Krushak Odisha

A Case Study on Krushak Odisha, a golden records database that empowers farmers and enhances farm policy outcomes

CSM Technologies

Agriculture Dept. of Odisha

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Krushak Odisha is a unified, one-stop database of farmers designed in sync with the state governance framework. It serves as the single version of truth for any information on the farmer's demographics and assets.

Introduction

Agriculture is an essential economic activity that sustains livelihoods. India's real GDP grew by 8.2 percent in FY24, exceeding the 8 percent mark in three out of four quarters of FY24. According to the Economic Survey, the share of agriculture and allied sectors in India's total Gross Value Added (GVA) was 18.3% in 2022-23. Agriculture remains a cornerstone of economic activity, sustaining livelihoods across India.

India's digital revolution has redefined governance and service delivery by enabling digital identities, secure payments, and efficient transactions. This wave of transformation has spurred the growth of a thriving digital ecosystem across industries like finance, healthcare, education, and retail, positioning the nation as a global leader in citizen-centric digital solutions.

To bring a similar transformation to the agricultural sector, the Union Cabinet, under the leadership of Prime Minister Narendra Modi, approved the Digital Agriculture Mission on September 2, 2024. With a financial outlay of ₹2,817 crore, including ₹1,940 crore from the central government, this umbrella scheme aims to revolutionize agriculture through digital initiatives such as creating Digital Public Infrastructure (DPI), implementing the Digital General Crop Estimation Survey (DGCES), and supporting IT-based programs by central and state governments, academic institutions, and research bodies. This mission marks a pivotal step in leveraging data and technology to empower farmers, streamline policymaking, and strengthen the agricultural value chain.

There is no denying the potential data and technology have in empowering farmers, but only when the flow of information is complete and authentic. A unified database is a golden record for farmers, enabling better planning, monitoring, policymaking, strategy formulation, and smooth implementation of schemes for farmers nationwide. The whole supply chain, which is the key tenant for food security, depends on a verified farmer database that accurately estimates food producers in a region.

The federated farmers' database built by taking the publicly available data existing in the Department of Agriculture and various data silos in government and linking them with the digitized land records can create a unified inclusive database of all types of farmers inclusively. A unified farmer database is a cornerstone for driving innovation, informed policymaking, and efficient implementation of schemes, ensuring that resources reach the proper beneficiaries at the right time.

Challenges

Farmers:

◘ No mechanism to check eligibility for different government schemes

◘ Providing the same set of information for availing different schemes/services

◘ Burden of proving identity and eligibility every time applying for a scheme

◘ Going through the same verification cycle every time, availing the benefit of a scheme

For Government:

◘ Identification of the proper beneficiary in the absence of a unified farmer database

◘ Redundancy in collection and verification of the exact details for different schemes given to the same beneficiary

◘ Data Entry issues at the ground level lead to delays in scheme delivery

◘ Lack of data-backed planning for any policy or scheme intervention in the absence of consolidated farmer data

Solution

Krushak Odisha is a unified, one-stop database of farmers designed in sync with the state government's avowed 5T governance framework. This seamless data repository is the single version of truth for any information on the farmer's demographics and assets. This solution is different from other farmer databases because it aggregates info with the farmer as the premise and not his family.
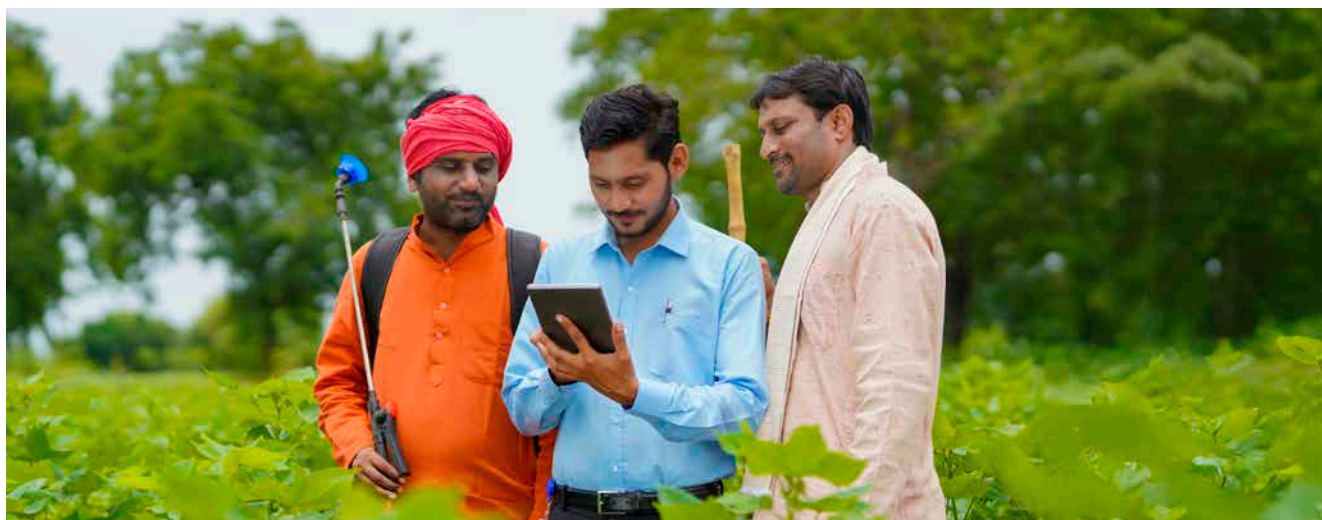
The database is 100 percent Aadhaar seeded with the authenticated bank details of farmers. The distinguishing feature of this database is that it is populated with more information on all categories of farmers- cultivators & sharecroppers, landless laborers, livestock & fishery farmers, and forestry farmers. The digital solution can be easily integrated with existing external databases like the Paddy Procurement Automation System (PPAS), Millet Procurement Automation System (MPAS), Aadhaar, Bhulekh (the state's land records database), seed supply, fertilizer management, soil health card and Pradhan Mantri Fasal Bima Yojana (PMFBY).

The Krushak Odisha Unified Farmer Database is a visionary initiative to consolidate fragmented information across various departments into a single, inclusive system. By integrating data from digitized land records and existing public databases, this platform creates a "golden record" of every farmer, enabling precise planning and monitoring of agricultural programs.
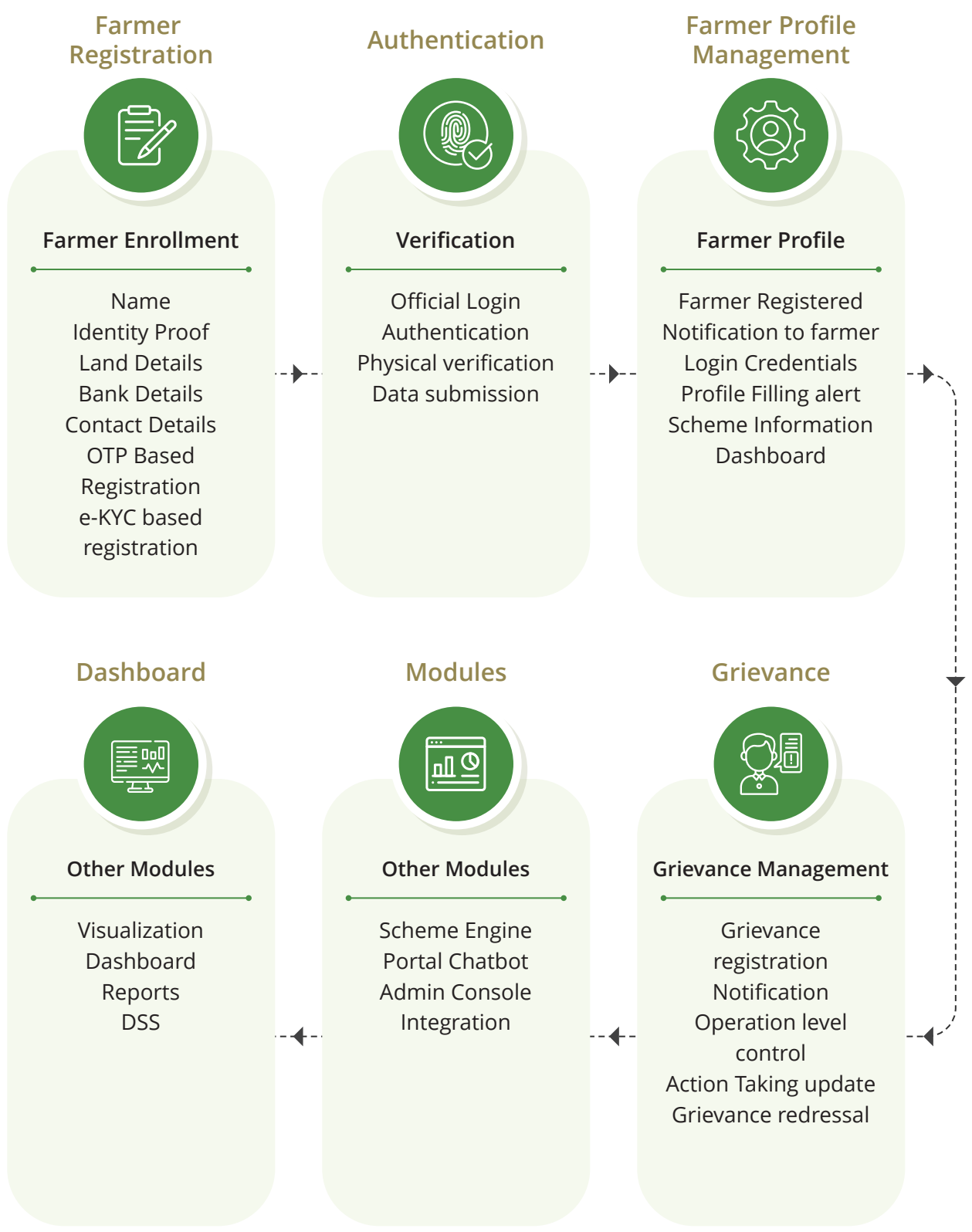
This unified approach enhances transparency and accountability, streamlining the delivery of services such as financial assistance, crop insurance, and credit access. It also empowers policymakers with actionable insights, facilitating better resource allocation and strategy formulation. By bridging information gaps and fostering trust across the supply chain, the Krushak Odisha database lays a strong foundation for the sustainable growth of agriculture in the state, ensuring no farmer is left behind in the journey toward progress.
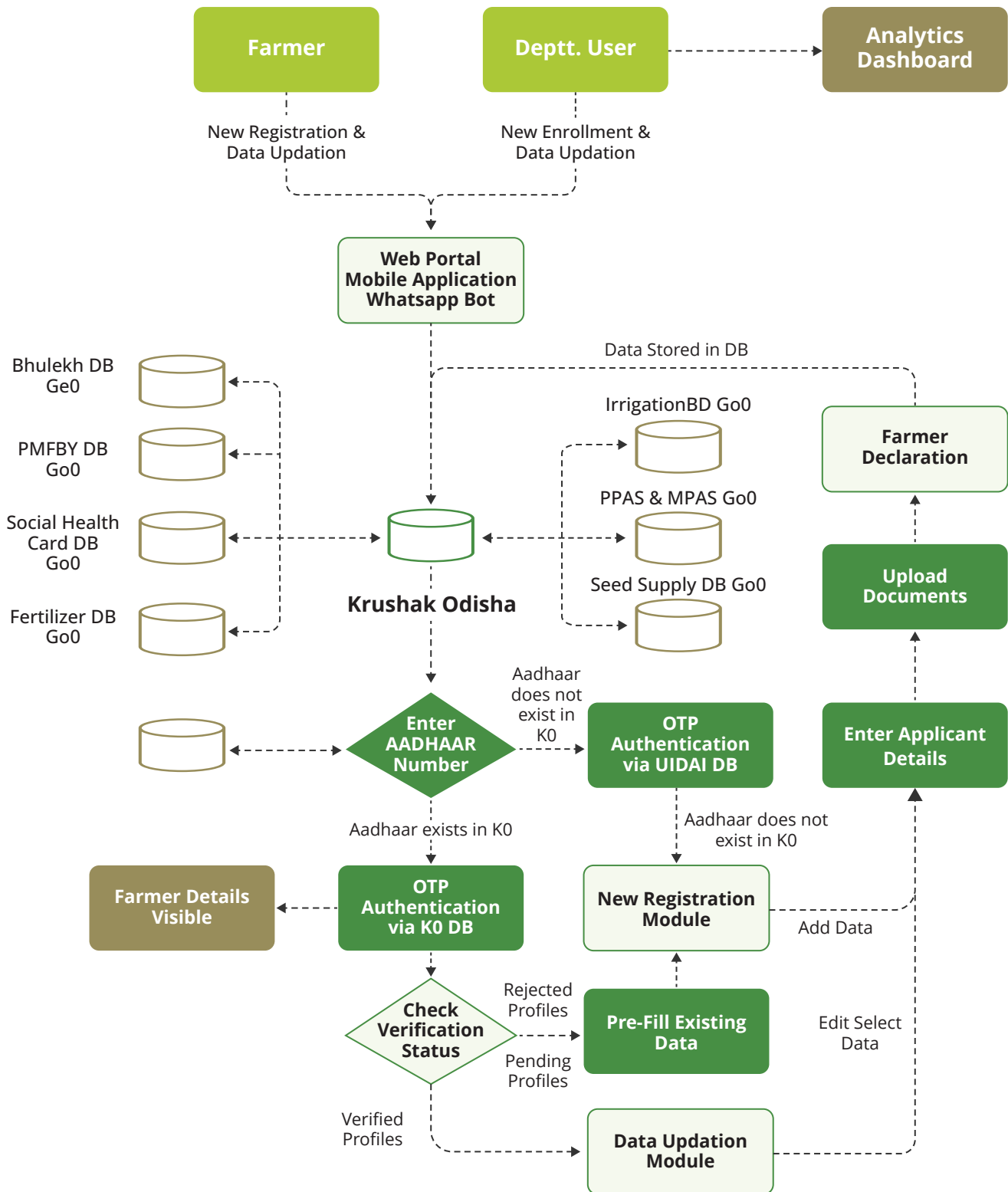
Special Features

- Unified farmer database based on the farmer, not the family

- 100% Aadhaar seeded

- Verified bank details

- ADAPT Portal | Decision Support System

- Scheme Monitoring by Extension Workers

- A one-stop portal for farmer registration

- Verification of farmers' details by extension workers

- Integration with all farmer databases like forestry, animal husbandry, fish & aquaculture, sharecroppers, landless farmers makes it an inclusive farmer database

- Technology to identify the farmers from the lands they till by integrating farmers' demographics with land records database

- Deduplication and profiling of the eligible beneficiaries by leveraging Aadhaar as a unique identifier to weed out duplicate entries in the master database created.

- Mapping with several databases facilitates auto-inclusion of eligible beneficiaries and auto-exclusion of ineligible beneficiaries as per the defined government criteria

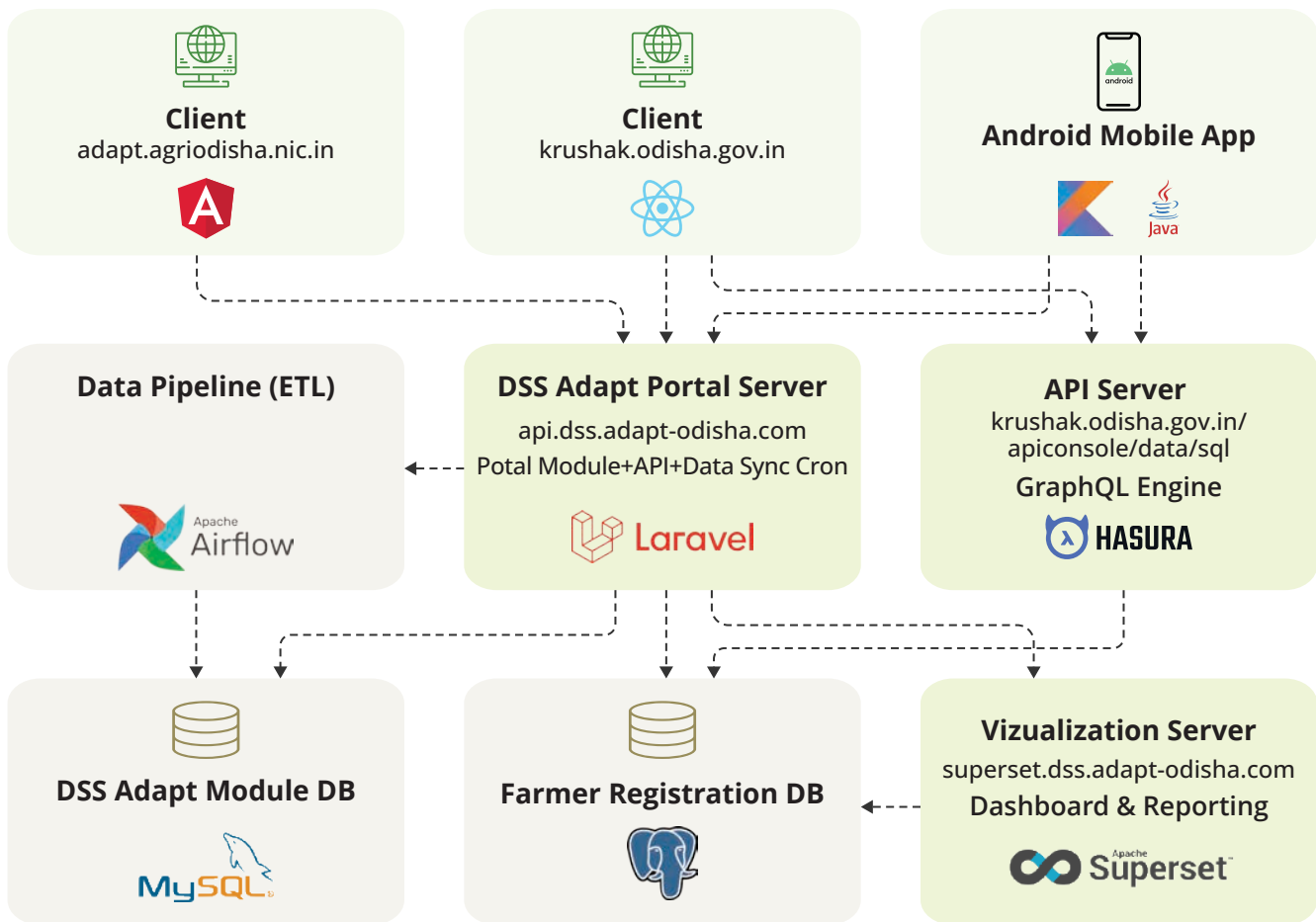- Ensures Fair Assistance to the targeted genuine & eligible beneficiaries

System Overview

Farmer Registration

Farmer Enrollment

Name
Identity Proof
Land Details
Bank Details
Contact Details
OTP Based
Registration
e-KYC based
registration

Authentication

Verification

Official Login
Authentication
Physical verification
Data submission

Farmer Profile Management

Farmer Profile

Farmer Registered
Notification to farmer
Login Credentials
Profile Filling alert
Scheme Information
Dashboard

Dashboard

Other Modules

Visualization
Dashboard
Reports
DSS

Modules

Other Modules

Scheme Engine
Portal Chatbot
Admin Console
Integration

Grievance

Grievance Management

Grievance
registration
Notification
Operation level
control
Action Taking update
Grievance redressal

Farmer registration and update process flow

Solution Architect

Client
adapt.agriodisha.nic.in

Client
krushak.odisha.gov.in

Android Mobile App

Data Pipeline (ETL)
Apache Airflow

DSS Adapt Portal Server
api.dss.adapt-odisha.com
Potal Module+API+Data Sync Cron
Laravel

API Server
krushak.odisha.gov.in/
apiconsole/data/sql
GraphQL Engine
HASURA

DSS Adapt Module DB
MySQL

Farmer Registration DB

Vizualization Server
superset.dss.adapt-odisha.com
Dashboard & Reporting
Apache Superset

Benefits

For Farmers:

- Unique identity proof
- Instant eligibility check
- Customized agro advisory
- Input accessibility

For Government Officials:

- Identification of Beneficiaries
- Detection of Anomalies
- Policy Formulation & Budgeting
- Impact Assessment of SchemesA Unique ID – It is generated, and the system envisages the allotment of Kisan Parichay Patras as a unique ID for the authenticated farmers.

ADAPT Decision Support System (DSS) - Analytics for decision-making and agricultural policy transformation. The project aims to digitize the farm economy and is equipped with a decision support system in the ADAPT portal to aid policymakers in decision-making. The initiative is instrumental in improving farmers' welfare and changing the sector through data-based decision-making. The unified farmer database is the foundation of ADAPT. The complete and authentic database available under a single umbrella enables the government to plan and design policies and schemes as well as implement & monitor them.

Key Modules:

User Management:

- ✓ Operational procedure for generating user credentials (user IDs are created for GP, Block, District level officers, Scheme officers, and state-level officers).
- ✓ Assigning roles and modules to users.
- ✓ HR management activities

Scheme Management:

Digitization, setting targets, reviews, report generation, and query resolution regularly

GP Sitting:

Ensuring availability of GP Officers at GP headquarters to address farmers' issues every Monday

BTT meeting:

Capturing fortnightly data on Block Technology Team (BTT) discussions comprising Block Officers from all the Line Departments.

Dakshyata:

Performance Management System to recognize top-performing employees (Monthly/ Annually)

ACIM (Agriculture Crop Insurance Monitoring):

Estimate insurance claims and track banks' actual claim disbursement status to beneficiaries.

Krushi Unnat Sahayogi Programme (KUS)

✓ Training for final year B. Sc (Agriculture) students
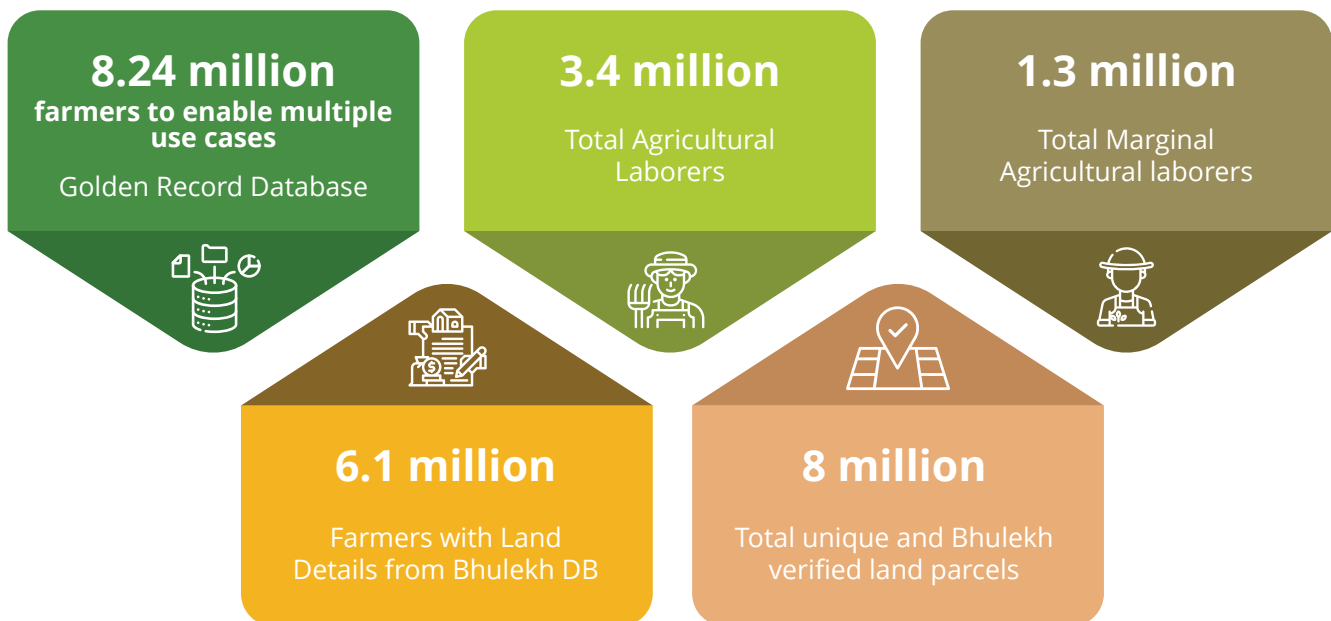
✓ For practical field knowledge & schemes

CWWG meeting (Crop Weather Watch Group)
Meeting under the chairmanship of APC

✓ Weekly for Kharif & Fortnightly for Rabi (Monday)

✓ Monitoring- Crop Coverage, Rainfall, Crop Loan, Crop Insurance, Irrigation, Input like Seeds, Fertilizers, Pesticide availability

Impact Figures

A Krushak Odisha portal has been envisaged as a single platform for all farmers to update their information regularly. This state-wide comprehensive farmer database contains the latest demographic, financial, land record, and asset-related information of all the state's farmers. This has been conceptualized as the first step to mitigate the issues of repeated application rounds for the schemes, field, and document verification by integrating disparate datasets, tackling the challenge of farmer identification & authentication, and beneficiary mapping. This is a one-stop solution that brings ease to decision-making.

8.24 million
farmers to enable multiple use cases
Golden Record Database

3.4 million
Total Agricultural Laborers

1.3 million
Total Marginal Agricultural laborers

6.1 million
Farmers with Land Details from Bhulekh DB

8 million
Total unique and Bhulekh verified land parcels

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