TRUST

Trustmachine Tokens Distribution Economics 0.6

Rebuild Trust With The Decentralized World Computer

CONTENTS

TRUSTMACHINE TOKENS DISTRIBUTION ECONOMICS

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ABSTRACT. This paper gives detailed descriptions of the phased token-distribution economics as well as the decentralized continuous liquidity mechanism in trustmachine proposed by Trust-Tech [2017]. A high level overview of the trustmachine is briefly discussed to introduce what the distribution is and why it is necessary. We are following the industries' best working appoaches of achieving such distribution and it would be implemented in such a way that is both technical and explanatory. LEGAL DISCLAIMER: This paper also contains forward-looking statements, subject to risks and uncertainties that could cause actual results to differ materially. Without EAFT done, we currently DO NOT accept contributors from U.S. and C.N and if EAFT is live, it is a MUST that all the participants should be KYC verified. It is assumed that the distribution economics model is not perfect and might have slight modifications over time and Trust-Tech may reserve all rights for final explanations.

1. INTRODUCTION TO THE TOKEN SYSTEM OF TRUSTMACHINE

1.1. **High Level Overview.** The Trustmachine is a greatly leaped-forward Ethereum 3.0 design based on λ-calculi to implement a cutting-edge generalized yet purely functional decentralized trusted computing system from ground up and further eliminate uncertainties and trust issues in a rational way. In order to secure the entire Trustmachine against specific issues like network abuse and restrict resource waste designed upon λ-calculi, any given programmable computation in the Trustmachine is subject to fees. And The Trustmachine Token(TTT) ultimately shifts its value to the future system of Trustmachine through mining since the genesis block and further converts to MANA according to the manaPrice under certain associated manaLimit in each transaction to run desired computation on the trustmachine. In short, TTT is ultimately for the birth, growth, and mana-fueling of Trustmachine. In order to continuously liquidize the value of trustmachine ecosystem in a decentralized way especially when prior to the deployment of Trustmachine Mainnet, we also introduced Trustmachine Decentralized Reserve(TDR) to hold a basket of reserves including ETH and let TTT hold a huge portion of TDR in its reserve. TTT is assumed non-circulable before the genesis of Trustmachine Mainnet and its price partially depends on its reserved circulable TDR, which has built-in semi-automatic price-discovery mechanism. Since the demand for TTT-backed TDR increases along with the growth of Trustmachine and an increasing demand of its basketed smart tokens, the value of TDR and TTT increase and the non-circulable TTT will be favored to further guarantee the progress of implementing trustmachine.

1.2. **What Is Trustmachine?** Trustmachine is a generalized yet purely functional mathematically-secured quasi-deterministic decentralized state-transition system that is built upon the theory of typed λ-calculi. It is fundamentally designed to eliminate complex trust issues derived from uncertainties. And it is implemented as world's most secure and trusted system that reaches extremely high performance with privacy guarantees. Details have been discussed in the Blackpaper drafted by Trust-Tech Laboratory.

1.3. **What Is Mana Cost?** MANA cost is the fees associated with various computation when one is using trustmachine to execute some trusted smart contracts and the fee schedules is specified in units of MANA(see Blackpaper Appendix G for the fees associated with various computation). Each transaction in the trustmachine has its own manaLimit and cost would be calculated according to the manaPrice.

1.4. **What Is Mining?** Mining is the process of competing and contributing to achieve consensus and further finanalize state changes in the trustmachine. Mining blocks may require specific hardwares, virtualized conditions which is extensively costly. Through multiple approaches combined including new signature schemes, mining is designed to raise attacking costs at minimum sacrifice and thus lower the possibilities of being attacked. Each mined block is attached with the reward to incentivize protecting of the system. The genesis block of the mining process contains all the TTTs that have been distributed previously.

1.5. **What Is Trustmachine Decentralized Reserve?** Trustmachine Decentralized Reserve(TDR) is distributed at Pre-TSD Alpha(α) and it can be used to purchase TTT at Pre-TSD Beta(β). It is circulable through built-in

continuous liquity and price discovery mechanism thus exchangable with ETH. TDR itself is a smart token that has a combinations of reserves including ETH that act as the tunnel of shifting value into TTT.

1.6. What Is The Trustmachine Token? The Trustmachine Token(TTT) is distributed at Pre-TSD Beta(β) and it is assumed non-circulable prior to the genesis of Trustmachine Mainnet. TTT itself is an ERC20 standard token built with the solidity smart contract language of Ethereum and has a great portion of Trustmachine Decentralized Reserve(TDR). Its value will migrate to the trustmachine once the brand new trustmachine is built. TTT is non-circulable but holds significant amount of TDR in its reserve. We will discuss the distribution economics of both TTT and TDR in detail later.

1.7. What Is Trustmachine Scattered Distribution? Trustmachine Scattered Distribution(TSD) is a process of distributing two tightly-binded Trustmachine tokens including TTT and TDR among multiple groups of contributors in three stages to achieve maximum decentralization hence reduce attacking factors of the trustmachine and significantly raise cost of attack in the future. It requires contributors and volunteers from world wide to participate this project and contribute their knowledge(through papers and code, etc), locked-up value(through ETH, etc) and ethusiasm to build up a future trusted yet decentralized platform.

1.8. What Is Pre-TSD Alpha(α)? Pre-TSD Alpha(α) is the alpha pre-stage of TSD and Trustmachine Decentralized Reserve(TDR) will be scatterly distributed with a hidden cap. TDR has ETH in its reserve and is circulable. Only ETH is accepted at this stage and shapeshift is recommed to shift from token like BTC to ETH if you wish to contribute with some other tokens. TDR behaves as the kickstarter and liquity provider of the future distributed TTT which has TDR in its reserve but non-circulable prior to the TSD Lambda(λ).

1.9. What Is Pre-TSD Beta(β)? Pre-TSD Beta(β) is the beta pre-stage of TSD and only The Trustmachine Token(TTT) will be scatterly distributed. ETH and TDR are both accepted in this stage and there is a significant discount if you are using TDR to purchase TTT. TTT has TDR in its reserve and it is non-circulable before genesis, thus ETH and TDR can be used to purchase TTT but TTT will not be able to convert to TDR or ETH prior to TSD Lambda(λ). However, significant discounts and cryptovesting are enabled to encourage the convertion to TTT, especially through TDR.

1.10. What Is TSD Lambda(λ)? After months or even years of hard working of Trust-Tech Laboratory, the security-enhanced Trustmachine Mainnet will be steady to deploy. All TTTs distributed at Pre-TSD stages will be written into the genesis and future TTTs will be scatterly distributed via mining through decades which is written into the core protocol of Trustmachine. Thus TSD Lambda(λ) refers to such distribution via genesis block and mining block rewards on the Trustmachine Mainnet.

1.11. What Is The Cap Of TTT And TDR?. The cap of TTT is fixed at 8,400,000,000(8.4 Billion) and it will be distributed through decades in three stages, 10% at Pre-TSD Beta(β), and 90% at TSD Lambda(λ). It is non-circulable prior to the genesis of Trustmachine Mainnet. The cap of TDR is hidden until the total contributions of ETH reached 80% of the hidden cap.

1.12. What Is The Hidden Cap In TDR?. We employed a new technique as hidden cap to Trustmachine Decentralized Reserve(TDR). And the hidden cap is only known to the Trust-Tech Laboratory and there are two goals of the hidden cap:

- Incentivize small contributors of TDR. Where big contributors(whales) usually need to know more detail(such as cap) before purchasing tokens
- Even token distribution of TDR. By reducing whales, we will have a more even token distribution. This is important for building the Trustmachine Mainnet.

The hidden cap will be revealed during the sale. Once revealed, it becomes the hard cap. Because we want the token distribution last long as possible, if there's initial FOMO we will immediately reveal it.

To illustrate the hard cap and its purpose, heres a scenario where it would be needed:

- The hidden cap algorithm fails, and as a result the sale goes up to 10 million ETH
- An attacker manages to break the contract and steal that ETH
- That attacker would then have 10% of ETH in circulation, and as a result could damage it and potentially lead to a hard fork

To mitigate the risk of the above scenario (however unlikely), theres a hard cap coded in the contract. Essentially, its just a line of code that cannot fail. We take security very seriously, and we are very cautious. We will not risk damaging Ethereum under any circumstances. And the hard cap included in the contract is a safety mechanism to prevent that.

1.13. **What Is Minimum Time?** Some concerns were raised by the community that whales might eat up the entire initial supply of TDR, leaving the small contributors behind. We have decided to allow a short, minimum time-1 hour-during which all contributions will be accepted regardless of the hidden cap. After the first hour, the distribution will have a hidden cap that will be revealed only if the collected ETH reaches 80% of the limit. If funds collected in the first hour reach or exceed the cap, the distribution will end immediately thereafter.

1.14. **What Is Constant Reserve Ratio?** The CRR is set by the smart token creator, for each reserve token, and used in price calculation, along with the smart tokens current supply and reserve balance, in the following way:

$$(1) \qquad Price = \frac{Balance}{Supply \times CRR}$$

This calculation ensures that a constant ratio is kept between the reserve token balance and the smart tokens market cap, which is its supply times its price. Dividing the market cap by the supply produces the price according to which the smart token can be purchased and liquidated through the smart contract. The smart tokens price is denominated in the reserve token and readjusted by the smart contract per each purchase or liquidation, which increases or decreases the reserve balance and the smart token supply (and thus the price) as detailed below. When smart tokens are purchased (in any of their reserve tokens) the payment for the purchase is added to the reserve balance, and based on the calculated price, new smart tokens are issued to the buyer. Due to the calculation above, a purchase of a smart token with a less than 100% CRR will cause its price to increase, since both the reserve balance and the supply are increasing, while the latter is multiplied by a fraction. Similarly, when smart tokens are liquidated, they are removed from the supply (destroyed), and based on the current price, reserve tokens are transferred to the liquidator. In this case, for a smart token with a CRR less than 100%, any liquidation will trigger a price decrease. This asynchronous price-discovery model works by constantly readjusting the current price toward an equilibrium between the purchase and liquidation volumes. While in the classic exchange model price is determined by two matched orders in real-time, smart token prices are calculated over-time, following every order.

   The above formula calculates the current price, however, when a purchase or liquidation is executed, the effective price is calculated as a function of the transaction size. The calculation can be described as if every transaction is broken up into infinitely small increments, where each increment is changing the smart tokens supply, reserve balance, and thus its price. This ensures that purchasing the same amount of smart tokens in a single or multiple transactions would yield the same total price. Additionally, this method ensures that the CRR will be kept constant and the reserve can never be drained. Essentially, the effect of the transaction size on the price (due to itschanging the smart tokens supply and reserve balance) is incorporated into the effective price for any transaction. The mathematical functions for calculating price per transaction size are presented further in this document.

1.15. **What Is Price Calculation Per Transaction?** The actual price of a TDR smart token is calculated as a function of the transaction size. In this case, ETH is reserve token and TDR is smart token.
R, reserve token balance; S, smart token supply; F, constant reserve ratio(CRR).
T = Smart tokens received in exchange for E(reserve tokens), given R, S and F

$$(2) \qquad T = S \left(\left(1 + \frac{E}{R}\right)^{F} - 1 \right)$$

E = Reserve tokens received in exchange for T (smart tokens), given R, S and F

$$(3) \qquad E = R \left(1 - \sqrt[F]{1 - \frac{T}{S}} \right)$$

1.16. **What Is The Complete Convertion Fomula In TDR?.**

1.16.1. *Basic Fomulas of TDR.* Trustmachine Decentralized Reserve allows a smart contract to handle the purchase and distribution of tokens without a 2nd party. The tokens are exchanged for token of a parent token that are held in the reserve. We will derive the formulas required to determine the amount of tokens received for a given amount of tokens. Let R be the current reserve of the parent currency (say, ETH). Let S be the current outstanding supply of tokens. Let F be the constant fractional reserve ratio, and finally let P be the current price of a token. The total market cap of the tokens is SP, and by definition the amount in reserve is F times that, $R = FSP$. This means that the price at any time can be calculated as $P = \frac{R}{SF}$. When a user buys an infinitesimal amount of coins dS (selling simply means $dS < 0$), the supply of tokens increases by this amount. The user pays P dS for them, which are added to the reserve, meaning $dR = PdS$. Additionally, since $R = FSP$, we have $dR = d(FSP) = Fd(SP) = F(SdP + PdS)$. So we have:

$$(4) \qquad PdS = dR = F(SdP + PdS)$$

$$(5) \qquad PdS(1 - F) = FSdP$$

$$(6) \qquad PdS(\frac{1}{F} - 1) = SdP$$

Letting $\alpha = \frac{1}{F} - 1$ we have:

$$(7) \qquad PdS\alpha = SdP$$

$$(8) \qquad \alpha\frac{dS}{S} = \frac{dP}{P}$$

$$(9) \qquad \alpha dlogS = dlogP$$

$$(10) \qquad \alpha logS + A = logP$$

$$(11) \qquad e^A S^\alpha = P$$

$$(12) \qquad P = (\frac{S}{S_0})^\alpha P_0)$$

This allows calculating the current price, given the current supply of tokens, and the initial price and supply. If a user buys a total of T tokens, bringing the total supply from S_0 to $S_0 + T$, the total paid amount is:

$$
\begin{aligned}
E &= \int_{S_0}^{S_0+T} PdS = \int_{S_0}^{S_0+T} P_0 \left(S/S_0\right)^\alpha dS = \\
&= P_0 S_0 \frac{(S/S_0)^{\alpha+1}}{\alpha+1} \Big|_{S=S_0}^{S_0+T} = P_0 S_0 \left(\frac{((S_0+T)/S_0)^{\alpha+1}}{\alpha+1} - \frac{(S_0/S_0)^{\alpha+1}}{\alpha+1} \right) = \\
&= \frac{P_0 S_0}{\alpha+1} \left(\left(1 + \frac{T}{S_0}\right)^{\alpha+1} - 1 \right) = FP_0 S_0 \left(\left(1 + \frac{T}{S_0}\right)^{1/F} - 1 \right) = \\
&= R_0((1 + \frac{T}{S_0})^{1/F} - 1) = R_0 \left(\sqrt[F]{1 + \frac{T}{S_0}} - 1 \right)
\end{aligned}
$$

(13)

From this we can deduce the amount of tokens T obtained by paying E:

$$(14) \qquad E = R_0((1 + \frac{T}{S_0})^{1/F} - 1) = R_0 \left(\sqrt[F]{1 + \frac{T}{S_0}} - 1 \right)$$

$$(15) \qquad 1 + \frac{E}{R_0} = \sqrt[F]{1 + \frac{T}{S_0}}$$

$$(16) \qquad \left(1 + \frac{E}{R_0}\right)^F = 1 + \frac{T}{S_0}$$

$$(17) \qquad T = S_0 \left(\left(1 + \frac{E}{R_0} \right)^F - 1 \right)$$

1.16.2. *Multiple Reserve Tokens.* A Trustmachine Decentralized Reserve(TDR) smart contract can also have reserves consisting of several parent tokens. If there are m different reserve tokens, then for each token $i \in \{1, 2, \ldots, m\}$, we have amount in reserve R_i, fractional reserve ratio F_i, and price P_i (where $\sum_i F_i \leq 1$). The outstanding supply of tokens S is global. As before, we have for every i, $R_i = F_i S P_i$, which also means that $dR_i = F_i(S dP_i + P_i dS)$. Tokens can be bought and sold for any combination of tokens, so in general $dS = \sum_i P \frac{dR_i}{P_i}$. Buying and selling tokens for different tokens commutes - if a single trader performs several such operations, the end result is the same regardless of the order in which they are carried out (of course, if there are multiple traders, value can be transferred from one to the other depending on the order of operations). In particular, if at some point there are S_0 outstanding tokens and reserve R_{i0} of each token i, the following invariant holds:

$$(18) \qquad S = S_0 \prod_{i=1}^{m} \left(\frac{R_i}{R_{i0}} \right)^{F_i}$$

Which means that if a user spends a total of $E_1, E_2, \ldots, E_m$ coins of currency $1, 2, \ldots, m$ respectively (where any combination of the E_i can be negative), the amount of tokens ob- tained is:

$$(19) \qquad T = S_0 \left(\left(\prod_{i=1}^{m} \left(1 + \frac{E_i}{R_{i0}} \right)^{F_i} \right) - 1 \right)$$

2. PRE-TSD ALPHA(α) TOKEN DISTRIBUTION

To implement the Trustmachine, there are two pre stages of Trustmachine Scattered Distribution(TSD) which are Pre-TSD Alpha(α) and Pre-TSD Beta(β). Each of them are crucial and thus unavoidable. Trustmachine Decentralized Reserve(TDR) is distributed at Pre-TSD Alpha(α) to kickstart the trustmachine project and further one-way liquidize The Trustmachine Token(TTT) before TSD Lambda(λ), which means a migration of value from TDR to TTT before the deployment of Mainnet. However, before genesis, TTT remains non-circulable and only distributed in the stage of Pre-TSD Beta(β) accepting ETH and TDR with 25% discount.

2.1. **TDR Allocation At Pre-TSD Alpha(α).** Graph:
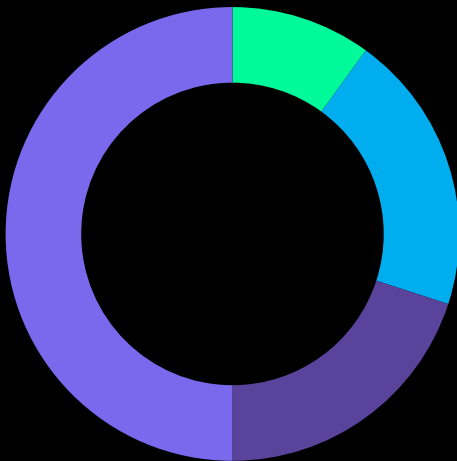
- 50%: Contributors Of The Trustmachine Reserve
- 20%: Non-circulable Reserve Held In TTT(Genesis)
- 10%: Trust-Tech Foundation, Founders, Early Team
- 20%: Trust-Tech Laboratory, Short-Term Dev Budget

Hidden Cap(Revealed After 80% Is Reached)

Trustmachine Decentralized Reserve(TDR) is critical to the birth and development of Trustmachine Project.

- 50%: Contributors Of The Trustmachine Reserve
  For contributing the trustmachine's decentralized reserve and trustmachine's development, business development, partnerships, contribution, and more. We offer a 25% additional discount at Pre-TSD Beta(β) if one contributes with TDR to suppport Trustmachine project.
- 20%: Non-circulable Reserve Held In TTT(Genesis)
  Non-circulable reserve held by Trust-Tech Laboratory in TTT distributed at Pre-TSD Beta(β)) to fuel the Trustmachine project in the long run.

- 10%: Trust-Tech Foundation, Founders, Early Team
  For short-term trustmachine governance, partner contribution, academic grants, public works, community building, et cetera.
- 20%: Trust-Tech Laboratory, Short-Term Development Budget
  For research, engineering, deployment, business development, marketing, distribution, and more.

2.2. TDR Distribution Details In Pre-TSD Alpha(α).

- TDR Distribution Term: Determined
- Token: Trustmachine Decentralized Reserve(TDR)
- Price: 0.01 ETH per 1 TDR (i.e. 100 TDR per 1 ETH)
- Increasing Demand: Since the demand for TTT-backed TDR increases along with the growth of Trustmachine and an increasing demand of its basketed smart tokens, the value of TDR and TTT increase and the non-circulable TTT will be favored to further guarantee the progress of implementing trustmachine.
- Hidden ETH Cap: revealed if 80% of the cap is reached, then the hidden cap becomes the hard cap.
- Distribution Timeline And Duration: Opens on Sep 10th, the distribution will run for 28 days or until the hidden cap is reached, with a 1 hour minimum time.
- Token Availability: TDR for ETH contributions will be distributed immediately. The ability to transfer, purchase and liquidate TDR through the smart tokens contract will be enabled gradually during a time span estimated at 7 days following the Pre-TSD Alpha(α) closing.
- Security: ETH will be held using multi-sig wallets according to industry best practices.

2.3. Use Of Proceeds For TDR.
Cryptovesting is a governance practice designed to ensure long-term alignment of interests and is standard for any serious project. All team members will have a 3 year vesting schedule with a 6 month cliff. This means we will mature one-sixth of our tokens every 6 months.

- 20%: ETH Reserve(CRR)
- 40%: Software Development
- 10%: Advanced Research
- 5%: Misc and Unexpected
- 5%: Legal Expenses
- 8%: Operational Expenses
- 12%: Marketing and Business Development
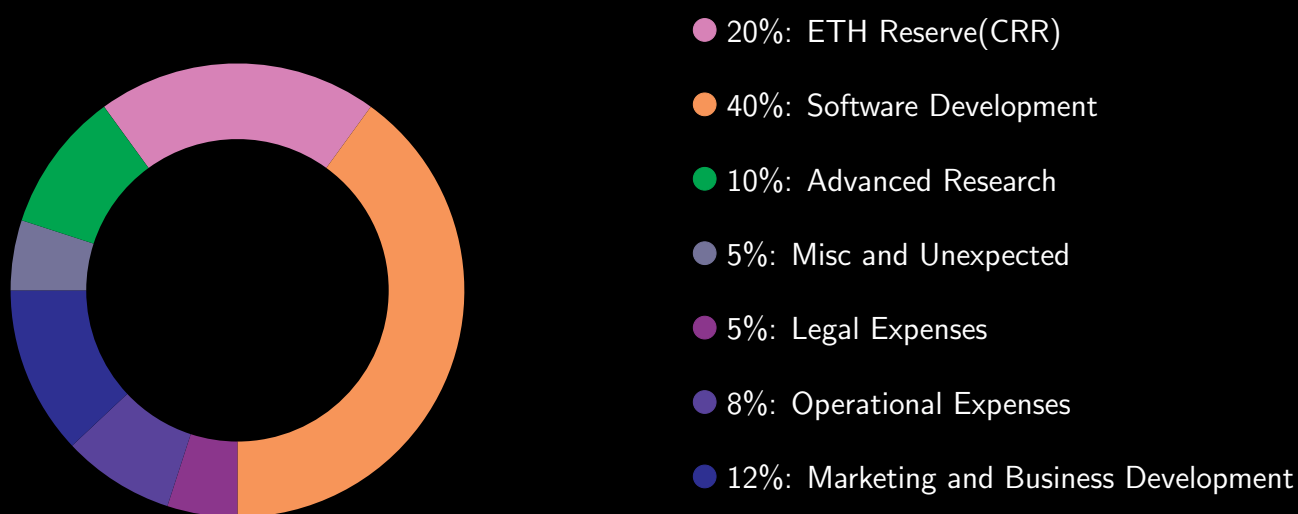
2.4. Initial Trustmachine Decentralized Reserve CRR (Constant Reserve Ratio)).
Multiple liquidity pools across different exchanges (aka market depths) which are typically a small fraction of the traded coins market cap has been studied and an initial 10% Constant Reserve Ratio (CRR) for the Ether reserve of TDR is used. During an initial pilot period, the Trust-Tech Foundation will oversee all aspects of the reserve, including monitoring of price stability and market depth. The Foundation may adjust the CRR as needed to accommodate market changes and maintain performance. Any such change will be communicated to the community via our official blog. After the pilot period the CRR will be immutably set.

3. PRE-TSD BETA(β) TOKEN ALLOCATION

At Pre-TSD Beta(β), TTTs are distributed to 3 participating groups. A total of 840,000,000 TTTs would have been distributed after this stage, including 8,400,000(1% of TTTs distributed at Pre-TSD Beta(β)) TTTs with non-circulable reserve of TDR distributed to the Trust-Tech Laboratory at Pre-TSD Alpha(α).

3.1. **TTT Allocation At Pre-TSD Beta(β).** Graph:
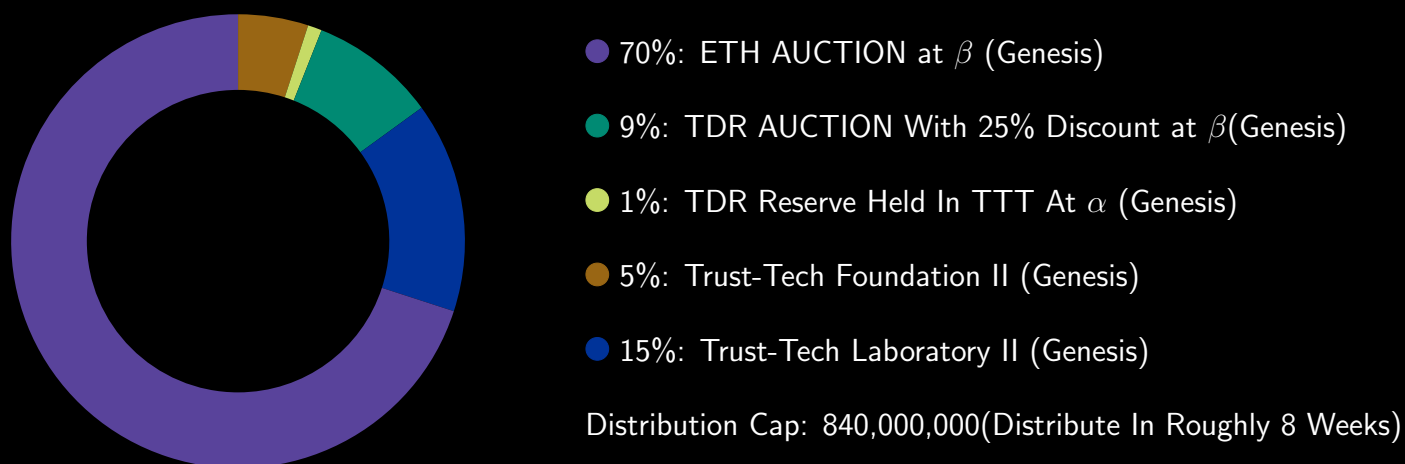
● 70%: ETH AUCTION at β (Genesis)

● 9%: TDR AUCTION With 25% Discount at β(Genesis)

● 1%: TDR Reserve Held In TTT At α (Genesis)

● 5%: Trust-Tech Foundation II (Genesis)

● 15%: Trust-Tech Laboratory II (Genesis)

Distribution Cap: 840,000,000(Distribute In Roughly 8 Weeks)

Every participating group is critical to the trustmachine's creation, development, growth, and maintenance.

- 70%: ETH Auction At Pre-TSD Beta(β)(Genesis Allocation, 6-Month To 3-Year Linear Cryptovesting)
  For contributing the trustmachine development, business development, partnerships, contributions, and more.
- 9%: TDR Auction with 25% Discount At Pre-TSD Beta(β)(Genesis Allocation, 6-Month To 3-Year Linear Cryptovesting)
  For contributing the trustmachine development, business development, partnerships, contributions, and more.
- 1%: TDR Reserve Held In TTT At Pre-TSD Alpha(α)(Genesis Allocation, 6-Month To 3-Year Linear Cryptovesting)
  For contributing the trustmachine development, business development, partnerships, contributions, and more. Note that all Pre-TSD Alpha(α) contributors would have to be complied to the requirements of EAFT
- 5%: Trust-Tech Foundation II(Genesis Allocation, 6-Year Linear Cryptovesting)
  For long-term trustmachine governance, partner contributions, academic grants, public works, community building, et cetera.
- 15%: Trust-Tech Laboratory II(Genesis Allocation, 6-Year Linear Cryptovesting)
  For research, engineering, deployment, business development, marketing, distribution, and more.

3.2. **TTT TOKEN DISTRIBUTION DETAILS IN PRE-TSD BETA(β).**

- State: To Be Determined
- Token: The Trustmachine Token(TTT)
- Instrument: EAFT, Our legal team is busy working on it.
- Increasing Price: as investments are made, the price increases along the Price Function; however, the initial price of the auction depends on the hidden cap of TDR and remains hidden until the hidden cap is revealed
- Advisor Distribution Price: 25% discount for all
- Initial Price: INITIAL_PRICE of TTT will be made public after the finalisation of Pre-TSD Alpha(α)
- Public Distribution Price Function: price = max(INITIAL_PRICE, amountRaised $\times$ INITIAL_PRICE / 168,000,000) USD/TTT
- Distribution Cap: 840,000,000 The Trustmachine Token (unknown how much in $USD, as INITIAL_PRICE is dependant and discounts affect totals)
- Distribution Timeline: 12 weeks after Pre-TSD Alpha(α).

4. TSD LAMBDA(λ) TOKEN ALLOCATION

The Trustmachine Token(TTT) will be distributed to 5 major participating groups through 3 stages of Trust-machine Scattered Distributions(TSD): Pre-TSD Alpha(α), Rebuild Ethereum; Pre-TSD Beta(β), Post-Ethereum; and TSD Lambda(λ) Mining, Trustmachine Official Release. This allocation is written into the protocol itself and the Trustmachine Genesis block in the Mainnet(Lambda(λ)). It is assumed that such strategy of allocation is suitable for realizing the vision of Trust-Tech and thus the distribution fashion remains unchanged throughout three

stages of scattered distributions. In each stage of token allocation, roughly 10% tokens is distributed to extremely valuable early-term contributors, roughly 70% tokens is distributed to major participants, 15% is distributed to Trust-Tech Laborary and roughtly 5% is distributed to Trust-Tech Foundation.
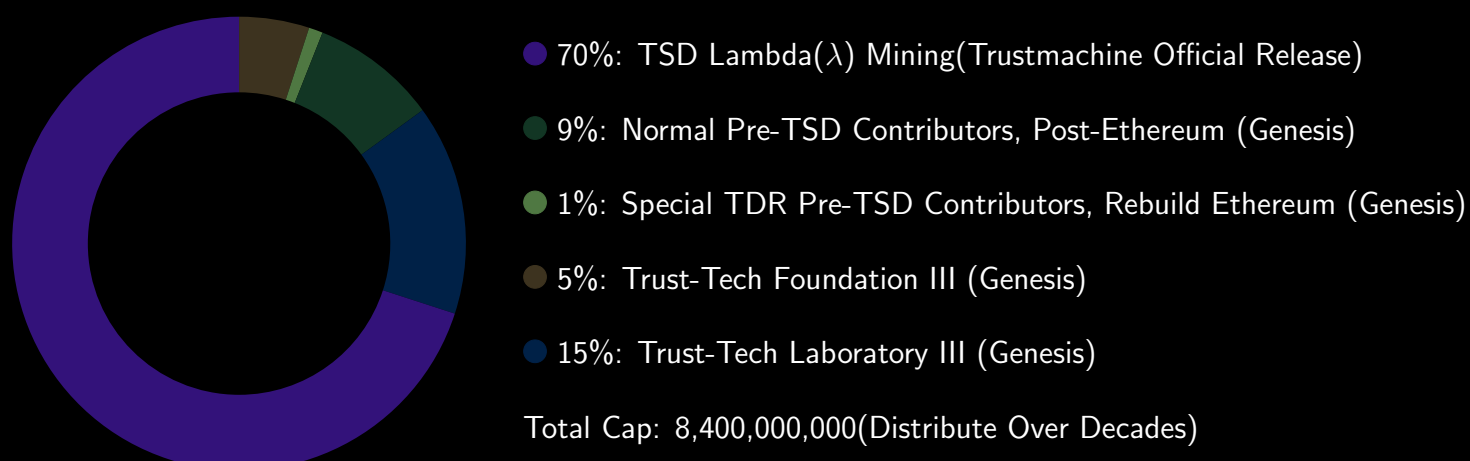
● 70%: TSD Lambda(λ) Mining(Trustmachine Official Release)

● 9%: Normal Pre-TSD Contributors, Post-Ethereum (Genesis)

● 1%: Special TDR Pre-TSD Contributors, Rebuild Ethereum (Genesis)

● 5%: Trust-Tech Foundation III (Genesis)

● 15%: Trust-Tech Laboratory III (Genesis)

Total Cap: 8,400,000,000(Distribute Over Decades)

Every participating group is critical to the trustmachine's creation, development, growth, and maintenance.

- 70%: TSD Lambda(λ) Mining, Block Reward(Trustmachine Official Release)
  For securing the entire trustmachine, providing computing power, providing data storage, providing network bandwidth, maintaining the state transition system, distributing data, executing smart contracts, and more.
- 9%: Normal Pre-TSD Contributors, Post-Ethereum(Genesis Allocation, 6-Month To 3-Year Linear Cryptovesting)
  It includes all the 90% contributors except for TDR related ones at Pre-TSD Beta(β) for contributing the trustmachine development, business development, partnerships, contributions, and more.
- 1%: Special TDR Pre-TSD Contributors, Rebuild Ethereum(Genesis Allocation, 6-Month To 3-Year Linear Cryptovesting)
  It includes 0.1% distributed to Trust-Tech Laboratory at Pre-TSD Alpha(α) and 0.9% distributed at Pre-TSD Beta(β) auctioned with TDR. For those extremely valuable ones who provides early-contributing to the trustmachine development, business development, partnerships, and more.
- 5%: Trust-Tech Foundation III(Genesis Allocation, 6-Year Linear Cryptovesting)
  For long-term trustmachine governance, partnerships, contributions, academic grants, public works, community building, et cetera.
- 15%: Trust-Tech Laboratory III(Genesis Allocation, 6-Year Linear Cryptovesting)
  For research, engineering, deployment, business development, marketing, distribution, and more.

We strongly encourage open contributions of plotting the curves for trustmachine scattered token distribution economics regarding our descriptions of token allocation and linear cryptovesting to help better value The Trustmachine Token(TTT) in a visualized way for more contributors to understand.

5. NOTES TO THE TOKENS DISTRIBUTION IN TRUSTMACHINE

5.1. **Contribute Trustmachine Project With ETH.** Trust-Tech Laboratory requires significant contributors to have ETH exchanged into the The Trustmachine Token(TTT) to help us develop, launch, and grow the Trustmachine. We must develop all the protocols required: the mining protocol, the client, user interfaces and apps, network infrastructure and monitoring, software that third-party wallets and exchanges need to contribute TTT, integrations with other data storage software, tooling for web applications and dapps to use TTT, and much more. We must deploy the Trustmachine, facilitate its growth to large scale, market to and onboard miners and clients, bring key partners into the ecosystem, and much more.

5.2. **Scattered Token Distribution.** We hope to bring a large and diverse group of contributors from around the world, who want to work closely with us to build the most secure yet trusted world computer. We primarily seek strategic contributors who have something high-value and unique to help design and implement Trustmachine. We also wish to reach as broad of a contributor base as we can; we want people and organizations from countries all over the world, who work in many different kinds of industries. We want our contributors to represent many

different groups so that Trustmachine can quickly come to serve those users and spread across these networks. We want contributors who add value, contributors who will work with and for the network. We want contributors who will share their skills, their knowledge, and their networks to achieve our success. We have structured the token distribution to reward a large group of people that can help us build the network, by distributing Trustmachine token at what we think is a much lower price than it will be worth some day (caveat: as with any risky contributions of course we cannot make guarantees or predictions). We are unfortunately legally restricted to involve only accredited contributors.

5.3. Scattering TTTs at Pre-TSD Alpha(α). Pre-TSD Alpha(α) distributes TDR with a hidden cap, the hidden cap will be revealed once the total contributions of ETH reaches 80% of the hidden cap.

5.4. Scattering TTTs at Pre-TSD Beta(β). Pre-TSD Beta distributes 10% of the entire TTTs in public auction and 9.9% will be auctioned with TDR at a special discount and 70% will be auctioned with ETH. To continue Pre-TSD Beta(β) in some particularly regulated countries especially for USA and CN after Pre-TSD Alpha(α), Trust-Tech may conduct a scattered distribution via EAFT, an Enhanced Agreement of Future Tokens(see the legal section of this document) and all Pre-TSD Alpha(α) contributors must follow the requirements at Pre-TSD Beta(β) since EAFT is strictly carried out. This distribution is happening to the broader community and accredited general public. Please refer to the "How To Join Trustmachine Scattered Distribution" document for detailed instructions on how the distribution will work.

5.5. Advisor Distribution. For the last few years, we have been working with a group of tremendously valuable strategic advisors; these are individuals and organizations who have helped to build the Trustmachine, who have made strong long-term commitments for the future, and/or who present very significant future opportunities for the entire world computer. In order to secure their long-term commitment and alignment, they were given cryptovesting/discount choices of 1-3 years and 0-25% discount. (Note: to reflect their strong commitment to the Trustmachine, the minimum cryptovesting for all advisors is 1 year, a significant time for crypto token networks. This is 2x larger than the public distribution minimum cryptovesting.)

6. LEGAL WORK & THE EAFT

6.1. Scattered Distribution Docs, Token Distribution & Securities Laws. Our scattered distribution at Pre-TSD Beta(β) is assumed to be conducted with a novel instrument, called the EAFT, created to enable compliant token distributions of TTT. And it is assumed that all Pre-TSD Alpha(α) distributions should be migrated at Pre-TSD Beta(β) to enable EAFT. Read our Private Placement Memorandum for a detailed description of our scattered distribution and a number of important legal disclosures. Most token distributions happen as direct distributions of the token, a crypto asset. Some happen as distributions before the token and the network exist. Some such token distributions may not comply with the securities laws of the U.S. & C.N. and other jurisdictions. Some token distributions have chosen to bar US or CN contributors from participating for this reason. Others have chosen to accept only to accredited contributors. For an excellent review of securities laws as they may or may not apply to crypto tokens, please see Coin Centers thorough Framework for Securities Regulation of Cryptocurrencies. After months of extensive legal review, and much thought about the evolving landscape of crypto assets and their legal structures, we have come to the conclusion that token distributions such as ours should be cautious. Other projects have been found to be selling securities. Therefore, out of an abundance of caution and with the best, long-term interests of the Trustmachine at heart, we must structure our distribution as a form designed as EAFTs, according to and in compliance with SEC Reg D. 506(c) and other U.S. or C.N. securities laws. Accidentally violating these laws could be a project-ending event!

6.2. Enhanced Agreement for Future Tokens(EAFT). Since the Trustmachine is in development and it is not yet live, in order to do a compliant token distribution, we created the Enhanced Agreement for Future Tokens(aka. EAFT, an enhanced framework based upon SAFT which complies to the security laws of U.S. and C.N.). The EAFT is a token distribution instrument and legal agreement between two parties, where one party (the buyer) buys tokens to be delivered at a future date by the other party (the seller), after the Trustmachine Launch or some other event important to the creation of a crypto token network. You can find more about the EAFT by reading it, and our PPM.

6.3. U.S.or-C.N.Accredited Contributors. We are required by law to ensure that all U.S. and C.N. contributors who participate in our distribution qualify as Accredited Contributors (e.g. have over $200K (or $300K w/ spouse) in income, or a net-worth over $1M, etc.). We unfortunately do not accept the Trustmachine Token distribution to US or CN contributors who do not meet that requirement. This is understandably thoroughly disappointing for us and for many people in our community, as so many of our staunchest contributors are not accredited. That said, we understand the regulations are in place to protect people from bad actors, and we hope our community understands we must abide by them.

6.4. Non-U.S.or-C.N. Contributors. Technically, we are not required to apply the same standard to non-U.S.or-C.N. contributors, and we maybe able to classify the distribution to those as a Reg.S scattered distribution. In such a case, we would need an extensive, world-wide review of each jurisdiction to figure out what restrictions we do or do not need to apply. This could take months of legal work to address thoroughly. Since the US or CN restrictions tend to be more stringent – and world-wide contributors often invest in US or CN ventures according to US or CN securities laws – our legal team requires us to apply either our contributors jurisdiction restrictions or at least US or CN restrictions to all contributors. We know this comes as a big disappointment to many, and we hope you understand the restrictions we must work under.

6.5. Cryptovesting & Discounts. Trustmachine is the global decentralized framework composed of computers, people, organizations and network facilities that wishes to bring certainty & stability to the human society with mathematically-secured low cost approaches and rebuild trust. It will be made successful through the work of all its participants, for many years to come. We aim to make Trustmachine massively valuable in the long-term, and we want to attract contributors similarly interested in long-term value creation and growth.

6.5.1. *Cryptovesting Creates Long-Term Alignment.* Long-term cryptovesting is a powerful way to strongly incentivize early network participants to improve the network and increase the value of Trustmachine for years to come. Trust-Tech Laboratory and the Trustmachine Foundation are deeply committed for the long-term, and 6-year cryptovesting boldly proves that to all other network participants.

6.5.2. *Cryptovesting Is Tough With Volatility.* We do understand that, especially for smaller contributors, a lock up with typical crypto asset volatility can be hard to deal with.

6.5.3. *Rewards For Cryptovesting At Pre-TSD Beta(β).* Therefore, instead of forcing long-term cryptovesting for contributors, we reward it with discounts, and we provide multiple options that can fit different risk profiles. The cryptovesting schedule(since finalisation of Pre-TSD Beta(β)) for each participating group is as follows:

- Contributors: 1 year minimum (advisor distribution), 6 month minimum (public distribution)
- Trust-Tech Loboratory: 6 years, linear cryptovesting
- Trust-Tech Foundation: 6 years, linear cryptovesting
- Miners: Release half life of 6 years

For contributors, the following cryptovesting periods and discounts are available:

- 6 month cryptovesting, 0% discount
- 1 year cryptovesting, 7.5% discount
- 2 year cryptovesting, 15% discount
- 3 year cryptovesting, 20% discount

We strongly encourage readers to plot these discounts and linear cryptovesting to help visualize the graph for easier understanding.

6.5.4. *Rewards For Special TDR Contributors At Pre-TSD Beta(β).* In order to reward early-term contributors at Pre-TSD Alpha(α) and those early-term maintainers of TDR, an additional 25% discount is automatically enabled for all special contributions with TDR to purchase TTT. The total cap of TTT distributed to special TDR contributions is 840,000,000(10% of total TTTs).

7. MAINNET(λ) SUPPLY, RELEASE SCHEDULE, MARKET CAP

Trustmachine Mainnet Lambda(λ) block rewards are set according to a 6-year half-life (Bitcoins is 4), sampled as frequently as every month (Bitcoin is sampled once every four years). Six years is significantly better for the Trustmachine Network because it disperses a much larger amount of tokens in years 3 - 9 than the alternative schedule. We think this is important to both sustain network growth during that critical period, and to reward

long term contributors in the network. Sampling the distribution more frequently than in Bitcoin causes a much smoother adjustment in block reward, and reduces the sudden and drastic overnight effects to the miner base.

8. NETWORK & TOKEN DISTRIBUTION FAQ

8.1. **What Is Trust-Tech?** Trust-Tech Foundation and Trust-Tech Laboratory are initiatives of Trust Technologies, a nonprofit organization based in Zug, Switzerland.

8.2. **What Does Trust-Tech Do?** Trust-Tech Laboratory is building a purely functional state-transition system to enable anyone to build formally verified and provably secure dapps. Trust-Tech creates a new type of cryptocurrency called TDR, which can hold (and trade) other cryptocurrencies. This allows TDRs contract to serve as its own market maker, automatically discovering its own price(s) and providing liquidity to other currencies, thereby removing the need for a second party in its trades. Every TDR is always liquid at some price point. And through introducing TDR as the kickstarter and one-way liquidity provider, the previously distributed tokens ultimately shift their value to the future Trustmachine Mainnet to secure the entire system and raise attack cost.

8.3. **What Is The Token Distribution Cap?** The cap of TTT is in terms of amount of The TrustMachine Token (TTT), and the total number of TTT is 8,400,000,000 in Trustmachine Mainnet Lambda(λ), distributed over decades. However the cap of TDR that contributes to the price and liquity of TTT remains unknown prior to the revealing its hidden cap. Pre-TSD Alpha(α) will continue until 80% of the hidden cap is reached and the TDR's hidden cap will be revealed as the hard cap.

8.4. **Why There Are So Many TTTs In The Future?** It is because we bet on the future belonging to the distributed trusted state-transition systems that offer strong security and certainty to support financially-extensive activities, we believe trustmachine would ultimately implement all the protocols upon λ-calculi and eventually grow enormous over time. The total market cap of the entire cryptocurrency industry is boosting, and trustmachine should become one of the major blockchain-like infrastructures in cryto-era. All TTTs will distribute over decades and it won't affect the price that instantly.

8.5. **What Is The Total Supply(Ever)?** The total supply of TTT ever will be: 8,400,000,000 (8.4 Billion), to be released over decades, similar to Bitcoin. The network should cross half of its supply (4.2 Billion tokens) around year 6. But to value the contribution, this is the wrong question to ask for valuations. While important, it is not as important immediately and in the early years of the network. Better questions to ask are: What do the release schedules look like? What is the circulating supply in the next year, 2 years, 3 years...? These questions are much more relevant in the early years of the Network, and for contributors seeking to understand token and network valuations at various points in time.

8.6. **What Do The Release Schedules Look Like?** The Trustmachine Token(TTT) will be released according to the release schedules described earlier in this document. It has long-term, 6-year cryptovesting for Trust-Tech Laborary and The Trust-Tech Foundation, cryptovesting between 6 months and 3 years for contributors, and a mining release half-life of 6 years. See the graphs above for a visual representation of these schedules.

8.7. **Is TDR Circulable After Pre-TSD Alpha(α)?** TDR, which behaves as the kickstarter, liquidity provider and value reserve of TTT is circulable with the built-in continuous liquidity and price discovery mechanism as soon as Pre-TSD Alpha(α) is completely finalised(approximately 7 days after Pre-TSD Alpha(α)). At Pre-TSD Beta(β), TDR also enjoys 25% discount compared with normal contribution of ETH to convert to the non-circulable TTT to support Trustmachine Project.

8.8. **What Is The Circulating Supply Of TTT In The Next N Years?** There are a number of things affecting the amount of circulating TTT: (a) the mining release schedule, (b)the cryptovesting schedules, (c) locked up TTT to cover miner pledges, (d) TTT locked up as rewards or collaterals in the storage and retrieval markets, (d) TTT locked up by smart contracts, and (f) TTT in addresses whose keys are lost. The circulating supply will be affected most by the release and cryptovesting schedules, so take a look at the graphs earlier in this document to get a sense of estimated maximums at various points in time.

8.9. What Is The Implied Valuation Of Trustmachine? Valuing crypto assets and their networks is hard, and TTT will be no exception. The most popular method is by calculating the market cap of the circulating supply (i.e. last price paid per token x total circulating supply). This method is obviously flawed in many accounts: it does not capture the underlying value of the network, the volatility and fluctuation of these assets, the significant security risks associated with these networks and assets, nor the value of the technology improvements over time. Please do not use this or any other method to value the Trustmachine or any potential contributions with ETH, without fully understanding what how a given measure works, what it captures or fails to capture, and how other models work. That said, taking the release schedules into account, and assuming contributors choose medium cryptovesting, a distribution ending with TTT at $3 could mean a market cap between $0 - $4.2B in the first year, with circulating supply between 0 and 1,596M TTT. This market cap is similar to the market cap of the Ethereum Network in its first year.

8.10. Are We Getting The EAFT Enhanced Token Or Paper Right Now? The Enhanced Agreement for Future Tokens (EAFT) is a legal agreement based on SAFT, similar to the YC SAFE. Think of it a bit like a forward contract the seller (Trust-Tech Laborary) sells tokens ahead of time to a buyer (you); the seller must then build the network, and deliver the tokens at Network Launch in the future. We chose to develop the EAFT due to the nature of token distributions and questions about legal regulations on token network contributions with ETH. It turns out that most contributors weve consulted with prefer this structure as it clearly establishes risks, includes provisions that address risks of failure, and legally bind the seller.

8.11. What Do We Do About Keeping The Token Safe? Are There Custodians? At Pre-TSD Alpha(α) and Pre-TSD Beta(β), we suggest all the contributors to use an official Ethereum wallet to make transactions and store the private key in a secure environment, offline if possible. At Pre-TSD Beta(β), since this transaction is probably for EAFTs (legal agreements tied to legal entities), you do not have to worry about private keys and custody until we deliver the token. As we get close to Network Launch, we hope to work with popular crypto asset wallets and exchanges to add support for tokens in the Trustmachine system, we will also build the decentralized exchange the liquidize them.

8.12. When Do We Get The Tokens? All TDR tokens distributed at Pre-TSD Alpha(α) are delivered instantly to your wallet but unable to make transactions until the finalisation of the distribution stage. It is assumed to take only several days. Trust-Tech also reserves the right for carrying out strict controls to meet with the requirements of EAFT for tokens distributed at any Pre-TSD stages. All TTTs distributed in Pre-TSD stages are delivered on Trustmachine Mainnet Lambda(λ) launch and are subject to a certain amount of cryptovesting (also known as a usage restriction). Cryptovesting is selected at time of EAFT purchase, commences at network launch, and ranges from a minimum of 6 months to a maximum of 3 years.

8.13. How Does Cryptovesting Work? TTTs subject to cryptovesting have a usage restriction. They cannot be sold, transferred, spent, or otherwise made use of on the Trustmachine. As each block in the Trustmachine blockchain is mined this usage restriction is lifted on a certain amount of tokens, making those tokens usable. This is referred to as cryptovesting. The rate at which the usage restriction is lifted at which the tokens vest is linear, and per blockchain block. For example, a contribution with ETH with 2 year cryptovesting would have 25% of its tokens available for use 6 months after network launch, 50% available after 1 year, and 100% available (fully cryptovested) 2 years after network launch. Click here for an interactive tool to view cryptovesting over time.

8.14. How Often Do Tokens Vest? Monthly, Daily, Or Per Block? TTTs cryptovest per block. This means that some portion of cryptovested tokens is released with each block in the Trustmachine blockchain.

8.15. Is There A Cryptovesting Cliff, Such As 1-year Cliffs? No. The cryptovesting on TTT for contributors, Trust-Tech Laborary, and The Trust-Tech Foundation does not have a cryptovesting cliff. Cryptovesting starts linearly from the first block of the network.

8.16. What will the float be at Trustmachine Launch? 0? No. We will make sure there is some float at Network Launch. Our current plan is to start off the network with 1 month already cryptovested, but we may opt to do something different, such as start off the network with some small percentage cryptovested.

8.17. **When Do My ETH Contribution And Purchase Price Get Confirmed?** Contributions with ETH and prices are not final until after ETH transaction is confirmed. It varies when at different Pre-TSD stages. At Pre-TSD Alpha(α), the contribution is comfirmed after the block that contains ETH transaction is fully finalised. At Pre-TSD Beta(β), the distribution platform shows you estimated TTT amounts at current price for convenience only. After ETH transaction is received(which can take several seconds for ETH transactions via distributed AngelList accounts or up to 60-120 minutes for certain crypto currencies), the exchange rate and TTT amounts are confirmed. As contributions with ETH confirm sequentially, each contribution raises the price for all contributions following it. Lets say a transaction of ETH is initiated at price X and takes 30 minutes to confirm. During that time, any inflight ETH transactions that get confirmed will increase price to X + Y.

8.18. **What Are The Confirmation Times For Each ETH Transaction Method?** At Pre-TSD Alpha(α), we recommend using the official ethereum clients or wallets and it comfirms in the ethereum network once the block is completely finalised. At Pre-TSD Beta(β), please check the How to Join Pre-TSD Beta(β) document for exact timing and comparisons. Each method we accept has different characteristics, particularly different confirmation times. For example, the Bitcoin block time is estimated to be around 10 min, and our Distribution Platform clear with 2 confirmations, which means a Bitcoin ETH transaction is estimated to clear in around 20 - 30 min. Warning: network congestion can make blockchains proceed much slower than anticipated! We cannot clear a transaction that wish to contribute until it is fully confirmed.

8.19. **Is There A Minimum Or A Maximum Limit For Any Individual That Wish To Contribute?** There is a minimum contribution with ETH requirement of $10 USD (or the equivalent in cryptocurrency). There is no maximum contribution with ETH limit for any individual contributor or incryptovesting entity.

8.20. **What Happens If I Send Some ETH Transaction, But Not Enough To Cover Full Purchase?** All contributions with ETH remain open until the full-purchase price is received. This means any underETH transaction will keep the transaction open and uncompleted. You may still send additional ETH to the deposit address to complete the transaction until the distribution closes, at which point any uncompleted transactions are cancelled. We CANNOT issue a EAFT for partial contributions with ETH, because the legal agreements signed will be for the EXACT amount you entered and agreed to.

8.21. **What Happens If I Send More ETH Than Is Required For The Contribution?** No. Please send EXACTLY the amount listed on the Distribution Platform ETH transaction page. This is easy with USD, but many cryptotoken wallets force those who contribute with ETH to manually enter the ETH transaction amount to send. Please be careful and enter in EXACTLY the right amount (including any additional network transaction fees, if applicable). DO NOT send more than your contribution with ETH amount. We CANNOT count it, because the legal agreements signed will be for the EXACT amount you entered and agreed to. If you would like to invest more than the original requested amount, please create a new contribution with ETH.

8.22. **I Sent Too Much Or Too Little ETH. What Happens To That ETH?.** Any funds contributed with ETH that were NOT completed by the end of the distribution (i.e. too little ETH) will be cancelled. Any extra funds contributed with ETH beyond the contribution with ETH amount (i.e. too much ETH) will not be counted. Those funds may be: (a) refunded to the contributor, (b) used to cover token distribution costs, or (c) donated to the Trust-Tech Foundation, entirely at our discretion. For security reasons, we CANNOT return, use, or donate any such monies until after the distribution has ended. Please do not ask us to. We WILL NOT make exceptions, as this is a very high security risk.

9. AVAILABLILITY

The PDF of this paper is located at `https://github.com/trust-tech/blackpaper`.

References

Trust-Tech. TRUSTMACHINE: A GENERALIZED MATHEMATICALLY-SECURED QUASI-DETERMINISTIC DECENTRALIZED STATE-TRANSITION SYSTEM. 2017. URL {`https://github.com/trust-tech/paper`}.

10. IMPORTANT: Signature Verification And Message Encryption

Digital signature is a process ensuring that a certain package was generated by its developers and has not been tampered with. Below we explain why it is important and how to verify that the document as well as some other software you download is the one we have created and has not been modified by some attacker. Digital signature is a cryptographic mechanism. If you want to learn more about how it works see https://en.wikipedia.org/wiki/Digital_signature.

10.1. **What Is A Signature And Why Should I Check It?** How do you know that the document or software you download is really the one we made? Digital signatures ensure that the package you are downloading was created by our developers. It uses a cryptographic mechanism to ensure that the software package that you have just downloaded is authentic. For every user it is a must to verify that the software is authentic as they have very real adversaries who might try to give them a fake version. If the software package as well as the document has been modified by some attacker it is not safe to use. It doesn't matter how secure our package is if you're not running the real one. Before you go ahead and download something, there are a few extra steps you should take to make sure you have downloaded an authentic version. Below is an example of how to verify whether the DOWNLOADED_FILE is the one that we produce: 1.Import the public key of trust-tech.org(trust-tech@protonmail.com):

```
gpg --keyserver keys.gnupg.net --recv-keys 04BDC75EA19166D13F3F151448826F5500731B61
```

2.After importing the key, you can verify that the fingerprint is correct:

```
gpg --fingerprint 04BDC75EA19166D13F3F151448826F5500731B61
```

3.You Should See:

```
pub   rsa4096 2017-11-30 [SC] [expires: 2018-11-30]
      04BD C75E A191 66D1 3F3F  1514 4882 6F55 0073 1B61
uid           [ultimate] Trust-Tech (Trust-Tech.org Official) <Trust-Tech@protonmail.com>
sub   rsa4096 2017-11-30 [E] [expires: 2018-11-30]
```

4.To verify the signature of the file you downloaded, you will need to download the ".asc" file as well. Assuming the file is at the current directory, run:

```
gpg --verify DOWNLOADED_FILE.asc DOWNLOADED_FILE
```

5.The output should say "Good signature":

```
gpg: Signature made Wed 06 Dec 2017 02:39:33 AM EST
gpg:                using RSA key 48826F5500731B61
gpg: Good signature from "Trust-Tech (Trust-Tech.org Official) <Trust-Tech@protonmail.com>" [ultimate]
```

10.2. **How To Use GPG to Encrypt and Sign Messages?** It is recommended that all the important messages sent between you and us are encrypted with gpg and assuming you have properly generated gpg key pairs and well configured and secured. 1.Import the public key of trust-tech.org(trust-tech@protonmail.com):

```
gpg --keyserver keys.gnupg.net --recv-keys 04BDC75EA19166D13F3F151448826F5500731B61
```

2.After importing the key, you can verify that the fingerprint is correct:

```
gpg --fingerprint 04BDC75EA19166D13F3F151448826F5500731B61
```

3.You Should See:

```
        pub   rsa4096 2017-11-30 [SC] [expires: 2018-11-30]
        04BD C75E A191 66D1 3F3F  1514 4882 6F55 0073 1B61
uid           [ultimate] Trust-Tech (Trust-Tech.org Official) <Trust-Tech@protonmail.com>
sub   rsa4096 2017-11-30 [E] [expires: 2018-11-30]
```

4.To encrypt the messages that you wish to send to us:

```
gpg --output DOCUMENT_FILE.gpg --encrypt --recipient trust-tech@protonmail.com DOCUMENT_FILE
```

5.To decrypt the messages that we sent to you:

```
gpg --output DOCUMENT_FILE --decrypt DOCUMENT_FILE.gpg
```

For More detail, please refer to the guidelines described in the The GNU Privacy Handbook:

https://www.gnupg.org/gph/en/manual/book1.html

10.3. **Trust-Tech Public Key.** Below is the official pubkey of Trust-Tech(Expires: 2018-11-30):

```
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQINBFof5QsBEADK2yz9lsmCwo+2sIAlB1f3uSu9sqsKg7Uhf7XNV4AnK22R8qt+
SW995IcHOfSNRwAiXJrN8Dgsr4vdUSbdUX0VwLnXG9mMjnSbrAA5wqW568UWLpgO
p/Fp/rLDF1QjqMiZXE1m30DC/89d7CoGttXEt/v4kkEU/z8PGn+xT1D30cTO3v1f
qQh0gciHRXKRAbzN7foUMQ3K6NNehktiaS/B5XzF0ft0laPxqFn53V8LQZygETKH
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nELnY/0FdOD6eEXj8psfXVPkV/ovgO5+rSxPrhDtGIwUK3U+L7JUs25gkwARAQAB
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Y2hAcHJvdG9ubWFpbC5jb20+iQI9BBMBCAAnBQJaH+ULAhsDBQkB4TOABQsJCAcC
BhUICQoLAgQWAgMBAh4BAheAAAoJEEiCb1UAcxthQyEP/1THfSeNtbVC0OM8uB9B
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fEbDpxI9LzebpwIi23eBbKgY5JK7jYWeR8gA3xbFC0rsrhTlX/ERMAWthunYL7WC
CQendI5HNPqCKs68qf1s+koOjt3j0istBgZpZSi/7N6CxjKNoN9o9aZHvcoGUMjt
x4WmpeuJrIR/ZNgPIGt6f1eL4WyfSOvmsaFeNmYNapHNyUl/DdldBdsUeHoQGpYp
xGHduXvcmJVP6sqORXvCDHZCOGYxVGetnE3sOS4BDdaqyX+5WyTYy0U94QKO+yWn
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Si4henDgYgDTuQidpK/AS5oLYdCNjUgNkjVZENIz04Jkd/sk9rHkjmfAVzI88AvJ
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JKWmqQB06ldNg86Bmcu3q08aoPxEsYudqsXEkEJvfK8FIiEN6vsGHR1/G2NBEgts
QyAMeeXGWWFjJgVqiaPZjdH/E8TnE7e9xuR9lwIP8wakraxJdUY5Pm9tWZKQWqkJ
Fmt7saGWt43vzDPIOzWnAefXOwfPewyrHYnfhehhXV8WYxywUuHi3PsE0aYMaZcJ
b6gyT0f8N3w7BQ2GOlMgsbZZr+mUVBZICdD8Ploy3RBTxCvU2F62Z79iSdb8Qi+P
qqpcNrIczhYAiTzxTrl9fy0QHt+noMmWaCnKe2bTqt6Wi+wmjv2FGQ4gMKkctGdO
mF0FDjXPvvODEBg5EQARAQABiQIlBBgBCAAPBQJaH+ULAhsMBQkB4TOAAAoJEEiC
b1UAcxthxgcP/0r3aDaeCbGRtZplxsKOghiSMZ+QNFoWKgim3ByJF1PVHuO39RsU
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