Whitepaper

BridgeAxisoperating modeland AIUSDsecurity notes

A technical description of the current platform scope: wallet-native client access, Base USDC treasury intake, managed Hyperliquid execution, Momentum Alpha, AIUSD fee payment, and the contract controls around bUSDC-backed AIUSD issuance and managed AIUSD balances.

Current release scope

Base USDC depositsHyperliquid executionMomentum Alpha liveAster coming soon

Document

OverviewOperating modelCapital flowExecution scopeAIUSD architectureContract securityTest coverageOperational controlsRoadmapAudit package

01

Executive overview

BridgeAxis is a managed AI trading workspace, not a connect-your-own-exchange bot. Wallets authenticate clients, while treasury intake, balance crediting, exchange funding, strategy execution, fee accounting, and reconciliation are handled by the platform.

Surface	Current state	Notes
Deposit rail	Base USDC	Live client deposits are routed through the Base treasury rail.
Execution venue	Hyperliquid	The active managed venue for the current release.
Live strategy	Momentum Alpha	The only live strategy currently enabled for client trading.
Coming soon	Aster and additional strategy sleeves	Staged until the first execution path remains reliable end to end.
Fee utility	AIUSD fee payment	Eligible platform fees can be paid in AIUSD at a 50% discount when the account opts in and has enough AIUSD.

02

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Operating model

The product is intentionally narrow: one deposit rail, one active execution venue, and one live strategy. This keeps capital movement, custody state, and runtime reconciliation auditable before broader venue and strategy expansion.

Primary invariant:client-visible balances must be explainable from treasury receipts, ledger entries, exchange funding records, fills, fees, and return events.

Client wallet
: Signs into the workspace and owns the client account session.

Treasury rail
: Receives Base USDC deposits and feeds receipt matching.

Account execution wallet
: Per-account wallet used by the platform execution route.

Internal ledger
: Records balances, reserves, funding events, fees, and trade activity.

Runtime workers
: Process receipts, funding, exchange streams, execution intents, and risk state.

03

Capital flow

1

Wallet session

A client signs into the workspace with a wallet session. The wallet is identity, not a personal exchange API key.

2

Deposit intent

The client registers a treasury deposit intent and sends USDC on Base to the assigned platform rail.

3

Receipt and screening

Treasury receipt workers match inbound funds, then AML/KYT and policy checks decide whether the balance can be credited.

4

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Internal ledger credit

Cleared funds become platform buying power inside the internal ledger, with activity visible to both client and operator surfaces.

5

Venue funding

When a strategy starts, funding automation moves the requested USDC from the treasury path into the account execution route.

6

Execution and return

Runtime workers submit, reconcile, close, and return available venue funds back through the account ledger.

04

Execution scope

The live execution layer currently routes through Hyperliquid and Momentum Alpha. Other venues and strategies are shown as future product surface only when they are not live.

Area	Status	Control
Hyperliquid	Active	Funding, stream sync, submit, reconcile, close, and return flows are part of the current runtime.
Momentum Alpha	Active	Current live strategy sleeve for managed trading.
Aster	Coming soon	Venue is visible in roadmap and documentation, but not positioned as an active client path.
Breakout Scanner	Coming soon	Strategy sleeve remains gated until live readiness and risk controls are complete.
Mean Reversion	Coming soon	Strategy sleeve remains staged behind the current execution path.

05

AIUSD architecture



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AIUSD is the platform fee and accounting utility. It is issued through a controller that consumes internal bUSDC reserve credit before minting AIUSD and tracking managed execution windows.

AIUSD token
: Transferable ERC-20 token with 18 decimals and a hard max supply cap.

bUSDC reserve credit
: Internal BridgeAxis reserve token. It is not positioned as a public user asset or liquidity token.

Execution hub
: AIUSDController burns bUSDC 1:1 before minting AIUSD, records allocations, tracks managed windows, and settles managed balances.

Managed balance
: AIUSD attached to an active execution window. It cannot transfer while the window is active.

Tradable balance
: The part of an address balance not locked by the active managed window.

Fee payment preference
: Client setting that lets the platform charge eligible fees in AIUSD at a 50% discount when balance is sufficient.

Fee payment rule:when the account opts in and has enough AIUSD, eligible platform fees are charged in AIUSD at half the normal fee amount. If the preference is off or balance is insufficient, the platform falls back to the settlement asset.

06

Contract security model

The AIUSD contract model is built around a small control surface: the token enforces transfer restrictions, while the controller owns bUSDC reserve consumption, managed allocations, release windows, and desk settlement.

Control	Implementation
Supply control	AIUSD can only mint through the configured execution hub, and total supply is capped.
Reserve consumption	AIUSD issuance through the controller consumes bUSDC first, creating an auditable reserve-to-token path.
Execution windows	The controller records the managed amount and release timestamp for each account.
Transfer restriction	The token checks the controller before transfers and rejects movement above tradable balance.
Holder settlement	A holder can settle only their own tradable portion.
Desk settlement	Owner/operator settlement is capped by managed balance on the specific account and does not require holder allowance.

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Control	Implementation
Role boundary	Operator and owner actions are separated from holder actions through AccessControl and Ownable checks.

07

Test coverage and audit evidence

The repository contains runnable Node tests for the app-integrated contract path and generated audit metrics for the broader AIUSD security package.

Suite	Passing	Evidence	Coverage
Contract smoke	8/8	tests/contracts/aiusd.test.mjs	Ganache-backed deploy, bUSDC burn-to-mint, allocation, transfer lock, settlement, and one-year managed allocation coverage.
Server fee payment	3/3	tests/server/aiusd-fee-payment.test.mjs	Opt-in AIUSD fee payment, settlement fallback when disabled, and fallback when AIUSD is insufficient.
Server suite	118/118	tests/server/**/*.test.mjs	Runtime, accounting, funding, strategy, portfolio, and repository behavior covered by the server test suite.

Total generated AIUSD tests**72**
Unit tests**32**
Integration tests**6**
Security tests**8**
Fuzz tests**22**
Invariant tests**4**
Critical paths covered**13 / 13**
08

Operational controls

BridgeAxis relies on runtime supervision and ledger reconciliation, not blind frontend state. The client cabinet, operator workspace, and workers all read from the same platform model.

Treasury watchers
: Detect and match Base USDC receipts against deposit intents.

Funding workers
: Move eligible strategy funding to and from the active venue route.

Exchange streams
: Synchronize venue balances, positions, fills, and settlement events.

Strategy runtime

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Creates strategy intents only after funding and risk checks pass.

Risk runtime

Computes guard state and drawdown conditions without requiring client-side decisions.

Reconciliation

Connects on-chain events, venue events, and ledger entries into one account view.

09

Roadmap boundaries

Expansion should happen only after the Base + Hyperliquid + Momentum Alpha path remains stable across deposit, live execution, close, return, and reporting.

Phase	Focus	Release condition
Current	Base deposits, Hyperliquid, Momentum Alpha, AIUSD fee payment	End-to-end funding, trade, close, and return flow stays reliable.
Next	Aster and additional strategy sleeves	Runtime controls, reporting, and failure handling match the live Hyperliquid path.
Later	More deposit networks	Treasury receipt, gas, bridge, and reconciliation logic is proven per network.
AIUSD maturity	Reserve visibility and external liquidity planning	Contract, reserve, and accounting controls are reviewed before public expansion.

10

Audit package

The following repository artifacts are the starting packet for an external reviewer. They should be regenerated after every contract or fee-accounting change.

Artifact	Path
Contracts	contracts/aiusd/BUSDC.sol, AIUSD.sol, AIUSDController.sol, IAIUSDController.sol
Node contract tests	tests/contracts/aiusd.test.mjs
Fee payment tests	tests/server/aiusd-fee-payment.test.mjs
Threat model	docs/security/AIUSD_THREAT_MODEL.md
Critical path matrix	docs/security/AIUSD_TEST_MATRIX.md
Generated audit report	reports/aiusd-audit-report.md and reports/aiusd-audit-stats.json

BridgeAxis

Wallet-first managed trading with treasury and runtime controls.

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Product

TechnologyMarkets AIUSDWhitepaper

Platform

SecurityRoadmapFAQ

Community

DiscordXTelegram

Developers

GitHubCI Tests

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