

A PSYTECH DEMONSTRATOR

अन्नदृष्टि ANNADRISHTI

A 4D digital twin and decision-support layer for India's
FCI / PDS grain network — from wall map to world model.

36 राज्य · states

77 depot clusters · ~605 LMT

365-day playable year

Hindi-first · human-in-the-loop

01 • समस्या THE PROBLEM

700+

LMT CENTRAL POOL AT PEAK

2000+

FCI DEPOTS + HIRED CAPACITY

80 Cr

NFSA BENEFICIARIES

- ▶ The network breathes in two violent seasonal waves — RMS wheat (Apr–Jun, north-west) and KMS rice (Oct–Jan, east/south) — while PDS offtake drains it every single day.
- ▶ Decisions still travel through wall maps, PDF annexures and phone calls: **overflow discovered after rakes are queued, stockouts after districts run dry.**
- ▶ The data exists — FCI DOS, data.gov.in, NFSA, Annavitran — but no operational picture unifies **space × stock × time** for the officer on duty.

02 · समाधान WHAT WE BUILT

A living game board of the grain network — every godown a piece, every rake a moving peg, the whole year a playable timeline.

- ▶ **4D:** real geometry (36 states, 75 UP districts on drill-down) + capacity columns + daily clock, FY 2025–26.
- ▶ **Drill-down:** tap Uttar Pradesh → 50-depot RO Lucknow registry, transcribed from the FCI board itself.
- ▶ **Rule engine:** overflow / low-buffer / coverage rules emit plain-Hindi recommended actions — one tap to log the order.
- ▶ **Duty modes:** सुबह की समीक्षा · रैक प्रेषण · खरीद निगरानी · PDS उठान — camera, layers and feed auto-configure per daily workflow.
- ▶ **One-glance clarity:** status sentence, verdict chips, season chapters, guided tour — built for mixed digital literacy.
- ▶ **4 themes, 2 form factors:** dark ops rooms to projector-safe light, desktop and mobile.

03 · खेल-पट THE GAME BOARD

SUBSYSTEM	ROUTE	3D PEG	MOVEMENT
गेहूँ खरीद	 Gold	Truck, gold cargo	Mandi → depot · Apr–Jun
धान खरीद	 Green	Truck, green cargo	Mandi → depot · Oct–Jan
अंतरराज्यीय रेल	 Violet	Rake: engine + commodity wagons	Punjab→Bihar/Kerala/NE, MP→Mumbai, TG→Kochi...
PDS वितरण	 Blue	Small truck	Depot → district FPS

Depot columns: **amber** normal · **red** >90% overflow · **cyan** depleting. Subsystem tabs isolate any layer in one tap; filtered pegs scale up for focus. You can literally see what a train is carrying by its wagons.

04 · विश्व-मॉडल THE WORLD MODEL

Entities. Storage nodes {capacity, wheat/rice procurement weights, drain multiplier}, states with pooled coverage, movements typed by route.

Dynamics (daily). $\text{stock}' = \text{stock} + \text{inflow} - \text{outflow}$, where inflow follows gaussian procurement pulses on the real RMS/KMS calendar plus interstate receipts for consuming states, and outflow is PDS drain with pressure-dispatch above 90% and issue-rationing below 18%.

Emergent behaviour (untuned): Ludhiana overflows in late April; national utilisation 52% → 81% wheat peak → 30% autumn trough → rice rebuild; consuming states pull interstate arcs exactly along real corridors.

Rules. $\text{stock} > 90\% \rightarrow \text{OVERFLOW}$ · $< 12\% \rightarrow \text{LOW BUFFER}$ · $\text{state coverage} < 15 \text{ days} \rightarrow \text{PRIORITY ALLOCATION}$. Deterministic (seeded PRNG) — every demo run reproducible; engine ships as [annadrishti-sim.js](#).

05 · निर्णय-सहायता DECISION SUPPORT, NOT AUTOPILOT

- ▶ The engine **detects and suggests**; the officer **decides and logs** — every recommendation carries its evidence (utilisation, coverage days, serving depot).
- ▶ Daily duty workflows mirror a Regional Office day, so the tool lands inside existing routine instead of demanding a new one.
- ▶ Bilingual by design: status sentences, verdicts and briefings in Hindi; identifiers and data in English — the language split officers already use.
- ▶ Same doctrine as PsyTech's defence line (JOES): sensor fusion → shared picture → human-authorised action. PDS is the civilian proof.

06 · डेटा REAL VS SYNTHETIC · SOURCES OF TRUTH

LAYER	DEMO STATUS	SOURCE OF TRUTH
Boundaries	Real (Census 2011+)	Survey of India · LGD · datameet GeoJSON
Depot registry	Real cities; UP caps from FCI board	fci.gov.in annexures · DOS · Sansad Q&A
Daily stock	Synthetic, seasonally shaped	data.gov.in FCI stock datasets → drop-in
PDS offtake / coverage	Synthetic	DFPD bulletin · nfsa.gov.in · annavitran.nic.in · impds.nic.in
Procurement waves	Gaussian on real calendar	agmarknet.gov.in · DFPD procurement
Rail movement	Stylised corridors	FOIS (partnership / RTI)

Everything provenance-tagged in the shipped DuckDB — per-row confidence, per-layer source.

07 · उत्पादन-पथ PATH TO PRODUCTION

- ▶ **Phase 1 — Registry truth (4 wks).** Triangulate every depot against FCI/CWC/SWC directories; bitemporal DuckDB→Postgres; geocode real sites.
- ▶ **Phase 2 — Live time axis (4 wks).** data.gov.in daily stock feed wired into the twin; synthetic engine becomes the forecast layer on top of actuals.
- ▶ **Phase 3 — PDS coverage (6 wks).** NFSA allocation + Annavitran offtake → true district coverage days; alert thresholds calibrated with RO staff.
- ▶ **Phase 4 — Movement (ongoing).** FOIS/rake integration via partnership; road telemetry where available — pegs become real vehicles.

Deployment: on-prem / NIC-cloud compatible, single-file web client, no external dependencies at runtime.

08 · क्यों PSYTECH

- ▶ **Deepstar** — our agentic operations runtime (28+ connectors) runs the ingestion, monitoring and comms automation behind the twin.
- ▶ **JOES** — defence decision-support line: OSINT/ACH, 3D digital-twin ops, route clearance, logistics. ANNADRISHTI reuses the same doctrine and stack.
- ▶ Full build — UP board twin → national 4D game board, 4 themes, world model, DB — executed by a founder-led AI-native team in days, not quarters.
- ▶ India-registered, India-hosted, Hindi-first. Built for government data-residency from day one.

09 · प्रस्ताव THE ASK

A 12-week paid pilot with one FCI Regional Office (proposed: RO Lucknow).

- ▶ Scope: live registry + daily stock feed + duty-mode rollout to AGM/D.O. desks; success = decision latency and overflow-days reduction, measured.
- ▶ Access needed: DOS read credentials or daily extracts; one nodal officer; RO wall-board data for ground truth.
- ▶ Expansion path: RO → Zone → national DFPD dashboard; iDEX/GeM procurement routes mapped.

अन्न का हिसाब, आँख के सामने।

The grain ledger, made visible.

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