

DUKASCASH

White Paper v. 2

July 18, 2019

Public Testing Disclaimer

Till the moment when the Bank announces the contrary, the development stage of the Dukascash project is considered as public testing. For this period the minimum size per transaction is established at 1000 or more tokens. This measure is intended to exclude retail clients from the public testing stage. During public testing this document represents a conceptual project. The details of implementation may be changed. The Bank will make every effort to implement the project as close as possible to the procedure outlined below. Nevertheless, depending on the market situation and plans of the Bank itself, the document may be amended and supplemented at the discretion of the Bank. During the public testing stage this document does not create any obligation for the Bank to launch and maintain the products and/or services listed below. The public testing stage starts on the 3rd of July, 2019.

Independently on the results of public testing, possible future amendments to the White Paper and continuation or discontinuation of the project, the Bank takes an obligation to buy back all Dukascash tokens purchased by clients during the public test phase.

Glossary

The Bank	Dukascopey Bank SA
Bulletin board	A special interface in the Dukascopy Connect 911 messenger and MCA account web interface allowing clients to publish review and accept bids and offers of tokens belonging to MCA account holders.
Cashback	From time to time, the Bank may like to stimulate and support the activities crucial for business development by incentives presumably paid in Dukascoins.
Cold/warm/hot wallet	Internal concept describing the different levels of access rights to private keys from blockchain addresses where tokens are collected. Cold wallets are placed with a third-party bank and accessible by a minimum of 3 EXCO members simultaneously. Warm wallets are stored in the Bank's premises and accessible by 3 EXCO members simultaneously. Hot wallets are stored in the Bank's premises and accessible simultaneously by 3 different employees appointed to execute transactions in blockchain. Warm and hot wallets hold a limited number of tokens. The limits are determined by EXCO.

Emission of token	Set of technical activities with ERC-20 token smart-contract in the Ethereum blockchain, which creates and/or manages the specified amount of tokens.
ERC-20 token standard	Technical standard used for smart contracts on the Ethereum blockchain for implementation of tokens.
MCA	Multi-Currency Account - retail banking service offered by the Bank.
Dukascash base fiat currency	Specific fiat currency to which the Dukascash token is softly linked.
Release of tokens	Internal procedure of changing the status of tokens according to the White Paper followed by the transfer of "released" tokens from Unreleased wallets to the wallets with tokens owned by the Bank or by the clients.
Released/Unreleased tokens	Unreleased tokens belong to no one and the process of release is strictly limited by the White Paper rules and controlled by the Bank. Tokens Released to free circulation are allowed to be used for any purpose at the token holder's discretion.
Reserve	Dukascoins issued but not released, which are reserved to buy back Dukascash tokens from the clients.
Smart-contract	Special software (code) deployed into Ethereum blockchain processing the rules, which regulate the emission of tokens, the management of transactions, etc.
Token	Virtual instance in blockchain with strictly defined and hardcoded properties managed by smart-contract and transferable between blockchain addresses as a means of value, information, rights, etc.
White Paper	The document, which contains the general description of the project, its goals, legal and technology solutions applied, rights, limitations, the Bank's activities and obligations aiming to achieve the goals of the project.

At the moment of publication of this Dukascash White Paper, the Bank considers that the base infrastructure for Dukascoin emission, release and circulation has been generally created and tested. As it was expected, the clients welcomed the launch of the Dukascoin. They actively use the incentive programs and campaigns related to it. Thus, the main initial goal of the Bank has been achieved.

The Bank currently opens about one thousand Multi-Currency accounts per day supporting the referral program with rewards paid in Dukascoins. Considering the foregoing, the Bank is ready for the next stage of the Dukascoin project named

Dukascash. The main purpose of the introduction of Dukascash is to enhance the use in the blockchain of payment tokens issued by Dukascopy Bank SA.

1. The Bank intends to issue Dukascash tokens with tickers EUR+, CHF+, USD+ and others (at a later stage) to be traded mainly at external trading venues. The denominations are based on the fiat currency, which the Dukascash tokens are planned to be tied to, using a "soft" linking mechanism, which is described below. The new Dukascash token will be traded by the Bank against the Dukascoin. The Bank intends to start Dukascash emission with EUR+, CHF+ and USD+, gradually increasing the list of Dukascash tokens' base currencies depending upon clients' demand. For the purpose of simplicity, the EUR based Dukascash token (EUR+) is used in the description of Dukascash by default below.

2. Dukascash is based on the ERC-20 token standard, same as the Dukascoin (hereafter referred to as "the Coin"). The main difference between a Dukascash smart-contract and Dukascoin smart-contract is the foreseen additional emissions of Dukascash tokens. Otherwise, the goal of the Bank is to use well developed and verified Dukascoin's infrastructure for Dukascash as much as possible.

3.1. The initial Dukascash tokens tranches of roughly CHF 10 million or equivalent in each base currency will be issued and initially kept by the Bank as "unreleased" tokens. Additional Dukascash tokens will be issued in tranches, depending upon client demand. Small portions (up to CHF 100'000) of unreleased Dukascash tokens will then be released in favour of the Bank to enable it to sell Dukascash tokens to clients.

3.2. The physical access to the devices allowing the use of smart-contracts (for issuance of new Dukascash tokens) will be arranged in a similar secured way adopted for Dukascoin's Cold wallets – keys kept in a safe deposit box at a third-party Swiss bank accessible collectively by a minimum of three Executive Committee Members.

4. The rules and the infrastructure created by the Bank for Dukascoins will be mostly used for Dukascash. Specifically, the Bank will deal in Dukascash tokens only with clients holding an MCA account and having linked a personal blockchain wallet to their MCA account. The Bank reserves the right to refuse any prospective client in accordance with its internal policies and regulations. The Bank will apply the same AML, risk management procedures, book-keeping of released and unreleased tokens, procedure of Dukascash tokens storage in "cold"- "warm"- "hot" wallets, withdrawal/deposit of Dukascash tokens to/from the blockchain, multi-signature functionality to access wallets, etc. similarly to Dukascoin.

5. The Bank commits use its best effort to continuously sell and buy Dukascash tokens in exchange for Dukascoins. However, the Bank's objective is to have Dukascash tokens traded mainly on external trading venues.

6. The issued unreleased Coins will be used to create the Reserve. The Dukascoins accumulated in the Reserve will secure the buyback effort by the Bank of the

Dukascash tokens denominated in all base currencies released in circulation. The Bank will take the obligation to use its best effort to buy back from clients all released Dukascash tokens in exchange for Dukascoins. The main purpose of separating the Reserve from other unreleased Coins is to ensure the transparency of the Reserve in the blockchain. The Reserve will be kept in the publicly announced blockchain wallet and thus will be segregated and visible in the blockchain for public control. The buyback of Dukascash tokens will be an additional way of releasing Dukascoins. At the same time the main way to release Coins is by rewarding new MCA clients in accordance with the initial Dukascoin White Paper.

7.1. The principle of determination of intrinsic value of a Dukascash token is based on the following rule: the number of Coins required to buy one unit of Dukascash base fiat currency should be equal to the number of Coins needed to buy one corresponding Dukascash token. The current price of the Coin will be taken from the Dukascoin's Bulletin Board, which enables clients of the Bank to execute peer-to-peer exchange of Dukascoins to euro and vice versa. Let's consider the example where the Coin rate against euro (DUK+/EUR) on the Dukascoin's Bulletin Board is 0.74/0.75 EUR for 1 Coin (best Bid = 0.74, best Ask = 0.75). The Bank will attempt to sell Dukascash tokens at the reverse rate of Dukascoin on the Bulletin Board at Ask: $1 / 0.74 = 1.3514$. The Bank will attempt to buy Dukascash tokens at the reverse rate of Dukascoin on the Bulletin Board at Bid: $1 / 0.75 = 1.3333$. Therefore, the attempted exchange rate EUR+/DUK+ will be as follows: $1.3333 / 1.3514$ (Bid = 1.3333, Ask = 1.3514).

7.2. If a client would like to buy Dukascash against a fiat base currency (in our example EUR+ Dukascash token against EUR) they must do two subsequent transactions. The first one is to buy Dukascoin against EUR on the Dukascoin Bulletin Board. The second one is to buy EUR+ Dukascash token against Dukascoin from the Bank. In this example, the first transaction would be done at the Ask rate of 0.75 on the Dukascoin Bulletin Board and the second transaction would be done at the Ask rate from the Bank equal to 1.3514. Thus, the attempted cumulative rate for both mentioned transactions will be $0.75 * 1.3514 = 1.0136$ EUR+/EUR.

7.3. If a client would like to sell Dukascash against a fiat base currency (in our example EUR+ Dukascash token against EUR), they must do two subsequent transactions. The first one is to sell EUR+ Dukascash to the Bank against Dukascoin. The second one is to sell Dukascoin against EUR on the Dukascoin Bulletin Board. In this example, the first transaction would be done at the Bid rate of 1.3333 and the second transaction would be done at the Bid rate on the Dukascoin Bulletin Board equal to 0.74. Thus, the attempted cumulative rate for both mentioned transactions will be $1.3333 * 0.74 = 0.9866$ EUR+/EUR.

7.4. Above-mentioned calculations mean that the estimated rate EUR+/EUR is equal to $0.9866 / 1.0135$ (Bid / Ask). In order to facilitate the exchange of EUR+ to EUR or vice versa for the client, the Bank may, without taking any obligations and at its own discretion, directly quote the EUR+/EUR exchange rate.

7.5. Above-mentioned calculations are for reference purposes only and not binding on the Bank. Clients willing to buy Dukascash tokens must apply to the Bank for a quotation. Up to a certain limit set by the Bank, it will only be possible to exchange Dukascash tokens against Dukascoins. Beyond that limit, the Bank reserves the right to quote Dukascash tokens against either Dukascoins or fiat currencies. The limit will be determined and may be changed by the Bank at its discretion.

7.6. Dukascash tokens with a base currency different from EUR will be quoted by the Bank based on the same main principle of intrinsic value applied for EUR+: the number of Coins required to buy one unit of the Dukascash base fiat currency should be equal to the number of Coins needed to buy one corresponding Dukascash token. The initial quotation for Dukascash tokens with other base currency would be based on the best bid/ask of DUK+/EUR from the Dukascoin Bulletin board and Dukascopy Bank cross rate of the corresponding fiat currency to EUR. As an example, let's consider the same case where the Coin rate against euro (DUK+/EUR) on the Dukascoin's Bulletin Board is 0.74/0.75 EUR for 1 Coin (best Bid = 0.74, best Ask = 0.75) and Dukascopy Bank EUR/USD rate is 1.1299/1.1300. In this case, the quotation of USD+ against DUK+ would be equal to 1.1799/1.1960. To calculate the quotation for another Dukascash token (CHF+) with the same quotation of DUK+/EUR, one will need to have the rate EUR/CHF. Let's assume this Dukascopy Bank EUR/CHF rate is 1.1199/1.1200. In this case the quotation of CHF+ against DUK+ will be 1.1905/1.2067.

7.7. Because of this manner of price determination of the Dukascash tokens, there will always be a situation when the cross rate of Dukascash tokens in different base currencies is approximately equal to the cross rate of their base currencies. For the examples considered above, it means that EUR+/USD+ exchange rate will be approximately equal to EUR/USD rate, the rate of EUR+/CHF+ will be approximately equal to the cross rate of EUR/CHF and the rate of USD+/CHF+ will be approximately equal to USD/CHF rate. This will allow exchanging Dukascash tokens with different base currencies in away similar to fiat currency exchange, which, in turn, makes Dukascash a universal and convenient means of payment worldwide.

7.8. During the initial stage of the Dukascash tokens implementation, the Bank may offer quotations of Dukascash tokens with different base currencies against EUR.

8. The Bank considers Dukascash as further development of the Dukascoin. Dukascash is designed as a payment token (virtual currency token) softly linked to its fiat base currency indicated in the title (ticker). The "soft" linking is derived from the fact that the Dukascash token is linked to the base fiat currency indirectly through the intermediation of Dukascoin. Therefore, the Dukascash token can deviate from the base currency's value but thanks to the design, the Dukascash token in the long-term is supposed to seek parity with the base fiat currency, which is the Dukascash token's intrinsic value.

9. Dukascash is designed as a low-volatile payment token. The low volatility of the Dukascash token to the value of its base fiat currency makes it a far more practical

means of payment compared to the Dukascoins. With the use of payment-oriented Dukascash, the Bank intends to expand the practical use of Dukascoins in business and in the real economy. In contrast to the Dukascoins, which is currently predominantly used within the Bank's ecosystem, Dukascash tokens are expected to circulate as a payment means outside of the Bank from the beginning. The Bank will collaborate with independent professionals of the crypto industry to organize the listing/exchange of Dukascash tokens against other cryptocurrencies and against fiat currencies on independent external trading venues.

10. Dukascash tokens linked to major fiat currencies are also expected to create a convenient environment for speculation and arbitrage operations. For example, users may exchange in the blockchain Dukascash tokens in one base currency to Dukascash tokens in another base currency. The Bank will encourage the trading of EUR+/USD+, USD+/CHF+, EUR+/CHF+ and other pairs on independent trading venues. This will be an important structural achievement stimulating the demand of Dukascoins and Dukascash. Thus, making the markets of both Dukascoins and Dukascash more efficient, liquid and stable. **The Bank will act as a market maker for Dukascash** providing the exchange of Dukascash tokens to Coins and vice versa. At the same time, **the Bank has no intention or obligation to be a market maker for Dukascoins.**

11. The Bank undertakes to use its best effort to provide customers with regular liquidity so that Dukascash tokens can be sold or bought against Dukascoins. The Bank, at its own discretion but with no obligation, can buy or sell Dukascash tokens for fiat currencies. Such exceptional operations in fiat currencies will be aimed at preventing excessive volatility of Dukascash tokens and Coins prices.

12. In principle, the Bank uses the best Bid and the best Ask determined on the Dukascoins Bulletin Board to calculate the rate of Dukascash tokens. If independent representative markets of Dukascoins will appear in the future, the Dukascash pricing model will be updated accordingly to include prices on external venues.

13. For the purpose of calculating Dukascash tokens' price, the Bank reserves the right to ignore any spontaneous arbitrage or price distortions created by micro lots as well as any other junk quotes on the Dukascoins Bulletin Board. This way, the Bank intends to prevent the manipulation and abuse in Dukascash pricing via attacks on the Dukascoins Bulletin Board.

14. In order to favor Dukascash tokens trading activity on external venues, the Bank plans to implement slightly less attractive trading conditions in comparison to conditions on external trading venues. The Bank may set the minimum/maximum size of the lot for trading with its clients to stimulate operations with Dukascash tokens on external venues.

15. The Bank undertakes a policy not to compete with external exchanges, where Dukascash tokens will be listed, thus, promoting their exchange on independent trading venues. The Bank is interested in the fast organization of Dukascash tokens exchange

on such independent trading venues against fiat currencies and cryptocurrencies (Bitcoin, Ethereum and others).

16. At the initial stage, the Bank does not provide clients with the custody for Dukascash tokens. Later on, the Bank may accept and keep clients' Dukascash tokens in custody.

17. In the future when the Bank will offer the custody service for Dukascash tokens, it will accept Dukascash tokens from its clients at the exchange rate of 1:1 to the fiat base currency, as a payment for its services.

18. The Reserve will contain the number of Coins enough to buy back all the Dukascash tokens in circulation: number of Coins in reserve = (number of Dukascash tokens in circulation) x (price of 1 Dukascash token in Coins). The Bank will perform a regular revaluation of the Reserve in order to reflect changes of the price of Coins.

19. The initial size of the Reserve will be set at the level of one (1) billion Dukascoins. This will guarantee no risk of insufficiency in the Reserve at the early stage of the project.

20. For each group of Dukascash tokens (each base fiat currency) in circulation, the Bank will publish regular statistics that will include the total number of issued Dukascash tokens, Dukascash tokens in circulation, the number of Dukascash tokens sold and bought back. In addition, the Bank will regularly report the size of the Reserve.

21. To promote the commercial use of Dukascash, the Bank may establish special incentive programs for business entities (merchants and other various internet-based projects), which use the Dukascash tokens as payment means to buy and sell goods and services. The Bank understands that stimulating the use of Dukascash as means of payment in the real economic environment will be vitally important from the very first stages of Dukascash tokens public introduction. To be eligible for cashback arrangement, the companies willing to integrate the Dukascash tokens into their business processes must sign a special type of contract with the Bank. The criteria and conditions set out in the contract will imply a selective audit by the Bank to avoid any misuse.

22. On top of the cashback arrangement, the Bank may stimulate the use of Dukascash tokens as a means of payment by offering corporate clients traditional banking services if they decide to integrate Dukascash tokens into their business processes.

23. The Bank intends to apply the same concept of AML/KYC controls for Dukascash tokens as it now does for Coins. Similarly to the Coins case, the Bank offers the operations in Dukascash tokens exclusively to its own clients. The client authorized to operate Dukascash tokens, must have an MCA account with the Bank and must have declared to the Bank their blockchain wallet (successfully passed AML control). The same as in the case for Dukascoins, the Bank is not able to control Dukascash tokens turnover in the open blockchain beyond its own infrastructure.