UKIYO NETWORK · INTERNAL PLANNING

Project *roadmap*

All-system plan plus detailed roadmaps for Oracle, Agency, and SPOOL

DOCUMENT: DETAILED PRODUCT ROADMAP · DRAFT V1.0 · IN PROGRESS
SCOPE: COMPANY VISION → MVP PILOT → SCALE (NOT PRODUCTION YET)
LOCATION: C:\ROADMAP\UKIYO-NETWORK-ROADMAP.HTML
RELATED MVP WORKSPACE: C:\MVP

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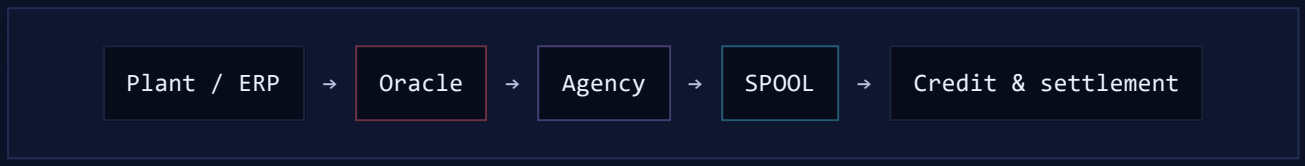
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All / company roadmap SYSTEM

NORTH STAR

Make industrial production legible, intelligent, and liquid. One system in three layers: Oracle answers what is true, Agency answers what may be done, SPOOL answers what credit and settlement follows.



Phased company timeline

PHASE 0 — NOW

Company site, white papers, vision docs live. Local MVP vertical demo exists at [illegible] (ERP fixture → score → policy → simulated advance + fail-closed). Oracle private prototype; Agency & SPOOL in active development.

PHASE 1 — PILOT-READY MVP · WEEKS 1–8

One Electronics PO on Arbitrum Sepolia. Deploy ScoreRegistry, Order NFT, IndustrySpool, PolicyEngine; wire agency loop; operator dashboard + audit export. Exit: stale feed blocks advance; allowlist enforced; human multi-sig for over-cap.

PHASE 2 — FIRST REAL PILOT · MONTHS 3–4

One mid-market supplier, one buyer PO. Real ERP connector (not fixture only); Ops runbook, escalation drills, pilot metrics. Capital remains testnet or tightly capped.

PHASE 3 — DEPTH · MONTHS 5–8

Stronger evidence + safer agency. Vision/logistics multi-source fusion, model calibration, richer policy bounds, fork simulation, optional L1 score-root anchoring.

PHASE 4 — CREDIT MARKETS · MONTHS 9–12+

Mainnet Arbitrum with limited liquidity. More industry spools, LP/buyer surfaces, Stylus where needed, audits, governance, observability SLOs.

Company-wide exit criteria (pilot-ready)

- Score updates within minutes of ERP change
- Stale / paused oracle blocks advance (fail-closed)
- Agent never calls a non-allowlisted selector
- Demo path: score up → advance; score crash → pause; human approves escalations
- Audit trail: attestation + decision + tx hash

Do not do early: multi-plant before one PO works · unbounded agent keys · mainnet liquidity before fail-closed drills · turning the marketing site into the protocol runtime.

Fulfillment Oracle

EVIDENCE LAYER

STATUS · PRIVATE PROTOTYPE → SEPOLIA PUBLISH

Turns plant reality into a cryptographically attested Fulfillment Probability Score. MVP uses ERP-only features; full vision adds computer vision and logistics.

Mission by phase

PHASE	ORACLE DELIVERABLE	ACCEPTANCE
0 Now	ERP fixture schema; weighted score engine; fail-closed states; HMAC attest stub; local ingest	Local demo publishes Normal scores; stale → Paused
1 Weeks 1–2	Real EIP-712 attest; ScoreRegistry on Arbitrum Sepolia; publish/read API	On-chain latest score per orderId; consumers verify signer
2 Months 3–4	Live ERP connector for one pilot plant; freshness SLO; operator alerts	PO score updates within minutes of real work-order change
3 Months 5–8	Vision + logistics fusion; calibration / drift monitors; threshold signing option	Degraded mode when one source fails; no false confidence publish
4 Months 9–12+	Two-tier publish (L2 freshness + L1 Merkle root); multi-node consensus	Advance-grade reads can require parent-chain safe finality

Detailed MVP tickets (Oracle)

ID	WORK	DONE WHEN
ORC-1	ERP JSON schema + fixture PO-2026-0001	Schema validates; orderId stable
ORC-2	Score engine → scoreBps + explanation	High/mid/low unit tests
ORC-3	EIP-712 attest + verify	Recovers authorized oracle address
ORC-4	Fail-closed: Normal / Degraded / Paused / Recovering	Stale feed does not publish
ORC-5	ScoreRegistry + Sepolia deploy	Publish & read on chain

MVP score features (ERP-only)

- Deadline slack (35%)
- Production velocity (30%)
- Quality proxy / defect rate (15%)
- Supplier on-time history (15%)
- Lead-time risk (5%)

Fail-closed rules

STATE	TRIGGER	BEHAVIOR
Normal	Snapshot ≤ 5 min	Publish attested score
Degraded	5–15 min age	Publish with uncertainty; agency haircut
Paused	> 15 min or missing fields	Stop publishing; advances blocked
Recovering	Feed restored after pause	−500 bps haircut one cycle

Later Oracle backlog

- MES / mid-market ERP adapters beyond fixture
- Line vision throughput & stoppage detectors
- Carrier / dock logistics milestones
- PyTorch calibrated model replacing weighted MVP scorer

- HSM/MPC oracle keys; k-of-n threshold attestation

Agency for Smart Contracts

GOVERNANCE LAYER

STATUS · BUILDING → SEPOLIA AGENT LOOP

Policy-bounded DeFi agents that observe oracle scores, simulate calls, and execute only allowlisted actions. Keys and limits stay off-model; high-impact moves escalate to human multi-sig.

Mission by phase

PHASE	AGENCY DELIVERABLE	ACCEPTANCE
0 Now	Band mapper, allowlist table, in-process simulate/escalate queue stubs	Local vertical demo: mint → escalate over cap → pause on stale
1 Weeks 5–6	On-chain PolicyEngine runtime: observe→decide→simulate→act on Sepolia	Unknown selector rejected; over-cap requires 2-of-2
2 Months 3–4	Pilot ops console for approvals, runbooks, notification codes	Operators can approve/reject with audit
3 Months 5–8	Anvil/Foundry fork simulation; argument-level bounds; Timeboost optional for pause/reprice	State-diff rejects unexpected balance moves
4 Months 9–12+	Manifest policy governance (timelock); signer HSM/MPC; novelty escalation	Agent compromise cannot bypass allowlist or escalation

Policy bands (MVP)

BAND	CONDITION	ACTION	ESCALATE?
High	scoreBps ≥ 8000, fresh, Normal	advance (within caps)	If amount > $25k, auto-cap
Mid	5500–7999 or Degraded	reprice → notify	No
Low	scoreBps < 5500	pause + notify	Yes (pause-lift)
Stale	Paused / missing score	pause	Yes

Detailed MVP tickets (Agency)

ID	WORK	DONE WHEN
AGY-1	PolicyEngine allowlist + value caps	Unknown selector rejected
AGY-2	Band mapper	Matches band table
AGY-3	Simulation gate	Bad diff → simulate_reject audit
AGY-4	Runtime on Sepolia	High-score advance E2E
AGY-5	Escalation 2-of-2	Over-cap needs human

Allowlisted actions only

- `mintOrder` `advance` `reprice` `pause` `notify`
- Empty allowlist authorizes nobody
- Model never receives signing keys, RPC secrets, or mutable policy text

Later Agency backlog

- Selector + argument decoding bounds for every value-moving call
- Express-lane (Timeboost) only for risk-reducing pause/reprice
- Novelty detection: first-time selectors always escalate
- Off-chain confidential policy with on-chain proof (optional)

SPOOL Protocol

CREDIT LAYER

STATUS · BUILDING → SEPOLIA ELECTRONICS SPOOL

Production-verified credit: Verified Order NFTs, industry spools, score-linked advances. MVP is one Electronics spool on Arbitrum Sepolia with MockUSDC — not mainnet capital.

Mission by phase

PHASE	SPOOL DELIVERABLE	ACCEPTANCE
0 Now	In-memory spool model (mint/advance/reprice/pause/notify) for local demo	Vertical-slice tests green
1 Weeks 3–4	VerifiedOrderNFT, IndustrySpool, MockUSDC on Sepolia; maxAdvance from score	Lower score → lower cap; paused score → revert
2 Months 3–4	Pilot funding of spool supplier payout path; outstanding tracking	One real PO advanced under policy
3 Months 5–8	Repayment waterfall; continuous reprice; buyer notify surfaces	Score crash pauses new advances without manual scramble
4 Months 9–12+	Mainnet limited liquidity; Auto/Pharma spools; LP participation; Stylus path	Audited contracts; utilization & risk dashboards

Detailed MVP tickets (SPOOL)

ID	WORK	DONE WHEN
SPL-1	VerifiedOrderNFT mint-once	Duplicate mint reverts
SPL-2	IndustrySpool Electronics actions	Selectors match allowlist
SPL-3	MockUSDC + fund spool	Advance transfers to supplier
SPL-4	maxAdvance = f(notional, ratio, score)	Paused/stale → 0
SPL-5	Foundry tests happy + fail-closed	CI green

MVP advance formula

```
maxAdvance = notional × advanceRatioBps × scoreBps / 10000 / 10000
```

Default `advanceRatioBps = 4000` (40% of notional at perfect score). Freshness window 900s.

Later SPOOL backlog

- Industry verticals beyond Electronics (Auto, Pharma)
- Buyer stake / notification for mid-band risk
- Stablecoin settlement asset upgrade from MockUSDC
- Public LP tranches with oracle-gated exposure
- Stylus compute for heavy credit logic; Ethereum L1 finality anchors

Dependencies & shared milestones

INTEGRATION

INTEGRATION ORDER

Layers are a directed chain. Do not advance SPOOL liquidity before Oracle fail-closed and Agency allowlist are proven.

Build order (MVP)

1. **Oracle ORC-1…4** — local truth + fail-closed (mostly done in `cre/`)
2. **Oracle ORC-5** — ScoreRegistry on Sepolia
3. **SPOOL SPL-1…5** — NFT + spool + MockUSDC wired to registry
4. **Agency AGY-1…5** — policy + runtime driving spool
5. **Dashboard DASH-1…5** — operator surface + pilot drill

Shared dashboard tickets

ID	WORK	DONE WHEN
DASH-1	PO list + detail	Score, state, last decision visible
DASH-2	HTTP API	Orders / audit / demo controls
DASH-3	Audit export JSON	Attest + decision + txHash
DASH-4	Fail-closed drill script	Supplier walkthrough reproducible
DASH-5	Site contact — pilot runbook	Contacts + escalation linked

Cross-layer dependency matrix

FROM → TO	INTERFACE	IF BROKEN
Oracle → Agency	EIP-712 attested score + state	Agency must treat as Paused / no score
Agency → SPOOL	Allowlisted calldata after simulate	No capital movement
SPOOL → Oracle	Reads registry for maxAdvance	Advance reverts when stale/paused
Human → Agency/SPOOL	2-of-2 escalation	Over-cap and pause-lift blocked

Suggested next 2 weeks

1. Finish **ORC-5** — ScoreRegistry on Sepolia
2. Land **SPL-1–3** — NFT + spool + MockUSDC
3. Keep marketing site as pilot intake only

Team posture

- Core team: 2 engineers, remote-first
- Stack: Rust · Solidity · Python · TypeScript
- Execution: Arbitrum Sepolia → Arbitrum One; settlement root Ethereum L1 (later)
