ARKS RWA – Optimized Full Blueprint

Dual Trading, Trust-Gated + Equity Monetization Model

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1. Canister Architecture (5 Core)

1. Core Platform Canister (ARKSRWA Core)

- Registers companies (name, symbol, valuation, metadata)
- Tracks verification state:
  - Registered, Pending, Verified, Caution, HighRisk, NeedsUpdate, Failed
- Orchestrates flows: triggers risk scans, creates tokens (via factory), runs primary sale (ICRC-1 transfers), lists on DEX, shows pool status
- Escrow for ICP/ckUSDC and company withdrawals (caps, schedules, approvals)
- Governance settings: thresholds, freshness windows, model versions, listing/delisting rules

2. Identity & Credential Canister Decentralized Identifiers + Verifiable Credentials (DID + VC)

- Issues and stores VC: `VC:Registration`, `VC:ValuationUpdate`
- Credential vault with selective disclosure
- Off-chain doc pointers (CID/hash + encryption ref)
- Revocation state

3. RiskEngine Canister

- HTTPS outcalls to news/search/social/registries
- Off-chain AI scoring
- Stores `{score: 0-100, label, state, last_scored_at, next_due_at, explanation_hash}`
- Lightweight badge API + full profile

4. TokenFactory Canister

- Versioned ICRC-1 WebAssembly(WASM) + cycles; spawns CompanyToken canisters
- Initializes minting/treasury (platform subaccount or company)
- Returns `token_canister_id`

5. CompanyToken Canister (ICRC-1, per company)

- Single source of truth for balances (private trades + DEX)
- Standard transfer/balance_of/metadata
- Optional mint freeze after primary sale

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2. Monetization Model – Equity-Based Listing

Instead of charging an **upfront listing fee**, ARKS RWA will **take a small % equity allocation** in the company's token supply upon listing.

Mechanism:

- On token creation, the company allocates **X% (e.g., 3–5%) of total token supply** to the platform treasury.
- Treasury-held tokens can be:
  - Staked in liquidity pools to earn swap fees
  - Sold gradually for revenue
  - Held long-term for upside as the company grows

Advantages:

- No barrier for companies to join
- Revenue scales with token price & trading volume
- Aligns platform revenue with company success

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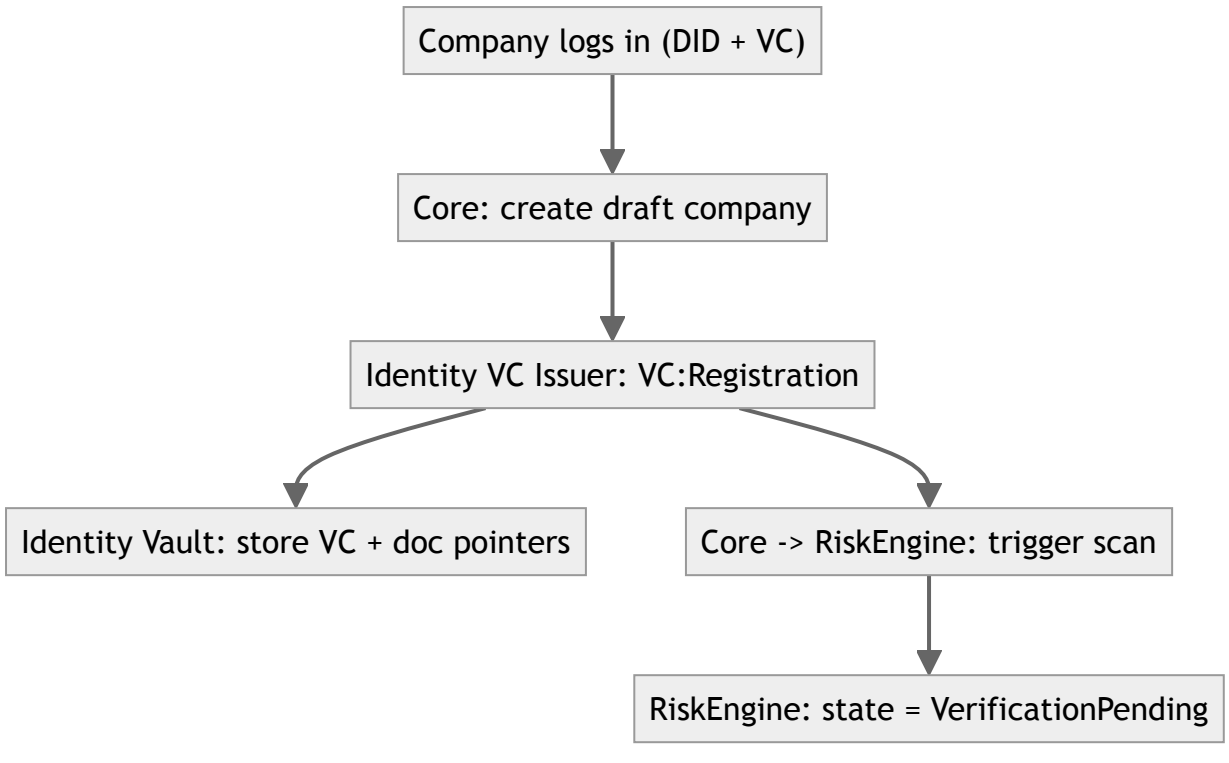
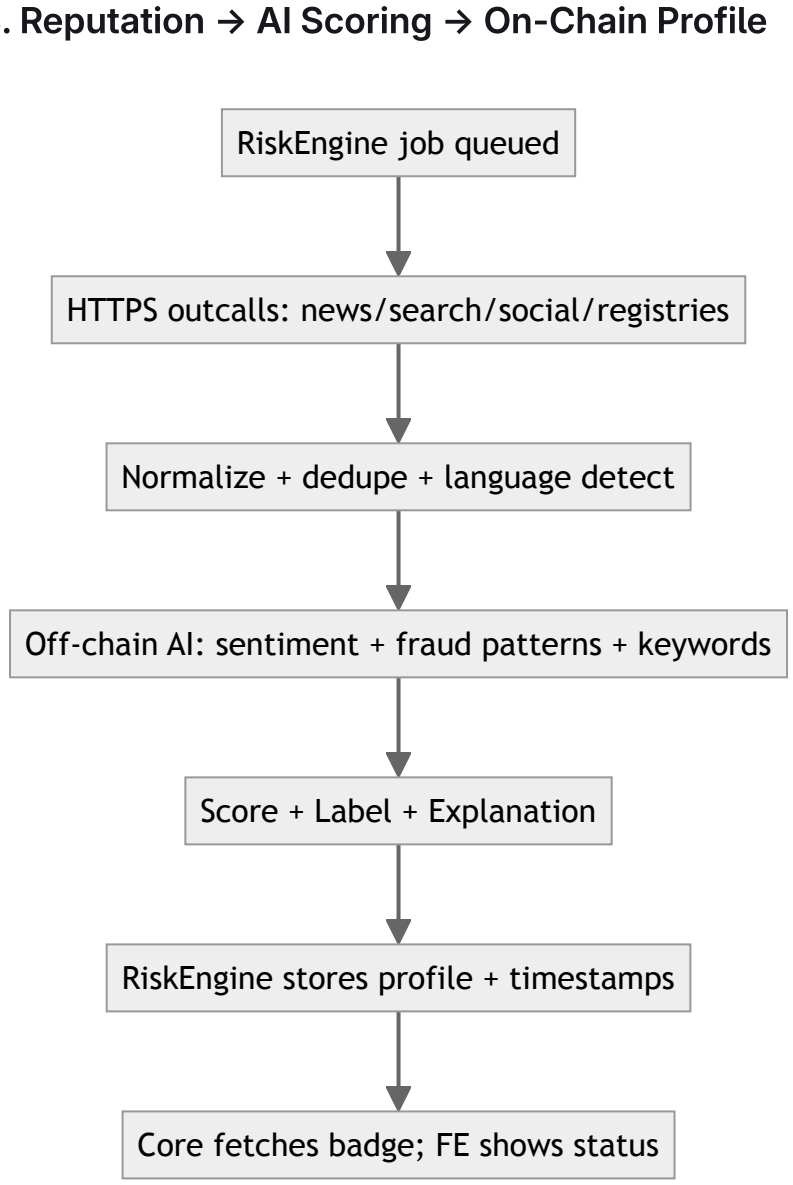
3. End-to-End Platform Flows

A. Registration & Notarization (DID + VC)

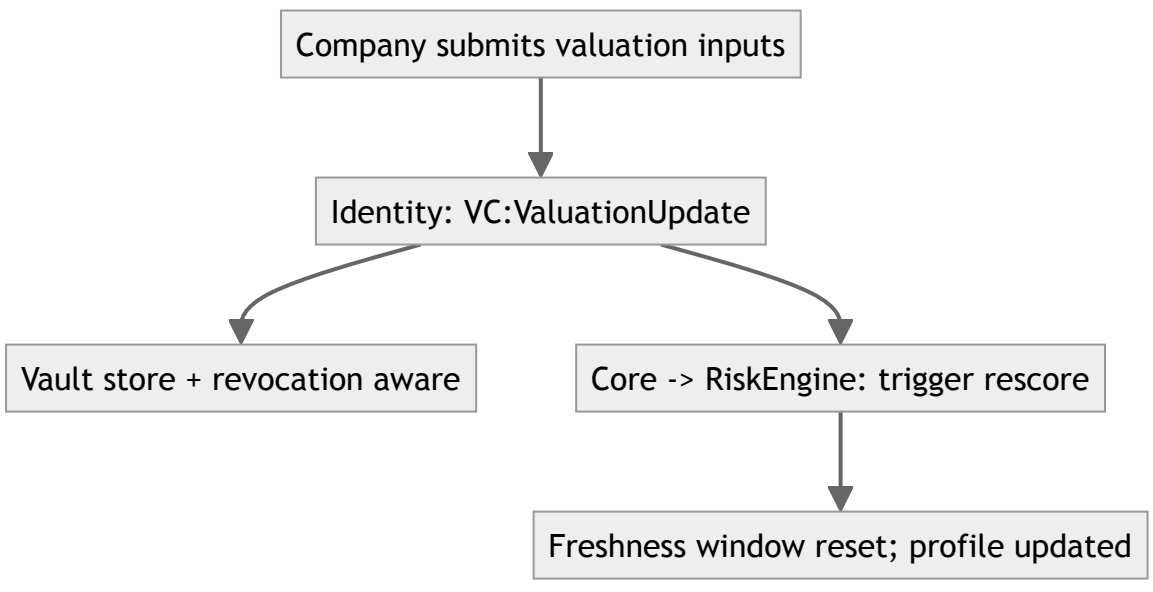


B. Reputation → AI Scoring → On-Chain Profile

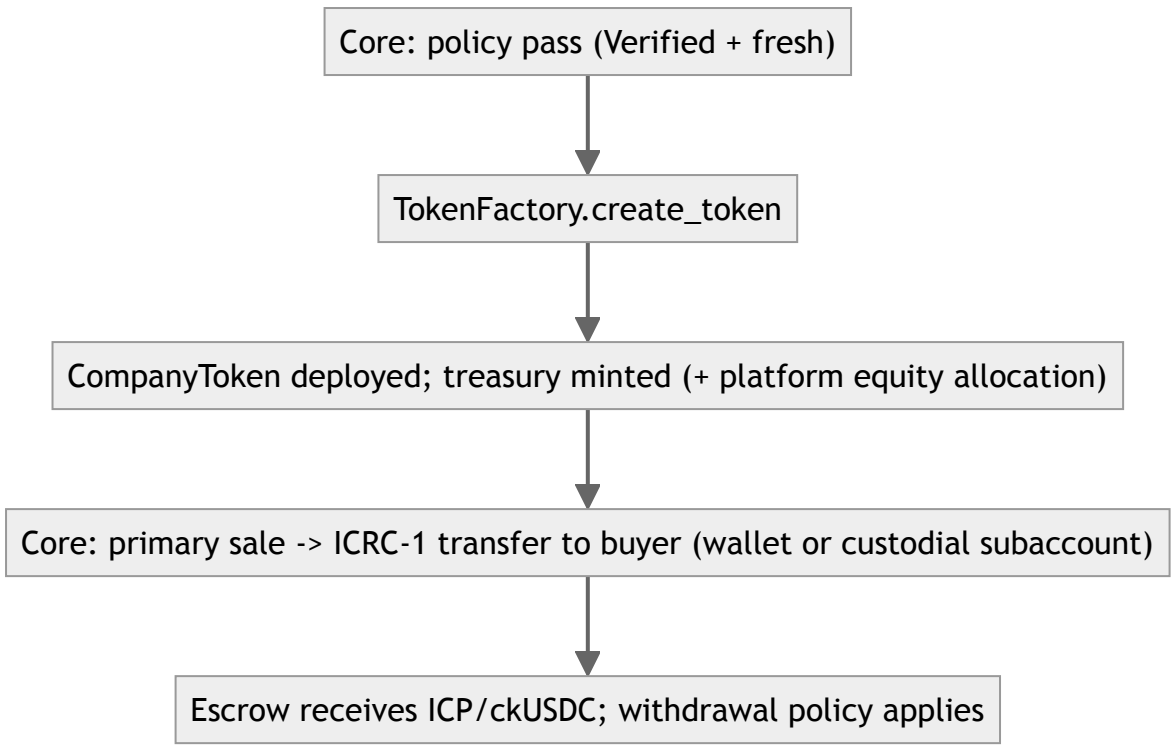


- Labels: Trusted (≥80), Caution (50–79), HighRisk (<50)
- States: Registered / VerificationPending / Verified / NeedsUpdate / Rejected / Failed

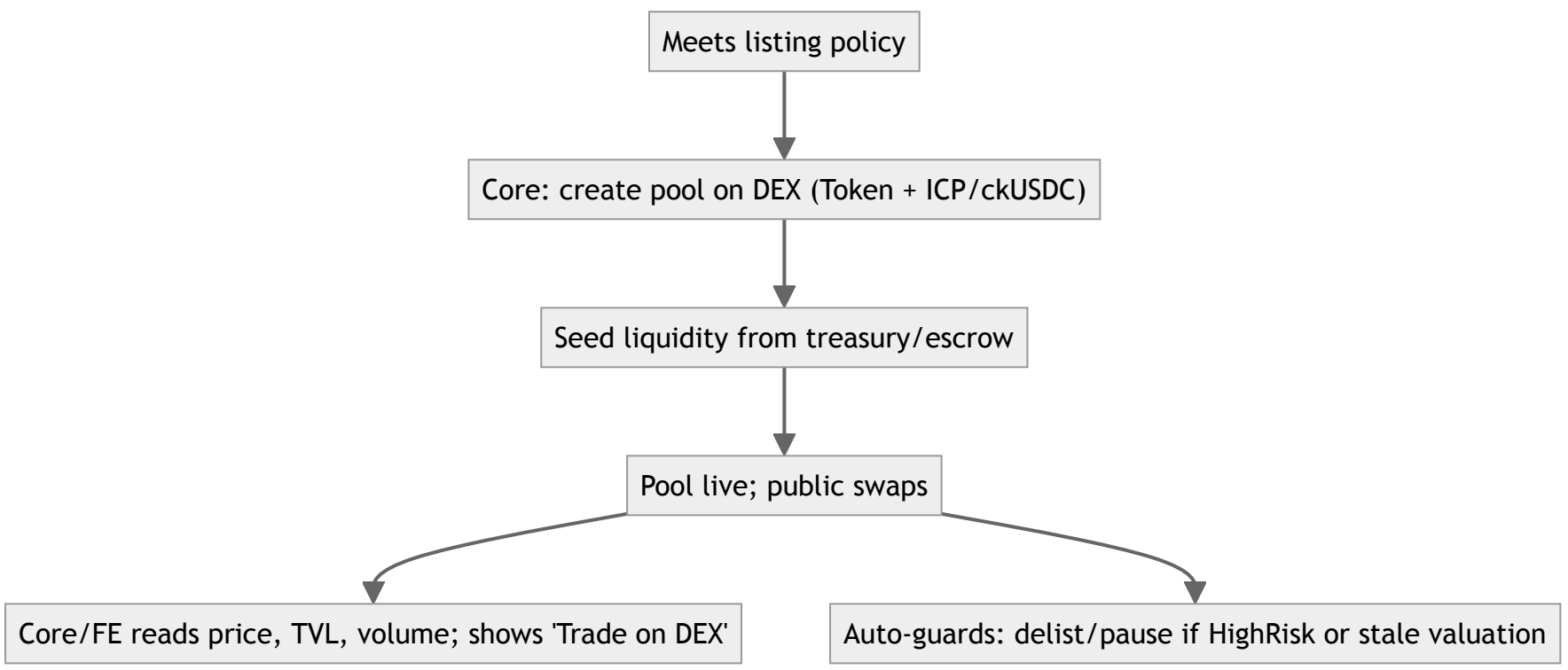
C. Valuation Updates (Freshness-gated)



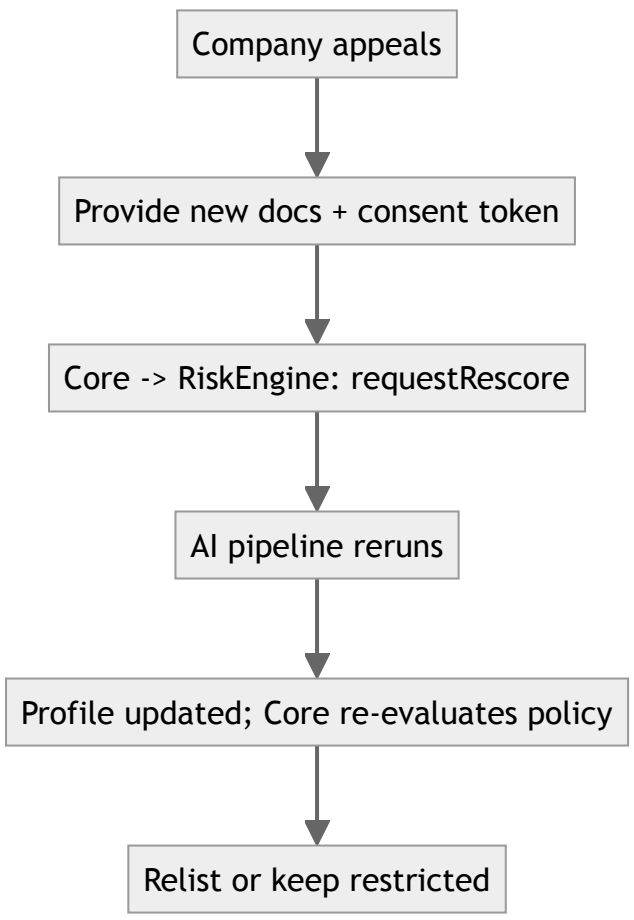
D. Tokenization & Primary Sale (Single Ledger: ICRC-1)



E. Public DEX Listing (AMM)



F. Appeals & Re-scoring



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4. Frontend Data Model

- **Company**: name, symbol, logo, description, valuation (USDT), token canister id, supply
- **Verification Card**: state, label, score, last_scored_at, next_due_at, explanation (short), valuation_freshness
- **Trading**: primary sale, private P2P (ICRC-1 transfers), DEX link + pool stats

- **Escrow/Withdrawals**: raised, withdrawn, remaining limit, next window

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5. Security & Privacy

- **DID/VCs**: Issuer DID `did:icp:<issuerCanisterId>`, revocation checks, selective disclosure (SD-JWT/BBS+)
- **Docs/PII**: encrypted off-chain; on-chain only hash/CID/enc-ref; consent tokens; audited access
- **RiskEngine**: outcalls with retry/backoff; store score/label/state/timestamps/explanation-hash only; scheduled rescans
- **Trading**: single-ledger ICRC-1; optional custodial subaccounts; auto-guards on risk/freshness
- **Escrow**: withdrawal caps/cadence/approvals; LP tokens tracked if platform LPs
- **Governance**: thresholds, freshness windows, model versions, provider allowlist, listing rules; audit logs

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6. Minimal Interfaces (shape only)

- **Core**: `register_company`, `get_company`, `get_verification`, `go_live`, `primary_buy`, `list_on_dex`, `get_pool_state`
- **Identity**: `issue_registration_vc`, `issue_valuation_vc`, `revoke`, `present_vc`, `add_doc_pointer`
- **RiskEngine**: `trigger_scan`, `request_rescore`, `get_profile`, `get_state`
- **TokenFactory**: `create_token(name, symbol, decimals, total_supply, treasuryAccount)` → token_canister_id
- **CompanyToken (ICRC-1)**: standard ICRC-1

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7. Benefits

- **Investors**: transparent trust (badge/score), dual access (private + DEX), escrow discipline
- **Companies**: easy registration with VCs, raise privately then list, appeals/rescore path
- **Platform**: no upfront fees → easier onboarding, equity stake aligns incentives, fewer canisters, strong governance

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8. Rollout Plan

Sprint 1 (Week 1) – Core Trading & Tokenization

Goal: MVP trading with private sale & DEX option
Must Deliver:

- Core Canister (registration, tokenization, primary sale, escrow)
- TokenFactory (spawns CompanyToken)
- CompanyToken (ICRC-1)
- DEX integration (manual liquidity funding)
- FE: company list, buy/sell, DEX link

Sprint 2 (Week 2) – Verification & Risk Awareness

Goal: Add trust layer for public launch
Must Deliver:

- RiskEngine (mock scoring first)
- Identity Canister (minimal VC issuing)
- Core integration (block DEX listing if unverified)
- FE: verification card, warnings for HighRisk tokens

✅ Result in 2 Weeks

- Public-facing platform with:
  - Company registration → token creation → private sale → DEX listing
  - Visible verification state + basic risk scoring
  - Escrow protection for funds
  - Equity-based monetization baked in

Comments