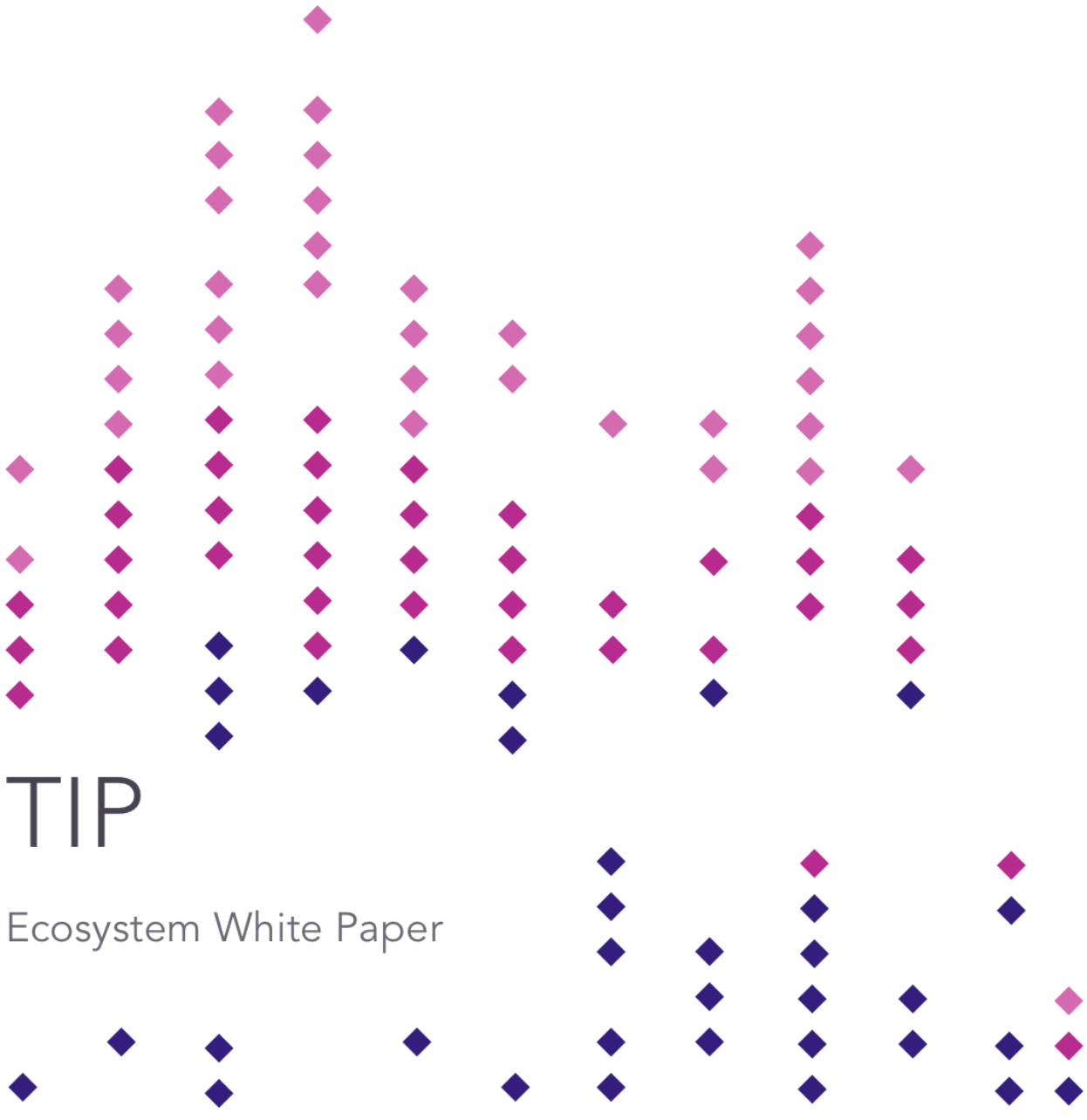

TIP

Ecosystem White Paper

Discovery on the Blockchain

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1

Executive Summary

1. Executive Summary

Cryptocurrencies have come a long way since the creation of Bitcoin by Satoshi Nakamoto in 2008. While adoption rates of cryptocurrencies have increased over the years, mass adoption has been slow. Applications that make blockchain technology an integral part of day-to-day life remain elusive.

Tip proposes to take cryptocurrency mainstream by providing solutions that make discovering users, businesses, and other useful information on the blockchain as easy as it is on social platforms. We are creating an ecosystem where users can transact and interact with one another in easy and familiar ways, without the technical barriers.

The Tip Network consists of our blockchain, decentralized apps, and users on the platform. Tip Network provides end-to-end solutions that connect businesses with their customers, and end users to other users. Our solution provides user-friendly usernames that are easy to remember, and discovery, that makes it easy to find other users. Peer to peer instant messaging is also built into our client applications so that users can chat and send transactions from within a familiar chat interface. Our solution for businesses is a point-of-sale system that makes it simpler for them to accept and process cryptocurrency payments.

This is all made possible by the Tip Blockchain: An indexed, searchable database, that can store arbitrary information, alongside addresses and transactions. Usernames, search, instant messaging, and point-of-sale application, are all decentralized apps built on this solid foundation. Our ecosystem will provide user-friendly, end-to-end solutions for businesses and users, to remove friction and technical challenges that are common today when using cryptocurrency.

Cryptocurrencies have gotten easier to use over the years, with each step bringing on a new wave of adopters. There are still several barriers users must overcome in order to use cryptocurrency day-to-day. With the Tip platform, solution for end-users and businesses, we provide the missing link to accelerate cryptocurrency adoption.

With Tip, user-friendly cryptocurrency is a reality. The next chapter in cryptocurrency will be written by TIP!

2

Introduction

2. Introduction

The Internet has brought people together in ways that were not possible before. An internet user can communicate with friends or family across the world using various social mediums and communication channels. In the early days of the internet, it was primarily used by researchers, academics, network and computer enthusiasts and the military. As the internet got easier to use, more use cases were conceived and developed which gave the average user a reason and the ability to connect. Today, the internet is more pervasive than radio was half a century ago.

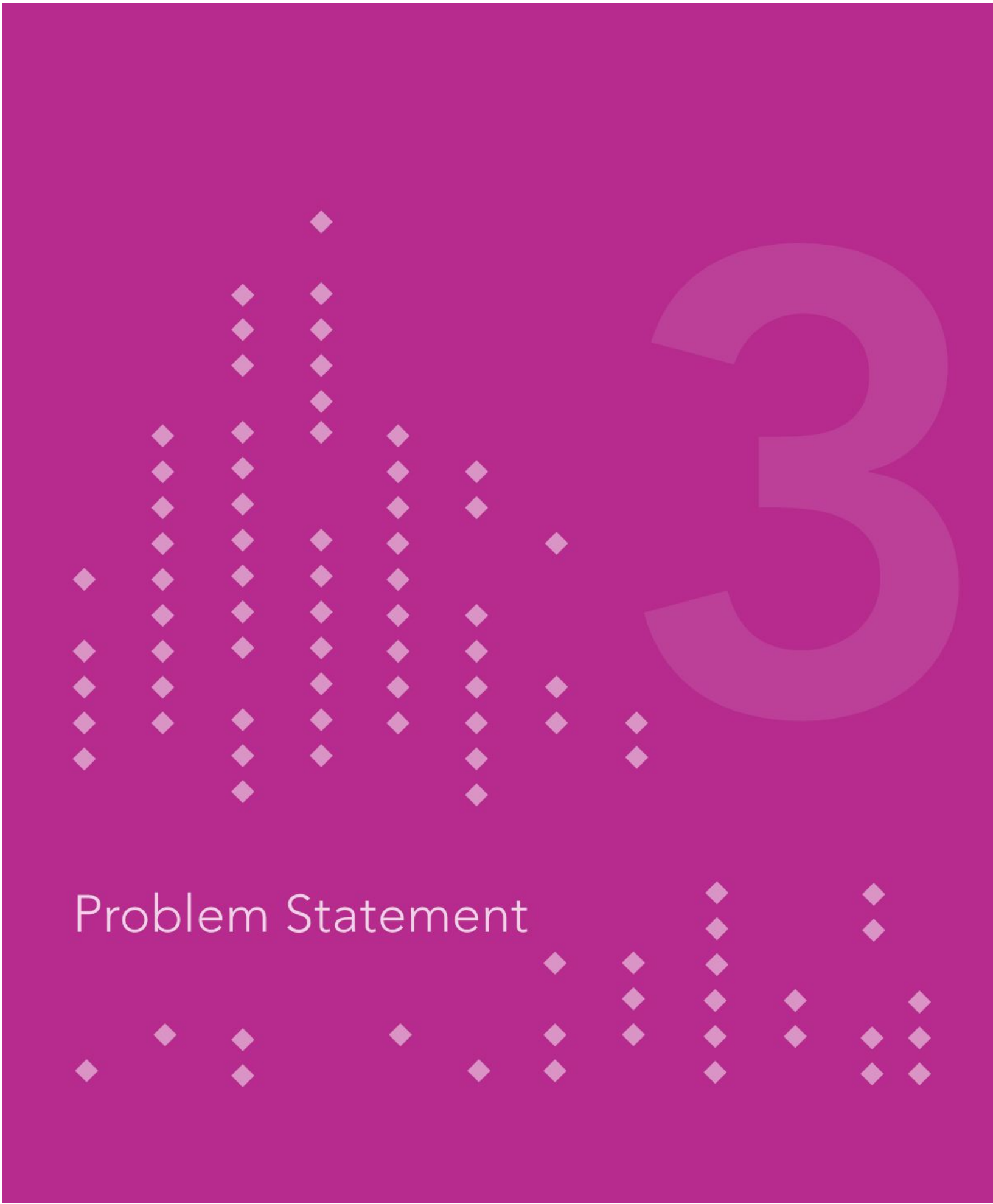
With the rise of the internet, new peer to peer networks such as BitTorrent were created, which allowed users to share information directly without the involvement of third parties. A natural evolution from that was Bitcoin and other cryptocurrencies, where users are able to exchange value without an intermediary, or a trusted third party, such as a bank, clearinghouse or money transfer service.

Just like the internet, Bitcoin was initially only accessible to tech-savvy computer geeks that were able to download the source code, compile and run the software. Since then, there have been several advances in technology and services, such as modern light wallets and cryptocurrency exchanges, which have made cryptocurrencies more accessible. While it is easier to use cryptocurrency today, it still takes a degree of technical knowledge: Private keys, public keys, hashed wallet addresses, syncing, nodes, are some of the terms new users have to familiarize themselves with. These are hurdles to adoption that have undoubtedly slowed the uptake of cryptocurrencies by the masses. We believe what is needed to make mass market adoption of cryptocurrency a reality is making the entire experience easy and familiar. All the technical details of the underlying protocols should be abstracted from the average user so that using cryptocurrency is as natural as using any social media platform.

The ability for users to discover information and other users on the network is vital. One major catalyst for internet ubiquity and user adoption was the rise of the search engine. The search engine made it easy for users to find useful information on the vast world wide web. Without search engines, the internet would contain vasts amounts of information, but there would be no easy way for users to find this information. The problem of discovery on the blockchain is an analogous one. If users are able to discover other users, content, and information in general, there are a multitude of applications that can be built upon this foundation, providing value to more users. This is the fundamental problem Tip is proposing to solve. Tip is creating a fully indexed, searchable, decentralized network that can store information which can be queried, thus solving the issue of discovery on the blockchain. With the problem of discovery solved by our platform, we can begin to build solutions for both end-users and businesses that utilizes this discovered information.

While some other blockchain projects are working on addressing the issue of human-readable names to send transactions, we believe that is only a small part of solving the mass adoption problem. Other projects are also working on making cryptocurrencies easier to use for users. Again, that is only one part of the problem. Tip is the only platform tackling the mass adoption issue using a holistic approach from a discovery standpoint, and building applications that connect end-users to businesses. This will provide solutions that can be used by both end-users and merchants in day-to-day cryptocurrency transactions.

Cryptocurrency mass adoption cannot wait for two or three years. This needs to happen now! That is why with the Tip is working on this as our primary goal, and delivering a solution that solves the issues outlined right away.


3
Problem Statement

3. Problem Statement

To illustrate the main problems users face when using cryptocurrencies today, let us present a few scenarios. These scenarios will illustrate how present-day solutions are inadequate for day-to-day use of cryptocurrencies by the average user.

3.1 Peer to Peer Cryptocurrency Exchange

For our first scenario, let us assume we have two users, Bob and Alice. Bob needs to send Alice a cryptocurrency transaction to repay her for lunch she bought him today. With existing solutions, Bob would somehow have to get Alice's wallet address from her. If they are in person, Bob could scan a QR code containing Alice's wallet address. If they are not in the same location, Alice could send Bob her address hash by copying, pasting and sending it to Bob over text messaging, another messaging app, or by email. These additional steps to initiate a transaction create unnecessary friction.

Most users who are not used to cryptocurrencies would think these steps to be too much of a hassle and not even bother using cryptocurrency. With so many options to send fiat currency between users, for cryptocurrency to compete, it needs to be easier than sending fiat transactions.

3.2 Small Business Accepting Cryptocurrency

In the second scenario, we will consider the case of small businesses accepting cryptocurrency for the payment of goods or services. These could be your neighborhood coffee shop, restaurant or shoe repair store.

Assuming a business, let's call it Gino's Pizza, wants to accept cryptocurrencies for payment, a common practice used today is the business displays QR code that can be scanned by customers to get the business' wallet address. Customers can then send transactions to this address using their own wallet application. This again creates barriers to entry for users who are not used to dealing in cryptocurrencies.

Secondly, what if the business in question is a restaurant that delivers, and requires payments to be made when orders are placed? With fiat transactions, users can give their credit card numbers to the order taker over the phone. This is not possible with cryptocurrencies. The closest thing to giving a credit card number over the phone would be the order taker reading out the store's cryptocurrency address over the phone. This would be very highly error-prone and impractical to use, as if the customer misses a single character, the transaction could be lost forever.

Businesses are hesitant to adopt cryptocurrencies due to these limitations.

3.3 Contextual Information Around Transactions

The third scenario pertains to contextual data for transactions. Let us go back to our neighborhood restaurant. Let us also assume that Gino's Pizza is a popular joint, thus, and several transactions are processed in an hour. If several orders are placed over the phone or by users scanning the business address QR code, the restaurant operators have no way of knowing which transaction corresponds to which order.

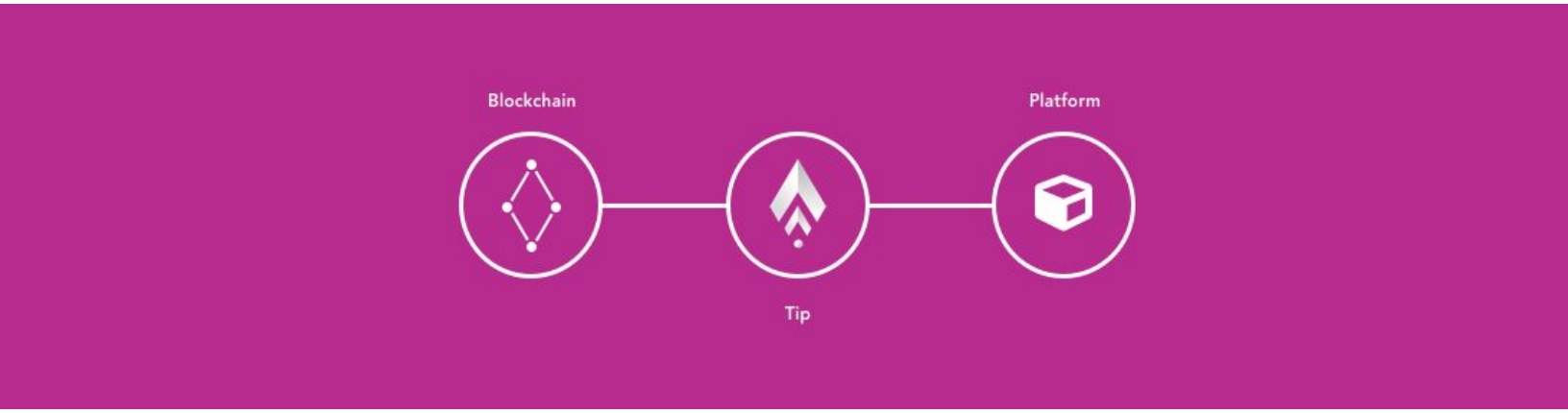
One ineffective solution would be to match the value of transactions with orders. This would not work if there is more than one transaction with equal or similar value. Another option would be the customers reading out the source address out over the phone, and the order taker recording this address, and then match addresses when transactions come in to attribute them to the correct customer. With only addresses hashes to go by, this is technically infeasible. Now imagine that the pizza shop is expecting deposits from multiple customers. It would be a total nightmare for the store employees to match transactions to customer addresses.

Another ineffective solution used presently is the businesses generating multiple addresses, one for each customer or order. This is a tedious and cumbersome process for small businesses to manage, as it leaves them with an ever-increasing number of addresses to manage over time. This is another non-solution to this problem.

4

The Solution: Tip Blockchain

4. The Solution: Tip Blockchain



Before we get into the details on how the Tip solves the specific problems presented above, let us first understand the solutions the platform provides.

4.1 High Level Overview

a. Human-friendly Addresses

The first solution presented by the Tip is unique, user-friendly addresses or address aliases. Each address on the Tip Blockchain is created from a cryptographic hash, just like with Bitcoin or Ethereum. However, this is an implementation detail users should not have to care about. With Tip, users will be able to create human-readable names or aliases on their accounts and transact using these aliases. The network maps the alias to the corresponding address, so transactions are routed correctly to the intended recipient.

An analogy to this issue is if users had to find websites using IP address instead of host names. This would have been an untenable situation that would have hampered mass user adoption of the internet. The Domain Name Service was created, which maps human-readable names such as `google.com` to the IP address `172.217.1.174`. Just as hostnames were a critical feature for mass adoption of the internet, user-friendly address aliases are a critical requirement for mass adoption of cryptocurrency.

b. Transaction Metadata

In addition to address aliases, Tip also provides the ability to attach arbitrary metadata to both accounts and transactions. Actually, attaching an alias to a wallet address can be thought of as a special case of attaching metadata to an address. This metadata can be protocol dependent, such as an alias, or arbitrarily specified by the user. It will be stored in the form of key-value pairs. This metadata would allow for the storage of arbitrary data the user chooses to specify.

Metadata storage on the Tip Blockchain will support both private and public data. Public metadata will be stored in plain text on the network, thus, would be accessible to anyone on the network.

Private data will be encrypted by the account holder and stored on the network. This data can then only be decrypted and viewed by the holder of the private key, the owner of the account.

c. Discovery 

So now we know that data can be stored alongside addresses and transactions. What can this data be used for?

The Tip Blockchain is a fully indexed, searchable platform. Users will then be able to discover other users and new content on the network by searching through the data using client applications. Network nodes will expose a RESTful API that store and access this information on the network. Decentralized apps (DApps) can then be built to use this RESTful API to discover information. DApps will be able to create their own custom fields and protocols to extend the usability of the platform.

d. Peer to Peer Instant Messaging 

The first DApp built on the Tip Network, by the Tip team will be a wallet app, incorporating several features of the platform. Account aliases, search and instant messaging will be bundled into this wallet application. Instant messaging will be a central feature of the application, as the primary goal of Tip is to drive mass adoption of the Tip Blockchain, and instant messaging provides a way to do that. Users will be able to send transactions directly from within messaging conversations, or by using the traditional wallet interface.

Users can also find other users or businesses by username (alias) by searching the network, and by adding contacts from their phone's address book. Various messaging formats will be supported, including:

- Text messaging
- Picture messaging
- Voice messaging
- Animated gifs
- Video calling.

All messages will be exchanged over peer to peer connections without being routed through a centralized server.

e. Point-of-Sale System

At the other end of the spectrum the cryptocurrency adoption problem, is businesses. The solution Tip provides to businesses will be another DApp, built specifically for retailers.

This is a point-of-sale system, which will include features such as:

- Transaction management
- Order management
- Customer management
- Sales reporting and analytics

- Third party integrations

This application will be a monumental boost to retailers that already accept cryptocurrency for payments, as it provides features they are used to in traditional point-of-sale systems, that were missing in the cryptocurrency space. It will also serve as a catalyst to getting more retailers to accept cryptocurrency payments, as it provides the conveniences they are used to with a traditional point of sale system, at a fraction of the cost.

4.2 How Tip Solves Problem Statement Issues

With the example problem defined earlier, having gone over the high level solutions provided by Tip, we are now ready to consider how Tip solves those issues presented.

a. Peer to Peer Cryptocurrency Transactions

In the first scenario, Bob needs to send Alice a cryptocurrency transaction to pay her back for lunch she bought him. With the Tip solution Bob has a few options:

1. Bob asks Alice for her Tip account name. @AliceBlake2000 would be a lot easier to remember than Bitcoin address 16rCmCmbuWDhPjWTrpQGaU3EPdZF7MTdUk.
2. Bob searches the network's database for Alice using her name. If she has saved this information on her account, he would be able to find her with a simple search, come up with a list of suggestions, and select the correct user. Bob will then be able to confirm Alice's identity by initiating a chat conversation with her. Once Bob and Alice find each other on the network, they can then chat and send transactions easily across the network.

This process is much easier than other cryptocurrency solutions available today.

b. Small Businesses Accepting Cryptocurrencies

With the Tip solution, Gino's Pizza can put their account alias, @GinosPizzaBaySt on their website. Regulars visitors will get to know the account name off hand. This will also make it possible to take orders over the phone, paid for by TIP Token.

Gino's Pizza will also be able to tie transactions to specific orders or customers using the Tip point-of-sale system.

c. Contextual Information Around Transactions

Tip Network's transaction metadata fields, allow for additional information to be attached to transactions, which can be used for arbitrary reasons. One obvious use-case of this would be to send identifying information along with transaction.

In the case of Bob ordering pizza over the phone, using the customer management feature of the point of sale system, Gino's Pizza can send a payment request to Bob. The payment request will contain all the information needed to settle the order. Using the Tip wallet app, Bob will be able to

attach this order number to the transaction. The wallet app will append the following transaction metadata:

```
address: BobJones1989
memo: 4 topping extra large pizza
order #: 37
price: 19.57 TIP
```

Once the transaction is received at Gino's Pizza, the point-of-sale System at the pizza shop is immediately able to identify the source address as customer Bob's, and the order this transaction is associated with. The order is then settled with no further work needed on the part of store employees.

The flexibility of the Tip platform means that various customized DApps can be built. These are just some examples of what is possible with the platform. Developers will be able to create a limitless number of applications to utilize the power of discovery on the Tip Blockchain.

5

Technical Implementation

5. Technical Implementation

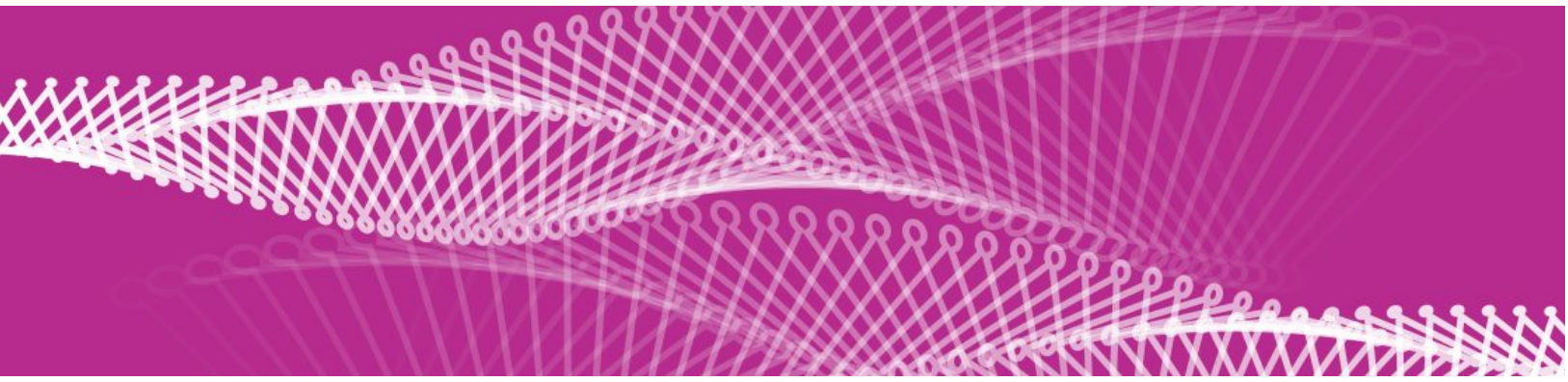
5.1 The Present: ERC 20 Token on the Ethereum Network

A core component of the Tip solution is the Tip blockchain. Tip blockchain will have features which enable discovery on the blockchain. Building a blockchain with these advanced features would take a significant amount of time. We believe the solutions proposed will be truly revolutionary in the cryptocurrency space. The problems highlighted are ones that need to be solved immediately, and not in a few years. Thus, the Tip team will launch the Tip solution on the Ethereum Network initially. This initial solution will use a hybrid model of decentralized network and apps, and centralized database to solve the problem of discovery in the short term.

It is common in the cryptocurrency space for ambitious projects to not release any functioning software for years in some cases. This is where Tip is different; Our goal is to provide solutions to start the process of mass market adoption right away. This is why we will be first launching on the Ethereum network. Due to the fact that Ethereum does not provide an elegant solution to storing data on or off-chain natively, the Tip solution on Ethereum will be coupled with a distributed off-chain database which will provide the name registration, indexing, and querying of information. This will mean that our users can start using our features within a few months, and not have to wait years for the development of the Tip Blockchain. Once the Tip Blockchain is developed, the data stored off-chain will be migrated to the new blockchain. A snapshot of the state of the network will be used in the creation of the genesis block. The ERC20 TIP tokens will then be converted to the new network tokens at a one-to-one rate.

The sections below discuss the interim centralized-decentralized hybrid solution to be launched in the first phase of the Tip solution.

a. Tip Indexed Database



This database will serve as the backing store for the Tip Network.

While Ethereum allows for the storage of arbitrary data on-chain, this solution has a couple of notable limitations:

Storage of data requires the creation of a smart contract. Users can not just store data on-chain

without first writing a smart contract to manage this data.
The data is not indexed or searchable. Data is stored in a variable on the blockchain, and can be retrieved only by a user calling a specific function or accessing the variable by name.
With the Tip database, users can store arbitrary data, either attached to addresses or transactions. This data is all indexed and searchable by other users on the network using our simple app interfaces.

We considered the use of Interplanetary File System (IPFS) for the storage module of the first phase of the Tip solution. However, a limitation of IPFS not being easily indexed and searchable meant an indexing and search layer would have to be implemented on top of that. Thus, we decided to stick with a traditional database management system (DBMS) to fulfill the storage requirements of the solution.

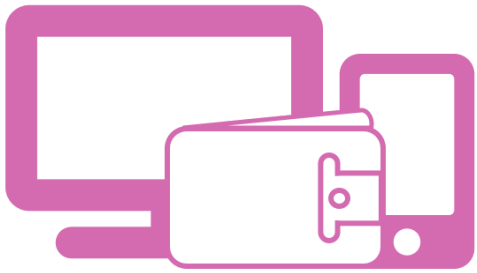
The database is distributed and replicated across multiple availability zones to guarantee high availability. This will ensure that if one node goes down the system can keep functioning with no interruption. The target uptime is 99.99%. In phase 2 of the solution, indexing and searching will be performed directly by blockchain nodes, and data stored in IPFS, removing any centralization in the Network.

b. Tip Network Node

The Tip network node provides the interface clients talk to in order to interact with the rest of the Tip Network. The nodes provide a REST API clients can access. Only data storage and retrieval requests are handled by nodes. TIP token transfers are sent directly to the token smart contract address and processed on the Ethereum blockchain. Thus, Tip network nodes are not responsible for confirming or processing transactions in the first phase of the project.

Data requests sent to the node will have to be signed by the sender's private key. The node will be able to use the public key of the sender to validate the authenticity of the request. Any requests not validated in this way will be rejected. Once a request has been validated, the node will then be able to store the associated data in the indexed database.

For this phase of the project, all nodes that have access to the Tip database will have to be trusted by the network. We foresee a situation where Tip Foundation runs several public nodes that can be used by the general public. To ensure a high level of availability, multiple nodes will be set up in various availability zones across the globe. Tip clients will be able to connect to any node interchangeably, thus, guaranteeing a state of high availability.



c. Desktop and Mobile Light Wallet: Kasakasa

The main interface users will use to connect to the Tip Network is a mobile and desktop wallet application, Kasakasa.

The mobile version of this wallet will have iOS and Android native apps, covering more than 95% of mobile users[1]. We will also be releasing a cross-platform desktop app for Windows, Mac, and Linux which will provide coverage to 97% of desktop computer users[2].

i. Address Aliasing, Attaching Address and Transaction Metadata

Users can attach an alias or username of their choice to their wallet address. Other users will then be able to discover them by searching for this username. In this phase of the project, metadata will be limited to address aliases and arbitrary metadata on addresses. Metadata will also be limited to 128 bytes per field, with a total payload size of 1KB or less. This should be sufficient for most use-cases, as only textual metadata is supported, which is lightweight.

ii. Search and Discovery

The wallet app will contain a Discovery section, which enables users to search for content on the Network. This content can be other users or transactions tagged with the search term.

iii. Peer to Peer Instant Messaging

As an extension of the Discovery feature, users will be able to interact with other users on the network over peer to peer instant messaging connections. All messages transferred will be done directly between the two users, without going through a central server. Messages will be encrypted and only readable by the users involved in that conversation.

The instant messaging feature will support rich media types such as images, video, voice messages, and animated GIFs.

Messages will also be encrypted end-to-end and sent over a secure channel using Datagram Transport Layer Security (DTLS). DTLS is a derivative of the Secure Socket Layer (SSL) which is used to secure most of the secure traffic across the internet.

iv. Send and Receive Transactions Over Chat

A central feature of the wallet application will be the ability for users to send token transfers from within the chat interface. This feature will hugely simplify the process of finding users to send cryptocurrency to, and the overall transaction process.

Users will also be able to send payment requests to other users. This feature makes it easy to settle bills or payments for fixed amounts.

d. Merchant Point of Sale System: Sika

To supplement our consumer focused solution, Kasakasa, Tip Network will create a desktop and tablet application for small businesses, which will make it easier for businesses that accept cryptocurrency.

Tip Network will work closely with retailers to deliver a solution that gives them the highest value and ease of use.

This solution will be very attractive for merchants because, as cryptocurrency transactions become more pervasive, it presents a suitable alternative for consumers looking to purchase goods and services. Current payment networks such as Visa and Mastercard charge processing fees of 1.5% - 3.0% per transaction[3], depending on location. This is a relatively high fee that merchants must absorb, or pass on to customers by charging higher prices. Transaction fees on Tip will be 0.1% - 0.2% for most transactions. This presents a 15-30 fold decrease in fees, which most merchants will welcome as it means higher margins for them, and an ability to offer their customers lower prices.

i. Transaction and Order Management

The transaction and order management feature allows retailers to tie TIP token transactions to orders. These connections will be made automatically using the metadata attached to each transaction. Retailers will also be able to send payment requests to customers. These payment requests contain all the information the customer wallet app needs to satisfy the order.

ii. Customer Management

The customer management feature will allow retailers to keep track of customers by observing their purchase histories, allowing retailers to identify their most valuable repeat customers. This will be possible by identifying the source of transactions and being able to group them together and perform various metrics and analysis on the data.

This feature also allows retailers to reward valuable customers with special offers and discounts.

iii. Sales Reporting and Insights

A common feature of many traditional point-of-sale systems is sales reporting and analytics. This allows retailers to analyze their sales data. Business will be able to analyze data by time period, by customer, by order type, and several other user-defined metrics.

iv. Third Party Integrations

The Sika point-of-sale system will provide a baseline for retailer accepting cryptocurrency, that far outpaces any other solutions on the market today in the cryptocurrency space. However, retailers using existing point-of-sale systems might want a way to integrate their cryptocurrency transactions on Sika, with their regular system.

The first step of this support will be the ability to export data from Sika in formats that can be easily ingested by other popular point-of-sale systems. Retailers will be able to automate this process so

that their systems are synchronized on a regular basis. Based on client requests, deeper integrations will be possible with the most popular point-of-sale systems.

5.2 The Future: The Tip Blockchain

The long-term goal of the Tip Project is to move to the Tip blockchain, where indexing and searching are supported natively on-chain. Transfer of TIP tokens will also be processed on the Tip blockchain, and not on Ethereum. This has the result of removing the centralized database and replacing that with the fully decentralized Tip Node network and IPFS.

The following sections outline how the Tip Network operates in a fully decentralized mode.

a. The Tip Protocol

Tip Network nodes operate on the Tip protocol. The protocol defines the operations clients can perform. The tip protocol is designed to have familiar verbs as the HyperText Transfer Protocol (HTTP), one of the core protocols that power the world wide web. Various transaction types are possible on the Tip Blockchain.

i. Send

The SEND action is used to transfer TIP tokens from one account to another. This is the basic function used for transferring value between accounts.

```
send(amount: Double, data: Dictionary? = null)
```

The value represents the value to be transferred. The data argument is the data payload attached to the transaction. This optional argument, which is has a default value of null, if no value is passed.

ii. Set

This is used to store a value on the Tip blockchain. This is a key-value pair. The only limitations to storage is size of data payload. Keys are restricted to 32 bytes, and values limited to 512 bytes.

```
set(key: String, value: String)
```

These limits are put in place to ensure users are not storing a huge amount of data on-chain, which would bloat the size of the chain. Only the owner of an account is able to store data on a given account.

Both public and private data will be supported. Public data will be viewable by any actor scanning the blockchain. Private data will be stored after first encrypting the data using the sender's private key. Data is encrypted using the AES block cipher, the most secure encryption ciphers available. AES is used by the US government and other institutions to secure data. Thus, only the owner of the account will be able to decrypt and view the data. Only the value portion of the storage pair will be encrypted, as the key will need to be in plain text to be retrieved by the account owner.

The cost of storing data on-chain is paid by the user sending this transaction. The cost of the

operation is dependent on the size of the data being stored. The following formula is used to calculate the cost.

$$\text{TotalCost} = \frac{\text{DataSize} \times \text{UnitPrice}}{\text{MaxDataSize}}$$

Here are the definitions for the variables used in the equation:

- TotalCost - The total cost of the storage operation in TIP token.
- MaxCost - The current maximum size in bytes that can be stored in a single operation. This value will be initially set at a default of 1024 (1 KB) and can be tweaked high or lower depending on storage pressure on-chain and other considerations.
- DataSize - The size of data to be stored in bytes. This is only the size of the value. The key is not factored into storage cost as it is limited to 64 bytes, that size is factored into the price.
- UnitPrice - This is the price per unite of storage (byte). This value can also be adjusted over time depending on storage pressure on-chain. This is similar to the gas price on Ethereum.

This operation can be called on an address or a transaction.

iii. Get

Return a previously stored value on the chain. Only public data will be returned by the network. If private data is somehow returned, it will be fully encrypted. There is no known way to decrypt data encrypted with the AES cipher, thus, this data will be unusable by any actor without the account owner's private key.

This is a free operation as this request is processed by a single node and the result of this does not have to be propagated across the network.

This operation can be called on an address or a transaction.

iv. Delete

This operation is used to remove data from the index that was previously stored on the chain.

```
delete(address: Address, key: String)
```

This operation can only be called on an address. Deleting metadata associated with a transaction is not supported as transactions cannot be modified after they are created.

v. Search

Data stored on-chain will be fully indexed and searchable. Only data marked as public will be indexed and searchable. Private data will be retrievable only by using the GET operation on the field the data is stored.

This is also a free operation as it does not alter the state of the chain. This request is also processed by a single node and the result of this does not have to be propagated across the network.

This operation can be called on an address or a transaction.

vi. Alias

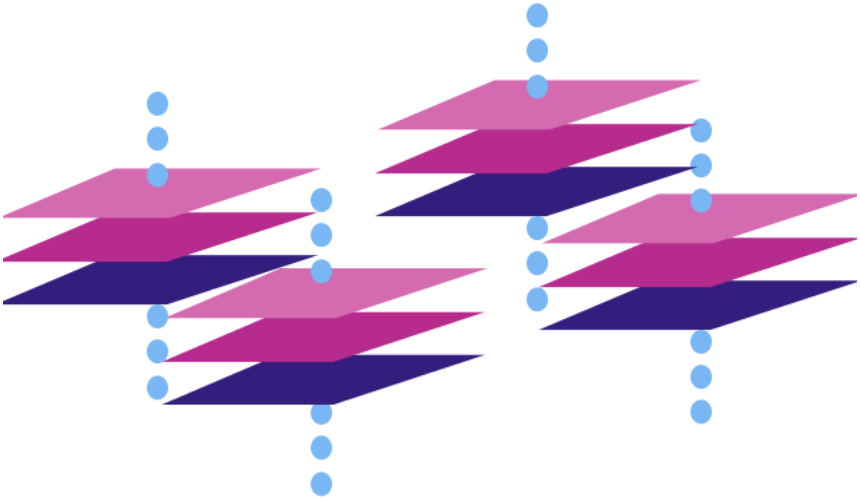
The alias operation can be thought of as a special case of the set operation. This is the operation used to attach a name or an alias to a wallet address.

This operation can only be called on an address. However, it is possible for a user to call the set operation on a transaction, with the key: 'name', and value, any suitable value of the user's choosing. In this case, this will not be considered as a special name operation, just as a regular set operation on that transaction.

b. Interplanetary Filesystem (IPFS) Backing Store

The InterPlanetary File System (IPFS) is a peer-to-peer distributed file system that seeks to connect all computing devices with the same system of files[4]. IPFS allows for distributed data storage on a directed acyclic graph data structure, which removes the need for having a centralized data store such as a traditional relational database, as used in the first phase of Tip Network implementation.

IPFS stores data by creating a unique hash of each file stored on the network. Each file's contents can then be accessed by using the unique hash for routing. Since IPFS is a fully distributed network, this removes any centralization in the Tip Network implementation. Metadata associated with accounts and transactions is hashed and stored on IPFS. A reference to this hash is then stored on the Tip Blockchain. This hash can be used by Tip Nodes to retrieve this data when requested by users.



c. Tip Blockchain Node

The main functions of the Tip blockchain nodes are covered in the following sections.

i. Processing Transactions

Transactions on the Tip blockchain are any write operations that can be specified in the Tip protocol. Tip blockchain nodes (nodes) are responsible for processing transactions and propagating them to

other nodes on the network.

Nodes use the Delegated Proof of Stake consensus mechanism, which is much less resource intensive than proof of work (PoW), thus, transactions can be confirmed much quicker than in a PoW system. This also frees up node resources to perform other tasks such as querying the chain index.

ii. Querying the Chain Index

Each Tip node (node) contains the full index of IPFS hashes stored on the network. Using this index, nodes can search for data as specified by the user and find the hash of where the data is stored in IPFS and return this to the caller.

d. Consensus

The Tip Blockchain will use a delegated proof of stake (DPOS) consensus mechanism for securing the network and generating new blocks. In DPOS, a select number of delegates are elected and have the responsibility of securing the network. These delegates run trusted nodes which are responsible for confirming transactions. Transactions are then confirmed by these trusted nodes. Delegates are rewarded for securing the network by receiving more TIP tokens in newly created blocks.

Delegates are elected by holders of TIP tokens. The elected delegates are incentivized to stay honest by this democratic system, in which underperforming or rogue delegates are voted out by the voters, and new trusted delegates voted in.

We do not expect contentious forks to be an issue on the Tip Blockchain. However, in the unlikely event that that does occur, the fork chosen by the majority of delegates becomes the main network. With the DPOS model, delegates are accountable to the users who elect them. Since these users are the holders of TIP tokens, decisions of delegates are more likely to align with that of token holders. Delegates who do not follow the will of token holders will be removed and replaced. This democratic process is much more favorable to holders of tokens than on a Proof-of-Work based network, such as Bitcoin and Ethereum, where miners have more leverage in steering the direction the network takes.

Full Nodes: 99 Delegates
Block Time: 9 seconds
Block Reward: 24 TIP (decreasing by 4 TIP every year or 3,504,000 blocks)
Transactions per second: 1,000, scale up to 8,000
Blocks per day: 9600
Token Emission: 230,400/day or 84,096,000 year 1 (8.4%)
Tokens per delegate: 849,454 (Year 1)

e. Kasakasa and Sika Version 2.0

The features of the end-user wallet and retailer point-of-sale systems in phase 2 will be identical to those in phase 1, albeit enhanced by switching to a newer, faster, purpose-built chain. Arbitrary metadata tagging will also be enabled from within the wallet application.

Due to the backing store of the network being moved to IPFS, the size limit on payload will be increased to 1MB. Kasakasa wallet app will include an interface for setting these arbitrary fields, searching and displaying results. Users will also be able to search and vote for delegates to secure the network from within the app.

The Tip Token

6. The Tip Token

The TIP token, is the unit of account on the Tip network. It is the native currency on the network, thus is used to pay for transactions, storage and other services on the network.
TIP is a utility token that the users will be able to use it to:

- Transfer between peer to peer.
- Use it to buy things in the real world with merchants who accept TIP.
- To store data on the Tip decentralized database.
- To pay for transaction fees on the network.
- Reward developers for creating apps that run on the Tip Network.
- To vote for delegates to secure the network.
- For delegates to stake their coins and earn staking rewards for securing the network.

The Tip platform provides an ecosystem that will allow users to purchase both digital goods and services on the platform, and also tangible goods in the real world from merchants that accept Tip token.

6.1 Token Distribution

a. Token Sale

In order to generate financing to fund the research, development, and marketing of the Tip Blockchain, Tip Inc will be launching a sale of TIP tokens which will be open to the general public. Users will be able to purchase TIP tokens using Ethereum tokens (Ether). The sale price for Tip will be 1 ETH = 10,000 TIP, or 1 TIP = 0.0001 ETH.

The token sale will run for four weeks. During this time, 60% of the total TIP supply will be available for purchase by the general public. Any unsold tokens will be burned.

b. Bounty Program

Besides purchasing TIP tokens during the token sale, users will be able to acquire TIP tokens by participating in bounty programs that Tip will be launching.
More information about bounty programs will be announced on our social media profiles.

c. Token Emission

Token emission is the rate at which new tokens are generated. In blockchain projects, token emission plays a very important role in securing the network. Public blockchain networks are secured

and kept running by operators who run nodes to confirm transactions. As stated earlier, TIP uses the Delegated Proof of Stake (DPOS) consensus protocol, where delegates are responsible to processing transactions and securing the network. These delegates are rewarded by collecting the transaction fees in blocks they process, as well as the block reward for blocks they mint. The block reward is the reward delegates receive for creating new blocks.

The TIP emission rate will be 24 TIP per block in year 1. This translates to 84,096,000 for the first year, or an 8.4% annual emission rate.

The TIP emission rate is significantly lower than other blockchain projects. For comparison purposes, the maximum block emission rate computed annually for other blockchain projects are: Ethereum 14.97%[5], Monero: 19.1%[6], Neo 30%[7], Lisk: 15.7%[8].

7

Competitive Advantages

7. Competitive Advantages

Next, we will cover other blockchain solutions that provide a subset of the features provided by Tip. We will then indicate how the Tip solution compares with those other projects.

7.1 ENS: Ethereum Name Service

ENS offers a secure and decentralized way to address resources both on and off the blockchain using simple, human-readable names.[5]

ENS eliminates the need to copy - and worse, type - long hexadecimal addresses. With ENS, you'll be able to send money to your friend at 'aardvark.eth' instead of '`0x4cbe58c50480...`', interact with your favorite contract at '`mycontract.eth`', or visit a Swarm-hosted site at '`swarmsite.eth`'[9].

While ENS is a step in the right direction, by moving away from cryptographic addresses, it is not really a platform targeted at the average non-technical user. ENS is akin to the internet's Domain Name Service (DNS), in that webmasters and site operators are the only ones who are concerned with the service. Everyday internet users do not know how to use DNS, and largely, do not even know of its' existence. To use ENS, users have to buy names on third-party sites as webmasters would buy domains on GoDaddy. ENS does not provide an ecosystem that makes name registration easy and straightforward. Also, after names are registered, there is not much that users can do with these names.

Tip is a better system than ENS because we provide an ecosystem where users can easily register names, search and find other users and businesses, and transact freely and easily using the apps in our cohesive ecosystem. Usernames are also stored on-chain, so any Dapps built to interact with the Tip blockchain will have access to the usernames, without having to rely on an external service like ENS.

7.2 Status Network

Status is an open source messaging platform and mobile interface to interact with decentralized applications that run on the Ethereum Network[10].

Status offers various features such as human readable usernames and instant messaging. While these features are a step forward in cryptocurrency, without true discovery, the applications of this technology are limited. Also, by not providing any solutions to businesses, half of the problem of cryptocurrency adoption remains unsolved.

7.3 KIN: Kik Network Token

Kin token is the token released by the Kik platform as the primary currency used within the Kik chat app and the Kin ecosystem.

Kin provides a decentralized ecosystem of digital services, where users can exchange value. The Kin cryptocurrency is currently integrated Kin platform, and the primary purpose of this is to serve as a rewards engine for Kik's existing messaging platform. Based on the Kin whitepaper, Kin token is used primarily within the Kik ecosystem, and not a general mass adoption cryptocurrency.

While the Kin cryptocurrency is an exciting project, by not having solved the issues of discovery mentioned in this whitepaper, such as friendly usernames and on-chain discovery, the obstacles to mass adoption will persist.

7.4 Telegram

Another cryptocurrency project that has generated a huge amount of publicity is the Telegram Open Network (TON).

Telegram is a messaging platform which boasts over 100 million users. While a lot of information about this project is not presently available, Telegram is expected to launch a token sale to fund the creation of a blockchain[11] project with features including:

- Instant messaging
- Two dimensional distributed ledgers
- Infinite sharding
- Side chains
- Many more features.

This is a very ambitious project which aims to raise up to $1.2 billion to fund the project[12]. This project will undoubtedly take years before a solution is on the market.

Mass market adoption of cryptocurrency needs to happen now. Which is why Tip Network is focused on solving the most pressing issues pertaining to user adoption, and have a solution out to market ahead of the competition.

From the above comparisons, it is clear that Tip Network provides the most value to the user in terms of the holistic approach we are taking towards solving the problem of cryptocurrency mass adoption. While the ability to send cryptocurrency over chat is a neat one, we believe that coupled with the other features we propose, such as on-chain transactional metadata supercharged with discovery provide a multitude of everyday use-cases other chains can just not support. Thus, Tip Network is obviously superior to anything in the cryptocurrency space in terms of solving the mass adoption problems

8 Conclusion

8. Conclusion

Tip proposes innovative solutions to the problems users face in using cryptocurrency for day to day transactions. We do this through the power of discovery on-chain, and building applications that harness the power of discovery on-chain to create customized solutions for end users and businesses. Discovery is made possible by a blockchain that supports storing arbitrary metadata off-chain in IPFS, and indexing this data on-chain so it is searchable and discoverable by end users and decentralized applications. This provides an extensible platform on which various other apps can be built to utilize this data stored on-chain.

The first decentralized app built on the Tip Network is the Kasakasa wallet, which supports address aliases or usernames, and makes sending transactions as easy as sending an instant message. The second application, targeting businesses is the Tip point of sale system, Sika, which makes receiving cryptocurrency payments as easy as using other point-of-sale systems retailers are used to. With these solutions in place and the solid foundation of on-chain discovery, Tip is poised to be at the helm of the cryptocurrency revolution.

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