

TOKENOMICS

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## INTRODUCTION

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**Inlock platform runs on the ILK token. Our token is the basic building block of the Inlock ecosystem. We understand that the Achilles' heel of token based models will be how they are concocted to interact with the business model that underlies them; this is why we designed our token to be the fuel for the ecosystem. This is the only way to use INLOCK's existing and future services.**

The Basic role of ILK token is to grant rights to use the products of the system and pay the toll - the ILK token to use system products and pay fees based proportionally on usage, just like paying a toll using a motorway. ILK tokens paid are used for forming smart contracts and after successful contracting these tokens will be recycled into the ecosystem. In this ecosystem there is a limited token supply that is directly connected (mathematically proven) to the capacity of the INLOCK platform.

In the preliminary stages of token modelling we analyzed multiple options, including: direct token issuing, collateral tokenization (stable coin) and token bonding curves. Our main goal was to find a model that could achieve equilibrium between token usage and token price. After extensive research, we finally selected the pre-issued limited supply token model with percentage based cost calculation based on usage. This is closest to the ideal utility token model.

We do not aspire to price stability; it is just a side effect of our token model. We have limited token supply and hard-capped collateral that we can accept for lending. Platform costs (in ILK tokens) are calculated based on well-defined percent of prompt USD price of collateral. Thus, if the token price is significantly lower than we expected then you need more ILK tokens to lock the collateral, this increases demand on secondary markets (internal token market / exchanges) which causes a direct increase the ILK token price and vice versa. This is not a stabilizing process but rather somewhat helps to protect against artificial price manipulations (eg. pump and dump). With this model, our token price can follow the market (we can grow as the mix of collateral coins (BTC, LTC, ETH) are growing, but because of this secondary drift effect we are protected against manipulation.

## Why do we need blockchain?

The INLOCK platform enables parties to offer and request loans freely, as well as browse existing ones.

From that point forward the platform does not participate in contracts created by those parties, unless they jointly decide to modify the contract.

The INLOCK platform prepares a smart contract to record the legal relationship between parties which is then digitally signed by INLOCK and 3 independent actors, giving them certain rights. The actors are the Borrower, Lender and Collateral Manager, who handles the collateral for the entire duration of the loan.

Thanks to the decentralized Blockchain the uninterrupted operation of the smart contract is ensured throughout the loan duration without any intervention being necessary from INLOCK. Furthermore, smart contracts running on the Blockchain contain trustless evidence and tasks which guarantee the integrity of all actors.

## Why do we need a token?

ILK tokens represent compensation for resources used; without the tokens these costs would need to be deducted directly from the collateral, which is contrary to the philosophy of the INLOCK platform as it was created to mobilize the purchasing power of cryptocurrencies without having to sell or trade them.

How do we utilize ILK tokens paid in return for platform usage?

The distribution of ILK tokens used when creating a lending contract is the following:

- 10% for the Marketplace where the parties are matched (INLOCK has created a complex marketplace API to make deals available not just on our own site);
- 30% for the Collateral Manager who handles the collateral for the entire duration of the loan;
- 60% for the INLOCK platform which is used to cover operational costs, financing the business development of the platform and extending its services.

The INLOCK platform immediately puts all used tokens back into circulation through its own token market.

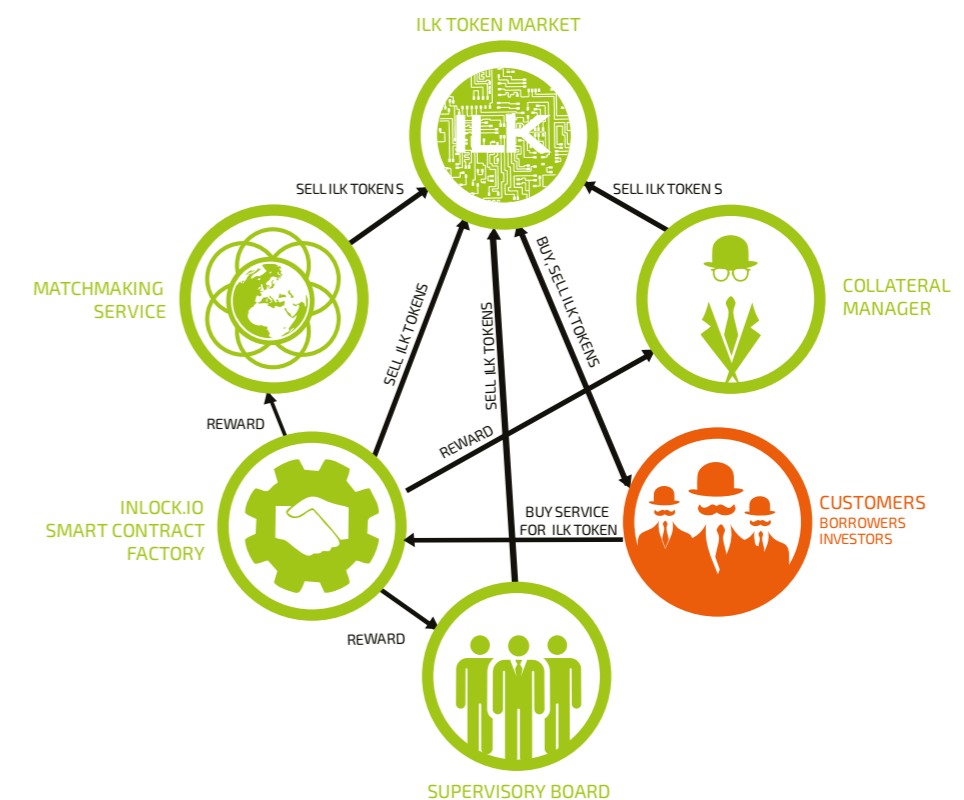
## How and why are we converting ILK (ERC20) tokens into internal blockchain contracts

Blockchain is essential to store and handle an unmodifiable, tamper-resistant and transparent register that can provide information about partner history and details BEFORE the lending contract is concluded. The INLOCK platform's main goal is to operate a fully transparent Marketplace for borrowers and lenders. The platform as an intermediary ensures a level playing field and unified experience for all customers across the platform. This goal can only be achieved if we rely on the smart contracts and the underlying technology: the blockchain. All concluded loan contracts are running in a separated smart contract which is easily accessible for the contracted parties. Our smart loan contract can provide the necessary evidence about the current state of the contract.

Long-term sustainability is very important for us and with this model we can eliminate the risks of any price fluctuations on the Ethereum network ERC 20 token.

An internal marketplace (TOKEN MARKET) to buy and sell ILK token without network/ mining fees is also very important to protect our ILK token from Ethereum network fluctuations, although token holders are able to store their tokens in appropriate private wallets as well.

The Following diagram shows the important actors of the token ecosystem and the token flow between the actors. The following tokecomics documentation will explain in detail how this ecosystem works.



From a technical aspect, ILK tokens will be released under ERC20 token standard. Each ILK token can be divided by up to 8 digital places. Although there is not a universal definition of tokens and categories, we built ILK to be a proper utility token and achieved the lowest Howey test score (0) possible for this type of tokens. (<https://www.inlock.io/wp-content/uploads/2018/03/Howey-test-inlock.pdf>)

Due to the nature of utility token style ecosystems, the price of all ILK tokens issued is fixed and equal in every token sale period. The fixed price is 1 USD per 100 token. We use a reward model which benefits early supporters of the INLOCK Platform throughout the token sale.

Anyone can buy and hold ILK tokens and because of the ERC20 token design, it can be stored in

Ethereum wallets capable of handling ERC20 tokens as well. Our customers can also store their tokens in the INLOCK eWallet service. ILK used for payment of fees is not charged an Ethereum mining fee nor influenced by Ethereum network load and price fluctuation.

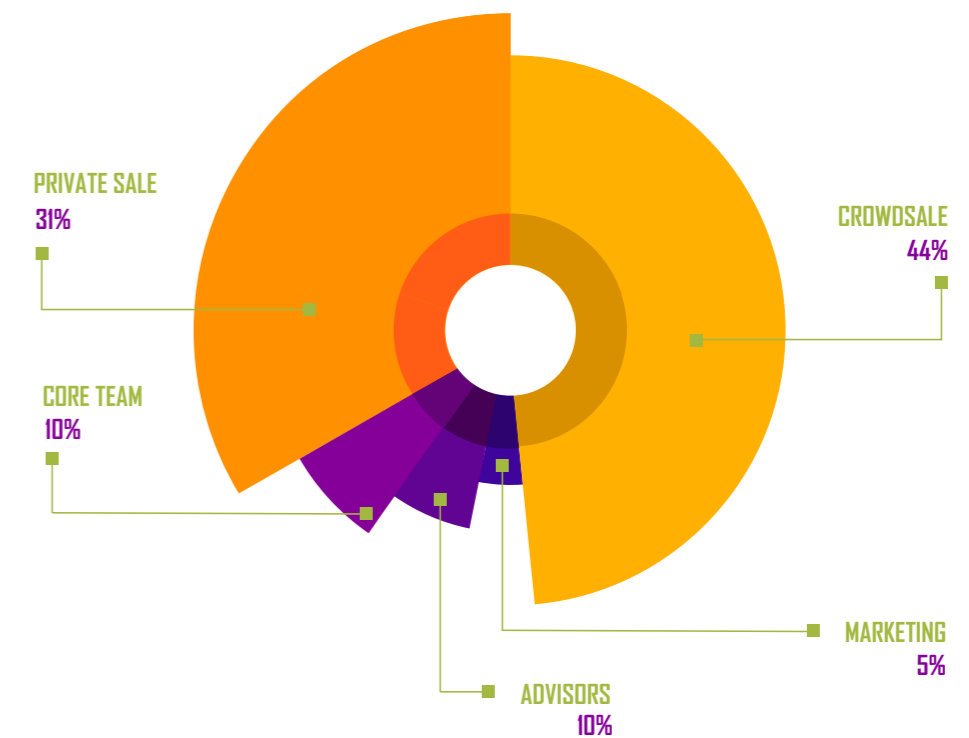
All Smart Contracts regarding the Token sale including all stages will be verified by third party auditors from credible companies prior to launch to ensure the integrity and security of the code.

Income Locker OÜ is registered in Estonia. The company's head office is located in Tallinn, Kesklinna linnaosa, Ahtri tänav-12-200, 10151, Estonia.

### Token sale parameters

- 31% of the tokens were sold during private sale stage I (family & friends) private sale stage II (strategic partners)
- 44% of the total tokens will be sold during the token sale
- 10% of the tokens will be allocated for the core team with a 24-month vesting schedule 6 months after the token sale
- 10% of the tokens will be allocated for the advisors with 6 months vesting starting 3 months after the token sale
- 5% of the tokens will be allocated for marketing purposes including a bounty campaign as rewards for bounty participants, miscellaneous costs associated with the token sale.

Remarks on the crowdsale marketing reservation: This pool will provide the necessary reserves for community rewards and motivation, including rewarding demo usage, feedback, community support and a small number of airdrops for prototype testing. During the final public crowdsale process we will distribute all remaining tokens from the marketing pool as a bonus for public investors.



- Dates: 09/01/2018 12:00 CET - 09/30/2018 12:00 CET
- Token Price: \$0,01 cryptocurrency equivalent for all phases of the Token Sale (price rate will be updated frequently during the token sale period)
- Token Standard: Ethereum ERC20
- Soft Cap: \$15,000,000 cryptocurrency equivalent
- Hard Cap: \$27,500,000 cryptocurrency equivalent (17,100,000 ILK Tokens sold during the public sale)
- Min. Personal Cap: 100.000 ILK (\$1000 cryptocurrency equivalent)
- Max. Personal Cap: no limit on max contribution
- Accepted cryptocurrencies: BTC, BCH, ETH, LTC, ARK
- Whitelist: Yes, starting from 01/Aug/2018

Know Your Customer (KYC): Yes. During the Whitelist potential Token purchasers are able to complete the KYC process in order to purchase the ILK Tokens. Every participant must provide their personal information to receive their tokens to their personal Ethereum wallets or their INLOCK e-wallet.

## Bonus system

Contribution	Bonus multiplier
01-sept-2018 - 09-sept-2018	17%
10-sept-2018 - 16-sept-2018	12%
17-sept-2018 - 24-sept-2018	9%
25-sept-2018 - 30-sept-2018	2%

We designed the Bonus system and personal limits in this way to enable even small investors to participate and be able to reach significant bonus levels.

The Smart contract does not allow for the issuance of any additional tokens. To participate in the Token Sale, please register at <http://ico.inlock.io> and follow the instructions.

Attention: participation of US citizens and residents is not allowed.

## Token supply calculation

$P$ : platform usage %       $C_{USD}$ : Collateral Value in USD

$T_d$ : time (days) of repayment       $V$ : ILK prompt price in USD

$$\langle P \rangle = \frac{0,25\% \times C_{USD}}{V} \Rightarrow \bar{P}$$

$$T_d = \{10; 30; 60; 90\}$$

$$T_d = \{10; 30; 60; 90\} = \{10\%, 40\%, 36\%, 14\%\}$$

$$\begin{aligned} \langle T_d \rangle \times \langle P \rangle &= \frac{\sum_{i=1}^4 \bar{P} \times T_d(i) \times \frac{365}{T_d(i)}}{4} \\ &= \frac{0,25\% \times 0,1 \times \frac{365}{10} + 0,25\% \times 0,4 \times \frac{365}{30} + \dots}{4} \\ &= 0,7\% / contract \end{aligned}$$

$$\langle T_d \rangle = \sum_{i=1}^4 T_d(i) \times T_d(i) = 62,85$$

\$0,01 (US\$) equivalent effect on ILK token:

$$P_{yearly} = (T_d \times \langle P \rangle) \times \frac{365}{\langle T_d \rangle} = 5,449\%$$

Yearly circulation scenarios based on total value of collateral:

$$ILK \text{ Circulation} / Y. \text{ volumen} = \begin{bmatrix} 1M \text{ USD} & 4.950.000 \text{ ILK} \\ 2M \text{ USD} & 9.900.000 \text{ ILK} \\ 4M \text{ USD} & \vdots \\ 8M \text{ USD} & \vdots \\ 16M \text{ USD} & 158.400.000 \text{ ILK} \\ 32M \text{ USD} & \vdots \end{bmatrix} \Rightarrow$$

Hypothetic token distribution in first year after platform launch will mobilize (ILKmob) 40-45% of the total token supply (~20% still in lock (cliff/vest), ~20% in speculative trades (exchanges), etc.)

Planned capacity for handled volume of collaterals: 350-400 million USD. In an extreme situations (when market volatility is extremely high and demand for Inlock platform is short timely peaking, the platform allow to increase handled volume of collaterals to 550 million USD.

$$\begin{aligned}
 ILK \text{ supply} &= \text{capacity} \times P_{\text{yearly}} \times (1 + (1 - ILK_{\text{mob}})) \\
 &= \begin{cases} 350M \text{ USD} & 2.772.560.000 \text{ ILK} \\ 400M \text{ USD} & \Rightarrow 3.168.640.000 \text{ ILK} \\ 550M \text{ USD} & 4.356.880.000 \text{ ILK} \end{cases}
 \end{aligned}$$

This mathematical background justifies why 4,400,000,000 utility tokens are needed.

## Introducing the INLOCK token economics and network effect

The whole INLOCK platform ecosystem is tokenized with ILK tokens; any kind of contractual related activity requires a certain number of ILK tokens. The ILK token is not an equity or a security type token; it is a utility token for the platform.

*„A unit of value that an organization creates to self-govern its business model, and empower its users to interact with its products, while facilitating the distribution and sharing of rewards and benefits to all of its stakeholders.“ (William Mougayar)*

## INLOCK token mathematical and market dynamics analysis

The INLOCK marketplace mechanism has been designed with the aim of

- Creating a stable and scalable economy;
- Providing the right incentives for all participants;
- Ensuring win-win transactions at all times.

We have carried out a mathematical and market analysis to make sure the economic principles are emulated at transaction level. The analysis is as follows.

### Economic stability of transactions

The most important property of the transaction logic is that it is independent of the INLOCK token market price. This independence guarantees market-conform transactions at all times. The transaction price depends only on the collateral, calculated on a FIAT basis. In particular, it does not derive from the INLOCK token market rate. The independence of the transaction fee from the token price is important for a number of reasons:

- Transaction fee independence is likely to lower speculator activity.
- Transaction prices and costs will be predictable even in the case of substantial moves on the token market.

## The effects of market volatility

Cryptocurrency markets have witnessed substantial volatility in the past. There are a number of factors behind adverse price movements:

The Ethereum ecosystem is still an emerging market. Rapid market development often correlates with high volatility.

- Media attention often amplifies otherwise valid price movements.
- Low market liquidity at times may cause larger-than-average price corrections.
- Speculators have caused some substantial market rate swings.
- Changes in regulation tend to have a strong effect on the market.
- Market participants have to anticipate phases of higher volatility in the future, as well.
- The rapidly evolving ecosystem and perception shifts are expected to move prices quickly.

## Factors that are likely to influence the ILK price

Whereas market volatility will naturally result in temporary price movements in both directions, there are a number of factors that are likely to have a positive effect on the INLOCK token price.

These factors include:

- Bullish sentiment on crypto exchanges.
- The INLOCK team is committed to continuously develop services built on ILK tokens. Additional future features will add utility value to the tokens. This will increase ILK's intrinsic value and create demand.
- The transaction fee mechanism provides a natural support of a mathematical nature for the price. Should the ILK price drop on the exchange, the transaction fee calculated from the collateral denominated in FIAT will immediately result in a higher demand for the tokens. It is important to note that these factors may have a positive effect on the price but they do not guarantee an upward token price trend.



## The mathematical effect of token price independence

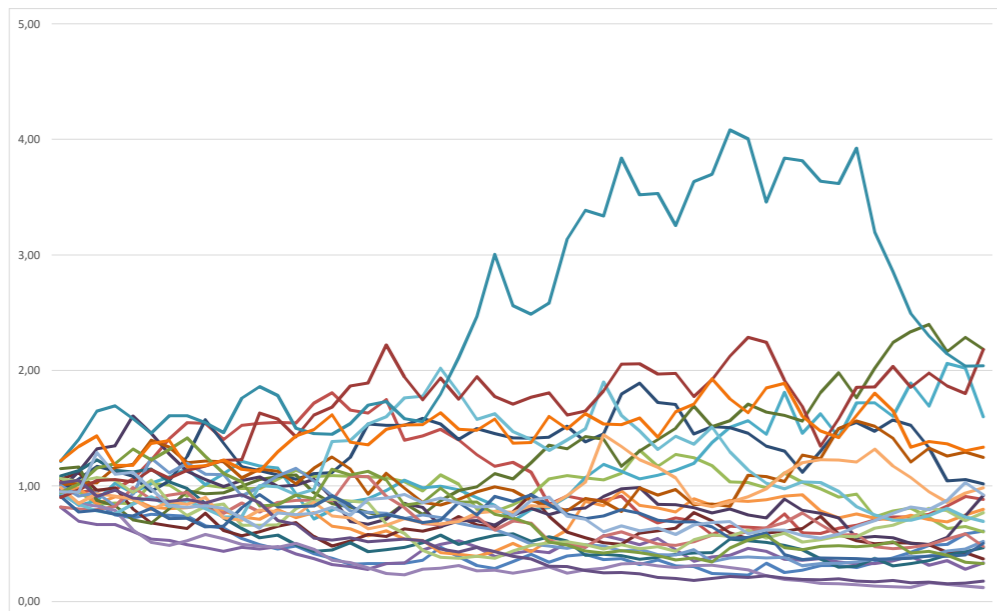
As stated above, the transaction mechanism provides price support of mathematical nature.

Please note that the following arguments serve illustration purposes only. The analysis is based on model calculations. Real market conditions will deviate from model assumptions.

The geometric Brownian process is a standard choice as a model for traded assets:

$$dS_t = \mu S_t dt + \sigma S_t dW_t$$

Where  $S_t$  is the token price at time  $t$ ,  $\mu$  is a constant percentage drift,  $\sigma$  is price volatility and  $W_t$  is a Brownian motion. Using this equation, we have generated a few ILK simulation paths for visualization purposes. The model parameters are based on recent historical data and current market conditions. Here is a sample of scenarios created by a Monte Carlo simulation:



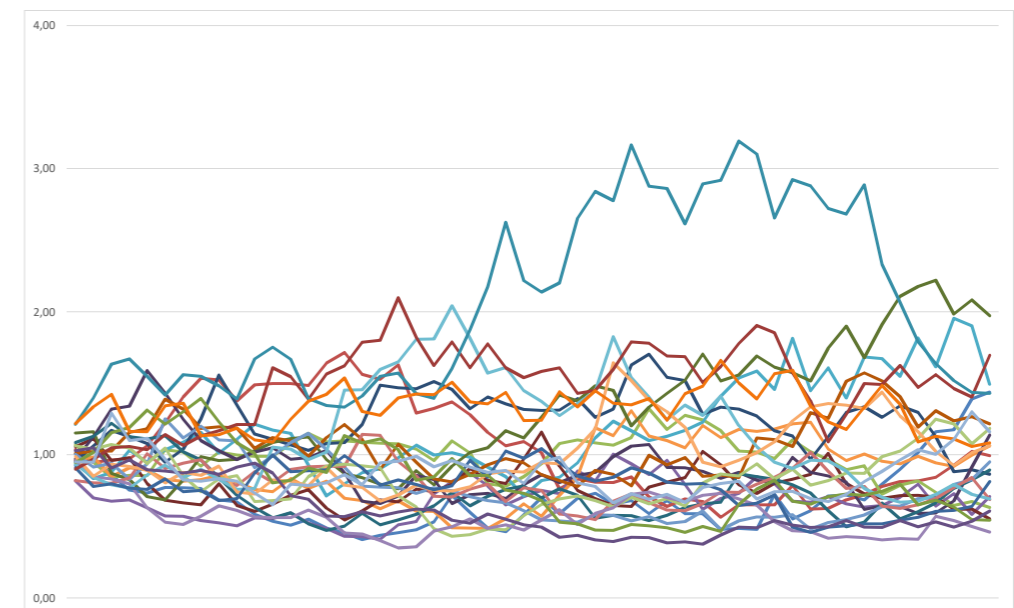
The INLOCK token transaction fee mechanism can be taken into account by adding a second drift term:

$$\frac{\alpha}{S_t} dt$$

Now we have a modified geometric process in the following form:

$$dS_t = \mu S_t dt + \frac{\alpha}{S_t} dt + \sigma S_t dW_t$$

This is the modelled effect when such a term is added to the standard geometric Brownian process. For easy comparison, the graph below shows Monte Carlo simulation paths generated using the same random numbers as in the above chart. The plot illustrates the expected positive effect of the transaction fee mechanism on the token price in bear market phases:



Fixing the ILK transaction fee to the collateral expressed in FIAT produces natural demand in bear markets.

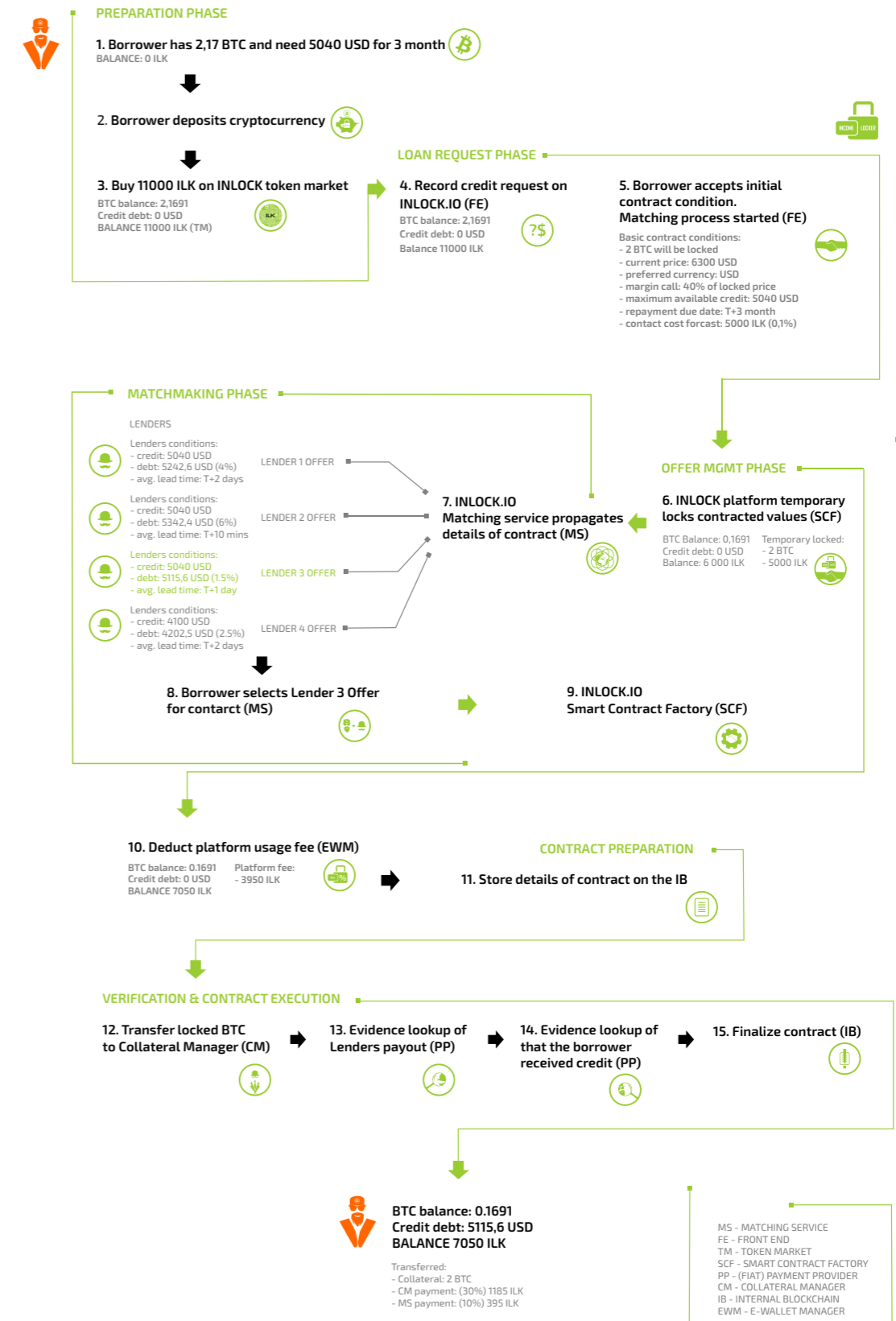
## Token and service usage basis

The ILK token fits into the „fee“ style utility token definition. ILK token is an inseparable part of INLOCK platform; with this token we can provide a full transparent service where we are able to preserve the maximum value of our customers' collateral. Our customers are able to get back their collateral without any cut after a successfully repaid loan contract.

Every transaction on the platform requires a percentage based fee (based on the deposited cryptocurrency) which must be paid with ILK tokens. The number of ILK tokens required to cover the fees is determined by the actual exchange rate of the ILK token. List of platform usage fees (based on collateral used per contract):

	UNIT	FEE
eWallet management/internal exchange between cryptocurrencies/deposit cryptocurrency	-	Free
eWallet withdraw cryptocurrency	Collateral	Based on actual network/mining fee
Using ILK Token Market to BUY ILK tokens	-	Free
Using ILK Token Market to SELL ILK tokens	ILK	0.2%
Using matchmaking service and get lenders' offers	-	Free
Lending contract creation after successful lender's offer selection	ILK	0.25% of collateral
Add extra collateral to existing contract	-	Free
Modification of the margin call level (collateral disinvestment - initiated by the Borrower)	ILK	0.2% of collateral
Get offer to extend contract due date	ILK	0.01%
Contract term extension agreed by both parties (Lender, Borrower)	ILK	0.65%
Partial or full loan repayment	-	Free
Collateral termination on margin call level	Collateral	max 5%*
Contract termination on due date without repayment	Collateral	max 5%**

## ECONOMIC OVERVIEW OF THE MONEY AND TOKEN FLOW IN A SAMPLE LOAN CONTRACT PROCEDURE





## **Purchaser eligibility & KYC / AML compliance**

All rounds will strictly follow our KYC (Know-Your-Customer) and AML (Anti-Money Laundering) policy. ILK Tokens are the only currency used on the Inlock platform. ILK Tokens do not represent company shares or give rights to revenue sharing or voting rights. From the token economics point of view, the ILK Token is a payment token, therefore there is no guarantee of future value of the ILK Token.

## **Limited token issuance**

The total number of tokens issued is 4.400.000.000 ILK; the release of new tokens is impossible as guaranteed by the smart contract. All unsold tokens will be locked until September 30, 2019 (1 year after the token sale). These tokens will be distributed among all token sale participants if they still have ILK tokens as the same address they provided during the token sale. We wish to reward participants for their long term commitment. The distribution is based on the number of tokens they still have in their wallets proportionally to others. ILK tokens purchased and sent to these addresses do not count towards distribution.