

WAIVIO

W H I T E P A P E R

VANCOUVER
CANADA
2018

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MISSION

Promote mass adoption of cryptocurrencies by enabling regular people to earn crypto while doing something useful and fun.

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BACKGROUND

Massive amounts of hardware and electricity are wasted today on mining new coins (proof-of-work). A select few with technical expertise and vast resources can benefit, as competition between computer systems reached unprecedented levels. Alternatively, proof-of-stake systems benefit those who vest substantial amounts of money, while delegated-proof-of-stake consensus requires both money and considerable reputation to earn new coins. All these systems effectively exclude regular people from participation.

Proof-of-knowledge (aka. proof-of-brain on Steem blockchain) consensus allows people to earn cryptocurrencies through distributed social networking, where all content contributions are validated by the community. Every day new coins are shared between all participating members proportionally to earned upvotes, instead of having a single block winner that “takes it all”.

This approach allows regular people to earn crypto by doing useful work that is recognized and confirmed by the society.

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SOCIAL CRYPTOECONOMICS

Social cryptoeconomics enable new classes of jobs, where people are compensated for sharing their experiences, reviews, ideas and expertise with a global community. Distributed social networking becomes the new form of cryptomining, which no longer requires special technical knowledge or substantial resources. Instead, anyone with a mobile phone can now participate and build an independent business on a distributed blockchain.

Social cryptoeconomics offers an entirely different approach to monetization of online communities. Distributed social networking is not just another source of revenue in addition to subscriptions and advertising, but rather a complete redesign of the system. Instead of charging customers, they are being rewarded. Instead of manipulating users to the benefit of advertisers, businesses can bid for attention of users without any intermediaries, having an objective evidence that users match certain criteria.

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WHERE DOES MONEY COME FROM?

A common point of confusion is, if money does not come from outside the system in the form of payments from users or advertisers, that there is no real value within it.

However, this is not the case: the system has value in itself

Within an online community people are actively exchanging labor and value: they provide content, invest their time and expertise, readers are being entertained and educated, common knowledge is being accumulated and much more. Yet traditional business models fail to capture that value and express it in a monetary form.

Imagine an island community that still uses barter economy. For that community to be integrated into the global economy three things should happen: introduction of a local currency, fair pricing of goods and services traded within the system and a currency exchange with the global system to establish relative value of that local currency. The community in this example didn't receive money from outside of their system at all, yet the global economy increased by the size of that island's economy. Some unique services may not even have much value outside of the island, but as long as local demand exists, that service will also have a fair global market price.

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WHY THIS HAS NOT BEEN DONE BEFORE?

Exchanging a product or a service for money is common practice. But proper accounting for the value of a social interaction is much more complex, because its value depends on an uncertain outcome: how many people were involved (likes, shares, comments), what was their own reputation, whether their followers got interested as well and so on. Along the way, all participants should be fairly compensated for the actual results of their actions.

Besides complexity of calculations, there is another obstacle – trust. Can we trust a central authority to perform all calculations and properly distribute benefits to all parties without any discrimination or censorship? How much value will that intermediary keep for itself? How can we be sure no abuse of power will happen?

Fairness, transparency and highest level of independent trust can be ensured through a distributed network operating on a public blockchain.

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STEEM BLOCKCHAIN

Steem blockchain was launched on June 4, 2016 to power social communities through incentivizing content creation and curation. Steem leverages wisdom of the crowd to assess the value of content and distributes rewards accordingly. Steem is using proof-of-brain consensus, where users receive new tokens according to the proven value they produced for the community.

Steem blockchain serves as a solid foundation for social cryptoeconomics and empowering multiple communities, allowing users to earn cryptocurrencies in exchange for their individual work as authors and curators.

Within two years [Steemit.com](https://steemit.com) (public interface for Steem blockchain) has grown in popularity to become a leader in social cryptoeconomy, and has demonstrated resistance to different types of attacks and abuses. Steem underwent 19 successful hard forks addressing critical issues and demonstrating ability of the distributed community to handle inefficiencies and external threats.

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WHAT IS WAIVIO

Waivio is a combination of an open Reference Protocol, Attention & Reference Marketplaces and Waivio Labs. Waivio is built on Steem blockchain and uses a Smart Media Content token under the name WVIO to enable social cryptoeconomics, integrate dedicated social communities into a distributed economy and redirect advertising budgets directly to users, instead of large numbers of intermediaries.

[Waivio Reference Protocol](#) enables accumulation of knowledge in distributed social networks and establishes domain expertise of users. Examples of such social apps are numerous, including product & service reviews, adventures & experiences, sports & hobbies, and even ideas & products development. Today many of these online communities struggle to monetize through subscriptions or advertising.

[Attention & Reference Marketplaces](#) are open platforms where businesses can bid for attention of their target audiences directly, having objective proof that users match their criteria, while users can trade their attention on their own terms. Advertising budgets now can be redirected directly to the community, rather than intermediaries.

[Waivio Labs](#) are involved in creation, facilitation of creation and re-purposing of legacy social apps to function on distributed blockchains and to use social cryptoeconomics for rewarding content creators and curators. Waivio Labs provide resources and expertise designing apps, building social audiences and establishing content policies to attract high-quality authors, especially at early stages.



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W A I V I O

R E F E R E N C E

P R O T O C O L

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WAIVIO REFERENCE PROTOCOL

In order to allow meaningful accumulation of knowledge in a distributed social network, it is important that users reference the same items/places/things/objects/ etc. in their posts. Traditional social hashtags are now mostly used for marketing purposes, plus it is difficult to invent a reasonably sounding hashtag for every, say, cocktail recipe and ensure all people use the proper hashtag every time.

Waivio introduces an Object Reference Protocol on Steem blockchain to create information graphs and improve social graphs with indirect connections between users. Waivio objects enable efficient accumulation of wisdom of the crowds over time, like product or service reviews, even if objects are referenced under different names in multiple languages.

Objects can be launched and improved by any participant. Object definitions and properties are accumulated from individual user submissions and prioritized according to community votes, thus rendering the most accurate and comprehensive description of the object field by field, parameter by parameter.

There are no limits to objects themselves. It is foreseeable that at some point Waivio will incorporate names and their variations of most geographical places, majority of living things and plants, all trademarks, many product catalogs and much, much more.

Waivio Objects belong to the entire community and cannot be owned or controlled by a single user or entity. Similar rules govern Wikipedia, where businesses are not allowed to control pages describing their business or their own products and services.

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WAIVIO OBJECTS

An Object can be created by any user on the blockchain and later enhanced or referenced in posts by the entire community. Objects can be used to identify physical objects, like products, geographical locations, businesses, services, names, experiences, terms and so on, as well as concepts and general notions.

[CreateObject](#) command is posted to the blockchain with the initial Name (with Locale) and Type of the Object. This initial immutable post becomes the reference point for all later AppendObject commands and all regular posts referencing that Object. In case of duplicate entries on the blockchain it is recommended that apps only use the earliest CreateObject post for references.

[AppendObject](#) command is recorded as a reply to the original CreateObject post and contains a single Field and a single Parameter (with Locale), thus enabling community voting for each field parameter independently. Parameter can be a single word, a lengthy description, a list of references or a meta collection of sub-fields (ex., address), but in all these cases, the community will be voting for the entire post as it represents a single parameter. In case of multiple fields or parameters embedded into a single AppendObject post, it is recommended that apps only use the first field with the first parameter, ignoring all other entries.

AppendObject command may contain a ChangeField instruction with an Effective Date indicating that a certain field should be presented with a different value after a particular date (ex., business is going to re-launch with a different name). Since these posts are unlikely to accumulate a competitive number of upvotes, these entries must be upvoted by a moderator, which is recognized by the app as an authority.

It is recommended that all CreateObject and AppendObject posts be upvoted by the author of the post to establish the initial weight of the object and parameter(s).

If an Object has multiple required fields, it is recommended to submit a CreateObject command followed by multiple AppendObject replies to the blockchain. Which fields are required and which ones are optional is governed at the app level.

Object Examples:

[Restaurant:](#)

Required fields: name, address (or GPS coordinates), category

Optional fields: phone, URL, photos, pros, cons, tips, menu, owner, hours of operation

[Hiking Trail:](#)

Required fields: name, trail head GPS (or set of key GPS coordinates), category

Optional fields: photos, pros, cons, tips, track, closest drive up GPS point, complexity level, incremental elevation, time required, season

When an Object is presented to users, all entries on the blockchain referencing the initial CreateObject post should be analyzed and prioritized according to accumulated votes for each parameter.

Certain fields may have only a single winning parameter (ex., product icon, catalog category, etc.), while other fields may have multiple results sorted according to their weights (ex., photos, lists of pros & cons, etc.)

Specifying locales for all field parameters enables aggregation of data for the same Object in multiple languages and from multiple countries.

Some fields may require a date stamp, for example, a business changing its name at a certain point in time.

[LinkObject](#) reply allows re-purposing of elements from older posts as fields for an object, while specifying the original author as beneficiary of post rewards.

Example:

Restaurant review (post) has a number of photos, and one of the users decided that a particular photo can serve as an anchor photo for the restaurant (object) itself. By linking this photo as a new parameter for an icon field that user improved the object, while preserving all credits for the original author.

In some cases, LinkObject command can be done automatically by an application, associating information from older posts or objects with newer objects.

Example:

Longer hiking trail, which was created previously and contains a lot of photos, now also partially matches a shorter hike created recently, which still does not have any photos. An app may choose to use LinkObject command to re-purpose one of popular photos from the matching section of the longer hike as an icon for the shorter hike, while keeping the original author of the photo as beneficiary of that posts' proceeds.

[DeleteObject](#) reply gives instructions to the app to ignore a particular object. For this command to be processed as a valid instruction, it should be upvoted by a moderator approved by the app.

[MergeObjects](#) reply (to a post with an earlier date) is a suggestion to merge two independent objects into a single object. Once posted, this command should accumulate at least 10% of the value of votes from both objects, at which point these objects may be processed as a single object by apps. In this case all future references should link to object, which was recorded on the blockchain earlier. Apps may choose to merge objects based on a simple upvote from an approved moderator.

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ROLE OF APP MODERATORS

All records on a distributed blockchain are immutable by design. Any person or computer can read and post to a distributed blockchain without any permissions, since there is no central authority on a blockchain. Legal status of blockchains is uncertain, as they are not registered in any particular country and are sometimes referred to as Distributed Autonomous Organizations (DAOs).

Yet most apps (including, app clients and processing servers) are operated by a particular legal entity. Every company (or individual) must comply with local laws of the country where they operate (and often laws of countries where their customers reside). And as such, apps might be requested to remove certain content that

violates local laws. Besides legal requirements, apps should also be able to protect their community from irrelevant, abusive or spam content.

It is advisable that apps will have a list of Approved Moderators, whose up- or down-votes will be processed by the app as a direct instruction to process a command that requires special approval or ignore certain content.

At some point, professional moderators (people or bots) applying different strategies may offer their services to multiple apps.

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SELF - MODERATION BY USERS

Steem blockchain supports [Mute](#) instructions to hide all posts/replies from a particular user. Mute lists can be supported by apps to provide a safer social environment for the community.

Apps may even offer a Safe Option to their users, when all Mute instructions by people whom that user follows (sub-mutes) are also applied to their view of social feeds, unless they directly follow sub-muted user themselves.

Mute command used by an Approved Moderator effectively excludes particular user from being seen by all other users of the app.

In addition to being able to Mute users, Waivio introduces a command [MuteObject](#), which makes a certain object invisible to a particular user of the app. If MuteObject reply is posted or upvoted by an Approved Moderator, this object will be no longer visible to the entire app audience.

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SOCIAL IMPACT OF REFERENCES

Object references from posts add a new layer of connection to the social graph. In addition to direct connections between people (ex., followers & likes), objects connect people indirectly through their common interests in particular objects (ex., favorite places, products, hobbies, sports, similar views etc).

Example: If a person has an interest in rock climbing, they may not necessarily have a large number of people involved in rock climbing among their immediate friends. In that case, objects associated with rock climbing (ex., popular places for rock climbing, specialty shops, specific equipment, climbing reports) may be used to find and connect with like-minded people sharing the same passion for rock climbing.

In fact, many traditional social networks may feel like empty places for newcomers, because they don't have enough friends or followers to engage with.

Referencing objects from posts may substantially increase visibility of these posts. For example, submitting an update about a popular travel destination, indirectly connects the author to all users who previously referenced the same destination.

Popular objects may have a substantial audience of their own. In a way, some object can be compared to an independent social identity with its own followers.

Note: Spamming users by referencing popular objects is likely to backfire, as downvotes from the community will have a lasting negative effect on the reputation of the author.

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REFERENCING OBJECTS AND LINK WEIGHTS

For the most part, Waivio posts are created according to standard Steem formatting in plain text with image and video links stored on shared or dedicated (app) servers. Some apps may require more complex .json formats, which are supported on Steem blockchain.

Waivio posts incorporate links to CreateObject posts, which serve as permanent addresses for Waivio objects.

While there is no formal restriction on the number of links in a single post, it is recommended not to exceed 100 links per post due to the fact that some apps may chose not to process overly complicated posts, especially when post earnings are minimal.

Links to Waivio objects may or may not contain specific weights. If no link value is specified, default value of 1 will be used. And if all links have no values assigned, all links will be deemed equal in value (all being assigned default value 1).

Some apps may choose to assist authors in calculating proportional values using Object Weights at the moment of posting. It would benefit users if apps were to offer a manual option to edit link weights by authors.

For the purposes of later calculations, Link Weights should be balanced to add up to 100%. These statistical calculations are not recorded on the blockchain and are done using floating-point numbers. Balanced Link Weights are not posted to the blockchain and are stored on app servers.

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OBJECT WEIGHTS

Object Weight is calculated by adding combined post earnings multiplied by balanced Link Weights for all posts that reference that particular object.

Important: CreateObject, AppendObject, LinkObject posts as well as all associated replies are also considered as referencing posts (having a single object link).

Object Weight is calculated in WVIO tokens, representing all rewards associated with that object. For the purposes of presentation, this value might be presented in a local currency, ex. USD.

Object Weight is a reliable comparative and representative measure of importance of a particular object for the community. As such it can be used by apps for building top lists, ranking entries in lists, sorting search suggestions and even identifying objects by their current dollar value.

Object Weights are not recorded on the blockchain and are only stored on an app server.

Example 1: Object Weight for a large city will be higher than for a smaller city.

Example 2: Popular book will have a higher Object Weight than a less known book.

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OBJECT SHARES

Object Share is the sum of all user earnings (both author rewards and curation rewards) from posts referencing a particular object multiplied by balanced Link Weights and then divided by the overall Object Weight.

Object Shares are floating-point statistical numbers, measured in % and they are stored on an app server.

Note: Object Shares are calculated not just for post authors, but for all curators as well. Object Shares will be used to calculate Domain Expertise of users and user voting is an integral part of user's knowledge of a particular topic or object. Knowledge is gained not only through posting, but through reading, and is recorded through curation activity for the benefit of the entire community.

Example 1:

An avid angler repeatedly going to the same lake and posting useful fishing reports, continues to increase their share of that lake.

Example 2:

Curator that often upvotes food recipes that later become popular with the community is growing their expertise in the cooking domain.

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D I S T R I B U T I O N O F O B J E C T B O N U S E S

App server may support distribution of Object Bonuses to all associated users according to their Object Shares. When and if Steem blockchain will support smart contracts, it might become possible to implement distribution without the assistance of a centralized service, such as an app server.

Example 1:

Wine maker decides to reward all users who posted and curated reviews about particular wine by sending them a one-time bonus.

Example 2:

Not-for-profit conference organizer received extra profit from a event and decides to distribute it to all who promoted that event by redistributing profit according to Object Shares of that event.

Example 3:

Community jointly developed a product idea and later a company began manufacturing it, paying back 5% royalties to all users who contributed to the idea in accordance with their Object Shares fixed for a particular date (version of the product).

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R E P R E S E N T A T I O N O F O B J E C T S H A R E S

Popular objects may have hundreds of thousands of associated users each having a minor Object Share. And since it is difficult to perceive values expressed in fractions of %, the following representation of values is recommended.

All users are sorted according to their Object Share. Top 1% is referenced as Rank 100 and the bottom 1% as Rank 1.

This method of ranking removes gaps in share ownership and is generally easy to understand.

Examples:

1 user – Rank 100; 2 users: Ranks 100 & 50;

3 users – Ranks 100, 60, 30; ...

10 users: Ranks 100,90,80,70,60,50,40,30,20,10

Apps may use different ranking classifications that suits their subject category.

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**DOMAIN EXPERTISE
OF USERS**

It is possible to select a subset of objects according to certain parameters. For that subset all Object Shares are summarized and a new list of users is created sorted by combined value of their shares in that group of objects. These values represent Domain Expertise of users as confirmed by the community through the proof-of-knowledge consensus.

Example:

It becomes possible to select all golf clubs in a particular area and create a list of users sorted by their proven golfing Domain Expertise.

Domain Expertise of users is not a self-declared or a demographic extrapolation. Instead, it is a precision tool based on objective evidence confirmed by the community and accumulated over time by users.

While Domain Expertise can be used to generate all kinds of Top Lists in apps, the true importance of that metric is that it enables a number of new business models on the distributed blockchain.

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GLOBAL RANK

Global Rank is a share of user's earnings divided by combined earnings of all users for the entire history of blockchain. Similar to Object Shares and Domain Expertise of users, Global Rank is presented with numbers varying from 100 to 1.

The importance of the Global Rank is that it reflects the actual value that user brought to the community, rather than the balance of vested WVIO tokens.

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W A I V I O

M A R K E T P L A C E

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WAIVIO MARKETPLACE

Waivio Marketplace offers a number of tools to facilitate direct transactions on a distributed blockchain. Steem blockchain currently does not support independently executed smart contracts beyond multi-signature accounts. Marketplace offers convenient off-chain solutions for Attention and Reference Trading for the most popular scenarios.

It is recommended that apps reserve a special section for additional rewards that particular user is or could be eligible to receive. Some Reference offers might be integrated into a catalog of objects (informing users that there is a potential reward associated with referencing a particular object from their posts).

Apps may choose to establish minimum thresholds for offers (minimum payout requirement, plus history of actual payouts) that they are willing to present to users. Some standing offers may have a fraction of rewards reserved for apps that help them locate and inform eligible users about the proposal.

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ATTENTION TRADING

Businesses no longer required to rely on manipulative advertising techniques to approach their target audiences. It becomes very simple for any business to use publicly available data on a distributed blockchain to compile a list of users that match their targeting criteria and approach them directly.

Selling and bidding for attention can either happen publicly on the blockchain or privately through a Waivio marketplace app, that allows users to keep some of their preferences private and alert users through notifications only when a valid bid for their attention is received. At the same time, users may browse all active bids from businesses and either accept them as is or issue a counter proposal.

Example 1:

A manufacturer of an innovative camping stove can compile a list of avid campers in a particular area and offer them a \$10 bonus for viewing their promotional video and a special offer.

Example 2:

A new health & sports tracking app willing to pay a \$10 for new installations by users who are active joggers.

Businesses and potential customers may interact directly without any intermediaries. Businesses can bid for attention of users with confidence, having objective evidence

of the user's Domain Expertise as confirmed by the community. Advertising budgets can now be redirected directly to potential customers, instead of gatekeepers that are no longer required. Some intermediaries, such as auditors, guides, ad hosting services might still be required, but their share is just a fraction of what is going to be paid directly to the user for their attention.

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AUDITORS

Some users (people or bots) may function as auditors who certify task completion and its authenticity. While domain expertise is established on the blockchain by the community, actual confirmation of an action that triggers the reward may require additional verification. In these cases, businesses bidding for attention may involve an auditor.

Example: Viewing a promotional video by a selected group of users triggers a reward. Auditor may verify that at least 80% of the promo video was actually viewed before confirming the payment.

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REFERENCE TRADING

Businesses might reward users for making references to certain objects from their posts. Popular objects have greater weight, higher visibility on distributed social networks and a higher number of connections to other objects and users (information & social graphs).

Example 1:

Manufacturer of hiking shoes may offer rewards to users referencing their product in hiking reports.

Example 2:

Group of seaside hotels may indirectly benefit from more people being engaged in nearby wave surfing. Hotels may offer rewards to users that submit quality wave surfing reports from that area, thus motivating more surfers to visit this place.

There are three key methods to how businesses can reward users for referencing objects: direct rewards, power votes and delegation.

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DIRECT REWARDS

Businesses can dedicate a fund and set rules for automatic redistribution of rewards from that fund, when a post appears on the distributed blockchain that matches that criteria. Such a fund can function as a smart contract on a blockchain or as an off-chain service. Waivio Marketplace will be providing tools for such campaigns.

Example 1:

A restaurant sets a fund worth \$10,000 in WVIO tokens to reward all posts that reference the restaurant and recognized by the community as a useful submission (ex., post earned at least 1 WVIO).

Example 2:

A distillery sets a fund to reward all cocktail recipes that include their product as an ingredient with an equivalent of \$10 in WVIO tokens.

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GUIDES

Certain rules for direct rewards require off-chain data or verification. Independent Guides provide these services.

Example: Business would like to reward only posts that have a product placement in associated photos. A Guide may independently verify (manually or using special software) all eligible submissions. The Guide confirms that all rules were met by upvoting the cleared post. Upvote by an approved Guide serves as a trigger for distribution of rewards.

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POWER VOTES

Poof-of-knowledge consensus uses upvotes to distribute rewards to authors and curators. Weight of the vote (amount of vested WVIO tokens) and Voting Power greatly influence how much author and previously voted curators are going to earn from a post.

If a business holds a substantial amount of vested WVIO in their account, their upvote will result in additional earnings for the author, from the common pool of rewards. Specific earnings depend on the current exchange rate of the WVIO token.

This way, an author receives additional revenue, without the business spending any of their budget. Businesses may even earn curation rewards for their upvotes.

Note:

If a business casts its upvote within 0–5 minutes from post submission, their curation rewards will also be transferred to the author. This will generate a larger reward for the author, while using a smaller budget of vested WVIO tokens.

This approach incentivizes business to hold WVIO tokens in the system. This way the entire community benefits from the increased utility value of WVIO tokens.

Example:

A brand holds over \$100K worth of vested WVIO tokens on their account and upvotes up to 10 posts every day (sustainable Voting Power) that link to objects associated with that brand. Upvote is done immediately after qualifying post submission, because it does not require pre-evaluation by the community. Users might be required to have a global rank of 20 or more to prevent abuse.

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D E L E G A T I O N

Delegation is an effective instrument for businesses to support certain authors. Delegated tokens are processed by the system as if they belong to the author for calculating their post and curation earnings. Business may recall delegated tokens at any moment.

Example: Tourist Board may delegate some WVIO tokens to an active journalist who consistently writes about adventures and activities, thereby building a positive image for that destination.



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W A I V I O

L A B S

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WAIVIO LABS

Waivio Labs is a branch of Waivio that is developing new social apps (including partnerships), consulting third parties about integration of social cryptoeconomics into existing apps and helping projects achieve the scale through content policies, search engine optimization and social media marketing.

There are many UX and server-side solutions that are rather unique for distributed social networks and cooperation with experienced designers and developers can accelerate the development of apps.

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CONTENT POLICY

Success of new social apps greatly depends on their ability to attract influential authors and populate their ecosystem with quality content. Since the concept of cryptoeconomics is new, people in general are hesitant to transfer fiat money into cryptocurrencies. Since their account will have zero vested WVIO tokens, they will generate smaller revenues at first, which may hamper their enthusiasm for the social app at the early stages.

Waivio is proposing to use token delegation to improve the ability of chosen authors to generate revenues on the distributed social network. Most authors are open to experimentation and changing their platforms. The incentive for widespread experimentation with a new promising platform is even more likely as few authors on legacy social systems can generate considerable revenues from their work.

In addition to supporting selected authors through delegation, several accounts with vested WVIO tokens should be used to manually review and upvote quality submissions from other users.

Finally, it is possible to delegate smaller amounts of vested WVIO tokens to new app users for a period of 3–6 months while they are getting familiar with the concept of making money within Waivio ecosystem. Once their own earned balance is accumulated, they should be able to continue using their own funds. This program should be carefully monitored against Sybil attacks.

Example: Sport fishing app requires a continuous stream of quality fishing reports to attract and engage the audience of local anglers. Company could approach fishing guides in the area and offer them a reward for every fishing report they submit for a certain period. This can be done through delegation, direct rewards or power votes using Waivio Marketplace.

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SEARCH ENGINE OPTIMIZATION

Specialized social apps maintain catalog(s) of subject specific objects (terms) with detailed descriptions and extended social graphs. Social apps generally produce continuous streams of subject-specific news. This is a good foundation for growing search engine traffic.

Next step is to optimize landing pages for user retention. Pages dedicated to objects should contain all relevant information without duplication. This way, visitors coming from search engines will be able to get the answer they were looking for and every page can function as a gateway for the entire knowledge base accumulated by the app.

Mobile web user experience is very important as majority of users will navigate using smartphones. “Drive-through” search traffic requires immediate answers and no obstacles, like installing new apps.

For those with apps already installed, deep linking should be supported to deliver an even better experience.

Website rank and discoverability also depend on links from established sites. Properly designed Content Policy can serve as a good foundation for building external reputation and links from content partners and influencers.

There are many other SEO tools that can bring quality search traffic to social websites.

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SOCIAL MEDIA MARKETING

Users of distributed social apps are usually very loyal, active and enthusiastic. App should equip them with different tools that will make it easy for them to share their content and achievements with their followers on other social networks.

Example: Every time a user submits a new sailing report, the app also offers an option to share it on Facebook, Twitter and other social networks with an option to auto-share all future reports.

There are many different technical, UX and marketing elements to a successful app. Waivio Labs accumulates expertise, processes and shares best practices to grow audiences of distributed social apps.

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W A I V I O

S O C I A L

C R Y P T O E C O N O M I C S

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WAIVIO SOCIAL CRYPTOECONOMICS

Waivio is being built on Steem blockchain as a Smart Media Token and much of Waivio Social Cryptoeconomics are rooted in Steem dynamics.

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FUNDAMENTALS OF STEEM CRYPTOECONOMICS

STEEM currency has an inflation rate of 9.5% narrowing to 1% over a period of 20 years. New STEEM tokens are divided into three pools: 75% - Rewards Pool, 15% - compensation to stakeholders (who already have vested STEEM) and 10% - rewards to block producers (who provide computing resources to Steem blockchain). New tokens are issued every 3 seconds with each block production (when new records are added to the blockchain).

Unlike the majority of social networks, where 1 person equals 1 vote, Steem blockchain counts 1 STEEM as 1 vote. Individuals who have contributed the most to the platform (vested STEEM balance) have the most influence over how contributions are scored. This approach offers good protection on a distributed blockchain against Sybil attacks (creating many small accounts).

STEEM must be powered down (equal parts over a period of 13 weeks) to be used for transfers, withdrawals and exchanges.

For a comprehensive description of Steem blockchain, please refer to Steem Blue Paper (<https://steem.io/steem-bluepaper.pdf>), Steem Whitepaper (<https://steem.io/steem-whitepaper.pdf>) and Steem GitHub (<https://github.com/steemit/steem>).

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PROOF - OF - BRAIN CONSENSUS ON STEEM

The Rewards Pool is distributed according to a Proof-of-Brain consensus algorithm to post authors (75%) and curators (25%) through the linear stake-weighted voting algorithm (directly proportional to vested STEEM).

Authors are being rewarded only if the community upvoted their work.

Post rewards are calculated on the basis of upvotes accumulated during initial 6 days and 12 hours. Votes that are given to posts later continue to have an impact on Reputation Score of the author, but they no longer impact distribution from the Rewards Pool.

Curator rewards also depend on the Voting Power and the frequency of voting. Voting Power decreases by 2% with every upvote and regenerates at the rate of 20% every 24 hours. Curation rewards are calculated using a square root function, thus multiplying rewards for curators that discovered an interesting (which will receive a lot of upvotes overall) post early on. Additionally, Steem operates a linear reverse auction for the first 30 minutes of voting when 100% of curator's rewards go to the author in the first second and 0% after 30 minutes.

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PROOF - OF - KNOWLEDGE CONSENSUS

Proof-of-Knowledge consensus on Waivio is based on Proof-of-Brain consensus on Steem. There are three major differences: split of rewards between authors and curators, arbitrary rewards for discovery and higher inflation rate to accommodate extensive user growth.

On Waivio, authors receive 65% and curators receive 35% of post rewards. While Steem is better equipped for long-form journalism, where author must spend considerable time planning and crafting the article, Waivio is designed for faster sharing of experiences, knowledge, advice and reviews by users. Specialized social apps make it easier for users to submit activity reports, recipes and much more.

Waivio Reference Protocol is designed to accumulate knowledge over time from many individual user submissions.

Example 1:

Restaurant reviews accumulate over time to display which items on the menu are more popular and what are the key external events that drive traffic through the year.

Example 2:

What are the best wild camping sites in this area, how hard is it to get there, and if there are seasonal hazards like strong wind exposure, muddiness etc.

While Waivio makes it easier for users without a language degree to share their knowledge with the community, the job of curation becomes even more important and demanding.

Proof-of-knowledge consensus only allows for 6 days and 12 hours for users to upvote new posts. While this time frame is perfectly acceptable for general news on Steem, this is a rather short window for upvoting product reviews, since fewer people may have the required knowledge.

Waivio reference protocol easily identifies users who previously referenced the same product, but to motivate them to review and upvote a new submission, they are offered higher curation rewards.

Therefore, curation portion on proof-of-knowledge consensus on Waivio (35%) is higher than on Steem (25%).

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DISCOVERY REWARDS

Authors may set aside a portion of their rewards (ranging from 0% to 100%) to promote discovery of their post. Discovery Rewards are distributed proportionally between the author (upvotes from their direct followers), users who re-posted (upvotes from their followers) and the app (other upvotes from users who discovered the post through the app news stream or other app pages). Authors can set discovery awards for every post independently.

Example:

If a post received curation upvotes only from an authors' direct followers, then 100% of Discovery Rewards will be returned to the author.

Discovery Rewards are calculated using curator's earnings from the post. All upvotes that came from direct followers of the author are included in the author's share of Discovery Rewards. Then upvotes from followers of the first user who re-posted are calculated, then the second and so on. In the event when curator follows two or more users who re-posted, only the earliest promoter will receive the credit. All upvotes from users who are not followers of either the author or re-posters are counted in the share of app rewards.

While Steem blockchain does not support smart contracts, redistribution of Discovery Rewards must be handled by apps themselves. This is done through a dedicated address, referenced as a recipient of the author-defined referral portion of author rewards, that are specified at the time of post submission to the blockchain. Once Steem processes rewards for the post at the end of 6 days and 12 hours, the Discovery Rewards service will further redistribute payments to the author and re-posters.

Accuracy of Discovery Rewards service can be easily verified by any user, because all the data required to repeat calculations is publicly available on the blockchain.

Authors do not receive payments just for the fact of submitting their work to the blockchain. Authors receive rewards only if the community recognizes the value of that submission by upvoting the post. Quality and timely posts are likely to be upvoted by readers. But the overall rewards greatly depend on how many users see the post. The window of opportunity for the post to reach its maximum audience is limited by a time frame of 6 days and 12 hours. Late upvotes no longer influence rewards.

Proof-of-knowledge consensus already places a great emphasis on curators by offering them 35% of rewards, thus motivating users to actively participate and upvote quality posts.

Discovery Rewards is another powerful tool that can be used by authors to motivate users to participate in re-distribution of the post, increasing its visibility among community members.

Apps may offer special discovery options for posts that meet certain criteria, including a minimum level of Discovery Rewards share.

Some apps may chose not to retain app share of Discovery Rewards and instead forward these payments to the author.

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WVIO TOKEN

WVIO Token is a Smart Media Token on Steem blockchain.

Inflation rate for WVIO token is 20% narrowing to 4% over a period of 20 years. WVIO inflation is more than double that of STEEM at 9.5%. The main reason for a much faster inflation rate is that it benefits new users who join the Waivio ecosystem. Higher inflation rate allows active users to become leaders in their respective domains of expertise. On Steem it is impossible for a newcomer to gain sufficient weight organically working on Steem network, without spending tens or even hundreds of thousands of dollars buying STEEM.

Another difference with WVIO token is that 100% of inflation goes into the Rewards Pool vs. STEEM, where only 75% of inflation funds do. This further enables new, active community members to grow their weight and revenues on Waivio platform no matter which app they are using.

For users who are storing value in WVIO tokens (ex., businesses that use Power Voting for Reference Trading) higher inflation rate may represent a potential threat to their funds losing value over time. However, as long as Waivio ecosystem (number of active users and quantity of new content) is growing faster then the current rate of

inflation, then the value of WVIO token will actually grow. Waivio platform is expected to grow much faster than 20% per year.

As such, the WVIO token remains a good instrument for preservation of value.

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POWERING DOWN WVIO TOKEN

Powering down period of WVIO tokens is the same as for powering down of STEEM tokens – 13 weeks in equal portions.

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DOUBLE REWARDS

When a post is submitted through an app that supports Waivio Reference Protocol, users receive both WVIO tokens and STEEM (or STEEM/SBD) rewards. Curators that use Waivio apps also receive both tokens as rewards.

What is important to note though, is that user earnings of a particular token are proportional to the amount of the same type of tokens vested, meaning that the WVIO rewards are proportional to the amount of vested WVIO tokens, while STEEM rewards are proportional to the amount of vested STEEM.

There are many factors, including current token rates, ability to earn new tokens (users who upvote posts, do they have more vested WVIO or STEEM), investment outlook and more, that can influence decisions of authors and curators to keep vested WVIO tokens, vested STEEM tokens or both.

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TAXES

Important:

This is not a tax advice. Always seek advice from a professional familiar with your local tax laws.

In many jurisdictions, additional income received by people in cryptocurrencies, must be declared as any other revenue for tax purposes. In cases where there are direct expenses associated with generation of that revenue, these costs may be partially deductible.

Example:

User paid \$100 for a dinner at a restaurant and posted a review on Waivio, which generated \$10 worth in WVIO tokens. If that revenue will be recognized by tax authorities as business income (vs. other income), it may be possible to deduct \$10 worth of direct expenses off the \$100 bill. As a result, additional revenue is offset by direct expenses and no additional taxes will be imposed.

To assist users in keeping their records, Waivio introduces a [Receipt](#) command (reply referencing the original post), which stores an encrypted scan of a receipt, which can be only viewed by the author.

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APP SHARE OF USER REWARDS

It takes considerable resources and efforts of a team of professional developers, designers and business people to build and support an app. Additional effort is required to engage business partners and educate them about the benefits and capabilities of social cryptoeconomics, source unique and quality content, build community around the app, provide customer support, pay traffic and hosting fees, etc.

While some Waivio apps may completely rely on the voluntary app share of Discovery Rewards as defined by users, other apps may opt for a certain percentage of user rewards (App Share of User Rewards), which is enforced by the app at the time of posting. App Share of User Rewards are collected in both WVIO and STEEM, but largely depend on the balance of vested WVIO or STEEM tokens by users.

Some apps on Steem blockchain currently require up to 25% share of user rewards to cover for high cost of traffic (ex., D.Tube, DSound.Audio). On average, apps receive anywhere from 5% to 15% of user earnings. This share is set at the moment when the app submits a new post to the blockchain on behalf of the user.

Apps may enforce App Share by ignoring all posts that do not have the proper share attribution.

Waivio apps may allow customers to set the App Share of User Rewards themselves, while offering different discovery options associated with different levels of App Share.

Note:

Direct payouts from businesses to users are generally made without any commissions, unless businesses are using paid-for tools to distribute additional rewards to users.

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WVIO TOKEN UTILITY VALUE

Users are required to maintain a balance of vested tokens to generate revenues from their posts and curation votes. In that respect WVIO token is very similar to STEEM, which is recognized as a utility token.

Businesses can use powered down WVIO tokens to reward users that reference or improve objects that directly or indirectly benefit these businesses.

Vested WVIO tokens can be used by businesses for power voting, where businesses can reward users with upvotes which later translate into higher revenues for authors and, potentially, curators.

Several new professional services can be provided to users of Waivio apps, such as those of moderators, auditors, guides and oracles. Their revenues largely depend on the portion of vested WVIO tokens as well.

All these parties are required to actively engage on Waivio ecosystem to maximize their returns from earned or acquired WVIO tokens.

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DEMAND FOR WVIO TOKENS

Note:

The following statements are speculative and do not constitute investment advice or a promotion of WVIO token as passive investment.

It is expected that the Waivio ecosystem of social apps (number of users and amount of content items) will grow much faster than the rate of WVIO token inflation at 20% (narrowing down to 4% over 20 years). Higher demand for WVIO tokens where more users compete for the same number of new tokens could drive the token price up.

Besides, users need vested WVIO tokens to generate better revenues from their posts and upvotes. Like holding STEEM on Steem blockchain, users are expected to hold WVIO as a long-term investment, because this is the foundation for their sustainable earnings in the future.

Specialized professional services (Auditors, Guides, Moderators) on Waivio network require a certain amount of vested WVIO tokens to generate higher returns from their professional activity.

The largest demand for WVIO tokens is expected to come from businesses converting their advertising budgets into vested WVIO tokens to be used for power

voting or delegation. These funds are expected to be invested with the intention of long-term holding.

All these factors could contribute to a strong value of WVIO token and its growth over the time.

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INITIAL WVIO TOKEN DISTRIBUTION

At the time of launch, 100,000,000 WVIO tokens will be issued. Distribution of these tokens will be done in the following way:

Waivio Content Fund – 55%
Airdrop to Steem users – 40%
Market Maker – 5%

Waivio Content Fund

The Content Fund will be managed by Waivio Labs and will be used to develop the Waivio ecosystem in a variety of ways.

Every time a new social app is launched, it faces a catch-22 problem: high quality content is required to build an audience, but great content creators do not want to contribute to a platform without an established audience.

Social cryptoeconomics introduces yet another challenge: it requires that authors maintain a deposit of vested WVIO tokens on their accounts to generate higher revenues.

The main purpose of the Content Fund is to solve the catch-22 problem by delegating funds to pre-selected content creators and curators, effectively ensuring that authors are being compensated at early stages, while the app community is being built around quality content.

Example:

An app dedicated to jogging may invite local running club leaders to submit their routes, schedules and race reports to the app in exchange for guaranteed rewards, which will be achieved through a combination of delegated funds and upvotes by Guides, who will review these submissions.

Pre-approved Guides may upvote useful posts by other authors, thus offering additional motivation for app users to contribute to knowledge accumulation within the community.

Each app should have a solid Content Policy in place to succeed. Approaches to finding quality content creators, influencers and building an engaged audience are highly dependent on the context of the app, local dynamics and many other factors.

The Content Fund might also be used to support Auditors, Moderators and Oracles to help them build sustainable business within the Waivio ecosystem.

A program for supporting new app users might be launched, which will delegate some tokens to new users for a limited period (ex., 6 months). This will allow them to generate revenues without depositing funds to their accounts, which remains a lengthy and complicated process for the most people. This program must be closely monitored against Sybil attacks.

The importance of the Content Fund will diminish over time, as new tokens are distributed exclusively to authors and curators according to their work. Inflationary rewards are not received by passive token holders and as such the share of Content Fund within 5 years will drop from 55% to 27% and within 20 years Content Fund will represent only 11% of the total supply of WVIO tokens.

Airdrop to Steem Users

Within Steem community, a large portion of STEEM tokens are owned by a small group of users, while the majority of users joined later and struggle to earn even a basic balance of STEEM. It is important that during WVIO airdrop this problem will not be imported into the Waivio ecosystem.

Rules of the WVIO airdrop calculation:

1. WVIO tokens will be awarded proportionally to earned Steem only– Steem/Steem Power/SBD balances are not included in the calculation.
2. SBD earnings will not be included in the calculation for the purposes of the airdrop.
3. Maximum Steem earnings that will be included in the proportional airdrop calculation is 1,000 Steem.

WVIO airdrop is specifically targeted at Steem users who use the system by submitting posts or by actively curating content. The purpose of Waivio airdrop is to create a relatively equal playing ground for all users.

Market Maker

Five percent of the initial token distribution (5,000,000) are reserved for an automatic Market Maker. At the time of launch, Waivio Technologies Corp. will invest Steem dollars in the Market Maker in the amount corresponding to \$250,000 CAD. This will set the initial price for WVIO token at \$0.05 CAD.

Once the Market Maker will have a balance of both WVIO and STEEM tokens, it will become operational and users will be able to convert their WVIO tokens into STEEM or use their STEEM to buy more WVIO tokens. From that moment the price of WVIO token will be defined by the open market through the Market Maker as well as through other exchanges that will support WVIO token trading.

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W V I O T O K E N I N F L A T I O N

Once Waivio system becomes fully operational, 55,000 new WVIO tokens will be generated each day as inflation, and redirected to the Rewards Pool, from where they will be further distributed to authors and curators according to the proof-of-knowledge consensus.

Every year 20,075,000 WVIO tokens will be distributed to participating users. During the initial year, this amount of new tokens represents a 20.08% inflation. Over the following 5 years, inflation rate in relative terms will narrow down to 10.02%, and further down to 4% over 20 years.

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W V I O T O K E N I N F L A T I O N L A U N C H

Initial and ongoing distribution of WVIO tokens is designed to provide fair distribution of rewards according to the adequate effort of users.

Waivio's launch phase presents an additional challenge: High relative inflation with few or no operational apps creates the possibility that only informed and tech savvy users will benefit from that initial period. This has been observed with many other blockchains.

To address this challenge, WVIO token inflation will be launched only after the initial 5,500 users participating in the initial WVIO token distribution, will activate their accounts by either posting or voting at least once with any app using Waivio reference protocol.

This rule ensures some social competition at the start of WVIO token inflation.

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USING WVIO TOKENS BY APPS

Waivio strives to achieve a combined network effect for social apps that support Waivio reference protocol. Value of a network is defined as N^2 (where N represents number of active users). There are multiple reasons; why the value of the network accelerates with a greater number of active users.

Small communities are often undervalued because they have a hard time reaching the scale that makes it worthwhile for businesses to consider locking their funds in a dedicated token. Yet, when multiple communities use a single token and similar rules-of-engagement, it becomes much easier for a business to reach combined audiences, manage social presence across specialized communities and hold their funds vested for longer periods of time, safely backed up by the aggregate value of the entire network.

Example:

A manufacturer of a water pack may want to reach a combined audience of outdoor enthusiasts in a geographical area, including hikers, cyclists, campers, bird watchers, mushroom hunters and more. If all these communities were to use separate tokens, this business would have to invest smaller funds into different tokens and adapt to different community dynamics.

This Network effect applies to users as well. All Waivio apps are using Steem Connect to authenticate accounts, and users can start using any app right away, preserving their global reputation, social graph and accumulated knowledge. Vested WVIO tokens work the same way in all apps eliminating the need for users to lock their funds in multiple app-specific tokens, diluting the weight of their votes.

Example:

And avid sailor, who earned domain expertise in an app dedicated to sailing, decided to leave a restaurant review using a new app. Since the user now can use the same account and the same balance of vested WVIO tokens, the barrier of entry to use the new app is minimal. In addition to that, all existing followers would be notified and can view the restaurant review (review abstract is recorded on Steem blockchain in a readable format, which can be previewed by all apps) and learn about the new restaurant review app.

Network value depends on the number of active users. When the same user has an option of using not just one, but many different apps, they are more likely to remain active within Waivio ecosystem at large.

Example:

User might use a mountain biking app during summer months, but usage drops during winter months. Meanwhile, the same user may engage with an app dedicated to downhill skiing, thus remaining active on the network throughout the year.

Aggregation of content on a public blockchain and its automatic sharing between apps has an additional benefit, as it allows cross-integration, providing additional benefits to users.

Example:

Hiking app may benefit from presenting accommodations options for their users, while a travel app now can add information about hiking trails around each hotel.

Even competitive apps on Waivio can benefit from the network effect, because it might be easier to grow a combined audience and more effectively attract business partners.

Example:

Auto clubs in different regions can have their own social apps. They all can benefit from aggregation of content about rare parts and technical solutions, while still managing their local audiences. Combined audiences with proven domain expertise can be now targeted by businesses, thus increasing earnings for users and apps.

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A P P E A R N I N G S

When specialized apps use the same proof-of-knowledge consensus, reference protocol for accumulation of knowledge and user authentication mechanism, network effect drives value of the underlying token and user earnings.

Better user earnings translate into higher revenues for apps themselves in the form of a share of discovery rewards (arbitrary) or as a share of all user rewards (predefined).

Power votes by businesses reward users for references and consequently contribute to app revenues.

Apps also receive a commission from Attention Trading for locating users and informing them about targeted bids for their attention.

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RAISING FUNDS FOR APP DEVELOPMENT TEAMS

Note:

The following information is not a legal advice. Always seek a professional familiar with your local laws.

Often startup companies intend use an initial coin offering (ICO) to raise funds for software and business development.

The legal environment has changed dramatically, driving additional government scrutiny and attention to ICOs, which in most cases are classified as securities, thus limiting the list of investors who can hold the token and imposing additional requirements, such as KYC.

Using a single token for both raising funds (restricted list of approved investors) and utility function (unlimited trading) is largely impractical.

One possible solution is to have two different tokens: a security token, which can meet all the legal requirements and be used to raise funds for the app company, and a utility token that functions as an incentive for social cryptoeconomics but is never sold by the company.

WVIO token functions as an incentive for users, while the company can issue its own security token offering (STO) specifically for fund raising, effectively offering shares of the company expressed in security tokens. There are many platforms that currently offer launching and trading of security tokens. This offers liquidity to participating investors on par with flexibility of trading shares of a public company, eliminating the liquidity discount that typically reduces the value of privately held shares.

