WRIOS

ALL YOU NEED IS A BROWSER!

A BLOCKCHAIN-POWERED USER-CENTRIC WEB 3.0 PLATFORM

WHITE PAPER

webRunes, 2018

Contents

1 · Abstract

“I have a dream for the Web [in which computers] become capable of analyzing all the data on the Web – the content, links, and transactions between people and computers. A ‘Semantic Web’, which makes this possible, has yet to emerge, but when it does, the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines. The "intelligent agents" people have touted for ages will finally materialize.”

— Tim Berners-Lee, the inventor of the World Wide Web

This White Paper describes the current state of the WRIO Internet OS project (the “**Project**”), its near-term objectives and its long term ambitions and goals. As at the date of this White paper, the Project is in its infancy at the minimum viable product (MVP) phase. You can find a brief description of the MVP in the Advanced Guide.

We are approaching the era of the Internet of Things (IoT) and “Big Data”. Automated processing of data will be imperative. We believe this new era will require a platform that will unite the web of machines and users. The key to this unification will be a machine-readable data format, that not only enables processing of data in automatic mode but also paves the way for the user-centric Web 3.0.

1.1 Introducing WRIO Internet OS

WRIO Internet OS (or simply WRIO OS) is a Web 3.0 blockchain-powered platform enabling a next-generation browsing experience.

Web 3.0 = Semantics + Blockchain + Smart Contracts

Semantics: the study of meaning in language. The Semantic Web is a web of data that can be processed directly and indirectly by machines.

Blockchain: is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. The Blockchain provides a secure database that stores assets of users and automated IoT systems. It enables the creation of a new type of semantic web search engines; a set of algorithms used by blockchain-based automated systems.

Smart Contracts: are self-executing algorithms of interaction with the blockchain. The Smart Contracts provide a set of algorithms used by blockchain-based automated systems.

1.2 Open source

WRIO Internet OS is an open-source project and the global Community (“webRunes”) represents the manpower driving it forward. If you would like to contribute as well, take a look at our Github repositories to see how you could contribute and make a difference!

1.3 Key features

- **Semantics:** a global and decentralized pool of open, shareable, reusable and machine-readable semantic data
- **Hubs:** free, simple development spaces for conceptually new types of websites
- **Web 2.0 support:** social media and services (1800+ domains)
- **Simplicity:** rich functionality through cloud/distributed mashup applications
- **Global:** blockchain as a metadatabase
- **Single sign-in:** blockchain addresses function as IDs; secure one-click authorization
- **Decentralization:** content is censor-proof, block-proof and spam-proof
- **Security:** no malware or viruses
- **Spam-proof:** reputation system and Web of Trust based on the blockchain
- **Privacy and anonymity:** user-controlled disclosure
- **webDashboard:** user-centric and predictive
- **Predictive:** predictive UI and search
- **Curation:** automatic data processing and distribution; content monetization

We expect semantics, automatic data processing, reputation, privacy, P2P and blockchain-powered dApps to become the new trends that will replace many of the visionary technology projects of the past. In the future, we expect to see Web 3.0 versions of Google, Skype, eBay, PayPal, Facebook, Uber, etc., using a single distributed source of machine-readable data pool.

2 · Mission

2.1 Problem

The World Wide Web is a paradox. The sites you visit everyday use natural language, but they are written in code and run by machines. Even though machines play a key role in creating and maintaining the web, the computers themselves really can't make sense of all this information. They can't read, see relationships or make decisions like people. Web 2.0 is focused on the ability for people to collaborate and share information online. But the problem with Web 2.0 is that computers simply display blocks of data as instructed by code. The machines cannot understand the meaning of what they are displaying. They only know how to display it.

This creates an issue, as it is difficult to fully realize the value of information on the web. Rather than having all data stored in a structured and usable way, we rely on keywords, links and search engines to give us a vague impression of what might be contained on any given website.

For example, information about local sports events, weather, flights, baseball statistics, or television guides... all of this information is available and presented by numerous sites, but all in HTML. The problem with that is in some contexts it is difficult to use this data the way one might want to do so.

2.2 Solution — Semantics

The next evolution of the Web is the Semantic Web. The Semantic Web proposes to help computers "read" and use the web more like humans. The idea is pretty simple — metadata added to web pages can make the existing World Wide Web machine-readable. This isn’t artificial intelligence and it won’t make computers self-aware, but it will give machines the tools to find, exchange and, to a limited extent, interpret information. It's an extension of, not a replacement for, the World Wide Web. The Semantic Web improves web technologies by helping computers interpret the meaning of words, rather than relying on keywords or numbers. So the Semantic Web is, in a way, a huge engineering solution. But it is actually more than that. Where Web 2.0 is focused on people, the Semantic Web is focused on machines. The web requires a human operator, using computer systems to perform the tasks required to find, search and aggregate its information. It's impossible for a computer to do these tasks without human guidance because web pages are specifically designed for human readers. The Semantic Web is a project that aims to change that by presenting web page data in such a way that it is understood by computers, enabling machines to do the searching, aggregating and combining of the web's information — without a human operator.

These challenges are overcome by Semantic Web technology. Data is part of the web and the web directly talks with data to data instead of documents as in Web 2.0. Hence, the Semantic Web is also known as a Web of Data. According to Sir Tim Berners-Lee, Semantic Web is “an extension of the current Web in which information is given well-defined meaning, better-enabling computers and people to work in cooperation”. Semantic Web or Web 3.0 has changed the way we present information on the web. Semantic Web uses Linked Data format to store its data and allows data to be self-described in a more structured way so that the computer can

easily process and analyse the data: the Semantic Web is a mesh of meaningful data comprehensible to both humans and machines, on a global scale.

Thus, machines are not only able to process long strings of characters and index tons of data. They are also able to store, manage and retrieve information based on meaning and logical relationships. So, semantics adds another layer to the web and is able to show related facts instead of just matching words.

2.3 Semantics use cases

By formalizing meaning independently of data, semantic technology enables machines to “understand”, share and reason with data in order to create more value for us, humans. Semantic graph databases (which are based on the vision of the Semantic Web), make data easier for machines to integrate, process and retrieve. This, in turn, enables organizations to gain faster and more cost-effective access to meaningful and accurate data, to analyze that data and turn it into **knowledge**. They can further use that knowledge to gain business insights, apply predictive models and make data-driven decisions.

Various businesses are already using semantic technology and semantic graph databases to manage their content, repurpose and reuse information, cut costs and gain new revenue streams.

- **Publishing:** In media and publishing, the BBC, the FT, Springer Nature, and many others use semantic publishing to make data integration and knowledge discovery more efficient
- **Big Data:** In healthcare and life sciences, AstraZeneca and other big pharma companies make use of semantic technology for early hypotheses testing, monitoring of adverse reactions, analytics inpatient records and much more
- **Data-driven Decisions:** In the financial industry and insurance sector, many companies have started adopting technologies to semantically enrich content and process complex and heterogeneous data
- **New Knowledge:** In e-commerce, the automotive industry, the government and public sector, technology providers, the energy sector, the services sector and many more are employing semantic technology processes to extract knowledge from data by attributing meaning to various datasets
- **Global:** With Web 3.0, information is more connected thanks to semantic metadata. As a result, the user experience evolves to another level of connectivity that leverages all the available information
- **Artificial Intelligence:** Combining this capability with natural language processing, in Web 3.0, computers can understand information like humans in order to provide faster and more relevant results. They become more intelligent to satisfy the needs of users

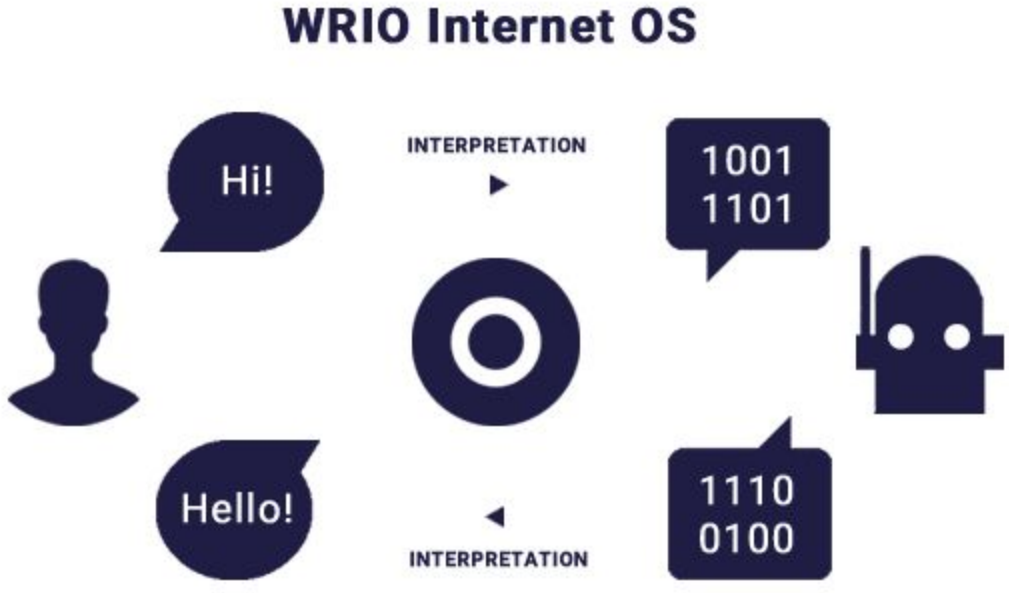
Meaning. This is what semantics is all about. As early as in 2007, Sir Berners-Lee told Bloomberg:

> *”Semantic technology isn’t inherently complex. The Semantic technology language, at its heart, is very, very simple. It’s just about the relationships between things.”*

Chances are the ‘relationships between things’ that will help organizations manage data more efficiently and make a better sense out of it.

2.4 Human-machine interpreter

The Project’s mission is to serve as the human-machine interpreter.



A machine-readable web is the first prerequisite for computers to learn how to process natural language. This project will implement subsequent measures to help solve the Chinese Room problem. This relates to the development of the semantic field and machine learning algorithms (to be discussed individually after the announcement of our Individual Assistant project).

The Project’s mission is based on a solid interrelation of facts about the modern web, its challenges, and solutions - all with the aid of advanced technologies.

01 FACT. The Age of Internet of Things: The rapid increase in the number of Internet users and smart devices

02 PROBLEM. Generated information doubles every 18 months: Avalanche-like growth in volume of content and unstructured data

03 MAGIC. Structured data (semantics): Structured data is a standardized format for providing information about a page and classifying the page content; for example, on a recipe page, the ingredients, the cooking time and temperature, the calories, and so on

04 SOLUTION. Semantic Web (Global Data Pool): "The Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries." The term was coined by Tim Berners-Lee for a web of data that can be processed by machines — that is, one in which much of the meaning is machine-readable

05 TECHNOLOGY. Blockchain (MetaDatabase): Blockchain stores assets and metadata. Metadata is data that provides information about other data. Metadata is used to mark and record structured data in the key:value format, which is the basis for automatic data processing

06 FEATURE. Automatic data processing and content distribution (Interest Matrix): Automatic correlation, classification, and cataloging of web data against users' interest matrices will allow the creation of predictive user-centric services and search engines of new generation

07 FUNCTIONS. User-centric services and predictive search engines: Functions and interactivity are provided through cloud and distributed applications while all user actions and browsing are performed through a personal WRIO Internet OS webDashboard

08 TOOL. WRIO Internet OS: WRIO Internet OS based on these principles will enable new markets of cloud/distributed apps and affordable terminal devices with a browser-driven OS

09 FUTURE. Thin-client terminal devices (Individual Assistant): The era of smart predictive systems that will give rise to a new generation of web

10 OBJECTIVE. Evolution to secure machine-readable distributed Web 3.0: The accomplishment of the objective will serve as the technical foundation for the implementation of ideas of libertarian project The Alternative

11 MISSION. To serve as the human-machine interpreter: Thus, to accomplish the mission we need a platform capable of upgrading nowadays' Web 2.0 to machine-readable Web 3.0

3 · WRIO Internet OS — All you need is a browser

WRIO Internet OS is an open-source Ethereum-based platform (PaaS) for cloud and distributed mashup apps (SaaS) that creates a secure browser-driven operating system. It provides an API-free, global, decentralized pool of open, shareable, reusable, and machine-readable semantic data, featuring a user-centric Web 3.0.

Generation	**Web 1.0**	**Web 2.0**		**Web 3.0**
Center	Website			User
Format	HTML + Database			JSON-LD + Blockchain
Type	Catalogs	Social media	Curated web	Curated + Semantic web
Infoflow	One-to-many	Many-to-many	Many-to-one	
Interface	Browsers	Feeds	Collections	WRIO Internet OS
% of users creating content	<1%	~1%	>25%	
Value to user	Consuming content	Creating Sharing	Capturing Collecting	Global data pool Content monetization Rating Interest Matrix Security
Connection to other users	Comment within community	Share with friends	Follow taste experts	Recommender System
Examples	cNet, NY Times	Blogger, Facebook, Yelp, Youtube	Tumblr, Pinterest, Twitter	Any WRIO hubs, e.x. wrioos.com

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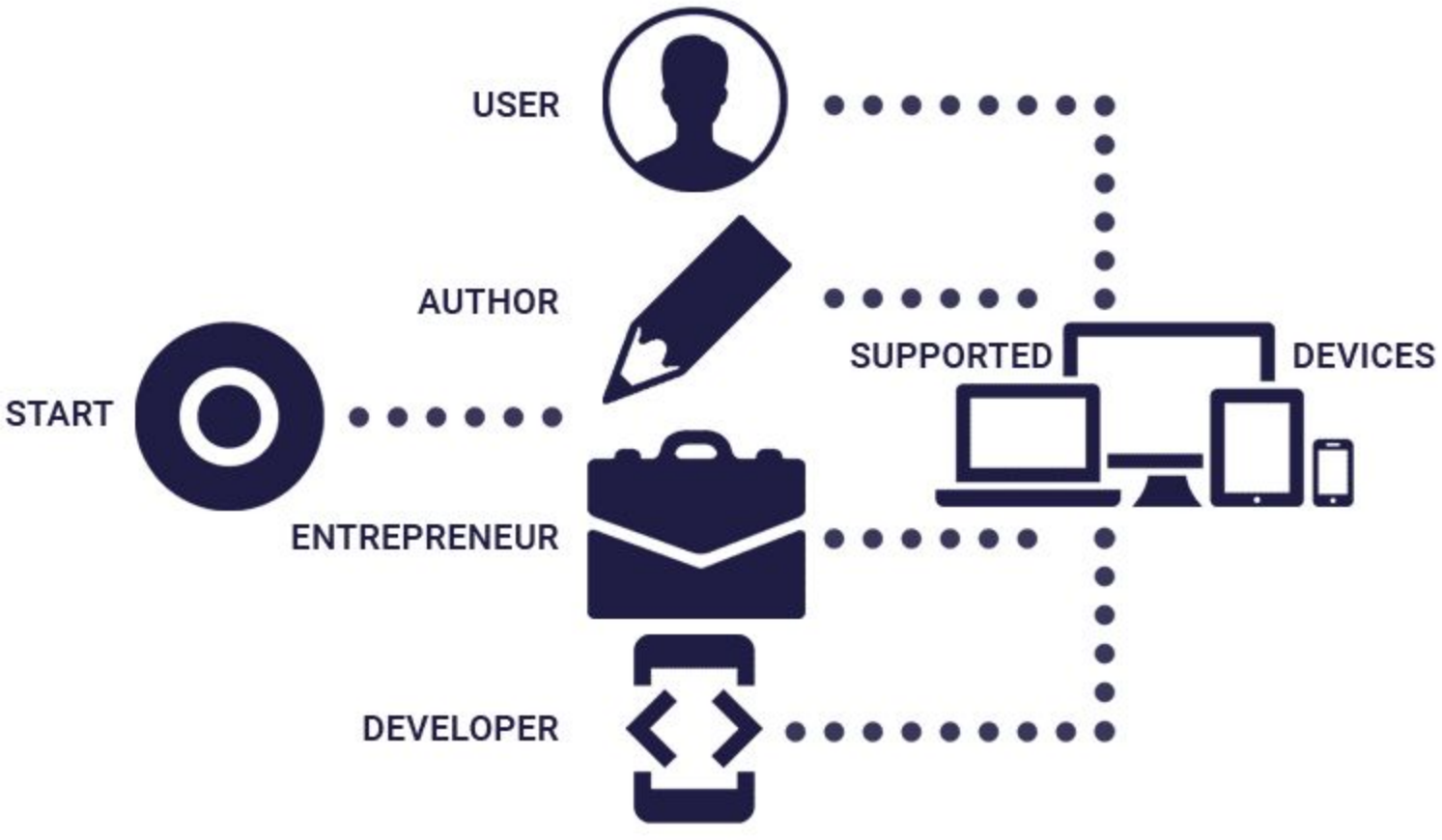
4 · Advantages of WRIO Internet OS



4.1 For users

- Security and privacy - spam-proof, malware & virus-free browser-driven OS
- Full control of personal data and assets stored in the blockchain and utilizing the Profile
- Custom set of applications using a Single Sign-in and uniform predictive UI
- No need to download, update, install or setup any software
- User-centric Web 3.0 browsing experience
- Full access to a free and censor-proof global semantic data pool, featuring Dark web support: VPN, Tor, I2P, etc.
- Proactive filtration of incoming information and automation of web activity using Individual Assistant
- Access to a Dashboard, customized with an automatic arrangement of bookmarks based on your preferred content using AI

4.2 For authors

- Fully automatic search for relevant readers through Recommender System
- Monetization of creative activities, using the Crediting function
- Easy funding of your creations, using crowdfunding functionality
- Comments and promotion through advanced tweets
- Authorship acknowledgment through saving the date, link to, and hash-sum of the creation in blockchain through the digital fingerprint functionality
- Content is censor-proof and block-proof

4.3 For entrepreneurs

- Replacement of obsolete web 2.0 sites with web 3.0 hubs without a string of code: web development becomes redundant through the capabilities of web 3.0, eliminating setup and technical support issues. Functionality becomes better through cloud/distributed apps
- Automatic connection to the global semantic data pool. Linked Data — availability of third-party content without copy/paste or API
- Semantic structured pages ensure high organic search positions (top of search results)
- Anonymous though all-encompassing statistics and analytics based on the Interest Matrix for efficient business operations
- Offers which provide a substitute of expensive, untargeted, and inefficient adds

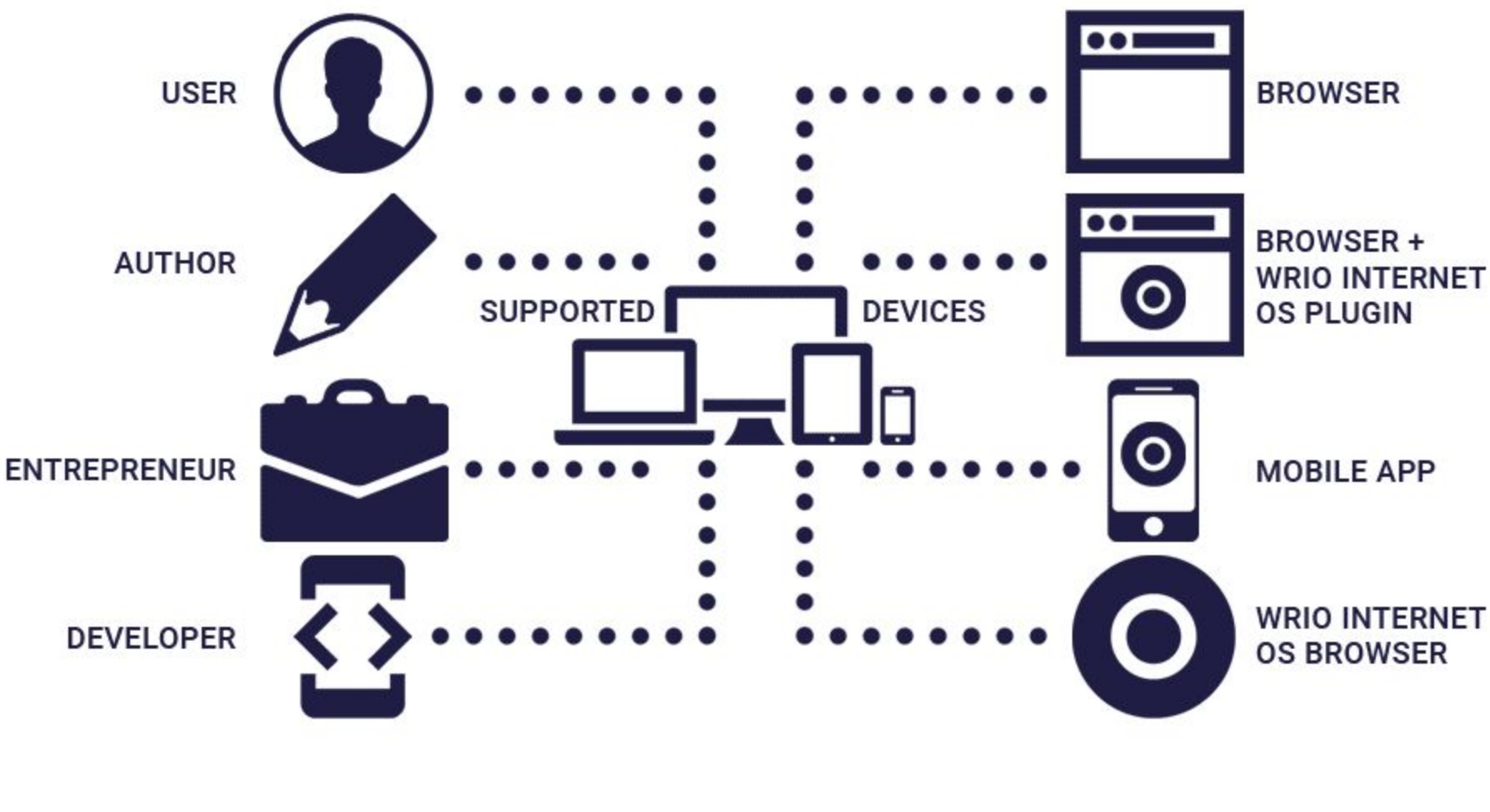
4.4 For developers

- Development of cloud/distributed apps using a global semantic data pool
- Single sign-in with free access to the decentralized pool of users
- Security boasting private user data which is effectively protected through blockchain cryptography
- Browser-driven nature of WRIO Internet OS guarantees the absence of cross-platform, cross-browser, cross-device, and responsive problems. Frontend development is not required as a ready-made set of controls and elements is provided. UI is determined by a theme selected by the user. All developers' efforts are focused on the development and support functions (backend)
- Cloud services will guarantee that the user always uses an up-to-date version with the absence of compatibility issues without need of the support of the previous version
- Zero piracy, simple monetization of applications, and automatic search for relevant users based on behaviors and interests
- Cloud/distributed web 3.0 apps marketplace provides a free and secure market that does not have censorship or requirements.
- Regulated through the Rating and Web of Trust

5 · Functionality of WRIO Internet OS

5.1 Supported devices

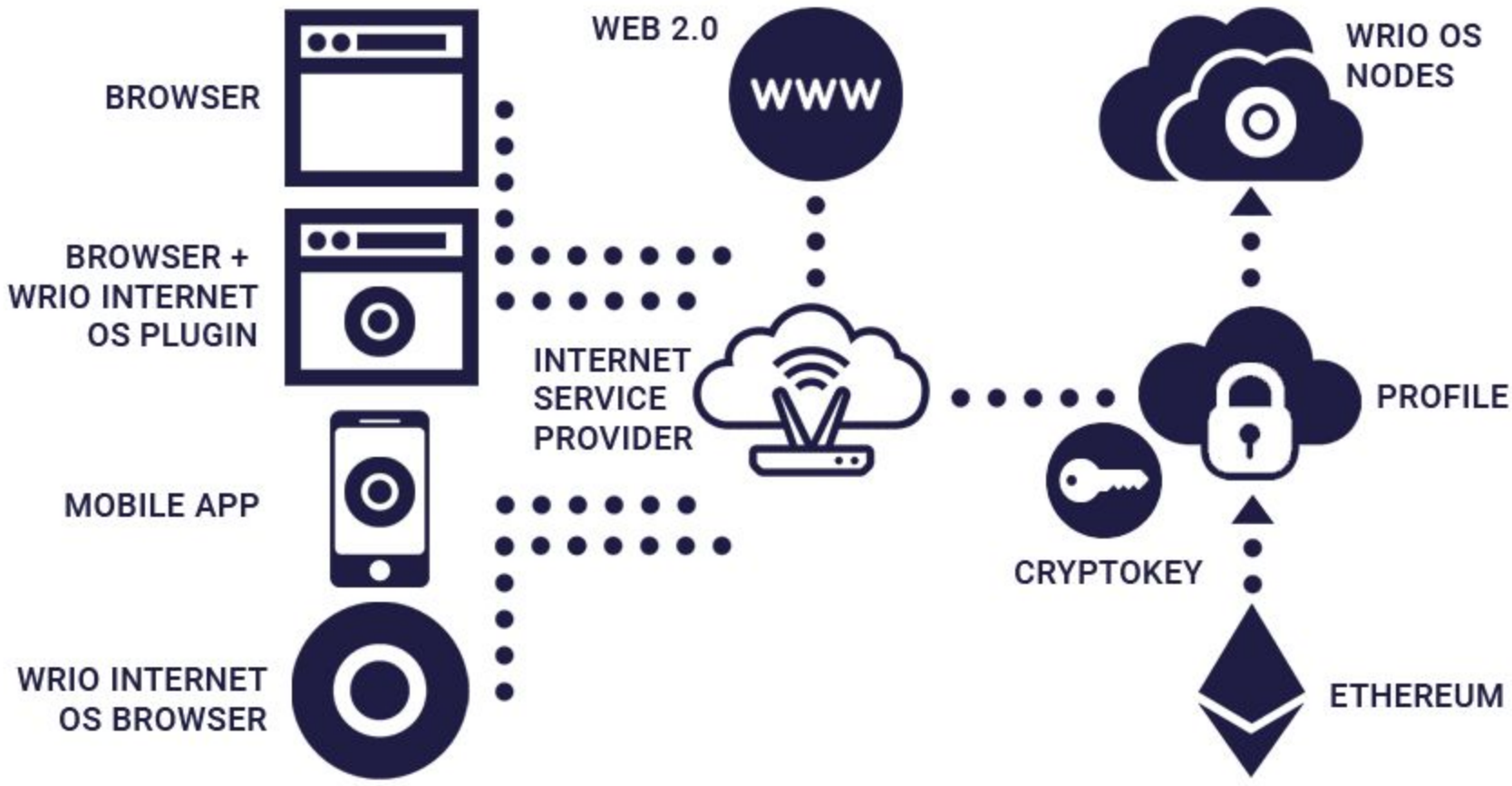
WRIO Internet OS is being developed for compatibility with numerous types of browser-enabled devices, browser + plugin, and the WRIO OS mobile app. However, its primary objective is opening a new market of terminal devices based on single-board computers — inexpensive kernel-Linux devices with a browser-driven WRIO Internet OS onboard.



5.2 Keystore — A secure storage of encryption keys

The Keystore is responsible for decrypting data/messages and providing access to the Profile. Access to the Keystore is based on the use of a password and/or two-factor authentication and a physical USB-key. The key is kept by the user who receives it after registering a blockchain address.

5.3 Internet service provider. Virtual realm access point



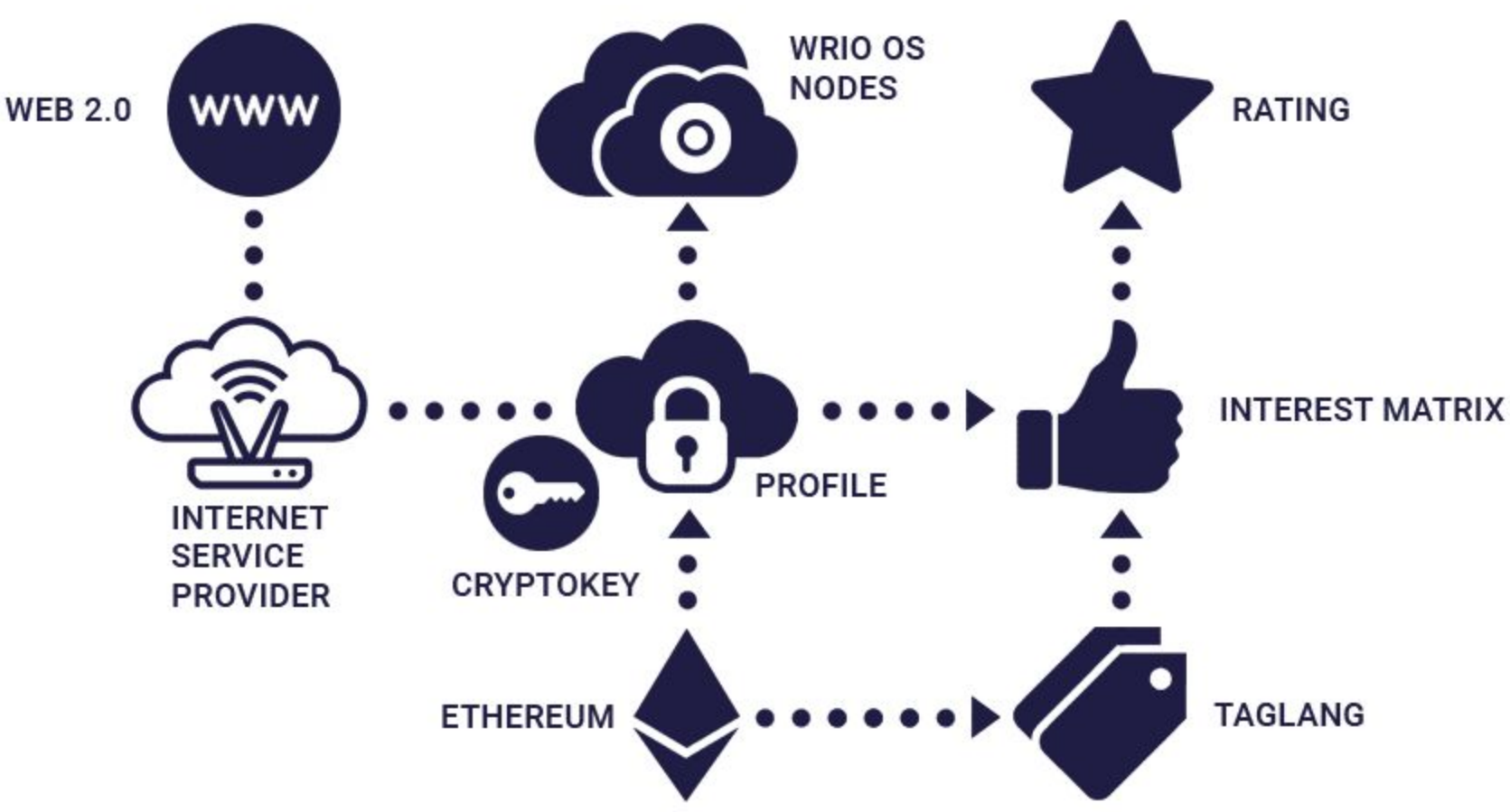
The current limitations include resources lockup, traffic interception, and surveillance over user activity: Golden Shield Project, Five Eyes, Roskomnadzor, etc.

WRIO Internet OS overcomes these limitations through:

- End-to-end encryption protects against interception
- Tor-like WRIO OS nodes allow easy bypassing of lockups
- WRIO OS P2P network protects privacy
- Navigation and authorization are automatically pushed through blockchain-based Profile

5.4 Profile — Single Sign-in

An anonymous electronic passport designed to retain the user's control over personal data serve as a reliable ID. Trust in an online environment is not ensured by threats to invoke legal prosecution, but rather through the complexity and time-consuming process of reputation building related to the account, thereby ensuring the Web of Trust.



Disadvantages of Web 2.0 — a system based on the username/email+password combination

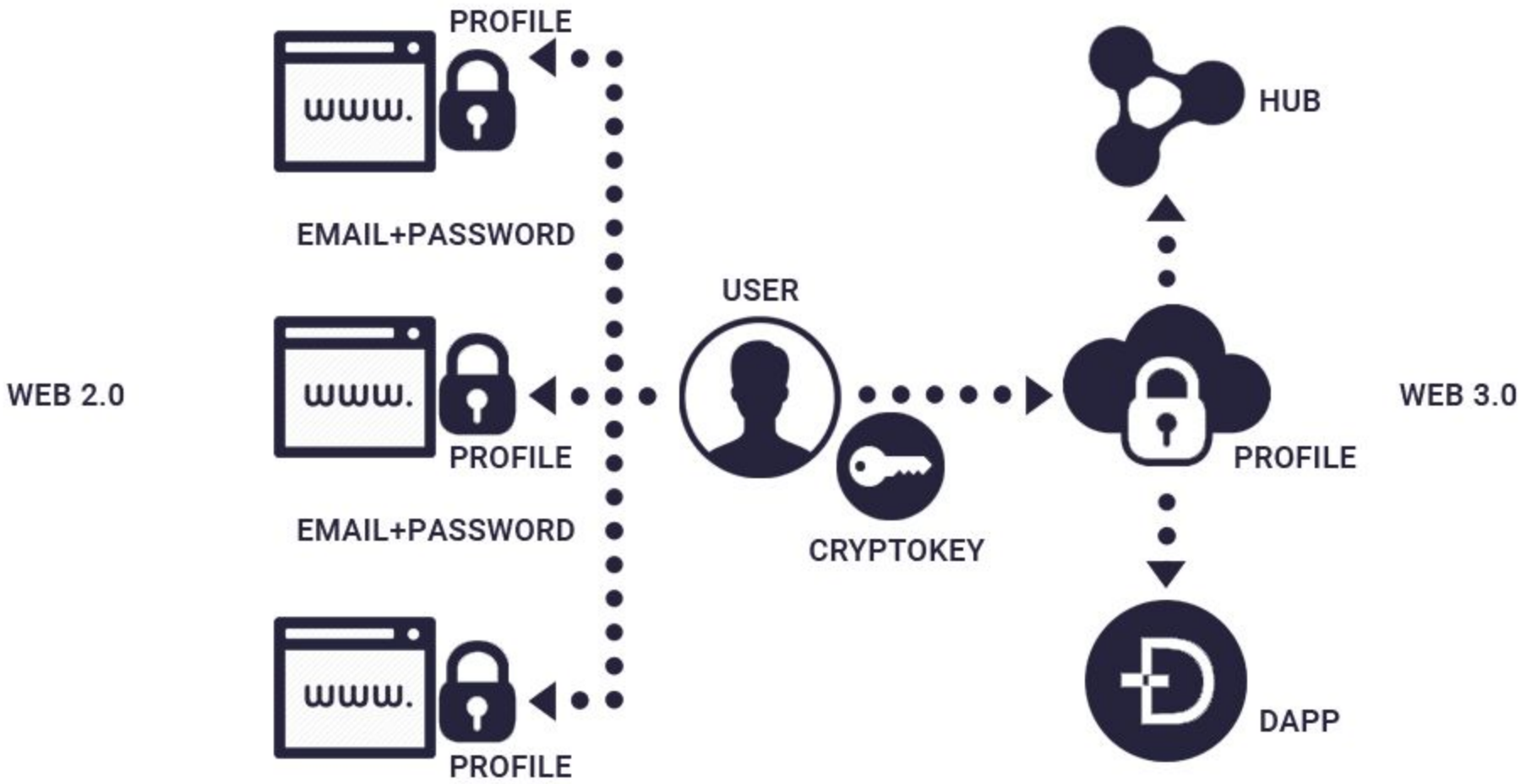
- Separate registration and profiling needed for each service
- Complex process of keeping information up-to-date
- Passwords are either too easy to penetrate through brute force or too complex to remember. Often people use the same password for different services and once that password has been hacked, the accounts of all services under that password are compromised
- A compromised email allows access to all related services
- Remembering the email address or social media used for registration
- The service needs to be entrusted with personal data. A separate profile is needed for each service. Account removal requires dubious steps, also not guaranteeing complete deletion
- Third-party information selling

Profile advantages with Web 3.0

- **Single Sign-in:** one login for all hubs and services, the system functions just like social login. However, there is one essential difference: this is a uniform distributed identification system on the basis of the Ethereum blockchain. Due to its decentralized nature, no one controls it, while it can be used by anyone without conditions, restrictions, or intermediaries
- **Universal ID:** your blockchain address functions as ID, access is granted through the use of a crypto-key stored on the user's side. The address can be compared to a mailbox in a provisionally infinite wall of other mailboxes
- **Respect of privacy:** the ID can be anonymous and does not have to contain personal data. If personal data is used, it is securely protected by cryptography and access can be recalled at any time
- **One-click authorization:** the user can connect to services with one click without having to register or fill in their profile. The full list of services the Profile is connected to
- **Web of Trust:** spammers' accounts are effectively blocked through the Web of Trust
- **Personal data security:** Personal data is not stored on the server's side, meaning services cannot transfer the data to 3rd parties either themselves or as a result of hacker attacks
- **Storage of Assets**: the ID also acts as a storage for assets: webGold, reputation tokens, DAOs tokens, etc.
- **Authorship acknowledgment:** authorship acknowledgment through saving the date of, link to, and hash-sum of the created content in blockchain — thereby creating a digital fingerprint
- **Restoring:** In the event, the key is lost, it can be restored, provided that its partial copies have been distributed among trusted users

Web 2.0 services upgrade

- There is no longer a need to remember passwords to services and websites, with using auto login through the Keystore
- Crypto-layer — automatic encryption of messages between WRIO OS users within the existing services: email, messengers, and social media



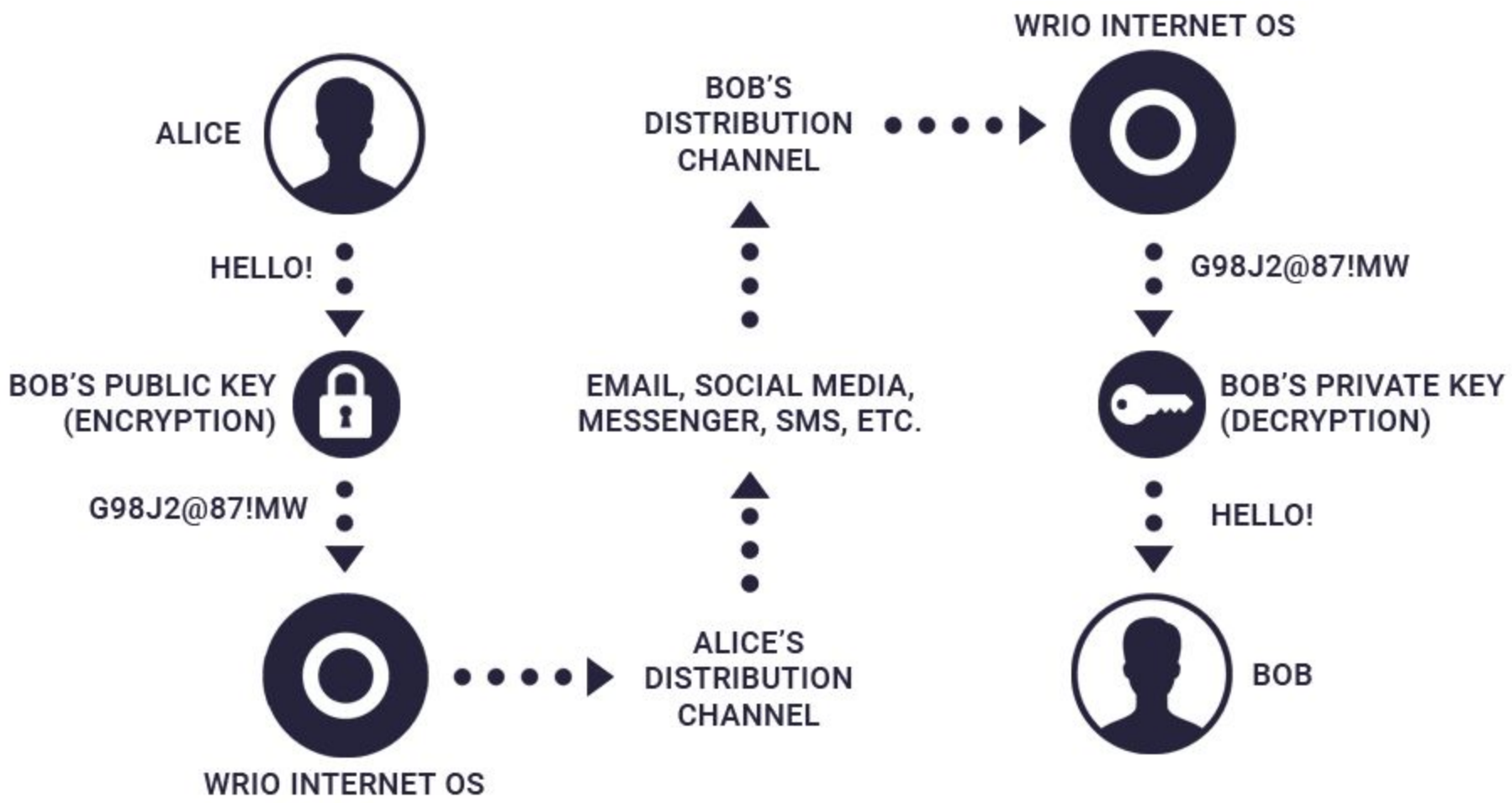
Web 2.0: *Every website and service requires separate registration. Insecure combination of an email+password.*
Web 3.0: *Secure one-click authorization based on a crypto-key. Single profile for all hubs and cloud/distributed apps.*

We believe that the independent global identification system based on the blockchain will replace centralized solutions and become a decentralized “Wikipedia” of users.

Note: With the launch of the MVP Release, the first WRIO OS node has been put into operation with authorization through Twitter (Metamask support is coming). However, even today when registering, users get a secret phrase consisting of 12 words that grant access to the webGold wallet and assets stored in the Ethereum blockchain.

5.5 Global Address Book

Global Address Book is a logical extension of the Profile concept.

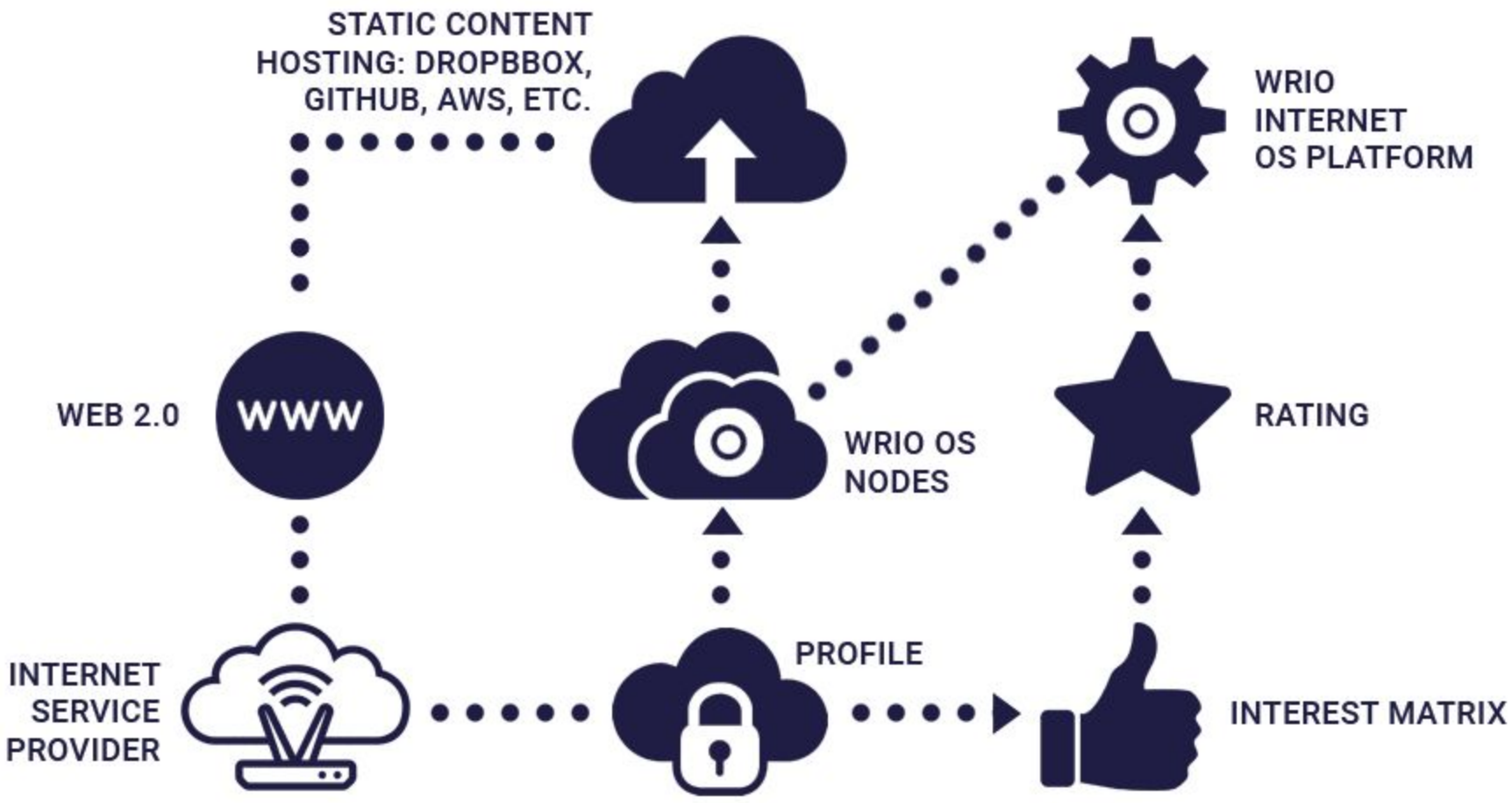


Each message will be automatically encrypted by the system using an addressee's public key. It will be sent through the preferred channel and decrypted on the addressee's side with the help of a private key. For instance, messages from your friends registered in various social media can be sent to your email, and you can respond to them through email as well.

All user contacts will be linked by the blockchain address which will act as a universal ID. The single contact system eliminates all boundaries and registrations on social media, messenger, and mail services. Any message sent is encrypted by the system with the addressee's public key. The message is then decrypted with the private key stored in the Keystore. Messages will then be sent and received through the API of corresponding services on the user’s name or WRIO OS account — regardless of the platform they use. Keys guarantee privacy through end-to-end encryption in all circumstances.

5.6 WRIO Internet OS Nodes — Entrance to Web 3.0

Nodes are a cloud version of WRIO Internet OS and a guide into the world of Web 3.0. WRIO OS nodes can be both public and private for either personal use or for use by a limited group of people connected through business and personal interests. If the WRIO Internet OS browser, plugin or mobile app is used, WRIO OS nodes are no longer needed.



Distinctive features of WRIO OS nodes

- No central point of failure
- Tor-like, interchangeable: in the event, a node is locked up the user can easily change to another, or set up a private node
- Do not store the personal data of users; rely on the user Profile instead
- Censor- & block-proof. Proxy mode restores access to the resources blocked on the ISP level
- Functions are based on cloud/distributed apps
- Support of and access to a Global Data Pool

5.7 Semantic Upgrade — A Global Data Pool

Linked Data

Tim Berners-Lee, best known as the inventor of the World Wide Web said: *"I have a dream for the Web in which computers become capable of analyzing all the data on the Web – the content, links, and transactions between people and computers."*

> *"In computing, Linked Data is a method of publishing structured data so that it can be interlinked and become more useful through semantic queries. It builds upon standard Web technologies such as HTTP, RDF, and URIs. However, rather than using them to serve as web pages for human readers, it extends them to share information in a way that can be read automatically by computers. This enables data from different sources to be connected and queried."*
>
> — Wikipedia

In his article Design Issues: Linked Data Sir Timothy John Berners-Lee distinguishes four basic principles of Linked Data:

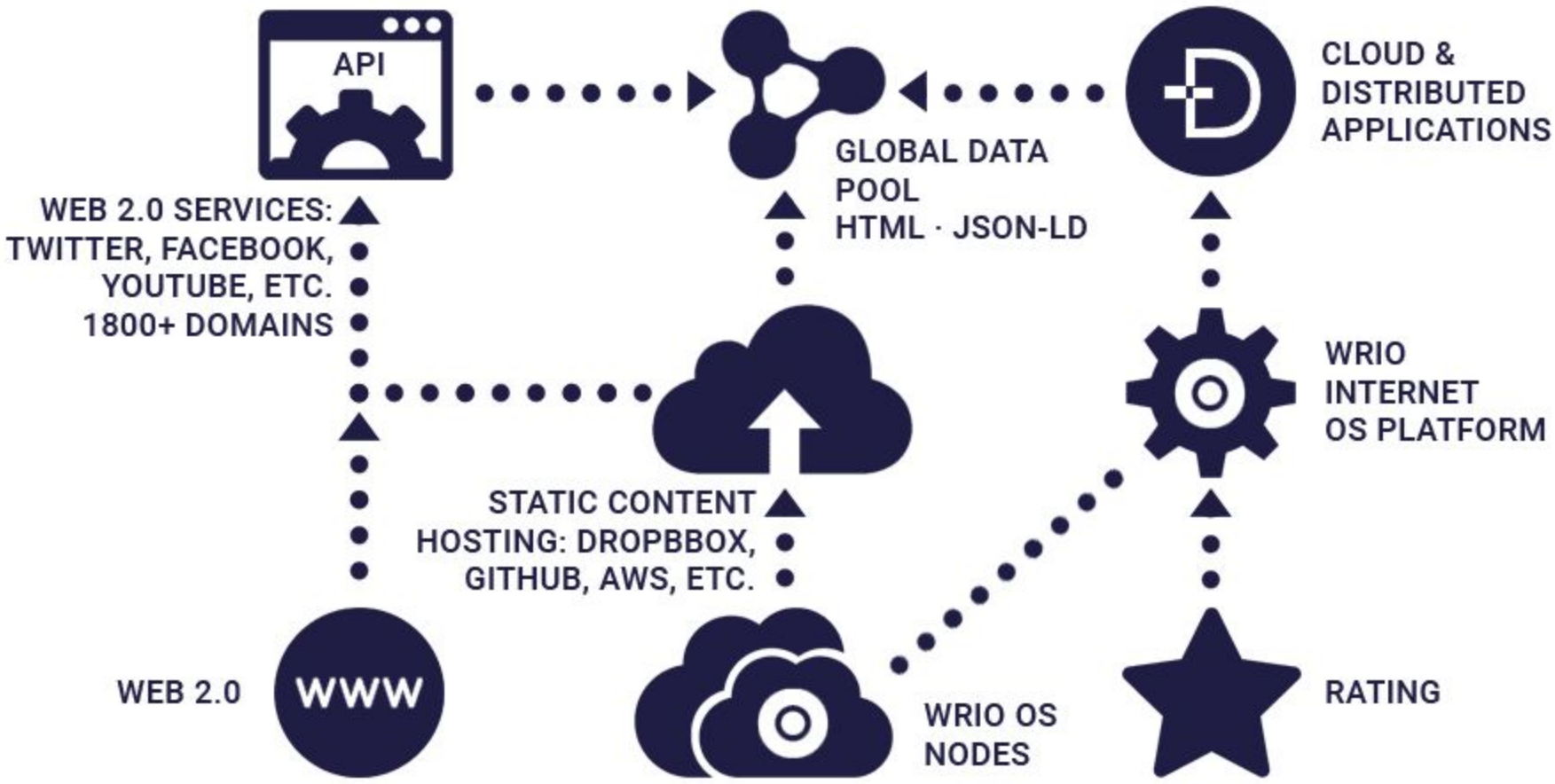
- Use URIs as names for things = entity identity
- Use HTTP URIs so that people can look up those names = access
- When someone looks up a URI, provide useful information, using the standards (RDF*, SPARQL) = structure
- Include links to other URIs so that users can discover more things = integration

> *"The Web enables us to link related documents. Similarly, it enables us to link related data. The term Linked Data refers to a set of best practices for publishing and connecting structured data on the Web. Key technologies that support Linked Data are URIs (a generic means to identify entities or concepts in the world), HTTP (a simple yet universal mechanism for retrieving resources, or descriptions of resources), and RDF (a generic graph-based data model with which to structure and link data that describes things in the world)."*
>
> Tom Heath, including excerpts from Bizer, Heath and Berners-Lee (2009) (PDF)

JSON-LD

JSON-LD is a method of encoding Linked Data using JSON, which is at the heart of Web 3.0 and is supported by all major search engines. Many applications from Google, Microsoft, Pinterest, Yandex, and others already use these vocabularies to enrich and extend user experiences. JSON-LD is a static HTML file with minimum markup, which can be stored on any static content hosting, including the

Dark web. Such a file contains data of a particular object (a person, an organization, a book, etc.) divided into the key-value pairs on the basis of a corresponding template.



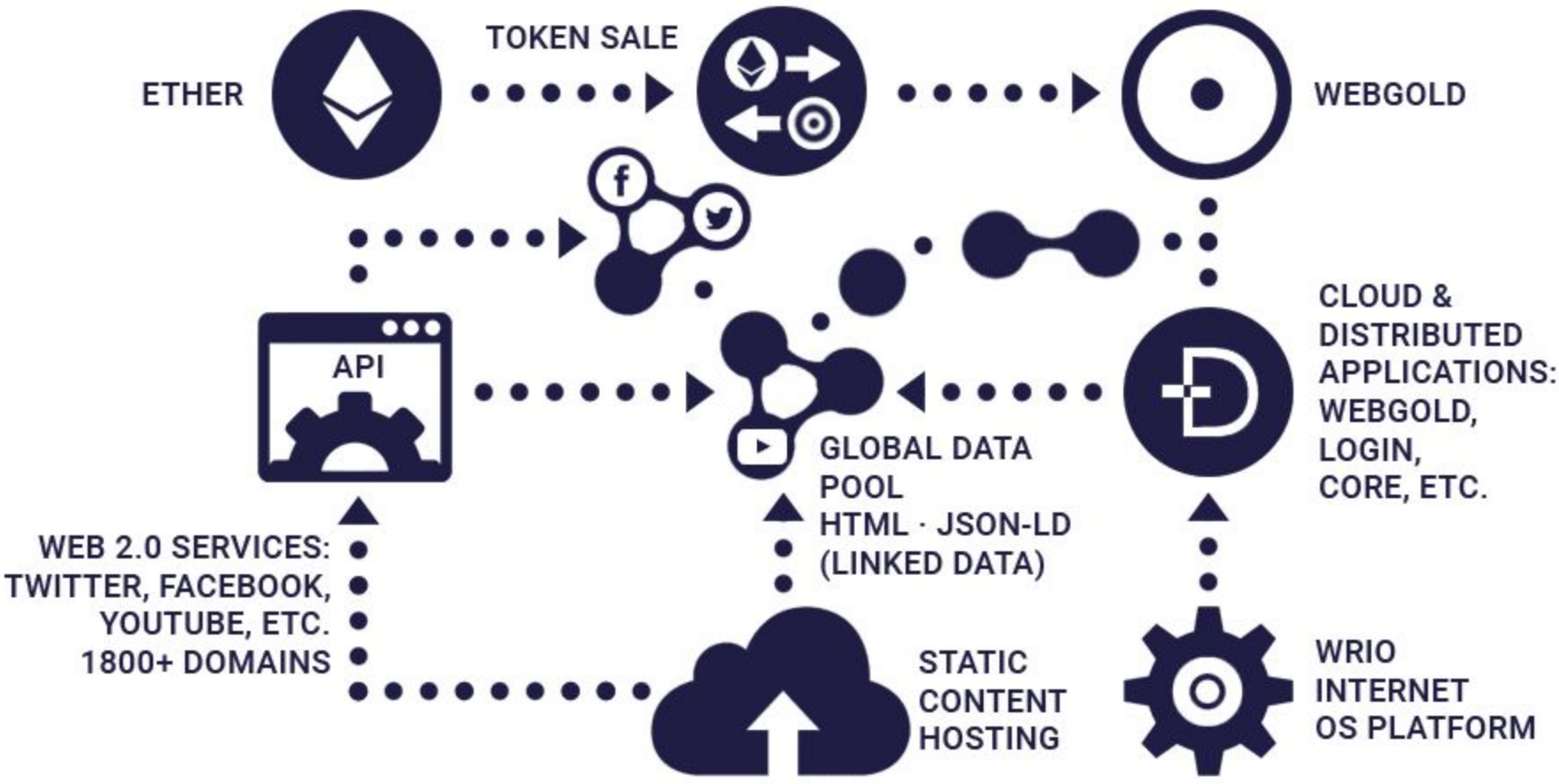
A simplified example

A simplified key:value code example explaining this concept is as follows:

```
Name: Alice
Surname: Smith
Born: 1 January 1980
Place: Rome
```

The example provided above relates to several objects, one of which is Rome, which has an attribute “Country: Italy”, and through which it is associated with Italy, Italy with Europe and so on. Thus, all files are interrelated and form a semantic network, in turn, forming a global data pool (GDP).

Not only does GDP resemble a neural network, it also technically pushes the analogy further, and using a Logical Machine based on Ethereum enables the creation of next-generation search engines and services built on direct and indefinite logical relations. The first services of that kind will be Interest Matrix and Individual Assistant.



JSON-LD can embed content from web 2.0 services and social media channels such as Twitter, Facebook, Youtube etc.

HTTP & RDF allow us to share data with people we will never meet. This is considered "cooperation without coordination" which forms queries that pave the way to another feature of the global data pool — coherence of data.

The global data pool is a decentralized "Wikipedia" of open, shareable, reusable and semantic Linked Data that allows the use of resources of millions of computers as a unified, distributed, and public data storage. The GDP is based on Open Web ideas.

Advantages of the semantic upgrade

- **Pure data:** unlike web 2.0 pages, data is not mixed with markup and UI, rather they are linked with each other on the pages
- **Speed & secure:** the textual format of the pages ensures their minimum size, easy compression, and fast encryption. Pages can be transferred at a high rate even if the Internet connection is very slow
- **Textual:** the static nature of pages enables caching, offline-first, while they can be stored on any server: Dropbox, Google Drive, Github, AWS, etc., including Dark web segment
- **Censorship and block-proof:** access will be via DHT and P2P technologies, digital fingerprint of files instead of Uniform Resource Identifier (URI). More details in Predictive Search
- **Structured data:** a standardized format for providing information about a page and classifying the page content
- **Machine-readable:** automatic processing by search engines without the need for a syntax analysis — high organic SEO positions
- **Open access:** refers to online research outputs that are free of all restrictions on access and free of many restrictions on use
- **Open content:** a creative work that others can copy or modify freely, without asking for permission
- **Open data:** the idea that some data should be freely available to everyone to use and re-publish as they wish, without restrictions from copyright, patents or other mechanisms of control. More details in Open Copyright (TBA)
- **Malware and virus free:** WRIO OS browser, plugin or mobile app process just text data, ignoring JavaScript, ensuring complete protection
- **Coherence:** websites are no longer stand-alone, while data is no longer restricted to specific website boundaries and form part of the GPD. This leads us to the coherence of data — no copy/paste
- **API-free Semantic Lego:** anyone can add and use data pursuing their purposes through HTTP

5.8 Semantic Lego — Coherence of data

JSON-LD pages are blocks of pure data used to build up hubpages, like Lego blocks, on the basis of original sources, thus ensuring the coherence of data — no more copy/paste is necessary.
API is no longer required to obtain data – it suffices to send an HTTP query of the following form:

```
https://domain.com/profile.html?name
```

The example of the query provided above retrieves data from the field "name". The query is generated automatically when text is inserted on another JSON-LD page. If the value in "name" is changed, all pages using that data will reflect the changes without any additional actions. In order to avoid continuous employment of the original sources, the pages use within themselves cached versions updated if the original file is changed, tracking the last change date or hash-sum.

It is also possible to insert certain pieces of text. Text start and end markers are used for this:

```
https://domain.com/profile.html?about,20,30
```

If the source text is changed, the markers are updated automatically. Technical details go beyond the White Paper and will be discussed separately on our blog.

This is a simplified example, provided to aid a high-level understanding of the basic principles. Certain technical details have been omitted to retain simplicity. The entire code is generated automatically. The user only needs to fill in data in a Microsoft Word-like page editor. Pages can be created manually using any text editor. Key features include:

1. page URL. Pages can be stored on any static-hosting server, including the Dark web. In the event the filename is missing, index.html is used instead
2. information displayed for the user, and the key in the code responsible for its
3. page code is in the JSON-LD format
4. list of HTTP-queries. Queries are the same regardless of the source. The left part of the example uses data from the same page
5. cached version is automatically updated if the original source is changed. Data are automatically transformed into the form eligible for the user, based on the localization settings, as described in the example with a date of birth
6. name of the key the data are retrieved from
7. location of the key-value (6) in the text. The first digit is the section number, the second is the number of the symbol, after which the value will be inserted

The next section will describe how WRIO Internet OS nodes render JSON-LD data in the form of a webpage users are accustomed to, while WRIO OS applications add the required customized functions, thus enabling the creation of new, user-centric Web 3.0 websites — hubs.

6 · Hubs — Web 3.0 websites

Obsolete centralized web 2.0 websites are gradually replaced by web 3.0 hubs. They do not require technical changes of the web and use the existing infrastructure. The hubs can incorporate web 2.0 content: social media and services (1800+ domains supported).

Any website is a set of objects of various types. For instance, a news site is a set of objects relating to an “article” type; an Internet shop – goods, shopping cart and client; a social media platform or account – user, status, comment, and etc. This concept naturally leads to the idea of a structured design of websites as objects, indicating their properties and processing methods: who sends, what is being sent, the addressee, what objects it relates to, what qualities it possesses, etc. For this very purpose schema.org was developed: it contains ready-made schemas, which are supported by all major search engines. Pages developed on the basis of these schemas in JSON-LD format do not require parsing, are ideal for search engines, and ensure high organic search positions without the use of search engine optimization.

Each JSON-LD file contains a link to wrioos.js that interlinks it to a default WRIO OS node. The node turns JSON-LD data into a page a user is accustomed to, with the functions and theme of the **user’s choice**, and not of the hub’s owner’s. This is one of the features of the user-centric web concept that differs radically from the current browsing experience, leading us to reverse information flow from websites to the user. This feature not only prompts the uprise of web 3.0 websites, user-centric applications and services but also **changes the concept of advertising**.

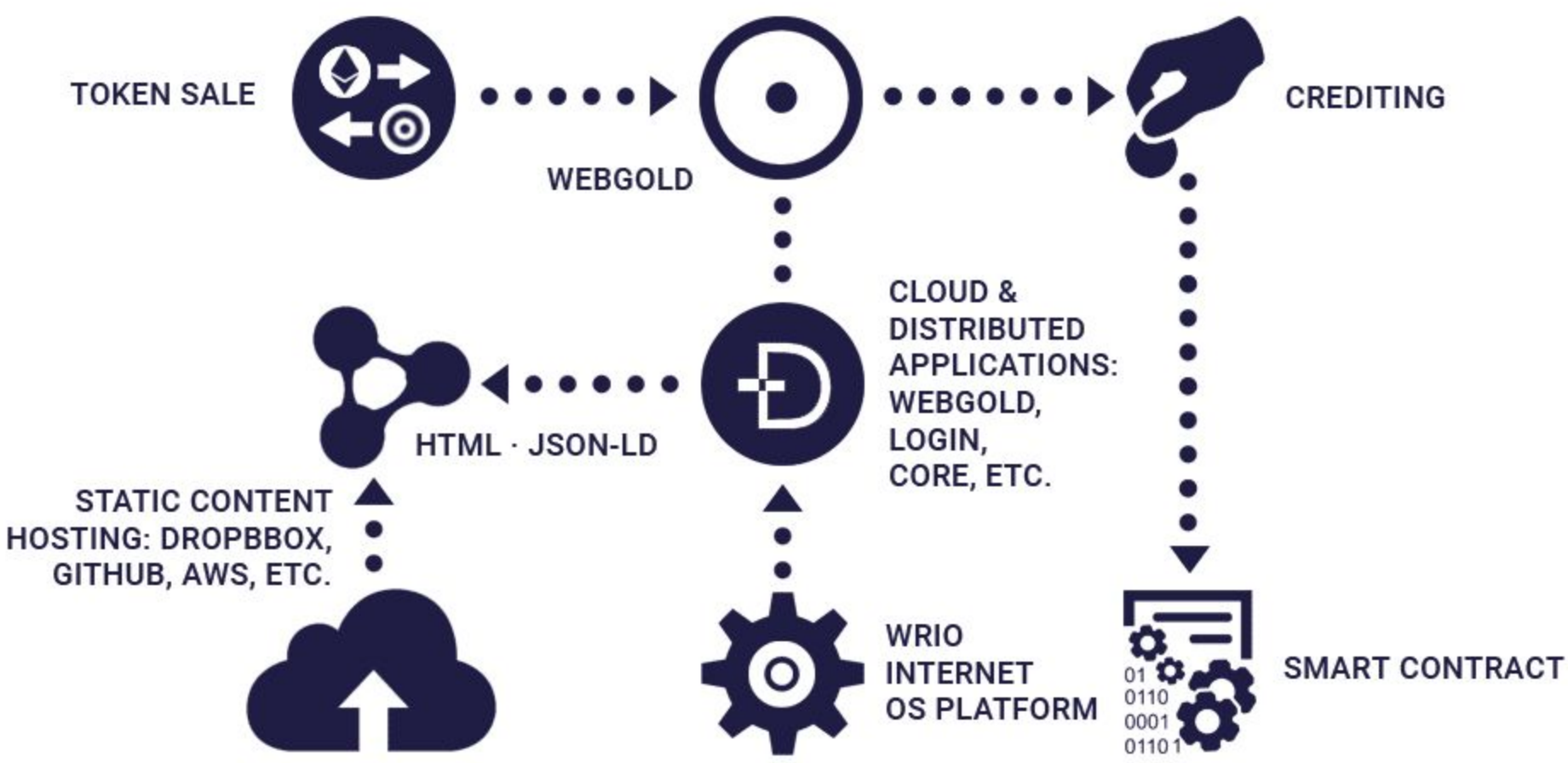
6.1 Advantages of hubs

Since hubs use JSON-LD format, they adopt its advantages:

- **Textual format:** minimum size, easy compression and fast encryption
- **Static identity:** caching, offline-first
- **Pages can be hosted on any static content hosting service**: Dropbox, Google Drive, etc., including Dark web. Example: https://aa.wr.io, hub pages are located in a Github repository
- **Censor-proof and block-proof**
- **Operates without javascript:** wrioos.js belongs to a node and is required only for users who don't use the WRIO OS browser, plugin or mobile app, which makes them more secure and guarantees absence of surveillance
- **Functionality**: rich functionality through cloud/distributed mashup apps
- **Consistency**: data is not restricted to a website, which allows the use of third-party content without copy/paste or API. Hubs would function as a kind of stencil applied to the GDP to display the required information
- **Access via HTTP, DHT, and P2P**: pages can be searched for based on their digital fingerprint instead of URI
- **Automatic connection:** automatic connection to the global semantic data pool
- **Machine-readable**: automatic processing by search engines without the need for a syntax analysis
- **Semantics:** semantic structure of pages ensures high organic SEO positions (top of search results)
- **User-centric Web 3.0 browsing experience**: automatic search for relevant readers — Interest Matrix
- **Pinger:** comments and promotion through tweets
- **Offers:** a substitute for expensive, annoying and inefficient ads
- **Core:** hubs are created with the help of an editor without a single string of code. Just save the page on our server or any other server. Get inspired
- **No frontend development required**: UI is determined by a theme selected by the user — zero expenses for designers/developers and technical support

7 · Cloud/distributed mashup apps — dApps market

Cloud apps — software as a service (SaaS) is a centrally hosted subscription-based software licensing and delivery model. **dApps** are decentralized applications that cannot be destroyed or changed by force. A mashup is a web application that uses content from more than one source to create a single new service displayed in a single graphical interface.



7.1 WRIO OS applications features

- **Microservices:** provide all the necessary hub functions — an analog of desktop applications for WRIO Internet OS
- **Browser-driven:** the browser-driven nature of WRIO OS guarantees the absence of cross-platform problems, cross-browser, cross-device and responsiveness issues. No frontend development is required, maintenance is provided by a ready-made set of controls and elements. UI is determined by a theme selected by the user. All developers' efforts are focused on the development and support of functions as such (backend)
- **Predictive UI:** predictive UI corresponding to the tastes and physical abilities of the user

- **Cloud Services:** cloud services are always up-to-date, creating an absence of compatibility issues and negating the need for the support of previous versions. No need for downloading, installing or setting up any applications: all resource consuming operations are performed on the service provider's servers, displaying the end result on the user's screen
- **Cloud/distributed apps marketplace:** the launch of a new market of mashup services that use the Global Data Pool. It's a free and secure market that has no censorship and imposes no requirements, regulated by the community through Rating and Web of Trust; the author's reputation is the quality guarantor
- **Single Sign-in:** free access to the decentralized pool of users
- **Privacy:** private user data are protected through blockchain cryptography
- **User-centric:** automatic search for relevant users based on their behavior and interests. All purchases are made in webGold: no piracy, simple monetization of applications

8 · webGold — Back to the Gold Standard

8.1 Introducing webGold

webGold is an ERC20 token. It is used on the WRIO Internet OS platform and for settlements between WRIO OS projects.

This token has been developed to ensure the correct functioning of the Rating, which is based on equilibrium Crediting, and thus requires a steady exchange rate. The steady exchange rate is a unique feature of webGold and is based on historic use of the gold standard to stabilize currencies around the globe. It is identified either by symbol ⊙, or by WGD.

The initial cost of webGold has been pegged to physical gold (1,000 WGD = 1g gold, about $40). This value may change due to limited offers, market forces or speculation over time, but the lower limit of webGold volatility is maintained by the Ether held in the token sale fund and the book value of the ecosystem. The upper limit is determined by the Emission.

The book value is determined by the formula:

WGD = (Token Sale Fund + DAO's assets) / Total webGold token amount

The Token Sale fund is secured by cryptocurrency raised during the Token Sale and the future combined value of the tokens of all the DAOs that may operate on the WRIO Internet OS Platform. At the moment of the Token Sale the value will be determined entirely by the Token Sale fund. But as DAO assets are created the value will shift until it is mostly held in the DAO's assets – crypto-economy.

Tokens are the heart of the crypto-economy. And for a token to have value it needs three key components, as described in William Mougayar's article "Tokenomics — A Business Guide to Token Usage, Utility and Value":

- **Role**
- **Purpose**
- **Features**

Each role has its own purpose and is defined by a certain set of features. In the case of webGold this set is as follows:

- **Right.** Provides the right to purchase the tokens of the DAOs which may operate on the WRIO Internet OS Platform (TBA in the future) and the right to participate in the decentralized management and development
- **Value exchange.** Secures the value of sidechain cryptocurrencies used to operate DAOs' internal economy. Credits are the first
- **Toll.** webGold will be required for getting on the blockchain infrastructure. It includes running smart contracts to perform a specific function and plain usage fees in the form of WGD transaction fees
- **Function.** Many DAOs will provide additional functions for WGD
- **Currency**. Preservation of savings
- **Earnings**. Owners of webGold will have a unique opportunity to participate in the Airdrop distribution of newly issued WGD

8.2 webGold advantages

- Steady exchange rate, market-limited volatility
- Liquidity is determined by the market value of DAOs' assets. More information is available in the Emission section
- Token Sale participants could use WGD to purchase tokens which may be issued by any DAO operating on the WRIO Internet OS platform
- Coverage of Token Sale participants: **all** raised funds will be used to support the webGold exchange rate. After the launch of the Exchange (this is a future event and will be announced post Token Sale), webGold can be sold for the book value. This is the lower price limit, for which webGold is buybacked, and which distinguishes webGold from other cryptocurrencies and ensures Token Sale participants' security

8.3 Token economy

The economy is powered by the balance between WGD and DAOs tokens:

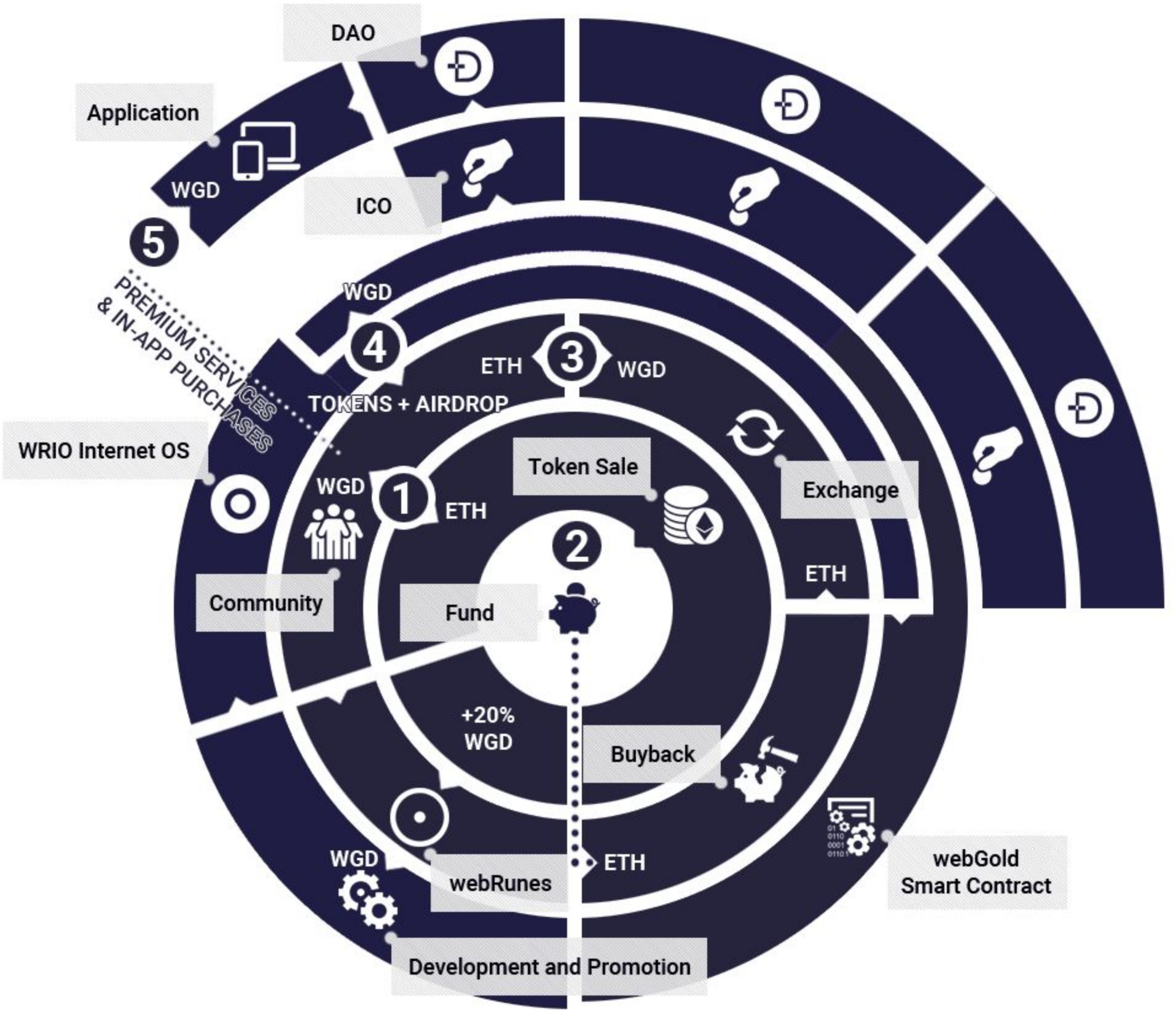
WGD tokens: the core token of the ecosystem.

DAO tokens: Distributed Autonomous Organizations can launch their own tokens on the WRIO OS platform.

Having these tokens allows the platform to build decentralized assets, and work towards a self-sustaining ecosystem where users have a confirmable reputation and can run autonomous organizations in a trustless environment.

The token economy will be stood up in the following way:

1. A Token Sale will be held where 80% of all WGD tokens will be sold. 20% of the tokens are held in reserve for further development. See "Token distribution" for the details.
2. All ETH raised by the Token Sale will be used to back the WGD token, and is used in a buyback pool to maintain the price.
3. The Buyback Fund ensures the WGD price is maintained while the platform grows.
4. When a DAO launches on the platform, WGD is used to buy tokens. The DAO can then exchange the raised WGD for ETH from the buyback pool.
5. As the DAO grows, it returns value to WGD. Much like a company growing in value increases a country's gross national product.
6. Each time DAO token is bought or sold the total market value is recalculated. The emission contract then adjusts the token supply to maintain a constant total market cap. See "webGold Emission" for the details.
7. As more DAOs are built, and more WGD is used to buy DAO tokens, the Buyback Fund is depleted. This allows the DAO assets that were built by those tokens to become the assets giving WGD its value.
8. Eventually the Buyback Fund will be depleted. This done, WGD will reflect the value of all DAOs based on the WRIO OS platform. This will create a value-based and asset-backed ecosystem.



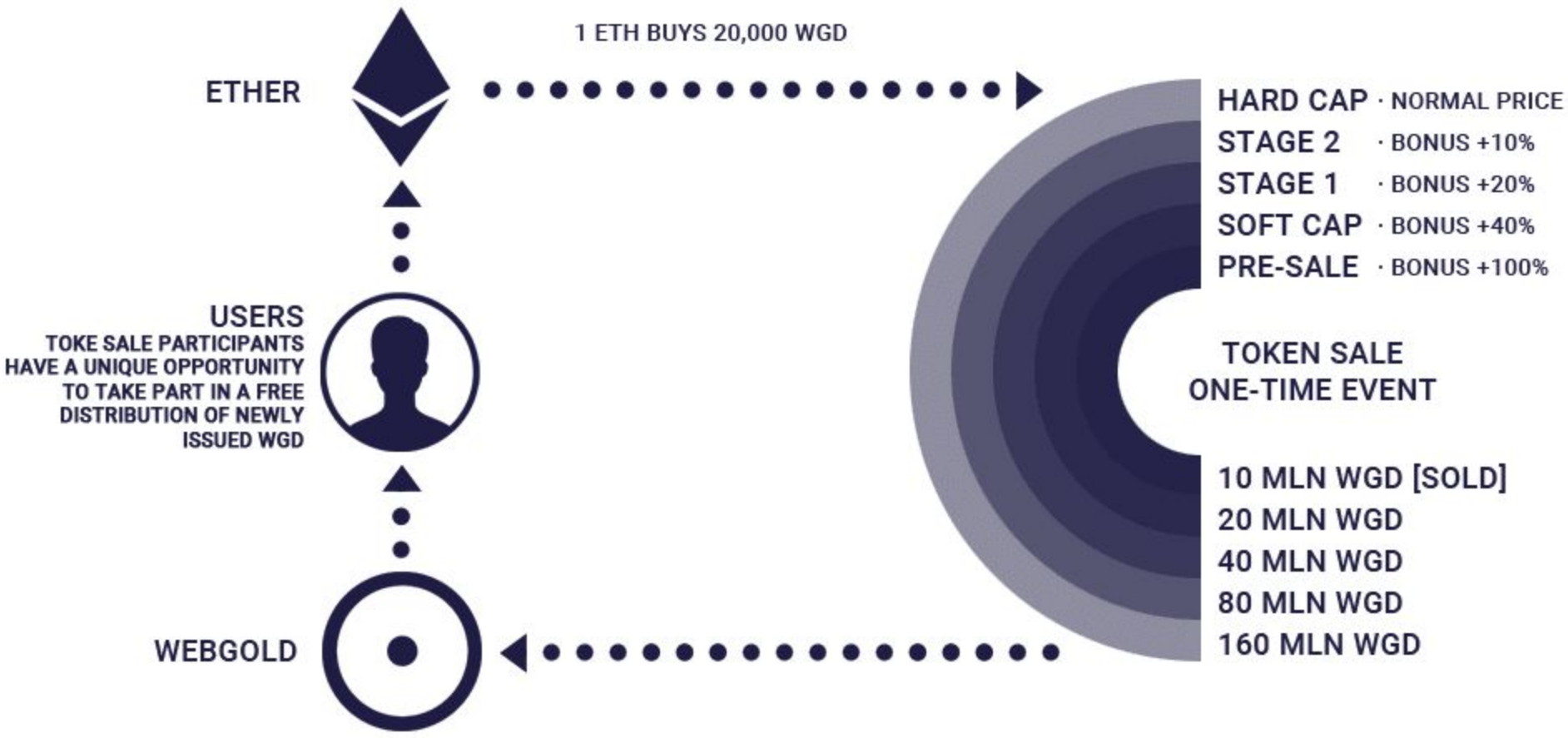
1. Community participates in the Token Sale and generates the initial WGD pool. 80% of all WGD will be sold, and 20% will be used for further development of the project.
   The project is open-source and anyone can join webRunes.
2. Buyback Fund. All raised funds will be used to support the webGold exchange rate, so after the Token Sale it maintains its book value.

3. Soon after the Token Sale is over anyone will be able to sell WGD on an exchange at the very least for the book value, as webRunes will maintain buy-walls at the book-value rate on 3rd party exchanges..
4. The first DAOs will launch their ICOs on the platform. webGold will ensure the initial liquidity of DAOs' tokens through a free exchange. With the development of DAOs the value of their tokens will repay the "debt", increasing the total liquidity of WGD. When tokens are sold, webGold are transferred to the DAOs' funds, where they are used for development and promotion purposes. With each sold token the book value of WGD grows, since the ratio of assets to WGD increases. The higher the book value, the more people will sell their WGD to the Buyback Fund, until the fund drains all its ETH. At this stage webGold will be 100% covered by the DAOs' tokens, and emission smart contract will remain on course.
5. The payment of services increases the total value of DAOs' tokens. Each time DAOs' tokens are sold, the price difference is an indication of its new market value. If the change is positive, new WGD are issued based on the emission smart contract. Their amount will equal the amount of change. These new WGD are then distributed to all WGD wallets via airdrop. If the change is negative, the corresponding amount of WGD will be deducted during the next emission. Thus, the amount of WGD in circulation is always an equivalent of the market evaluation of all of DAOs operating on the platform.

Below is a description of all aspects in detail.

9 · webGold Token Sale — One-Time Event

All funds raised from the Token Sale will be used to back the WGD token. All raised funds will be used to support the webGold exchange rate.



We have had over 1,000 pledges to contribute in the Token Sale.

9.1 Token Sale — Key details

Ethereum ERC20: Compatible
Token Sale date: Coming
Accepted currencies: ETH
Exchange rate: 1 ETH = 20,000 WGD
Total Supply: 387,500,000
Soft cap: 20,000,000
Hard cap: 310,000,000
Minimum purchase quantity: 10,000 WGD (0.5 ETH)
Maximum purchase quantity: 20,000,000 WGD (1,000 ETH)

Unsold tokens are held in the smart contract until the hard cap is reached. Nobody has access to them without purchasing with ETH. This means they are not part of the circulating supply until they are backed by ETH in the buyback fund. Thus keeping the value of WGD stable as more tokens are released.

Restrictions: Residents (Tax or otherwise) or citizens of the United States of America, the People's Republic of China (except for Hong Kong, Macau and Taiwan) and/or any other country which prohibits buying, holding and/or operating WGD tokens are prohibited from participating in the Token Sale. Please see Token Sale Terms & Conditions for further details.

9.2 Token sale stages

Presale [Completed]**:** Bonus +100% · 10 mln WGD. Raised $50,000 used to develop MVP and first WRIO OS applications

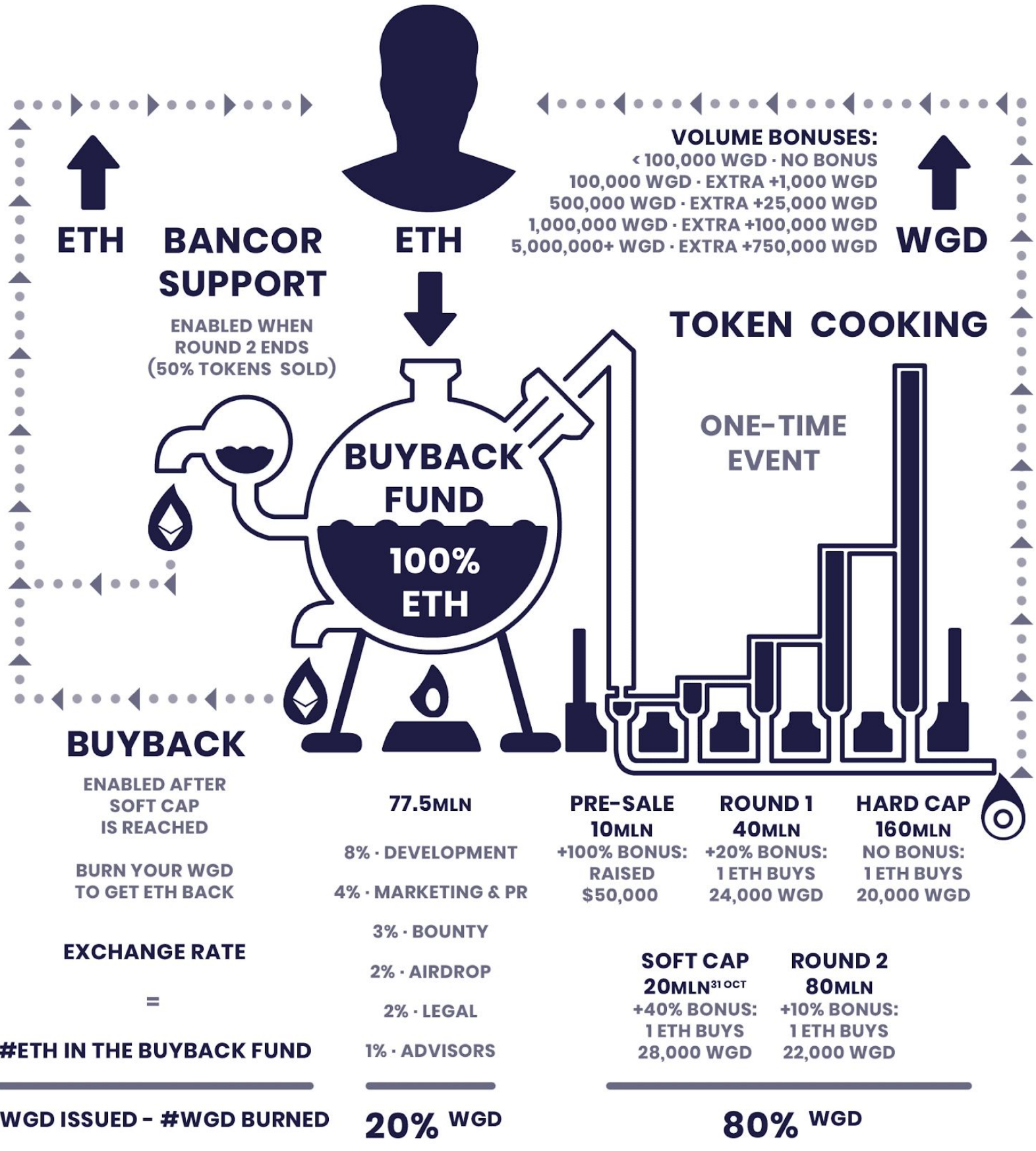
Soft Cap [Whitelist Already Full]: Bonus +40% • 1 ETH buys 28,000 WGD · Cap: 20 mln WGD

Stage 1: Bonus +20% · 1 ETH buys 24,000 WGD · Cap: 40 mln WGD

Stage 2: Bonus +10% · 1 ETH buys 22,000 WGD · Cap: 80 mln WGD

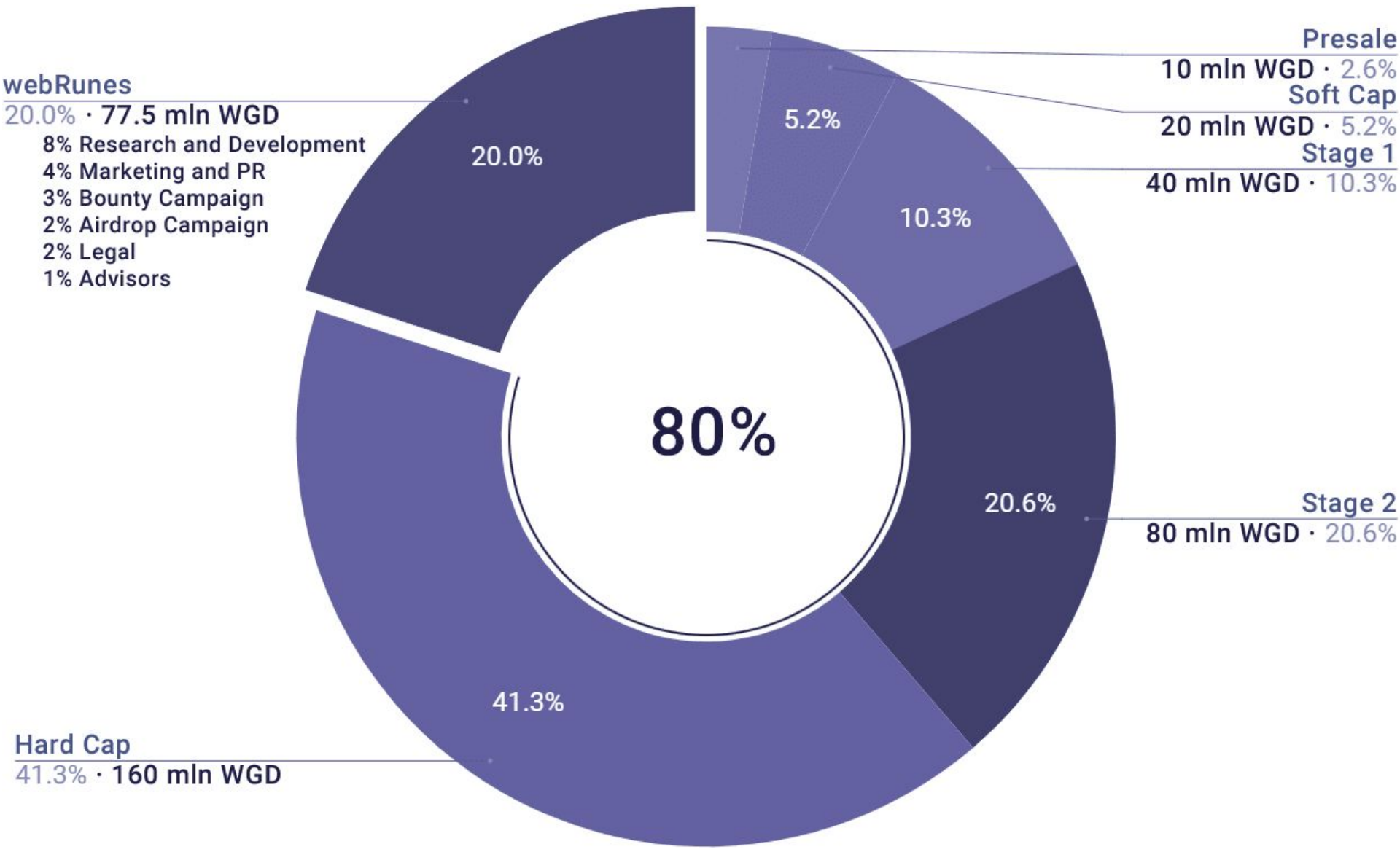
Hard Cap: No bonus · 1 ETH buys 20,000 WGD · Cap: 160 mln WGD

The bonus is halved at each coming stage, while the number of WGD being sold is doubled. As soon as the soft cap is reached, the buyback fund will be enabled, meaning you can convert your WGD back to ETH at any time. We will keep raising funds until we reach our hard cap, and will keep working on the product during this time. So if, at any time you don't think the team can achieve its vision you are welcome to swap your WGD back for ETH. But if you keep holding your tokens, as more are sold, the platform and ecosystem are developed further, and the bonus decreases, the overall net value of the project will increase.



9.3 Token distribution

80% of the total supply will be sold in the token sale. The remaining 20% will be channelled into further development of the project:



Token distribution
Total: 387,500,000 WGD
80% tokens to Token Sale participants.
20% (77,500,000 WGD) for WRIO OS and apps:
· 8% Research and Development
· 4% Marketing and PR
· 3% Bounty Campaign (ended)
· 2% Airdrop Campaign (ended)
· 2% Legal
· 1% Advisors

9.4 Management of funds

All funds raised during the token sale are stored in a totally autonomous wallet. Nobody has access or controls the wallet other than the smart contract. This wallet will operate as both the wallet to collect token sale funds, and as a buyback fund once the sale ends.

During the token sale all raised ETH will be held in the smart contract. Once soft cap is reached this will become a buyback fund. The fund will be totally automated and not controlled by any party. It will buy WGD back from anyone wishing to sell using a simple formula described in "12.1 Buyback Methodology". The purpose of this fund is to ensure the WGD ecosystem is supported by a tangible asset and contributors to building on the platform can have easy access to their money. The economic reasoning for this is described in "12.2 Reasoning". As soon as all the ETH is spent buying back WGD, webGold will become an independent cryptocurrency completely backed by the value of the tokens issued by the DAOs operating on the WRIO Internet OS platform. This, combined with the Emission will result in a stable exchange rate.

9.5 Benefits for Token Sale participants

- **Token Sale participants' protection**: all raised funds will be used to support the webGold exchange rate — which we believe is an improved version of the token-holder protection idea offered by the founder of Ethereum, Vitalik Buterin
- **One-Time Event:** after the hard cap is hit, WGD can only be bought from Bancor or earned
- **Tokens of DAOs operating on WRIO Internet OS Platform:** In the future, Token Sale participants will be able to purchase the tokens of the first DAOs operating on the WRIO Internet OS platform on special terms
- **Special Offers:** participation in special Offers from WRIO OS to acquire premium services and purchase CRD at the lowest price
- **Airdrop:** a unique opportunity to take part in regular WGD redistribution airdrops (pro rata basis) via the Emission.

10 · webGold Emission

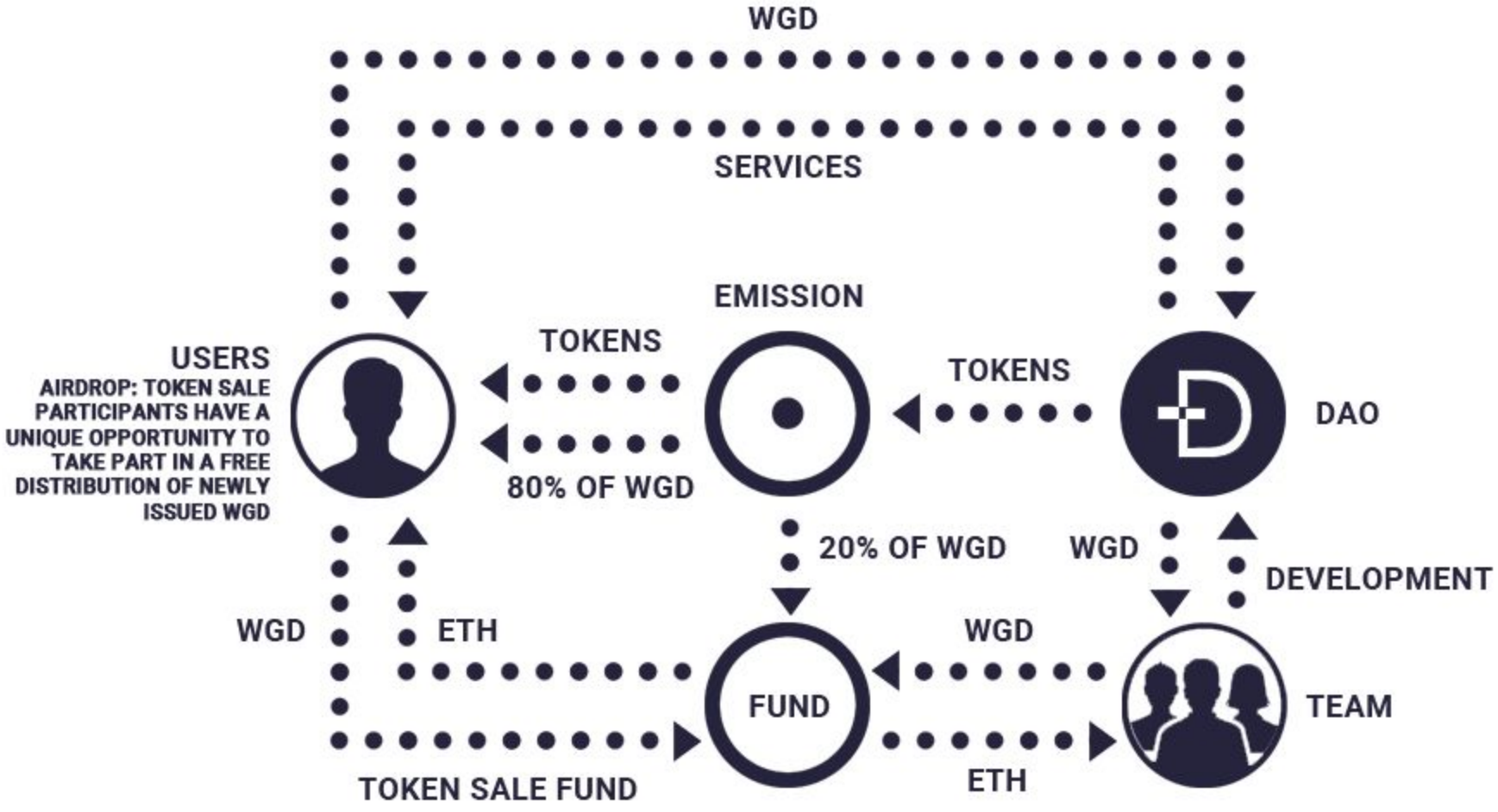
Unlike other cryptocurrencies, webGold cannot be mined. It can only be issued on the basis of the combined value of the assets of all DAOs operating on the WRIO Internet OS platform.

Each time DAOs' tokens are sold, the sale price is the market evaluation of its current value. If the change is positive, new WGD are distributed based on the emission smart contract. The amount will equal the amount of change. WGD are then distributed through an airdrop. If the change is negative, the corresponding amount of WGD will be deducted from the fund (see below) during the next emission. **Thus, the amount of WGD in circulation is always an equivalent of the market evaluation of all of DAOs operating on the platform.**

As pointed out above:

> *"The Token Sale fund is secured by cryptocurrency raised during the Token Sale and the future combined value of the tokens of all the DAOs that may operate on the WRIO Internet OS Platform. At the moment of the Token Sale the value will be determined entirely by the Token Sale fund. But as DAO assets are created the value will shift until it is mostly held in the DAO's assets."*

The ratio will change each time a single token of any DAO is sold. Until the ratio change is over, the emission smart contract will issue just 20% of new WGD. When all WGD are secured by DAOs' tokens, the emission smart contract will switch to the issue and distribution of webGold under normal conditions.



The emission smart contract will issue 20% of new WGD until WGD is 100% backed by the combined value of the DAOs' tokens operating on the WRIO Internet OS platform. webGold is bought back at book value by the buyback fund. The fund will not sell the reacquired WGD. They will instead be used for further development of the project and negative emission coverage.

Let's consider an example and assume that:

1. An equivalent of $11.2 million is issued during the Token Sale. At that time WGD is 100% covered by ETH. Taking into account bonuses and the share for developing (20%) issued during the Token Sale, the book value at the time:
   1 WGD = $11,212,800 / ⊙387,500,000 = $0.0289
   or $28.9 per 1,000 WGD after all bonuses and reserve tokens. The standard price of WGD is pegged to gold, so appx $40 for 1000 WGD.

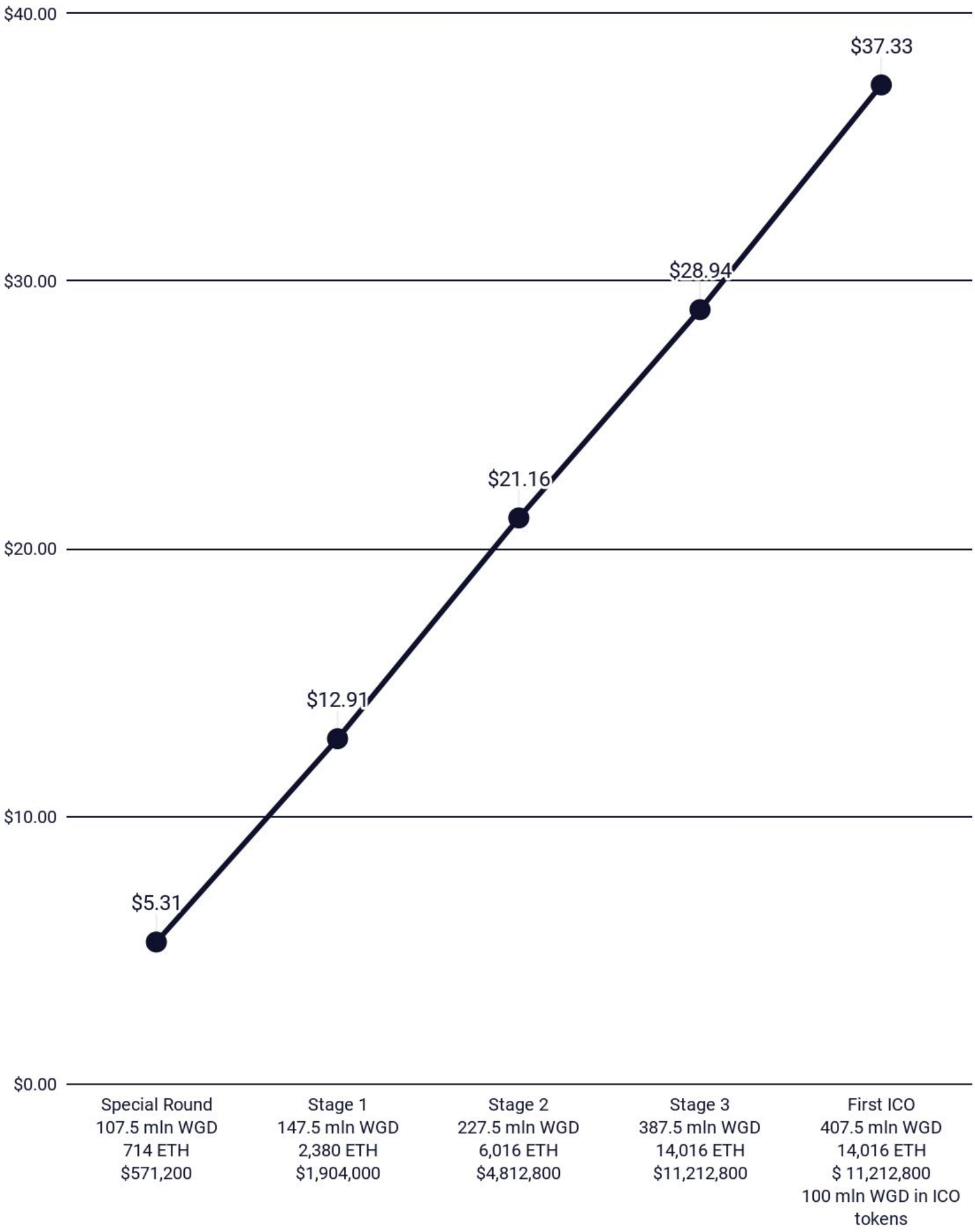
Round	WGD issued, mln	Total WGD, mln	ETH, qty[1]	Total ETH	USD equivalent[2]	Book value per 1,000 WGD
webRunes' share	77.5	77.5				
Presale	10	87.5				
Special Round	20	107.5	714	714	$571,200	$5.31
Stage 1	40	147.5	1,666	2,380	$1,904,000	$12.91

[1] ETH, qty = Cap / (ETH -> WGD exchange rate). Check "Token sale stages" for the details.
[2] 1 ETH is pegged at $800

Stage 2	80	227.5	3,636	6,016	$4,812,800	$21.16
Stage 3	160	387.5	8,000	14,016	$11,212,800	$28.94
First DAO	20[3]	407.5	5,000[4]	19,016	$15,212,800	$37.33

After the Token Sale, DAOs can begin issuing their own tokens on the WRIO platform. Let's assume that during the first phase of a DAO token sale it reaches 100 million WGD. The emission smart contract will issue 20% of the required amount of webGold (20 mln WGD) and will distribute them among webGold holders. Thus, over the course of the substitution, the DAOs' assets grow five times faster than the number of issued webGold. This will put the number of WGD in circulation in equilibrium with DAOs' assets.

Thus, at this stage we have assets represented by the DAOs' tokens for 100 million WGD, and the Token Sale fund in ETH for $11 million. The estimated WGD book value is:
1 WGD = ($11,2 mln + DAOs' tokens for 100 mln WGD (~$4 mln)) / 407,500,000 WGD = $0.0373
or $37.3 per 1,000 WGD.



[3] The emission smart contract will issue 20% of the required amount of webGold (20 mln WGD)
[4] DAOs' tokens for 100 million WGD (in ETH equivalent)

webGold book value[5]

Each stage reflects the total number of WGD inclusive of webRunes' share that will amount to 77.5 mln (20% of all issued tokens). The chart indicates the total number of raised ETH and their equivalent in USD (1 ETH is pegged at $800), which is used to obtain the book value. After the first WRIO OS platform-based ICOs the book value will continue to grow. This chart provides an estimate of WGD value provided that sold tokens yield 100 mln WGD

2. When tokens are sold, webGold are transferred to the DAOs' funds, where they are used for development and promotion purposes. With each sold token the book value of WGD grows, since the ratio of assets to WGD increases. The higher the book value, the more people will sell their WGD to the Buyback Fund, until the fund drains all its ETH. At this stage webGold will be 100% covered by the DAOs' tokens, and emission smart contract will remain on course.

It should be noted that when new WGD are distributed, the account balance prior to the transaction resulting in the emission is taken into account. This serves the interests of token buyers, killing two birds with one stone: they receive tokens and new WGD.

Additional information will be published concerning the distribution rules that will exclude inactive accounts using the statistics on the frequency of Crediting to/from the account. A minimum rating and activity based on in/out transactions will be required. It is important to note that after the Rating is introduced in 2021, emission smart contract will distribute WGD as follows: 20% WGD based on the balance (pro rata basis) and 80% based on the Rating (Proof-of-Rating). This approach is one of the instruments for building up reputation as a parameter taking precedence over money.

In the following sections we'll get back to reputation and talk about it as the currency of the 21st century, as well as bring up the topic of the evolution of the monetary economy to reputational.

11 · Airdrop — Get free tokens!

80% of new WGD are automatically distributed among users on a pro rata basis of their holding and later on the basis of their Rating (Proof-of-Rating, see below).

Thus, Token Sale and Bounty participants will be the first to receive WGD. Note: Bounty has now ended.

The remaining 20% is carried over to a reserve fund to be used for further development of projects and negative emission coverage.

12 · Buyback

100% of the ETH raised in the sale will be circulated back to the community over time. This will be done via an autonomous buyback fund. The basic idea is to use the raised ETH as a tangible asset to back the WGD ecosystem, giving it a clear and defined value while it grows. As companies start selling premium services, tokens or in-app purchases on the platform, they can trade the earned WGD for ETH easily.

12.1 Buyback Methodology

All the ETH raised in our token sale are held in a smart contract. This smart contract will act as a transparent buyback fund. Any time WGD is sent to the fund, an amount of ETH is returned. The exchange rate of WGD to ETH is calculated using the formula below:

Exchange rate = #ETH in the Buyback Fund / (#WGD issued — #WGD burned)

The smart contract will allow two-way ETH ←→ WGD conversion while the sale is live, and once the sale is closed only WGD → ETH will be possible until the fund is depleted.

This means liquidity is guaranteed, and there will always be a minimum price to help improve stability.

12.2 Reasoning

The fund will act as a conduit funneling value into companies that want to launch on the WRIO Internet OS Platform. Since WGD can be used to buy services or participate in token sales it will allow companies to add value to the WRIO economy and shift activity onto the platform.

Similar to the gold standard (specifically the gold bullion method), holding a fixed amount of a tangible asset will help define the value of WGD. This has multiple benefits:

- Increased stability/reduced volatility: with a measurable value backing the token it is easy to define what it is worth.
- Pump and dump schemes will be significantly harder, as there is a defined value for the token available to everyone.
- As companies begin using the WRIO Internet OS Platform and releasing their own products, the value will shift from a supply of ETH to actual valuable products on the platform. This will help maintain value while the platform grows, and give companies a focused and motivated user-base to work with.

[5] Statements and numbers specified above are estimates only.

- Many of the negative aspects of the gold standard do not apply to a deflationary currency like webGold, Ether, or Bitcoin. So we will create a stable currency that can support a growing economy and allow bounty hunters, DAOs and companies to prosper.

WGD funnels users and value into the WRIO ecosystem and supports startups and DAOs that run on the platform. Increasing popularity and value of the ecosystem as their WGD is easily converted back to ETH without worrying about liquidity, depth or creating too much sell pressure on a growing token.

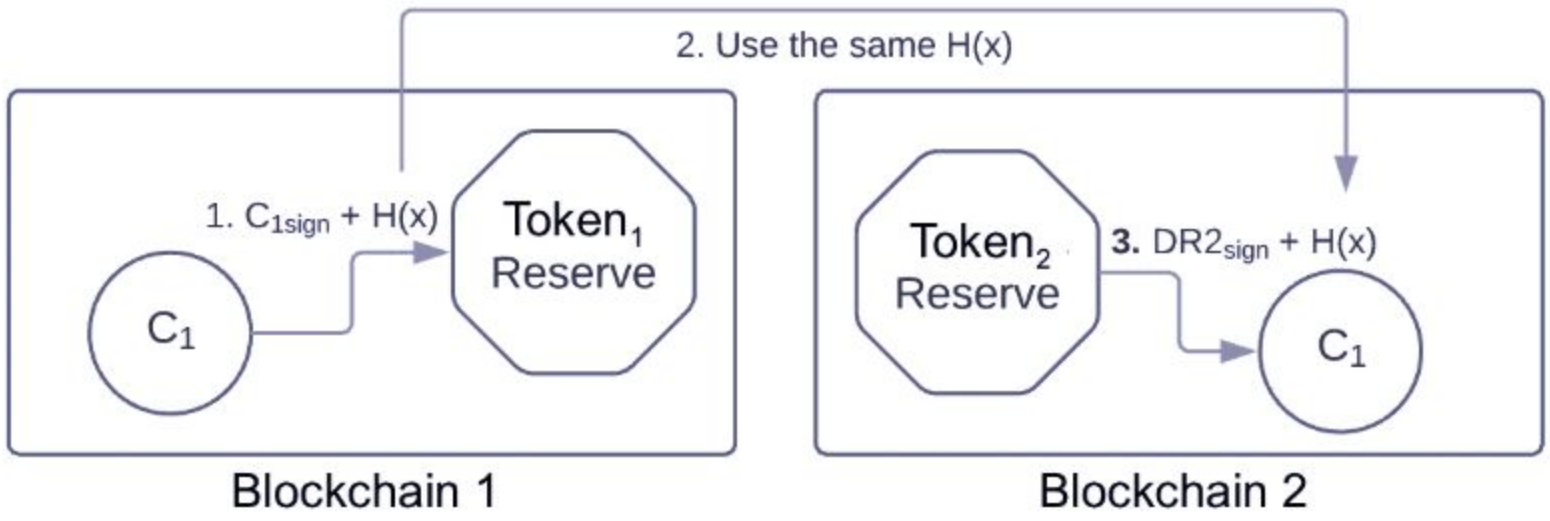
Automatic buyback is expected to be introduced right after Token Sale.

In short: WGD provides liquidity for initial DAOs; DAO owners and supporters (i.e. bounty hunters, developers or participants) can get ETH back from the buyback fund and build projects. When the buyback fund is depleted DAOs will provide liquidity back to WGD. This gives an even balance between WGD and the projects that are run on the platform. Resulting in a stable economy.

13 · Credits — App tokens

Credits (**CRD**) are the app tokens of the WRIO OS platform. App tokens represent a currency that users need to pay for services provided by DAOs operating on the WRIO Internet OS platform. App tokens are derivatives of webGold — a sidechain. Sidechaining is any mechanism that allows tokens from one blockchain to be securely used within a completely separate blockchain but can still be moved back to the original chain. By convention, the original chain is normally referred to as the "mainchain" while any additional blockchains which allow users to transact within them in the tokens of the main chain are referred to as "sidechains".

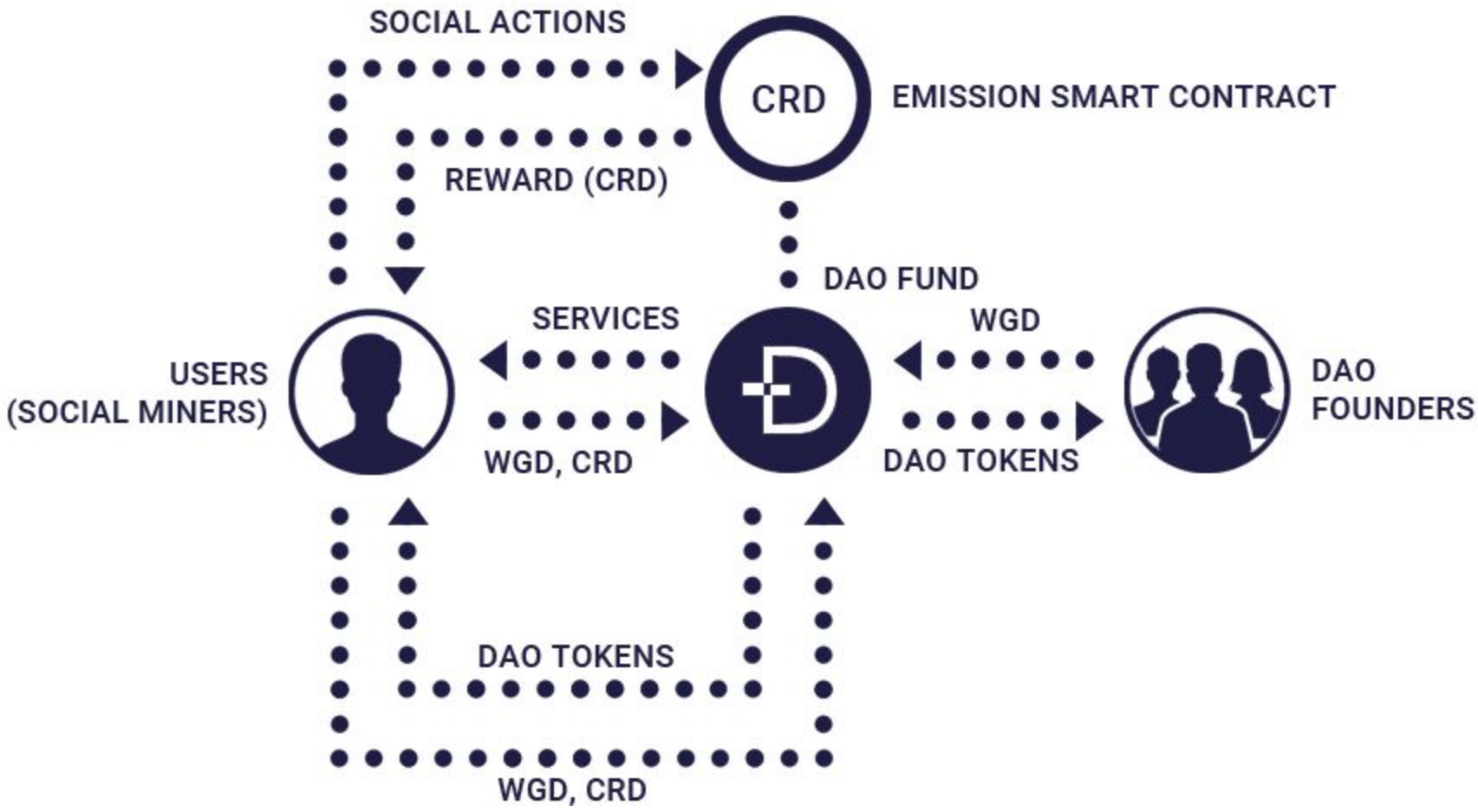
In order for cross-chain token swaps to occur atomically, we can make use of hashed time-locked contracts. This allows two parties to send tokens on separate chains in an “all-or-nothing” fashion. This is important because separate blockchains do not have the ability to communicate with each other under normal circumstances. Multiple existing examples of cross-chain atomic swaps already exist, and we will be incorporating state-of-the-art approaches directly into our protocol. A simplified explanation of the process is that the hash of a secret is added as a requirement for the transfer of tokens on the first chain. The recipient of the first transaction then uses the same hash as a requirement for a transfer of a tokens on the second chain. In order for the original sender to claim this second transaction, he has to reveal the secret, which results in the recipient of the first transaction being able to also claim the tokens in the first transaction. By adding time-locked mechanisms, we can ensure that it’s not possible for any of these tokens to be transferred out or spent in any way during this two-step process, or the transactions get reverted.



App tokens can be compared to cents (sidechain) and dollars (mainchain). The only difference is that the number of “cents” (CRD) in one “dollar” (WGD) changes continuously. The ratio of CRD in circulation to WGD in the DAO WRIO Internet OS fund determines the CRD:WGD rate.

App tokens enable DAO founders to freely manage their internal economy within the financial liabilities to their users expressed in the value of webGold in the fund. Token mining is based on the concept of PoSA (Proof of Social Action) — actions that one way or another contribute to the promotion of WRIO Internet OS: sharing, posting, etc. Social Action scenarios are programmed via Smart Contracts: when predefined conditions are met, the user receives a certain amount of CRD as a reward. Users who perform Social Actions are called Social Miners.

The first Social Action costs are insignificant but nevertheless non-zero efforts: you are able to receive 10 CRD every hour free of charge by clicking “Get Free Credits”. This reward will be enough to participate and support your favorite authors. When a Crediting is made, CRD are automatically converted into WGD to level the effect of Credits’ exchange rate on the Rating. Soon CRD will be used to get additional services that will enhance your opportunities: premium account, post boost, placement of Offers, etc. Other Social Actions may yield bigger amounts.



App tokens are backed by the number of WGD in the fund of DAO that issued them. The fund may be credited with the initial contribution of the DAO founder (Authorized capital), through the sale of DAOs' tokens, and via the provision of services.

13.1 Benefits

Credits do not require power consumption like Bitcoin, Ether, and many other cryptocurrencies. 10 CRD that one can receive every hour is a modest amount for developed countries, but for over a billion people living on $2 per day, the system provides a unique opportunity to get a significant addition to that sum as Social Miners. As the number of people participating in CRD mining and accrual grows, the system will have a greater impact on the distribution of wealth in the world, since those interested in services provided by WRIO Internet OS will purchase CRD accrued by Social Miners to pay for them. CRD that have been used are consumed, thus increasing the rate of coins remaining in circulation.

Using app tokens instead of WGD helps manage community activity with through several market mechanisms:

- rise in the value of CRD results in the growth of Social Miners
- more Social Miners = more CRD issued
- excess of CRD = the price drops
- lower price results in a reduced number of Social Miners
- reduced number of Social Miners causes a shortage of CRD, and thus the coin value rises again

Over the course of the platform development as more Social Miners emerge, the number of CRD will balance. The balance between the supply and demand will be correlating the cost of CRD, making the least well-to-do social groups the most active Social Miners.

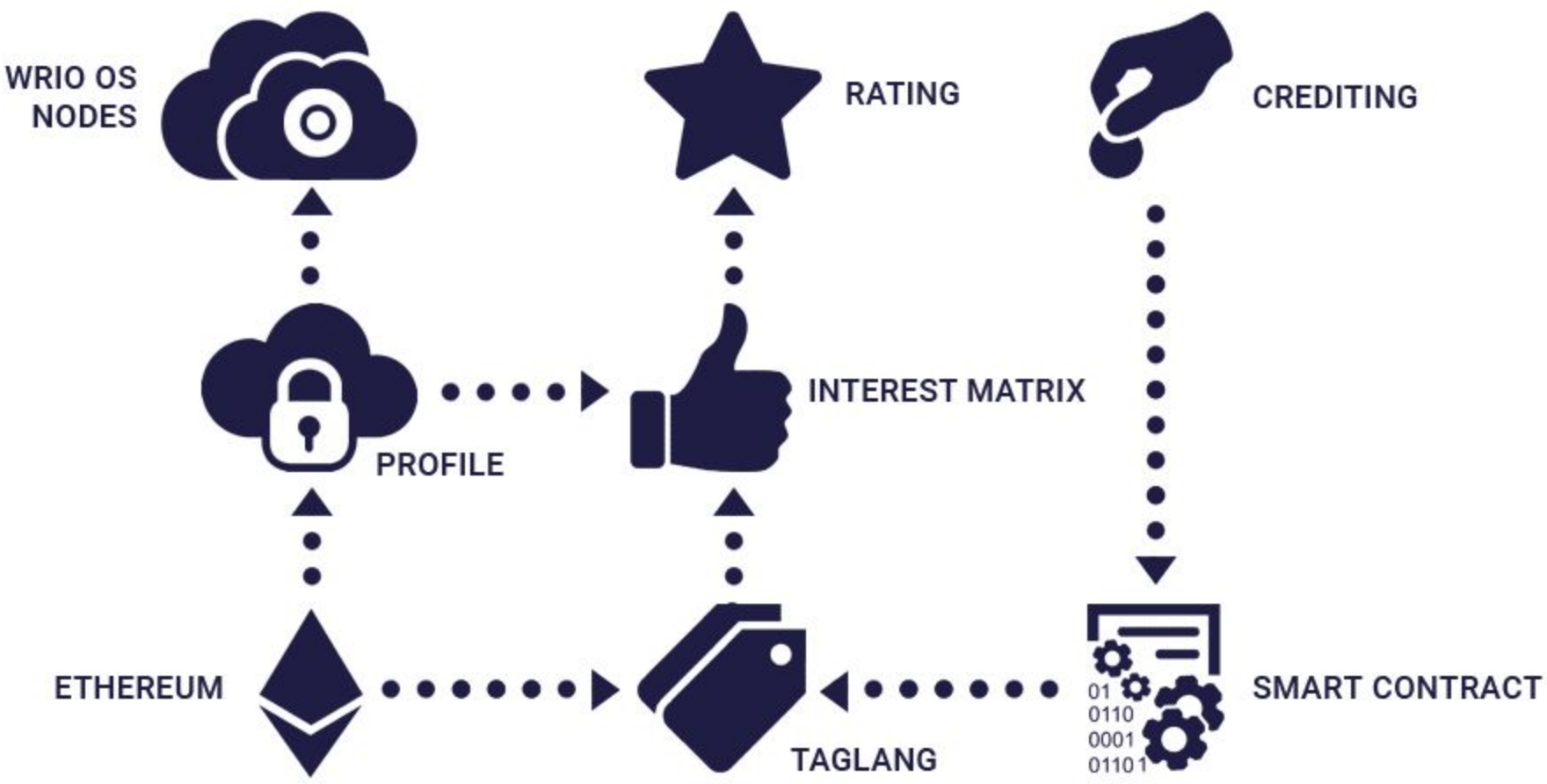
Third-party hubs and services can offer their own rewards for users' actions: for views, shares, feedback, orders, etc.

At the time of writing this White Paper, the WRIO OS fund holds 1,000,000 WGD (1kg gold or $40,000 equivalent), and early adopters have a good opportunity to become the first Social Miners and accumulate a considerable amount of CRD. After the launch of our Exchange, which is scheduled for 2022, CRD can be exchanged for WGD.

13.2 Crediting[6]

Crediting with the use of Credits is a reputation building mechanism for Rating measurement. Rating is a core element to the Project. It is required to ensure the effective performance of Taglang, Interest Matrix and the Recommender System.

[6] Currently based on Ethereum testnet



Crediting is established through Credits tokens.

13.3 Advantages of Crediting

- All platform participants will use Credits to create an individual scaling system, that will help determine a user's Interest Matrix. How often, how many, and for what content Credits are sent by the user aids in determining this matrix. Moreover, Credit distribution will be used to see changes in interests that may occur over time and to build an Interest Matrix, which will make it easier to find people with similar views. In the long term this will lead to an automatic curated web with no need for searches or subscriptions.
- The Credited amount effectively solves the problem of "mere 1s or 5s", finally resulting in the emergence of a simple, though effective non-flat rating scale.
- Fast and accurate assessment of value through the sense of "price" developed in the course of a lifetime.
- A vote's weight has a nonlinear dependence on the amount Credited and the voter's Rating (TBA). Voting through Credits is, in the first place, beneficial to the voters themselves: each Credit increases their reputation and improves the performance of the Interest Matrix and the Recommender System. Users are more likely to transfer money to those who are active Creditors themselves.
- Each user has their own dynamic scale, varying with each new Credit. An absence of Credits is similar to "dislikes". Its degree is determined by the frequency and median of Credited amounts. In other words, if a user rarely participates or does not make use of his/her Credits at all, then absence of Credits will not impact the assessment of content or services.
- Users who are Crediting others frequently and/or for large amounts are the most welcome clients, and businesses can often make them the best Offers to attract their attention.
- Driving up the rating is prevented by several mechanisms (TBA), but more importantly:
    - **A Creditor's rating is more important than the Credited amount**: thus, driving up the rating from new accounts that have low ratings is useless
    - **% of the Credited amount is converted into Rating tokens**: the more the Credited amount, the less the %. In other words, the rating growth rate nonlinearly slows while the amount is increased (from 25% to 1%)
    - **The blockchain keeps the record of Credits from one ID to another**: a small number of Credits from high-rated users will result in a higher rating than a bigger number of low-rating Credits, even if large amounts are Credited
    - **Cumulation**: A new Credit to the same ID takes into account the rating obtained by the Creditor since the last transfer, and adds the Rating number corresponding to the difference

The Credited amount is a non-flat evaluation of a content or service, which is a key element of Rating and the Interest Matrix. Rating tokens are always related to Taglang tags, which are a set of performance labels that allow the evaluation of a user's skills and knowledge.

14 · Rating

Rating is the "nervous system" of WRIO Internet OS. It is based on an equilibrium between transactions and Credits — proportional amounts for the same quality level of goods, services, or content spread out over a period of time. Basically, your Rating is a measure

of how active you are on the platform, and how much everyone appreciates your contribution. This was designed to reduce volatility of the system and ensure a stable platform that is attractive to businesses and users. webGold was developed with this in mind and is used to achieve a steady exchange rate.

Rating is an algorithm used to reach consensus through Proof-of-Rating (PoR). Also, it serves as a guarantor between parties interacting with each other, thereby acting as a mediator in the event of disagreement without having to go through expensive legal proceedings.

Online trading platforms have proven the efficiency of rating systems. With no need for government entities, passports, or other formal procedures to contract between parties. Reputation requires much time and effort to build. It is fragile and can easily be lost through dishonest P2P transactions. Smart contracts provide automatic contractual fulfillment without intermediaries, while arbitration will become a tool for solving any conflicts that may arise between the parties.

14.1 Use cases of Rating

- A business transfers a fee to their contractor for each completed task, and a Crediting corresponding to work quality. The bigger the amount and higher the employer's rating, the faster the contractor's reputation grows. At the end, all will have certain ratings in different spheres. **This list of appraisals will be more informative than any CV**. Links to completed works can be saved to the blockchain, which will enable automatic portfolio buildup
- Exact and fast searches for professionals in the global user database with no need for recruiting firms or reviewing thousands of CVs at different portals
- Intermediate-free transactions. Apart from the technical guarantee of fulfilling transaction conditions embedded in Smart Contracts, reputation serves as the conceptual guarantor — the efforts needed for its tedious development outweigh a potential profit from fraud and dishonest fulfillment of undertaken obligations. Arbitration will serve as the tool for resolve any conflicts that may arise

Part of Crediting is converted into Rating tokens, which are distributed among tags. The distribution mechanics goes beyond the scope of this White Paper, however; it correlates with the rating level of the post's tags among the voters. Tokens are bound to the author's account and cannot be transferred or sold. The Rating also serves as the basis for the automatic curated web. It is a content distribution mechanism, which will be described in the Recommender System.

Reputation is slowly earned with every Crediting and completed transaction, reflecting the experience of interacting with the community. However, this is not the only instrument through which users will reap value. Below we will discuss the Web of Trust – the list of people who trust the user and / or act as their guarantor.

15 · Web of Trust

While Rating is the appraisal of professional skills and knowledge of a user, Web of Trust reflects the number and strength of trusted connections one has formed with other community members. This is more than just contacts — these are people who are voluntary guarantors in user transactions, providing a part of their Rating as collateral. In case of any disputes which may arise in relation to any transaction, guarantors will suffer reputational loss, which ensures that the effectiveness of the approach is a social acknowledgement of bonds between people. ***Instead of a useless number of "friends" in social media, the system displays the vast amount of people who trust that person, and the extent of that trust.***

Through a global decentralized system, the Web of Trust ("**WoT**") enables users to transfer and interlink their ties in real and virtual worlds. WoT is based on the Six degrees of separation concept that forges a chain of trust from one user to another through their friends and business partners. It provides you opportunities to close deals with participants you've never met. The basic concept is simple: if you trust Alice, and Alice trusts Bob, who in turn trusts Carol, then, to a certain extent, you are very likely to trust her as well.

Reputation is an important asset of the 21st century, a necessary element for the evolution of the monetary economy to the crypto-economy. In order for peer-to-peer networks to develop, parties need to trust each other, and goodwill becomes the most important criterion for making transactions.

Apart from trusted connections, WoT has blacklisted users – people who a given individual does not wish to interact with. However, the system has been designed in such a way so that people will be interested in avoiding conflicts, and if they occur they should be amicably settled - even a positive settlement by arbitration will not save the person from being temporarily or permanently put on the user's blacklist. Removal from the deals orb is similar to a global dislike that can cause a domino effect and result in being put on the blacklist by the affected user's friends as well, and even further in case of an intense conflict. Of course, it's not a big deal if conflicts are of a sporadic nature: WoT will safeguard against further problematic deals with the part of community the rule-breaking user belongs to. However, the WoT's objective is to ensure the comfort of interaction with the person, and regular actions to the disadvantage of the community, even though being formally legitimate, will cut off more and more people, which will sooner or later result in virtual ostracism.

How WoT will change the society and what influence it will have on business will be outlined in the book The Alternative (TBA). So far it should be noted that from a business point of view, a powerful channel for feedback and interaction with the society is provided, which enables the society to evaluate its attitude in figures and picture the dynamic pattern. Businesses will strive to encourage their regular customers acting as guarantors of their products and services in every way possible. This will dramatically change the approach to advertising. **Unlike ads, a *reputation* cannot be bought, it can only be earned and trusted.** The only way to increase one's reputation is through socially useful actions.

15.1 Advantages of the Web-of-Trust (WoT)

- social acknowledgement. Everyone has an individual and constantly changing circle of WoT - the network of trust that significantly differs from the old-fashioned rating systems used by services such as eBay
- a solution to the problem of fake accounts, spam bots and trolling; a reduction of online fraud
- an efficient system to confirm the reliability of an information source. Use cases will be discussed in Offers
- mutual guarantee — by doing so, you put your reputation on the line: every negative rating received by users you trust will affect your own ratings as well
- besides the WoT between the parties to a transaction, the system also shows the relationship between them — providing the social graph of trusted relationships between users
- whilst in personal relationship trust is based on guarantees, in business circles it is determined by the number of contracts, their value and degree of satisfaction expressed in the form of Credits
- one WoT figure is enough to evaluate risks of a deal, and no reference is necessary
- trust expressed in WoT is a more valuable asset of the crypto-economy than money
- it is the basis of the social capital concept implemented in The Alternative project

The WoT is aimed at creating an all-purpose social identifier by providing a simple and instant method of assessing the degree of trust to strangers during both online and offline interaction, and in personal and business spheres. Even today there are prerequisites for WoT-like systems to become one of the most essential indicators in people's lives.

16 · Taglang — MetaDatabase

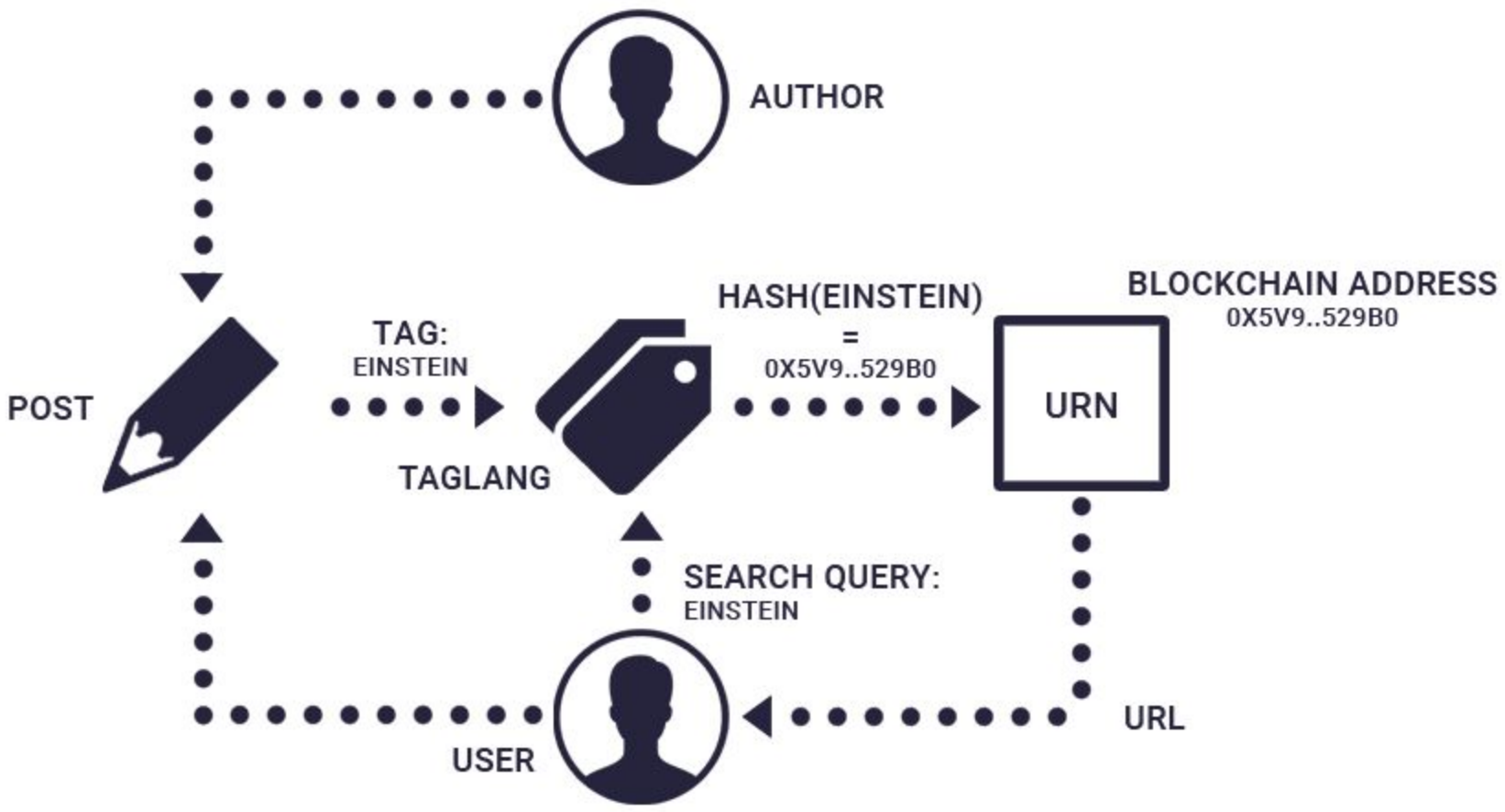
Taglang integrates all decentralized data registered on the blockchain, similar to how the nervous system binds together cells in a body.

At the heart of Taglang lies the idea of processing metadata instead of the content itself. Taglang can be represented as a large decentralized catalogue of labels for all types of things. Labels contain a set of parameters used to find what is required. The Project enables:

- ➔ creation of new web-services based on the Internet of Things concept
- ➔ Predictive Search Engines based on the laws of logic
- ➔ global cloud HDD, where data is navigated through shortcut-hashes

The idea is simple: when content is created, the author describes it through a 'set of tags' that function like file shortcuts in a desktop OS. Each created page is hashed according to the name and content (DHT-like) in such a way, so that the results identify addresses in the Ethereum blockchain, which can be viewed at automatically generated personal domains — Uniform Resource Name. This approach allows the creation of a new type of decentralized DNS, where specifying the name of a book, song, movie, etc. brings the user automatically to the required page.

Note: Due to the rise of transaction costs, we are considering alternatives to Ethereum, including an independent WRIO OS blockchain.



The above example uses just one tag. Authors can use as many tags as they need. In some cases, the authors are interested in their relevance, otherwise readers will simply leave, being unsatisfied with what they've found. This will lead to a poor views / Credits ratio, and each time the content will be displayed lower and lower in search results (PageRank substitute). Rating is distributed amongst content tags based on successful search queries that direct content to a new user, thus resulting in a Credit. Parameters such as the time of reading, sharing, etc., are also taken into account.
The address contains all required information on the subject. In our simplified example, it's just a URL. There may be many links, but one way or another each of them will be related to the "Einstein" tag: the system will rank them according to rating and additional search criteria — Predictive Search.

We have become used to http:// addresses. However, they have some serious flaws and one of them is that http-addresses can be easily blocked at the provider's level, and moving a file, even within the bounds of a domain, makes it unavailable. Blockchain replaces the obsolete Domain Name System (DNS), allowing a required file to be found using its digital fingerprint.

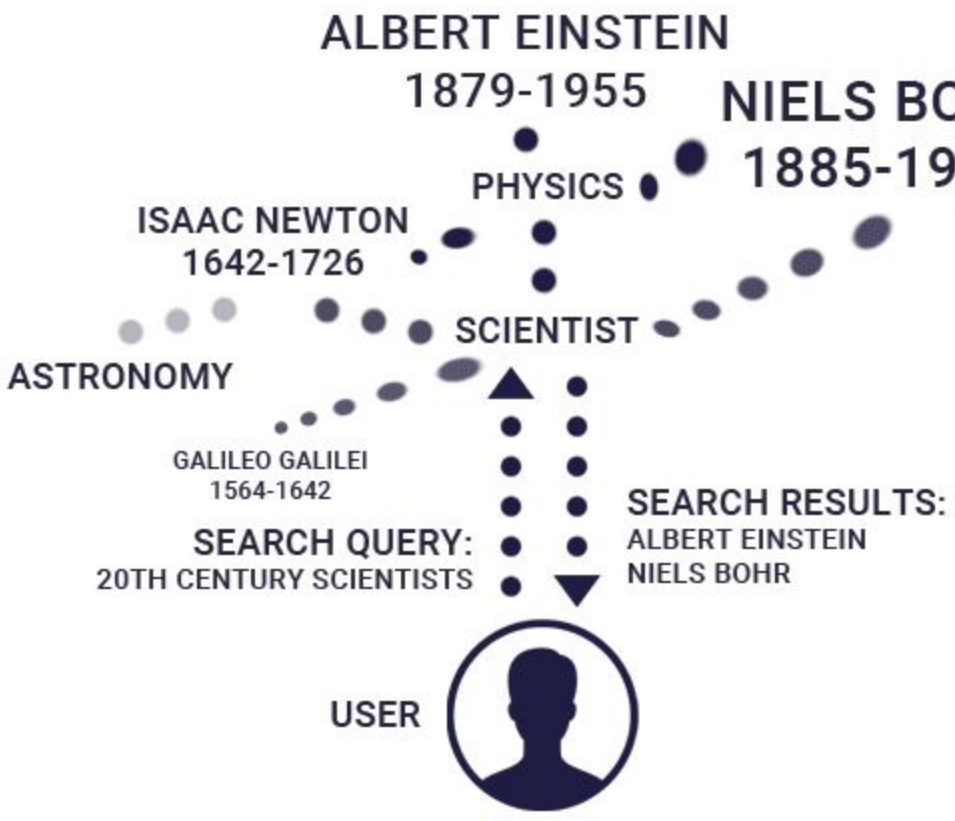
This approach solves the problem of denied access to a page/file if it has been moved or if its name has been changed – information about the changes is automatically recorded on the blockchain. If the name has been changed, the old address will automatically redirect users to a new one. The digital fingerprint serves not only to find the required file, but also to download torrent-like files: a static link is no longer required, the file will be downloaded automatically from the nearest source. Computers of every user who open a certain page turn into a source of data (optional function) and help distribute the content, while also earning a passive income as a percent of all Credits received by the content. Thus, materials are spread across the network in proportion to their relevance and popularity, while users are awarded for the help in their distribution, guaranteeing a distributed, free and censor-proof web.

Metadata is the "language" of Predictive Search. Sets of tags for every entity, frequency of their usage with each other, rating comparison, etc., enable a new type of personalized search engine based on the weighting matrix — semantic field.

17 · Semantic field — Tags neural network

The core difference between semantic technology and other data technologies, for instance, the relational database, is that it deals with the meaning rather than the structure of the data. Synonyms, antonyms, and other structural peculiarities of a natural language make the accurate and unambiguous machine processing of tags a more complicated task. This problem can be solved through automatic separation of words along the semantic field on the basis of frequency analysis and some other techniques.

A semantic field is a matrix that shows how far from each other are certain notions, or in what way they are interrelated to each other. Hot and cold are deemed to be on the opposite matrix planes (top/bottom), while warm and chill are not far from them, respectively. The closer their meaning, the closer they are to each other. A tag strength depends on its occurrence rate, while relation to other tags depends on the frequency of their common use with each other. That strength is used for the rating of search queries. A connection is established and intensified every time tags are mentioned together and when the parent page's rating rises.



Hash-transformation omitted. Brightness of connections reflects their strength. Years of life are separate tags with the connection being established on general terms. Their view is aimed at making the scheme simpler.

Tags with opposite values create a logical scale or dimension (e.g., black-[other colors]-white). Other tags with intermediate values are placed between them. The mutual arrangement of tags is continuously corrected by static analysis and machine learning algorithms.

For the sake of simplicity, there is only a time scale in the given example, and the position of tags on it is represented through the change of the font size. Logical dimensions can intersect with each other. For instance, tag "scientist" does not intersect with the time

scale, while relation of tags “astronomy” and “physics” to the scale is much weaker than that of personal tags. Thus, the semantic field is an n-dimensional space of tags with a vast number of interconnections differing in remoteness and strength. Like a signal in a neural network, a search query in this space activates addresses of relevant tags, travels and fades in all directions the faster the greater distance between the tags and the weaker their bond. The search results are ranked based on the “travel distance”.

17.1 Key features

- A neural network of tags, which is used for building alternative search queries in Predictive Search
- Ranking of results based on the maximum number of total points of semantic interconnections between tags of a search query — the same pages will be rated differently depending on the query context
- The search takes into account not only the tags specified in the query, but also those with close meaning to them, including other languages specified in the user’s profile
- An important element of the Translate system

18 · Translate

A language is a lexical code used by people for communication purposes. One needs to know it to understand other people and express their thoughts and feelings accurately. During a conversation, people turn their thoughts into a verbal form, and after receiving a reply, transform words back into thoughts. Thus, we understand others through the lens of our own experience. Unusual thoughts or their representation is a source of humor, exciting books, and other things perceived as culture. A direct translation is often a poor choice when it’s required to understand something in a foreign language: first one needs to convert words into a thought, and then transform it into a verbal form of another language.

Most computer-based translation systems today use a direct translation method, the results of which are unsatisfactory, to say the least. Although we are not developing translation services right now, we see the potential of using Taglang and semantic fields to create a new type of translator operating on the basis of thoughts. Each notion (not a word) has its own corresponding address in the blockchain, which will allow the creation of a new type of precise, automated translator to operate with thoughts. How it works will be described in a separate post on our blog at a later date following the Token Sale.

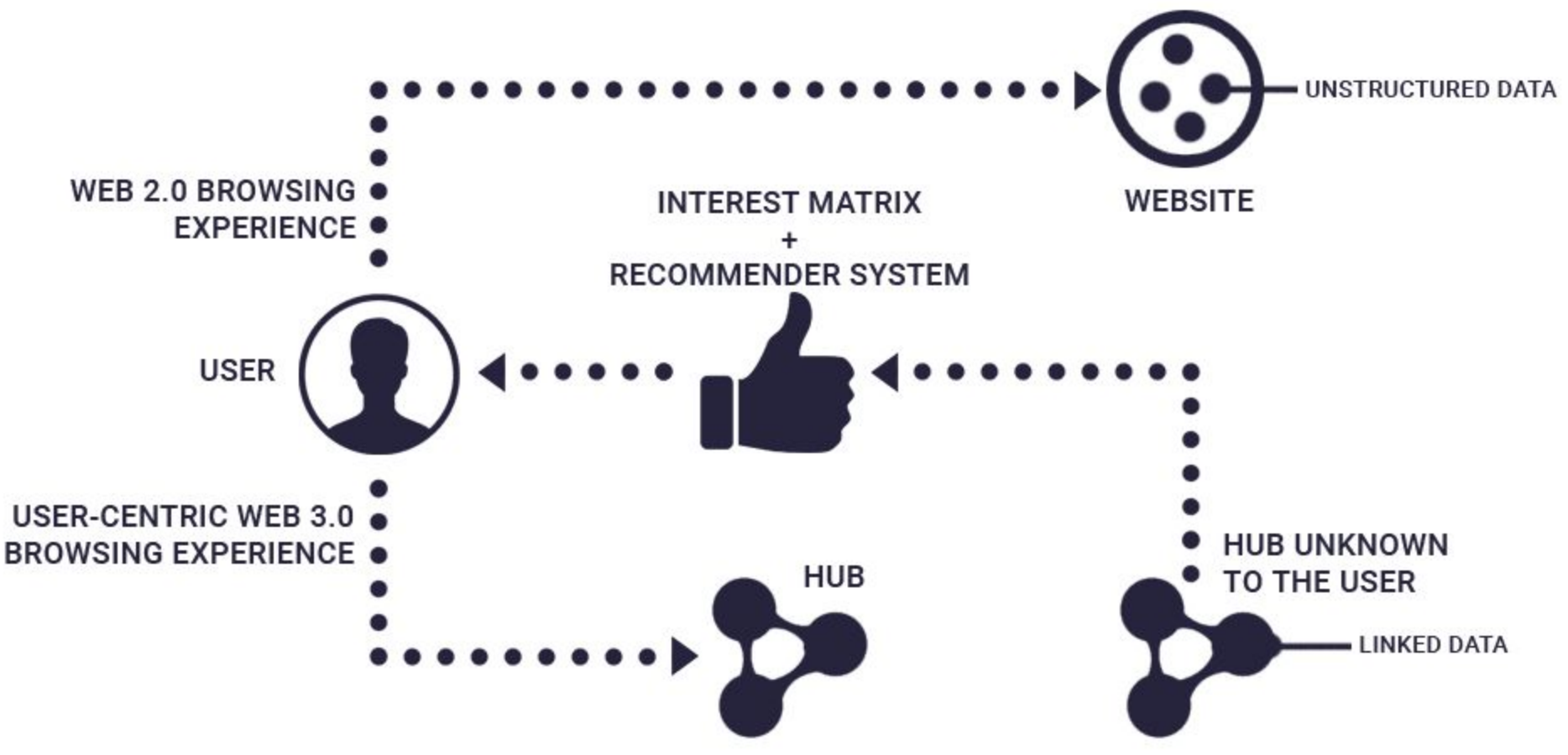
19 · User-centric web — Interest Matrix

The idea of the user-centric web is that the information flow direction shall be changed. Whilst previously a user used to visit websites - now, thanks to the Interest Matrix and Recommender System, **information will seek relevant users automatically, which means that authors and entrepreneurs will not have to promote their websites anymore.**

19.1 Direction of information flow

Web 2.0: User -> Website -> Information

Web 3.0: Information -> Interest Matrix + Recommender System -> User



The example above provides two scenarios:

- browsing of hubs familiar to the user
- receipt of information the user may be interested in from unfamiliar hubs

In Web 3.0, sites will no longer be separated entities, and people will stop typing domain names to open them. Only information streams will matter, associated with tags, which will represent a set of users' interests and act like frequencies of favorite radio stations.

The problem of existing rating systems is their absoluteness and attempt to create a unified scale. This is as good as assessing apples, hamburgers and other meals with no account of individuals' tastes, time and context. A general assessment can only provide mean figures that will be very far from the real picture of users' preferences. In other words, everything is relative in this world, and an assessment may hold meaning only in relation to someone's individual preferences. A set of interests in every area can be useful in developing the curated web system, which will recommend content to users with similar tastes automatically. It will be a global automatic share for users you've never met, but whose interests match yours. A simple example would be a blockbuster. Even if a movie is highly praised altogether, it does not really mean you are going to like it. And vice versa, an underground movie may go unnoticed by a mainstream audience, and yet be of very high value for a devotee. Today it is solved by subscribing to bloggers and reviewers whose opinion you trust. The Interest Matrix works in a similar way, but automatically and at a global scale: an individual's matrix will help them lean toward the opinion of users with similar tastes, and will serve as the basis of the Recommender System.

19.2 Interest Matrix features

- change of information flow direction: content will automatically find its consumers
- every newly opened page, every new Crediting (taking into account its amount) will make the Interest Matrix more accurate in offering relevant information
- instead of subscribing to groups in social media or websites, the Interest Matrix provides a user's set of interest tags operating like frequencies of favorite radio stations, and the Recommender System is a broadcast receiver

The Interest Matrix and Recommender System are two sides of the same coin. The Interest Matrix functions like an information filter. The Recommender System is the result of incoming information filtering. Thus, the objective of the Interest Matrix and Recommender System is to learn how to automatically select information for a user as good as the user would do it themselves, if not better.

20 · Recommender System — Curated Web

The system is a logical extension of the above idea of the user-centric web: interesting content and useful services find their users without the use of ads. Users do not need to look for information by themselves, and authors can give exclusive attention to the development of interesting content with no need for SEO and promotion.

This material goes beyond the scope of the White Paper, so only the types of recommender systems and basic algorithms is provided below:

<table>
<tr><td rowspan="4">Interactive Recommenders

The initial shaping of the Interest Matrix (cold start) is based on the selection of categories on the basis of "I'd like this rather than that" principle. This is the difference from the standard search function: the user is provided with an instrument that is used to find something interesting, even if the user is not able to clearly define his or her wishes. The task "the user is looking for something new or customary" is usually solved with the help of multi-armed bandits algorithms. With every next choice the system defines your Interest Matrix more precisely</td><td>Collaborative Filtering

Pros: Don't need to know about content
Cons: Cold start problem

Interest Matrix becomes more comprehensive with each user's action (Credit, reading, sharing, and etc.)</td><td>Content Based Recommendations

Pros: No cold start problem for items
Cons: Gathering of content info could be restricted and not correlated with quality, semantic interference</td><td>Demographics-based Recommendations

Information from the user's profile is used: gender, location, age, etc.</td></tr>
<tr><td colspan="2">Knowledge-based recommendations

Pros: No Cold Start problem
Cons: Experts are required

Basis of the "Wikipedia of goods and services", see curated Offers</td><td>Context-Aware Recommendations

Basis of the user-centric web and Predictive Search</td></tr>
<tr><td colspan="3">Hybrid Recommender Systems

Try to accumulate the advantages of all approaches and compensate disadvantages of each</td></tr>
</table>

Recommender systems use various techniques and approaches, the description of which goes beyond the scope of this White Paper. However, the idea itself is perfectly represented by the "Collaborative filtering" animation.

Recommendations are based on the information about the properties of the product being recommended, context, personal though anonymous data: location, age, gender, Crediting history, etc.

Two opposite approaches may be distinguished in the personalization:

- **Expanding personalization:** based on certain knowledge of the user, the latter is offered some additional information that supposedly will be useful to them. A typical example will be commercial recommendations most common for Internet stores, like “Frequently bought together” — Learning to rank and Sequential pattern mining
- **Narrowing personalization:** it can be demonstrated through the algorithms of social media feeds: posts are selected from the stream of the user’s friends and only demonstrated to him or her if they’re of interest

These two approaches solve opposite tasks. The first proposes previously unknown information. The other uses information that has already been filtered by people whose interests are similar to the users. This principle underlies the idea of the Curated web.

The idea of an automatic, curated web is founded on the distribution mechanism based on one simple idea: each created post is sent to users whose Interest Matrix is in maximum correlation with the tags defined by the authors. The distribution scale depends on the author’s rating. If readers confirm their interest in the material through Crediting, sharing, and other means, the system continues with the distribution of the content until the natural limit of the interested audience is reached and activity in this respect drops.

The web is an immeasurable ocean of information, which continues to double every 18 months, according to statistics. We have long surpassed our ability to view and select the rising wave of content. For instance, every minute 72 hours of videos are uploaded to Youtube alone. The absurdity is that, although authors of the content know what they want to communicate to their readers or viewers, they don’t have a dedicated tool to do it. Pages are created in the hope that search engines will be able to handle this huge volume of information and somehow clear up the mess. Search engine optimization is the expected and hideous result, and promotion techniques verge on spam.

Thus, only a tiny part of the information gets within our sight, and even less is of any value to us. Under such circumstances our option is to be confident with a modest selection of related articles from RSS feeds, social media groups, and shares from friends. We create our own vision of reality, not from carefully selected information, but rather from data that caught our eye utterly by chance.

The Recommender System is designed to effectively solve the information filtering problem: not only will the system select it according to your Interest Matrix, but it will also rate it to the degree of matching interests, importance, and relevance. Manual tuning of conditions is possible. This will enable notifications of new content on the basis of a tag or a set of tags. A standard condition is a certain level of Rating.

The development of this idea is “Individual Assistant”.

21 · Individual Assistant — Logical Machine

Owing to the semantics of GDP, Smart Contracts and the logical machine of the Individual Assistant (IA) based on Ethereum, it becomes possible to process enormous amounts of data automatically, which cannot be embraced by human brains. ***However, the objective of IA is the automation of any actions that can be described as an algorithm.***

IA is a command add-in, programmable interface in the form of a command-line that controls all aspects of the system. IA can be represented as a set of “smart scenarios” run automatically subject to pre-programmed conditions “If -> Then”. Using a simple wizard, users can create their own sets of commands or edit the default one. The system can be controlled manually. However, IA provides an advanced control over applications and performs routine tasks with the help of command chains: processing of messages and making of replies based on predefined rules, automation of apps work, etc. The closest examples of similar services can be IFTTT and Telegram bots. A short demo can be found here.

21.1 IA features

- **Processing of information provided by Recommender System**: archiving according to predefined criteria, sharing, notifications etc.
- **Publication of content at specified times:** personified replies to messages, etc.
- **Advanced control over WRIO Internet OS using the command-line interface**: add, delete, and manage apps. For instance, command
  play ‘Swan Lake’
  starts playing back a song via a player associated with command “play”.
  share with @Alice “Check it out!”
  It will share the page with which the command was sent and deliver it to Alice accompanied by “Check it out!”
- **Easy programming through the wizard, or application of ready-made sets of scenarios**: automatic replies to emails and messages in social media, messengers, etc. Various personal data can be used: geolocation data, preferences, tastes, time of day, entries in the schedule/organizer, etc.
- **All WRIO OS apps are linked to IA through API, providing full control and enhanced IA capabilities:** for example, using an app like Yelp, IA can show the best Offers from restaurants in the vicinity based on the user’s food preference. This system will be able to correlate supply with demand, opening a new segment of smart offers that will replace ads

- **Logical processing of search queries**: if you ask IA about “something round, small, juicy and red”, then on the basis of GDP and the Semantic field, the system will assume this means an apple and will return the corresponding result using the predictive search system

22 · Predictive Search

The logical machine of Individual Assistant, in conjunction with the above described GDP, Rating, Taglang, Semantic field and Interest Matrix services, provides a possibility to create new, efficient and personalized type of predictive search engines, the capabilities of which may seem dreamlike to many.

Based on the laws of logic and comparing the accumulated data, such systems makes assumptions that go beyond the scope of direct search queries. To a certain degree the predictive search can be compared to the way our brain functions: if you come to a place important to you from your childhood together with a friend, your memory will have flashbacks related to both of them. In a similar way, the engine will take into account all components and will choose results that most closely correspond not only to the query itself, but also to the search history, preferences, context, geolocation and other parameters, including semantically relevant data.

Predictive search operates in a similar way as PageRank from Google, although the page Rating is used instead of the number of links to it, and search results are ranked in line with the user’s Interest Matrix.

The ideas of the predictive search are further developed in Offers designed to replace the annoying ads.

23 · Offers — Feedback ads

“Information is something concealed from us, the rest of it is ads.” — Anonymous.

Advertising is a mix of psychological manipulation, half-truths and obvious bullshit. Not only do ads often use biased and misrepresented information, create info-noise and waste our time, they also significantly push up the cost of goods and services. Depending on the goods, advertising may account for 20 to 80% of their cost! It isn’t information and facts but emotions that ads operate with, urging consumers to buy “status” and “individuality”. Their objective is to create marketing noise, spread brand awareness and ignite demand. Ads are an inevitable consequence of a monetary economy, a cause for the emergence of the consumer society and planned obsolescence, which results in irrational consumption of natural resources, emissions, and waste, all of which have a disastrous effect on the environment.

The objective of Offers is to satisfy the natural demand, provide facts and all the necessary information required for relevant customers to make an educated decision. Every Offer includes an informative description of the services and/or goods, accompanied by an expert opinion of the community in the form of Rating and WoT of their supplier/manufacturer. The idea of Offers is to create reputational conditions that make honesty the best policy for the marketing of goods and services.

Each Offer is undersigned with tags, through which it is related to the Interest Matrix and Predictive Search. An Offer includes an estimate of efficiency expressed as the ratio of user actions (click, share, purchase, comment, etc.) to views. The higher the indicator, the more people will receive the Offer based on the reactive principle similar to the one described above. Contrary to the classical approach where the advertiser pays per click, the opposite is true for the Offers system — while Offers are relevant and users respond to them, the advertiser pays nothing. But if Offers are rejected time after time, the rate of their distribution drops, the advertiser’s WoT decreases, and placement cost goes up. Thus, it is the advertisers themselves who are interested in the relevance of the Offers.

Unlike ad banners and promos that users tend to close as fast as possible — and they do it more often with various ad blockers — Offers are viewed voluntarily and do not hinder viewing the original content. They are collected in a special section in a dashboard according to the user’s Interest Matrix. The more willingly a user views and interacts with them (shares, comments, feedback, recommendations, etc.), the higher the chances are that the user will be among the first that the system will make new Offers to. The creator of an Offer may encourage users’ activity and interaction with the Offer by providing bonuses, discounts, etc., for valuable feedback, as well as a percentage of the transaction for the promotion and recommendations. An opportunity to influence the quality of advertised information through feedback radically differentiates Offers from today’s unidirectional ads.

Users can leave their comments and specify reasons they rejected an Offer. After eliminating the cause the advertiser may demonstrate an improved Offer to the same user. This approach allows users to receive the best Offers, while advertisers can better understand what stops consumers from accepting an Offer and how it can be amended. Besides, advertisers receive complete anonymous statistics and tools to make special proposals to clients that meet certain criteria: new/regular client, client with a low/high rating, gender, age, available recommendations, etc.

A recommendation differs from feedback as that client may include the seller in their WoT. In this case, the recommendation will reflect a reputational pledge provided by the recommender, which is better than any words in showing his or her attitude towards the recommended goods and services. If the transaction is completed, the recommender may receive either a bonus from the seller of the promoted goods and services (usually, a percentage of the transaction) and the buyer (in the form of Rating and inclusion into WoT), or, if the buyer is unsatisfied with the deal, they might receive a reputational penalty proportional to the WoT-pledge, just like the seller. Thus, unlike ads, every recommendation bears reputational responsibility, has a public indicator of happy/unhappy buyer ratio, and affects the recommender’s circle of trust. Recommendations from users with low indicators will have little value, and vice-versa, high ratings allow users to expand their WoT by gaining of subscribers, thereby becoming a professional reviewer.

Sellers are interested in high-rated clients and will engage them in every way possible with personalized Offers, as their recommendations will be the best advertising. Just like content reviewers (curated web), there will be a network of professional reviewers of Offers — curated Offers that manufacturers will provide their goods and services to with better conditions, or even free of charge, to get their honest assessment others will trust. After all, if your friends and acquaintances recommend something to you, you are likely to accept their opinion. Offers are based on the same principle. The only difference is that recommendations are given by members of a community you don't know, but whom you can trust within their competence in the issue reflected in their Rating. That is the difference between feedback at eBay and other services, where you have no idea about the level of competence of the person who left the feedback.

As Offers develop, a network of high-rating professional experts in their respective fields will appear. If you need a new cell phone, a car, or an iron, the predictive search will provide you with a list of goods meeting your criteria and will automatically generate a comparative table, run complete analysis, and provide reviews and recommendations from professionals that guarantee their assessment with their reputation.

This will also influence the process of creating new goods and services. Today, a product is manufactured first, which is then sold to consumers with the help of advertising. A developed system of reviewers will enable an expert evaluation of goods and services by the community already at the concept stage, and then it will be offered to an audience already prepared for the launch of the goods. Not only will this allow the idea to bypass marketing research and find its first clients, it will also attract crowdfunding to help the goods come out. Please read more here.

Each product and service is entered by any willing person into the blockchain with a link to its page in the Global Data Pool, and afterwards consumers can find it using the Recommender System and the Predictive Search. Cooperation and free information flow will enable the community of consumers to create the most complete **wikipedia of goods and services** with detailed descriptions and lists of all significant parameters, allowing easy comparison of products, tracking market trends, automatic gathering of breaking statistics (IoT element), accumulated experience of consumers, and reviews of independent experts. Thus, consumers will be able to make educated purchases relying on facts instead of ads, while businesses will obtain new powerful tools for efficient commercial activity.

Such a decentralized and free base will be a standard choice when making a purchase. People will refer to it looking for unbiased answers and recommendations. One figure in the base will overscore all ads which will become useless as a result.

23.1 Use cases

The relationship between the global user base and goods will make sellers and buyers united. Use cases include:

- **Purchase of a cell phone:** as simple as entering in the IA "a mobile with xyz specifications that can solve xyz tasks". You get the advantage of the variants picked with the help of the Predictive Search, or choose from received personal offers from the stores that can receive and process requests from users
- **Purchase of clothing**: Stores meeting certain criteria will have access to your Profile and measurements. Now, when ordering clothes you can be sure you will not be offered something that will not suit you, and professionals can select a style for the next season catered personally for you
- **You have a high Rating in sports, namely skis?** Any sports store specializing in winter sports will be happy to offer you the best goods on special terms, so long as you agree to buy from them and give your assessment.
  Are you a gourmet food taster? Restaurants will especially welcome your visits.
  Do you know about cars? Car dealers will fight for your opinion.

The choice and recommendations of professionals is the best advertising.

23.2 Offers' advantages

- **The ads approach shifts away from:**
  goods -> generation of demand -> consumer
  to user-centric:
  consumer -> demand -> goods
- **When ads use the "carpet-bombing-with-spam" approach, offers act more like snipers:** the Recommender System processes and filters all Offers, comparing their tags with the tags specified in the Interest Matrix of a user, and displays only those that the user may be potentially interested in
- **Advertisers are interested in the relevance of the Offers:**
  - the more relevant an Offer is, the cheaper it gets
  - the lower the promotion expenses, the lower the price for the buyer
  - the less expensive a product, the more competitive it becomes
  - a competitive product means more positive recommendations
  - the better the recommendations, the greater number of people will see the Offer
- **Reactive distribution:** directly depends on the degree of users' satisfaction with the Offer
- **Focus on the reputation and WoT:** means that the size of the advertising budget is no longer important. This will remove low quality and non-personalized ads from the media landscape
- **Offers provide complete and anonymous statistics on users' views to advertisers**: country of residence, age, gender, etc.

- **Reputational responsibility of advertisers and reviewers to consumers:** low quality Offers or Offers with irrelevant tags cause the advertiser's WoT to drop, so that the advertiser could be added to a blacklist, an effective anti-spam tool
- **Voluntary viewing of Offers**: the more frequently a user checks Offers and interacts with them, the better Offers they will get. Activity (viewing, sharing, commenting, recommending, etc.) earns discounts and other bonuses
- **A recommendation intensifies the WoT connection of the client to the seller:** a parameter that reflects loyalty and opens up a shining new horizon for bilateral B2C relationships
- **Feedback:** Comments and opinions on an Offer allow users to influence it, while the ad provider can improve the Offer. Sets of emoji (unclear, poor quality, etc.) will help users to quickly give their feedback
- **Every unfair action on the part of a seller or a client (!) is reflected in their WoT and narrows their available audience - including friends, acquaintances and business partners of the offended party:** For the first time both parties of a transaction acquire a level of trust which makes it possible to get rid of the obsolete motto "The customer is always right". A dishonest client will be dishonest towards other members of society. Not only will the reputation protect buyers against low quality goods and services, it will also allow businesses to avoid transactions with problematic clients, which will prompt the latter to change their attitude towards others
- **Offers are linked to the decentralized and semantic "Wikipedia of goods and services" on the basis of GDP:** It contains all significant parameters of goods, reviews and recommendations, which will enable users to automatically generate a comparative table of trade-offs. Thus, users will be able to select a product fast and prudently with no need to search for and study separate pieces of information scattered all over the Internet
- **Decentralised:** traditional advertising loses its meaning in the face of a free stream of information about consumers' experiences that cannot be controlled by corporations

The advantages described above will attract users to Web 3.0, at last free of traditional ads, while personalized Offers will gain more users' attention and more opportunity for a mutually beneficial exchange. Offers are one of the elements of the crypto-economy based on reputation, which will be outlined in the following sections.

The implementation of an approach where reputation rather than the size of an advertising budget plays the most significant role will cause the evolution of ads: instead of marketing nonsense, we will receive a useful tool that will change our negative attitude towards it.

Offers can be paid with either webGold or Credits.

24 · Conclusion

WRIO Internet OS is a platform designed to bring together all of the above ideas and become an instrument that will upgrade Web 2.0 to Web 3.0. The implementation of the project will result in a status quo where users will not need a desktop OS.

Available Internet access across the globe will give rise to a new market of very inexpensive thin-client terminal devices with a browser-driven WRIO Internet OS onboard. In the first instance these will be single-board computers like Raspberry Pi with a pre-installed minimal Arch Linux and a browser for security reasons launched in a container isolated from the system. In the future we are planning to announce Individual Assistant based on a similar technological base.

Individual Assistant concept based on Raspberry Pi and WRIO Internet OS.

Key benefits of WRIO Internet OS

- **Simple:** WRIO OS can be viewed as a cloud operating system with thin client, where cloud/distributed apps are responsible for the same functions as desktop software: you do not need to install or set them up, all resource intensive operations will be run on remote servers of service providers
- **User-centric:** personalized UI and functions providing a new level of browsing experience, aimed at the automation of incoming data filtering and processing in accordance with users' interests
- **Secure:** only textual data is processed; all scripts are ignored. Access to sensitive data via a cryptokey that only the user knows
- **Global:** Profile and Rating are public users and reputational bases utilizing blockchain technology
- **Semantic:** GDP — a decentralized storage of machine-readable data

The cost of such devices will be comparable to that of inexpensive mobile phones, making them accessible to everyone. WRIO Internet OS will provide free access to information, education, and the crypto-economy.

Other projects of similar conceptual and technical scope are being developed today. These aim at creating one or another component of the next generation web: reputation systems, cryptocurrencies, dApps, etc. This marks the emergence of a new powerful trend and a new market, all related to the blockchain-based Web 3.0. However, the synergy effect may be achieved only if all of the above is interrelated, which is the ultimate goal of the WRIO Internet OS project.

Roadmap

- **Individual Assistant** · 2027
- **Arbitration** · 2026
- **dApps market** · 2025
- **Predictive Search** · 2025
- **Semantic Field** · 2025
- **Recommender System** · 2025
- **Mobile app, WRIO OS browser** · 2024
- **DAO management system:** provision of tools necessary to create DAOs. Smart Contract Wizard · 2024
- **Interest Matrix** · 2024
- **Open Copyright** · 2023
- **Offers** · 2022
- **Web of Trust** · 2022
- **Taglang** · 2022
- **Dark web support:** VPN, Tor, I2P, etc. · 2022
- **Exchange:** Stock Exchange will offer WGD / CRD pair · 2022
- **Rating** · Q4 2021
- **Profile, Single Sign-in, Keystore** · Q4 2021
- **First ICO:** DAO's tokens for webGold · Q4 2021
- **Fundraising** · Q4 2021
- **MVP** · Status: In progress
- **Core (alpha):** Web 3.0 content management system · Q1 2020 · Status: Done
- **White Paper release** · Q1 2020 · Status: Done
- **Credits and Crediting** · Q4 2019 · Status: Done
- **Pinger:** first app · Q3 2019 · Status: Done
- **Global Data Pool**: first hubs · Q2 2019 · Status: Done
- **First WRIO Internet OS node** · Q2 2019 · Status: Done
- **Prototype** · Q4 2018 · Status: Done
- **Proof of Concept** · Q2 2017 · Status: Done

Links

Landing Page
One-pager
WRIO Internet OS Hub
Telegram Channel
Telegram Group

Slack
Bounty Thread
About Us

FAQ

Who can use WRIO Internet OS, and why?
WRIO Internet OS was created to be an alternative to today's Web 2.0 which is cluttered, non-secure, and with large scale privacy breaches almost daily in the news. The purpose of this project is for everyone to benefit from a user-centric browsing experience utilizing the semantic web with automatic data processing and storing metadata through blockchain due to the large degree of security that it yields. Authors, Entrepreneurs, Developers, and Users will all be incentivized by WRIO's user-centric services and DApps ecosystem.

What is the current state of the WRIO Internet OS project?
We have a proof-of-concept and we're on schedule (see Roadmap) to further develop the project to the point where we can soon bring a generation of fully distributed and secure Web 3.0 browsing.

How does WRIO Internet OS utilize the blockchain?
Blockchain technology will be utilized to store the metadata of each generated page (in Linked Data format) prior to being integrated to the user's Interest Matrix compiled in their profile. It helps in the auto process of linking decentralized pages through a global metadatabase.

Why are you using Ethereum?
Ethereum has matured dramatically over the past few years. Because of its maturity and therefore its blockchain security, as well as its scaling capability plans, we believe it's the best option to run this platform on.

If you're using Ethereum and storing metadata on it, won't it bloat the network?
The simple answer to that is no. Due to the semantic infrastructure of WRIO Internet OS, the metadata will equal 'tags' on the blockchain, and these tags will be limited to <64 bytes, and every post on the platform, for instance, has a "wallet" attached to it with a list of transactions and metadata (tags). To put this into perspective, Wikipedia has about 5 million articles and the whole ETH transaction capacity is about .5 million per day. That means the whole wiki metadata is equivalent to 10 days of ETH capacity only.

Can the team deliver on this large-scale promise?
WRIO Internet OS is an open source project and the global Community ("webRunes") represents the man power driving it forward. The most active community members currently form the Core Team for webRunes. In order for individuals to be accepted as a Core Team members, they must meet two key criteria: pursue lifelong learning as a basic principle, and have a strong drive towards creating a better world. Our Core team currently consists of 11 main co-founders from around the globe, including advisors from multi-billion dollar companies who've completed projects with large corporations such as Apple, Nike, Walmart, as well as with numerous other conglomerates. The cumulative initiative and experience of these core team members along with the efforts of our 30+ community contributors is entirely sufficient to meet and exceed our project goals.

How is WGD necessary to the business model?
webGold (WGD) is required for settlements between WRIO OS projects. WGD is a universal cryptocurrency to convert tokens from one app to another.

How do I benefit from the webGold token?
It's a unique opportunity to take part in an Airdrop distribution of newly issued WGD (on a prorated basis) — the more WGD you have, the more you get. Soon after the Token Sale, participation of the first ICOs of WRIO OS apps and services is also granted. All raised funds will be used to support the token exchange rate in the Buyback Fund. Find out more at webGold Emission chapter.

What sets you apart from other ICOs?
Unlike the overwhelming majority of other Token Sales and ICOs, we already have a viable working product. Additionally, our product offers not just a remake of something already existing in Web 2.0, but a new web concept that's going to change the core principle of services that will be very useful for every Internet user in the near future.

What is the next step after the Token Sale?
We created the tech base for the semantic web, but it's only the beginning. Next step of the platform: create a browser-based OS by using the raised funds to develop thin-client terminal devices as agents for a new kind of web: distributed and secure to maintain the economy and create WRIO OS apps. Find more information in the Roadmap.

Why is WRIO Internet OS important?

Web 1.0 was simply a huge catalog of documents. It evolved into Web 2.0: the web of social media and search engines, but information processing still remains unsecure, centralized with manual data processing. Web 3.0 is a secure web of robots and automatic data processing. While Web 1.0 and Web 2.0 had websites with a core idea, Web 3.0 has a user in it. Find more at the White Paper chapter: WRIO Internet OS — All you need is a browser.

What's the difference between WGD and CRD tokens?
WGD will be traded as a stake in the platform and will be traded on exchanges once the Token Sale concludes. CRD (Credits) are in-platform tokens to be used as upvotes to authors, donations to users, or content upvotes for a better user experience (see Interest Matrix algorithm).

What happens if not all tokens are sold?
Unsold tokens will be burned.

How will the WGD price be maintained after the Token Sale and beyond?
WGD's price will be maintained by a Buyback Fund that will be maintained by webRunes Limited and a third-party provider. This will ensure the price of WGD does not go below the pre-sale price. Users will be able to sell WGD at any time after the Token Sale on the book price, which directly depends on the number of collected ETH and issued WGD, thereby providing a stable exchange rate. See webGold Emission.

Are you going to list webGold on exchanges?
Prior to the Token Sale, we will be in talks with multiple exchanges to ensure the listing of WGD. The size of the Token Sale and the amount raised often determines the speed of these listings, therefore, no guarantees can be made from webRunes regarding the listing of WGD in exchanges. That said, if a listing of WGD is confirmed, webRunes will announce it.

What cryptocurrency can I use to contribute in the Token Sale?
We are only accepting ETH in our Token Sale. Please do not send any other token/cryptocurrency.

What does WRIO Internet OS stand for?
The name originates from the acronym of "webRunes Input/Output Internet Operating System". Its browser-driven approach which allows the system to work with any device with a browser and Internet connection, which is reflected in the project motto: "All you need is a browser".

How can I contribute my skills to the Community?
We are grateful for project contributors and are always in search of passionate developers who share a similar vision for the future. For info on how to support us please follow us on Github or reach out to us directly at info@webRunes.com

Legal Disclaimers & Risks

Potential purchasers are advised to read the Token Purchase Agreement (the "**Token Purchase Agreement**") carefully and perform the necessary due diligence before: (i) making use of this White Paper; (ii) participating in the Initial Token Offering (the "**Token Sale**"); and/or purchasing the webGold tokens ("**WGD**" or "**Tokens**") required to use the services and benefits of the WRIO OS platform. The Token Purchase Agreement governs the agreement between webRunes Limited (the "**Company**") and the Token Sale participants.

This White Paper has been developed by the Company, in collaboration with the webRunes global community and the core team members representing the webRunes global community. This White Paper does not constitute advice nor a recommendation by the Company, its officers, directors, managers, employees, agents, advisors or consultants, or any other person to any recipient of this document on the merits of the participation in the Token Sale. We recommend you consult your own legal, financial, tax or other professional advisors for further guidance prior to participating in the Token Sale.

The purpose of this White Paper is to present WRIO OS and the webGold Token to potential Token holders in connection with the proposed Token sale. The information set forth in this White Paper may not be exhaustive and does not imply any elements of a contractual relationship. Its sole purpose is to provide relevant and reasonable information to potential Token holders in order for them to determine whether to undertake a thorough analysis of the Company with the intent of purchasing the WGD Tokens.

This White Paper is not a prospectus or disclosure document and is not an offer to sell, nor the solicitation of any offer to buy any investment or financial instrument including securities of any form, units in a business trust, units in a collective investment scheme or any other form of regulated investment or investment product, or any interest or right in the Company or to participate in any trading strategy in any jurisdiction and should not be treated or relied upon as one. No regulatory authority has examined or approved of this White Paper or any other document contained on the wr.io (the "**Website**"). No action has been or will be taken by the Company to obtain such approval under the laws, regulatory requirements or rules of any jurisdiction.

The WGD Token is a utility token. This product is not a security, commodity, or any other kind of financial instrument and has not been registered under the United States Securities Act of 1933, the securities laws of any state of the United States, or the securities laws of any other country, including the securities laws of any jurisdiction in which a prospective Token holder may be a resident. WGD Tokens are not being structured or sold as securities of any form, units in a business trust, units in a collective investment scheme or any other form of regulated investment or investment product in any jurisdiction. WGD tokens hold no rights in the Company and are sold as a functional good and all proceeds received by the Company may be spent freely by the Company, absent any conditions set out in this White Paper.

The distribution of any information in relation to the Token Sale or participation in the Token Sale in certain jurisdictions may be restricted by law. It is the participant's sole responsibility to ensure that their participation in the Token Sale is not prohibited, restricted, curtailed, hindered, impaired or otherwise adversely affected in any way by any applicable law, regulation or rule where they reside or are domiciled. Failure to comply with any such restrictions may constitute a violation of the laws of any such jurisdiction. Citizens, nationals, residents (tax or otherwise) of United States of America or any other jurisdiction which prohibits the possession, dissemination or communication of this White Paper and/or prohibits participation in the Token Sale or the purchase of the WGD Tokens or any such similar activity, are not permitted to participate in the Token Sale, otherwise, they assume all the responsibility and liability arising from their participation in the Token Sale or their acquisition of the WGD Tokens and shall indemnify the Company for any damages arising out of their participation in the Token Sale.

The Token Sale may not be marketed in the Russian Federation, South Korea or certain EEA jurisdictions, including Spain, France, Italy and Germany, due to the marketing and/or private placement regimes applicable in these Jurisdictions. Moreover, the information provided in this White Paper is not intended for distribution to, or use by, any person or entity in the United States or any jurisdiction or country where such distribution or use would be contrary to any law or regulation, or which would subject the Company (including their affiliates) or any of their products or services to any registration, licensing or other authorization requirement within such jurisdiction or country.

This White Paper is for information purposes only and is subject to change. The Company cannot guarantee the accuracy of the statements made or conclusions reached in this White Paper or any information on the Website. The Company hereby disclaims any representation, warranty or undertaking in any form whatsoever to any entity or person, including:

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- any representations or warranties relating to merchantability, fitness for a particular purpose, suitability, wage, title or non-infringement;
- that the contents of this White Paper and/or the Website are accurate and free from any errors; and
- that such contents do not infringe any third-party rights.

The information contained herein may from time to time be translated into other languages or used in the course of written or verbal communications with existing and prospective customers, partners etc. In the event of any conflicts or inconsistencies between such translations and communications and this official English language White Paper, the provisions of this English language original document shall prevail.

All performance targets contained in this White Paper are subject to change. There can be no assurance that the Company will achieve any targets or that there will be any return on contribution made by the participants during the Token Sale. The Company shall have no liability for damages of any kind arising out of the use, reference to or reliance on the contents of this White Paper and/or any information or document on the Website, even if advised of the possibility of such damages.

This White Paper includes references to third party data and industry publications. The Company believes that this industry data is accurate and that its estimates and assumptions are reasonable; however, there are no assurances as to the accuracy or completeness of this data. Third party sources generally state the information contained therein has been obtained from sources believed to be reliable; however, there are no assurances as to the accuracy or completeness of included information. Although the data are believed to be reliable, the Company has not independently verified any of the data from third party sources referred to in this White Paper or ascertained the underlying assumptions relied upon by such sources.

The information in this White Paper are current only as of the date above. For any time after the cover date of the White Paper, the information, including information concerning the Company's business, financial condition, results of operations and prospects may have changed. Neither the delivery of this White Paper nor any sale of WGD Tokens at the Token Sale shall, under any circumstances, create any implication that there have been no changes in the Company's affairs after the date of this White Paper. The Company does not undertake any obligation to update the information contained in the White Paper and/or any information contained on the Website after this date.

Please note that, following the Token Sale the Company may undertake a legal and regulatory analysis of the functionality of its Tokens. Following the conclusion of this analysis, the Company may decide to amend the intended functionality of its Tokens in order to ensure compliance with any legal or regulatory requirements to which it may be subject. In the event that the Company decide to amend the intended functionality of its tokens, the Company will update the relevant contents of this White Paper and upload the latest version of this White Paper to its Website.

Any WGD Tokens could be impacted by regulatory action, including potential restrictions on the ownership, use, or possession of such tokens. Regulators or other circumstances may demand that the mechanics of the WGD Tokens be altered, all or in part. The Company may revise mechanics to comply with regulatory requirements or other governmental or business obligations.

Caution Regarding Forward-looking Statements

This White Paper contains forward-looking statements or information (collectively "**Forward-looking Statements**") that relate to the Company's current expectations and views of future events. In some cases, these Forward-looking Statements can be identified by words or phrases such as "may", "will", "expect", "anticipate", "aim", "estimate", "intend", "plan", "seek", "believe", "potential", "continue", "is/are likely to" or the negative of these terms, or other similar expressions intended to identify Forward-looking Statements. The Company has based these Forward-looking Statements on its current expectations and projections about future events and financial trends. All information here that is forward looking is speculative in nature and may change in response to numerous outside forces, including technological innovations, regulatory factors, and/or currency fluctuations, including but not limited to the market value of cryptocurrencies.

In addition to statements relating to the matters set out here, this White Paper contains Forward-looking Statements related to the Company's proposed operating model. The model speaks to its objectives only, and is not a forecast, projection or prediction of future results of operations. Forward-looking Statements are based on certain assumptions and analysis made by the Company in light of its experience and perception of historical trends, current conditions and expected future developments and other factors it believes are appropriate, and are subject to risks and uncertainties. Although the Forward-looking Statements contained in this White Paper are based upon what the Company believes are reasonable assumptions, these risks, uncertainties, assumptions, and other factors could cause the Company's actual results, performance, achievements, and experience to differ materially from its expectations expressed, implied, or perceived in Forward-looking Statements. Given such risks, prospective participants in the Token Sale should not place undue reliance on these Forward-looking Statements. The Company undertakes no obligation to update any Forward-looking Statement to reflect events or circumstances after the date of this White Paper.

Other Statements

Statements contained in this White Paper and/or on the Website that are not historical facts are based on current expectations, estimates, projections, opinions, and/or beliefs of the Company. Such statements are not facts and involve known and unknown risks, uncertainties, and other factors. Each Prospective participant should not rely on these statements as if they were fact.

Risk Factors

Participation in the Token Sale may only be suitable for those who are able to understand the unique nature of the Company, WRIO Internet OS, the WGD Tokens, digital tokens and cryptocurrency exchanges. Participation in the Token Sale carries substantial risk and may involve special risks that could lead to a loss of all or a substantial portion of any contribution made. Do not participate in the Token Sale unless you are prepared to lose the entire amount you allocated to purchasing the WGD Tokens. WGD Tokens should not be acquired for speculative or investment purposes with the expectation of making a profit or immediate resale. No promises of future performance or value are or will be made with respect to WGD Tokens, including no promise of inherent value, no promise of continuing payments, and no guarantee that WGD Tokens will hold any particular value. Unless prospective participants fully understand and accept the nature of WGD Tokens and the potential risks inherent in the WGD Tokens, they should not participate in the Token Sale.

The Company's business is subject to various laws and regulations in the countries where it operates or intends to operate. There is a risk that certain activities of the Company may be deemed in violation of any such law or regulation. Penalties for any such potential violation would be unknown. Additionally, changes in applicable laws or regulations or evolving interpretations of existing law could, in certain circumstances, result in increased compliance costs or capital expenditures, which could affect the Company's profitability, or impede the Company's ability to carry on the business model and the WGD Tokens model proposed in this White Paper.

Risks and uncertainties include those identified in the Token Purchase Agreement, which the participants should carefully consider before deciding to participate in the Token Sale. The risks described in the Token Purchase Agreement are not a definitive list of all risk factors associated with participating in the Token Sale.