

# System Architecture

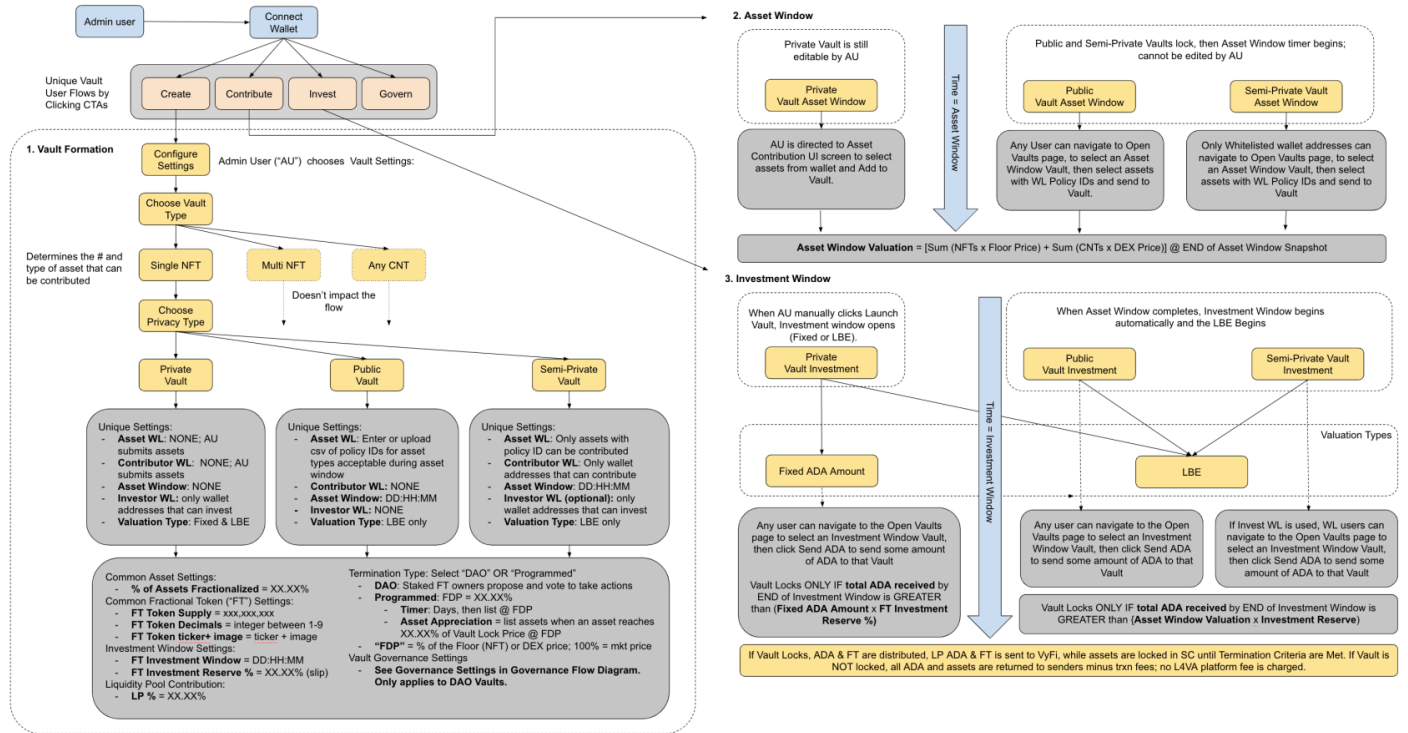
**Purpose:** High-level system design documentation covering the entire application ecosystem.

**Key Contents:**

- System overview and component relationships
- Infrastructure design and deployment architecture
- Integration patterns between components
- Scalability and reliability considerations
- Data flow diagrams
- Third-party service integrations
- System constraints and limitations
- Disaster recovery procedures

- System Overview
- Infrastructure Design
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# System Overview



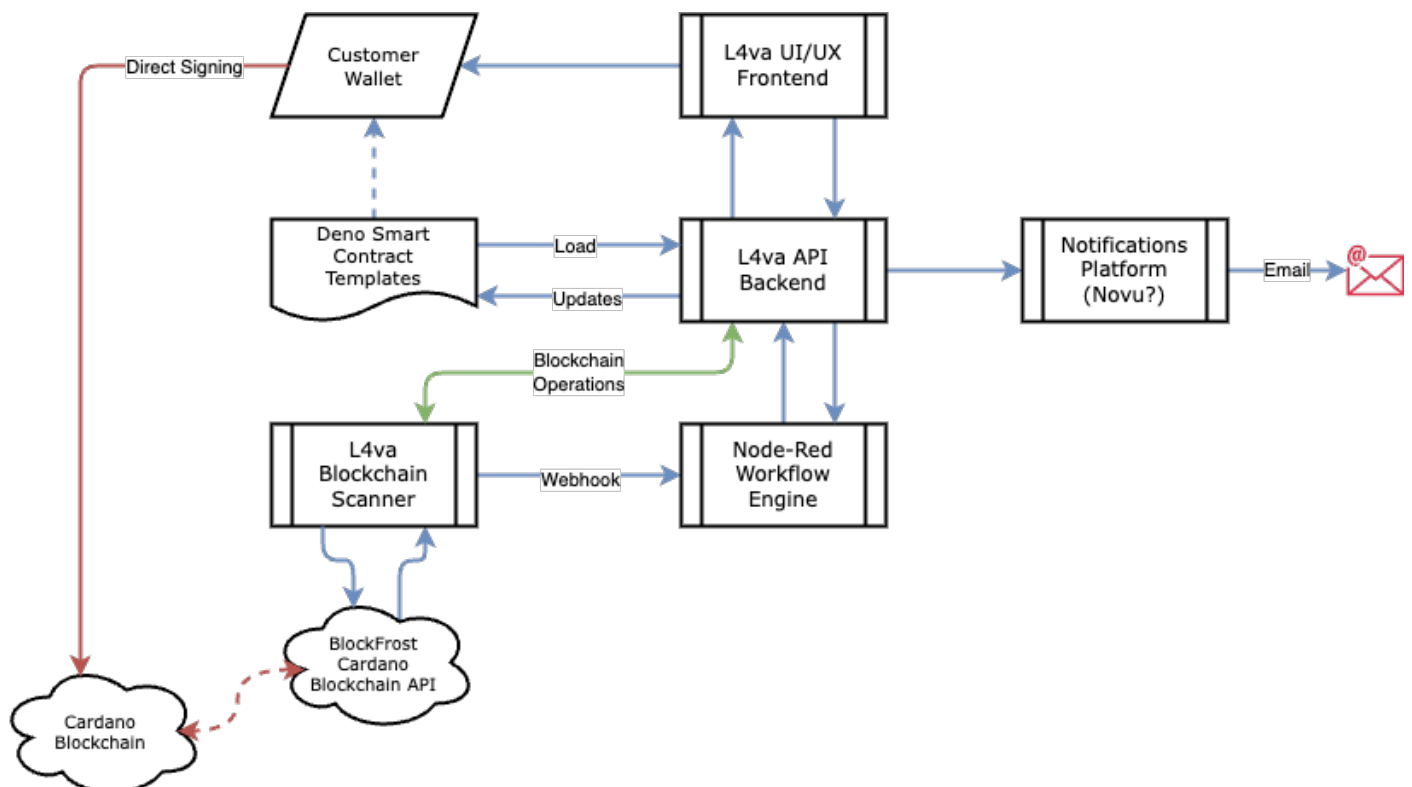
# Infrastructure Design

## Our "Glue" Components

### Components List

- **L4va UI/UX Frontend:** This is what our users interact with. This Web based frontend app authenticates a user using a Web3 wallet. It then communicates with the API Backend.
- **L4va API Backend:** This component connects our UI/UX Frontend with our database and implements parts of our business logic.
- **Deno Smart Contract Templates:** These are our Smart Contract templates which we populate with real data gathered from the user via the Frontend, or gathered from the blockchain via the L4va Scanner. We then present them to the user's wallet for direct signature and submission into the blockchain.
- **Scanner:** This component leverages the Blockfrost API to continuously monitor the Cardano blockchain for a specified list of assets. It supports configuring multiple webhook subscriptions on the same blockchain object, where different events trigger distinct notifications. For example, when ADA is received into a wallet, it might trigger a "Receive" webhook, and when ADA is sent out, it could trigger a separate "Send" webhook. Each webhook would then trigger a potentially different Node-Red workflow.
- **Node-Red Workflow Engine:** This is a real-time, visual workflow engine that allows us to quickly implement workflows for our webhooks. The workflows can run code, perform database queries, trigger API calls in our own system or in external systems, and much more.

### Architectural Diagram



# Integration Patterns

# Scalability & Reliability

# Data Flow Architecture

# External Integrations

## DexHunter

<https://app.dexhunter.io/partners>

TBD: The plan is to embed DexHunter within our site, to allow users to trade on our site via the vault pages. The DexHunter app widget should surface in the UI already showing the fungible token associated to the vault.

## TapTools

<https://www.taptools.io/>

TBD: The plan is to utilize tap tools API to act as our oracle and pull market information on specific assets. This is critical for us to be calculating the asset values contributed to a vault during the contribution phase, as well as other data surfacing in the application (e.g. TVL in a vault, TVL across the protocol, Mkt Cap of FT, etc.).

## VyFi

<https://app.vyfi.io/>

TBD: The plan is to integrate with VyFi for (i) automatically generating liquidity pools on VyFi per the settings in the Vault, upon successful vault completion, and (ii) allowing vaults governed by the agora dao framework to buy and/sell FT assets from VyFi pools. (note: is it possible to accomplish (ii) on dexhunter so that we get better pricing to the vault?)

## Wayup

<https://www.wayup.io/>

TBD: the plan is to integrate with Wayup, allowing vaults governed by the agora dao framework to buy and/sell NFT assets on Wayup.

# System Constraints



# Disaster Recovery

# Terminology / Glossary

| Term / Acronym                          | Definition / Meaning   |
|---|--|
| <b>Vault</b>                            | A blockchain-based container that holds tokenized real-world assets, fractionalized tokens (FTs), and governance settings. |
| <b>Private Vault</b>                    | A vault where only the Admin User (AU) can submit assets and control contributions.  |
| <b>Semi-Private Vault</b>               | A vault where only whitelisted addresses can submit assets or contribute.  |
| <b>Public Vault</b>                     | A vault open to any user for submitting assets and contributions, as long as asset policy IDs match defined criteria.      |
| <b>Admin User (AU)</b>                  | The creator of a vault, responsible for configuring its settings and managing its initial setup.                           |
| <b>Fractional Token (FT)</b>            | Tokens representing fractional ownership of assets within a vault.   |
| <b>Governance Token (GT)</b>            | Tokens used for governance actions like staking, proposing, and voting in the platform.                                    |
| <b>Asset Window</b>                     | The time period during which assets can be submitted to a vault.   |
| <b>Investment Window</b>                | The time period during which users can contribute ADA to a vault in exchange for fractional tokens.                        |
| <b>Lock Phase</b>                       | A governance phase where proposals are locked to prevent counter-proposals or anti-hostile actions.                        |
| <b>Execution Phase</b>                  | The phase in which the outcomes of governance proposals are executed.  |
| <b>Cosigning Threshold</b>              | The minimum number of co-signers required to approve a governance action before it can be executed.                        |
| <b>Governance Authority Token (GAT)</b> | Tokens issued to represent authority or rights tied to specific governance proposals.                                      |
| <b>Creation Threshold</b>               | The minimum percentage of the total FT supply that a user must stake to create a proposal.                                 |
| <b>Start Threshold</b>                  | The minimum percentage of the total FT supply required to initiate the voting phase for a proposal.                        |

| Term / Acronym                        | Definition / Meaning   |
|---------------------------------------|--|
| <b>Vote Threshold</b>                 | The minimum percentage of the total staked FT supply needed for a vote to be considered valid.                                   |
| <b>Execution Threshold</b>            | The minimum percentage of the total staked FT supply needed to approve the execution of a proposal.                              |
| <b>Liquidation Price (LP)</b>         | The percentage of the floor price or market price at which assets in a vault can be liquidated.                                  |
| <b>LBE (Liquidity-Based Event)</b>    | A valuation type where asset contributions determine the value of fractional tokens (FTs).                                       |
| <b>NFT (Non-Fungible Token)</b>       | A unique digital asset tokenized on the blockchain, often representing real-world assets or digital collectibles.                |
| <b>CNT (Cardano Native Token)</b>     | A native token built on the Cardano blockchain, which can represent assets or serve utility purposes in a vault.                 |
| <b>Agora Protocol</b>                 | The governance protocol used for managing proposals, voting, and executing decisions within the platform.                        |
| <b>Anti-Hostile Intervention</b>      | Actions taken to counter malicious or disruptive proposals during the governance process.  |
| <b>Policy ID</b>                      | A unique identifier for Cardano assets, used to verify and whitelist NFTs or CNTs for specific vaults.                           |
| <b>Asset Valuation</b>                | The calculated value of assets in a vault based on their floor price, DEX price, or market price at the end of the Asset Window. |
| <b>RAT (Reusable Action Template)</b> | Pre-written scripts used to configure and automate governance effects.   |
| <b>Fixed Valuation</b>                | A static asset valuation type where a fixed ADA amount is used for investment.   |
| <b>Fractionalization</b>              | The process of dividing an asset into smaller fractions, represented by tokens, to allow shared ownership or investment.         |