

AI-powered Irrigation Management: From Reservoirs to Roots

ABOUT US

Climate Tech Empowered Digital Solutions for a Better Tomorrow

*Building Scalable Digital Public Infrastructures for **Water, Agriculture and Disaster**. Interoperable, cloud-agnostic and low-code by design, developed to add socio-economic benefits..*

WHO WE ARE

Founded in 2014, we are a global Climate Tech company leveraging technologies such as AI, GenAI, Remote Sensing, Cloud Computing, Big Data, and Digital Twins etc. to build solutions for effective monitoring and management.

OUR MISSION

“We aim to solve critical problems related to Water, Agri and Disaster at each scale. We are combining Data, Science & Technology, to build digital products and services for every person in the globe adhering to their climate story.”

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Team at Vassar Labs

332+ people engaged in combining Science & Technology for precision Decision Making



Laxmiprasad Putta

Founder

*B.Tech, **IIT Madras** (1996) ·*
*MS, **MIT** (1998)*

- **Serial Tech** Entrepreneur with **30+** years of experience in Digital Transformation and allied sectors
- Founded **Vassar Labs** in 2014
- Prior to Vassar Labs, he founded **OAT Systems** focused on **RFID**/IoT pioneer, scaled deployments worldwide
- **Checkpoint Systems**; ran its global RFID/IoT business



Nikhilesh Kumar

Co-Founder & CEO (Climate)

*B.Tech, **IIT** Kharagpur (2007) ·*
*MBA, **ISB** Hyderabad (2014)*

- **Tech innovator** with **20+** years of experience in building advanced AI Products for critical domains
- Has **led 52+** deployment of large-scale projects across the globe along with **Government & F500** Companies
- Works in the crux of **Water, Agri and Disaster** in turning Vassar Labs into government-ready, revenue-generating programs at scale.

12

PHDs building the pillar for thought leadership

117

R&D Teams focused on building innovations

21

AI/ML & Deep Tech Experts

7

Advisors from NRSC, ISRO, Ivy League, IITs and IIMs

23

Thought leaders and management teams

163

Software developers building future ready tech

37

GIS & Hydrology experts unifying intelligence

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Customer Profile

Government

National:

भारत सरकार GOVERNMENT OF INDIA

जल शक्ति मंत्रालय MINISTRY OF JAL SHAKTI

NITI Aayog

NCA

NHP

States:



International:

U.S. DEPARTMENT OF ENERGY

وزارة البيئة والمياه والزراعة Ministry of Environment Water & Agriculture

NWRA

Enterprise

Multi Lateral Agencies:

WORLD BANK GROUP

UNDP

ADB

Industry Partners:

IN-SPACe

Google

Microsoft

CII Confederation of Indian Industry

EY

planet.

Deloitte.

F500 Companies:

Unilever

Swiss Re

macmillan

GP Georgia-Pacific

STANLEY

REALPAGE

MidCentral

Knowledge Partners

Institutes & Research:

Massachusetts Institute of Technology

TIRUPATI

isro nrsc

MISSISSIPPI STATE UNIVERSITY

ICRISAT

Members & Associations:

IWA the international water association

ICID•CIID

BILL & MELINDA GATES foundation

Global Water Partnership

SWAN SMART WATER NETWORKS FORUM

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aquaWISE: DPIs Advancing Water Security for All

aquaWISE provides a suite of **20+ products available as SaaS** or custom solutions, deployable on customers' cloud or local infrastructure, designed to meet a wide range of **water management needs across various scales** and environments.

Water for Governance



aquaWRIMS – *Simplifying Water Management*

aquaMIND - *GenAI Applications for Water Management*

aquaSHED – *Simplified Watershed Conservation & Planning*

Water for People



aquaCITY - *Digital Water Management for Cities*

aquaFACILITY - *Sustainable Facility Water Management*

aquaLAKE - *Waterbody Monitoring Simplified*

Water for Irrigation



aquaIRRIGATION - *Climate Resilient Irrigation Decision Support*

aquaLIFT - *Sustainable Lift Irrigation*

aquaWELL - *Realtime Groundwater Monitoring*

Water for Planet

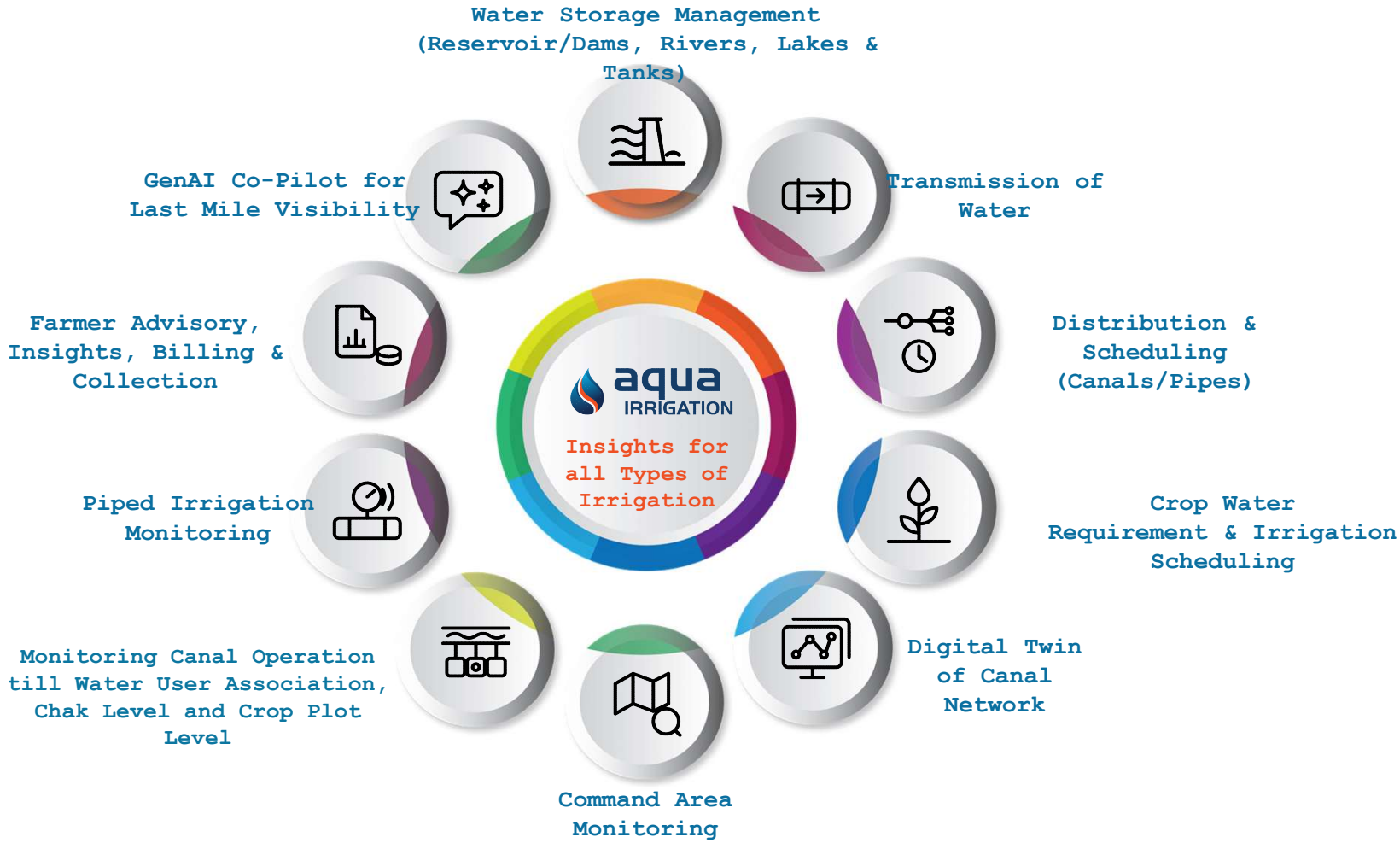


aquaDRROP - *Dam Operations & Safety at your Fingertips*

aquaHYDRO - *Hydropower Operations Optimization*

aquaFLOOD - *Stay Ahead of Floods: Predict, Prepare, Protect*

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IMPROVEMENT AREAS

1. **Fixed rotational supply-driven** basis to **need based demand driven water releases**
2. **Manual under reporting** of cropped area to AI & satellite enabled **evidence-based billing**
3. **Fragmented multi source data** to **integrated decision-making platform**

KEY LAYERS

- ❑ Farm Intelligence Layer
- ❑ Water Intelligence Layer
- ❑ Farmer Intelligence Layer

PROPOSED SOLUTION – INTEGRATED AI & DIGITAL TWIN PLATFORM

DATA SOURCES

- Satellite Imagery (Sentinel-1,2, High-Res)
- Weather Data (Rainfall, Forecast)
- Reservoir & Canal Data (SCADA, Sensors)
- Field & Soil Data (IoT, Surveys)
- Farmer Inputs & Historical Data

→

AI & ANALYTICS ENGINE

- Farm Boundary Detection
- Crop Type Classification
- Crop Growth Monitoring
- Soil Moisture Estimation
- Crop Health Monitoring
- Water Balance & ETa Estimation

→

DECISION SUPPORT SYSTEM

- Irrigation Scheduling
- Pump Operation Planning
- Water Allocation & Prioritization
- Scenario Analysis & Simulation
- Alerts & Notifications
- Farmer Advisory Generation

→

DIGITAL TWIN OF PIN

- Reservoir → Pump House → DC → OMS → Outlets
- Farm / Tail-End
- Real-time Monitoring (Flow, Level, Gates)
- Water Tracking from Source to Tail-End
- Equitable Water Distribution

→

OUTPUTS & IMPACT

- Improved Water Use Efficiency
- Better Crop Yield & Productivity
- Assured Tail-End Water Delivery
- Reduced Losses & Conveyance Cost
- Data-Driven Decisions & Accountability
- Sustainable & Resilient Irrigation System

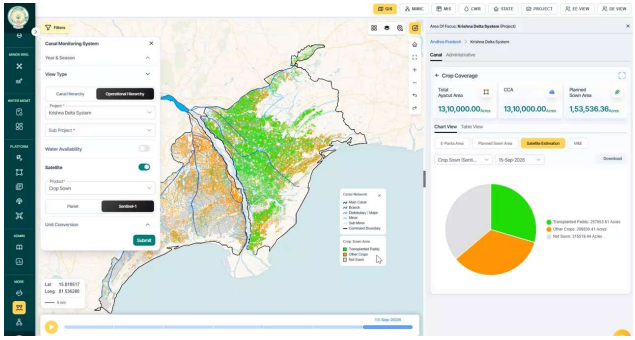
TECHNOLOGIES

- **AI / ML** — Deep Learning
- **Remote Sensing** — (SAR & Optical)
- **IoT & SCADA** — Sensors & Telemetry
- **GIS & Spatial Analytics** — Mapping & Modeling
- **Cloud & Big Data** — Storage & Processing
- **Digital Twin** — Modeling & Simulation
- **Mobile & Web** — Dashboards & Apps

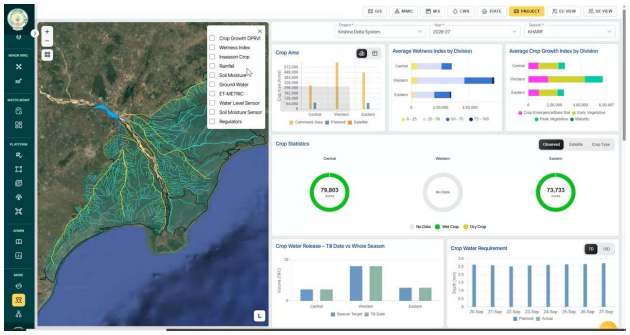
4 States

90+
Irrigation
Projects

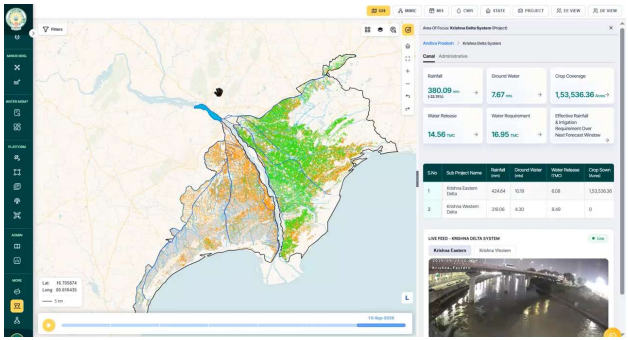
6 M ha of
Command Area



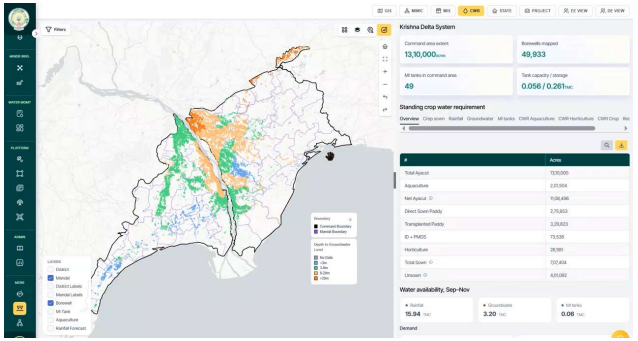
1. Near Real Time
Command Area Monitoring



3. Comprehensive Assessment of
Irrigation System



2. Irrigation Scheduling based
on weather forecast



4.Improved Water Management
under climate uncertainty

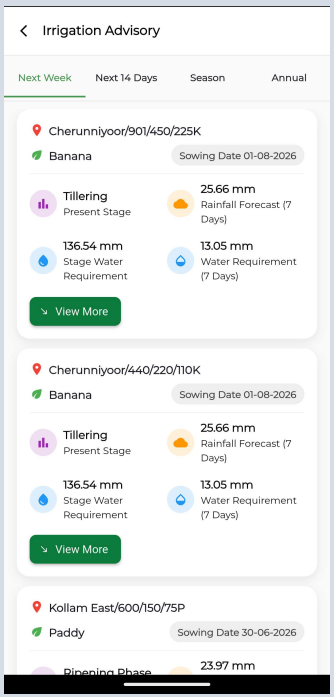
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CLIMATE

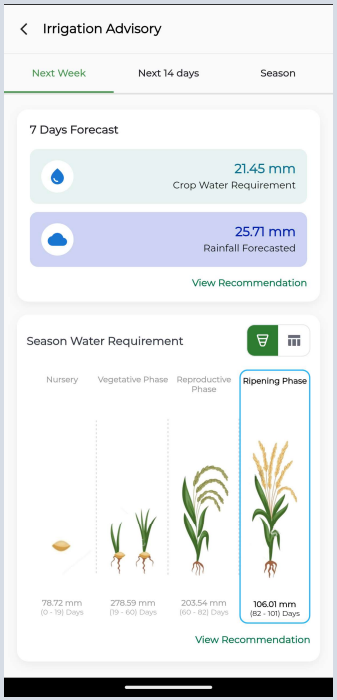
Farm-level, data-driven advisory covering sowing, irrigation, nutrients and pest management

Proven Deployment & Impact Across States

- Operational in **Haryana, Kerala, and Andhra Pradesh**
- Agro-advisories for **185+ crops**
- **35+ soil labs integrated** (KATHIR)
- **Weekly irrigation advisories live** in Kerala
- **Crop stress monitoring active** in Kerala
- **State-wide fertilizer planning** in Andhra Pradesh
- **Urea allotment optimized** across Andhra Pradesh
- **Pest alerts issued for 23+ lakh hectares**
- Supports **RSK officers and farmers**
- **12+ pests covered** under AI detection
- **Offline access enabled** for field use



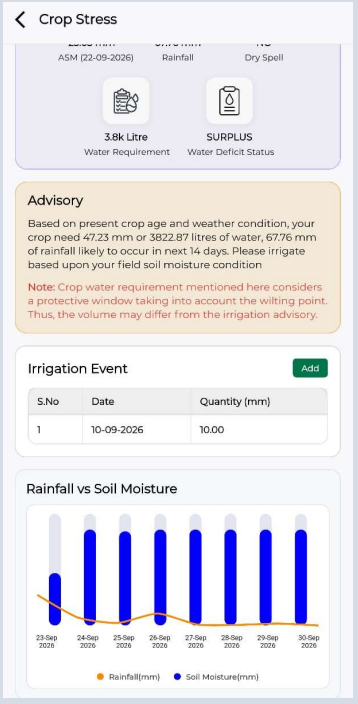
Farm Level Irrigation Insights



Crop Stagewise Irrigation Scheduling Advisories



Irrigation and Water Stress Advisory



Rainfall vs Soil Moisture

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Farm/Plot → Cultivated Area → Crop → Irrigation Service → Water Delivered → Tariff → Demand







TOP 10 OVERDUE FARMERS (60+ Days)

Farmer Name	Chak	Outstanding (₹)	Days Overdue
Suresh Yadav	13	1,24,850	98
Ramlal Patel	14	1,18,760	92
Dharmendra Singh	12	1,05,430	86
Shyamlal Kushwah	15	98,320	85
Mohan Verma	13	95,640	82
Hariram Lodhi	14	89,750	80
Girdhari Lal	12	82,310	78
Rakesh Parmar	15	80,450	76
Babulal Meena	13	78,260	74
Kamlesh Patel	14	75,860	72



For illustration purpose

AI Insights

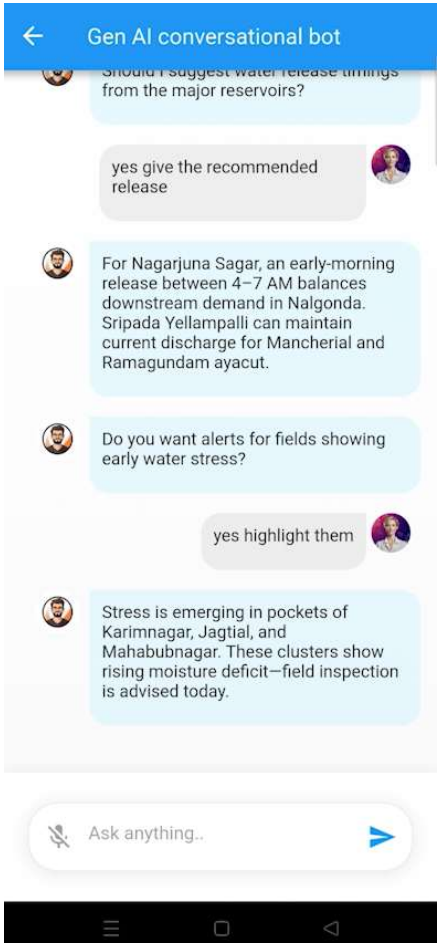
- Identify defaulters
- Predict collections
- Optimize outreach

BENEFITS: Reduce manual assessment · Improve billing transparency · Minimize area-related disputes · Enable plot-wise billing intelligence

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Water User Society

- Project
- Sub-Project
- Division
- Sub-Division
- Section
- Pani Panchayat
- Chak
- Beneficiary Farmer



Click to play

Integration of Operational hierarchy, Irrigation officer, Pani Panchayat and Beneficiary





GenAI based Irrigation Decision Support

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Vassar LABSCLIMATE

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Thank You!