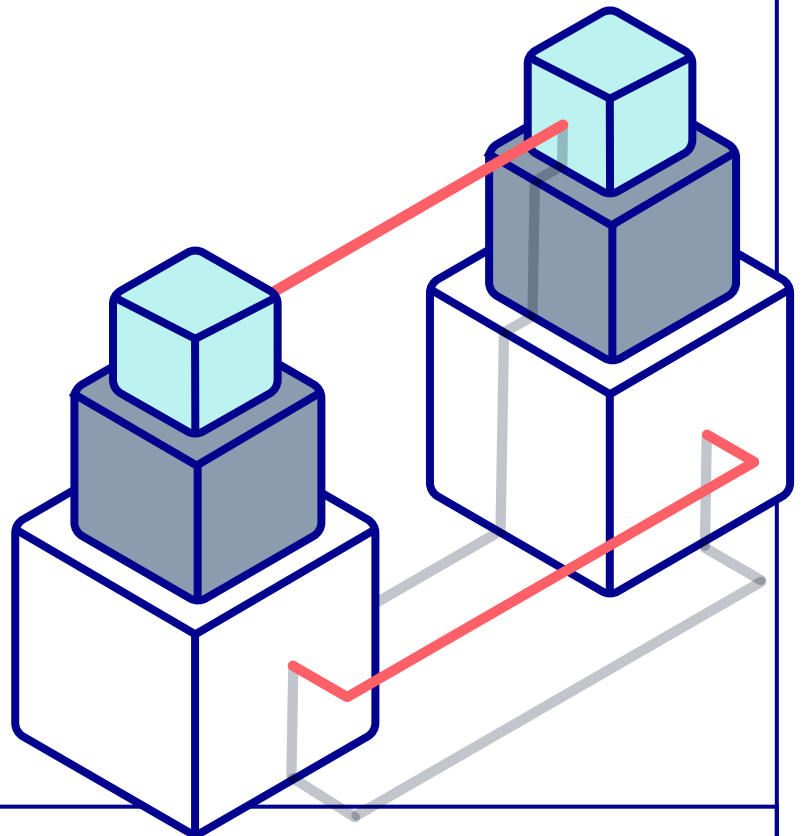




TTC Protocol:

Un protocol de retea sociala,
descentralizat si cu recompense



v0.8

Informatia de mai jos contine materiale actualizate ale TTC Foundation in legatura cu protocolul TTC. Pentru a asigura ca materialele din aceasta carte alba sunt precise si prezinta starea actuala a protocolului TTC, Fundatia TTC poate revizui aceasta carte alba din timp si fara sa anunte. Informatia prezentata in aceasta carte alba este indicativa si nu este legata juridic de Fundatia TTC, afiliatii sai sau oricare parte terta. Acest document este doar pentru scop informativ si nu este intentionat sa fie o ferta de a vinde, o solicitare sau o oferta de a cumpara jetoane TTC, sau vreo investitie in platformele, proiectele sau proprietatile Fundatiei TTC, cote de piata sau titluri de valoare in Fundatia TTC. Va rugam sa cititi exonerarea huridica de la finalul acestei carti albe.

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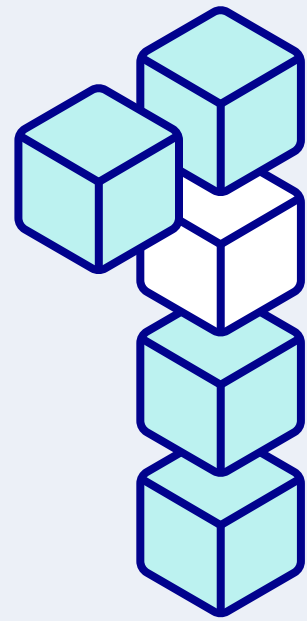
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O1

Background



Decentralized Social Networks

Individuals have adapted to the rapid development of mobile communication technology by finding new ways to share their lives, interact with one another, and form communities. Social networks are no longer simply technological phenomena. Major platforms like Facebook, Instagram, and Weibo have fundamentally changed the way users express identity, communicate ideas, and develop relationships.

As social network services grow increasingly sophisticated, users run up against limitations caused by their centralized architectures. Currently, the platforms themselves determine how user-generated content is distributed. The resulting dynamic favors paid content, while authentic user-generated content is condemned to low engagement and low visibility. Additionally, advertising revenue generated by users' likes, shares, and other forms of engagement flows to the platform provider rather than to its contributing users.

This dynamic has not gone unnoticed. Users' patience is wearing thin, and users now expect a new generation of transparent, open-minded, decentralized social networks that incentivize participants rather than platforms. This is the next generation of social network.

It is clear that in a centralized system, the platform wields control

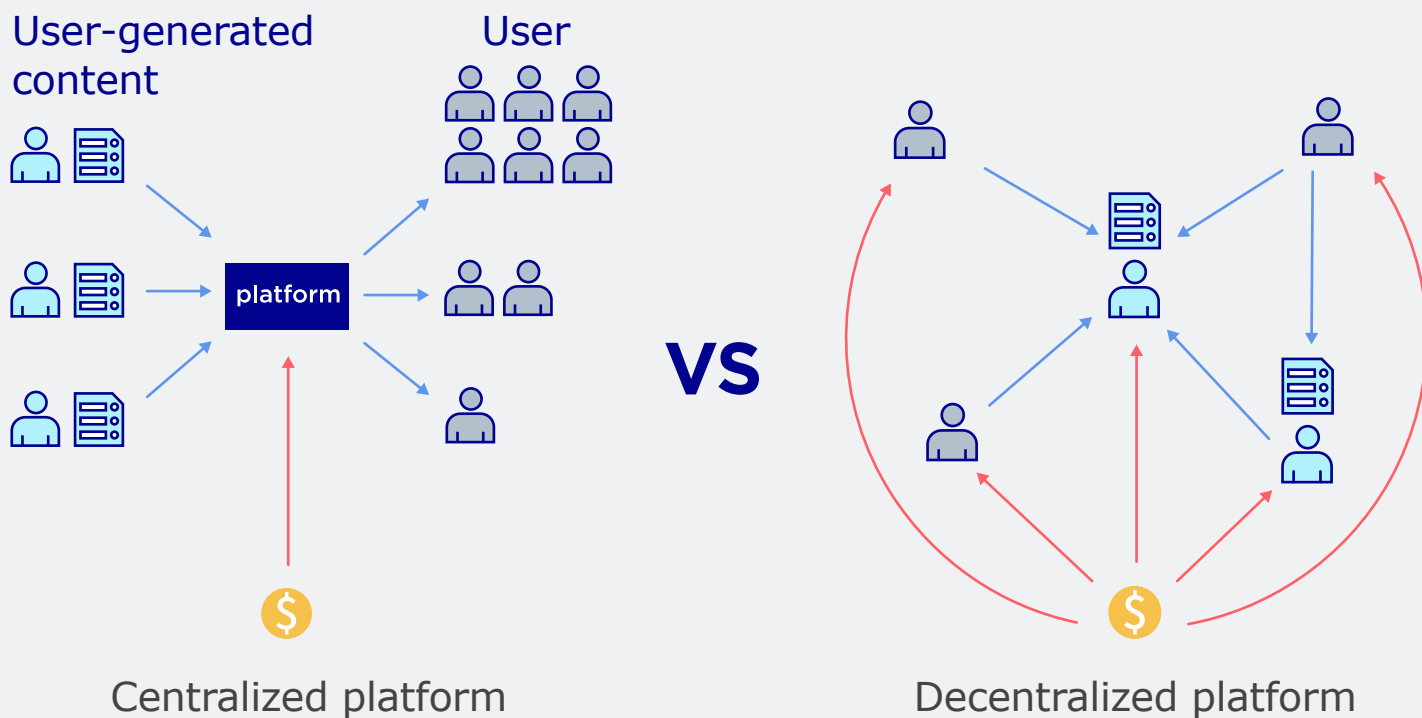


Figure 1. Centralized platform vs Decentralized platform

over content distribution. It is the platform that benefits from advertising. In a decentralized system, users decide which content is worth seeing, and the benefit goes directly to users.

Blockchain Technology

Practically, a blockchain is a digital ledger that is used to record transactions across multiple parties. It is decentralized, distributed, and public, and because the record cannot be altered retroactively without the alteration of all subsequent information in collusion with the entire network, blockchain technology is secure by design. This makes blockchains suitable for keeping track of events, medical information, financial transactions, and other types of record keeping.

Technically, a blockchain is a distributed computing system that has achieved “decentralized consensus.” This means that there is no central authority that determines how and what information gets added to the ledger. The protocol around a blockchain is what allows participants on the network to reach a consensus about how to add new information, even when members cannot trust one another.

Recently, blockchain technology has led to rapid development of identity management, transaction processing, documenting provenance and supply chains. Blockchains are starting to infiltrate our everyday lives.

In 2017, there were more than 600 blockchain projects implementing ICOs (Initial Coin Offerings). In 2018, there were 200 ICO projects in January alone. So far, there are more than 6,000 cryptocurrency exchanges all over the world.

Blockchain-Based Social Networks

There are several ways in which blockchain technology can be naturally applied to social networks. For a social network to develop, participating users must be able to interact easily. Each user on the platform functions as a node in the network. As the frequency and the probability at which users interact increase, the density of nodes increases. This is highly compatible with blockchains.

In recent years, blockchain-based content platforms have garnered public attention. One such platform is Steemit.com, a decentralized and token-incentivized platform that gives cryptocurrency rewards to users who produce and interact with high quality posts. However, on Steemit.com the barrier to entry is steep. It is still challenging for ordinary bloggers to share their interests, opinions, and knowledge because the platform mandates that only rigorous posts meeting a high standard of professionalism will be rewarded. As a result, the platform is highly concentrated with a select group of users that are able to take advantage of the Steemit reward system.

Other experiments with blockchain-based social networks focus on finding communication solutions, such as server-less messengers. Hardly anyone has attempted to create protocols specifically for the kind of content and user behaviors seen on social networks. Given its potential in the social space, platforms that combine blockchain and social networking are coming.

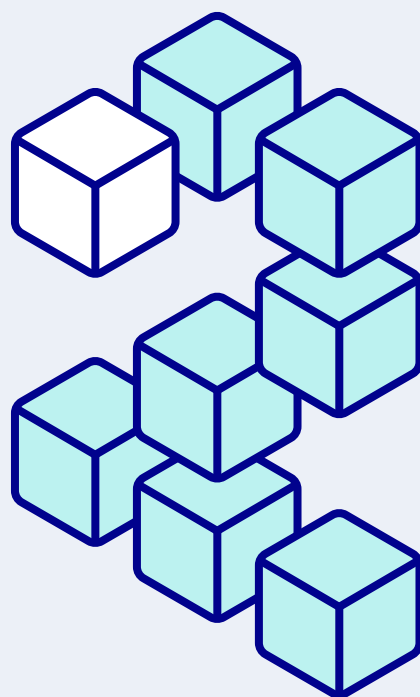
Token-Incentivized Social Networks

Rewarding some users with cryptocurrency tokens creates economic incentives. These incentives effectively facilitate the establishment and growth of social networks in a few ways.

- **Proactive users** Every user in the network is a stakeholder, which contributes to a shared belief that contributions matter. Users will participate proactively as their contributions are clearly and fairly recognized and rewarded.
- **Healthy atmosphere** Content aligned with the core values of the network gets highly rewarded. This creates a self-sustaining cycle where users are encouraged to create content that strengthens the network.
- **Exponential growth** As the network grows, it increases the value of the network, which in turn increases the value of the incentives. Not only does this make incentives more attractive to users, it also builds public awareness about the network.

O2

TTC Token



TTC token

The TTC token (TTC) is a universal token based on blockchain, issued as the operating medium for smart contracts. Compared to traditional mining mechanisms, the TTC token is issued to users depending on their contribution levels to the platform. This incentivizes users to be active in making contributions and maintaining a positive and consistent personal image on the platform.

Advertisers can promote brands and products through the TTC Protocol's advertising platform. Unlike traditional platforms that are centralized, the profits from advertising go directly to users. This fosters a win-win relationship for both advertisers and users.

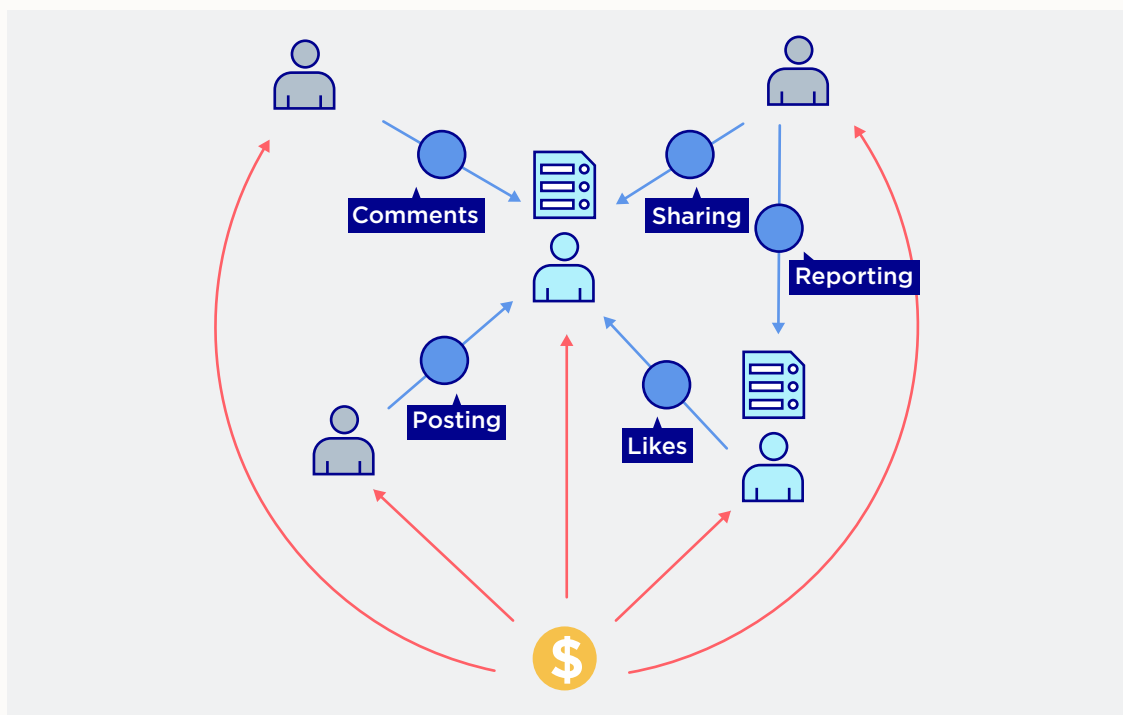


Figure 2. The value chain of user behavior and incentive

tataUFO will be the first DAPP on the open network of TTC Protocol. As the TTC Protocol grows, other developers can create DAPPs that serve communities outside of tataUFO's 10 million users. All the DAPPs on the TTC Protocol will deliver economic rewards to end users for their social activities.

Comparison between content-based platform

	tataUFO	Steemit	Weibo	instagram
Identity	Personal lifestyle sharing	Blogging	News + Micro blogging	Photo sharing
Contents	Personal moments	Professional articles	Extensive information	Personal moments
Blockchain	Yes	Yes	No	No
Content administrator	User	User	Platform	Platform
Content distribution	Decentralized	Highly Concentrated	Centralized	Centralized
Governance	Decentralized	Small amount of star users	Platform	Platform
Reward system	Yes	Yes	Small amount of star users	No
Beneficiary from ad	User	No	Platform	Platform

Table 1. tataUFO offers decentralized operation and content distribution, which benefits a greater number of users

Economic System

TTC tokens are distributed as rewards on a daily basis to users who contribute to the platform. Rewards are divided into three types.

- **Content reward** For users who create high quality content, and for users who interact with content by liking, commenting, sharing, or reporting
- **Reputation reward** For users who make contributions over the long term by showing loyalty to the platform, consistently creating high quality content, and gaining recognition from others
- **Advertising reward** For users who take part in promotional activities such as watching advertisements, participating in themed campaigns, or completing customer surveys

Both content and reputation rewards are issued from a fixed pool of TTC tokens programmed into the smart contract of the TTC Protocol. Advertisement rewards are generated by the TTC tokens introduced to the platform by advertisers.

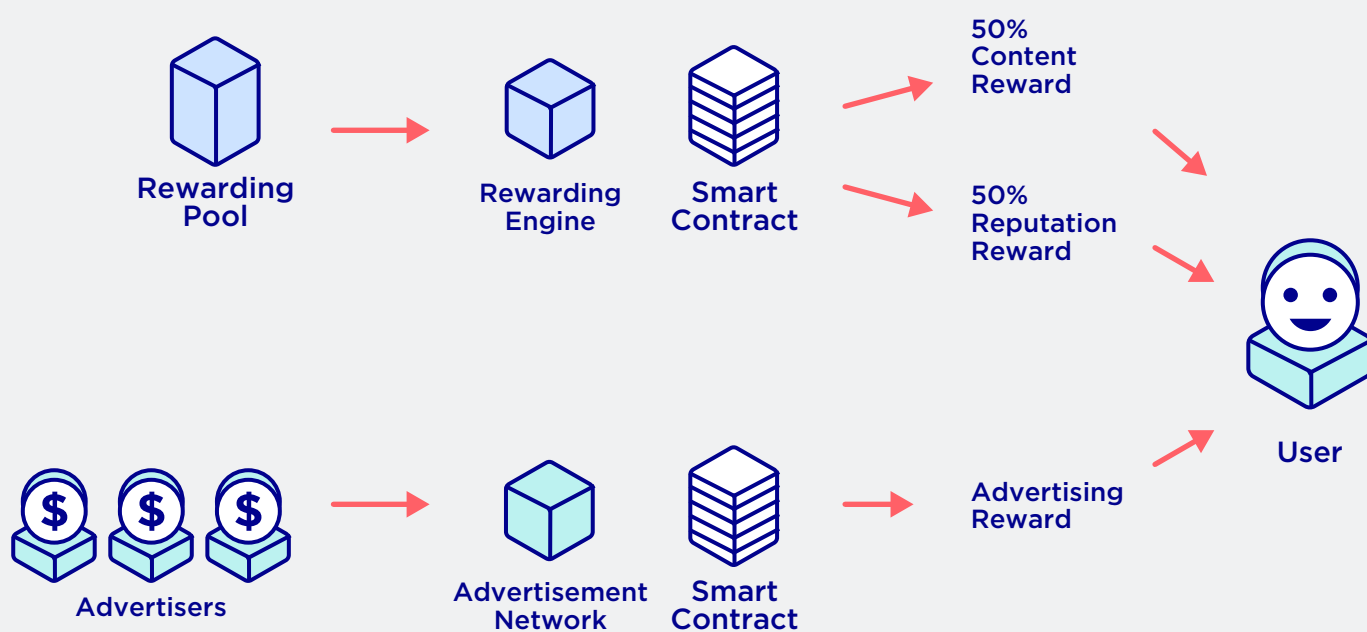


Figure 3. A demonstration of issued TTC tokens pool and advertising TTC tokens pool

Content reward

A piece of content's value in TTC tokens is determined by the reputation of the users who interact with it. A user's reputation affects the value of a piece of content whenever that user likes, comments, shares, or reports it.

If a user with a high reputation interacts with a piece of content, that content is given higher value and higher exposure. Additionally, content shared on other platforms is also given higher value because it's exposure off the network increases the value of the network.

$$\text{Content value} = \Upsilon_{\text{like-weight}} * \sum f(\text{reputation of liker}) + \Upsilon_{\text{comment-weight}} * \sum f(\text{reputation of commenter}) + \Upsilon_{\text{share-weight}} * \sum f(\text{reputation of sharer}) - \sum f(\text{reputation of reporter})$$

(at the beginning, $\Upsilon_{\text{like-weight}} : \Upsilon_{\text{comment-weight}} : \Upsilon_{\text{share-weight}} = 30\% : 50\% : 20\%$)

Content with a higher value will be given wider exposure, and also both the user who created that content and the users who interacted with it are given larger rewards of TTC tokens.

When a user interacts with a piece of content in multiple ways (e.g., liking and sharing a piece of content), only the form with the highest weight applies to calculate the content value. Each additional form of interaction adds 1 point to the value of the

content. For example, if we have a user with the reputation score of 12, any piece of content that user likes, comments, and shares will be assigned 14 points.

Should content be reported, points equivalent to the reporter's reputation points are deducted from the content's value. Additionally anytime the creator of that reported content interacts with other content, those interactions no longer add value. To adjudicate willful wrongdoing, mistakes, and unclear cases, reported content will be evaluated by an audit committee.

Reputation reward

Reputation is a quantified value of the long-term contributions made by a user in terms of their loyalty, the quality of the content they create, their number of followers, as well as their participation in auditing reported content.

$$\text{Reputation} = \text{Retention Value} + \text{Value of Content created} \\ + \text{Follower Value} + \text{Auditing \& Reporting Value}$$

(At the beginning, Retention Value : Content Creating Value :
Follower Value : Auditing Reporting Value = 20 : 30 : 30 : 20)

A user's reputation value begins at 1 when he or she registers. The maximum reputation value is 100. The reputation value increases quickly as new users improve their reputation, but slows down gradually as users begin reaching the upper limit.

- **Retention value** Reflects the loyalty of a user toward the platform. As the user keeps coming back to the platform, the retention value grows at a much lower rate, with an upper limit of 20.

$$V_{\text{retention}} = \log (n, Nd)$$

- **Value of content created** Value of Content Created Reflects the quality of content a user creates. As a user creates more content, the content created value grows at a much lower rate, with an upper limit of 30.

$$V_{content} = \log (n, f (N_c, V_c))$$

- **Follower value** Reflects a user's popularity on the platform. As a user gets more followers, the follower value grows at a much lower rate, with an upper limit of 30.

$$V_{follower} = \log (n, f (N_f, V_f))$$

- **Auditing & reporting value** Reflects a user's contribution to maintain the quality of the platform. Reported content is sent to an audit committee formed by selected users on the platform. The report succeeds when half of the audit committee members reach a verdict in favor of the reporter. The reporter then gets a reputation reward when the report succeeds, while he or she may suffer a reputation loss when the report fails. The audit committee members who contribute to the final verdict also gain reputation bonuses. As a user participates in more

reporting and auditing cases, the auditing & reporting value grows at a much lower rate, with an upper limit of 20.

$$V_{report/audit} = \log (n, f (Nr, audit(Yes/No)))$$

Advertising reward

An advertiser acquires a certain number of TTC tokens from the exchange and uses it to bid on advertising network of the TTC Protocol. The TTC tokens used in the advertisements are distributed directly to the users that view and interact with the advertisements. The TTC Protocol itself takes a fractional transaction fee to cover the maintenance cost of implementing the advertising network.

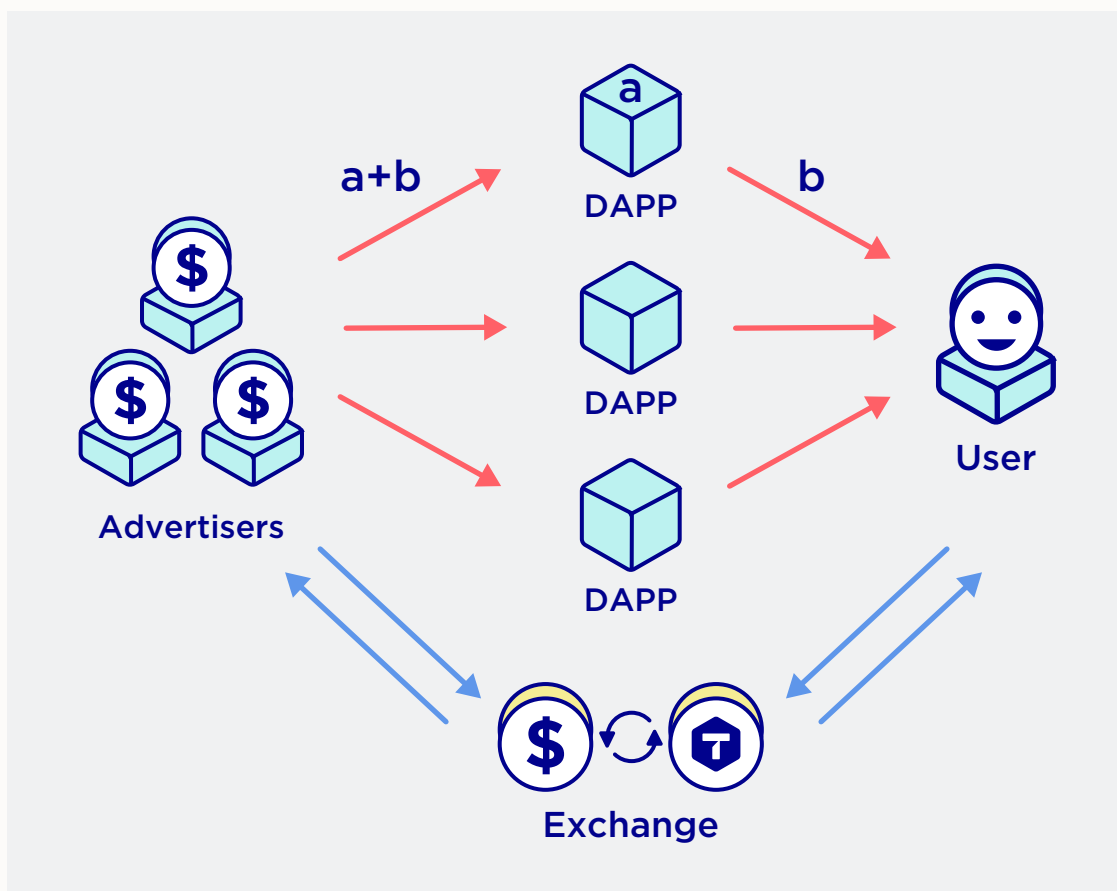


Figure 4. The TTC Protocol returns the commercial value to users

- **Promotional campaign**

An advertiser sets up a campaign that asks users to generate content that follows the campaign directions. Users making content for the campaign get rewarded according to how much other users interact with the content made.



- **Display advertisements**

A user chooses whether to watch an advertisement or not. The TTC tokens allocated for such advertising goes directly to the users that watched the ad.



- **Customer survey**

An advertiser selects a group of users to complete a customer survey. Users that participate in the survey get the rewards of the TTC tokens.



Reward engine

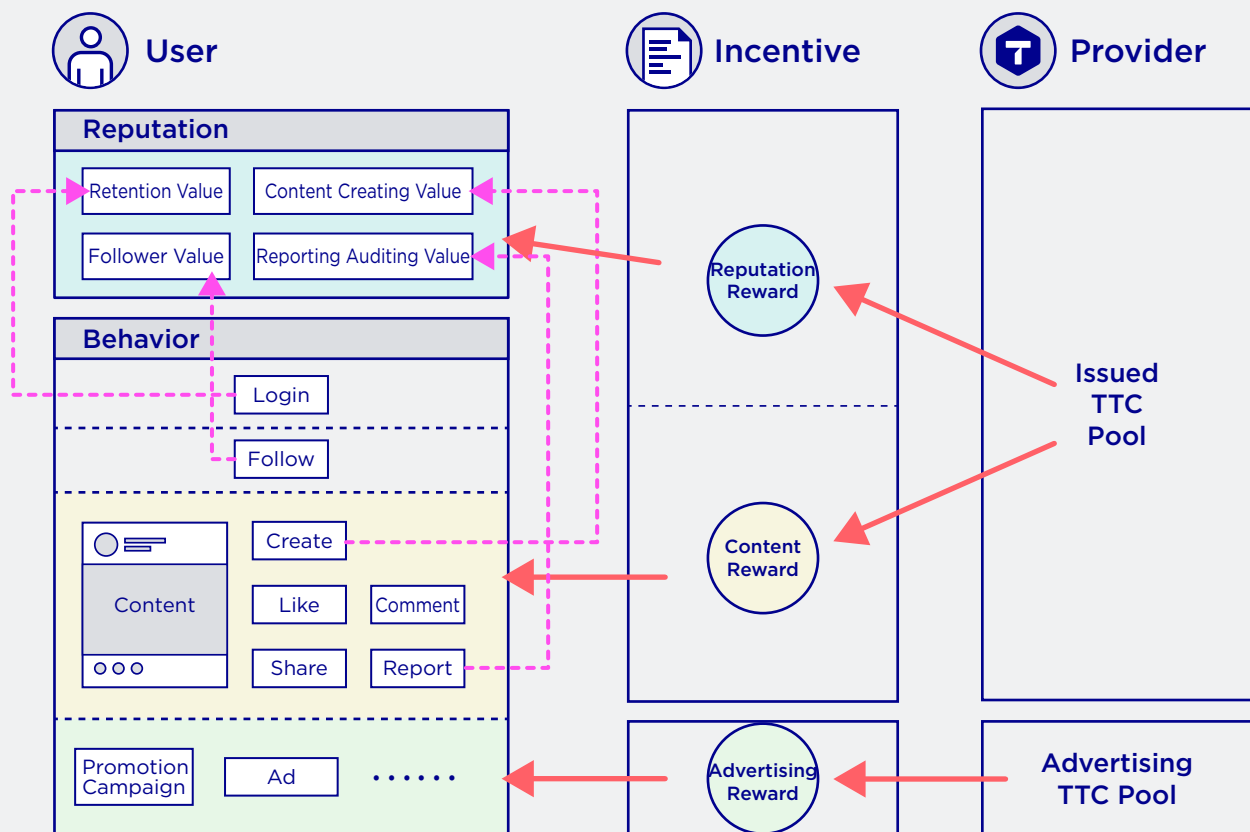


Figure 5. The value chain of user behaviors and incentives

The TTC tokens are issued at 24:00 GST daily. The issuing reward pool is predetermined by a smart contract with the content reward and reputations reward each occupying 50 percent of the pool.

- **Content reward**

- The content reward is distributed according to the calculated value of the relevant piece of content.
- The value calculation cycle is 24 hours, which means that only the interaction that occurs in the first 24 hours after a piece of content is created affects that content's value. Interactions after the first 24 hours do not affect the content value. The content reward is distributed at 24:00 of the day that content's 24 hour calculation cycle ends.
- Content value is distributed between the creator of the content and users who interact with said content. The initial proportion falls into the golden ratio with the creator being awarded 61.8% while those who interact with the content being awarded 38.2%.
- Users who interact with content are rewarded according to the Fibonacci sequence. For instance, the first 5 users that interact with the content would share the reward with the percentage of 8/19, 5/19, 3/19, 2/19 and 1/19 respectively.

- **Reputation reward** The reputation reward is distributed to each user in the platform according to their reputation value exactly one day prior to the payout day.

- **Advertising reward** Additionally, users can earn extra TTC tokens by interacting with advertisements. These TTC tokens are introduced into the platform by advertisers.

Content exposure

There are several ways for content to reach users. Content deemed by the network to be valuable and content that is likely relevant to a user's interests are given greater exposure. Users who discover content that resonates with others are given greater rewards as well, which encourages users to curate and provide exposure to high quality content. After a user interacts with a piece of content, it is also exposed to those who have chosen to follow that user.

- **Following** In this category, an active user sees content created by other users the active user has chosen to follow, as well as content those users liked or commented on. Content will be ranked according to the reputation of the users who created it, as well as those who interacted with it.
- **Trending** In this category, an active user sees content the entire community has deemed most valuable. The rankings of the most valuable content are calculated every minute.
- **Discovery** In this category, an active user sees newly created content and content that is tailored to the active user's taste. Interest will be determined by tags and other metadata.

Governance

There exists a possibility that a user may try to acquire some unfair reward by abusing the reward policies. This would be potentially damaging to other users and to the reputation of the TTC Protocol. To minimize this risk, there are several mechanisms the TTC Protocol will employ to detect abnormal behaviors.

- **System identification** The system will automatically identify and quarantine a set of predetermined abnormal behaviors, such as repeating meaningless comments in short time span. Users exhibiting these behaviors would be exempt from reward disbursement.
- **Reporting** When a particular piece of content is reported multiple times by several different users, the content's determined value and chance of exposure drops dramatically. As a result, any content reward for the creator and those who interact with it would be minimized.
- **Auditing** Any content that has been reported by a certain number of users will be automatically sent to an audit committee comprising users with comparatively higher standing within the TTC Protocol. If more than half of the committee members reach an unfavorable verdict as to the appropriateness of the content for the TTC Protocol, the content will be suspended from circulation while the content creator faces a decrease in reputation value. Conversely, the reporters and

committee members who reached the verdict in favor of the reporter will receive an increase in reputation value. In the reverse verdict that rules for the content instead of against, the opposite will be true. Reporters and committee members will decrease in reputation value while the creator will increase in reputation value.

Application Scenario

As the universal token for all DAPPs, the TTC token plays an important role in providing a better user experience. The TTC Protocol is open to developers, third party applications, and service providers. For example, in tataUFO, TTC tokens can be used in the following ways:

- **Emoticons**

Users can purchase emoticons developed by third party contributors with TTC tokens.



- **Chat bots**

Third party chat bots can offer various services such as on-demand weather reports, up-to-date exchange rates, and other premium services.



- **Polls**

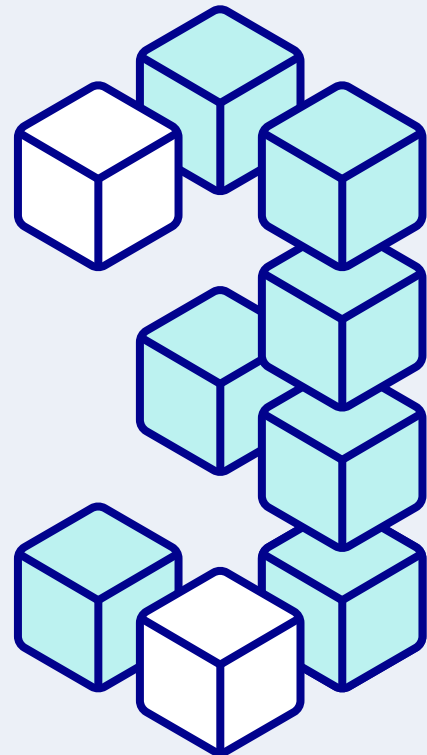
Users can use TTC tokens to start a poll that gathers general opinion on a specific topic. Poll participants are rewarded with TTC tokens.



- **Private gifting** Once users follow one another, the chat feature is enabled. Users can send other users gifts of TTC tokens via private chat.
- **Discount coupons** Users can use TTC tokens to purchase discount coupons for online and offline stores.

Additional scenarios in other DAPPs might include bounty payments, interactive game earnings, special item purchases, and more. There are numerous possible ways to use TTC tokens to provide a richer user experience.

O3 The ecosystem of the TTC Protocol



The ecosystem of the TTC Protocol

Developers of the open platform TTC Protocol also share the benefits of a decentralized and token-incentivized social network. Any developer can create his or her own blockchain DAPP and promote it on the TTC Protocol. To foster a unified and solid ecosystem, all DAPPs will be accessible with a single user account and wallet.

In addition, the TTC Protocol will also support a unified advertising platform with TTC tokens as the universal currency. Advertisers can select multiple user groups from different DAPPs to increase the influence and value of those advertisements.

- Users may cross over from one DAPP to another to interact with communities across the entire TTC ecosystem. This brings robustness to the TTC Protocol with a Single Sign-On (SSO) function.
- DAPPs increase the number of users and thus bring in more advertisers over time. This increases the commercial value of the TTC Protocol and raises the cost of advertising. In turn, users will have access to a smaller amount of TTC tokens everyday, but TTC tokens will have greater value.

tataUFO will be the first DAPP on the open platform TTC Protocol. We encourage other developers to follow tataUFO's lead and to take advantage of the benefits that come from a decentralized, token-incentivized social network.

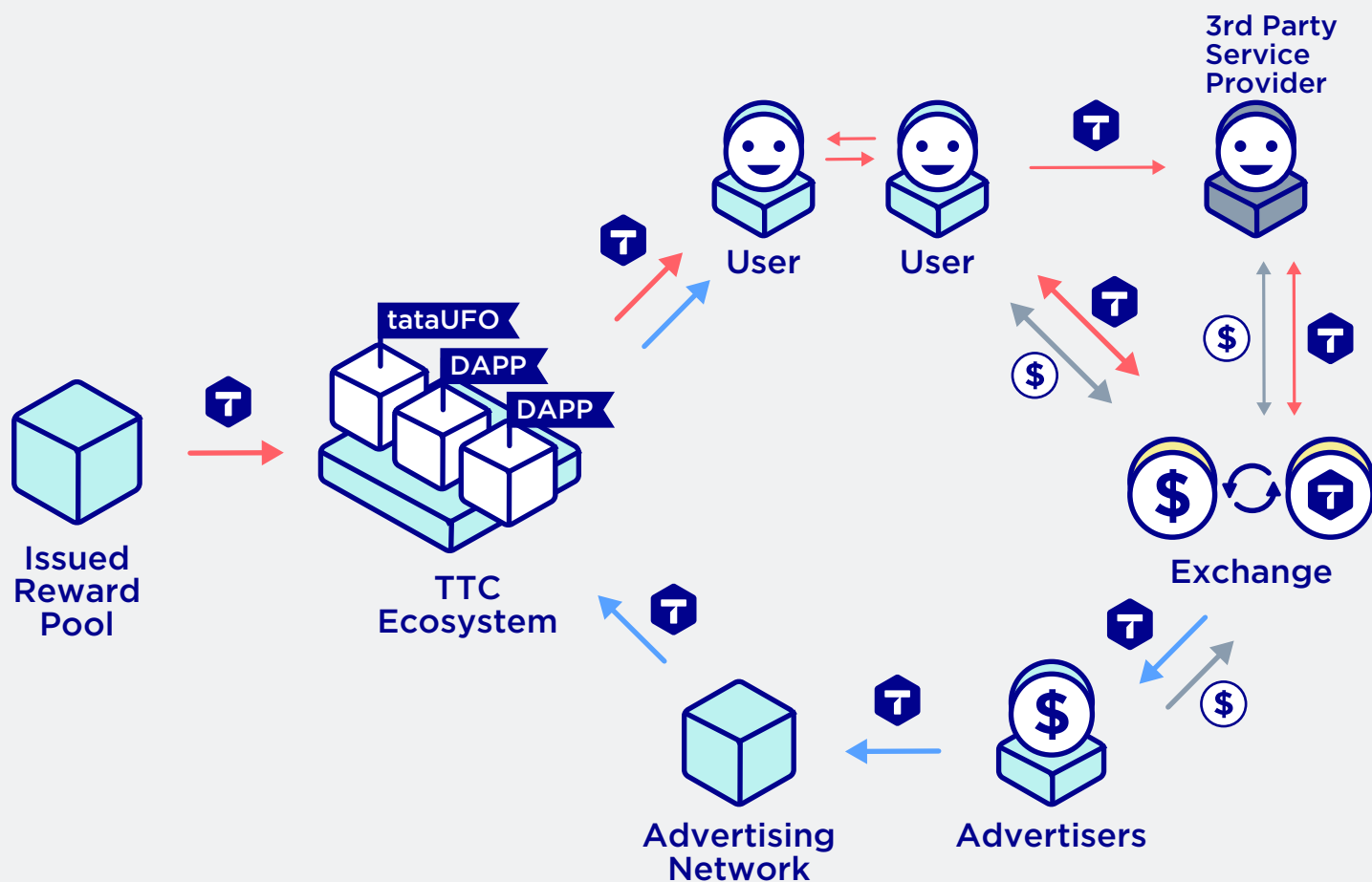


Figure 6. TTC Protocol value chain

tataUFO

tataUFO is a lifestyle sharing social network DAPP that is tailored to Millennials and younger Generation Z. Users share their lives and interact with each other to build social relationships. tataUFO matches users that share similar interests by using big data and cloud computing to analyze the content each user generates and find potential matches. The result is not just more social connections, but more intimate connections.

Just five years after launching in 2013, tataUFO's registered userbase grew to more than 10 million, most of whom are college students in first- and second-tier cities in China. tataUFO's brand recognition and brand loyalty among the younger generation provide a solid foundation for the future of the TTC Protocol.

The open platform TTC Protocol will allow tataUFO to provide even more value to its users by establishing a decentralized and token-incentivized social network.



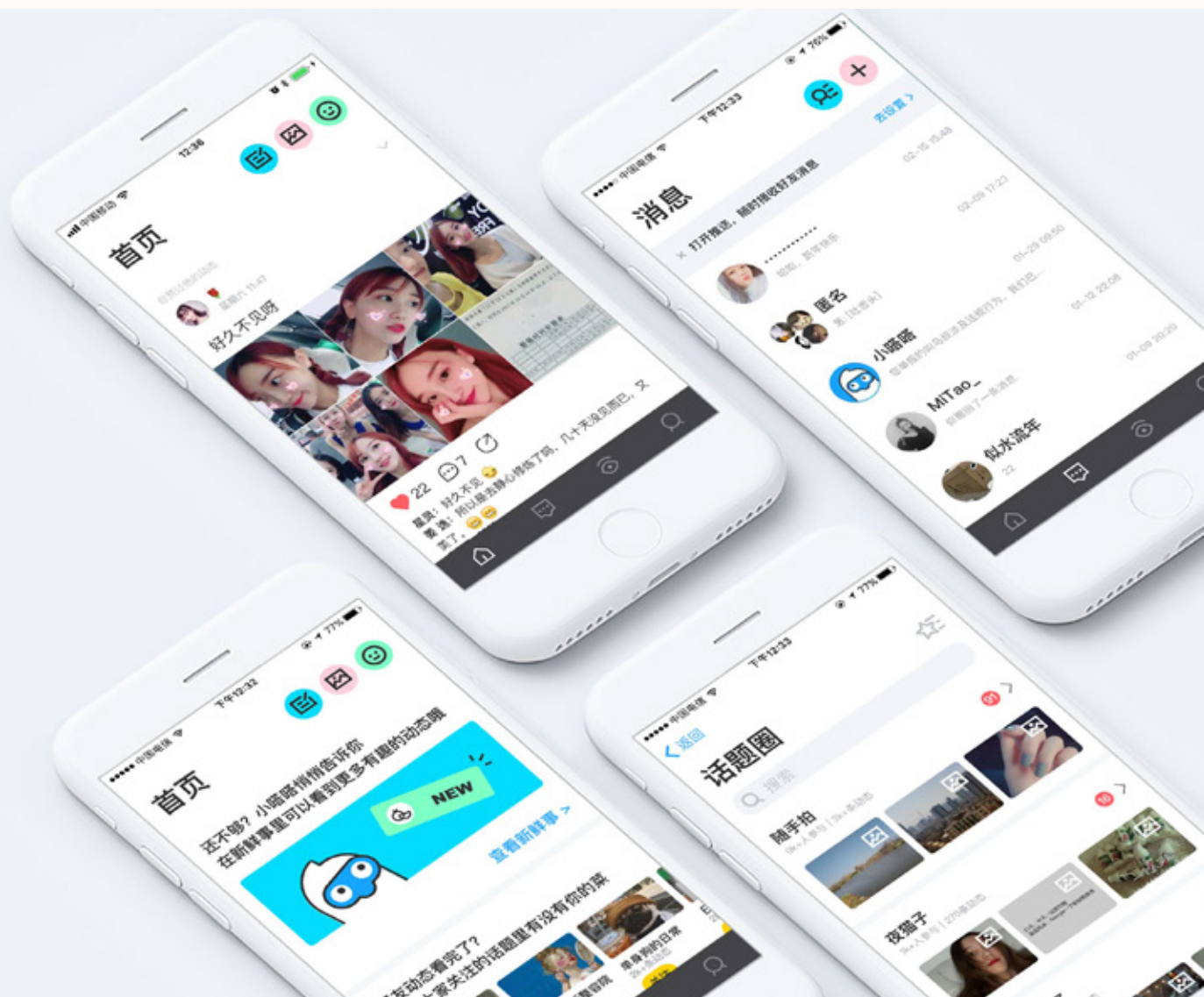
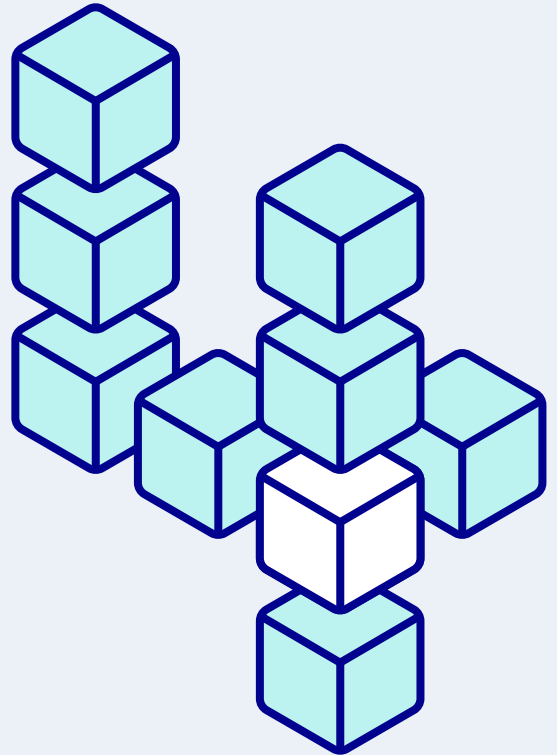


Figure 7. A demonstration of tataUFO

O4

**TTC
Foundation**



TTC Foundation

TTC Foundation^[1] is an independent, democratic, and non-profit governance institution. Its mission is to ensure the TTC system operates reliably and transparently.

The main responsibilities of TTC Foundation include the following:

- To establish a global, social ecosystem covering various regions and user bases by adding DAPPs
- To establish a set of fair and transparent governance processes, and to supervise the operation of the TTC reward engine, rules of engagement, legal issues and so forth
- To establish the smart contract of a decentralized and incentivized social network, and to increase of user value by creating a network effect
- To support the open platform TTC Protocol, fund new projects, and set up the distribution mechanism to DAPPs that ensures sustainable development

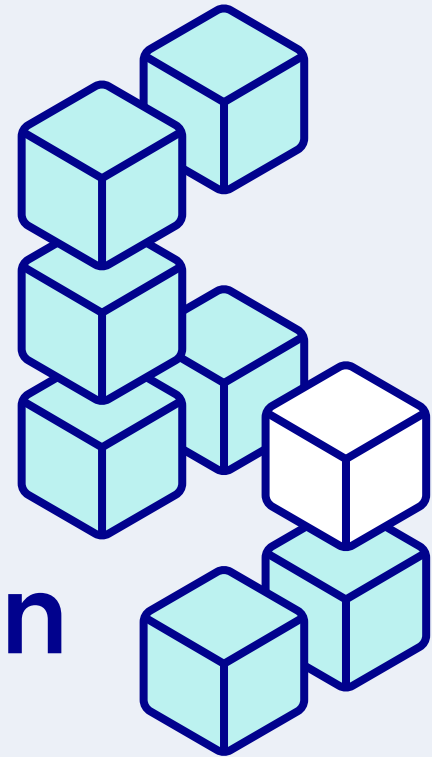
In order to accelerate the establishment of a global ecosystem that is the TTC Protocol, TTC Foundation will actively allo-

[1]. TTC Foundation is a company incorporated in the Republic of Singapore as a company limited by shares known as TTCFoundation Pte. Ltd.(Singapore Company Registration Number 201808413G).

cate its resources to develop and acquire more DAPPs on to the open platform TTC Protocol. Resources will be used to encourage developers to join the TTC Protocol. This will accelerate organic growth in both the number of DAPPs and users. TTC Foundation will also invest in services with the potential to grow the TTC Protocol ecosystem. This will result in inorganic yet rapid growth of the platform.

O5

Technical Consideration



On-chain and Off-chain Tradeoffs

The TTC Protocol is built on the public Ethereum network. As the most widely used blockchain network, Ethereum provides reliable and flexible services for DAPPs to operate. However, with the growing number of DAPPs and users, Ethereum is overburdened. The current daily number of transactions handled by Ethereum is over 100,000, resulting in the long wait times for transactions to be processed. Furthermore, Ethereum requires fees for every transaction on its blockchain. It could be a considerable burden for users if the transactions are not aggregated.

Given these barriers, the TTC Protocol will implement a balanced on-chain and off-chain transaction service. The transactions in the TTC Protocol will be settled on the Ethereum blockchain. Additionally, the TTC Foundation will implement an off-chain ledger to improve the efficiency of the system. Users' actions will be initially recorded off-chain, then synchronized on-chain upon computation. This hybrid solution creates a semi-centralized system in which all users on the TTC Protocol will have a relatively smooth and consistent experience.

TTC Foundation will continue to optimize the balanced on-chain and off-chain transaction service. Details of the off-chain mechanism will be kept transparent through various ways. In the long run, the TTC protocol ecosystem will evolve into a fully on-chain service, by working with other public

blockchain or by building own system.

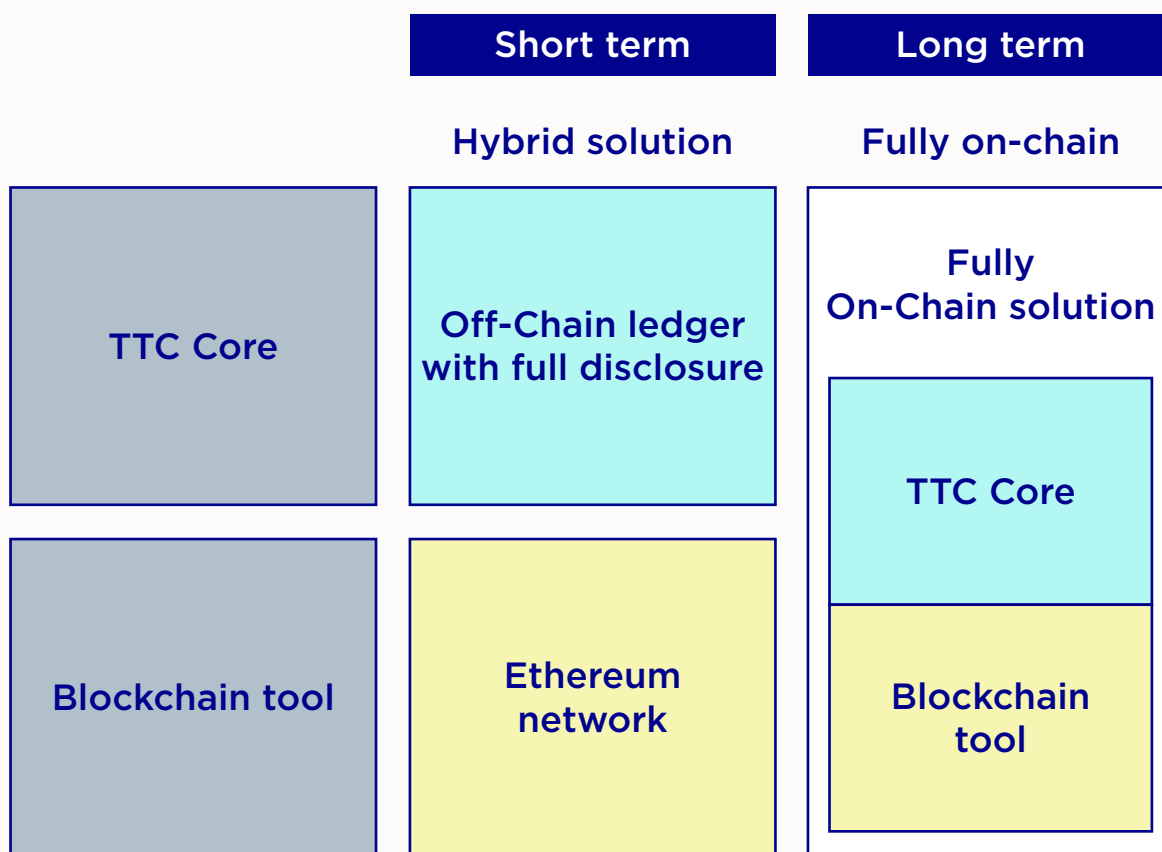


Figure 8. A demonstration of On-chain and Off-chain tradeoffs and the long term solution

Technical Architecture

There are 4 layers in the TTC system:

- **Blockchain Tool** An underlying architecture including a database, network, block format and consensus algorithm, etc.
- **TTC Core** Layer for unified authorization, the TTC token system, the reward engine and wallet etc.
- **TTC Protocol Open Platform** API with unified content, user, and information management (including the SSO solution), anti-spam and audit solution, advertisement network etc.
- **Applications** DAPPs created by developers on the open platform TTC Protocol.

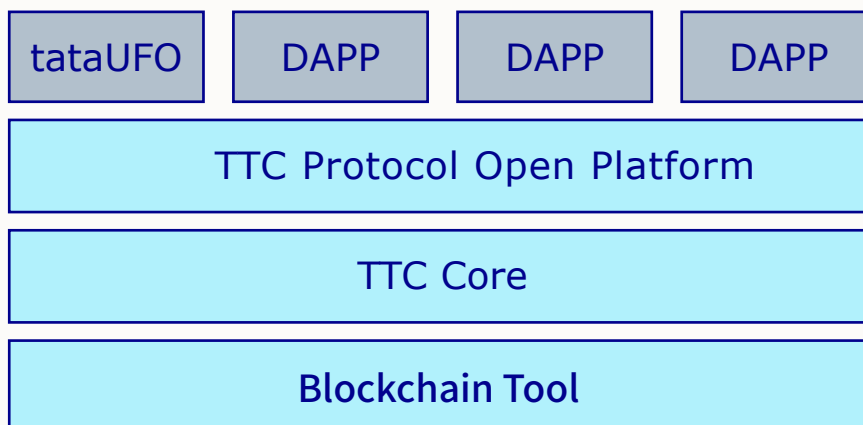
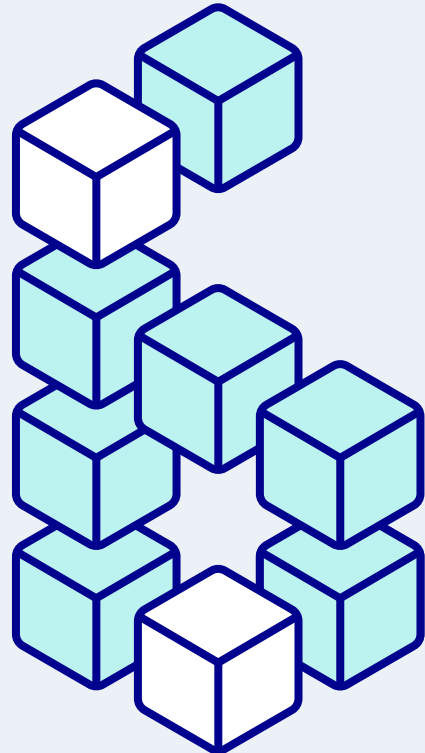


Figure 9. The technical architecture of the TTC Protocol

O6

TTC Tokens Issuance Schedule



Value modeling

TTC tokens are issued according to a predetermined schedule. In the first year, half of the total TTC tokens pool shall be issued. In the coming years, the total TTC tokens issued each year will be equivalent to half of the total remaining TTC tokens to be issued. The TTC tokens issued each month shall be identical, the value of which halves every 12 months.

$$TTC \text{ Each Month} = \frac{RewardPool}{(2y*12)}$$

$$TTC_{peruserEachMonth} = \frac{TTC_{EachMonth}}{TotalUse}$$

As shown in Figure 7, the TTC tokens each user can acquire each day drops quickly as the number of users increases.

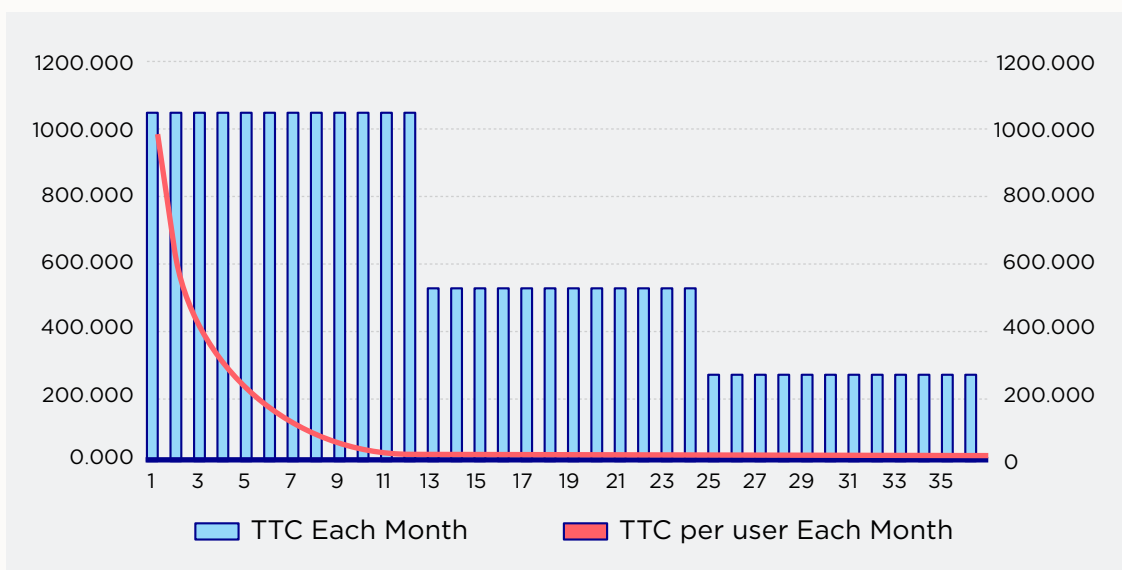


Figure 10. TTC tokens issuance schedule

The value of TTC tokens depends on advertising costs, independent of the influence of exchange. TTC tokens will experience fluctuations in value similar to what's seen on other advertising platforms, such as toutiao.com. A user could contribute \$0.15 USD per month when the number of users is relatively small, but this figure could be around \$1.5 USD when the number of users in the platform reaches a certain threshold. The ActiveRate begins at 100, dropping to around 42% and going up to 50% as the number of users increase. This value is based on industry standards and the performance of tataUFO.

$$\begin{aligned} MAU &= TotalUser * ActiveRate \\ USDValueperTTC(withoutExchange) &= \frac{AdsRevenueEachMonth}{TTCEachMonth} \\ &= \frac{MAUEachMonth * AdsWeight}{TTCEachMonth} \end{aligned}$$

As shown in Figure 8, the value of TTC tokens is in proportionate to the number of Monthly Active Users (MAU).

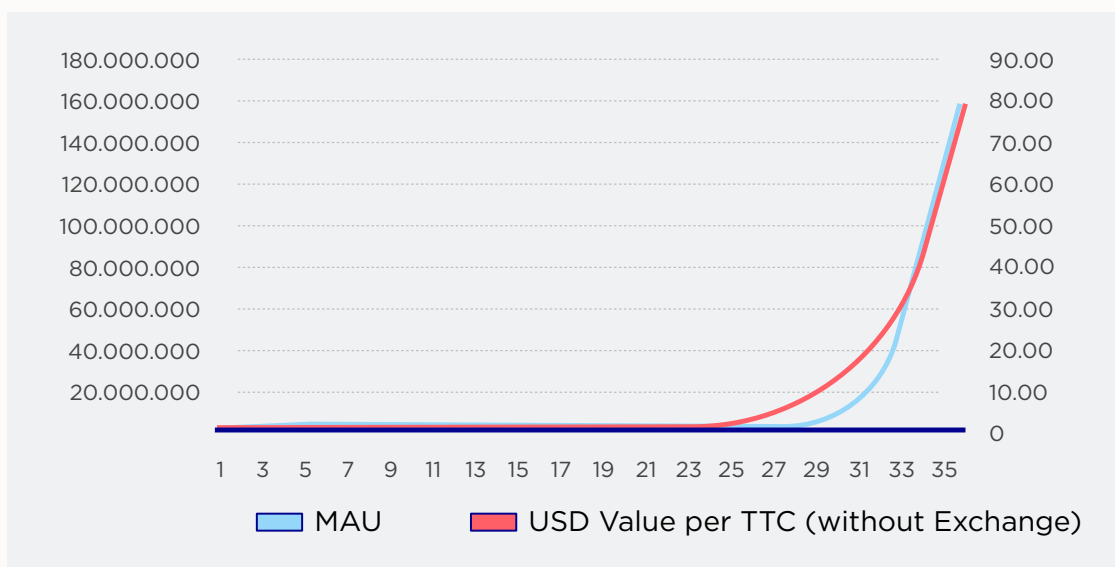


Figure 11. The correspondence of TTC token value and MAU

Trajectory of TTC token value over the next 3 years alongside growth in number of users in optimistic, conservative and pessimistic estimates are as shown in Table 2. Please note that these values only consider factors within the platform.

		Beginning	Year 1	Year 2	Year 3
Optimistic	Total Value of TTC		2,444,310	240,267,762	19,821,693,989
	number of users		508,066	13,767,563	328,058,424
	USD Value per TTC	0.01	0.02	1.41	101.65
Conservative	Total Value of TTC		2,091,044	127,842,748	7,750,245,530
	number of users		447,690	8,112,224	146,257,080
	USD Value per TTC	0.01	0.02	0.75	39.74
Pessimistic	Total Value of TTC		1,966,611	89,841,255	3,604,161,409
	number of users		426,002	6,043,228	75,981,640
	USD Value per TTC	0.01	0.02	0.53	18.48

Table 2. The optimistic, conservative and pessimistic anticipation of the TTC token value

TTC Pre-Initial Token Sale and Initial Token Sale plan

TTC tokens will be issued on ERC-20 with a total amount of 1,000,000,000 (1 billion), in which 25% of the total number of TTC tokens will be set aside for sale. Participants in the pre-initial token sale ("Pre-Initial Token Sale") and initial token sale ("Initial Token Sale") can purchase TTC with ETH.

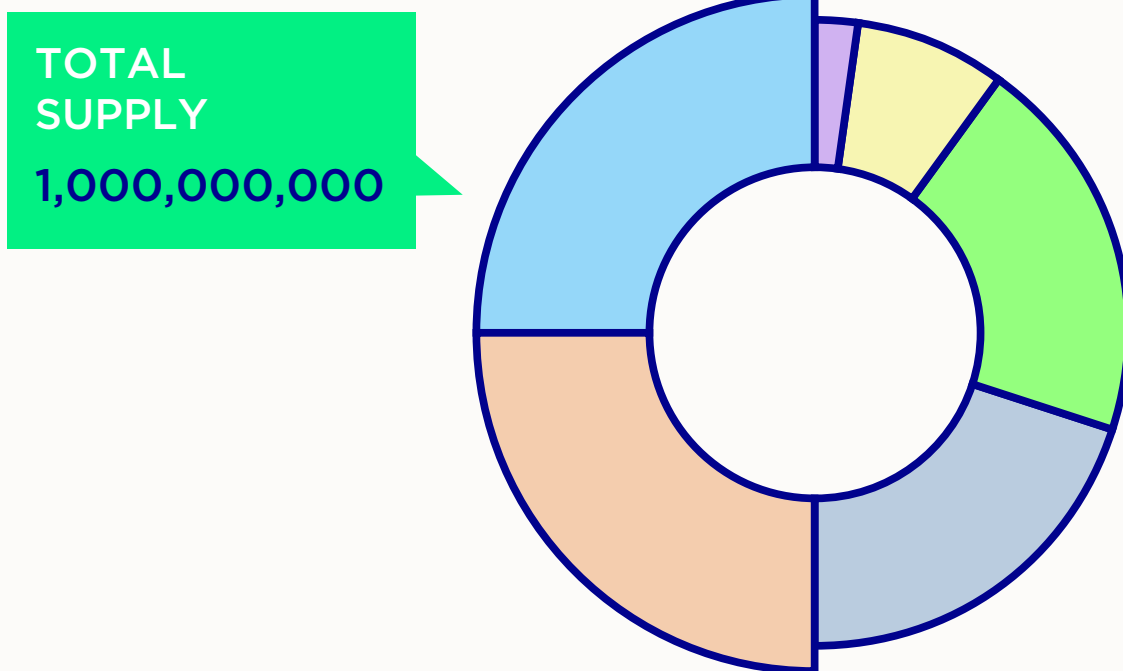
General Information

Token Name	TTC
Based on	Ethereum(ETH)
Standard	ERC-20
Payment	Ether (ETH)

Pre-initial TTC token sale : 1ETH = 5,000TTC

Initial TTC token sale : 1ETH = 4,000TTC

Token Allocation



Token Sale



Rewarding Pool



Ecosystem Building



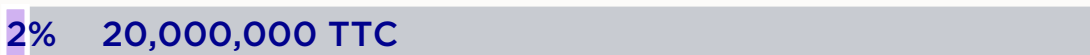
Foundation



Team

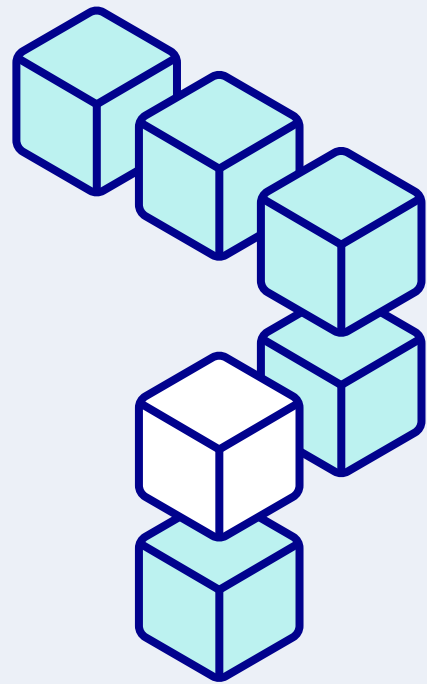


Old users & Bounty



07

Team



Core Members



Brian CHEONG
President & Founder

Founder & CEO @ tataUFO
Analyst @ SoftBank Ventures Korea
B.A in Economics, Peking University



Chase Chang
VP, Ecosystem

ex-COO @ Retrica
VP of Global Business Development @ LINE Pay
Head of Partnership @ LINE Thailand
B.S. in Electrical Engineering, University of
Wisconsin-Madison



Yixiao WANG
Product Director

Co-founder & Vice President @ HuYing Network
Technology Co., Ltd (Acquired),
Product Manager @ Baidu
B.S in Information Management and Information
System, Renmin University of China



Yuanyong Zhai
Technical Director

CTO @ several startups.
Senior Engineer/Project Manager @ Yonyou and
the Great Wall technology software company
Zhengzhou University, B.S. in Computer Science



He Zhang
Design Director

Design Director @ The Brand Union and Dongdao Brand Design & Management Red Dot Design Award, iF WORLD DESIGN, A Design Award, China Red Star Design Award and Design for Asia Awards winner
B.A in Visual Art and Design, Sichuan Fine Arts Institute



Jie Wu
Growth Director

Business Development @ Dianping
B.A in International Economics and Trade, Shanghai Ocean University



Peng Liu
Technical Lead

Associate Director @ Beijing Jietong Huasheng Technology
Senior Engineer @ LG Chinese bidding network and Beijing Bao desktop Electronic Technology Co.Ltd
M.S in Electrical Engineering, Dalarna University (Sweden)
B.S in Electrical Engineering and Automation, Tsinghua University



Xiangyang Wang
Technical Lead

Senior Engineer @ Samsung Communications Research Institute in Beijing
Senior Engineer @ LG Electronic China R&D Center
M.S. in Computer Science, Tsinghua University



Liang Zhang
Technical Lead

Senior engineer @ various startups
B.S. in Electrical Engineering, Shanxi Normal University



Yi Mo
Senior Product Manage

Social Platform Project Leader @ SOHU
M.S. and B.S. in Computer Science, Beihang University



Bingqing Chen
Senior Product Manager

Product Manager @ Renren, TCL and Yidianzu.
B.S. in Information Management and Information Systems, Peking University



Shihao Guo
Senior Product Manager

Senior Engineer @ tataUFO and Beijing North Information Technology Co.
B.S. in Computer Science, Henan University



Yunji Ma
Design Lead

Senior Designer @ Beijing Yak sat Network
Technology Co.,Ltd

B.A. in Graphic Design and Arts, Beijing Jiaotong
University,

Advisors

TBD

Investors

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Ameba Capital Group



LIGHTSPEED
CHINA PARTNERS

Lightspeed China Partners



SoftBank
Ventures Korea

SoftBank Ventures Korea



Korea Investment
Partners Co., Ltd.

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The Tokens subject of the Pre-Initial Token Sale and Initial Token Sale are proprietary cryptographic tokens issued and sold by an affiliate ("Issuer") TTC

by TTC Foundation or its directors, executive officers or employees acting on behalf of TTC Foundation (as the case may be), that are not statements of historical fact, constitute "forward-looking statements". Some of these statements can be identified by forward-looking terms such as "aim", "target", "anticipate", "believe", "could", "estimate", "expect", "if", "intend", "may", "plan", "possible", "probable", "project", "should", "would", "will" or other similar terms. However, these terms are not the exclusive means of identifying forward-looking statements. All statements regarding TTC Foundation's business strategies, plans and prospects and the future prospects of the industry which TTC Foundation is in are forward-looking statements. These forward-looking statements, including but not limited to statements as to TTC Foundation's prospects, future plans, other expected industry trends and other matters discussed in this White Paper regarding TTC Foundation are matters that are not historic facts, but only predictions.

These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause the actual future results, performance or achievements of TTC Foundation to be materially different from any future results, performance or achievements expected, expressed or implied by such forward-looking statements. These factors include, amongst others:

- (a) changes in political, social, economic and stock or cryptocurrency market conditions, and the regulatory environment in the countries in which TTC Foundation conducts its business and operations;
- (b) the risk that TTC Foundation may be unable to execute or implement its business strategies and future plans;
- (c) changes in interest rates and exchange rates of fiat currencies and cryptocurrencies;
- (d) changes in the anticipated growth strategies and expected internal growth of TTC Foundation and the TTC Protocol;
- (e) changes in the availability and fees payable to TTC Foundation in connection with its businesses and operations or on the TTC Protocol;
- (f) changes in the availability and salaries of employees who are required by TTC Foundation to operate their respective businesses and operations;
- (g) changes in preferences of users of the TTC Protocol;

- (h) changes in competitive conditions under which TTC Foundation operates, and the ability of TTC Foundation to compete under such conditions;
- (i) changes in the future capital needs of TTC Foundation and the availability of financing and capital to fund such needs;
- (j) war or acts of international or domestic terrorism;
- (k) occurrences of catastrophic events, natural disasters and acts of God that affect the businesses and/or operations of TTC Foundation;
- (l) other factors beyond the control of TTC Foundation; and
- (m) any risk and uncertainties associated with TTC Foundation and its business and operations, the Tokens, the TTC Protocol and the Token Sale.

All forward-looking statements made by or attributable to TTC Foundation or persons acting on behalf of TTC Foundation are expressly qualified in their entirety by such factors. Given that risks and uncertainties that may cause the actual future results, performance or achievements of TTC Foundation to be materially different from that expected, expressed or implied by the forward-looking statements in this White Paper, undue reliance must not be placed on these statements. These forward-looking statements are applicable only as of the date of this White Paper.

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TERMS USED

To facilitate a better understanding of the Tokens being offered for purchase by TTC Foundation, and the businesses and operations of TTC Foundation, certain technical terms and abbreviations, as well as, in certain instances, their descriptions, have been used in this White Paper. These descriptions and assigned meanings should not be treated as being definitive of their meanings and may not correspond to standard industry meanings or usage.

Words importing the singular shall, where applicable, include the plural and vice versa and words importing the masculine gender shall, where applicable, include the feminine and neuter genders and vice versa. References to persons shall include corporations.

NO ADVICE

No information in this White Paper should be considered to be business, legal, financial or tax advice regarding TTC Foundation, the Tokens, the TTC Protocol, or the Token Sale. You should consult your own legal, financial, tax or other professional advisor regarding TTC Foundation and its business and operations, the Tokens, the TTC Protocol, and the Token Sale. You should be aware that you may be required to bear the financial risk of any exchange for of Tokens for an indefinite period of time.

None of the advisors engaged by us has made or purports to make any statement in this White Paper or any statement upon which a statement in this White Paper is based and each of them makes no representation regarding any state-

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THE TOKEN SALE (AS REFERRED TO HEREIN) IS INTENDED FOR, MADE TO OR DIRECTED AT ONLY PERSONS WHO ARE NOT EXCLUDED PERSONS

No regulatory authority has examined or approved of any of the information set out in this White Paper. No such action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction. The publication, distribution or dissemination of this White Paper does not imply that the applicable laws, regulatory requirements or rules have been complied with.

RISKS AND UNCERTAINTIES

Prospective purchasers of Tokens should carefully consider and evaluate all risks and uncertainties associated with the Issuer and TTC Foundation, and their business and operations, the Tokens, the TTC Protocol, and the Token Sale, and all information set out in this White Paper and the Token Sale Terms prior to any purchase of the Tokens. If any of such risks and uncertainties develops into actual events, the business, financial condition, results of operations and prospects of the Issuer could be materially and adversely affected. In such cases, you may lose all or part of the value of the Tokens.

Please read the following risks and warnings before deciding to purchase Tokens. It should be noted the following list of risks and warnings is not exhaustive. Accordingly, prospective purchasers should not place undue reliance on these statements.

1. RISKS RELATING TO PARTICIPATION IN THE TOKEN SALE

The Issuer may be forced to cease operations

It is possible that, due to any number of reasons, including, but not limited to, an unfavourable fluctuation in the value of cryptographic and fiat currencies, the inability of the Issuer to establish the Project or the Token's utility, the failure of commercial relationships, or intellectual property ownership challenges, the Issuer may no longer be viable to operate and the Issuer may dissolve or take actions that result in a dissolution of the Issuer.

There is no prior market for the Tokens and the Token Sale may not result in an active or liquid market for the Tokens

Prior to the Token Sale, there has been no public market for the Tokens. In the event that the Tokens are traded on a cryptocurrency exchange, there is

no assurance that an active or liquid trading market for the Tokens will develop or if developed, be sustained after the Tokens have been made available for trading on such cryptocurrency exchange. There is also no assurance that the market price of the Tokens will not decline below the purchase price of the Tokens (the "Purchase Price"). The Purchase Price may not be indicative of the market price of the Tokens after they have been made available for trading on a cryptocurrency exchange.

A Token is not a currency issued by any central bank or national, supra-national or quasi-national organisation, nor is it backed by any hard assets or other credit. The Issuer is not responsible for nor does it pursue the circulation and trading of Tokens on the market. Trading of Tokens merely depends on the consensus on its value between the relevant market participants, and no one is obliged to purchase any Token from any holder of the Token, including the purchasers, nor does anyone guarantee the liquidity or market price of Tokens to any extent at any time. Accordingly, the Issuer cannot ensure that there will be any demand or market for Tokens, or that the Purchase Price is indicative of the market price of Tokens after they have been made available for trading on a cryptocurrency exchange.

Future sales of the Tokens could materially and adversely affect the market price of Tokens

Any future sale of the Tokens (which were not available for sale in the Token Sale) would increase the supply of Tokens in the market and this may result in a downward price pressure on the Token. The sale or distribution of a significant number of Tokens outside of the Token Sale, or the perception that such further sales or issuance may occur, could adversely affect the trading price of the Tokens.

Negative publicity may materially and adversely affect the price of the Tokens

Negative publicity involving the Issuer, the TTC Protocol, the Tokens or any of the key personnel of the Issuer may materially and adversely affect the market perception or market price of the Tokens, whether or not such negative publicity is justified.

There is no assurance of any success of the TTC Protocol

The value of, and demand for, the Tokens hinges heavily on the performance of the TTC Protocol. There is no assurance that the TTC Protocol will gain

traction after its launch and achieve any commercial success.

The TTC Protocol has not been fully developed, finalised and integrated and is subject to further changes, updates and adjustments prior to its launch. Such changes may result in unexpected and unforeseen effects on its projected appeal to users, and hence impact its success.

While the Issuer has made every effort to provide a realistic estimate, there is also no assurance that the cryptocurrencies raised in the Token Sale will be sufficient for the development and integration of the TTC Protocol. For the foregoing or any other reason, the development and integration of the TTC Protocol may not be completed and there is no assurance that it will be launched at all. As such, distributed Tokens may hold little worth or value, and this would impact its trading price.

If and when the TTC Protocol is fully developed, there is no assurance it will be widely adopted or utilised by its target users.

The trading price of the Tokens may fluctuate following the Token Sale

The prices of cryptographic tokens in general tend to be relatively volatile, and can fluctuate significantly over short periods of time. The demand for, and correspondingly the market price of, the Tokens may fluctuate significantly and rapidly in response to, among others, the following factors, some of which are beyond the control of the Issuer:

- (a) new technical innovations;
- (b) analysts' speculations, recommendations, perceptions or estimates of the Token's market price or the Issuer's financial and business performance;
- (c) changes in market valuations and token prices of entities with operations similar to that of the Issuer that may be made available for sale and purchase on the same cryptocurrency exchanges as the Tokens;
- (d) announcements by the Issuer of significant events, for example partnerships, sponsorships, new product developments;
- (e) fluctuations in market prices and trading volume of cryptocurrencies on cryptocurrency exchanges;

Sale is successful, the Issuer will not be able to receive the funds raised and the Issuer will not be able to utilise such funds for the development of the TTC Protocol, and the implementation of the TTC Protocol might be temporarily or permanently curtailed. As such, distributed Tokens may hold little worth or value, and this would impact its trading price.

The loss or compromise of information relating to your wallet may affect your access and possession of the Tokens

Your access to the Tokens in a cryptocurrency wallet (“Wallet”) depends on, among other things, the safeguards to the information to such Wallet, including but not limited to the user account information, address, private key, and password. In the event that any of the foregoing is lost or compromised, your access to the Wallet may be curtailed and thereby adversely affecting your access and possession to the Tokens, including such Tokens being unrecoverable and permanently lost.

The Wallet or Wallet service provider may not be technically compatible with the Tokens

The Wallet or Wallet service provider may not be technically compatible with the Tokens which may result in the delivery of Tokens being unsuccessful or affect your access to such Tokens.

3. RISKS RELATING TO TTC FOUNDATION

The TTC Protocol is intended to be operated and maintained by TTC Foundation. Any events or circumstances which adversely affect TTC Foundation may have a corresponding adverse effect on the TTC Protocol if such events or circumstances affect TTC Foundation’s ability to maintain the TTC Protocol. This would correspondingly have an impact on the trading price of the Tokens.

TTC Foundation may be materially and adversely affected if it fails to effectively manage its operations as its business develops and evolves, which would have a direct impact on its ability to maintain the TTC Protocol and consequently the trading price of the Tokens.

The financial technology and cryptocurrency industries and the markets in which TTC Foundation competes have grown rapidly and continue to grow rapidly and evolve in response to new technological advances, changing business models and other factors. As a result of this constantly changing envi-

ronment, TTC Foundation may face operational difficulties in adjusting to the changes, and the sustainability of TTC Foundation will depend on its ability to manage its operations, adapt to technological advances and market trends and ensure that it hires qualified and competent employees, and provide proper training for its personnel.

As its business evolves, TTC Foundation must also expand and adapt its operational infrastructure. TTC Foundation's business relies on its blockchain-based software systems, cryptocurrency wallets or other related token storage mechanisms, blockchain technology and smart contract technology, and to manage technical support infrastructure for the TTC Protocol effectively, TTC Foundation will need to continue to upgrade and improve its data systems and other operational systems, procedures and controls. These upgrades and improvements will require a dedication of resources, are likely to be complex and increasingly rely on hosted computer services from third parties that TTC Foundation does not control. If TTC Foundation is unable to adapt its systems and organisation in a timely, efficient and cost-effective manner to accommodate changing circumstances, its business, financial condition and results of operations may be adversely affected. If the third parties whom TTC Foundation relies on are subject to a security breach or otherwise suffer disruptions that impact the services TTC Foundation utilises, the integrity and availability of its internal information could be compromised, which may consequently cause the loss of confidential or proprietary information, and economic loss.

The loss of financial, labour or other resources, and any other adverse effect on TTC Foundation's business, financial condition and operations, would have a direct adverse effect on TTC Foundation's ability to maintain the TTC Protocol. As the TTC Protocol is the main product to which the Tokens relate, this may adversely impact the trading price of the Tokens.

There may be weaknesses, vulnerabilities or bugs in the TTC smart contract

TTC Foundation will make reasonable efforts to ensure that the smart contracts underlying the Tokens are audited, tested and approved by technical experts. However, as smart contract technology is still in its early stage of development and its application of experimental nature carries significant operation, technological, financial, regulatory and reputational risks, there are inherent risks that such smart contracts could contain weaknesses, vulnerabilities or bugs.

Purchasers of Tokens should understand and accept that there are no warran-

ties that Tokens are fit for a particular purpose or do not contain any weaknesses, vulnerabilities or bugs which would cause loss in their worth or value. In the event that any of the aforementioned risks materialises, TTC Foundation's business strategies, results of operations and prospects may also be adversely affected.

TTC Foundation may experience system failures, unplanned interruptions in its network or services, hardware or software defects, security breaches or other causes that could adversely affect TTC Foundation's infrastructure network, and/or the TTC Protocol

TTC Foundation is unable to anticipate when there would be occurrences of hacks, cyber-attacks, mining attacks (including but not limited to double-spend attacks, majority mining power attacks and "selfish-mining" attacks), distributed denials of service or errors, vulnerabilities or defects in the TTC Protocol, the Tokens, the Receiving Address, the Wallet or any technology (including but not limited to smart contract technology) on which TTC Foundation, the TTC Protocol, the Tokens, the Receiving Address, and the Wallet relies or on the TTC blockchain or any other blockchain. Such events may include, for example, flaws in programming or source code leading to exploitation or abuse thereof. TTC Foundation may not be able to detect such hacks, mining attacks (including but not limited to double-spend attacks, majority mining power attacks and "selfish-mining" attacks), cyber-attacks, distributed denials of service errors vulnerabilities or defects in a timely manner, and may not have sufficient resources to efficiently cope with multiple service incidents happening simultaneously or in rapid succession.

TTC Foundation's network or services, which would include the TTC Protocol, could be disrupted by numerous events, including natural disasters, equipment breakdown, network connectivity downtime, power losses, or even intentional disruptions of its services, such as disruptions caused by software viruses or attacks by unauthorised users, some of which are beyond TTC Foundation's control. Although TTC Foundation has taken steps against malicious attacks on its appliances or its infrastructure, which are critical for the maintenance of the TTC Protocol and its other services, there can be no assurance that cyber-attacks, such as distributed denials of service, will not be attempted in the future, and that any of TTC Foundation's enhanced security measures will be effective. TTC Foundation may be prone to attacks on its infrastructure intended to steal information about its technology, financial data or user information or take other actions that would be damaging to TTC Foundation and users of the TTC Protocol. Any significant breach of TTC Foundation's security measures or other disruptions resulting in a compromise of

the usability, stability and security of TTC Foundation's network or services (including the TTC Protocol) may adversely affect the trading price of the Tokens.

We are dependent in part on the location and data centre facilities of third parties

TTC Foundation's infrastructure network is in part established through servers that which it owns and houses at the location facilities of third parties, and servers that it rents at data centre facilities of third parties. If TTC Foundation is unable to renew its data facility lease on commercially reasonable terms or at all, TTC Foundation may be required to transfer its servers to a new data centre facility, and may incur significant costs and possible service interruption in connection with the relocation. These facilities are also vulnerable to damage or interruption from, among others, natural disasters, arson, terrorist attacks, power losses, and telecommunication failures. Additionally, the third party providers of such facilities may suffer a breach of security as a result of third party action, employee error, malfeasance or otherwise, and a third party may obtain unauthorised access to the data in such servers. As techniques used to obtain unauthorised access to, or to sabotage systems change frequently and generally are not recognised until launched against a target, TTC Foundation and the providers of such facilities may be unable to anticipate these techniques or to implement adequate preventive measures. Any such security breaches or damages which occur which impact upon TTC Foundation's infrastructure network and/or the TTC Protocol may adversely impact the price of the Tokens.

General global market and economic conditions may have an adverse impact on TTC Foundation's operating performance, results of operations and cash flows

TTC Foundation has been and could continue to be affected by general global economic and market conditions. Challenging economic conditions worldwide have from time to time, contributed, and may continue to contribute, to slow-downs in the information technology industry at large. Weakness in the economy could have a negative effect on TTC Foundation's business, operations and financial condition, including decreases in revenue and operating cash flows. Additionally, in a down-cycle economic environment, TTC Foundation may experience the negative effects of increased competitive pricing pressure and a slowdown in commerce and usage of the TTC Protocol. Suppliers on which TTC Foundation relies for servers, bandwidth, location and other services could also be negatively impacted by economic conditions that, in

turn, could have a negative impact on TTC Foundation's operations or expenses. There can be no assurance, therefore, that current economic conditions or worsening economic conditions or a prolonged or recurring recession will not have a significant adverse impact on TTC Foundation's business, financial condition and results of operations and hence the TTC Protocol, which would correspondingly impact the trading price of the Tokens.

TTC Foundation or the Tokens may be affected by newly implemented regulations

Cryptocurrency trading is generally unregulated worldwide, but numerous regulatory authorities across jurisdictions have been outspoken about considering the implementation of regulatory regimes which govern cryptocurrency or cryptocurrency markets. TTC Foundation or the Tokens may be affected by newly implemented regulations relating to cryptocurrencies or cryptocurrency markets, including having to take measures to comply with such regulations, or having to deal with queries, notices, requests or enforcement actions by regulatory authorities, which may come at a substantial cost and may also require substantial modifications to the TTC Protocol. This may impact the appeal of the TTC Protocol for users and result in decreased usage of the TTC Protocol. Further, should the costs (financial or otherwise) of complying with such newly implemented regulations exceed a certain threshold, maintaining the TTC Protocol may no longer be commercially viable and TTC Foundation may opt to discontinue the TTC Protocol and/or the Tokens. Further, it is difficult to predict how or whether governments or regulatory authorities may implement any changes to laws and regulations affecting distributed ledger technology and its applications, including the TTC Protocol and the Tokens. TTC Foundation may also have to cease operations in a jurisdiction that makes it illegal to operate in such jurisdiction, or make it commercially unviable or undesirable to obtain the necessary regulatory approval(s) to operate in such jurisdiction. In scenarios such as the foregoing, the trading price of Tokens will be adversely affected or Tokens may cease to be traded.

The regulatory regime governing blockchain technologies, cryptocurrencies, tokens, and token offerings such as the Token Sale, the TTC Protocol, and the Tokens is uncertain, and regulations or policies may materially adversely affect the development of the TTC Protocol and the utility of the Tokens

Regulation of tokens (including the Tokens) and token offerings such as the Token Sale, cryptocurrencies, blockchain technologies, and cryptocurrency exchanges currently is undeveloped and likely to rapidly evolve, vary signifi-

cantly among international, federal, state and local jurisdictions, and is subject to significant uncertainty. Various legislative and executive bodies in Singapore and other countries may in the future, adopt laws, regulations, guidance, or other actions, which may severely impact the development and growth of the TTC Protocol and the adoption and utility of the Tokens. Failure by TTC Foundation or users of the TTC Protocol to comply with any laws, rules and regulations, some of which may not exist yet or are subject to interpretation and may be subject to change, could result in a variety of adverse consequences, including civil penalties and fines.

Blockchain networks also face an uncertain regulatory landscape in many foreign jurisdictions such as the European Union, the PRC, South Korea, and Russia. Various foreign jurisdictions may, in the near future, adopt laws, regulations or directives that affect the TTC Protocol. Such laws, regulations or directives may directly and negatively impact TTC Foundation's business. The effect of any future regulatory change is impossible to predict, but such change could be substantial and materially adverse to the development and growth of the TTC Protocol and the adoption and utility of the Tokens.

New or changing laws and regulations or interpretations of existing laws and regulations may materially and adversely impact the value of the currency in which the Tokens may be sold, the value of the distributions that may be made by TTC Foundation, the liquidity of the Tokens, the ability to access marketplaces or exchanges on which to trade the Tokens, and the structure, rights and transferability of Tokens.

Tokens holders will have no control on TTC Foundation

The holders of Tokens are not and will not be entitled, to vote or receive dividends or be deemed the holder of capital stock of the issuer for any purpose, nor will anything be construed to confer on the purchaser any of the rights of a stockholder of TTC Foundation or any right to vote for the election of directors or upon any matter submitted to stockholders at any meeting thereof, or to give or withhold consent to any corporate action or to receive notice of meetings, or to receive subscription rights or otherwise.

The purchaser may lack information for monitoring their investment

The purchaser may not be able to obtain all information it would want regarding TTC Foundation, the Tokens, or the TTC Protocol, on a timely basis or at all. It is possible that the purchaser may not be aware on a timely basis of material adverse changes that have occurred. Information in relation to the

development of Tokens may also be highly technical by nature. As a result of these difficulties, as well as other uncertainties, the purchaser may not have accurate or accessible information about the TTC Protocol.

There may be risks relating to acts of God, natural disasters, wars, terrorist attacks, riots, civil commotions widespread communicable diseases and other force majeure events beyond the control of TTC Foundation

The Token Sale and the performance of TTC Foundation's activities may be interrupted, suspended or delayed due to acts of God, natural disasters, wars, terrorist attacks, riots, civil commotions, widespread communicable diseases and other force majeure events beyond the control of TTC Foundation. Such events could also lead to uncertainty in the economic outlook of global markets and there is no assurance that such markets will not be affected, or that recovery from the global financial crisis would continue. In such events, TTC Foundation's business strategies, results of operations and prospects may be materially and adversely affected. Further, if an outbreak of such infectious or communicable diseases occurs in any of the countries in which TTC Foundation, the developers, data providers or data consumers have operations in the future, market sentiment could be adversely affected and this may have a negative impact on the TTC Protocol and community.

There may be unanticipated risks arising from the Tokens

Cryptographic tokens such as the Tokens are a relatively new and dynamic technology. In addition to the risks included in this Annex, there are other risks associated with your purchase, holding and use of the Tokens, including those that TTC Foundation cannot anticipate. Such risks may further materialise as unanticipated variations or combinations of the risks discussed hereto.