

# Orbis

Whitepaper

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## **Abstract**

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Bluetooth mesh networks have diverse applications ranging from its numerous commercial IoT applications such as smart manufacturing, smart homes, automation, and peer networking. Individual consumers and developers however remain locked out of this lucrative market. The Orbis platform aims to establish a platform for both consumer and commercial developments in Bluetooth mesh by establishing pre-existing infrastructure and network for developers to deploy onto. The Orbis Token (OBT) will also be used initially to reward developers for successful releases as well as consumers for simply participating.

# Orbis Whitepaper

## 1.00 Vision

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Orbis powers distributed local networks, making them globally accessible while providing incentive for both developers and consumers to participate. Utilizing local bluetooth connectivity to create secure many-to-many (m:m) data communities, Orbis has applications in IoT development, crowdsourced networking, and systems integrations. Orbis creates multi-purpose and flexible infrastructure for developers to build upon and consumers to utilize delivering this through three components: OrbiStore, OrbisWeb, and OrbisToken (OBT).

For a simple application example we can use messaging. Messaging however only stands in for the general transmission of data over mesh networks.

After downloading the OrbisWeb app for your IOS or Android device click “connect” and your phone is now a part of a bluetooth network, a node in OrbisWeb. Then you can proceed to download an app, perhaps Bluetooth messaging from the OrbiStore. Using the app, your message is broadcasted to all nodes in range that then, unbeknownst to other users, is in kind repeated and relayed. This occurs until your recipient has received your message. And all the while, as your phone too is relaying others’ data, your wallet will be credited OrbisTokens simply for being part of the network which can then be used to purchase paid apps in the OrbiStore.

The value of such decentralized messaging in the face of seemingly universal SMS service and Wi-Fi is that mesh networks are not susceptible to infrastructure damage such as in the wake of natural disasters nor do they require costly connectivity implementations in low-connectivity places such as subway tunnels, underpasses, or even rural areas.

## 2.00 Orbis Architecture

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## 2.10 Orbis Bluetooth Low Energy (BLE) Mesh Networks (OrbisWeb)

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### 2.11 OrbisWeb Mobile App (Mobile Nodes)

Most foundational to Orbis are the participants. Mesh networking relies upon the presence of nodes and user's mobile devices with the help of an Android/IOS app will form the mobile nodes of OrbisWeb. Other nodes whether mobile or stationary will be automatically connected and data relayed.

To avoid data congestion, packets sent over mobile nodes will require relay counters ticking down each time the packet is relayed. At zero, the packet will no longer be relayed. Stationary nodes may be programmed to relay without modifying the the relay counter at the developer's discretion. Also to avoid data congestion, node devices will hold small message caches to avoid relaying duplicate messages.

In addition to synchronizing data with the mesh network, the OrbisWeb mobile apps will be the place where users can utilize their own downloaded dapps as well as be home to a native token wallet. The app will track node uptime and tokens will be minted to reward active participants as explained in [2.32](#)

How are third-party applications to be launched? A close comparison in terms of UI and app integration is WeChat. WeChat has implemented add-ons or extensions that enable users to process monetary transactions, call for a taxi, review a restaurant, etc. OrbisWeb will have much the same integration functionality for it's approved third-party applications.

### 2.12 Security

An obvious first question is the security and privacy of data. OrbisWeb devices will be provisioned using 256-bit elliptic-curve cryptography (ECC) and out-of-band authentication while inter-nodal communication is served with AES-CCM 128-bit encryption. Identifying data in mesh packets are also obfuscated thus ensuring data is private. End to end data sharing, such as messaging, will be protected with private pre-shared keys (PPSK).

### 2.13 Scalability & Accessibility

Bluetooth mesh is specified to support up to 32,000 nodes per network. Orbis intends to virtually exceed that with conventional data hubs storing automatically uploaded data from each network and making the data accessible to its intended recipient(s) via conventional internet.

How is this localized data to be accessible globally? For dapps requesting global usage such as in the case of crowd-gathered data, (see [3.20](#)) relevant data will be temporarily stored until the user connects to an internet source. On an internet connection, the OrbisWeb mobile app will upload the relevant data to globally accessible servers.

## 2.20 Application Platform (OrbiStore)

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### 2.21 Developers

The OrbiStore will provide a platform for developers and consumers to publish and download decentralized applications (dapps) utilizing OrbisWeb. Submitted dapps will be vetted through both automated and manual processes to ensure the absence of malicious software. Initially the Orbis team will vet initial software however we wish to transition to a community vetting system, where certified and trusted members of the community will approve submissions and be rewarded with Orbis Tokens.

### 2.30 Orbis Token (OBT)

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#### 2.31 Use, Reward, Developers, Consumers

OrbisToken (OBT) will be integral to the use of Orbis and provides benefits to the company, developers, and consumers alike. OrbisToken will be minted to reward both developers for consumer usage of their apps as well as consumers for participation in OrbisWeb. OBT can then be used by consumers to purchase apps on the OrbiStore and likely eventually Orbis products such as stationary nodes.

OBT will also be accepted for a one-time developer registration fee beginning 2019

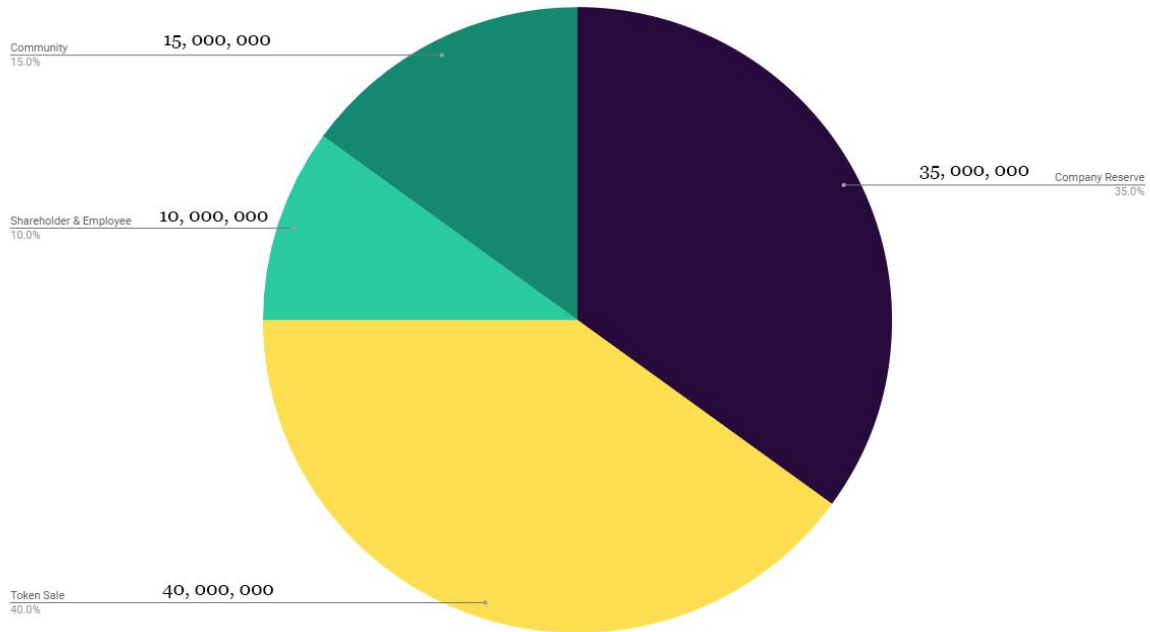
#### 2.32 Supply

OBT will be minted at a 10% annual inflationary schedule. 50% of minted coins will be proportionally credited to existing holders of OBT counteracting inflationary devaluation. 30% will be rewarded to mobile nodes per time active. And the remaining 20% will be rewarded to developers based on app usage.

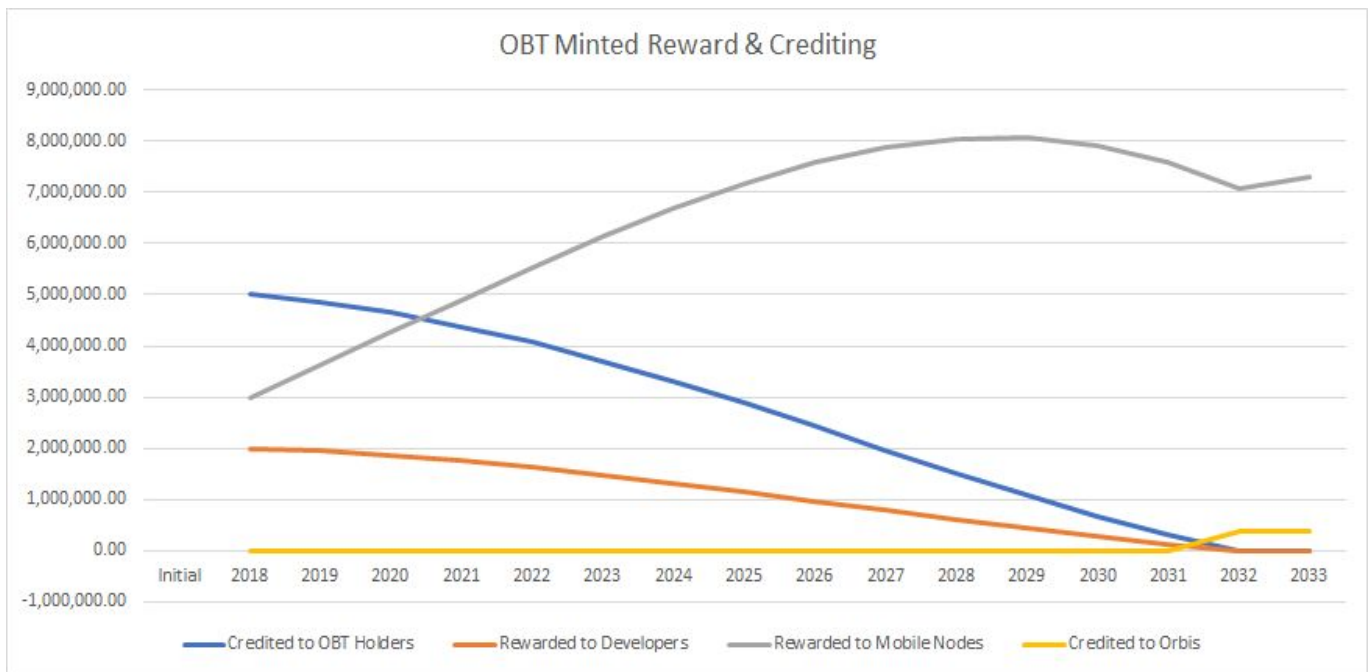
OBT inflation will be gradually lowered over 15 years to a minimum of 3%. OBT crediting and developer rewards will be reduced to zero during this time. At and after 15 years the percentage of minted coins rewarding mobile nodes will be 95% and 5% of minted coins will be credited to Orbis. Below for table and chart of projected OBT supply based on 100 million initial supply.

Initial OBT Token Distribution

100,000,000 Initial Supply



Data	Inflation	OBT Minted	Total Supply	Credited to OBT Holders	Rewarded to Developers	Rewarded to Mobile Nodes	Credited to Orbis
Initial			100,000,000.00				
2018	1.100	10,000,000.00	110,000,000.00	5,000,000.00	2,000,000.00	3,000,000.00	0.00
2019	1.095	10,450,000.00	120,450,000.00	10,450,000.00	10,450,000.00	10,450,000.00	0.00
2020	1.090	10,840,500.00	131,290,500.00	10,840,500.00	10,840,500.00	10,840,500.00	0.00
2021	1.085	11,159,692.50	142,450,192.50	11,159,692.50	11,159,692.50	11,159,692.50	0.00
2022	1.080	11,396,015.40	153,846,207.90	11,396,015.40	11,396,015.40	11,396,015.40	0.00
2023	1.075	11,538,465.59	165,384,673.49	11,538,465.59	11,538,465.59	11,538,465.59	0.00
2024	1.070	11,576,927.14	176,961,600.64	11,576,927.14	11,576,927.14	11,576,927.14	0.00
2025	1.065	11,502,504.04	188,464,104.68	11,502,504.04	11,502,504.04	11,502,504.04	0.00
2026	1.060	11,307,846.28	199,771,950.96	11,307,846.28	11,307,846.28	11,307,846.28	0.00
2027	1.055	10,987,457.30	210,759,408.26	10,987,457.30	10,987,457.30	10,987,457.30	0.00
2028	1.050	10,537,970.41	221,297,378.67	10,537,970.41	10,537,970.41	10,537,970.41	0.00
2029	1.045	9,958,382.04	231,255,760.72	9,958,382.04	9,958,382.04	9,958,382.04	0.00
2030	1.040	9,250,230.43	240,505,991.14	9,250,230.43	9,250,230.43	9,250,230.43	0.00
2031	1.035	8,417,709.69	248,923,700.83	8,417,709.69	8,417,709.69	8,417,709.69	0.00
2032	1.030	7,467,711.03	256,391,411.86	7,467,711.03	7,467,711.03	7,467,711.03	373,385.55
2033	1.030	7,691,742.36	264,083,154.21	7,691,742.36	7,691,742.36	7,691,742.36	384,587.12



For information on how and at what rate company tokens will be spent see “Funding & Token Sale.”

## 2.33 NEO

The Orbis team has chosen to develop on the NEO: Smart Economy. NEO’s integration of common compilers and IDEs including C#, Java, C, C++, JavaScript, and Python for coding smart contracts allow for a much lower barrier to entry to Orbis’ repository.

The NEO team’s commitment to government compliance, anti-quantum cryptography NeoQS, and community-based governance as well as the fundamental alignment in the goal of a smart, connected, and digital economy are why Orbis will be developed on the NEO platform.

## 3.00 Utilization

### 3.10 IoT

A core goal of Orbis is implementation in IoT, the incorporation of nodes into smarthomes. A click of an Orbis app may securely control a home’s locks, cameras, lights, a/c, lights, drapes, etc, each device node relaying the command until the appropriate recipient is reached. Homes become closed-loop networks of their own. Power efficiency is also enabled by low-power bluetooth nodes which are paired with “friend nodes.” Friend nodes cache data bound for



their partner, delivering them when the partner low-power nodes wakes at its programmed time interval.

### 3.20 Crowd-Gathered Data

Perhaps the most interesting of applications, data from mobile nodes enabled by Orbis apps on Android and IOS will enable developers to utilize crowd-gathered data. Lost your keys? With a node on your keychain, you can privately alerted to its location when another user running the OrbisWeb app automatically connects with it. Want to know how long the line is at the Louvre? See anonymous data on how long it took other users to go from the lobby to the exhibits.

### 3.30 Digital Infrastructure

In the era of a data-driven economy, the reliability of digital infrastructure is a top priority. The situation in Puerto Rico in the aftermath of Hurricane Maria is exemplary of the need for decentralized, self-healing, and relatively inexpensive and rapidly deployable digital infrastructure. Instead of centralized hubs where the failure of a single telecom tower could shut down the entire system, Bluetooth mesh utilizes multipath and self-healing managed flood relay.

Cell infrastructure in difficult to reach areas such as subways may also be replaced by affordable and portable Bluetooth routing hubs which as of 2016 may be capable of ranges over 300 meters (1000 feet).

### 3.40 Logistics

Bluetooth mesh has applications in logistics ranging from lighting and power efficiency to warehouse stock and employee management. Aforementioned low-power nodes in combination with sensor nodes can automatically control warehouse lighting and temperature without the need for inlaid wiring. Empty shelves can be identified with more nodes and employees are reachable through Bluetooth messaging with all nodes simultaneously acting as relay nodes.

## 3.50 Systems Monitoring

Complex system monitoring can be achieved through Bluetooth mesh. Railway car linkages or aircraft systems can be efficiently monitored through Bluetooth nodes and unresponsive nodes quickly identifiable. Wiring in a 747 aircraft amounts to 274 km (171 miles), kilometers of such tear and corrosion susceptible wiring can be replaced with wireless and wear resistant nodes.

## 4.00 Company & Development Roadmap

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### 4.10 Timeline

#### 2017 Q4

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- Project Planning
- Community Engagement
- Whitepaper Release & Drafting
- Closed Alpha testing of Android OrbisWeb app
- Partnerships & Advisors
  - Networking firms
  - Blockchain firms
  - Crypto-wallets
  - Crypto-exchanges
  - Aligned crypto projects
- Website completion and capability scaling

#### 2018 Q1 & Q2

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- ICO Funding/OBT Distribution
- Exchange listing and trading
- OrbiStore development
- Blockchain OBT development
- Android & IOS Alpha testing
- Staff acquisition
- Community Development
  - Community developer outreach
  - Establish OrbiStore application vetters
  - Community & industry conferences
  - Community engagement OBT rewards

#### 2018 Q3

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- OrbisWeb beta release

- OrbisWeb data-center establishment
- Company-developed application release
- Manufacturing partnerships
- Product development
  - BLE nodes
  - BLE routers

## 2018 Q4

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- Production OrbisWeb release
- Production company-developed app releases
- Product releases
- Community developer releases
- Platform tweaking

## 2019 Q1-4

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- Municipal and organization partnerships
  - Testing large-scale BLE mesh infrastructure
- Improving mesh data transmission speed & efficiency
- Orbis deployment scaling
- Cyber security firm consultation - improving network privacy and security

## 5.00 Funding & Token Sale

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### 5.10 Token Sale

The OBT token sale will take place March 3-31 2018. OBT will be minted until the hardcap funding goal of \$12,000,000 USD is reached, any unsold tokens will be burned. XRT will be determined as follows with the goal of achieving a starting supply of 100,000,000 and raising \$12 million USD.

$$\$12,000,000 \text{ USD} = 40,000,000 \text{ OBT} * \frac{\text{NEO PRICE USD}}{\text{XRT}}$$

The exact sale time will be announced a week prior to the sale and XRT will be determined and announced three hours prior to the sale.

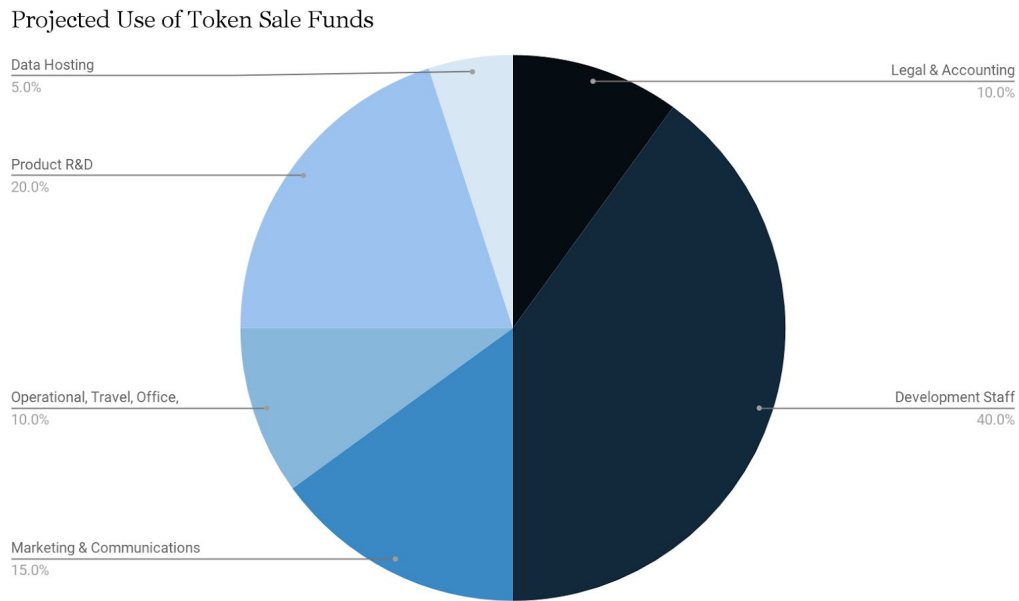
ICO Sale Bonus	Bonus %
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Day 1	25%
Day 2-5	15%
Day 5-10	5%

### 5.11 Token Sale Funds

Please note pending legislation and regulation, citizens of certain countries may be restricted from participating in the sale and proof of citizenship may be required.

Funds raised through our ICO will primarily be directed to development staff. These funds will be working to establish OBT smart contract, OrbisWeb Android and IOS apps, and OrbiStore.



### 5.20 OBT Company Reserve & Employee Vesting

Employee tokens will have a vesting period of 48 months with a maximum withdrawal of 10% per quarter. Company reserve withdrawal over 10% per quarter requires two-week's official public notice.