UKIYO NETWORK · EVIDENCE LAYER

Fulfillment *Oracle* roadmap

Detailed plan: private prototype → Sepolia → multi-source industrial truth

DRAFT V1.0 · IN PROGRESS (NOT PRODUCTION YET)
FILE: C:\ROADMAP\01-FULFILLMENT-ORACLE-ROADMAP.HTML
ROLE: ANSWER "WHAT IS TRUE" ABOUT A PRODUCTION ORDER

MISSION NOW MVP PHASES TICKETS TECH RISKS NEXT

1. Mission & boundaries

NEVER MOVES FUNDS · NEVER SETS POLICY

Fuses plant signals into a continuous **Fulfillment Probability Score** and publishes cryptographically attested evidence. Agency and SPOOL consume it; Oracle never advances capital.

HOLDS	PRODUCES	NEVER DOES
Connectors, scorers, attestation keys, feed health	Attested scoreBps, explanations, oracle state	Move funds, decide credit policy, hold capital

2. Current state

PRIVATE PROTOTYPE · LOCAL MVP STUBS

- Site brief + white paper published
- Local MVP (C:\mvp): ERP fixture, weighted score, fail-closed, attest stub, tests
- Missing: live EIP-712 on Sepolia, real ERP connector, vision/logistics

> **Pilot locked:** Electronics · SUP-ACME-01 · PO-2026-0001 · Arbitrum Sepolia 421614

3. MVP scope (deep)

In scope

- Single ERP/CSV fixture (units, due date, defects, supplier history)
- Weighted FPS 0–10000 bps + explanation
- EIP-712 Score: orderId, scoreBps, timestamp, dataRoot
- Fail-closed: Normal / Degraded / Paused / Recovering
- ScoreRegistry on Sepolia + off-chain API
- Freshness window 900s

Out of scope

- Vision · logistics multi-source · multi-plant · L1 root · full PyTorch model

Score weights

FEATURE	WEIGHT	SOURCE
Deadline slack	35%	dueDate, remaining units
Production velocity	30%	unitsCompleted vs elapsed
Quality proxy	15%	defectRateBps
Supplier history	15%	on-time rate
Lead-time risk	5%	plannedLeadDays

Fail-closed

STATE	TRIGGER	PUBLISH	EFFECT
Normal	≤5 min	Yes	Full score
Degraded	5–15 min	Yes + uncertainty	−500 bps haircut downstream
Paused	>15 min / invalid	No	Advances blocked
Recovering	Fresh after pause	Yes + haircut	−500 bps one cycle

4. Phases

PHASE 0 · FOUNDATION

Schema, fixture, score, fail-closed, local attest, tests. Exit: stale path demo green.

PHASE 1 · WEEKS 1-2 · SEPOLIA RAIL

- Real EIP-712 + ECDSA
- Deploy ScoreRegistry
- Publisher: ingest→score→sign→publish
- Read API for Agency/dashboard

Exit: Agency reads verified Sepolia scores.

PHASE 2 · MONTHS 3-4 · REAL PLANT

- One mid-market ERP connector
- Plant-scoped credentials
- Replay logs + silent-feed alerts
- SLO: score age p95 < 5 min

PHASE 3 · MONTHS 5-8 · MULTI-SOURCE

- Vision throughput/stoppage
- Logistics milestones
- Fusion + agreement threshold
- Calibration / drift monitors
- Optional k-of-n signatures

PHASE 4 · MONTHS 9-12+ · PRODUCTION NETWORK

- L2 freshness + L1 Merkle root
- Multi-node weighted publish
- Vertical models · key rotation

5. Tickets

ID	WORK	ACCEPTANCE
ORC-1	ERP schema + fixture	Validates; orderId stable
ORC-2	Score engine	High/mid/low tests
ORC-3	EIP-712 attest	Recovers oracle address
ORC-4	Fail-closed FSM	Stale → no publish
ORC-5	ScoreRegistry Sepolia	Publish/read on-chain
ORC-6	ERP production connector	Phase 2
ORC-7	Replay + auditor export	Phase 2
ORC-8	Vision adapter	Phase 3
ORC-9	Logistics adapter	Phase 3
ORC-10	Fusion threshold	Phase 3
ORC-11	Calibration/drift	Phase 3
ORC-12	L1 root anchor	Phase 4
ORC-13	Multi-node median	Phase 4

6. Tech notes

```
Score(bytes32 orderId,uint16 scoreBps,uint64 timestamp,bytes32 dataRoot)
```

Services: ingest-worker · score-service · attestor · publisher · health-monitor

7. Risks

RISK	MITIGATION
ERP poisoning	Multi-source later; anomaly; fail-closed
Silent feed	Age → Paused
Key compromise	Dedicated key → HSM/MPC
Overconfidence	Explainability; Degraded uncertainty
Cross-chain replay	EIP-712 chainId + verifyingContract

8. Next 2 weeks

1. ORC-5 ScoreRegistry on Sepolia
2. Real EIP-712 verify in publisher
3. Oracle signer runbook