

Pain Points

- Crop wastage** due to unpredictable diseases in large-scale operations.
- Limited **real-time field insights** with available technology.
- Difficulty **staying updated** on agricultural advancements and knowledge.

- Limited resources** mean she can't afford significant crop losses.
- Wants to adopt modern techniques but has **limited access to technology** and knowledge.
- Struggles to get fair prices** in the local market, leading to financial instability.

- Has **noticed a decrease in yield** over the years.
- Struggles with understanding** modern agricultural techniques.
- Faces challenges with **erratic weather patterns** affecting her crops.

Goals

- Reduce crop wastage**, improve yield, and streamline farming
- Connect with markets** for demand and price trend insights.

- Improve the quality and quantity** of her produce using sustainable methods
- Find better markets or buyers** for her produce
- Understand and possibly **adopt new farming techniques** that can help her farm
- Get **fair prices** for his produce

Small Farmers: Landholding less than 2 hectares
Medium Farmers: Landholding between 2-10 hectares
Big Farmers: Landholding greater than 10 hectares

Segmentation of Farmers based on land usage

Who we are solving for? And why?

Big Farmers

1% = 1.5 Mn farmers
Owns ~ 55% Crop area

Financially equipped for tech investment
Less tied to traditional methods
Set trends in the community

Medium Farmers

14% = 21 Mn farmers
Owns ~ 30% Crop area

Have resources but seek proven tech
Motivated by big farmer successes
Integrate tech to compete and expand

Small Farmers

85% = 128 Mn farmers
Owns ~ 15% Crop area

Adopt tech after seeing community benefits
Prioritize proven, cost-effective tech
Follow the lead of larger farmers

Problem

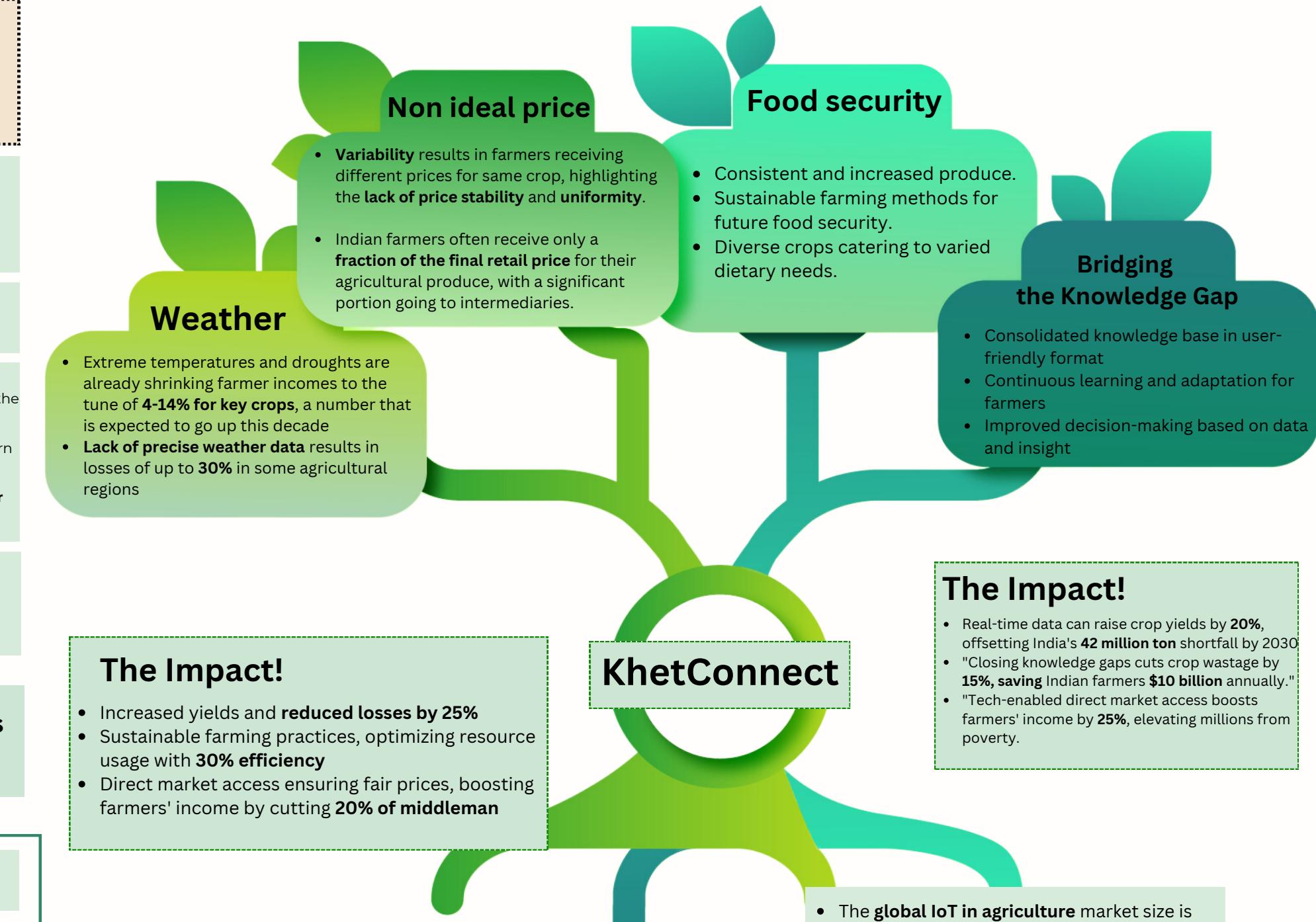
Deep Dive

Solution Device

App Integration

User Journey

Metrics and Pitfalls



**5 1%
9%**
Increase in internet users from 2020 to 2030
Internet penetration in India

- The **global IoT in agriculture** market size is projected to reach **USD 28.56 billion** by 2030
- The revenue generated in the global AI in agriculture market is expected to increase to **\$11.2 billion in 2030** from **\$671.6 million in 2019**

Solution Overview

Unlock the future of farming with KhetConnect: IoT, tractor cameras, and Gen AI, driven by advanced internet, offer real-time guidance and optimal pricing for enhanced productivity and efficiency.

AgriTech Vision Module Setup



Physical Design

- Compact and Durable: The device should be robust enough to withstand the rough conditions of a farm. It should be weatherproof and resistant to dust and dirt.
- Easy Attachment: The device can be attached to the tractor using a clamp or magnetic system, allowing it to be easily mounted and dismounted.
- 360-Degree Rotation: This will ensure the device can capture images and data from all angles, covering the maximum area

Integration & Installation on Tractor

- Position: The AVM should be installed on the top-front portion of the tractor, similar to where a rearview mirror would be on a vehicle. This position offers the device a clear, unobstructed view of the field ahead, ensuring maximum coverage as the tractor moves
- Protection: Given that tractors often operate in dusty or wet conditions, the device should be housed in a protective casing that's both waterproof and dustproof.

- High-Resolution Cameras: For detailed image recognition, capturing even minor defects or signs of disease in crops.
- Infrared Sensors: To assess plant health, as unhealthy plants often reflect infrared light differently than healthy ones.
- Weather Sensors: To capture real-time data on temperature, humidity, and rainfall.
- Soil Sensors: Embedded in the device, these will measure soil moisture, pH, and nutrient levels



Technical Components

Features bundled

Precision AgriTech

Employ DeepVision to harness data from cameras for precise weed detection and herbicide application. Combine this with GPS-guided tractors and real-time IoT soil sensors for accurate seed and fertilizer placement, optimizing crop growth.

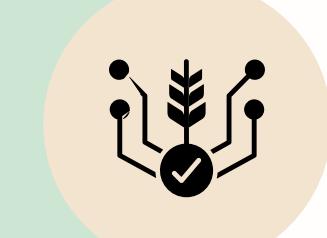


AI-Weather Precision Irrigation
An integrated irrigation solution with AI-enhanced weather predictions, remote mobile control, and long-term strategies, incorporating satellite data to optimize water use and enhance crop productivity for sustainable agriculture



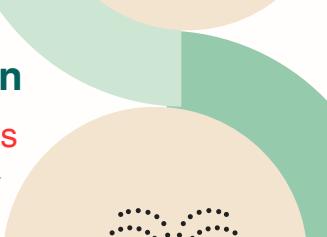
Agri-Assist

Leverage NLP to create an intuitive chatbot and mobile app, offering farmers easy access to a treasure trove of time-tested farming knowledge and practices, fostering agricultural sustainability and modernization



AgriCommerce Optimization

Employ dynamic pricing algorithms alongside an expansive delivery network to adjust prices in real-time, providing farmers with competitive rates based on demand and supply dynamics



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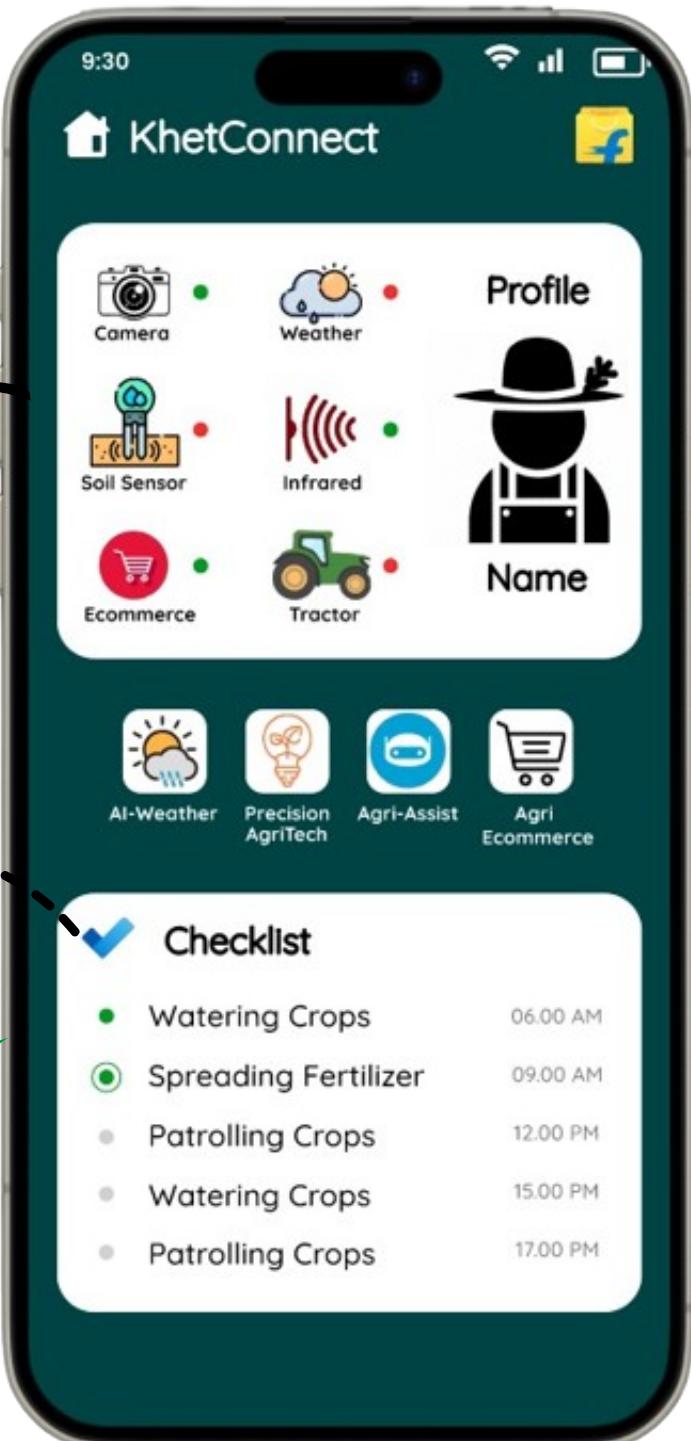


Use

	<ul style="list-style-type: none"> High-resolution for precise image recognition, detecting crop defects or diseases. Enables visual data collection for farm monitoring and analysis.
	<ul style="list-style-type: none"> Measures soil moisture, pH, and nutrient levels for optimal crop growth. Assists in precise soil management and irrigation control.
	<ul style="list-style-type: none"> Captures real-time data on temperature, humidity, and rainfall conditions. Provides crucial weather information for informed farming decisions.
	<ul style="list-style-type: none"> Assess plant health by detecting infrared light differences in plants. Identifies stressed or unhealthy crops through non-visible light.

Data Collected

	<ul style="list-style-type: none"> Visual images of crops Detection of defects or diseases Crop growth monitoring
	<ul style="list-style-type: none"> Soil moisture levels Soil pH Nutrient content in the soil
	<ul style="list-style-type: none"> Temperature Humidity Rainfall
	<ul style="list-style-type: none"> Infrared light reflection from plants Identification of plant health conditions

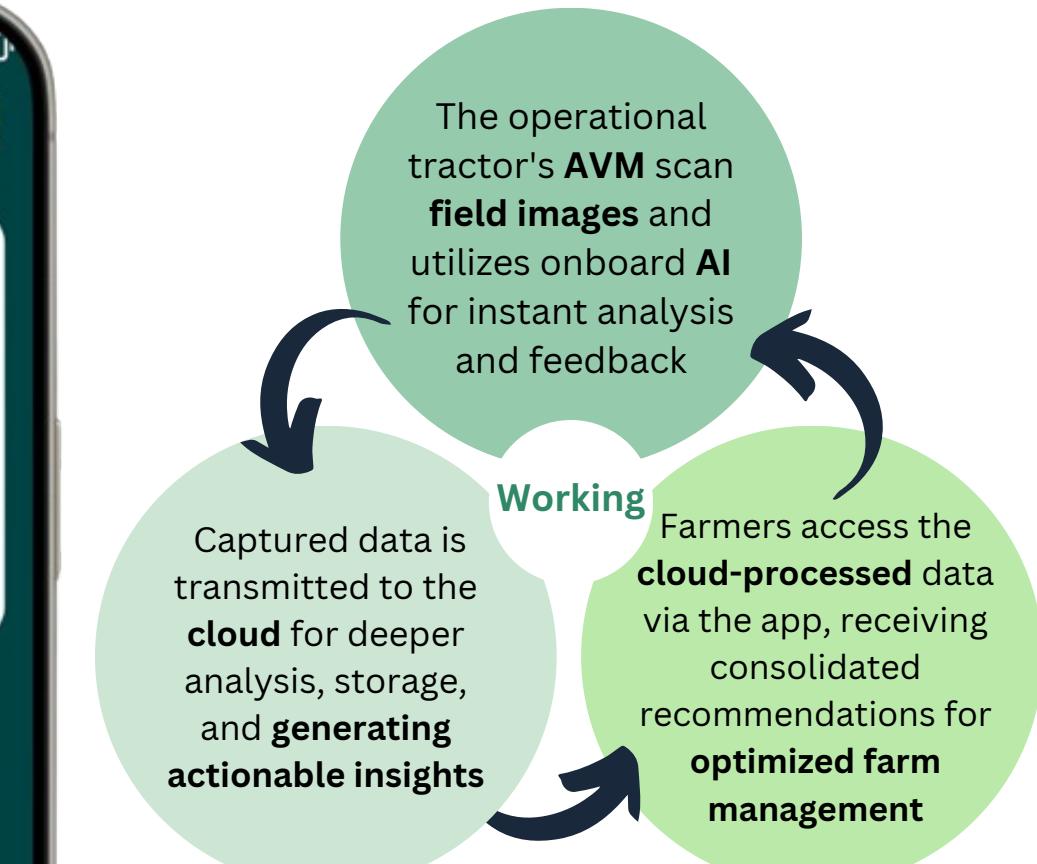


Feasibility

	1. IoT Adaptability & Smart Farming Adoption : By 2030, AVM's IoT integration predicts and optimizes farming processes. Real-time and predictive insights ensure competitive, efficient farming.
	2. Advanced AI & Cloud Integration : Harmonious use of algorithms and cloud for swift data processing by 2030. Fast, AI-driven insights empower proactive, yield-maximizing actions.
	3. Sensor Technology: Adoption : Devices with multifunctional sensors provide all-encompassing farm analysis. Single-module insights drive efficient, data-oriented farm management.

The checklist benefits farmers with:

- AI Recommendations:** Tailored tasks based on real-time farm data.
- Voice Alerts:** Hands-free task reminders.
- Predictive Scheduling:** Forecasts tasks using weather and soil analytics.
- Task Tracking:** Instant feedback on completed tasks.
- Farm Dashboard:** At-a-glance view of upcoming tasks.



Market Size

Metric	Rural	Urban
TAM	35 Cr	7 Cr
SAM	10.5 Cr	2.8 Cr
SOM	3.5 Cr	1.1 Cr

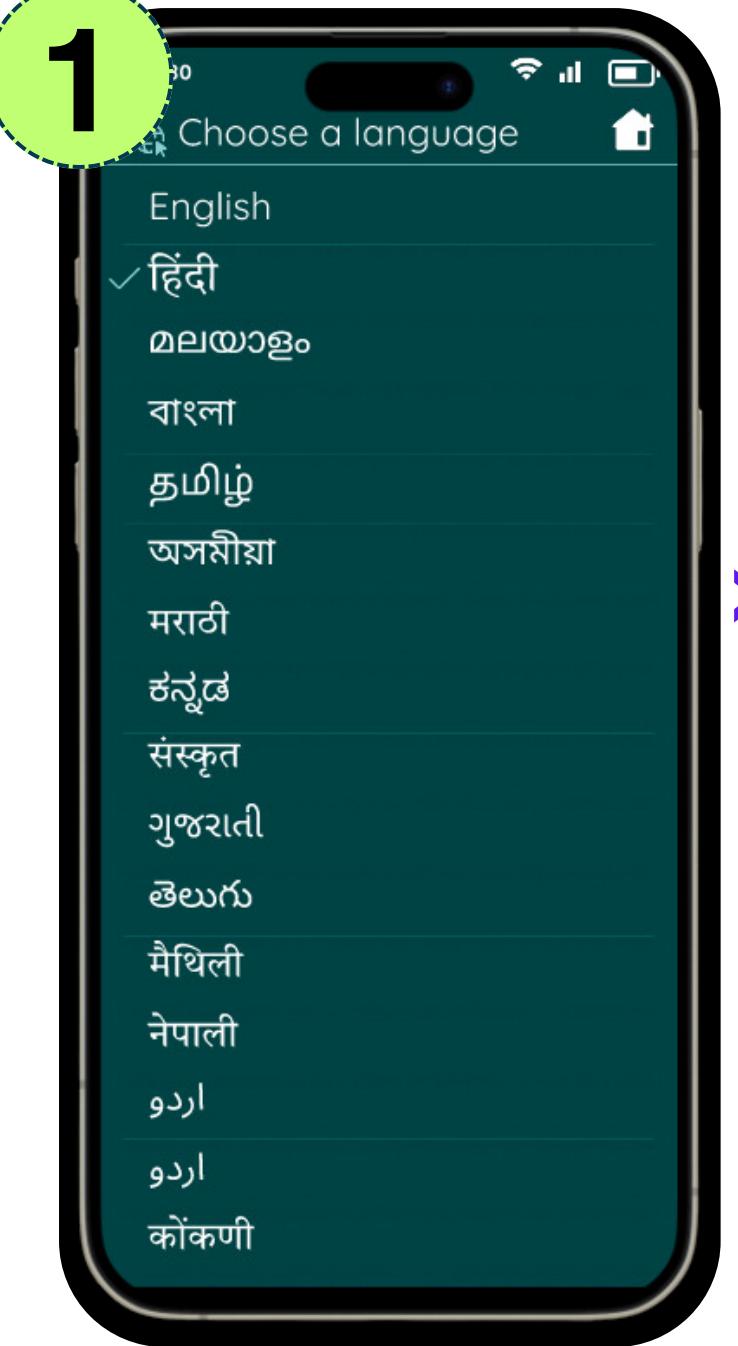
44,500 Cr

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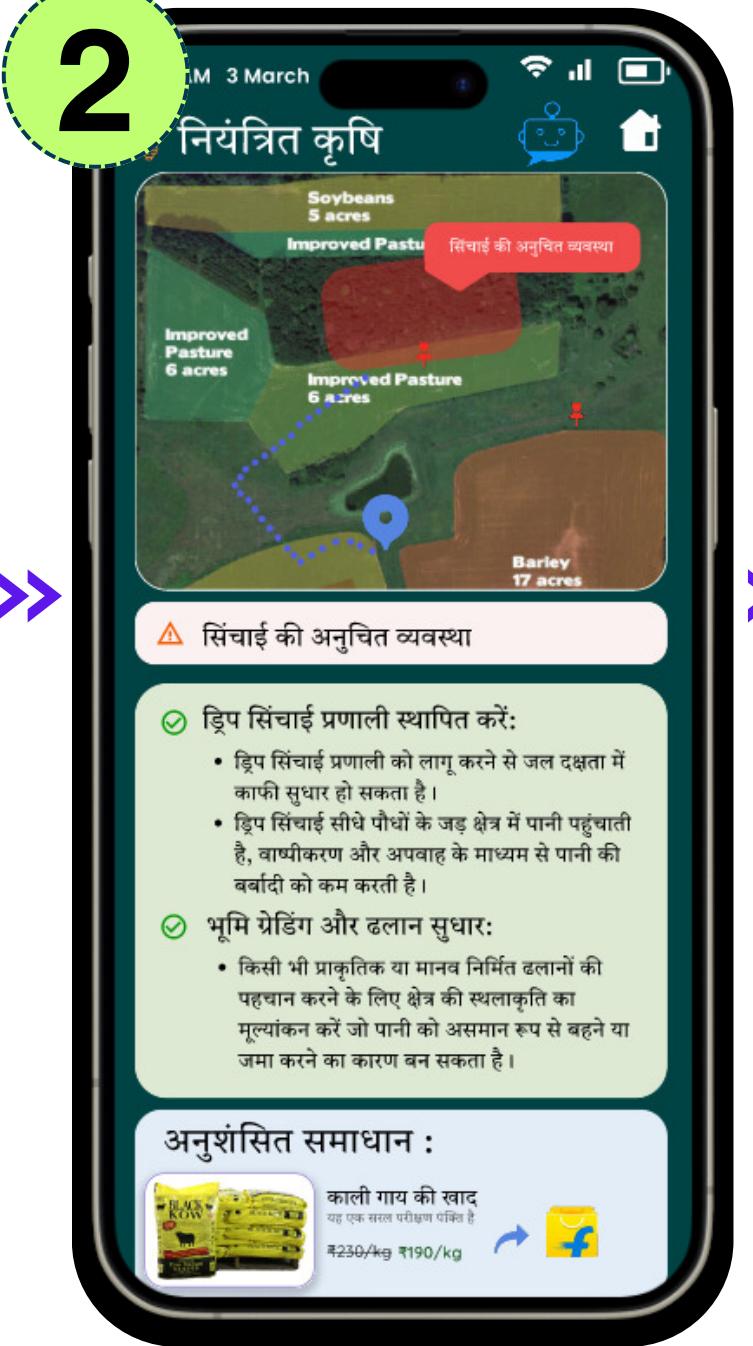
Use the app with link
given below
Prototype

A Walkthrough Of End-To-End User Journey

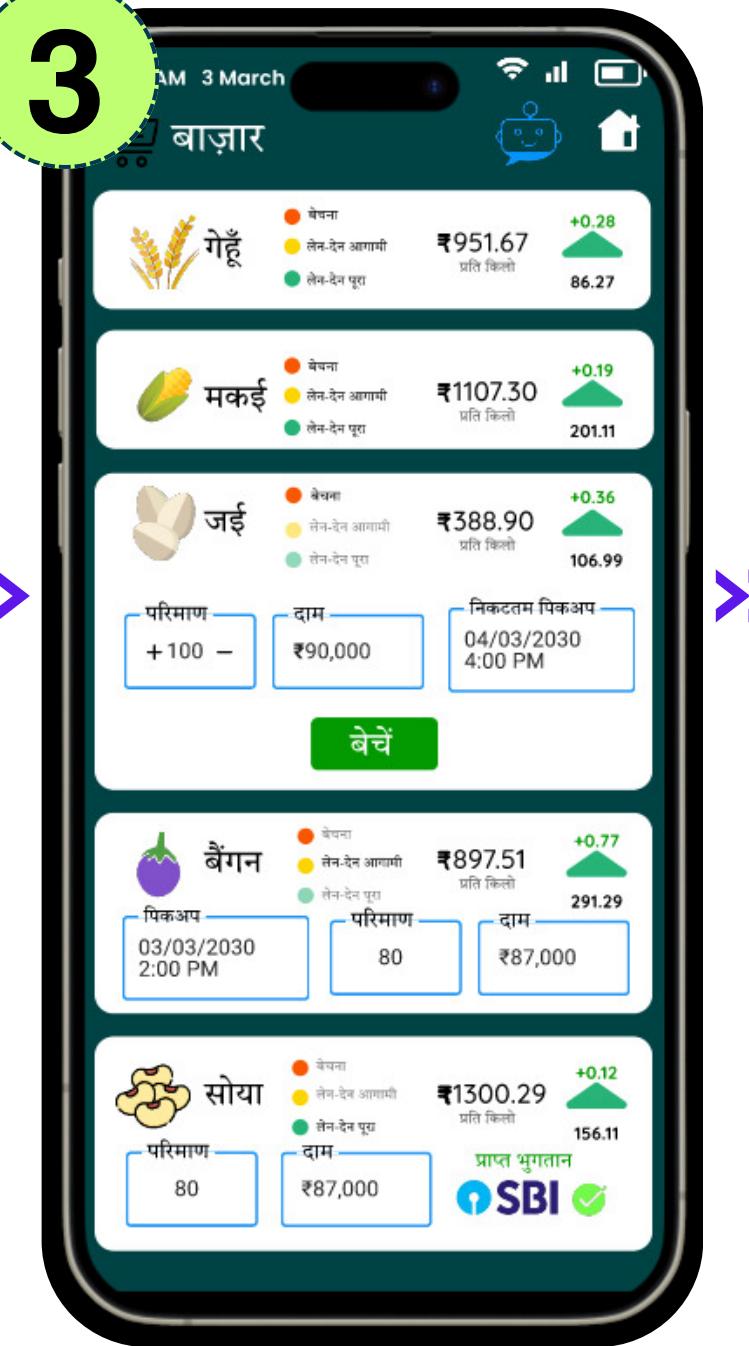
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2



3



4



Onboarding

In 2030, as we steer towards a future of precision farming, our app's onboarding process stands as a beacon of progress for Indian farmers. With multiple sensors installed on tractors and the promise of real-time data at their fingertips, it's a game-changer. But the true brilliance lies in addressing the existing language and literacy barriers.

By offering very intuitive, multilingual onboarding, we break down these walls. The result? A remarkable **60%** reduction in churn rate, as farmers across the country adopt technology which empowers them, optimizing resource use, enhancing crop yield, and paving the way for sustainable agri-landscape. **It's not just an app; it's a transformation.**

[Link to Figma Prototype](#)

Use Case

Our multilingual onboarding caters to India's **linguistic diversity**, enhancing **user retention** by **35%** and ensuring seamless access to data for **70%** of **non-English-speaking farmers**

Our 'Precision Agritech' feature, utilizing DeepVision, GPS, and IoT, enhances **weed detection** precision by **80%**, reducing **herbicide use** by **50%**, and increasing crop yield by **30%** for sustainable farming

We leverage the e-commerce supply chain to gain **real time pricing data** for the crops leading to elimination middlemen increasing **profitability** by **150%** and decreasing **lead time** to **30%**.

The AI enabled weather system suggests appropriate irrigation and harvest leading to **35% less** consumption of water, and decreases **spoilage** of harvest upto **20%** by integrating **crop health** and ambient weather conditions.

Problem

Deep Dive

Solution Device

App Integration

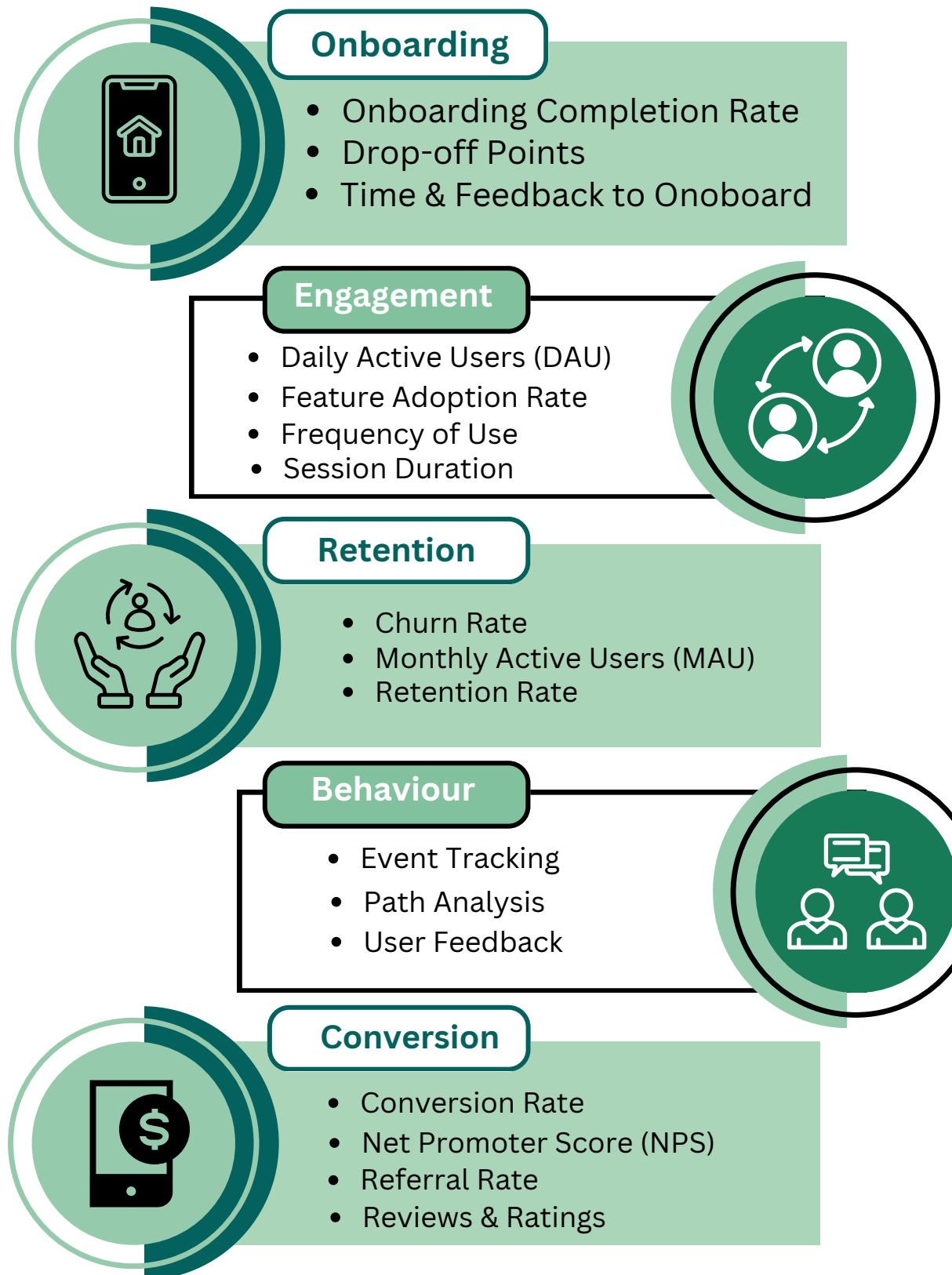
User Journey

Metrics and Pitfall

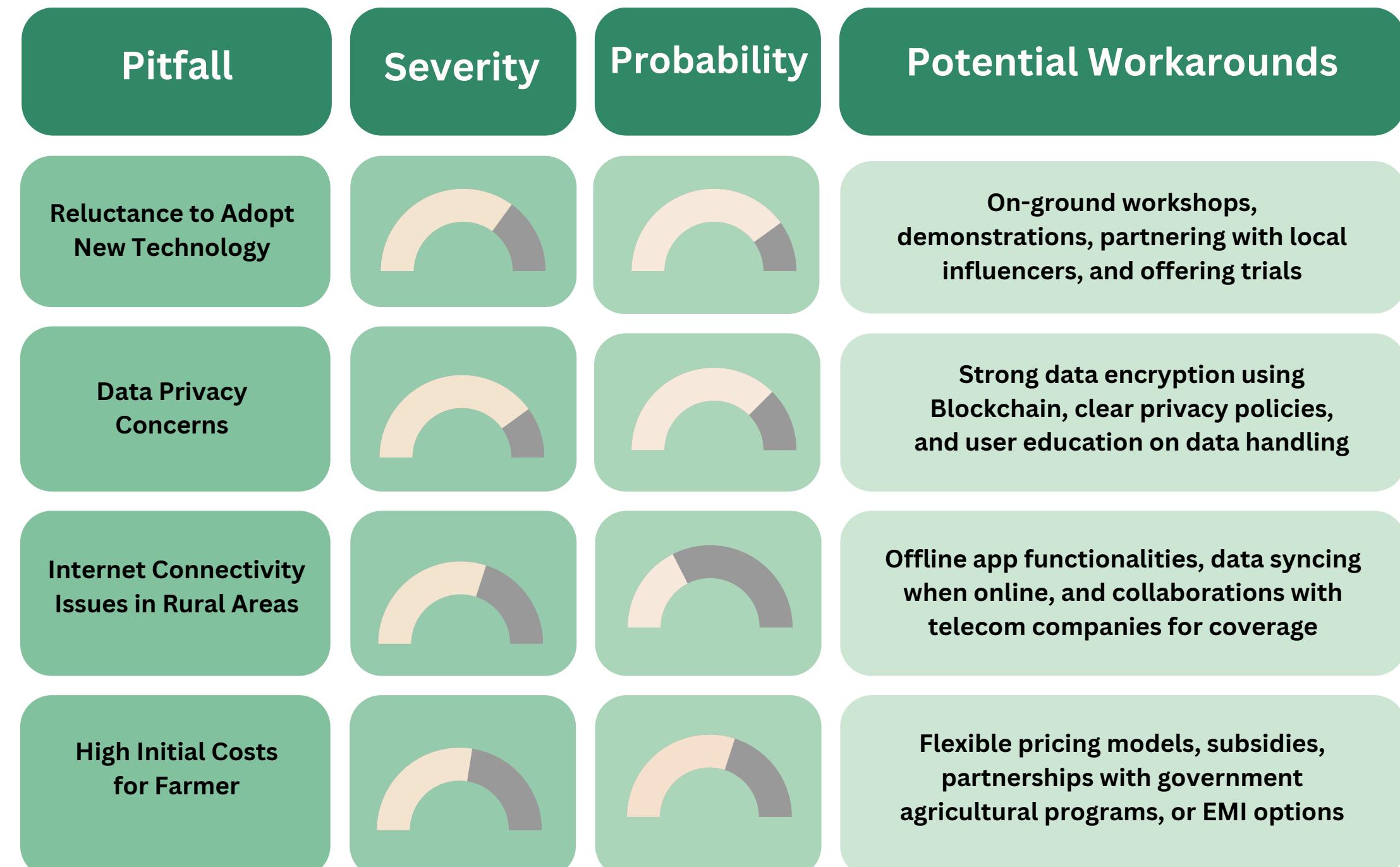
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Just to be on the Ball

Success Metrics with User Journey



Risk Analysis



We address the limited access to real-time agricultural data, modern market insights, and user-friendly technological solutions for Indian farmers. This solution, rooted in a top-down approach to innovation, leads to efficient practices, saving crop from losses, and financial stability