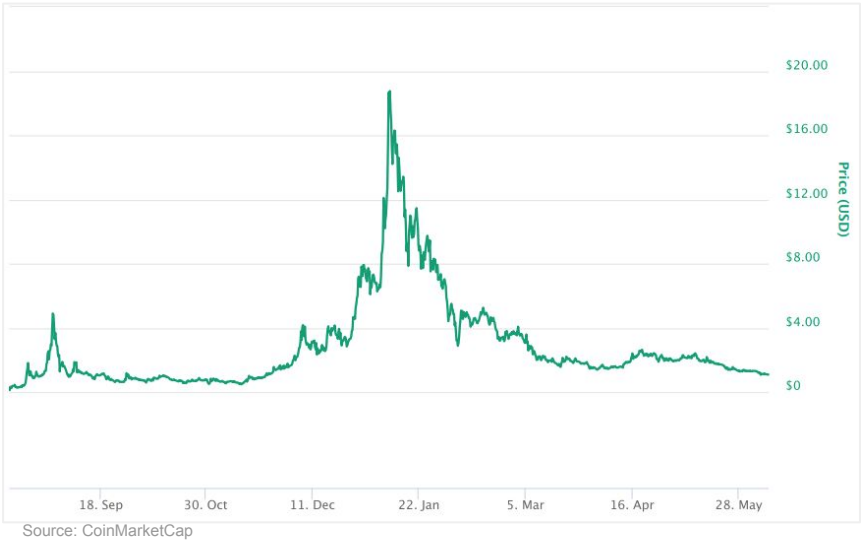
RESEARCH REPORT

# DeepOnion

INTELLIGENT TRADING

**Deep Onion (ONION)**
Type: Privacy coin
Date: 08-Jun-2018

Price: $1.08
Market Cap: $16,474,801
Liquidity: Low
Primary Exchange: KuCoin
Team strength: n.a.
Project stage: Functioning product
Funding stage: Traded
HQ: n.a.
First USD Price: $0.75



Source: CoinMarketCap

## Summary

The DeepOnion project was officially launched in July 2017 as an anonymous payment platform that is natively integrated with the TOR network. The purpose was to solve some of the issues of the cryptocurrencies world, primarily privacy. The community is working on developing a secure marketplace for sending ONIONs, the cryptocurrency that promises its users anonymity, security and privacy. Deep Onion position themselves as a provider of a service secure both from malicious attacks and authorities at the same time.

## Strengths & Opportunities

- Clearly communicated goals, engaged community, and strong presence
- Advanced technological base, potential for integration of different technological approaches
- Banking and Payment services are one of the most popular industries in the blockchain world with expected growth
- Huge potential for privacy coins is predicted for 2018*

## Weaknesses & Threats

- The user base is not strong enough to foster mass adoption
- The anonymity of the team and limited information about project may send a wrong message to prospective investors
- The market of the privacy coins is saturated and the service itself is not novel enough at this stage
- Targeting privacy-consciousness users may predetermine the orientation to shadow economy and black market

*Predictions on Hackernoon, podcasts, Cryptoticker, Coinsquare 2018 prediction by Clayton Danie on Monero

# Analysis of DeepOnion (ONION)

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# Project Analysis

## Description

### Overview

DeepOnion Project's main purpose is to bring solutions to the issues the pioneer cryptocurrencies are facing. The problem they have focused on is privacy, something that bitcoin, the cryptocurrency with the biggest market capitalization, does not fully address. One of the promises that cryptocurrencies are making is that excluding the middlemen of global payment systems will ensure anonymity and privacy in such payment systems. Due to the public nature of the blockchain ledger, the identity of the account holders can be anonymous but the transactions are exposed. This semi-anonymity enables tying addresses to real-world identities. Users are particularly vulnerable when "cashing out" into a fiat currency and transfering funds to their bank accounts.

DeepOnion is based on Supercoin, an anonymous coin with coin mixing function, aims to solve this. The project is coming with technologies such as DeepSend or Stealth Addresses and utilises the TOR network to anonymize both identities and traffic and make it near impossible to trace the coins' movement. DeepOnion positions itself as a privacy coin or as an anonymous currency, an alternative payment solution.

### Business Model

The incentives for transaction validation are the transactions fees, which are currently very low. At the beginning of the year, when the fees for bitcoin transactions were as high as $23, the fees for DeepOnion were at $0.004. Other source of revenue for the founders would be the increase in value of coins. The founding members hold 2 million ONIONs and the development team additional 3 million.

According to the team, the development fund is to be used for "marketing, to hire other developers if necessary, to pay for exchange subscriptions and for other community needs: proposals on Votecentral may require the use of funds from the development wallet". To assure transparency, all movements are public and anyone can monitor the wallet from a link shared on the VoteCentral (voting platform based on the blockchain technology, engaging the community in co-creation).

### ONIONs Distribution

DeepOnion did not do an Initial Coin Offering (ICO), and is not planning to do so in the future. The coin, ONION, was distributed mainly through Airdrops (free of charge tokens distribution to a user's wallet). It is estimated that in the next ten years, the total amount of generated ONIONs will be approximately 25 million. Of this number, the total number of PoW coins will be over 20 million (including 18 million pre-mined at block 1), the rest will be generated by PoS.

The 18 million from premined block are distributed as follows:

- 2 million Founders reward
- 3 million Development fund
- 3 million Bounty fund
- 10 million Airdrops campaign
    - Rounds 1-15: 3.2 million
    - Round 16-40: 6.8 million

## Team

The team decided to remain anonymous. On the official webpage, it is stated that the team consists of four professionals specializing in software development, SEM marketing, big-data, cloud computing, branding, marketing, and blockchain technology. They claim to be an experts in their fields, however, no names or professional histories are revealed.

# Project Analysis

## Technology

The potential of DeepOnion is the combination of different technologies solving the privacy and scalability issues, which are two main pain points of most cryptocurrencies.

**Privacy**
DeepOnion is promising with the integration of several technologies that make the transaction secure and private and hide the metadata about the users. The outcome should be an anonymity provided by TOR network and blockchain privacy assured by cryptocurrency technologies.

*Already implemented:*
TOR
Utilising the TOR network enables the traffic to be encrypted so that the users can almost completely anonymously browse the Internet, send messages or use P2P network. DeepOnion integrates their transactions fully through the TOR network and utilize the multilayer encryption of the IP address of the sender and receiver of ONION. The company implemented the OBFS4 obfuscation protocol on top of the tor network, so that all traffic appears to be random traffic. This solves the issue of using the technology in countries where the TOR network is banned, e.g. China.

DeepVault
Another feature is the DeepVault, information storage that is held within the DeepOnion blockchain. It allows Onion members to store file validation credentials (hashes of files) within the blockchain. Enabling storage of legal documents and contracts opens the field for creating additional financial services in the future.

*Upcoming:*
DeepSend
Additionally, DeepOnion comes with their own privacy solutions which is scheduled to be released 3Q 2018, DeepSend. It will compromise of different technologies, such as Zero-knowledge protocols, CoinJoin and Ring signatures. The DeepSend functionality will be optional and connected with additional fees for the users, which are not specified yet. It will also be integrated in the DeepOnion Wallet, now enabled in mobile version for Android with an iOS option on the way.

**Scalability**
DeepOnion is a hybrid coin with a consensus based on both PoW and PoS. The block is the size of 1.5 MB of data, and the average block interval is approximately 48 seconds (combined PoW 240s target with more frequent PoS 60s target). Each transaction block is about five hundred (500) Bytes. This suggests that the network can handle 62.5 transactions per second. With bitcoin oscillating around three transactions per second, this is a significant distinguishing feature. Detail characteristics of both protocols are:

PoW:
- x13 algorithm, 240s block target
- Initial payout will be 8 ONION per block
- PoW payout will be halved each year until it reaches 1 ONION where it will remain

PoS:
- 60s block target
- PoS interest will be variable per year: 1st year 10%, 2nd year: 5% and subsequent years 1%
- Minimum holding time before PoS generation is 24 hours
- Maximum allowed accumulated coin age is 30 days

# Project Analysis

## Fiscal and Monetary Policies

Currently, there are approximately 15 million circulating supply of ONION. According to the DeepOnion distribution strategy, 13 out of the 18 million ONION pre-mined in the first block are to be distributed through Airdrops and Bounty rewards system.

**Airdrop & Bounty**
In order to participate in the Airdrops, there was a list of rules starting with registration based on bitcointalk.org account. The participants needed to be active members of the DeepOnion forum, posting minimum 5 messages per week. The distribution was based on the current ONION balance on the users' accounts, a minimum of 50 ONIONs was required for qualification. As per a DeepOnion team member, there were more than two thousand (2,000) users participating on the Airdrops.

On April 20. the company has gone through all 40 rounds of Airdrops, distributing 3.2 million ONIONs in the first 15 rounds, 3.75 in the following 15 rounds and 3.05 in the last ten rounds, totaling 10 million ONIONs. From the 3 million in the bounty fund, four hundred thousand (400,000) ONIONs was already distributed for contributions such as articles, videos, and to support potential new merchants that use DeepOnion.

**Mining**
There is no hold requirement, but PoS provides further rewards for those who are prepared to hold. The number of blocks mined already is at the time of the report over five hundred thousand (500,000). The rewards are still in the scope of the first year, 8 ONIONs per block, thus the already mined amount is approximately 4.23 million ONIONs.

Based on this, there are 2.6 million ONIONs left in the bounty fund and the minable amount is approximately 2.77 million ONIONs. The ONION coin is currently traded on nine exchanges with the highest volume on KuCoin, approximately seventy-eight percent (78%) of the total volume.

## Roadmap

Since the formal launch in July 2017 the Company has passed several important milestones in less than a year. After the Airdrops, bounty, and mining in started in July 2017, DeepVault feature was launched in Q4 of 2017 and in Q1 of 2018 the mobile wallet for android was released. The roadmap for the remainder of the year includes listing on more exchanges and supporting smart contracts. The initial roadmap called for the launch of DeepSend in Q2 of 2018, a capability that would greatly enhance the privacy of the coin; however this has not yet been achieved and the roadmap was recently updated to list the debut of DeepSend in Q3 or later.

## Communication

DeepOnion is building its community on several channels, both external and internal. Their Airdrop strategy helped them create the forum community, currently with over thirteen thousand (13,755) members posting around eight hundred posts in 24 hours. Their facebook page is followed by nearly fifty-seven thousand (57,000) people, reddit account has twelve thousand five hundred (12,500) subscribers and twitter slightly over forty-nine thousand (49,000). Their official telegram group has over twenty-three thousand (23,353) followers and the youtube channel ove two thousand (2,272) subscribers, to who they delivered already 67 videos with marketing and educational content.

# Market

## Competition

The market for privacy coins is growing and there are several technologies providing options to add privacy to different aspects of a transaction. Below is a short description of some of the **main technology solutions**.

### Stealth Address

This technology works on the principle of one-time use payment addresses. The stealth address is a parent public key to the recipient private address, which the sender can use to generate a new one-time use payment address for the transaction. The payment address is not linkable to stealth address by observer and the recipient is the only one who can calculate the one-time use secret key to the payment address.

### CoinJoin/Mixing

Mixing is a technique used to obfuscate the path from the sender to recipient. There are third party providers of mixing services for bitcoin users, or tumblers, that mix bitcoin transactions from a number of users together and send them out to different addresses. At this time this service is still provided via a third party, and thus requires an extra level of trust. CoinJoin has eliminated this middleman, allowing multiple parties to join a transaction. Senders and recipients are then mixed together and coins sent out to addresses making it more difficult to pair the original parties.

### Ring Signatures

The Ring Signatures technology hides the identity of the sender. It hides the sending address by creating a transaction attributed to a group of possible senders. Third parties can verify that a given transaction was signed by one of the members of the group, but cannot identify the exact one. The efficiency of this process depends on the number of addresses used for hiding the author, and how random they appear to be.

### Pedersen Commitments

The commitment approach grants users the ability to keep certain information secret. For example, the total number of ONIONS being sent can be kept private. In this scenario, the sender would commit to an amount but would not reveal the amount sent to the general public because the amount is anonymized by hashing the data on a blockchain. In order to reveal the information, the hash can be reproduced, Pedersen Commitments have an additional property, they can be added and the sum of a set of commitments is the same as a commitment to the sum of the data.

### Zero-Knowledge Proof

This technique is a cryptographic protocol allowing one party to prove that a statement is true without the need to reveal any other information. The Zerocash Protocol (zk-SNARKs) is built on this principle, converting coins into notes, which are shielded.

| Technology | Sender | Recipient | Amount |
|---|---|---|---|
| Stealth Address | 🔴 | 🟢 | 🔴 |
| CoinJoin | 🟡 | 🟡 | 🟡 |
| Pedersen Commitments | 🔴 | 🔴 | 🟢 |
| Ring Signatures | 🟢 | 🔴 | 🔴 |
| zk-SNARKs | 🟢 | 🔴 | 🟢 |

🔴 Provides no confidentiality

🟡 Provides limited confidentiality

🟢 Provides strong confidentiality

# Market

## Competition

The technologies described above only provide privacy for certain parts of a transaction when used alone. That is why privacy coins must use combinations of these methods to be effective. The three most well known privacy coins are Monero, Zcash, and Dash.

**Top Coins**

**Monero (XMR)**

Monero originated as a Bytecoin fork in 2014 and since then earned significant market share among privacy coins. In terms of market cap, it is the best performing privacy coin and its strong community coupled with its popularity among darkweb users helps XMR maintain its status as the most utilized and well-known privacy coin. In terms of technology, the sender privacy is protected by ring signatures, and recipient privacy is derived through the use of stealth addresses. To hide the transaction amount, ring confidential transactions are used.

Monero was facing the scaling issues due to a large transaction size, so they came up with a dynamic block size mechanism. It allows for adapting to the need of the network a and opens opportunities for further scalability, while controlling the growth rate of the block size. Removing the cap on the block size theoretically enables scalability up to one thousand (1,000) TPS, but that functionality is highly dependent on the hardware capabilities of the miners.

**Zcash (ZEC)**

Zcash implements the Zero cash protocol based on zk-SNARKs. This project forked from Bitcoin and builds on the principles of Zerocoin, speeding up the time to verify transactions. The technology is able to provide strong confidentiality and appears to be promising solution. Ethereum added solution enabling zk-SNARKs into its blockchain in Byzantine fork in September 2017 and verified a Zcash transaction on its testnet. The Zcash project is owned by Zerocoin Electric Coin Company which brings a level of centralization. However, it establishes an arena for partnerships such as the one with J.P. Morgan, which theoretically adds credibility to the project.

Zcash is not without drawbacks. Many commentators cite the fact that the privacy settings are optional a major disadvantage. The “shielded” transactions are not enabled by default and when fewer people opt for anonymity, it is easier for attackers to deanonymize ALL transactions. Also the speed, even if it is enhanced, is still restricted by the transaction size of 2kB. With average 2.5 minutes for 2MB block this allows for approximately 6.7 TPS.

**Dash (DASH)**

Dash, originally forked from bitcoin in 2014, leverages the Coinjoin technology while adding features to tackle the issues associated with the standard mixing solution. Dash’s large user base makes it a strong player in the privacy coin field, as it has the highest volume of all privacy coins. Unfortunately the actual proportion of truly private transactions is not known, as Dash also offers privacy as an option, not as a default. Dash's initial adoption was driven especially by its InstantSend option, which does not offer privacy features, but was highly scalable with up to one thousand (1,000) TPS.

Dash’s private option PrivateSend, using Coinjoin, is much slower, originally with 1MB block allowing for 28 TPS. After the fork, the block size increased to 2MB. This enabled doubling the number of transactions to 56 TPS.

# Market

## Competition

DeepOnion Comparison

The comparison of the performance of DeepOnion to the top three privacy coins is slightly biased, as DeepOnion is still in an early stage of the development. Currently, the privacy solution offered by DeepOnion is limited to the IP address obfuscation offered by TOR technology and the Stealth address. Privacy of the transactions and the amount will be provided after the launch of DeepSend (3Q18). This technology promises to combine previously mentioned solutions such as Zero-knowledge proofs, CoinJoin and Ring signatures. However, the development combining these technologies is yet to be seen.

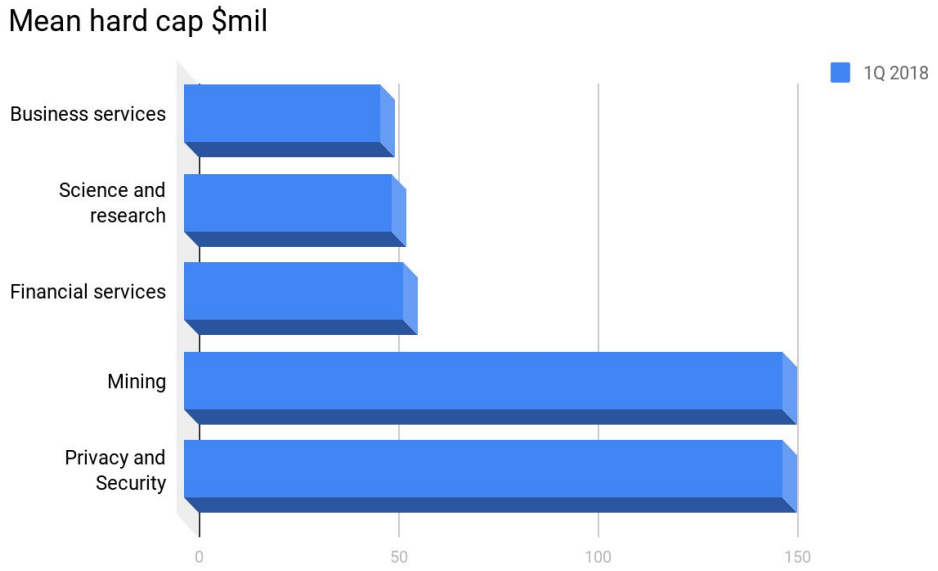
In order to provide a more accurate comparison to the "big three" privacy coins, the table below compares the current and future iterations of DeepOnion to Monero, Zcash, and Dash. The table provides a basic overview of what the Company states will be achieved for the DeepOnion network when DeepSend is implemented, but the overall impact of DeepSend remains unknown. A major issue is that it is not currently known what effect(s) it will have on the scalability of the network. In the current iteration, the transaction speed is 62.5 TPS, which means that DeepOnion network is performing well in comparison to all three coins and the scalability looks promising.

| | Zcash | Monero | Dash | DeepOnion now | DeepOnion with DeepSend |
|---|---|---|---|---|---|
| **Total supply** | 21 million | 18.3 million + tail emission | 18.9 million | 25 million | 25 million |
| **Block size** | 2 MB | dynamic | 2 MB | 1.5 MB | 1.5 MB |
| **Block time** | 2.5 minutes | 2 minutes | 2.6 minutes | 0.8 minutes | unknown |
| **Privacy technology** | zk-SNARKs zero proof protocol, Stealth address | Ring Signatures, Stealth Address, Pedersen Commitments | CoinJoin variant | TOR, Stealth address | TOR, Stealth address, Zero proof protocol, Ring signatures, CoinJoin |
| **Soundness depend on # of users** | No | Yes | Yes | No | unknown |
| **Privacy by default** | No | Yes | No | Yes | No for DeepSend |
| **Hides Sender** | Yes | Yes | Yes | No | Yes |
| **Hides Recipient** | Yes | Yes | Yes | Yes | Yes |
| **Hides Amount** | Yes | Yes | No | No | Yes |

# Market

## Demand

As the popularity of cryptocurrency increases, the effort to track cryptocurrency transactions has also increased. Governmental authorities are reacting to DLT-based payment systems quickly in an effort to regulate the entire industry. In response, the demand for transaction privacy is growing rapidly. Due to the inherent public nature of the ledgers of the most popular currencies, such as bitcoin or ether, there is a growing need for privacy coins in the cryptocurrency market. This has created a huge opportunity for private altcoins. The graphic below shows the top five (5) coin variants with the largest average hard cap from the Icorating ICO Market Research report. The Privacy and Security category is tied for first place with Mining Services, which indicate a positive trend of the category.




## Institutions

For regulatory agencies and governments in general, attractiveness of cryptocurrencies to criminals has always been a strong concern and is a common argument for increased regulation. The privacy solutions and privacy coins are understandably being monitored closely by such authorities, whose intent is to eliminate the transparency of transactions. In 2017, Bitmixer, popular bitcoin mixing service, suddenly shut down, despite turning a healthy profit. The link of Bitmixer to Alphabay, darknet market operating on TOR, was considered to be the reason. Alphabay was shut down in July 2017 by the US authorities.

The role of privacy coins in both incidents is worth noting. The Bitmixer administrator specifically mentioned coins such as Dash and Zerocoin as better suited for privacy while announcing the exit of the market. After the Alphabay's dismantling, investigators were not able to quantify the amount of Monero coins traded there.

This implies that even though the authorities aim for transparency, their regulatory power is limited and applicable mostly towards centralized third party service providers. It is getting more difficult to regulate decentralized coins that effectively implement the privacy solutions discussed in this report. Regardless of the increasingly sophisticated technologies that implemented, actual real world infrastructure will always remain a weak point for privacy coins, as regulators have much greater ability to enforce draconian regulations. An example is the recent discussion in Japan about restricting the trade of privacy-focused altcoins. Japan's Financial Services Agency has not issued an official plan yet, but it is pushing exchanges to drop coins such as Monero, Zcash and Dash.

# Strategic Analysis

### Strengths

DeepOnion's strength is its intense focus on technology to effectively and efficiently combine the existing privacy solutions. The fact that the network is built on TOR provides a strong initial line of defense for privacy, as it helps to neutralize ability to link personal information of users to their transactions by disguising their IP addresses. The addition of established cryptographic privacy techniques to TOR seems to indicate that DeepOnion will be a sound privacy solution.

DeepOnion further distinguishes itself by its relatively high TPS in comparison to other privacy coins. Finally, a great strength of DeepOnion is its community. The strategy of distributing the coins through Airdrops, not an ICO, fostered deep engagement among its users. The Vote central function is fostering co-creation, as well as the presence of DeepOnion on the Crowdholding platform.

### Weaknesses

As the project is still at an early stage, the final technology is not fully developed as of this time. Postponing the launch of DeepSend may signal complications with the tech, and until the privacy functionality is launched, TOR and Stealth address offer only a limited upgrade on privacy.

The Airdrop campaign ended in April, and as the Airdrop members were the drivers of the community, there is a danger of a recession. The team will now have to spend more in marketing to retain the online presence, and after the bounty fund is spent as well, those expenditures may increase even more.

The last weak point is the anonymity of the team. Together with limited information about the Company's headquarters, this may be a concern for some investors. The lack of clarity around the identity of the core members may lead to potential accountability issues, not to mention concerns that the project could be a false flag operation by a sophisticated governmental agency.

### Opportunities

The increasing demand for privacy coins is creating new opportunities to enter the market. As regulations tighten in response to the growing popularity of cryptocurrencies, users are turning to decentralized and anonymous solutions offered by privacy coins.

If DeepOnion succeeds in combining the verified technologies from the projects that are already proven to be effective (e.g. CoinJoin in Dash, zk-Snarks in Zcash), it can leverage the position of an integrator of the advantages of each technology. Working on the additional features can be promising as well. The private information storage offered by DeepVault and potential support of smart contracts could very well be the first steps towards building a holistic, private, secure, and totally anonymous financial ecosystem.

### Threats

The top players dominate the privacy coins market. A strong user base is crucial for the soundness of the most of the privacy solutions, which makes it difficult to gain significant market share. DeepOnion is going to have to offer additional features and solutions to succeed and justify the value of ONION.

Even though the regulation of decentralized cryptocurrencies is considerably complicated, there is the threat of governments disabling the centralised infrastructure providers, e.g. by forcing registered exchange services to remove or not list privacy coins. This would inevitably push the privacy coins to dark web and shade economy.

# Trading Analysis

While some may question the relevance that technical data has on the cryptocurrency market, as it is by no means a mature market so there aren't long timeframes to pull data from, historical correlation and volatility can still provide a more objective context for analysis.

The chart below shows the development of Market Cap (blue line), Price in USD (green) and BTC (orange). The grey area shows the 24 volume. The all time high was at the market cap $85M, price $18.76 and volume of $4.35M in 24 hours.

From Aug 13 2017 to Jun 08 2018


Source: Coinmarketcap

The trend of the ONION price and the market cap tends to follow the hype in the crypto world, showing strong correlation with bitcoin price movement, reaching the its peak prices in January 2018. After the peak, both price and market cap have been declining. The increase in market cap in the beginning of February was caused by an update in numbers after the rounds of Airdrops. The final Airdrops were in the second half of April 2018, when the market cap increased again, together with a slight increase in the price.

There are still 2.6 million in bounty fund to be distributed from the premined amount. After this, the price would depend solely on the demand for ONIONs on exchanges and the miners, who could mine the remaining 2.7 million ONIONs.

The final Airdrops in April raised concerns about the price dumps. Until the middle of May, the price did not drop significantly, but rather remained stable, oscillating around $2 per ONION. However, after May 15th the price and market cap has been dropping constantly.

## Suggestions for Investment

The future value of DeepOnion depends on if and how the company will be able to deliver the advanced technology outlined in the roadmap. The current technology is restricted to techniques that don't bring much new to the market of privacy coins. The market cap that the project has attained so far is based to a great extent on the overall crypto hype at the beginning of the year and the Airdrops campaign, which finished this April.

Currently, the investment in DeepOnion would thus be rather speculative. In the future, after DeepSend is launched, the real value of DeepOnion will be revealed. There definitely is a potential in the project, however, it is difficult to evaluate it in such an early stage of the development when the core value proposition is not finalized yet.

What also speaks against investment in this phase is the anonymity of the team. As the final Airdrop round finished, the question of how the team will be delivering is crucial. With a completely anonymous team and no information about the founders, it may be difficult to hold anyone responsible for completing the roadmap.

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