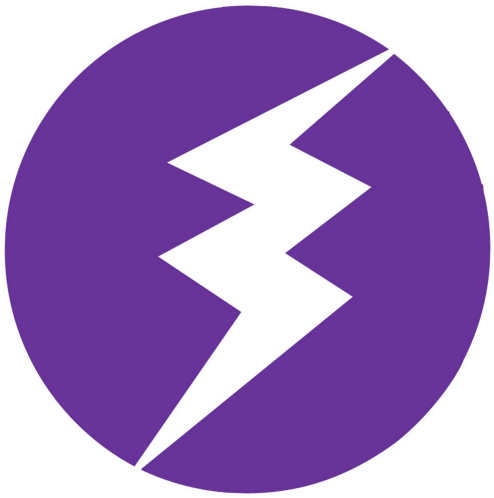


OpenWeb Network

Whitepaper
v 0.1

Table of Contents

Table of Contents 2

1. Introduction 3

2. Decentralised Web (Web 3.0) 3

3. OpenWeb Network 4

4. OpenWeb Host 6

5. OpenWeb Publisher 7

6. OpenWeb User 7

7. OpenWeb Node 8

8. OpenWeb Stakeholders 8

9. Tokenomics 10

10. Roadmap 12

11. References 14

1. Introduction

Present day Internet requires multiple intermediaries to allow communication and content delivery. These intermediaries dictate the rules of the transactions, content delivery and data storage(BlockchainHub, n.d.). The current architecture of the internet is broken and has placed wealth, influence and power in the hands of few greedy and behemoth organisations(Wood, 2018). These organisations often do not work with right ethics and cut users off as per their own discretion.

The next leap in the internet technology will be towards an open network which is free from intermediaries and is owned and run by the community. Decentralised Web (Web 3.0) is owned and operated by distributed computers globally allowing users to access open and secure content on the internet.

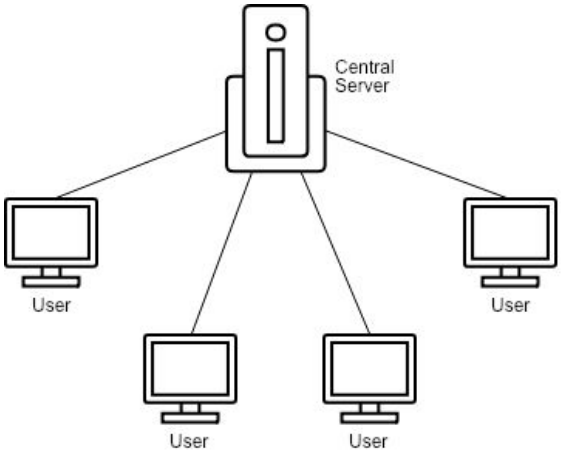
Blockchain technology has paved the way for decentralised ecosystem to exist. Bitcoin revolutionised the payment space by allowing people to transact without the need for trusted third parties while Ethereum allowed decentralised computing possible. Current advancement in technologies have opened up possibilities to allow decentralised storage and sharing of information without intermediaries and gatekeepers.

2. Decentralised Web (Web 3.0)

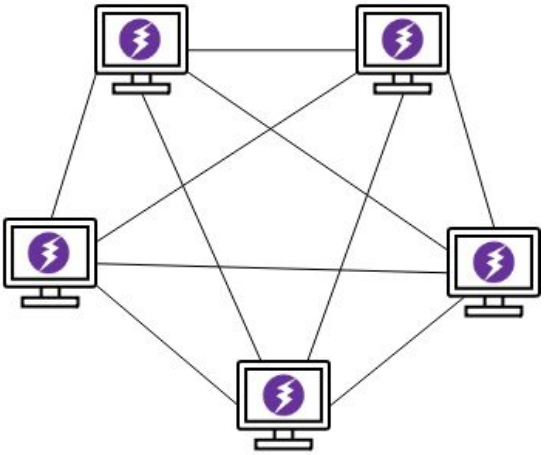
The current internet services relies on centralised servers creating dependencies on certain organisations opening up possibilities of censorships, denial of service or single point of failures if anything goes wrong.

A decentralised version of the web relies on peer to peer communication network which runs and is owned by the community. Decentralised web (Web 3.0) is powered by thousands of devices distributed globally as opposed to few high power servers owned by a handful of organisations. The distributed architecture of Web 3.0 makes it more robust, mitigating the possibilities of denial of service in the events such as DDoS attacks(Rowe, 2018).

Blockchain protocol allows peer to peer transaction without the need for centralised authorities or an intermediaries to oversee the transactions. The capability for peer to peer transactions allows technologies to exist which allow decentralised information sharing and reward structure.



Centralised



Decentralised

A report by MIT digital currency initiative by Narula and Barabas(2018) pointed out some key factors to be considered in order to make decentralised internet mainstream:

1. **Ease of use** - Technical possibility will not be sufficient to move users away from the current system. Accessing decentralised web must be user friendly to enable mass adoption among users. Moreover, it is essential to have lower barriers to entry for the developers by using existing frameworks and programming languages to build websites in Web 3.0
2. **Incentives** - Hosting and maintaining the network requires right incentive structure in place to reward community to host and distribute content in decentralised web.

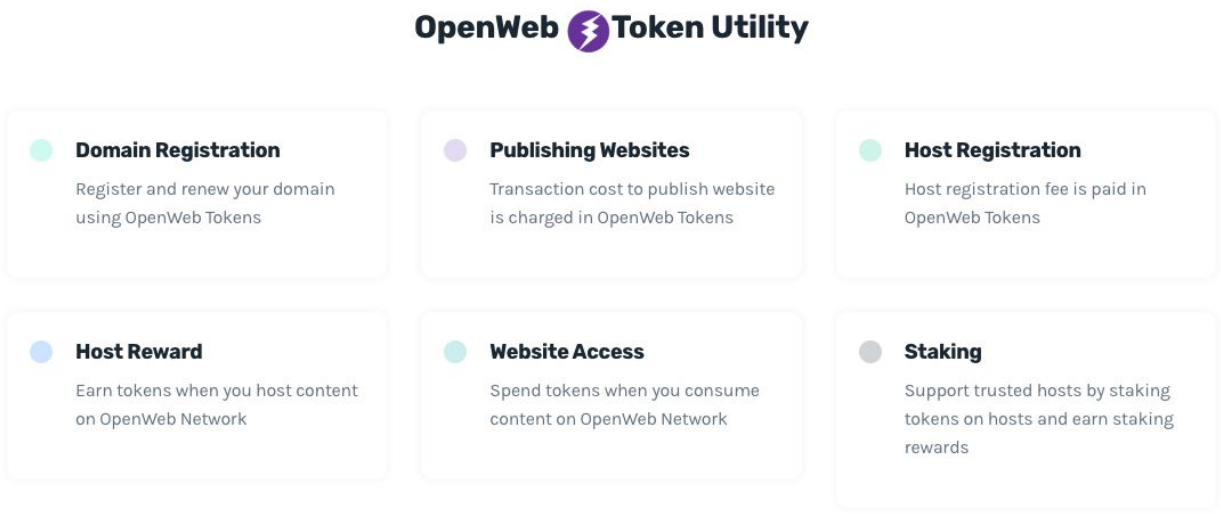
“Designing robust reward mechanisms for community-governed content is still an open problem, but if solved, this could be integral to placing curation control in the hands of a community.”
(Narula and Barabas, 2018)

3. OpenWeb Network

OpenWeb Network combines blockchain technology and distributed hosting to create a peer to peer version of the internet which is free from intermediaries. OpenWeb Network will not only revolutionise the hosting industry but create an inclusive internet where everyone can participate and contribute to the network.

OpenWeb Network is built keeping in mind the essential factors required to successful implementation and adoption of decentralised hosting and peer to peer version of the internet. These factors include:

1. **Decentralisation** - OpenWeb Network is decentralised and operates through Ethereum based smart contracts. All the key features related to managing and operating decentralised internet are secured cryptographically on blockchain. These features include domain registration and renewal, host registration, website publishing and incentivisation.
2. **Incentivisation** - OpenWeb Network uses blockchain to create a positive incentive structure for the community members supporting the OpenWeb Network infrastructure. Having an incentive structure will promote more hosts to join the network, making network robust and reliable.
3. **User friendly** - OpenWeb Network is compatible with existing browsers and allows users to access the websites on the network without the need for specialised applications. To access OpenWeb Network, users just need to add OpenWeb Network plugin in their browser. Being an open source project, OpenWeb Network opens up possibilities for anyone to develop plugins or browsers compatible with the network to provide seamless web access to the decentralised internet.
4. **Developer friendly** - The existing platform for decentralised infrastructure require developers to learn specialised programming languages thereby creating a shortfall of talent supply to work in the ecosystem(Castillo, 2017). To mitigate this issue, it is imperative to use the existing programming languages to built websites on decentralised version of the internet. This will diminish the learning curve for the developers and allow them to move websites to the OpenWeb Network without making significant changes to the existing codebase.
5. **Robust** - OpenWeb Network is robust and can be powered by hundreds of distributed devices sharing the computing resources. The peer to peer architecture of the network makes it robust and reduces the possibilities of network failure as compared to client server architecture where a server failure can adversely affect the quality of service.



OpenWeb Network has multiple components which will be discussed in details in later sections of this whitepaper. These components are:

- OpenWeb Host
- OpenWeb Publisher
- OpenWeb User
- OpenWeb Node
- OpenWeb Stakeholders

4. OpenWeb Host

OpenWeb hosts are the backbone of the OpenWeb network. OpenWeb hosts are the devices connected to the OpenWeb Network which share their computing resources in the network. OpenWeb hosts run OpenWeb Network nodes and serve the requests from the users for the websites. The network can have thousands of hosts making the whole infrastructure robust and scalable for users.

The list of hosts is maintained in the smart contract which gets updated whenever a host host joins the network. This list is used by the OpenWeb Network browser extension to identify the hosts available in the network and send the user's request for website to the nearest host.

OpenWeb Network has incorporated an incentive structure to reward hosts for joining and powering the network. The incentive for an host is based on the number of tokens staked on a host by the community. Incorporating staking creates further incentive for hosts to provide reliable service to the community.

The host registration can be done either through OpenWeb Network Website or through OpenWeb Network smart contract. To complete registration through smart contract the host needs to send host node connection details (IP:Port) to register host function in the smart contract. OpenWeb Website has included a user friendly registration process which will enable anyone to setup host nodes on the network.

5. OpenWeb Publisher

An OpenWeb Publisher is anyone/ any group who publishes content on the OpenWeb network. Anyone can become OpenWeb Network publisher and share content on the network. OpenWeb also allows multiple entities/addresses to own a domain and maintain community driven websites.

A publisher can publish website from OpenWeb website or directly from OpenWeb smart contract. A publisher must have a registered domain before publishing the website. To publish the website, the publisher will need to provide the following details:

1. Domain information
2. Git repository
3. Fileshash

Providing the hash will allow host to verify the integrity of the website (identify if the website files has been changed or not). This will ensure that the correct version of the website is delivered to the visitor when they request a host for the website. Host will regularly scan smart contract to see if the hash on the smart contract matches the hash calculated from the files on github. In case there is a difference in the hashing then the latest version of the website is pulled from the Github and installed by the host.

6. OpenWeb User

An OpenWeb User is someone who consumes content on the OpenWeb network. Users can view secure content hosted on the OpenWeb network on a regular web browser by using OpenWeb Network browser extension. Since, the network is decentralised and operates through smart contracts, OpenWeb Network opens up possibilities for third parties to launch browsers, extensions and applications that support OpenWeb Network.

To access internet on the OpenWeb Network, a user needs to pay a subscription in OWT which is added to the pool. A proportion of the tokens sent for subscription are burnt and the rest of

the tokens are added to the pool to incentivise hosts and stakers for running and supporting the network.

7. OpenWeb Node

An OpenWeb Node is similar to the host node but is intended for personal use. OpenWeb Node does not serve to the requests of the users on the OpenWeb Network. The standalone nodes can not earn tokens from the network and as they do not share their resources. Users running OpenWeb node can consume content without the need to connect to the host and are not required to pay a subscription fee to access the websites in the network.

8. OpenWeb Stakeholders

OpenWeb ecosystem uses staking to reward reliable hosts in the ecosystem. Stakeholders can stake tokens to hosts they trust and help smart contracts to identify reward calculations for each host.

Stakeholders can add/remove token staking from hosts based on the hosts they endorse. Anyone who holds tokens can become a stakeholder in the ecosystem. Each OpenWeb token (OWT) staked in the pool is counted as 1 stake and the payouts are proportionate to the staked tokens.

Staking is done on a monthly basis and the tokens once staked are locked up for a month in the smart contract. Below is a simple example to demonstrate how staking rewards and host rewards will be calculated in the OpenWeb Network:

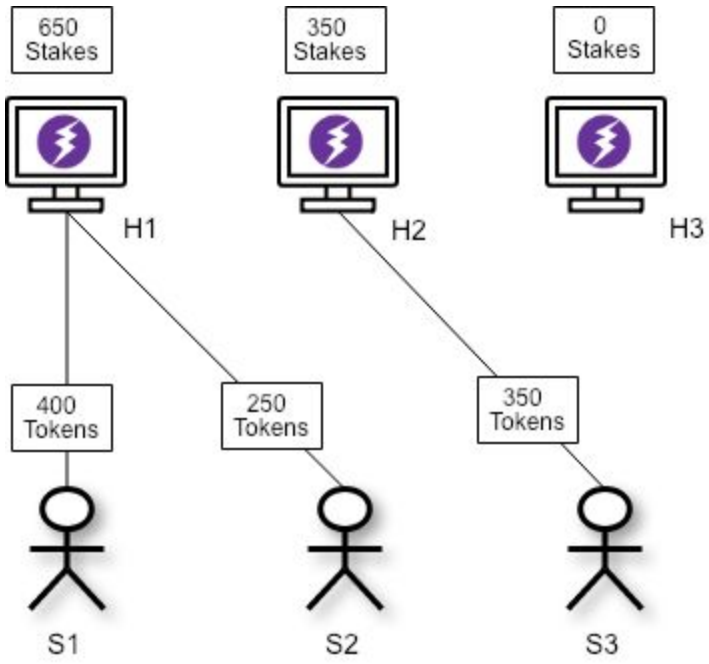
Assuming there are 3 stakeholder S1, S2 and S3 and 3 hosts H1, H2 and H3 in the network.
S1 and S2 stake 400 and 250 tokens to H1 respectively;
S3 stake 350 tokens to H3;
And no staking happens on H3

$$\text{The reward for a host} = \left(\frac{\text{Tokens staked on a Host}}{\text{Total Tokens staked}}\right) \text{x } (0.5) \text{ x Total tokens available for distribution}$$

$$\text{The reward for a stakeholder} = \left(\frac{\text{Tokens staked}}{\text{Total Tokens staked}} \right) \text{x (0.5) x Total tokens available for distribution}$$

Assuming there are 100 OWT available in the pool for reward distribution.

Reward for H1 = (650/1000) x (0.5) x (100) = 32.5 OWT
Reward for H2 = (350/1000) x (0.5) x (100) = 17.5 OWT
Reward for H3 = (0/1000) x (0.5) x (100) = 0 OWT



The reward for stakeholders as per the above formula will be
Reward for S1 = (400/1000) x (0.5) x (100) = 20 OWT
Reward for S2 = (250/1000) x (0.5) x (100) = 12.5 OWT
Reward for S3 = (350/1000) x (0.5) x (100) = 17.5 OWT

9. Tokenomics

OpenWeb Tokens are deflationary tokens with a starting initial supply of 1 billion OpenWeb Tokens. Everytime the services on the network are requested, a portion of the tokens collected in the pool is burned.

Users need OpenWeb tokens to access the content on the OpenWeb. These tokens are added to the pool and work as an incentive for . The tokens collected in the from all the users are divided between hosts, stakeholders and tokenburn.

For example if 100 tokens are needed by a user to access content on the OpenWeb network and the burn ratio is 10%, then 10 tokens will be burned while 90 tokens will be available in the pool. These remaining 90 tokens will be distributed between hosts and stakeholders in the ecosystem. The tokens earned by the hosts and stakeholder can either be staked in the ecosystem or sold in the market to the users. The deflationary nature of tokens will result in fewer tokens being available in the market each month.

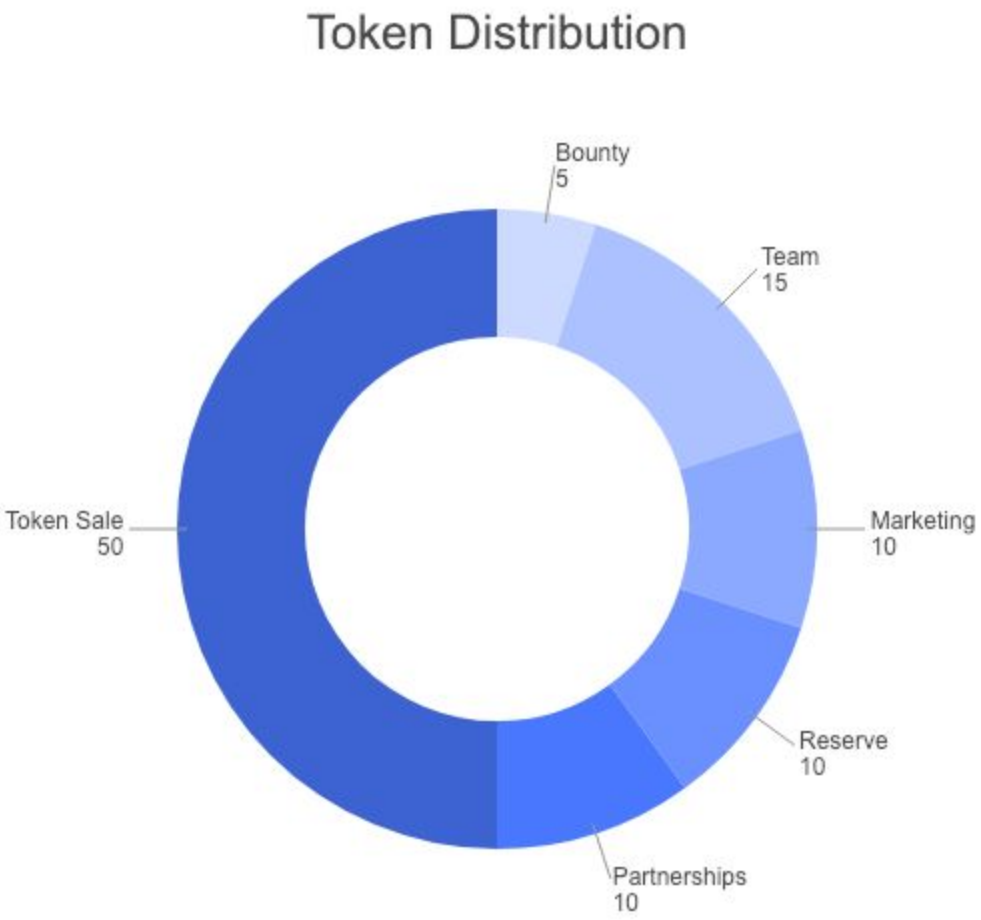
To ensure that the network remains usable and affordable for end users, real time data of the token price will be used to determine the cost of services in the OpenWeb Network. Price determination (in tokens) will be done using OpenWeb Network smart contracts using the real time token pricing information from the market.

Token Distribution

Token sale - 50%
The token assigned for tokensale are assigned for financial backers who have supported the project from conceptualisation to implementation and launch. The tokens will be issued to them in a 6 months vesting schedule.

Team - 15%
The team reserve will be assigned to all the team members, developers, researchers and advisors who have developed the OpenWeb Network. The team tokens will be completely locked up for 6 months after the network launch.

Bounty - 5%
Getting an initial traction and reaching a critical mass is highly desirable for the OpenWeb ecosystem. Bounty tokens are reserved for early adopters and code reviewers of the OpenWeb Network.



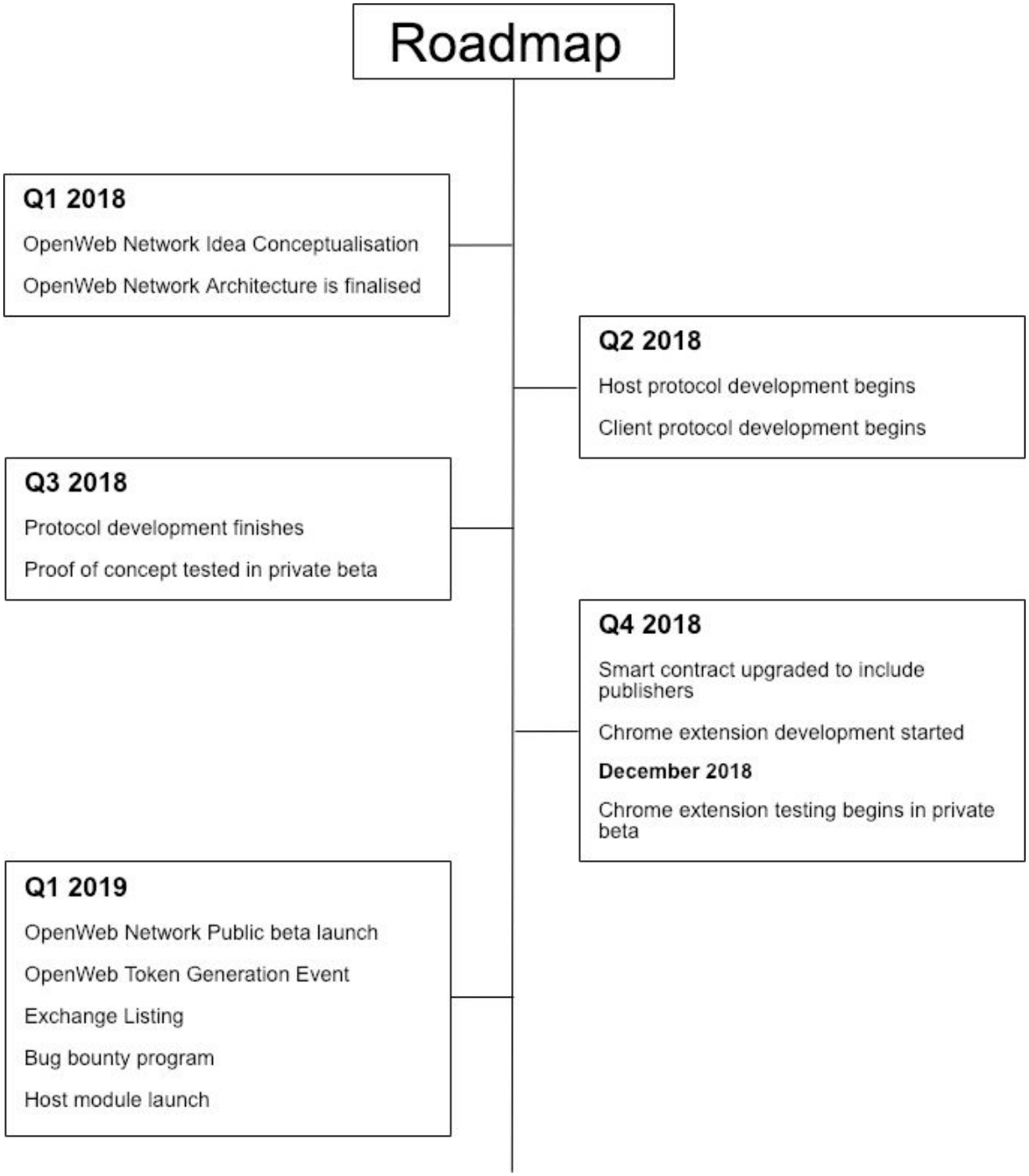
Total Supply - 1,000,000,000 OWT

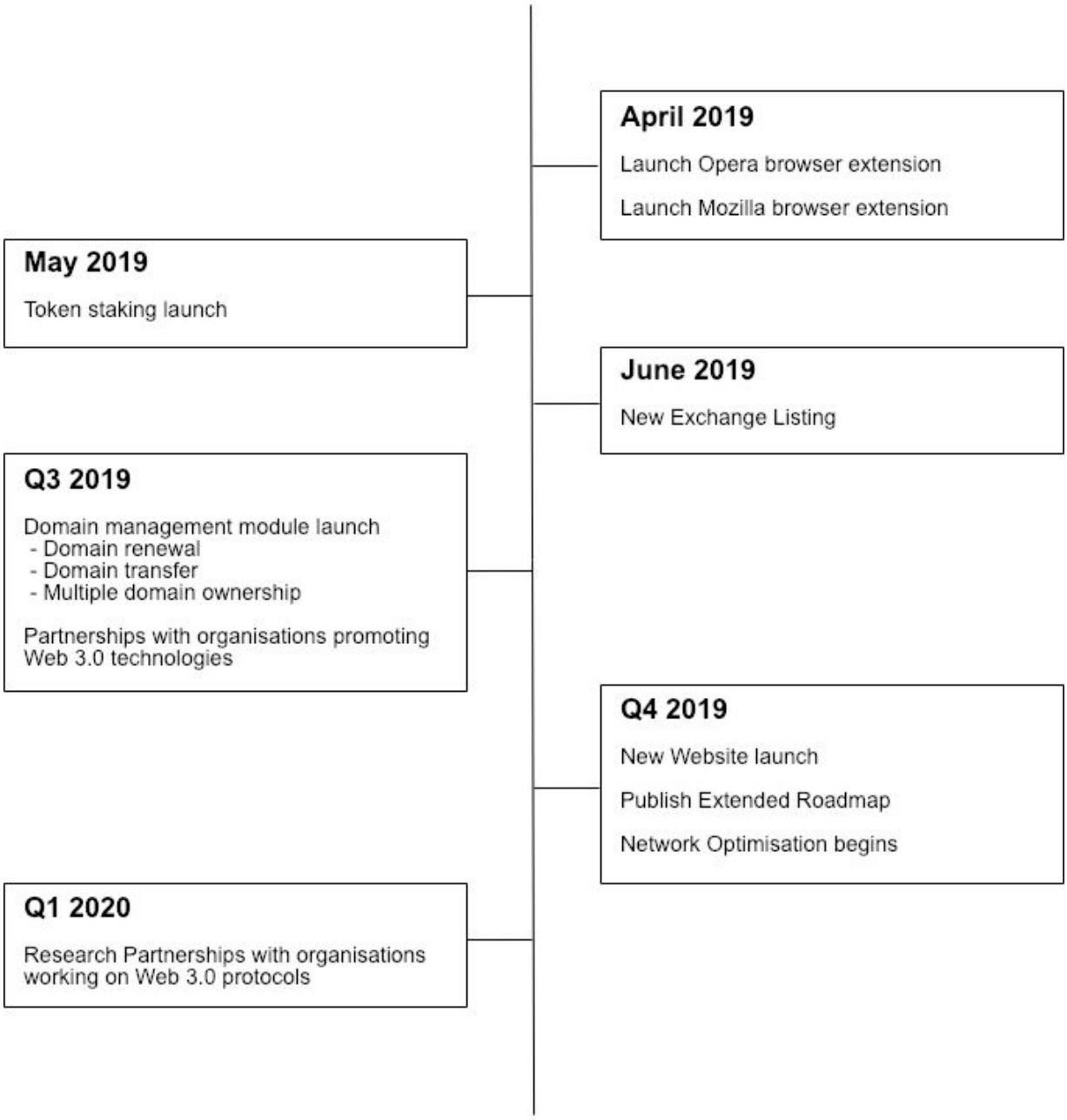
Partnerships - 10%
This fund will be reserved for strategic partners who will help in adoption and growth of the OpenWeb ecosystem. This may include companies/developers building new services that will add value to the system; organisations that will facilitate adoption by bringing in new users; exchanges/wallets that will increase the availability of the tokens etc.

Marketing - 10%
Despite building the best of the products, marketing activities are highly crucial to create awareness and engagement in the product. The tokens from the marketing reserve will be used for the all the marketing related activities associated with promoting the OpenWeb Network project.

Reserve - 10%

Reserve funds are kept to meet the expenses such as legal fees, compliance costs, operational expenses etc to ensure that the plans to build and grow OpenWeb ecosystem do not hit any roadblock.




April 2019
Launch Opera browser extension
Launch Mozilla browser extension
May 2019
Token staking launch
June 2019
New Exchange Listing
Q3 2019
Domain management module launch
- Domain renewal
- Domain transfer
- Multiple domain ownership
Partnerships with organisations promoting Web 3.0 technologies
Q4 2019
New Website launch
Publish Extended Roadmap
Network Optimisation begins
Q1 2020
Research Partnerships with organisations working on Web 3.0 protocols

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