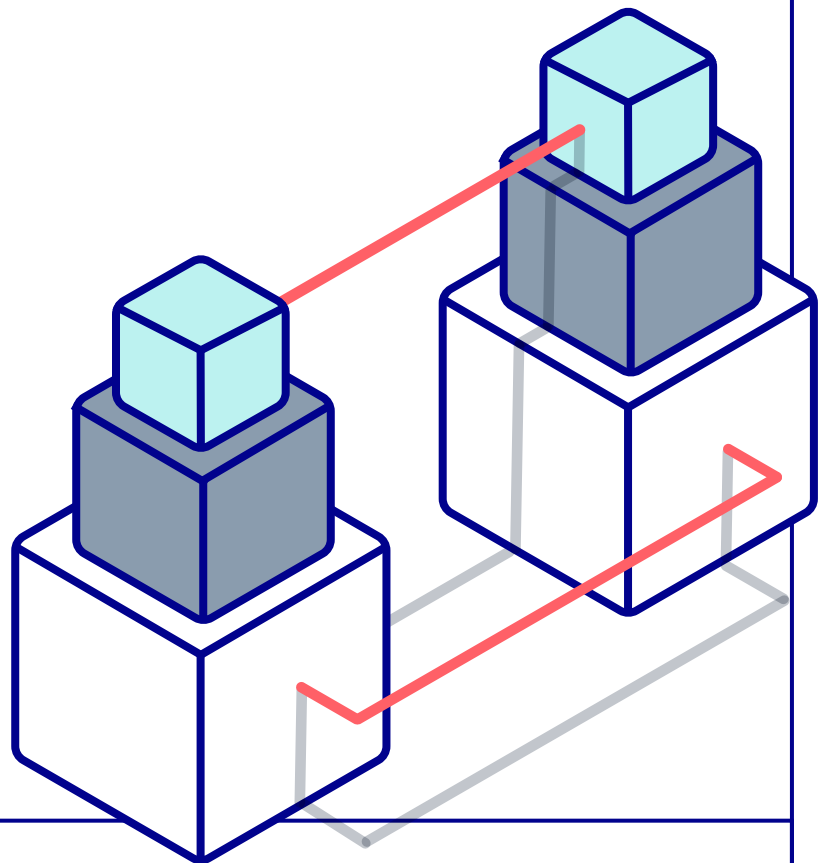




TTC 프로토콜:

탈중앙화 및 인센티브 기반 소셜 네트워크



v0.9

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요약

오늘날 대부분의 소셜 네트워크는 해당 플랫폼에서 광고를 표시하는 대가로 최종 사용자에게 서비스를 제공하는 중앙 집중식 구조에서 운영됩니다. 이러한 대가성 교환은 관심 경제의 근간을 이룹니다.

TTC는 차세대 소셜 플랫폼을 위한 탈중앙화된 토큰 인센티브 기반 소셜 네트워크 프로토콜입니다. TTC는 완벽히 탈중앙화된 플랫폼에서 운영되어 완전히 새로운 소셜 경험을 제공하며, 참여하는 개개인이 보람차고 역동적인 새로운 사용자 경험을 누릴 수 있습니다.

또한, TTC는 블록체인 기반 암호화폐를 이용하여 TTC라고 불리는 토큰 형태의 암호화폐 인센티브를 제공합니다. 소셜 네트워크 사용자는 콘텐츠 제작 및 배포, 타 사용자와의 상호 작용에 대한 보상을 받습니다. TTC는 네트워크를 구축한 사용자에게 관심 경제 속의 금전적 가치를 돌려줍니다.

TTC의 토큰 기반 인센티브 메커니즘과 사용자 생성 콘텐츠 배포가 결합되어, 각 최종 사용자가 TTC 플랫폼 자체를 이끕니다. 최종 사용자의 수가 증가하면 플랫폼의 가치와 TTC 토큰의 금전적 가치가 증가합니다.

TTC 오픈 플랫폼의 첫 DAPP은 1,000만 이상의 총 사용자를 가진 소셜 네트워크 서비스인 tataUFO가 될 것입니다. tataUFO는 소셜 네트워크의 일반적인 병목 현상에서 벗어나고, 콘텐츠 배포를 탈중앙화하며, 블록체인을 이용하여 토큰화된 인센티브 메커니즘을 통해 개인 사용자에게 가치를 돌려주도록 최선을 다할 것입니다.

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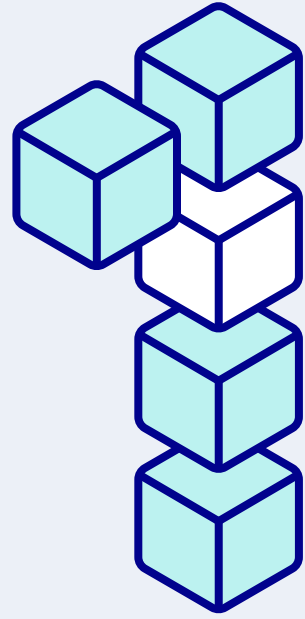
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White Paper Disclaimer

01 배경



소셜 네트워크의 탈중앙화

인류는 온라인에서 자신의 삶을 공유하고 서로 교류하며 커뮤니티를 형성하는 새로운 방법을 통해 모바일 통신 기술의 급속한 성장에 적응해왔습니다. 소셜 네트워크는 더 이상 기술적 현상으로만 볼 수 없습니다. Facebook, Instagram, Weibo와 같은 주요 소셜 플랫폼들은 사용자가 자신을 표현하고 생각을 소통하며 관계를 형성하는 방법을 근본적으로 변화시켰습니다.

소셜 네트워크 서비스가 점점 복잡해짐에 따라 사용자는 중앙 집중식 아키텍처로 인해 발생한 제약에 부딪치고 있습니다. 현재 사용자 생성 콘텐츠가 배포되는 방식은 플랫폼 자체가 결정합니다. 이와 같은 점이 반영된 동적 결과로 유료 콘텐츠가 장려되는 동시에, 사용자가 실제로 제작한 콘텐츠는 참여성과 가시성이 부족할 수밖에 없습니다. 또한, 사용자의 좋아요, 공유 및 기타 참여 유형으로 발생한 광고 수익이 이에 기여한 사용자가 아니라 플랫폼 제공자에게 주어지고 있습니다.

사람들이 이러한 역학 관계를 파악하지 못한 것이 아닙니다. 사용자의 인내심은 바닥나고 있으며, 오늘날의 사용자는 플랫폼이 아니라 참여자에게 인센티브가 제공되는 투명하게 공개된 방식의 차세대 탈중앙화 소셜 네트워크를 기대하고 있습니다. 이것이 바로 차세대 소셜 네트워크의 모습입니다.

중앙 집중식 체계에서 플랫폼이 콘텐츠 배포에 지배력을 행사한다는 점은 명확합니다. 광고를 통해 이득을 보는 측은 플랫폼입니다. 탈중앙화 체계에서는 어떤 콘텐츠가 볼 가치가 있는지를 사용자가 결정하고, 그 수익이 사용자에게 직접 전달됩니다.

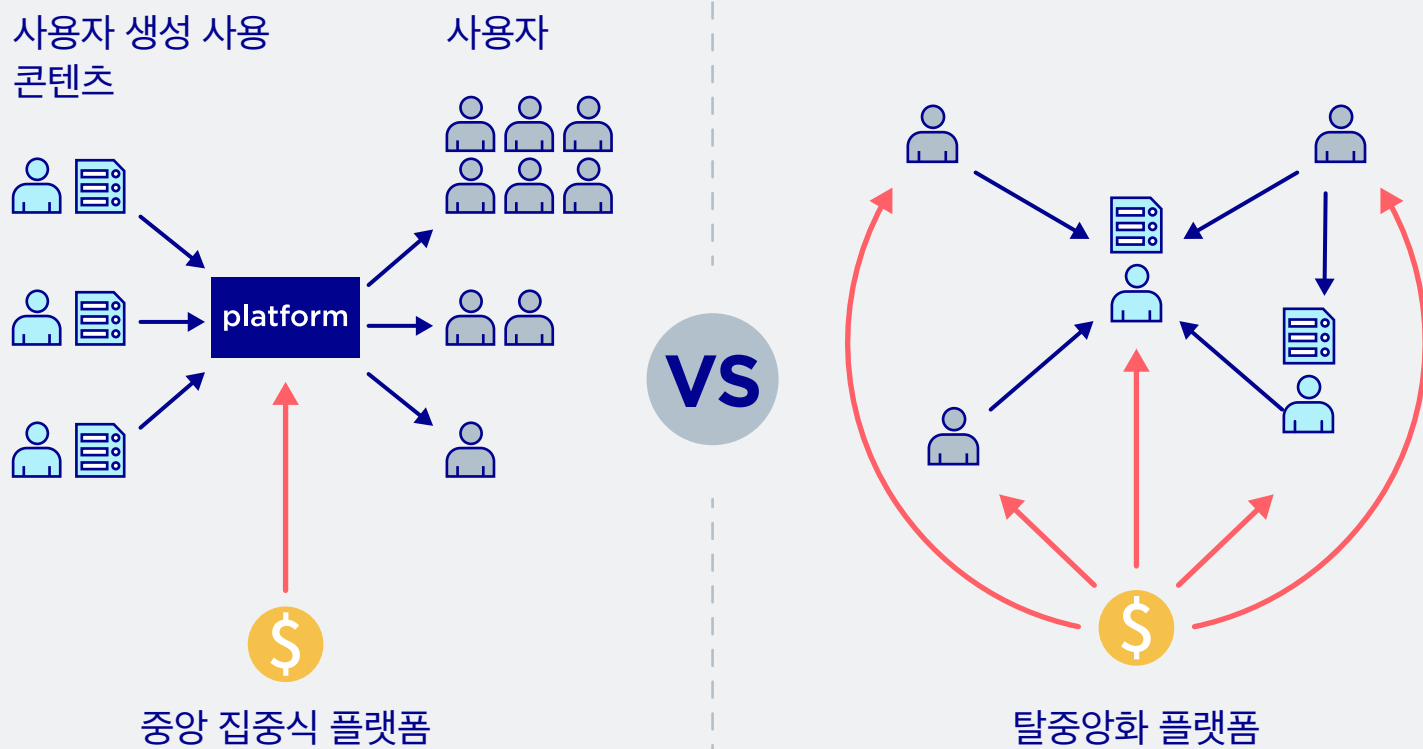


그림 1. 중앙 집중식 플랫폼 vs 탈중앙화 플랫폼

블록체인 기술

실질적으로 블록체인이란 여러 당사자 사이에 이루어진 트랜잭션을 기록하기 위해 사용하는 디지털 원장입니다. 탈중앙화되어 배포되고 공개되어 있으며, 모든 부속 정보를 전체 네트워크와 공모하여 변경하지 않고선 기록을 조작할 수 없는 블록체인은 구조적으로 안전하게 설계된 기술입니다. 이러한 점 덕에 블록체인은 이벤트 추적, 의료 정보, 금융 거래 및 기타 유형의 기록 관리에 적합합니다.

기술적 관점에서 블록체인은 “합의에 의한 탈중앙화 decentralized consensus”를 이룬 분산 컴퓨팅 시스템입니다. 이는 원장에 어떤 정보를 어떻게 추가할지 결정하는 중앙 권한이 없다는 것을 의미합니다. 블록체인 주변의 프로토콜이 네트워크상의 참여자들을 이끌어 새 정보를 추가하는 방식에 합의하도록 합니다. 참여자들이 서로를 신뢰할 수 없더라도 말입니다.

최근 블록체인 기술이 ID 관리, 트랜잭션 처리, 문서 출처 확인 및 공급망 분야의 급성장을 이끌었습니다. 블록체인이 우리의 일상에 녹아들기 시작한 것입니다.

2017년에 600개 이상의 블록체인 프로젝트가 초기 가상화폐 발행(ICO)을 시행했습니다. 2018년에는 1월 한 달에만 200개의 ICO 프로젝트가 있었습니다. 현재까지 전 세계적으로 6,000건 이상의 암호화폐 교환이 이루어졌습니다.

블록체인 기반 소셜네트워크

블록체인 기술이 자연스럽게 소셜 네트워크에 적용되는 데에는 여러 방법이 있습니다. 소셜 네트워크가 성장하려면 참여하는 사용자가 반드시 손쉽게 상호 작용할 수 있어야 합니다. 플랫폼상의 각 사용자가 네트워크의 노드(Node) 역할을 합니다. 사용자가 상호 작용하는 빈도와 개연성이 증가하는 만큼 노드의 밀도가 증가합니다. 이러한 점은 블록체인과 높은 호환성을 보입니다.

최근 몇 년간 블록체인 기반 콘텐츠 플랫폼이 대중의 관심을 모아왔습니다. 이러한 플랫폼으로는 고급 게시물을 제작하고 상호 작용하는 사용자에게 암호화폐를 보상으로 제공하는 탈중앙화 토큰 인센티브 지급식 플랫폼인 Steemit.com이 있습니다. 하지만 Steemit.com의 진입 장벽은 매우 높습니다. 플랫폼이 높은 수준의 전문성을 충족하는 자세한 게시물에만 보상을 제공하는 법규를 강요하여 평범한 블로거가 자신의 관심사, 의견과 지식을 공유하기에는 여전히 어려운 실정입니다. 그결과해당플랫폼에는Steem보상체계를잘이용할수있는특정 사용자 집단만 몰리게 되었습니다.

블록체인 기반 소셜 네트워크를 이용한 다른 실험적 시도는 서버를 사용하지 않는 메신저와 같은 커뮤니케이션 솔루션을 찾는 데에만 집중합니다. 소셜 네트워크에서 찾아볼 수 있는 콘텐츠 유형과 사용자 행동 전용으로 설계된 프로토콜 생성은 거의 아무도 시도하지 않았습니다. 사회적 공간의 잠재력을 고려해 볼 때, 블록체인과 소셜 네트워킹을 결합한 플랫폼이 등장할 것입니다.

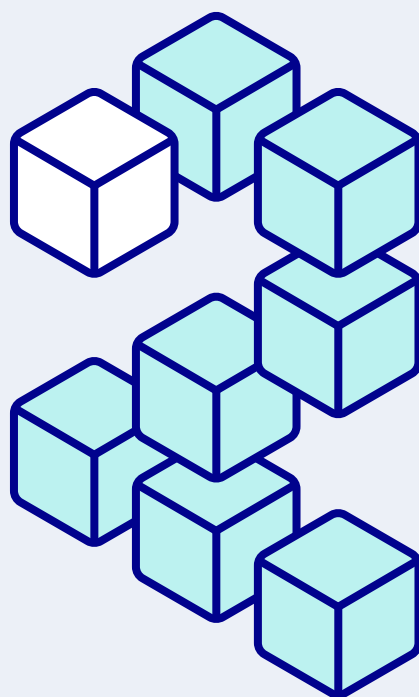
토큰 인센티브 지급식 소셜 네트워크

일부 사용자에게 암호화폐 토큰을 보상으로 지급하면 경제적 인센티브가 창출됩니다. 이러한 인센티브는 몇 가지 방법으로 소셜 네트워크의 구축과 성장을 효과적으로 돕습니다.

- **적극적인 사용자** 네트워크의 모든 사용자가 참여 활동이 중요하다는 공통된 믿음에 일조하는 이해관계자입니다. 자신의 참여 활동이 명확하고 공평하게 인식되고 그에 따른 보상이 지급되므로 사용자들이 적극적으로 참여할 것입니다.
- **건전한 분위기** 네트워크의 핵심 가치에 맞도록 제작된 콘텐츠에는 큰 보상이 제공됩니다. 이로 인해 사용자가 네트워크에 힘을 실어주는 콘텐츠를 제작하도록 장려하는 자발적인 순환 과정이 만들어집니다.
- **폭발적인 성장** 네트워크가 성장함에 따라 그 가치가 증가하고, 그로 인해 인센티브의 가치도 상승합니다. 이는 인센티브가 사용자에게 더욱 매력적으로 다가오도록 할 뿐만 아니라 네트워크에 대한 대중의 인식을 이끌어냅니다.

02

TTC 토큰



TTC 토큰

TTC는 스마트 컨트랙트용 운영 매체로서 발행된 블록체인 기반 범용 토큰입니다. 기존의 채굴 방식과는 다르게 TTC는 플랫폼에 대한 사용자의 기여 수준에 따라 발행됩니다. 이러한 점은 사용자가 적극적으로 기여 활동에 임하고 플랫폼에서 긍정적이고 일관적인 개인 이미지를 유지하도록 장려합니다.

광고주는 TTC의 광고 플랫폼을 통해 브랜드와 제품을 홍보할 수 있습니다. 기존의 중앙 집중식 플랫폼과는 다르게 광고 수익이 직접적으로 사용자에게 전달됩니다. 이는 광고주와 사용자 모두 이득 보는 관계를 조성합니다.

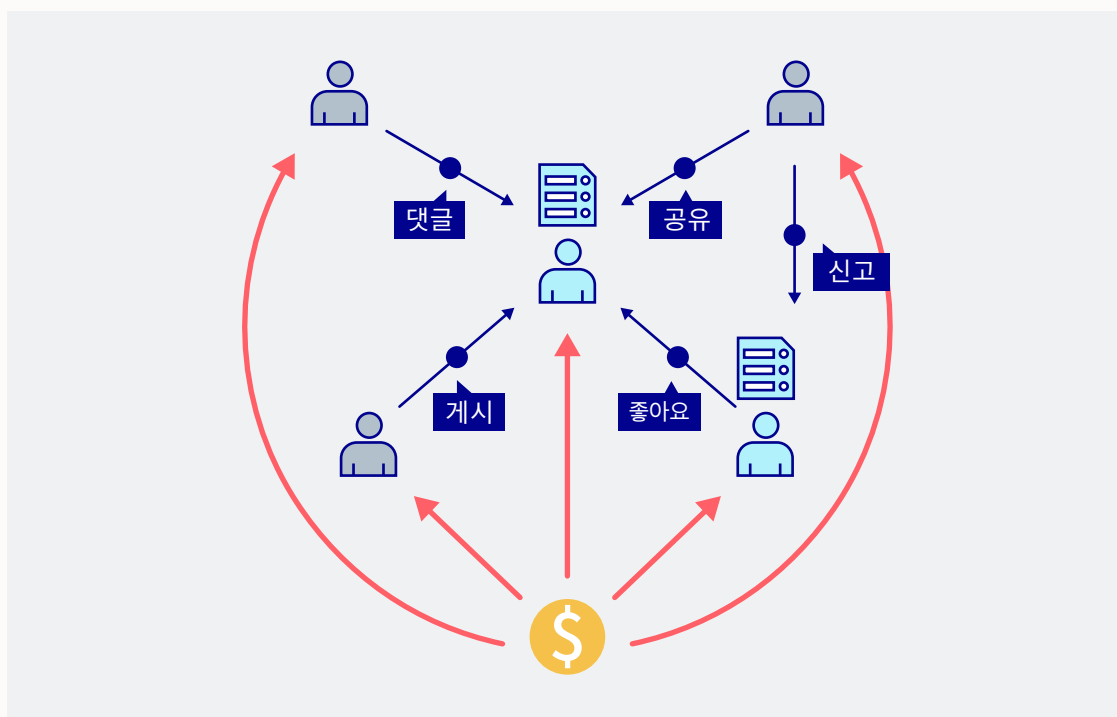


그림 2 사용자 행동과 인센티브의 가치 사슬 모형

TTC 오픈 네트워크의 첫 DAPP은 중국 내 1,000만이 넘는 유저를 가진 소셜네트워크 "tataUFO"입니다. 추후, 현존하는 소셜네트워크외에도 개발자들이 새롭게 개발한 소셜네트워크까지 모두 TTC오픈플랫폼에 조인할 수 있습니다. TTC는 소속된 모든 DAPP의 최종 사용자에게 사회 활동에 대한 경제적 보상을 제공합니다.

콘텐츠 기반 플랫폼과의 비교

	tataUFO	Steemit	Weibo	instagram
정체성	개인 생활 방식 공유	블로그	새 소식 + 마이크로 블로그	사진 공유
내용	개인사	전문 기사	폭넓은 정보	개인사
블록체인	예	예	아니요	아니요
콘텐츠 관리	사용자	사용자	플랫폼	플랫폼
콘텐츠 배포	탈중앙화	고집중식	중앙 집중식	중앙 집중식
거버넌스	탈중앙화	소수의 유명 사용자	플랫폼	플랫폼
보상 체계	있음	있음	소수의 유명 사용자	없음
광고 수혜자	사용자	없음	플랫폼	플랫폼

표 1. 탈중앙화 운영 및 콘텐츠 배포를 제공하여 더 많은 사용자에게 혜택을 주는 tataUFO

경제체제

플랫폼에 기여한 사용자에게 보상으로 매일 TTC 토큰이 배포되며, 이러한 토큰에는 세 가지 유형이 있습니다.

- **콘텐츠 보상** 고급 콘텐츠를 제작한 사용자와 좋아요, 댓글, 공유 및 신고 기능으로 콘텐츠와 상호 작용한 사용자에게 지급
- **평판 보상** 장기간 플랫폼에 대한 충성도를 보이고 지속적으로 고급 콘텐츠를 제작하며 사람들에게 인정받아 네트워크에 기여한 사용자에게 지급
- **광고 보상** 광고 시청, 테마별 캠페인 참여 또는 고객 설문조사와 같은 홍보 활동에 참여한 사용자에게 지급

콘텐츠 보상과 평판 보상 모두 하나의 풀에서 TTC의 스마트 컨트랙트에 따라 고정된 수의 토큰으로 발행됩니다. 광고 보상은 광고주가 플랫폼에 지급한 토큰에 의해 생성됩니다.

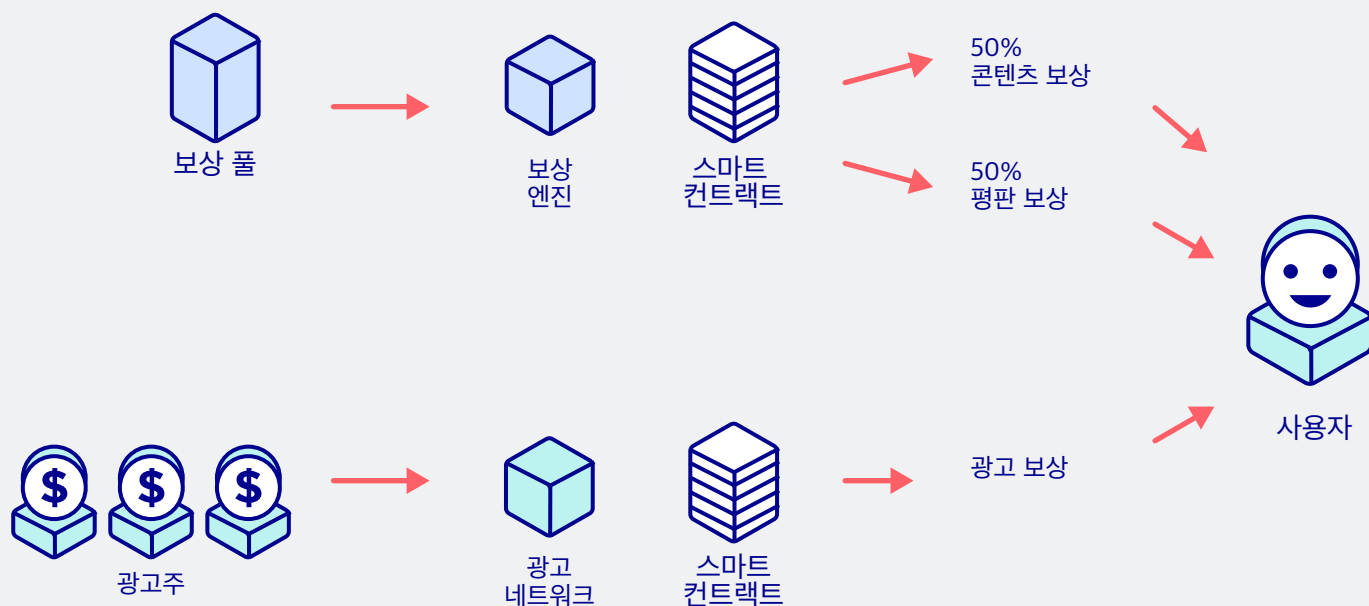


그림3. 발행된TTC풀 및 광고TTC풀 설명

콘텐츠보상

TTC 내 콘텐츠의 가치는 해당 콘텐츠와 상호 작용하는 사용자의 평판에 의해 결정됩니다. 사용자의 평판은 해당 사용자가 좋아요를 누르고 댓글을 남기거나 공유하고 신고할 때 콘텐츠의 가치에 영향을 미칩니다.

평판이 높은 사용자가 콘텐츠와 상호 작용할 경우, 해당 콘텐츠에는 더 높은 가치가 부여되고 더 많이 노출됩니다. 또한, 콘텐츠가 네트워크 외부에 노출되면 네트워크의 가치가 증가하므로, 다른 플랫폼에 공유된 콘텐츠에도 더 높은 가치가 부여됩니다.

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

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

더 높은 가치를 지닌 콘텐츠는 더욱 폭넓게 노출되고, 해당 콘텐츠를 제작한 사용자와 상호 작용한 사용자 모두에게 더 큰 TTC 보상이 주어집니다.

사용자가 여러 가지 방법으로 콘텐츠와 상호 작용하면(예: 좋아요 및 공유) 가장 높은 가중치가 적용된 양식만 콘텐츠 가치를 계산하는 데 적용됩니다. 각 상호 작용 양식이 추가되면 콘텐츠 가치에 1점이 추가됩니다. 예를 들어, 평판 점수가 12 점인 사용자가 좋아요를 누르고 댓글을 남긴 후 공유한 콘텐츠에는 14점이 할당 됩니다.

콘텐츠가 신고되면 신고한 사용자의 평판 포인트와 동일한 점수가 콘텐츠의 가치에서 차감됩니다. 또한 신고된 콘텐츠의 제작자가 다른 콘텐츠와 상호 작용할 경우 해당

상호 작용이 더 이상 가치를 추가하지 않습니다. 보고된 내용은 의도적인 부정행위, 실수 및 불분명한 사례를 판결하기 위해 감사위원회에서 평가합니다.

평판보상

평판은 사용자의 충성도, 제작한 콘텐츠의 품질, 팔로워 수, 신고된 콘텐츠 감사 참여 면에서 장기간에 걸친 기여도를 수치화한 값입니다.

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

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

평판은 사용자 등록 시 1에서 시작하며 최대 100까지 증가할 수 있습니다. 신규 사용자가 평판을 높이면 평판 값이 빠르게 증가하지만, 상한선에 가까워지기 시작하면 점차 증가 속도가 느려집니다.

- **재방문 가치** 플랫폼에 대한 사용자의 충성도를 반영합니다. 사용자가 플랫폼을 계속 재방문함에 따라 재방문 가치가 최대 20까지 점점 더 낮은 비율로 증가합니다.

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

- **콘텐츠 생성 가치** 콘텐츠 생성 가치는 사용자가 제작한 콘텐츠의 품질을 반영합니다. 사용자가 더 많은 콘텐츠를 제작함에 따라 콘텐츠 생성 가치가 최대 30 까지 점점 더 낮은 비율로 증가합니다.

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

- **팔로워 가치** 플랫폼상 사용자의 인기를 반영합니다. 사용자가 더 많은 팔로워를 확보함에 따라 팔로워 가치가 최대 30까지 점점 더 낮은 비율로 증가합니다.

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

- **감사 및 신고 가치** 플랫폼의 품질을 유지하기 위한 사용자의 기여도를 반영합니다. 신고된 콘텐츠는 플랫폼에서 선택된 사용자로 구성된 감사위원회에 전해집니다. 감사위원회 위원 중 절반이 신고자를 지지하는 평결을 내리면 신고에 성공합니다. 신고에 성공하면 신고자가 평판 보상을 받지만, 신고에 실패하면 신고자가 평판을 잃을 수도 있습니다. 최종 평결에 기여한 감사위원회 위원도 평판보너스를받습니다. 사용자가더많은신고및감사사례에참여할수록감사 및

신고 가치가 최대 20까지 점점 더 낮은 비율로 증가합니다.

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

광고보상

광고주는 일정 수의 TTC를 교환을 통해 획득하고, 이를 이용해 TTC의 광고 네트워크에 입찰합니다. 광고에 사용된 TTC 토큰은 광고를 보고 상호 작용한 사용자에게 직접 배포됩니다. 플랫폼 자체는 광고 네트워크 구축에 대한 유지관리 비용을 충당하기 위해 소액의 거래 수수료를 징수합니다.

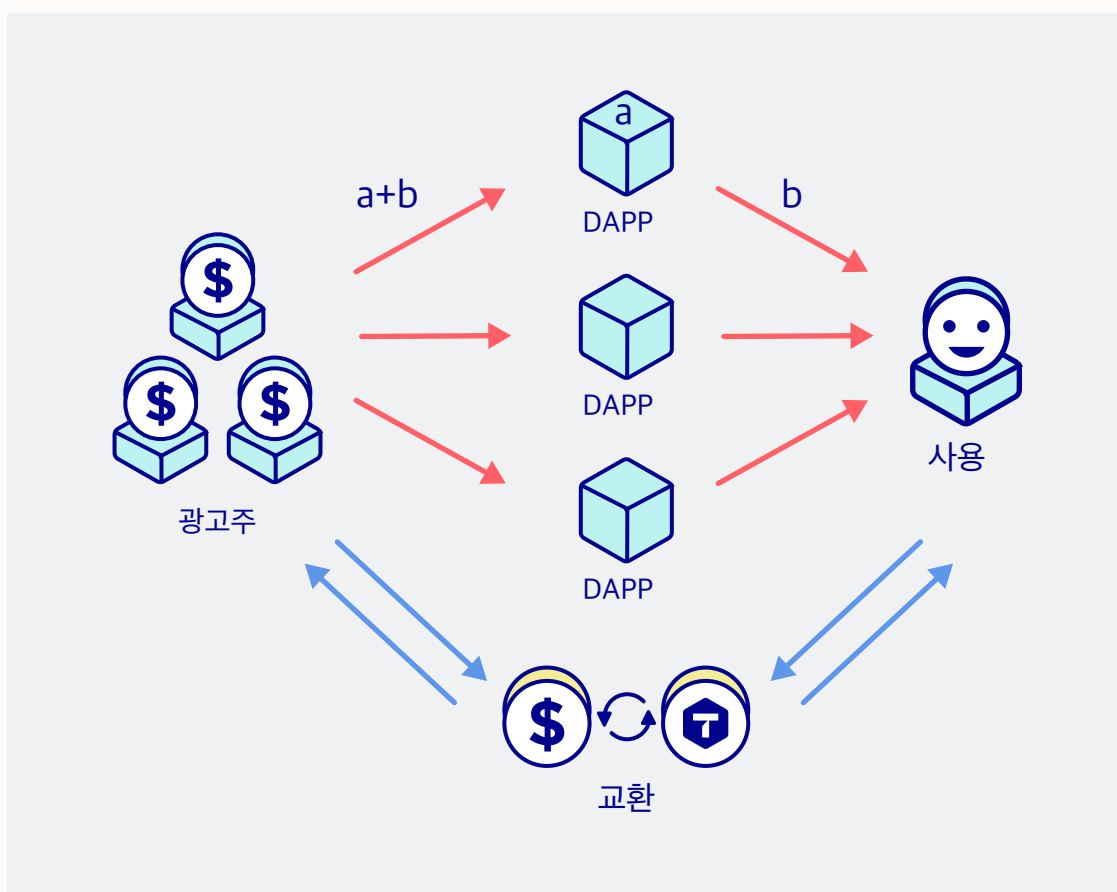


그림 4. 금전적 가치를 사용자에게 돌려주는 TTC

- 홍보 캠페인

광고주가 사용자에게 캠페인 지시를 따라 콘텐츠를 제작하도록 요청하는 캠페인을 설정합니다. 캠페인에 맞는 콘텐츠를 제작한 사용자는 다른 사용자가 제작된 콘텐츠와 상호작용하는 정도에 따라 보상을 받습니다.



- 디스플레이 광고

사용자가 광고 시청 여부를 선택합니다. 광고 게재를 위해 지불된 TTC토큰은 해당 광고를 시청한 사용자에게 직접 전 달됩니다



- 고객 설문 조사

광고주가 고객 설문 조사를 작성할 사용자 그룹을 선택합니다. 설문 조사에 참여하는 사용자는 TTC 보상을 받습니다.



보상엔진

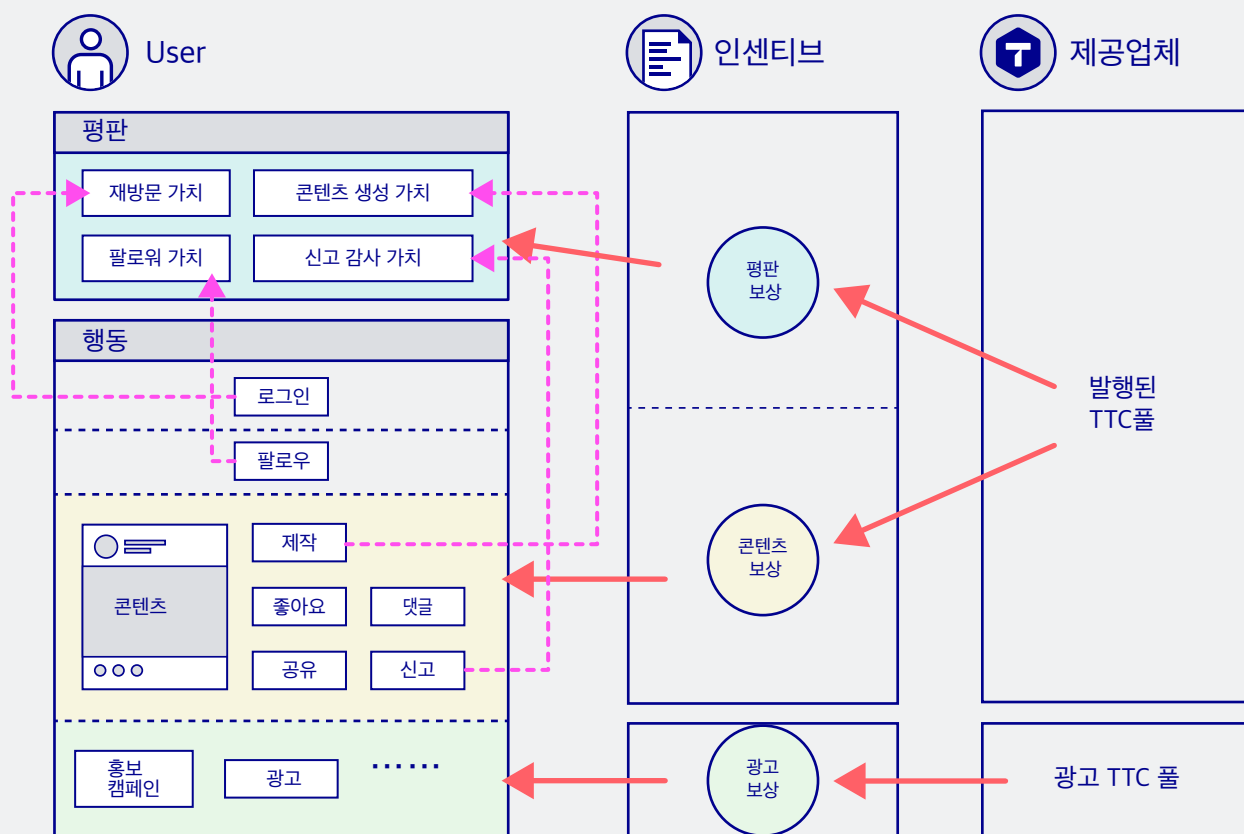


그림 5. 사용자 행동과 인센티브의 가치 사슬 모형

TTC 토큰은 매일 24:00(GST)에 발행됩니다. 발행되는 보상 풀은 스마트 컨트랙트에 의해 미리 결정되며, 콘텐츠 보상과 평판 보상이 각기 풀의 50%를 차지합니다.

- **콘텐츠 보상**

- 콘텐츠 보상은 콘텐츠의 계산된 가치에 따라 배포됩니다.
- 가치 계산 주기는 24시간이며, 이는 콘텐츠 생성 후 24시간 내로 발생하는 상호 작용만이 콘텐츠의 가치에 영향을 미친다는 것을 의미합니다. 첫 24시간 이후의 상호 작용은 콘텐츠 가치에 영향을 주지 않습니다. 콘텐츠 보상은 콘텐츠의 24시간 계산 주기가 종료되는 날의 24:00에 배포됩니다.
- 콘텐츠 가치는 콘텐츠 제작자와 해당 콘텐츠와 상호 작용한 사용자에게 분배됩니다. 초기 비율은 제작자가 61.8%를 차지하고 콘텐츠와 상호 작용하는 사용자가 38.2%를 차지하는 황금 비율로 나뉩니다.
- 콘텐츠와 상호 작용하는 사용자는 피보나치 수열에 따라 보상을 받습니다. 예를 들어, 콘텐츠와 상호 작용하는 첫 5명의 사용자는 각기 8/19, 5/19, 3/19, 2/19, 1/19 비율로 보상을 공유합니다.

- **평판 보상** T평판 보상은 정확히 지급일 하루 전 평판에 따라 플랫폼의 각 사용자에게 분배됩니다.

- **광고 보상** 사용자는 광고와 상호 작용하여 토큰을 추가로 획득할 수 있습니다. 이러한 토큰은 광고주가 플랫폼에 지급한 토큰입니다.

콘텐츠노출

콘텐츠가 사용자에게 도달하는 방법에는 몇 가지가 있습니다. 네트워크에 의해 가치 있는 콘텐츠로 간주된 콘텐츠와 사용자의 관심사에 관련된 콘텐츠가 더 많이 노출됩니다. 다른 사람과 공감하는 콘텐츠를 발견한 사용자에게도 더 큰 보상이 주어지며, 사용자가 고품질 콘텐츠를 선별하고 노출하도록 유도합니다. 사용자가 콘텐츠와 상호 작용하면 해당 사용자를 팔로우하기로 설정한 사용자에게도 해당 콘텐츠가 노출됩니다.

- **팔로우** | 활성 사용자는 이 섹션에서 본인이 팔로우하기로 설정한 다른 사용자에게 의해 제작된 콘텐츠뿐만 아니라 해당 사용자가 좋아요를 누르거나 댓글을 남긴 콘텐츠 또한 보게 됩니다. 콘텐츠는 제작한 사용자뿐만 아니라 해당 콘텐츠와 상호 작용한 사용자들의 평판에 따라 순위가 매겨집니다.
- **트렌드** | 활성 사용자는 이 섹션에서 커뮤니티 전체가 가장 가치 있다고 여기는 콘텐츠를 보게 됩니다. 가장 가치 있는 콘텐츠의 순위는 분 단위로 계산됩니다.
- **발견** | 활성 사용자는 이 섹션에서 새로 생성된 콘텐츠와 본인의 취향에 맞게 조정된 콘텐츠를 보게 됩니다. 관심 사항은 태그와 기타 메타 데이터로 결정됩니다.

거버넌스

사용자가 보상 정책을 악용하여 불공정한 보상을 획득하려고 시도할 수도 있습니다. 이는 잠재적으로 다른 사용자와 TTC의 평판을 훼손할 수 있습니다. 이러한 위험을 최소화하기 위해 TTC가 비정상적인 행동을 감지하는 몇 가지 메커니즘이 있습니다.

- **시스템 식별** 시스템이 짧은 시간 내 의미 없는 댓글을 반복해서 작성하는 것과 같은 미리 지정한 비정상 행동을 자동으로 식별하여 격리합니다. 이러한 행동을 보이는 사용자는 보상 지급에서 제외됩니다.
- **신고** 특정 콘텐츠가 다수 사용자에게 의해 여러 번 신고되면 해당 콘텐츠에 정해진 가치와 노출 확률이 대폭 감소합니다. 그 결과 해당 콘텐츠의 제작자와 상호작용한 사용자들의 콘텐츠 보상이 최소화됩니다.
- **감사** 특정 수의 사용자에게 의해 신고된 콘텐츠는 모두 네트워크 내에서 상대적으로 순위가 높은 사용자로 구성된 감사위원회에 자동 전송됩니다. 위원회 구성원의 과반수가 콘텐츠에 반대하는 평결을 내리면 해당 콘텐츠의 유통이 보류되고 제작자의 평판이 저하됩니다. 반대로 신고자에 동의하는 평결을 내린 위원회 구성원과 신고자는 평판이 증가합니다. 콘텐츠에 반대하지 않고 찬성하는 평결이 내려지면 그 반대로 적용됩니다. 신고자와 위원회 구성원의 평판이 감소하고 제작자의 평판이 증가합니다.

활용 시나리오

TTC는 모든 DAPP에 범용적인 토큰으로서 사용자 경험을 향상하는 데 중요한 역할을 합니다. TTC 플랫폼은 개발자, 타사 응용프로그램 및 서비스 제공업체에게 개방되어 있습니다. 예를 들어 tataUFO에서 TTC 토큰은 다음과 같은 방법으로 사용할 수 있습니다.

- **이모티콘**

사용자는 TTC를 사용해 아티스트들이 개발한 이모티콘을 구매 할 수 있습니다



- **챗봇**

TTC를 사용해 서드파티에서 개발한 일기예보, 환율정보 등 외에도 다양한 프리미엄 서비스를 사용할 수 있습니다.



- **설문**

사용자는 TTC를 사용하여 특정 주제에 대한 일반적인 의견을 수집하는 설문조사를 시작할 수 있습니다. 투표참가자에게 보상으로 TTC를 지급합니다.

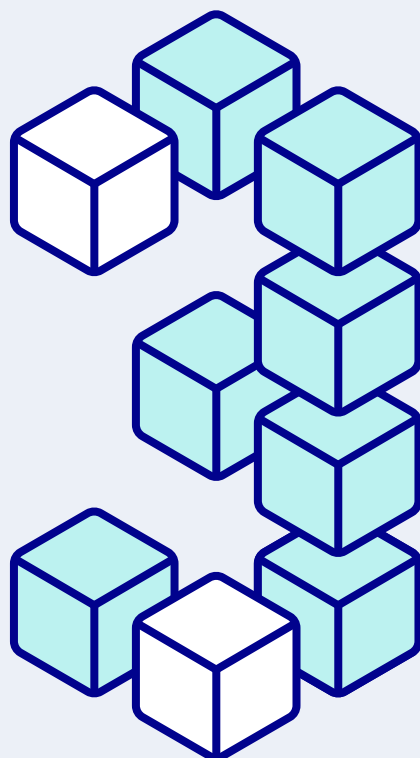


- **개인 선물** 사용자가 서로 팔로우하면 채팅 기능이 활성화됩니다. 사용자는 개인 채팅을 통해 TTC 선물을 보낼 수 있습니다.
- **할인 쿠폰** 사용자는 TTC를 사용하여 온라인 및 오프라인 상점의 할인 쿠폰을 구매할 수 있습니다.

그 외에도 다른 DAPP의 추가 시나리오에 포상금 지급, 인터랙티브 게임 획득, 특별한 아이템 구매 등이 포함될 수 있습니다. TTC를 사용해 보다 풍부한 사용자 경험을 제공하는 방법은 다양합니다.

03

TTC
에코시스템



TTC 에코시스템

TTC 오픈 플랫폼의 개발자는 탈중앙화 및 토큰 인센티브 지급식 소셜 네트워크가 제공하는 이점도 공유합니다. 모든 개발자는 자신의 블록체인 DAPP를 생성하여 이를 TTC에서 홍보할 수 있습니다. 견고한 통합형 에코시스템을 조성하기 위해 하나의 사용자 계정과 지갑으로 모든 DAPP에 액세스할 수 있도록 합니다.

또한, TTC 네트워크는 TTC를 세계 통화로 사용하는 통합 광고 플랫폼을 지원할 것입니다. 광고자는 다른 DAPP의 여러 사용자 그룹을 선택하여 자신의 광고가 미치는 영향력과 가치를 높일 수 있습니다.

- 사용자는 하나의 DAPP에서 다른 DAPP로 건너갈 수 있어 TTC 생태계 전체의 커뮤니티와 교류할 수 있습니다. 이에 단일 인증(SSO)이 더해져 TTC 시스템을 견고하게 만들어줍니다.
- DAPP는 시간이 지나며 사용자의 수가 늘어남에 따라 더 많은 광고주를 들여옵니다. 이는 TTC 시스템의 상업적 가치를 증진하고 광고 비용을 증가시킵니다. 즉, 사용자는 매일 더 적은 양의 TTC 토큰에 액세스할 수 있게 되지만, 토큰의 가치가 늘어날 것입니다.

TTC 오픈 플랫폼의 첫 DAPP는 tataUFO입니다. 당사는 타 개발자들이 tataUFO의 인도를 따라 탈중앙화된 토큰 인센티브 지급식 소셜 네트워크가 제공하는 장점을 활용하도록 권장합니다.

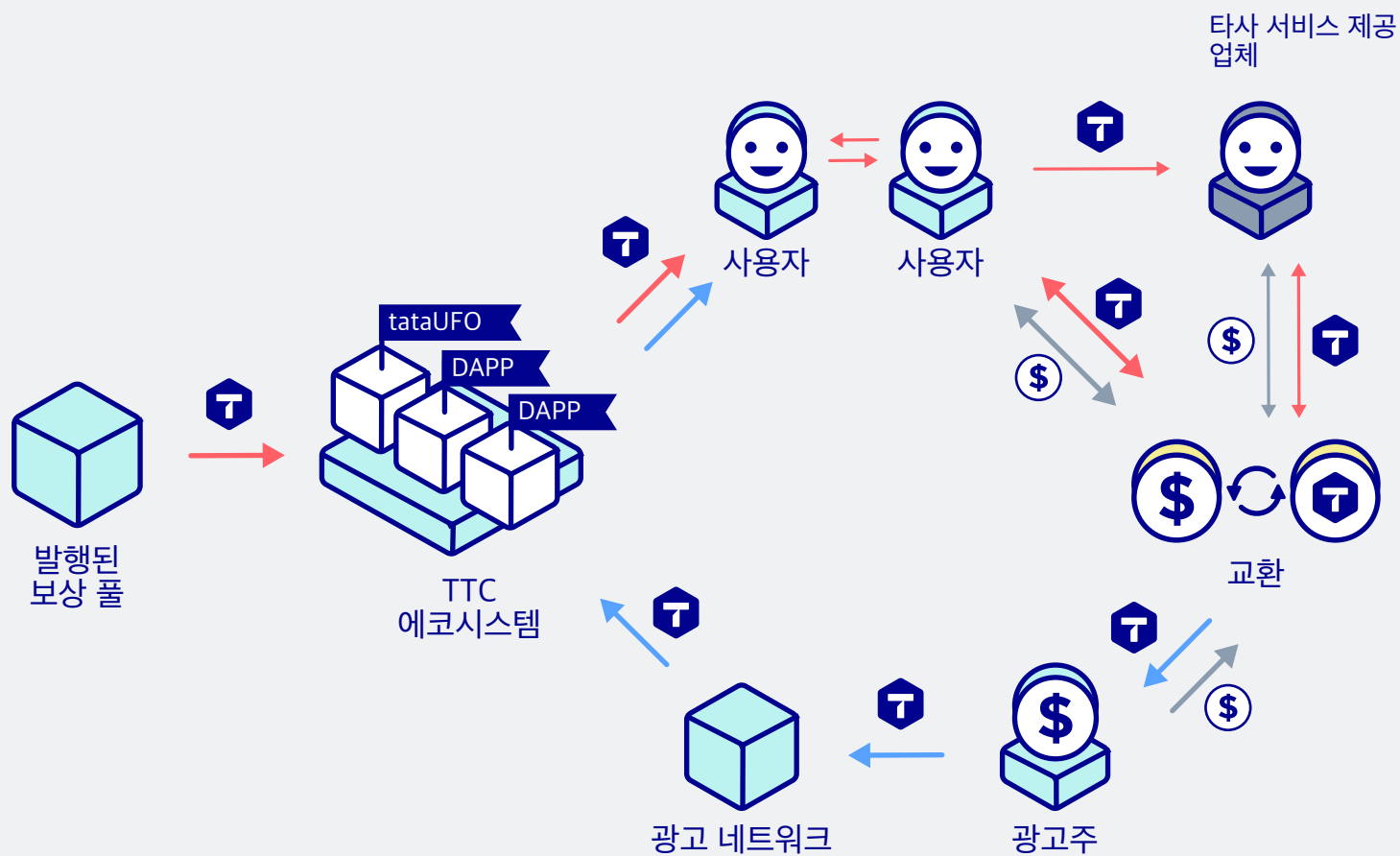


그림 6. TTC 에코시스템 가치 사슬 모형

tataUFO

tataUFO는 밀레니엄 세대와 다음 Z세대에 맞춤형 소셜 네트워크를 공유하는 라이프 스타일입니다. 사용자는 자신의 삶을 공유하고 서로 소통하여 사회적 관계를 형성합니다. tataUFO는 빅 데이터와 클라우드 컴퓨팅을 사용하여 각 사용자가 생성한 콘텐츠를 분석하고 잠재적인 일치점을 찾아 유사한 관심사를 공유하는 사용자들을 이어줍니다. 그로 인해 사회적 연결 고리만 늘어나는 게 아니라 더욱 친밀한 관계가 형성됩니다.



2013년에 출시된 tataUFO는 출시 5년 만에 등록된 사용자가 천만 명을 넘겼으며, 그중 대부분은 중국의 대도시와 중소 도시에 사는 대학생입니다. 젊은 세대의 tataUFO 브랜드 인지도 및 충성도가 이 네트워크의 미래를 위한 견고한 기반을 형성합니다.

tataUFO는 TTC 오픈 플랫폼을 통해 탈중앙화 및 토큰 인센티브 지급식 소셜 네트워크를 구축함으로써 사용자에게 더 많은 가치를 제공할 수 있게 되었습니다.

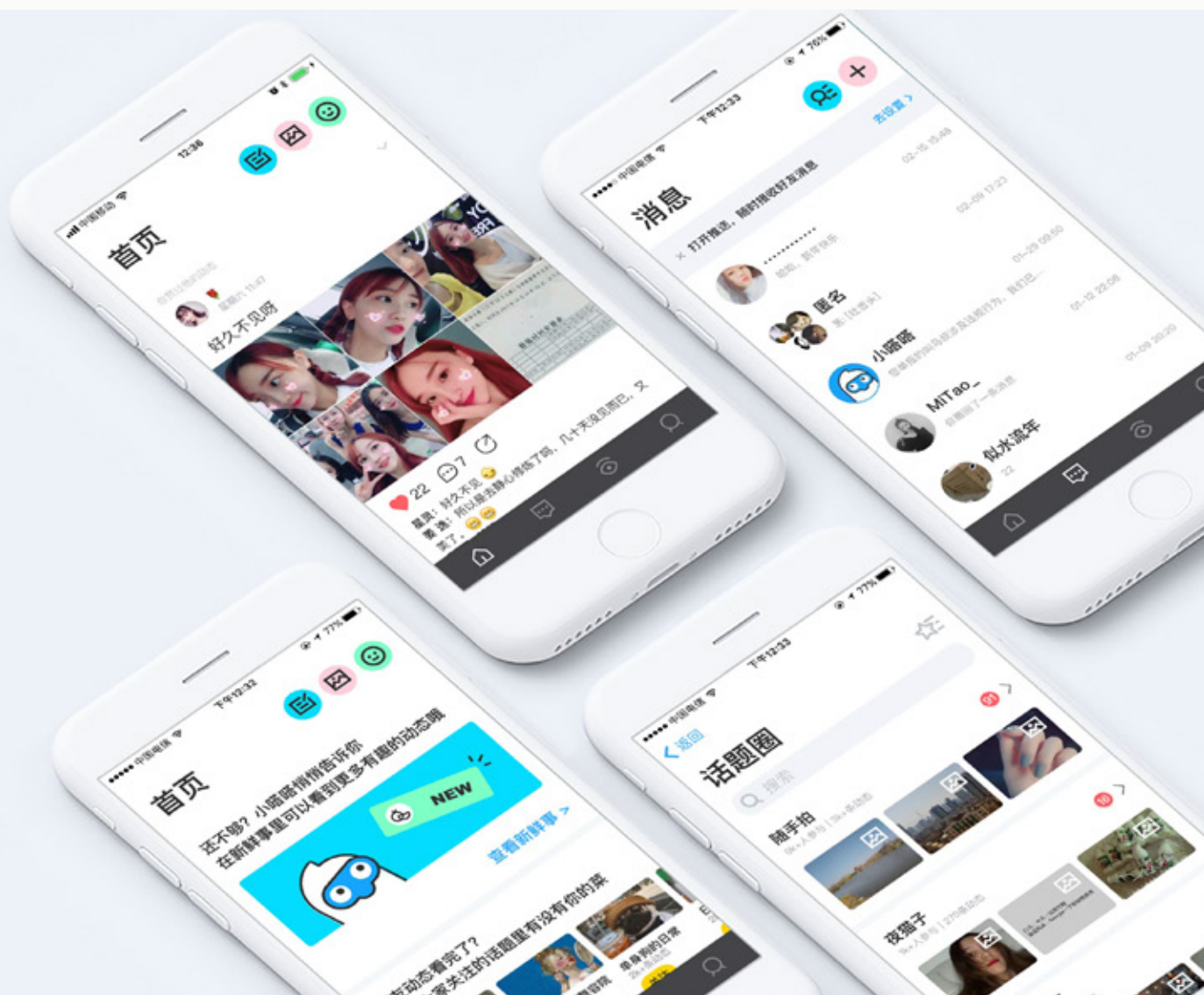
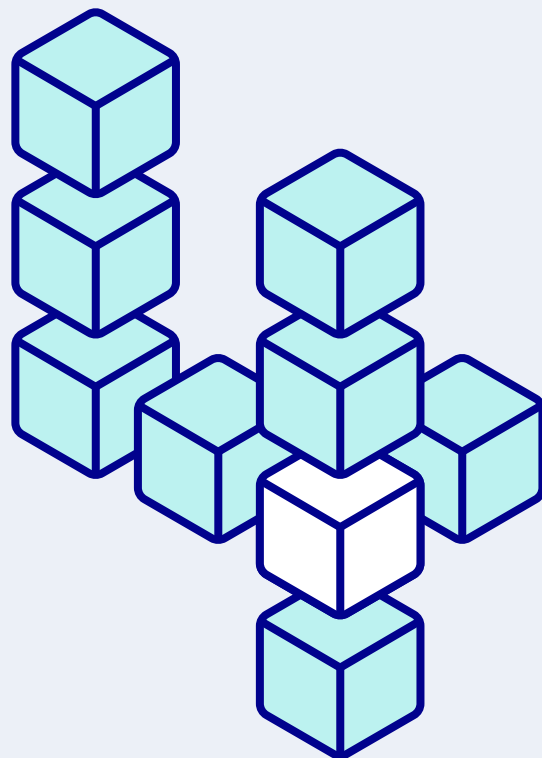


그림 7. tataUFO 예시

04
TTC
재단



TTC재단

TTC 재단은 독립적이고 민주적인 비영리 거버넌스 기관입니다. 이 기관의 임무는 TTC 시스템이 안정적이고 투명하게 운영되도록 보장하는 것입니다.

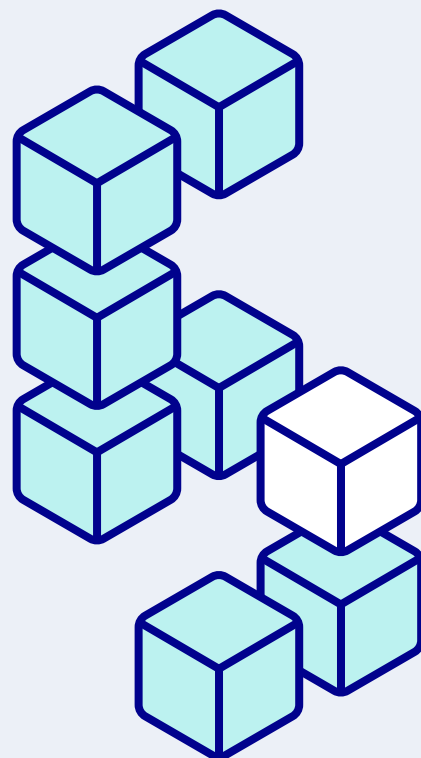
TTC Foundation의 주요 책임은 다음과 같습니다.

- DAPP를 추가하여 다양한 지역 및 사용자 기반을 포괄하는 글로벌 소셜 에코 시스템 구축
- 공정하고 투명한 거버넌스 프로세스 수립, TTC 보상 엔진 운영 및 참여 규칙, 법적 문제 등에 대한 감독
- 탈중앙화 및 인센티브 지급식 소셜 네트워크의 스마트 컨트랙트 이행, 네트워크 효과 창출을 통한 사용자 가치 증대
- TTC 오픈 플랫폼 지원, 새 프로젝트 자금 지원, 환경친화적 개발을 보장하는 DAPP의 배포 메커니즘 설정

본 재단은 글로벌 TTC 에코시스템 구축을 가속화하기 위해 리소스를 적극적으로 할당하여 TTC 오픈 플랫폼에서 더 많은 DAPP를 개발하고 획득할 것입니다. 개발자가 오픈 플랫폼에 참여하도록 독려하는 데 다양한 리소스가 사용될 예정입니다. 이는 DAPP와 사용자 모두의 유기적 성장을 촉진시킬 것입니다. 또한, 본 재단은 에코시스템을 성장시킬 잠재력을 가진 서비스에 투자할 것입니다. 이를 통해 비유기적이면서도 신속한 플랫폼의 성장을 이룩할 것입니다.

05

기술적
고려 사항



온체인 및 오프체인 트레이드오프

TTC 시스템은 공용 이더리움 네트워크를 기반으로 구축되었습니다. 가장 널리 사용되는 블록체인 네트워크인 이더리움은 DAPP 운영에 필요한 안정적이고 유연한 서비스를 제공합니다. 그러나 DAPP와 사용자 수가 증가함에 따라 이더리움에 과중한 부담이 주어지고 있습니다. 현재 매일 처리되는 트랜잭션의 수가 10만 개를 넘어 트랜잭션 처리에 많은 시간이 소요됩니다. 게다가 이더리움은 블록체인에서 이루어지는 모든 트랜잭션에 수수료를 부과합니다. 트랜잭션이 집계되지 않으면 사용자에게 상당한 부담이 될 수 있습니다.

TTC는 이러한 문제점을 고려하여 균형 잡힌 하이브리드 온체인 및 오프체인 트랜잭션 서비스를 구현할 것입니다. TTC 시스템의 트랜잭션은 이더리움 블록체인에서 처리됩니다. 또한 TTC 재단은 시스템의 효율성을 개선하기 위해 오프체인 원장을 도입할 것입니다. 사용자의 행동은 처음에 오프체인으로 기록된 후, 계산 시 온체인으로 동기화됩니다. 이 하이브리드 솔루션은 TTC 시스템의 모든 사용자가 상대적으로 매끄럽고 일관된 경험을 누릴 수 있는 하이브리드 시스템을 형성합니다.

TTC 재단은 지속적으로 균형 잡힌 온체인 및 오프체인 트랜잭션 서비스를 최적화할 것입니다. 오프체인 메커니즘의 세부 사항은 다양한 방식으로 투명하게 유지됩니다. 장기적으로 TTC 에코시스템은 다른 공용 블록체인과 협력하거나 자체 시스템을 구축하여 완전한 온체인 서비스로 진화할 것입니다.



그림 8. 온체인/오프체인 트레이드오프 및 장기 솔루션 설명

기술아키텍처

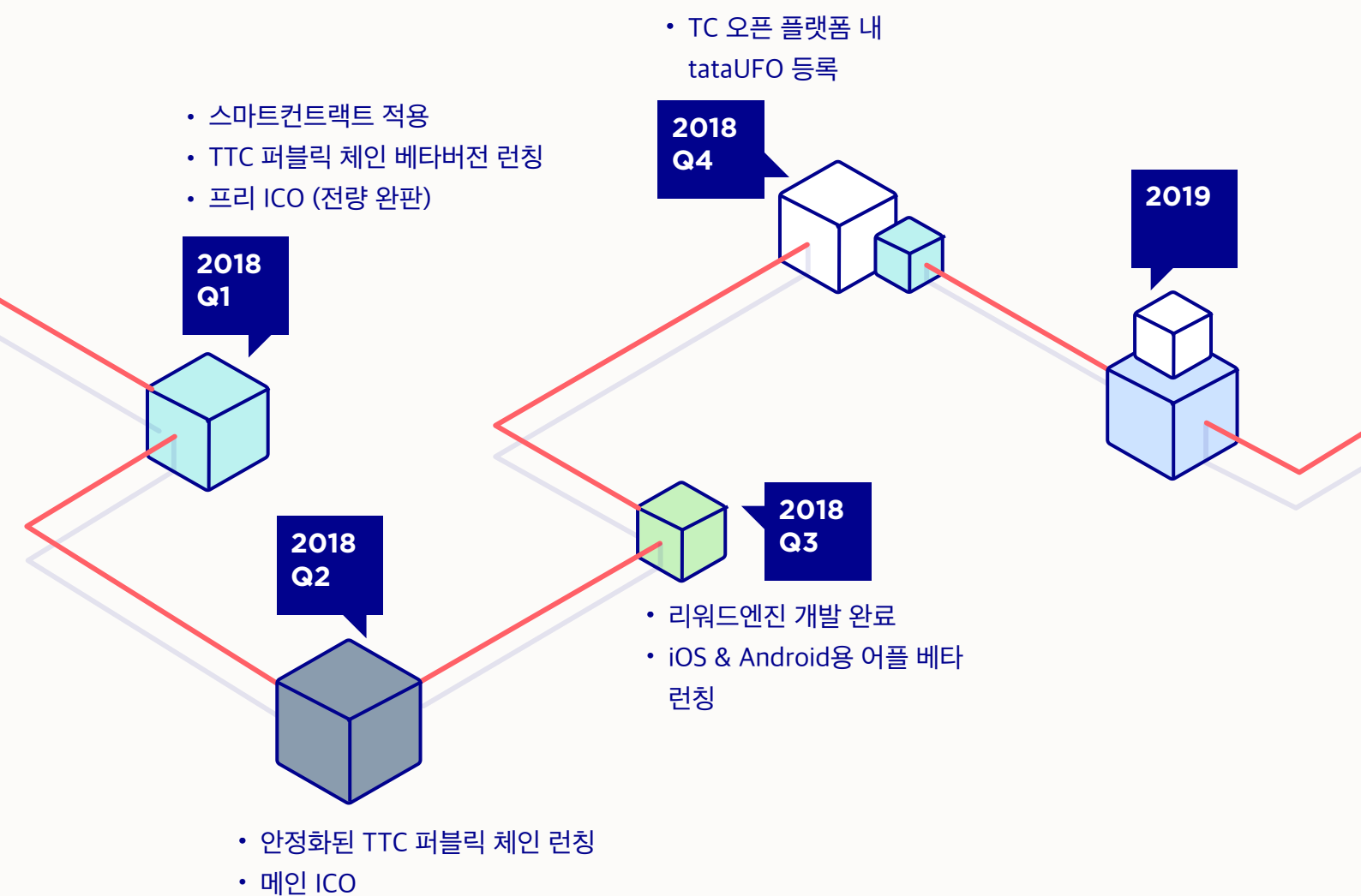
TTC 시스템에는 4개의 계층이 있습니다.

- **블록체인 도구** 데이터베이스, 네트워크, 블록 형식 및 합의 알고리즘 등을 포함하는 기본 아키텍처
- **TTC 코어** 통합 인증, 토큰 시스템, 보상 엔진 및 지갑 등을 위한 계층
- **TTC 오픈** 통합 콘텐츠, 사용자, 정보 관리(SSO 솔루션 포함), 스팸 방지 및 감사 솔루션, 광고 네트워크 등을 갖춘 플랫폼 API
- **애플리케이션** 개발자가 TTC 오픈 플랫폼에서 생성한 DAPP



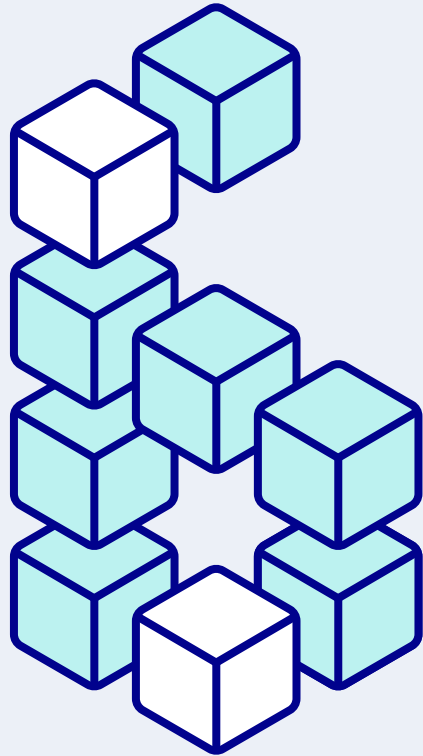
그림 9. TTC 시스템의 기술 아키텍처

로드맵



06

TTC
발급 일정



가치모형

TTC는 예정된 일정에 따라 발행됩니다. 첫해에는 전체 TTC 풀의 절반이 발행됩니다. 다음 해부터 발행될 예정인 TTC 총량의 절반에 해당하는 만큼의 총 TTC가 매년 발행됩니다. TTC는 매달 동일한 양이 발행되며, 12개월 주기로 발행된 TTC의 가치가 절반이 되어야 합니다.

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

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

그림 9에서 볼 수 있듯이 각 사용자가 매일 획득할 수 있는 TTC는 사용자 수가 증가함에 따라 급격히 감소합니다.

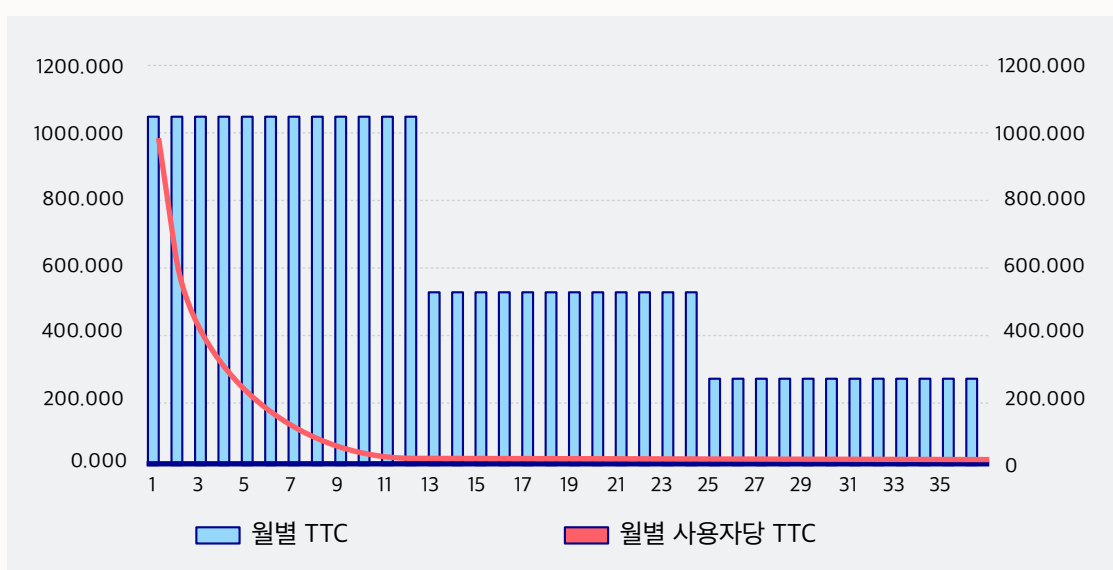


그림 10. TTC 발급 일정

TTC의 가치는 교환에 영향을 받지 않으며, 광고 비용에 따라 달라집니다. TTC는 toutiao.com과 같은 다른 광고 플랫폼에서 보이는 것과 비슷한 가치 변동을 겪을 것입니다. 사용자 수가 비교적 적을 때 사용자는 매월 0.15달러만큼 기여할 수 있지만, 플랫폼의 사용자 수가 특정 임계값에 도달하면 이 수치가 약 1.5달러 가 될 수 있습니다. ActiveRate은 100에서 시작하여 사용자 수의 증가에 따라 약 42%로 떨어졌다가 50%까지 올라갑니다. 이 값은 업계 표준 및 tataUFO의 실적을 기반으로 합니다.

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

그림 10과 같이 TTC 값은 월간 활성 사용자 수(MAU)에 비례합니다.

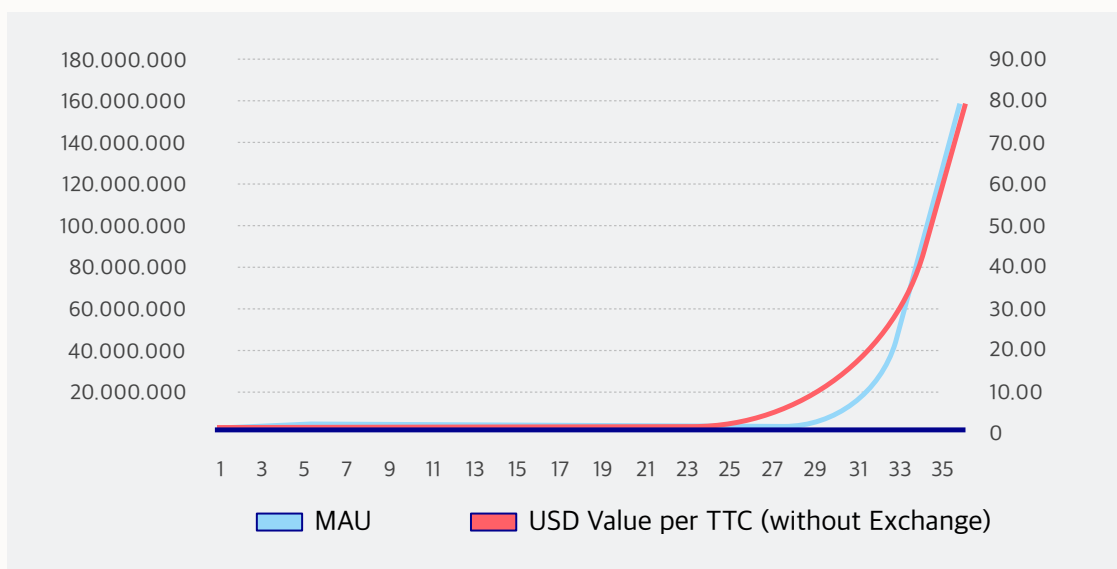


그림 11. TTC 가치와 MAU의 상관관계

낙관적, 보수적, 비관적 추정으로 집계된 사용자 수의 증가에 따른 향후 3년간 TTC 가치의 궤적은 표 2와 같습니다. 이 수치는 플랫폼 내부 요소만 고려한 것입니다.

		초기	1년	2년	3년
낙관적	TTC 전체 가치		2,444,310	240,267,762	19,821,693,989
	사용자 수		508,066	13,767,563	328,058,424
	TTC당 USD 가치	0.01	0.02	1.41	101.65
보수적	TTC 전체 가치		2,091,044	127,842,748	7,750,245,530
	사용자 수		447,690	8,112,224	146,257,080
	TTC당 USD 가치	0.01	0.02	0.75	39.74
비관적	TTC 전체 가치		1,966,611	89,841,255	3,604,161,409
	사용자 수		426,002	6,043,228	75,981,640
	TTC당 USD 가치	0.01	0.02	0.53	18.48

표 2. 낙관적, 보수적, 비관적 TTC 가치 예상

ICO 계획

TTC는 ERC20에서 총 1,000,000,000(10억)개가 발행될 예정이며, 화폐 총량의 25%가 판매용으로 설정될 것입니다. ICO 참여자는 교환을 통해 ETH로 TTC를 구입할 수 있습니다.

일반 정보

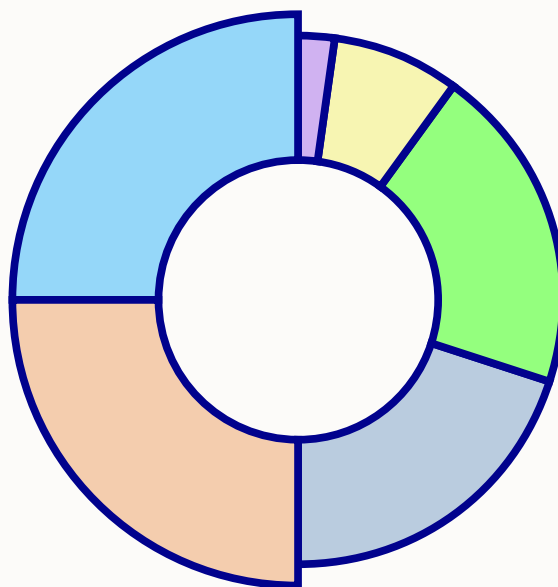
토큰 이름	TTC
기반	Ethereum
표준	ERC-20
구매수단	Ether (ETH)

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

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

토큰 할당

총 공급
1,000,000,000



토큰 판매

25% 250,000,000 TTC

보상 풀

25% 250,000,000 TTC

에코시스템 구축

20% 200,000,000 TTC

재단

20% 200,000,000 TTC

팀

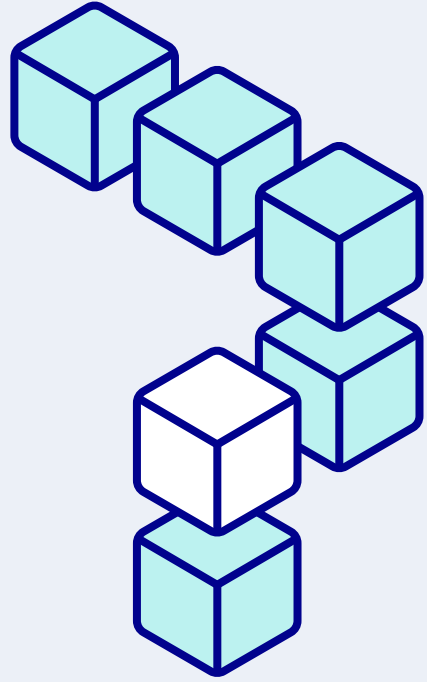
8% 80,000,000 TTC

이전 사용자 및 포상금

2% 20,000,000 TTC

07

팀



코어멤버



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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

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Product Manager @ Baidu
B.S in Information Management and Information System, Renmin University of China



He Zhang | Design Director

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Yi Mo | Senior Product Manage

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Yuan Zhang
CEO assistant and Blockchain PM of
Bitmain Technology



Jian Cai
Professor at Guanghua School of Management,
Peking university



Kevin Wang
Managing Partner at Ameba Capital
Ex-CFO at Kingsoft



Ryan Kim
CAO and Partner at Hashed



Hongwei Cao
Raventech CTO at Baidu

White Paper Disclaimer

IMPORTANT: YOU MUST READ THE FOLLOWING DISCLAIMER IN FULL BEFORE CONTINUING

The TTC Protocol is intended to be maintained by TTC Foundation and/or its affiliate(s). References in this White Paper to TTC Foundation shall be deemed to include a reference to such affiliate(s).

The sale ("Token Sale") of TTC tokens ("Tokens") is only intended for, made to or directed at, and to be acted upon by only person(s) (a) who is not a citizen, domiciled in, or resident of the United States of America or the People's Republic of China (which for the purpose of these Terms, shall exclude the Hong Kong Special Administrative Region of the People's Republic of China, the Macau Special Administrative Region of the People's Republic of China, and the Republic of China) ("PRC"); and (b) outside the United States of America or PRC.

By accessing and/or accepting possession of any information in this White Paper or such part thereof (as the case may be), you represent and warrant to TTC-Foundation Pte. Ltd. (Singapore Company Registration Number 201808413G) ("TTC Foundation") that:

- (a) you are not an Excluded Person (as defined herein), or a citizen or resident of a country the laws of which prohibit or conflict with the Token Sale or your participation in the Token Sale (as referred hereto in the White Paper);
- (b) you agree to be bound by the limitations and restrictions described herein; and
- (c) you acknowledge that this White Paper has been prepared for delivery to you so as to assist you in making a decision as to whether to purchase Tokens.

IMPORTANT INFORMATION

PLEASE READ THIS DISCLAIMER SECTION CAREFULLY. IF YOU ARE IN ANY DOUBT AS TO THE ACTION YOU SHOULD TAKE, YOU SHOULD CONSULT YOUR LEGAL, FINANCIAL, TAX OR OTHER PROFESSIONAL ADVISOR(S).

This White Paper in its current form is circulated by TTC Foundation for general information and to invite participant feedback only on the TTC protocol (the "TTC Protocol") and the Tokens as presently conceived, and is subject to review and revision by the directors and/or advisors of TTC Foundation. Please do not replicate or distribute any part of this White Paper without this section in accompaniment. The information set forth below may not be exhaustive and no part of this White Paper is intended to create legal relations between a recipient of this White Paper or to be legally binding or enforceable by such recipient against TTC Foundation. An updated version of this White Paper may be published at a later date and to be announced by TTC Foundation in due course.

PLEASE READ THIS SECTION AND THE FOLLOWING SECTIONS ENTITLED "DISCLAIMER OF LIABILITY", "NO REPRESENTATIONS AND WARRANTIES", "REPRESENTATIONS AND WARRANTIES BY YOU", "CAUTIONARY NOTE ON FORWARD-LOOKING STATEMENTS", "THIRD PARTY INFORMATION AND NO CONSENT OF OTHER PERSONS", "TERMS USED", "NO ADVICE", "NO FURTHER INFORMATION OR UPDATE", "RESTRICTIONS ON DISTRIBUTION AND DISSEMINATION", "NO OFFER OF INVESTMENT OR REGISTRATION" AND "RISKS AND UNCERTAINTIES" CAREFULLY.

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While we make every effort to ensure that any material in this White Paper is accurate and up to date, such material in no way constitutes the provision of professional advice. TTC Foundation does not guarantee, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency, or completeness of any material contained in this White Paper. Participants and potential Token holders should seek appropriate independent professional advice prior to relying on, or entering into any commitment or transaction based on, material published in this White Paper, which material is purely published for reference purposes alone.

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

Foundation. The Token will function as the native universal utility token used in the TTC Protocol as the means of value exchange and to power the TTC Protocol.

The Tokens are not be intended to constitute securities of any form, units in a business trust, units in a collective investment scheme or any other form of regulated investment or investment product in any jurisdiction. This White Paper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of regulated investment or investment product, or a solicitation for any form of regulated investment or investment product in any jurisdiction.

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 by TTC Foundation and/or Issuer to obtain such approval under the laws, regulatory requirements or rules of any jurisdiction. The provision of this White Paper to you does not imply that the applicable laws, regulatory requirements or rules have been complied with.

This White Paper does not constitute or form part of any opinion on any advice to purchase, sell or otherwise transact with Tokens and the fact of presentation of this White Paper shall not form the basis of, or be relied upon in connection with, any contract of investment decision.

THE TOKEN SALE (AS REFERRED TO HEREIN) IS INTENDED FOR, MADE TO OR DIRECTED AT ONLY PERSONS OUTSIDE THE UNITED STATES OF AMERICA OR THE PRC AND MAY BE ACTED UPON ONLY BY PERSONS OUTSIDE THE UNITED STATES OF AMERICA OR THE PRC. ACCORDINGLY, YOU ARE NOT ELIGIBLE AND YOU ARE NOT TO PURCHASE ANY TOKENS IN THE TOKEN SALE IF YOU ARE:

(A) A CITIZEN, DOMICILED IN, OR RESIDENT OF THE UNITED STATES OF AMERICA OR THE PRC;

(B) LOCATED IN THE UNITED STATES OF AMERICA OR THE PRC AT THE TIME OF YOUR WHITELISTING FOR AND INTENDED PURCHASE OR PURCHASE OF TOKENS IN THE TOKEN SALE;

(C) LOCATED IN A JURISDICTION WHERE THE TOKEN SALE IS PROHIBITED, RESTRICTED OR UNAUTHORISED IN ANY FORM OR MANNER WHETHER IN FULL OR IN PART UNDER THE LAWS, REGULATORY REQUIREMENTS OR RULES IN SUCH JURISDICTION; OR

(D) A PERSON WHO IS OTHERWISE PROHIBITED OR INELIGIBLE IN ANY WAY, WHETHER IN FULL OR IN PART, FROM PARTICIPATING IN ANY PART OF THE TRANSACTIONS CONTEMPLATED IN THE TOKEN SALE TERMS (AS DEFINED BELOW),

(COLLECTIVELY, "EXCLUDED PERSONS").

For the purpose of this White Paper, to be "Whitelisted" means to be identified to be eligible to participate in the Token Sale by the Issuer subject to satisfactory know your client and anti-money laundering and counter financing of terrorism checks conducted in connection therewith, or such other criteria as may be imposed by the Issuer in connection therewith at its sole and absolute discretion.

No Token should be construed, interpreted, classified or treated as enabling, or according any opportunity to, purchasers to participate in or receive profits, income, or other payments or returns arising from or in connection with the TTC Protocol or the Tokens or the proceeds of the Token Sale, or to receive sums paid out of such profits, income, or other payments or returns.

No person is bound to enter into any contract or binding legal commitment in relation to the sale and purchase of the Tokens, and no cryptocurrency or other form of payment is to be accepted on the basis of this White Paper.

Any agreement as between Issuer and you as a purchaser, and in relation to any sale and purchase, of Tokens is to be governed by only a separate document setting out the terms and conditions (the "Token Sale Terms") of such agreement. In the event of any inconsistencies between the Token Sale Terms and this White Paper, the former shall prevail.

There are risks and uncertainties associated with TTC Foundation, the Issuer and their business and operations, the Tokens, the TTC Protocol, and the Token Sale. Please refer to the section entitled "Risks and Disclosures" set out at the end of this White Paper.

This White Paper, any part thereof and any copy thereof must not be taken or transmitted to any country where distribution or dissemination of this White Paper is prohibited or restricted.

No part of this White Paper is to be reproduced, distributed or disseminated without including this section and the following sections entitled "Disclaimer of

Liability”, “No Representations and Warranties”, “Representations and Warranties By You”, “Cautionary Note On Forward-Looking Statements”, “Third Party Information and No Consent of Other Persons”, “Terms Used”, “No Advice”, “No Further Information or Update”, “Restrictions On Distribution and Dissemination” and “Risks and Uncertainties”.

DISCLAIMER OF LIABILITY

To the maximum extent permitted by the applicable laws, regulations and rules, TTC Foundation and Issuer shall not be liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this White Paper or any part thereof by you.

NO REPRESENTATIONS AND WARRANTIES

TTC Foundation and Issuer does not make or purport to make, and hereby disclaims, any representation, warranty or undertaking in any form whatsoever to any entity or person, including any representation, warranty or undertaking in relation to the truth, accuracy and completeness of any of the information set out in this White Paper.

REPRESENTATIONS AND WARRANTIES BY YOU

By accessing and/or accepting possession of any information in this White Paper or such part thereof (as the case may be), you represent and warrant to TTC Foundation as follows:

- (a) you agree and acknowledge that the Tokens do not constitute securities of any form, units in a business trust, units in a collective investment scheme or any other form of regulated investment or investment product in any jurisdiction;
- (b) you are not an Excluded Person, or a citizen or resident of a country the laws of which prohibit or conflict with the Token Sale or your participation in the Token Sale;
- (c) you are not located in a jurisdiction where the Token Sale is prohibited, restricted or unauthorised in any form or manner whether in full or in part under the laws, regulatory requirements or rules in such jurisdiction;

(d) you are not a person who is otherwise prohibited or ineligible in any way, whether in full or in part, from participating in any part of the transactions contemplated in the Token Sale Terms;

(e) you agree and acknowledge that this White Paper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of regulated investment or investment product in any jurisdiction, or a solicitation for any form of regulated investment or investment product, and you are not bound to enter into any contract or binding legal commitment and no cryptocurrency or other form of payment is to be accepted on the basis of this White Paper;

(f) you acknowledge and understand that no Token should be construed, interpreted, classified or treated as enabling, or according any opportunity to, Token holders to participate in or receive profits, income, or other payments or returns arising from or in connection with the Tokens or the proceeds of the Token Sale, or to receive sums paid out of such profits, income, or other payments or returns;

(g) you agree and acknowledge that no regulatory authority has examined or approved of the information set out in this White Paper, no action has been or will be taken by TTC Foundation to obtain such approval under the laws, regulatory requirements or rules of any jurisdiction and the publication, distribution or dissemination of this White Paper to you does not imply that the applicable laws, regulatory requirements or rules have been complied with;

(h) you agree and acknowledge that this White Paper, the undertaking and/or the completion of the Token Sale, or future trading of Tokens on any cryptocurrency exchange, shall not be construed, interpreted or deemed by you as an indication of the merits of TTC Foundation, the Tokens, the Token Sale, and the TTC Protocol;

(i) the distribution or dissemination of this White Paper, any part thereof or any copy thereof, or acceptance of the same by you, is not prohibited or restricted by the applicable laws, regulations or rules in your jurisdiction, and where any restrictions in relation to possession are applicable, you have observed and complied with all such restrictions at your own expense and without liability to TTC Foundation;

(j) you agree and acknowledge that in the case where you wish to purchase

any Tokens, Tokens are not to be construed, interpreted, classified or treated as:

- (i) any kind of currency other than cryptocurrency;
 - (ii) debentures, stocks or shares issued by any person or entity;
 - (iii) rights, options or derivatives in respect of such debentures, stocks or shares;
 - (iv) rights under a contract for differences or under any other contract the purpose or pretended purpose of which is to secure a profit or avoid a loss;
 - (v) securities;
 - (vi) units or derivatives of units in a business trust;
 - (vii) units in a collective investment scheme; or
 - (viii) any form of regulated investment or investment product;
- (k) you are fully aware of and understand that you are not eligible and you are not to purchase any Tokens if you are an Excluded Person;
- (l) you are legally permitted to participate in the Token Sale and all actions contemplated or associated with such purchase, including the holding and use of Tokens;
- (m) the amounts that you use to purchase Tokens were not and are not directly or indirectly derived from any activities that contravene the laws and regulations of any jurisdiction, including anti-money laundering laws and regulations;
- (n) if you are a natural person, you are of sufficient age and capacity under the applicable laws of the jurisdiction in which you reside and the jurisdiction of which you are a citizen to participate in the Token Sale;
- (o) you are not obtaining or using Tokens for any illegal purpose;
- (p) none of:
- (i) you;

(ii) any person controlling or controlled by you;

(iii) if you are a privately-held entity, any person having a beneficial interest in you; or

(iv) any person for whom you are acting as agent or nominee in connection with this Token Sale,

is a senior foreign political figure, or any immediate family member or close associate of a senior foreign political figure.

A "senior foreign political figure" is defined as a senior official in the executive, legislative, administrative, military or judicial branch of a government (whether elected or not), a senior official of a major political party, or a senior executive of a foreign government-owned corporation, and includes any corporation, business or other entity that has been formed by, or for the benefit of, a senior foreign political figure.

"Immediate family" of a senior foreign political figure typically includes such figure's parents, siblings, spouse, children and in-laws.

A "close associate" of a senior foreign political figure is a person who is widely and publicly known to maintain an unusually close relationship with such senior foreign political figure, and includes a person who is in a position to conduct substantial domestic and international financial transactions on behalf of such senior foreign political figure;

(q) if you are affiliated with a non-U.S. banking institution ("Foreign Bank"), or if you receive deposits from, make payments on behalf of, or handle other financial transactions related to a Foreign Bank, you represent and warrant to TTC Foundation that:

(i) the Foreign Bank has a fixed address, and not solely an electronic address, in a country in which the Foreign Bank is authorised to conduct banking activities;

(ii) the Foreign Bank maintains operating records related to its banking activities;

(iii) the Foreign Bank is subject to inspection by the banking authority that licensed the Foreign Bank to conduct its banking activities; and

- (iv) the Foreign Bank does not provide banking services to any other Foreign Bank that does not have a physical presence in any country and that is not a regulated affiliate;
- (r) you have a basic degree of understanding of the operation, functionality, usage, storage, transmission mechanisms and other material characteristics of cryptocurrencies, blockchain-based software systems, cryptocurrency wallets or other related token storage mechanisms, blockchain technology and smart contract technology;
- (s) you are fully aware and understand that in the case where you wish to purchase any Tokens, there are risks associated with TTC Foundation and its businesses and operations, the Tokens, the TTC Protocol and the Token Sale;
- (t) you bear the sole responsibility to determine what tax implications purchasing Tokens may have for you and agree not to hold TTC Foundation or any other person involved in the Token Sale liable for any tax liability associated with or arising therefrom;
- (u) you agree and acknowledge that TTC Foundation and/or any person involved in the Token Sale and/or with the creation and distribution of Tokens or the TTC Protocol, is not liable for any direct, indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this White Paper or any part thereof by you;
- (v) you waive the right to participate in a class action lawsuit or a class wide arbitration against TTC Foundation and/or any person involved in the Token Sale and/or with the creation and distribution of Tokens or the TTC Protocol; and
- (w) all of the above representations and warranties are true, complete, accurate and non-misleading from the time of your access to and/or acceptance of possession this White Paper or such part thereof (as the case may be).

CAUTIONARY NOTE ON FORWARD-LOOKING STATEMENTS

All statements contained in this White Paper, statements made in press releases or in any place accessible by the public and oral statements that may be made

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.

Neither TTC Foundation nor any other person represents, warrants, and/or undertakes that the actual future results, performance or achievements of TTC Foundation will be as discussed in those forward-looking statements. The actual results, performance or achievements of TTC Foundation may differ materially from those anticipated in these forward-looking statements.

Nothing contained in this White Paper is or may be relied upon as a promise, representation or undertaking as to the future performance or policies of TTC Foundation.

Further, TTC Foundation disclaims any responsibility to update any of those forward-looking statements or publicly announce any revisions to those forward-looking statements to reflect future developments, events or circumstances, even if new information becomes available or other events occur in the future.

THIRD PARTY INFORMATION AND NO CONSENT OF OTHER PERSONS

This White Paper includes information obtained from various third party sources ("Third Party Information"). None of the publishers of the Third Party Information has consented to the inclusion of the Third Party Information in this White Paper and is therefore not liable for the Third Party Information. While TTC Foundation has taken reasonable action to ensure that the Third Party Information have been included in their proper form and context, neither TTC Foundation, nor its directors, executive officers and employees acting on its behalf, has independently verified the accuracy, reliability, completeness of the contents, or ascertained any applicable underlying assumption, of the relevant Third Party Information. Consequently, neither TTC Foundation nor its directors, executive officers and employees acting on their behalf makes any representation or warranty as to the accuracy, reliability or completeness of such information and shall not be obliged to provide any updates on the same.

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-

ment in this White Paper and to the maximum extent permitted by law, expressly disclaims and takes no responsibility for any liability to any person which is based on, or arises out of, any statement, information or opinions in, or omission from, this White Paper.

NO FURTHER INFORMATION OR UPDATE

No person has been or is authorised to give any information or representation not contained in this White Paper in connection with TTC Foundation and its business and operations, the Tokens, the TTC Protocol, or the Token Sale and, if given, such information or representation must not be relied upon as having been authorised by or on behalf of TTC Foundation. The Token Sale shall not, under any circumstances, constitute a continuing representation or create any suggestion or implication that there has been no change, or development reasonably likely to involve a material change in the affairs, conditions and prospects of TTC Foundation or in any statement of fact or information contained in this White Paper since the date hereof.

RESTRICTIONS ON DISTRIBUTION AND DISSEMINATION

The distribution or dissemination of this White Paper or any part thereof may be prohibited or restricted by the laws, regulatory requirements and rules of any jurisdiction. In the case where any restriction applies, you are to inform yourself about, and to observe, any restrictions which are applicable to your possession of this White Paper or such part thereof (as the case may be) at your own expense and without liability to TTC Foundation.

Persons to whom a copy of this White Paper has been distributed or disseminated, provided access to or who otherwise have the White Paper in their possession shall not circulate it to any other persons, reproduce or otherwise distribute this White Paper or any information contained herein for any purpose whatsoever nor permit or cause the same to occur.

NO OFFER OF INVESTMENT OR REGISTRATION

This White Paper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment, or a solicitation for any form of investment in any jurisdiction. No person is bound to enter into any contract or binding legal commitment and no cryptocurrency or other form of payment is to be accepted on the basis of this White Paper.

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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;

(f) additions or departures of key personnel of the Issuer;

(g) success or failure of the Issuer's management in implementing business and growth strategies; and

(h) changes in conditions affecting the blockchain or financial technology industry, the general economic conditions or market sentiments, or other events or factors.

The funds raised in the Token Sale are exposed to risks of theft

The Issuer will make every effort to ensure that the funds received from the Token Sale will be securely held at such address as directed by the Issuer ("Receiving Address"). Further, upon receipt of the funds, the Issuer will make every effort to ensure that the funds received will be securely held through the implementation of security measures. Notwithstanding such security measures, there is no assurance that there will be no theft of the cryptocurrencies as a result of hacks, mining attacks (including but not limited to double-spend attacks, majority mining power attacks and "selfish-mining" attacks), sophisticated cyber-attacks, distributed denials of service or errors, vulnerabilities or defects on the Receiving Address, the TTC blockchain, or any other blockchain, or otherwise. Such events may include, for example, flaws in programming or source code leading to exploitation or abuse thereof. In such event, even if the Token Sale is completed, the Issuer may not be able to receive the cryptocurrencies raised and the Issuer may not be able to utilise such funds for the development of the TTC Protocol, and the launch of the TTC Protocol might be temporarily or permanently curtailed. As such, the issued Tokens may hold little worth or value, and this would impact its trading price. The Tokens are uninsured, unless you specifically obtain private insurance to insure them. In the event of any loss or loss of value, you may have no recourse.

2. RISKS RELATING TO THE RECEIVING ADDRESS AND WALLETS

The Receiving Address may be compromised and the cryptocurrencies may not be able to be disbursed

The Receiving Address is designed to be secure. However, in the event that the Receiving Address is, for any reason compromised (including but not limited to scenarios of the loss of keys to such Receiving Address), the funds held by the Receiving Address may not be able to be retrieved and disbursed, and may be permanently unrecoverable. In such event, even if the Token

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.