The Deep Whitepaper

www.deep.gold

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The Deep (DEEP) – is an eternal virtual world based on DPoS tokens to create a decentralized, immersive world that is part game and part social platform. An immutable world where each experience builds on previous experiences.

Abstract

Combining new technologies to create a new way of experiencing the product of our imagination, is the challenge that The Deep is going to address. With the advent of blockchain technology and virtual reality – VR – there is a plethora of opportunities we can explore to create something that human kind has never seen. This is the product of our imagination, and we are going to make it the product of yours, through the creation of a new virtual world based on total immersion. Equipped with its own economy, its own set of rules and anchored in ironclad democratic principles, The Deep will be the first virtual world in which you will be able to let your imagination roam freely and shape the world you see through a series of building blocks.

The Deep will be a hybrid between a social platform and a game. Your own experiences will be the raw material of the building blocks within this gamified social platform. The Deep will allow you to immerse yourself in your own experiences, building experience upon experience; an immersion that will be uniquely created by you, for you and with the advantage of allowing you to let others in, or conversely allowing others to let you into their own experiences.

Contents

The challenge: Virtual worlds that can build upon previous experiences.

Nowadays, we seek more and more ways to enhance what we experience daily. A great part of this enhancement comes from complete immersion, which until a few years ago, was more mental than sensory. The progress of immersion follows an exponential curve, which has its origins in books. From great novels, we turned to games, then to simple electronics like the radio or the TV. Then we went into the age of the computer, in which we found yet another level of immersion, until the internet came around. With the advent of social media, we got to what was the pinnacle of the immersion experience, until VR came along. VR brings the sensory part of our immersion to the fore, and The Deep's virtual world will be VR compatible.

Nevertheless, it is possible to take our virtual world even further in terms of how we experience immersion. Currently there are no virtual worlds that can build upon previous experiences. The Deep will address this challenge, through the combination of an unprecedented set of building blocks anchored on blockchain.

The solution.

This total immersion requires a unique solution that will provide users everything they need to take their cumulative experiences to the next level. The solution thus includes a combination of the base technology behind The Deep, which is called Sandbox VR, and an open Crypto-Sandbox world. This will allow users to explore The Deep with VR helmets, but for those who still do not have helmets, this combination will allow them to explore and participate in The Deep as well. Both of these technologies will be deployed in tandem following the ICO

Here is a more detailed technical explanation about how this will work: Through 5 protocol levels that will work in parallel and asynchronously. They will have the ability to exchange queries and data with each other seamlessly. The result will be top-notch functionality and user experience that will further user immersion.

Why blockchain?

The issue of integrating blockchain technology in The Deep raises the level of difficulty in this challenge, but it also amplifies the capability that The Deep has to provide an experience like no other before. Blockchain essentially provides 2 things:

- Security against centralization, immutability, a variety of attacks that lead to decay and it fences off outside intrusion or malicious actors within The Deep. This allows users to create experiences built on top of previous ones. Immersive experiences must happen as an aggregation of previous experiences, with present experiences and the possibility to build future experiences on them.
- Blockchain provides the perfect platform to build layers upon it, which is a critical feature of The Deep.

The role of blockchain technology in the solution.

A deeper look at the role of blockchain in this project, reveals the level to which this technology will become a crucial enable in The Deep. Starting with immutability, blockchain technology will allow each user to 'save' previous experiences, allowing them to build upon them without having anyone else tamper with them. The next key feature of blockchain technology that is crucial for the development of The Deep, is distributed computing. As experiences become more complex, a single user computer will not be enough to save all the information necessary to continue building upon previous experiences. The Deep must be saved on multiple computers, which can send their fragments of information over to the user on demand.

The other crucial feature that must be blockchain-powered, is the interaction. Within The Deep, users will have a social experience to the extent that they want to share their experiences with others. This will require computers to interact with each other, while retrieving the same data simultaneously. Blockchain allows user computers to do that while simultaneously saving the experiences they derive from the interaction with each other on an immutable chain.

Scaling then becomes the next great challenge. As soon as we launch The Deep, our blockchain solution will only allow about 3% of the users to be in The Deep at the same time. Scaling that blockchain and getting additional computing power on it will then become crucial. ICO proceeds will take care of part of that problem, while the popularity of this platform will also encourage users to add computing power to The Deep as they join.

A special algorithm will be deployed to enable users to engage in 'dynamic saving' around the world, as they add computing power. To do so, it is necessary to use error detection/correction codes. Blockchain will play a crucial part in the verification process of the data necessary to enable this.

The purpose of Deep tokens vis-à-vis the platform.

Deep tokens (DEEP) underpin the participation of the users in The Deep. Therefore, it is important to understand how the Deep tokens will work. Deep tokens will be rolled out on a DPoS blockchain eventually. First, the tokens will exist as ERC20 tokens on Ethereum. 100,000,000 tokens that will allow users to exercise their rights within The Deep, will be created. The token will allow user to do the following:

- Claim land on a 1 to 1x1 basis – Each token will allow the user to claim a 1x1 portion of the grid within The Deep. Nevertheless, claiming land will not entail burning or giving up the tokens.
- That brings us to the second use case for Deep tokens, which is voting power – as a democratic virtual world, users within The Deep will be allowed to have a say on what happens through delegates that they will elect using their DPoS tokens. Users will have votes according to their stake in The Deep, following this formula:

    Total number of votes = total number of tokens * decimal factor.

Token choice:

Creating a token is critical for the functionality of The Deep. Deep is the lynchpin of the economy in The Deep; it is the catalyst for every single experience that can be created in this virtual world. The ability to trade is crucial for a fully immersive virtual world to evolve and succeed in allowing its users to interact and to create.

Token structure. (critical success factors)

The token structure must guarantee the success of The Deep. Therefore, the token must:

- Ensure The Deep is immersive.
- Guarantee democracy through the correct deployment of its DPoS features.
- Enable an economy, which it does by allowing users to claim land, a critical part of any economy.
- It must guarantee that technical overhead is sustainable. This means it must enable sustainable scaling of the economy within the virtual world, via blockchain scaling.

Why an ICO?

The ICO will provide the spark that will allow The Deep to start going around. Its users, empowered by their stake in The Deep will provide the fuel to keep this next generation virtual world experience rolling.

The ICO will also allow a wide base of users around the world to acquire Deep tokens. This in turn will increase the number of users and will serve to divide possible land claims among as many users as it is possible. In any case, the creators of the project will keep 30% of Deep tokens to guarantee that there will be economic and democratic balance within The Deep.

The development of user experience within this virtual world.

One of the most important stages of the development of The Deep, is user experience – UX. We will be building many of the features that will enhance UX on The Deep through a carefully thought out plan that places social interaction at the core of the user experience. Chats will be enabled for users to interact with each other immediately. Social interaction mechanisms will evolve as The Deep gathers more users.

For the social aspect of The Deep to succeed, we need to allow users to become the leaders of The Deep. Through a democratic process that is guaranteed by the Delegate Proof of Stake – DPoS – mechanism on the blockchain. Users will take the lead when they vote for their delegates.

The lay of the land: explaining the world map.

The base of the Deep world and its map will be based on a two-dimensional grid. It will have 100,000,000 squares on the grid, with each square having a 1x1 area. These are the basic parcel units which users will be able to claim according to the tokens they hold. The implication of claiming land at the beginning or letting other claim it and develop it first before, will add an element of strategic choice. This will take social interactions within The Deep to the next level and will serve to solidify the link between the gaming aspect and the social platform aspect of The Deep.
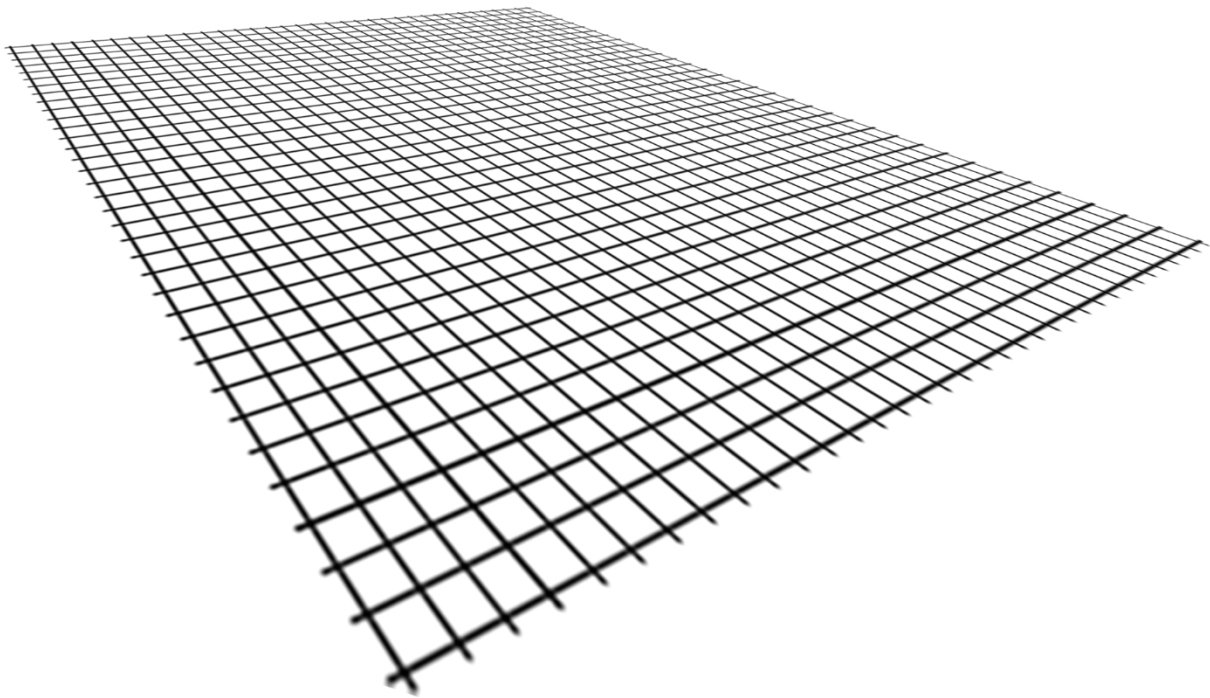

Figure 1: A visualization of the 10,000x10,000 grid that forms the base of the Deep world.

In-world mechanics and economics.

Delegates and transaction fees:

Delegates receive a percentage of each token transaction. Election as a delegate will thus become a desirable activity on the site. DPOS means consensus management based on stakeholder approval. Everything from voting for delegates, fee structure, technical parameters, etc. is agreed upon in a wholly democratic process.

Transactions on Proof of Stake, controls exchanges with all nodes contributing to security. Proof of stake is a type of consensus algorithm. Anyone who holds the cryptocurrency – in this case, Deep tokens -- can become a validator, which in the case of The Deep, means a delegate.

Economics:

By now, readers should understand that The Deep is also based on the age-old economics of real estate. Users will be claiming and developing parts of the grid within this virtual world, just like developers buy and build on land plots anywhere around the world. This aspect of The Deep will be one of the most salient for users once they start interacting with The Deep, and with each other within The Deep.

Users will be able to develop their real estate in whichever way they want. They will be able to set up shops, casinos, theaters or any other buildings they deem necessary to build upon their previous experiences and interact with other people within The Deep. Given that Deep tokens will not be used for these transactions, because the DPoS aspect of the blockchain requires users to keep their tokens to claim land and exercise their democratic rights, The Deep allows its users to enable any kind of external payment mechanism they wish to use to transact with each other.

Users will be able to transact with each other using PayPal, or bitcoin or any other system they might choose. Apart from that, users will have in-game gold to develop their real estate further within The Deep. Users will earn gold by storing and distributing data, since The Deep will require storage of a sizeable and diverse array of data.

This makes the economic cycle within The Deep stable and prosperous. Stability will be the result of using a broad set of currencies:

- Through the Deep API, any kind of payment will be available for user to user transactions.
- At the developmental level, in-game gold will allow users to develop their land plots.
- Deep Tokens will allow players to claim land to develop and will serve to vote through a DPoS mechanism.

Interaction with other users and trade will ensure economic growth, which will ultimately be measured by the magnitude of the immersive experience, and the pleasure users derive from it. With this, it is important to understand that since the economics of The Deep are based on principles of real estate economics, in the future, when The Deep becomes too crowded, it will be possible to build a bridge to yet another virtual world like The Deep. Citizens of both worlds will be able to interact and experience inter-world tourism just as we experience real world tourism. This will also intensify the immersive experience of users, driving economic growth on both worlds, much like tourism in the real world does.

Protocol layers.

The Deep will be built on 5 different layers. Each layer is necessary to provide critical aspects of functionality, while keeping the viability of the project. This is because the technical requirements of every function are different. Some functions need to be secured tightly, while others must be able to deliver results in real time. To deliver on this, the platform requires a degree of flexibility that can only be achieved by building layers that can interact with each other to the extent necessary.

Each layer can be secured independently, which means there is no single point of weakness, and no need to over invest on layers that require less quickness but more security for example. Following this logic, The Deep will be based on the following 5 levels:

- The protocol level 1 is a DPoS based token to manage land claims and voting in The Deep.
- Levels 2-3 of the protocol are absolutely decentralized and implemented as a peer-to-peer P2P network.
- Levels 4-5 of the protocol are implemented in the form of DPoS and servers of land owners, respectively.

Level 1: Ethereum / Deep

A DPoS based token to manage land claims and voting in The Deep. The number of tokens available is directly proportional to the amount of land available within The Deep, and land scarcity is a built-in feature. DPoS mechanisms will guarantee consensus management based on stakeholder approval.

Level 2: Claiming land

The level is responsible for land privatization and synchronization.

The level must fulfil the following tasks:

- To request the number of deep required for the operation from Level 1 protocols.
- Ask the network for a piece of land (neutral to owner).
- Check if the limit is reached for the number of private users.
- Enable and decentralize the operation of privatizing or claiming land.

Requirements: speed, high safety.

Users store a full set of data that stores information about land that has already been claimed.

Level 3: Building on land

The level is responsible for building, spending and charging gold and synchronization.

The level must fulfil the following tasks:

- Request land ownership information from Level 2 protocol.
- Request the availability of gold resources to develop those plots of land – build.
- Decentralized saving of construction operations.
- Charging gold for storage and synchronization of the network.

Requirements: sufficient speed and security that do not compromise the efficiency or effectiveness of each other.

Users store some information

A specially designed protocol level based on blockchain technology elements and error detection/correction codes from coding theory.

Level 4: User interaction

The level is responsible for the interaction of users with the environment and with each other.

The level must fulfil the following tasks:

- Move the character around the world with card loading with information from Level 2 and Level 3.
- Displaying avatars of other users nearby.
- Processing of social interactions between users.

Requirements: high speed while security remains as low as possible to enable higher speed (the desire to remove interference).

Delegates from the Level 1 protocol automatically support servers for user interaction on Level 4.

Level 5: Deep API

This level manages the installation of the personal servers for land owners, who rule their territory according to the norms of The Deep. The rules they make for their own land and buildings on it, are implemented by connection to The Deep via this API. As a result, Level 5 will allow users to deploy external applications in The Deep. This level is responsible for processing results from all protocol levels and rendering The Deep compatible to external applications.

The level must fulfil the following tasks:

- Verification of rights according to Level 2-3 protocol levels.
- Initialize the specified Deep API script.
- Serving the visitors of the private zone when they agree to the specified commands.
- Launching and processing the results of Level 1 to Level 5 through all protocol levels.
- Passive network support.
- Visualization of The Deep.

Requirements: speed, scalability.

Graphic visualization, as well as VR technologies in the Deep project are created on the basis of an open game graphics engine.

Elements of visualization are primitives in the form of:

- Materials (brick, glass, metal).
- Models (fence, window, lamp).
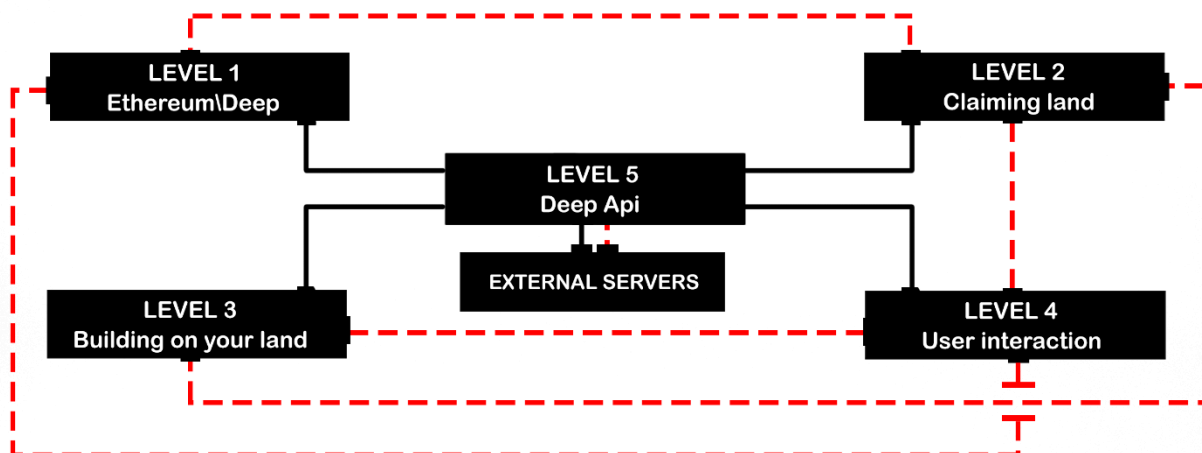- Effects (music, rain, fire).

Figure 2: A visualization of the connected protocol layers. Red dotted lines denote data pull requests

ICO timeline and structure.

The Pre-ICO sale for Ether will start on 15 September 2017. There will be 100,000,000 Ethereum-based tokens, that will be divisible up to the 8th decimal point.

- During the Pre-ICO, you can buy Deep tokens only over the Ethereum network.
- Pre-sale is available before the Pre-ICO, please contact us for it.
- The Pre-ICO hard cap is 4000 Ether, with no soft cap.
- 30,000,000 Deep tokens will be sold during the Pre-ICO.
- The contribution period is unlimited.

There is a definite interest in participating in the Pre-ICO, as the price of Deep tokens will be much lower at this time than it will during development.

The ICO will start when the Deep alpha is ready, which should be during the summer of 2018.

During the development phase, the token will be transferred to our own DPoS-based system. Transactions will be guaranteed by Proof of Stake, as discussed above. Users will get their tokens a day after they purchase them.

The Deep token will be listed on exchanges once the crowd sale is over. Exchanges help token offers attract sufficient liquidity. This will be particularly important for adoption when we launch The Deep.

The token sale will have a five-stage bonus structure and tokens will be distributed amongst core activities as shown below:

Stage#	Bonus	1 ETH	Until Cap
1	150%	12 500 ⓓ	500 ◈
2	90%	9 500 ⓓ	1000 ◈
3	50%	7 500 ⓓ	2000 ◈
4	30%	6 500 ⓓ	3000 ◈
5	0%	5 000 ⓓ	4000 ◈

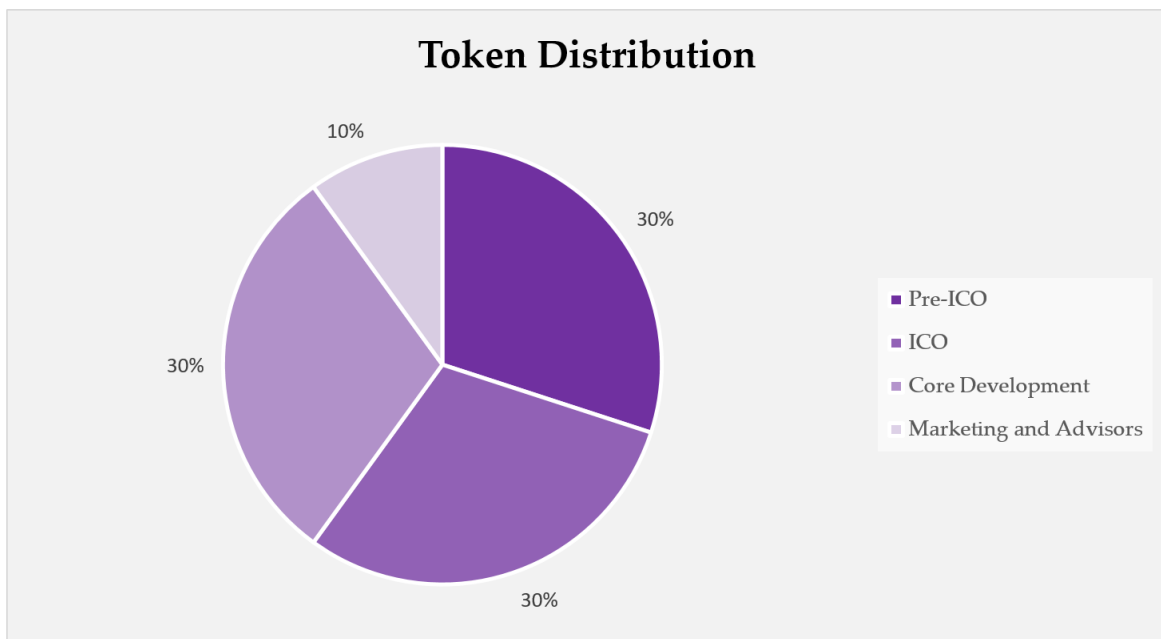*Figure 3: Bonus levels for contributions during pre-ICO.*

Figure 4: Distribution of the 100,000,000 DEEP tokens

Development road map.

At the start, The Deep will use Ethereum-based tokens. This is because we need to distribute tokens now. Our plan takes the following into consideration: First the team will develop the project, and then, at the appropriate time, Ethereum-based tokens will be swapped.

Pre-ICO: September 2017

First Deep token crowdsale
Five-stage structure with bonuses

Start of project development: October 2017

Architecture detailing
Project documentation development

Token release: January 2018

DPoS implementation
Preparation of Ethereum to Deep Swap

Core protocol release: April 2018

Land claiming
Building and user interaction levels development

DeepAPI release: June 2018

DeepAPI level development
Multi-service testing

Alpha release: Summer 2018

Basic delegates initializing
Alpha testing

ICO: Summer 2018

Second Deep token crowdsale
Market based pricing

VR Support: Autumn 2018

VR technologies analysis
Universal module development

Release: December 2018

Deep launch
Offline birthday party

The Deep: A transformative experience.

Every aspect of The Deep, from its purpose, its innovative use of blockchain technology, the VR-capable features, the way its users will be able to interact and build upon previous experiences, and its ICO structure, represent a transformative experience. The Deep is the next generation of human immersion and it will open the door to changing the way we interact with each other. A chance to jump in and be among the first to contribute, will give users an incredible opportunity to spearhead the development of this virtual world and become its pioneers. It is time to join this project and start shaping The Deep from within.