

v3.4-DAT-005 – Data Twin Lifecycle & Consent-Driven Exchange

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1. Purpose & Scope

This document defines the lifecycle and exchange control logic for data twins in MaxOneOpen. It ensures that data mobility remains user-consented, context-aware, and cryptographically enforced throughout all runtime states.

2. Data Twin States & Transitions

- States: Initiated, Linked, Active, Frozen, Terminated
- Transitions must be cryptographically signed
- Twin identity must remain stable across state changes
- Consent token defines lifecycle bounds and triggers

3. Consent-Driven Exchange Logic

Exchange Type	Consent Structure	Reversibility
Vault to Twin	Direct user token + policy contract	Full revocation
Twin to Twin	Cross-signature + TTL scope	Time-bound only
Twin to External	ZK-bridge proof + export contract	Explicit fallback only
Twin to Archive	User-signed freeze signal	Immutable

4. Runtime Binding & Token Enforcement

- Consent tokens must be scoped and signed by the user
- Tokens must be validated at each twin transition
- Runtime must enforce token-bound logic only
- External exchange requires local twin validation pre-release

5. Auditability & Certification Interface

- Lifecycle and exchange logs must be signed and locally stored
- Forks must expose twin consent API for external certification tools
- Certification requires verifiable consent + state lineage

6. Certification Relevance

Data twin lifecycle control and consent logic are mandatory for all certified MaxOneOpen deployments. No runtime exchange or reuse may occur without active, traceable user consent.