USD DWIN (USDW)

White Paper

Institutional Stablecoin Infrastructure

Comprehensive Technical, Compliance & Bank Integration White Paper

BASE

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Document Overview

Prepared for

Commercial Banks · Financial Institutions · Risk & Compliance Committees · Payment Service Providers

Blockchain Network

Base

Document Classification

Institutional / Technical / Compliance

Canonical Smart Contract Entrypoint

USDW_Main (ERC-1967 Proxy)

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Purpose of Document

This white paper provides a **comprehensive institutional overview** of the USDW stablecoin system, including its **technical architecture**, **governance and compliance framework**, **ISO-aligned operational model**, and **bank-grade integration flows**. It is intended to support **bank due-diligence, risk assessment, compliance review, and integration approval**.

Executive Summary

USDW is an **institution-first stablecoin infrastructure** designed to operate at the intersection of **regulated financial systems** and **public blockchain settlement**.

Unlike many stablecoins that originated from crypto-native ecosystems, USDW has been architected from inception to:

- Integrate with **banks and payment institutions**
- Align with **ISO 20022 messaging and reconciliation**
- Enforce **on-chain governance, compliance, and security**
- Support **deterministic issuance, redemption, and proof-of-reserves**

USDW is not positioned as a speculative crypto asset. It is designed as **financial settlement infrastructure**, enabling banks and institutions to extend existing fiat operations onto blockchain rails in a controlled, auditable, and compliant manner.

Industry Context & Need for USDW

Challenges in the Current Stablecoin Market

From a regulated financial institution's perspective, many existing stablecoins present material challenges:

Ambiguous system boundaries

Multiple smart-contract deployments, upgrades, and historical versions make it difficult to determine which contracts are authoritative.

Opaque governance models

Governance often relies on off-chain decision-making or loosely defined multisignature wallets, complicating accountability.

Off-chain proof-of-reserves

Reserve attestations are frequently delivered through PDFs, dashboards, or third-party websites rather than enforced on-chain logic.

Crypto-centric redemption flows

Redemption processes are often designed around exchanges rather than banks, increasing operational and compliance friction.

Weak alignment with banking standards

Limited support for ISO 20022 messaging, deterministic reconciliation, and bank reporting.

USDW Design Philosophy

USDW is designed to function as **regulated financial infrastructure**, not as a consumer crypto product.

Core design principles:

Banks retain control of fiat custody and settlement

Blockchain is used for tokenization, settlement finality, and auditability

Governance, compliance, and reserves are explicitly encoded on-chain

Integration aligns with existing bank operations, not replaces them

System Overview & Canonical Architecture

Single Canonical System

USDW operates through **one canonical smart-contract entrypoint**:

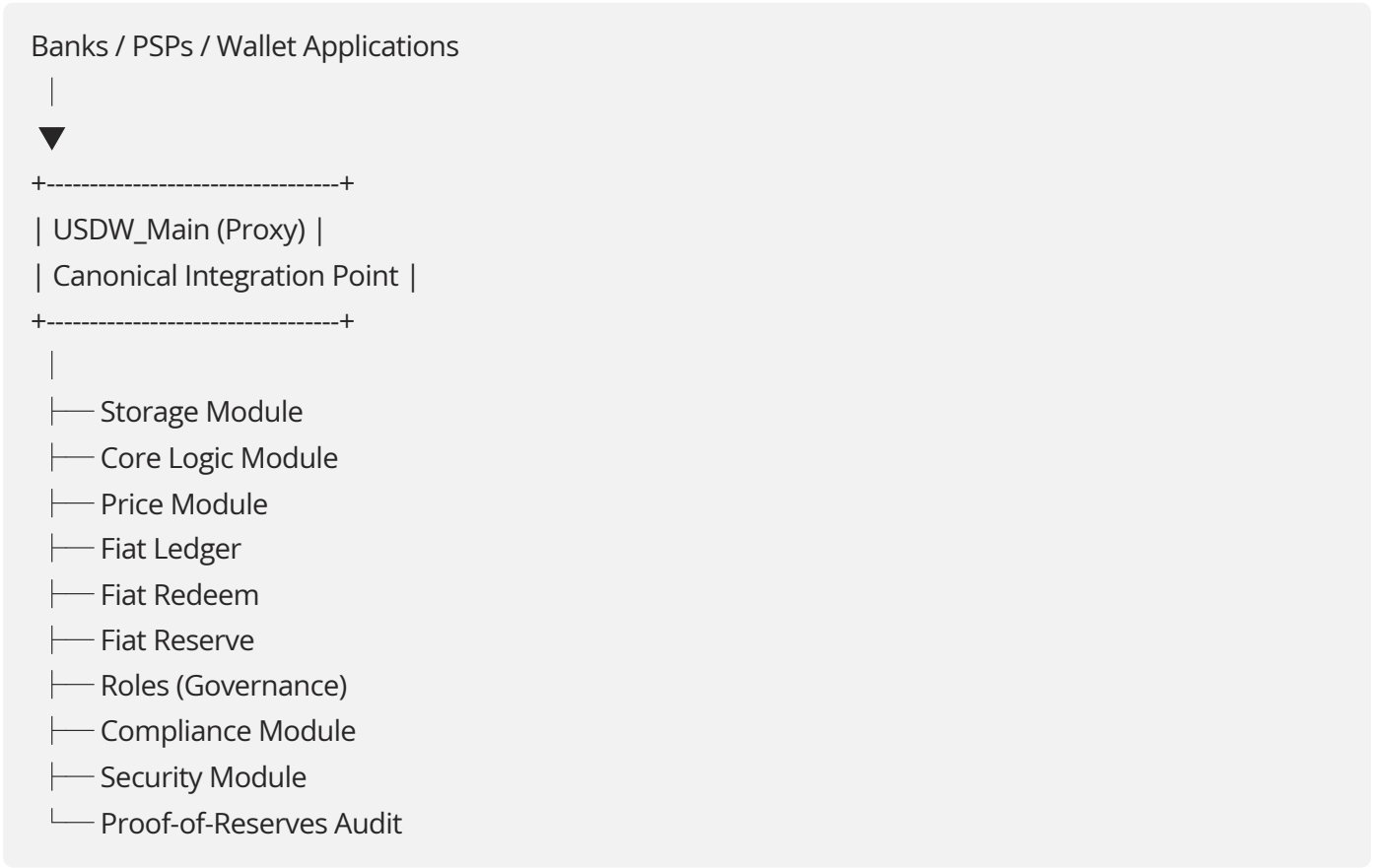
> **USDW_Main (ERC-1967 Proxy)**

All system modules are resolved from this proxy via on-chain getters. Any contract not referenced by USDW_Main is explicitly **non-canonical** and out of scope.

This approach provides:

- Clear audit boundaries
- Deterministic integration points
- Controlled upgrade paths

High-Level Architecture Diagram



Core Modules — Detailed Technical Explanation

1

Storage Module

Purpose: Defines the fixed storage layout of the USDW system, ensuring that state variables remain consistent across upgrades.

Why this matters to banks:

- Prevents state corruption during upgrades
- Enables long-term audit continuity
- Supports regulator expectations around data integrity

2

Core Logic Module

Purpose: Coordinates minting, burning, transfers, and internal module interactions.

Institutional relevance:

- Centralized operational logic
- Reduced fragmentation risk
- Easier system review and testing

3

Price Module

Purpose: Provides validated pricing inputs used for policy enforcement, redemption logic, and internal checks.

Institutional relevance:

- Pricing governance is a standard audit requirement
- Supports exposure management and operational controls

Core Modules — Continued

1

Fiat Ledger Module

Purpose: Acts as the on-chain mirror of fiat-side accounting events.

Institutional relevance:

- Deterministic reconciliation
- Clear mapping between bank ledger entries and on-chain events
- Reduced operational ambiguity

2

Fiat Redeem Module

Purpose: Controls the complete redemption lifecycle from request through settlement coordination.

Institutional relevance: Redemption is the highest-risk operation in stablecoin systems. This module enforces:

- Controlled execution
- Clear audit trail
- Policy-driven redemption rules

3

Fiat Reserve Module

Purpose: Maintains reserve-related policy hooks and references.

Institutional relevance: Supports:

- 1:1 reserve safeguarding
- Independent attestations
- Ongoing reserve monitoring

Governance, Compliance & Security Framework

Governance (Roles Module)

Purpose: Defines all administrative and upgrade authority.

Key characteristics:

- Explicit role assignments
- Verified upgrade authority
- No orphan or shadow governance paths

Institutional relevance: Clear separation of duties and accountability, aligned with bank governance standards.

Compliance Module

Purpose: Enforces compliance constraints at protocol level, including:

- Transfer restrictions
- Policy gating
- Emergency controls

Institutional relevance: Enables AML/CFT-aligned enforcement without relying solely on off-chain processes.

Security Module

Purpose: Provides emergency controls such as pause and guardian mechanisms.

Institutional relevance:

- Supports incident response
- Limits operational blast radius
- Aligns with business continuity expectations

Proof-of-Reserves (PoR) Architecture

POR System Design

Key properties

Single active PoR audit path	On-chain anchoring of reserve attestations	No parallel or legacy reserve systems

Bank Integration Model

Two-Layer Integration Framework

Layer 1 — Bank & Payment Rail (Off-Chain)

- Fiat custody
- ISO 20022 settlement
- AML/CFT controls
- Reconciliation and reporting

Layer 2 — Blockchain Settlement (On-Chain)

- USDW minting and burning
- Compliance enforcement
- Immutable audit events
- Proof-of-reserves validation

This mirrors how banks already integrate with:

- Card networks
- Clearing houses
- Payment processors

ISO 20022 Settlement & Reconciliation

Typical integration flow:

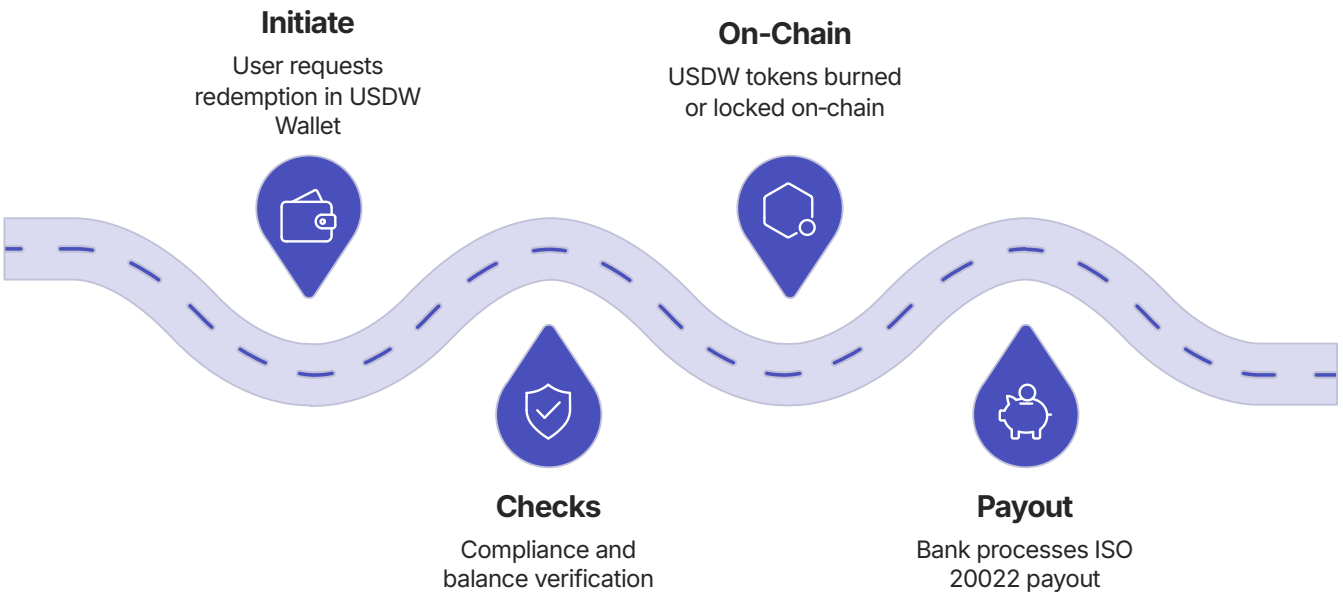
```
pain.001 → pacs.002
      |
      ▼
Bank Ledger Posting
      |
      ▼
camt.054 / camt.053
      |
      ▼
USDW On-Chain Event
```

Each fiat movement is reconciled using:

- EndToEndId
- Bank booking reference
- Corresponding USDW event

USDW E-Wallet & Redemption Flow

Redemption Flow Diagram



This streamlined redemption process ensures bank control while providing blockchain settlement evidence.

Operational Characteristics

Bank-first redemption model

Redemption processes are designed around bank operations, not crypto exchanges.

Fiat settlement remains under bank control

Banks maintain full custody and control of fiat settlement operations.

Blockchain provides immutable settlement evidence

On-chain records create an auditable trail of all settlement activities.

ISO Compilation & Alignment (Detailed)

This section describes **structural alignment**, not certification claims.

ISO 27001 — Information Security

USDW aligns structurally through:

- Role-based access control
- Separation of duties
- Controlled upgrades
- Event-based audit logs

ISO 22301 — Business Continuity

USDW supports continuity through:

- Emergency pause and guardian mechanisms
- Modular architecture limiting blast radius
- Canonical proxy enabling controlled recovery

ISO 37301 — Compliance Management

USDW embeds compliance directly into protocol logic:

- Compliance checks before sensitive actions
- Governance-controlled policy changes
- Immutable compliance evidence

ISO 20022 — Financial Messaging

USDW aligns with ISO 20022 by:

- Integrating issuance and redemption with pain.001 / pacs.002 / camt.*
- Supporting deterministic reconciliation
- Treating blockchain events as settlement evidence

USDW vs Other Stablecoins

Dimension	USDW	Typical Stablecoin
Canonical system	Single proxy	Multiple deployments
Governance	On-chain roles	Often off-chain
Proof-of-reserves	On-chain	External reports
Bank integration	ISO-aligned	Crypto-native
Redemption	Deterministic	Exchange-centric

Risk Perspective for Banks

A bank integrating USDW:

- Does not relinquish fiat custody
- Does not take crypto market risk
- Does not rely on opaque governance
- Uses blockchain as settlement infrastructure only

Final Authoritative Statement

The only authoritative USDW deployment on Base is:

USDW_Main (Proxy)

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