

# Tokenization

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# What is tokenization?

A process of transformation of asset accounting and management to represent each asset by a digital token.

# Why tokenize assets?

Tokenization reduces costs and frictions to trade

# Factors that increase friction and decrease liquidity

- Low **speed** of transaction settlement
- Need to **trust** a chain of intermediaries
- Limited **functionality** of infrastructure
- Reliance on a **single** party
- Low **usability** for the end user
- Limited **interoperability** of infrastructure components

# What will remove friction?

- Mathematically provable execution of trades
- Mathematically provable reconciliation and synchronization of data for each participant
- Each transaction subject to audit by all involved parties
- Guaranteed security against unauthorised history or account changes
- Universally applied transparent and predictable rules of trade
- Resilient infrastructure
- Fast settlement speed
- Simplicity of extension and usage of the infrastructure
- Standardized interoperable software components and protocols

Tokenization - improving  
the world's trading  
infrastructure

What exactly needs to be improved?

# Functionality

- Plug-in modules with business logic
- Interoperability of applications
- Smart contracts
- Backwards compatibility between protocols versions



# Security

- Nonrepudiation
- Ledger, history and account integrity
- Resilient infrastructure
- Separations of responsibility and roles
- Accessibility and DDoS protection
- Provable traceability of the account state
- Secure identity management which prevents impersonation
- Validation of software components
- Audit of all administrative actions

# Speed

- Digitization of all assets and processes
- Transaction finality in seconds (or less)
- AML determinations in seconds (or less)
- Real-time audits and auditability

# Joint management

- Well-defined rules embedded and enforced in software
- Transparency of all decisions for all participants
- Separation of roles
- Adding new ecosystem participants on the fly
- Joint account management
- Clear governance processes

# Usability

- Component interoperability
- Open-source
- License-free components
- Easy customization

# How to improve?

- Usage of cryptography for account management
- Usage of open API for component interaction
- Usage of blockchain for distribution of decision making, storage, and provable integrity and historical accuracy

# Assumptions

Tokenization is performed for real (i.e., existing somewhere else) assets that are under control of some entity or entities, which guarantees 1:1 relationship between the token and the “reference asset”

Principles of governance, KYC requirements, privacy, security and speed of processing are defined by the relevant entity or entities

# Account management transformation

Tokenization presumes a shift from mere order execution to direct asset management in an account.

This shift is enabled due to the usage of cryptography for account authorization and management. Accounts can be managed jointly via using multi-signature. Integrity and non-repudiation is achieved.

Accounts are secure even if the ledger is publicly available.

# Infrastructure components integration

Depository, exchange, and payment systems are combined and become a uniform decentralized infrastructure that contains within itself a ledger, an order book and a transaction execution engine which all are accessible via an open API.



# Decentralization

Blockchain acts as a ledger for accounts. It enables:

1. decentralization of transaction processing and storage, which leads to robustness and integrity
2. transparent and auditable transaction validation processes for all entities - and protection from double spending
3. Automated business logic (smart contracts)
4. Decentralized storage, audit and processing with centralized governance

# What is a “token”?

A token is an accounting unit which is used to represent balance of a specific (“reference”) asset.

# Everything will be tokenized

- Money
- Stocks and derivatives
- Real estate and certificates
- Warehouse receipts
- Loyalty points
- Precious metals
- Intellectual property

Tokenization leads to better  
asset liquidity

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