BankEx Yellow Paper

Version 0.1 alpha

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Abstract

BankEx Proof-of-Asset protocol are being described.

1 Introduction

1.1 BankEx Liquidity Protocol

1.2 Game theory behind Proof-of-Asset protocol

2 Modern Financial Markets

2.1 Classical Microservice Architecture

Microservice architecture is an approach to structuring applications whereby they are broken down into smaller independent internal components.

Advantages of microservice architecture:

- autonomous ownership for different microservices within an application;

- agility, application micro-components can be developed and tested in autonomous decentralized teams much faster;

- improved scalability (scaling independent of other components, on-demand scaling);

- continuous delivery and deployment of micro-components.

2.2 Bank-as-a-Service (BaaS) Business Model

2.3 BaaS Decentralized Model

2.4 Blockchain Service Architecture (BlockSA)

2.5 Blockchain Service Architecture (BlockSA) Difficulty Tuning

2.6 What is Blockchain Service Architecture (BlockSA)

2.7 Liquidity Theory Through the Prizm of Tokenization

2.8 Market Making Mathematical Models for Smart Asset

We use the following notation in our formulas:

- Trading volume disccount: $D_{TradingVolume}$

- Buy/Sell Ratio Discount: $D_{\frac{Buy}{Sell}}$

- Total Maker trading volume V_{Maker}

- Total Taker trading volume V_{Taker}

Maker:

$$f_{Maker} = \left(25 - D_{TradingVolume} - D_{\frac{Buy}{Sell}}\right) \times V_{Maker} \tag{1}$$

Taker:

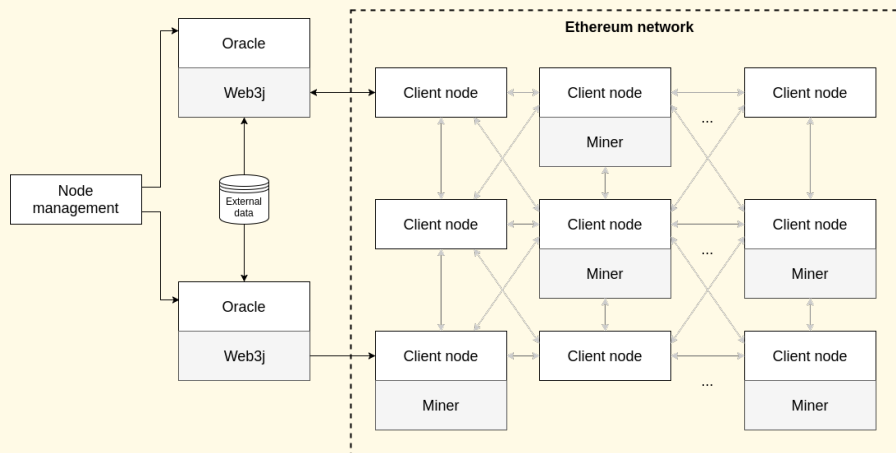$$f_{Taker} = \left(25 - D_{TradingVolume}\right) \times V_{Taker}, \tag{2}$$

Figure 1: Blockchain Service Architecture
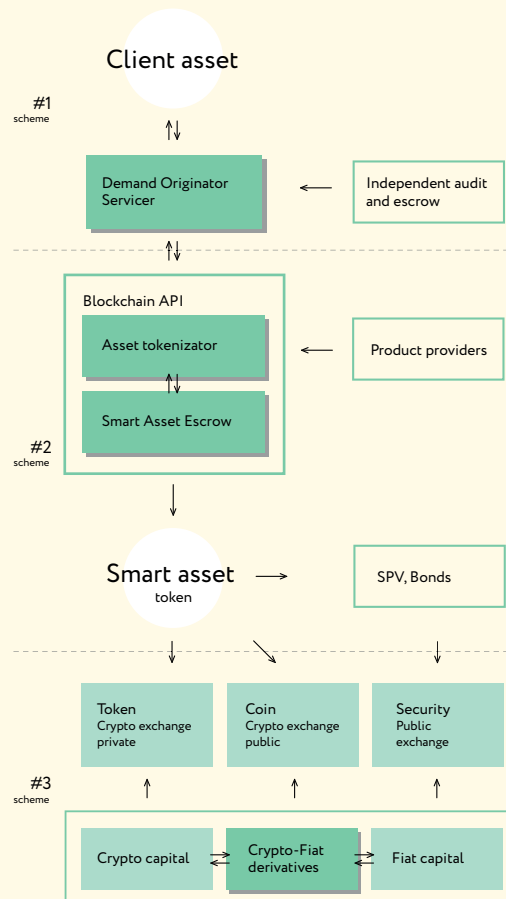

Figure 2: Asset Tokenization

$$\text{where } D_{TradingVolume} = \begin{cases} 0 & \text{if } V_{Taker} < 10\ 000\ BKX \\ 10 & \text{if } V_{Taker} \geq 10\ 000\ BKX \end{cases} \qquad\qquad f_{Total} = f_{Maker} - f_{Taker} \qquad (3)$$

A   Terminology

Blockchain   — is a continuously growing list of records, called *blocks*, which are linked and secured using cryptography [1] [2].

Tokenization   — process of converting rights into digital token to be circulated onver blockchain with low transactional fees. Tokenization is a blockchain equivalent of securitization.

References

[1]   Arvind Narayanan et al. *Bitcoin and cryptocurrency technologies: a comprehensive introduction*. Princeton: Princeton University Press, 2016. ISBN: 9780691171692.

[2]   Wikipedia. *Blockchain*. 2017. URL: https://en.wikipedia.org/wiki/Blockchain.