The Ahoolee project WhitePaper

Ahoolee is the world's first search engine dedicated to online shopping worldwide. Ahoolee uses a decentralized platform for open collecting and indexing information from open sources with confirmation of authenticity based on blockchain technology.

http://ahoolee.io/

https://ahoolee.com

The Issue of Finding an Item: A Short History

Search engines like Google or Yandex have been tailored to look for information on websites. When you are searching for products with the help of a search engine, you will usually get a list of websites that mention the product. However there isn't a single place where you can compare shops by price. You also cannot be sure that the product that you need is in stock because sometimes search engines find product pages with outdated information showing that the product is available, but in reality it is currently out of stock.

The next step in the development of online shopping was the advent of online marketplaces which were built in a number of ways.

1. Some online marketplaces, for example, Google.Shopping and Yandex.Market, were stemmed from search engines;
2. Other online marketplaces were built by large retailers, such as Amazon, Ebay, Ozon, etc.;
3. There are also independent online marketplaces, such as Alibaba or Goods.ru.

Online marketplaces have a number of disadvantages:

- Stores have to upload the data about their products to the marketplace on their own. If the store has not uploaded the information about the goods it has in stock to the marketplace, it will not appear there;
- Many stores do not meet the requirements of the marketplace. For example, some marketplaces require that stores label their goods with EAN bar codes, but many online stores do not have this information, which means that they do not have access to such marketplaces;
- Stores have to either pay for referrals to the marketplace site or pay a percentage of the sales. If there is no pay, there is no placement;
- There can be a discrepancy between the prices shown on the websites of the marketplace and the store. Marketplaces update prices with a certain frequency based on the data provided by the store itself; therefore, there is the possibility of fraud on the part of the store when it provides the marketplace with data that differs from that available on its website;
- There is also the product matching problem. In order to be sure that the store's product information will be included in the product card on the marketplace, the store has to write the name of the product in accordance with the name of the product used by the marketplace. Also, in some cases the name of the product categories used by the store has to be the same as that used by the marketplace. Otherwise, there is a chance that the product will not be found by customers.

As a result, there isn't a marketplace where the user could compare prices of any store over the Web. Many stores with fairly low prices are not represented in marketplaces because their economic performance does not allow them to pay marketplaces for traffic. Very rarely do stores have presence in many marketplaces; more often than not, they collaborate with one or two, which means that if you want to compare prices for an item, you also have to compare prices

offered by different marketplaces.

Let us have a look at a few examples. We are in Russia and decide to buy a Casio G-Shock DW-6900-1V watch. The lowest price in Russia now is 6,240 rubles, which is approximately equal to $110.
https://market.yandex.ru/product/3790183/offers?hid=91259&local-offers-first=0&deliveryincluded=1&how=aprice
At the same time, we can easily order this watch for less than $50 on Amazon:
https://www.amazon.com/gp/offer-listing/B000GAYQL8/ref=dp_olp_all_mbc?ie=UTF8&condition=all
And here is the opposite situation. A Casio G-Shock GST-W110D-1A watch can be bought for 15,095 rubles in Russia, which is equivalent to $266:
https://market.yandex.ru/product/12691526/offers?hid=91259&local-offers-first=0&deliveryincluded=1&how=aprice
However, you will not find it on Amazon for less $310:
https://www.amazon.com/gp/offer-listing/B0107PJIBO/ref=dp_olp_new_mbc?ie=UTF8&condition=new

Solution

The next step in the development of the market in our opinion is the development of a search engine specifically for e-commerce that would operate on the principles of a search engine. The results would be characterized by the automatic collection of information from the Internet, free placement in the system and constant data reindexing.

This being said, the platform should also have the main advantage of marketplaces, which is the ability to compare prices in all the stores using a single product card.

We have developed Ahoolee, a search engine for products aimed precisely at solving this problem.

The mission of our project is to enable any person to find any product on the Web, see ALL the shops where it can be purchased, and compare them by price.

We are for the full openness of information and we believe that information about stores, their prices and price changes should be open. However, we cannot trust any commercial company because it has its own commercial interests, so we store all the data on all the price changes in all online stores in the world in a decentralized way using the Ahoolee blockchain.

This instrument makes it possible to analyze the entire e-commerce market fully and it will be available to everyone.

In addition, Ahoolee's own cryptocurrency will enable users to purchase any items in all the stores represented on the platform. At the moment, Ahoolee's database contains more than 40 million SKUs, and the number grows daily.

The Mechanism of Ahoolee Tokens

Ahoolee tokens (AHT) are issued on the basis of Ahoolee's blockchain as an Ethereum fork.

Ahoolee tokens can be purchased through internal exchange integrated into the digital wallet using BTC or ETH, as well as USD, EUR and RUR.

Any AHT owner can purchase products using AHT in any store represented in the platform at the current AHT exchange rate to the currency used by the store. Any visitor to ahoolee.com will be interested in buying AHT, as this will give them an opportunity to get additional discounts from stores.

Miners do the parsing of product cards, and tokens are distributed among the miners proportionally to the work done. In order to verify the work done by the miners, we use the mechanism, which is described in detail in the Architecture of the Ahoolee Blockchain section.

In addition, our company pays assessors for the manual training of machine learning algorithms for product matching, paying remuneration in AHT. Any user can become an assessor and earn AHT not by means of hardware capabilities, but by means of manual labor.

Platform

The platform of the Ahoolee search engine consists of three main blocks: Parsing, Matching and Search.

Parsing
blockchain, proof-of-parsing

Matching
machine learning

Search
elasticsearch, machine learning
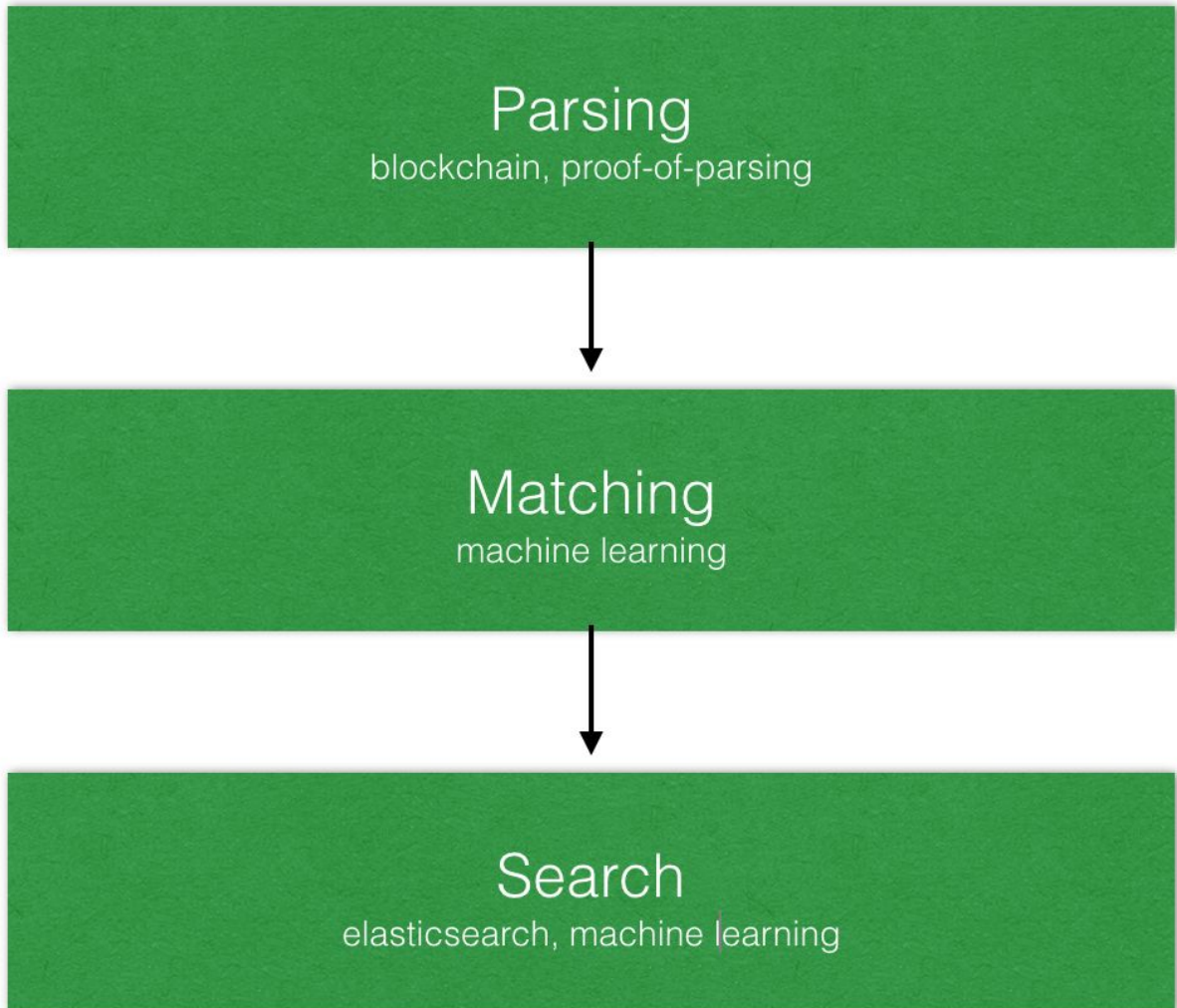
Parsing

In order to collect information from stores, we use a decentralized parsing method based on our own blockchain. The key tasks that we solve are keeping the information about prices up-to-date and providing the most detailed information about products. It is important not to create a DDoS attack on the store's website; for this reason, the fact that the price is up-to-date is confirmed based on smart contracts by a limited number of miners.

Matching

Information about products that has been collected from stores is processed by machine learning algorithms in order to consolidate the information about the same product sold by different stores in a single product card. Training data are marked by assessors. In this way we solve the issue of the incompleteness of information on products sold in different online stores. Our system does not rely on product categories in its search, which is why the way a store builds its category tree makes no difference.

Search

At the moment, the engine of the Ahoolee search engine is based on Elasticsearch, as well as some heuristic techniques designed to improve the quality of search results. As more and more statistical data will be accumulated from users' search requests, we plan to rank search results using machine learning methods, such as gradient boosting and neural networks.

Users Benefits

Price comparison

Ahoolee users can compare prices for the selected product using the product card information:

History of price changes

As prices are kept up-to-date using the blocking technology, all price changes are recorded in the blockchain. Thus, it will be possible to track all the price changes for all items in all online stores. This will enable the user to see if the store has deliberately raised the price before making a discount when there are, for example, such major sales as Black Friday.

As for businesses, this will enable them to analyze the e-commerce market. Stores will be able to use this data for dynamic pricing. Manufacturers will be able to analyze changes in prices for their products in time. Companies engaged in analytics will be able to do market research relying on real data from all stores.

Purchase history

The data on all the user's purchases made in AHT will also be stored in the blockchain. This will enable users to see such details about their purchases as the date, the name of the product, and the name of the store at any given time. This will save the user from having to keep a huge number of paper documents and will also make it possible to see if the warranty is still valid.

Market and Industry

In 2016, the global retail e-commerce sales amounted to $1.915 trillion. They are expected to increase to $ 4.058 trillion.

Retail e-commerce sales worldwide from 2014 to 2020 (in billion U.S. dollars)

Sales in billion U.S. dollars

Year	Sales
2014	1,336
2015	1,548
2016	1,915
2017*	2,352
2018*	2,860
2019*	3,418
2020*	4,058

Source:
eMarketer
© Statista 2017

Additional Information:
Worldwide; eMarketer; 2014 to 2016

statista

* https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/
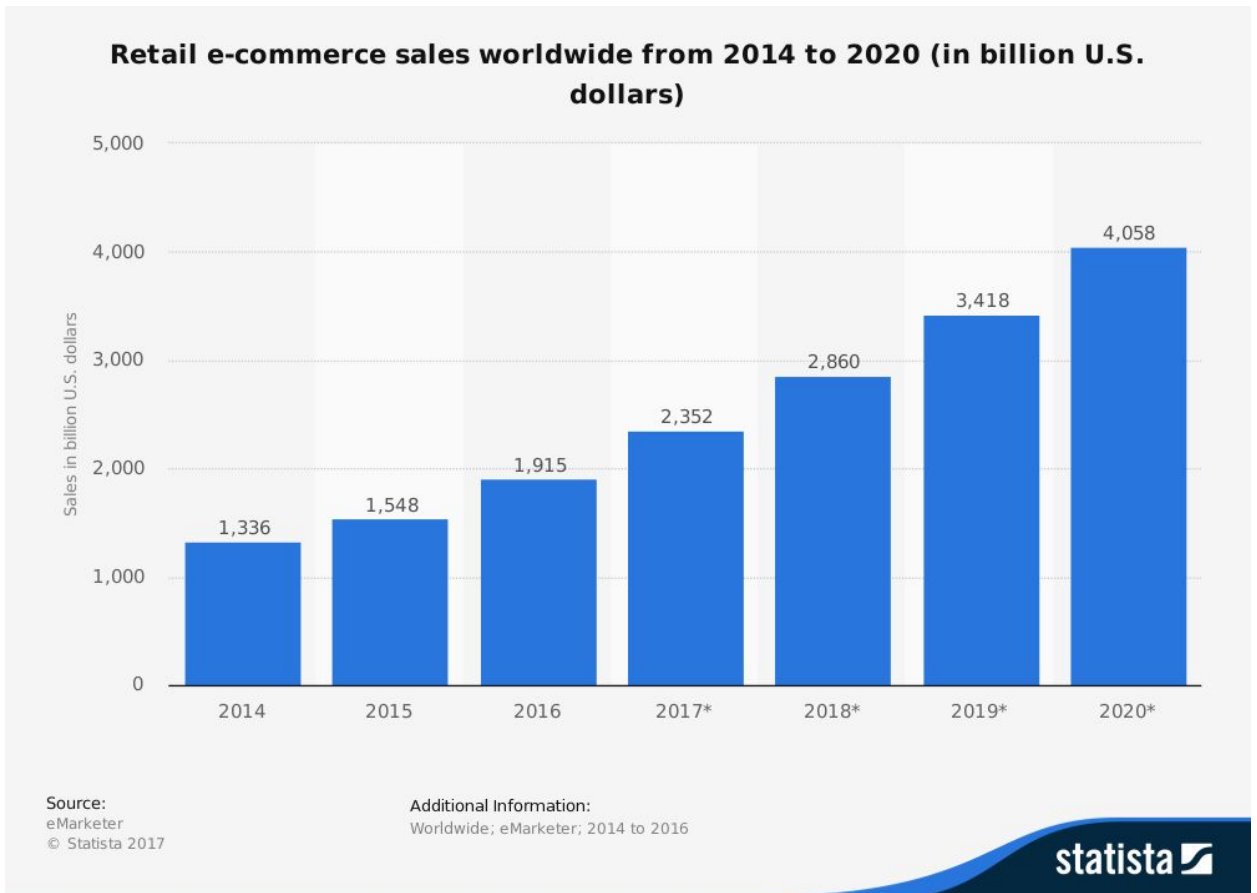
Search engines and commodity marketplaces

The largest marketplace in the world is Amazon. Its revenue exceeded $125 billion in 2016.

Global net revenue of Amazon.com from 2014 to 2016, by segment (in billion U.S. dollars)

* https://www.statista.com/statistics/672747/amazons-consolidated-net-revenue-by-segment/
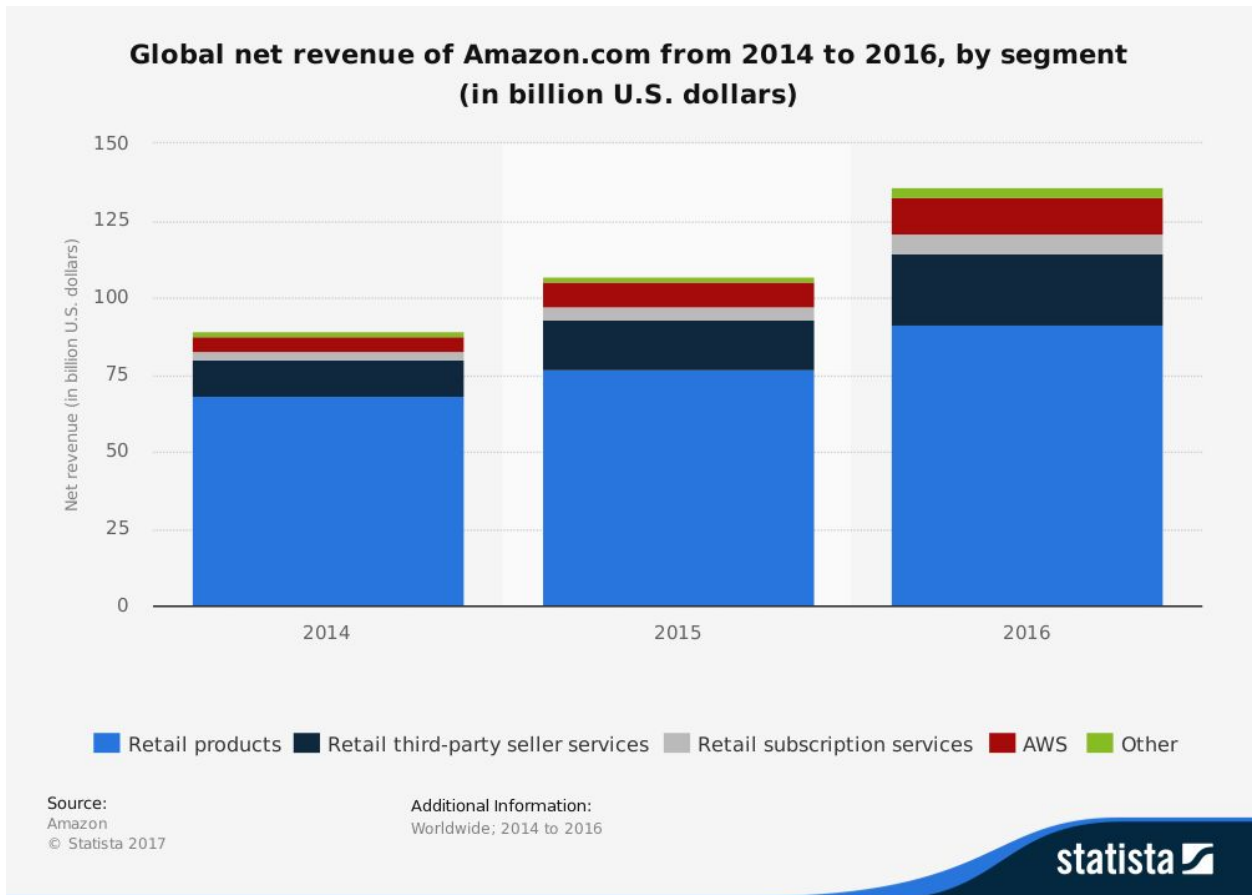
The largest holding company in China is Alibaba Group.

Annual revenue of Alibaba Group from 2010 to 2017 (in million yuan)

Net revenue in million yuan

Year	Value
2010	6,670
2011	11,903
2012	20,025
2013	34,517
2014	52,504
2015	76,204
2016	101,143
2017	158,273

Source:
Alibaba
© Statista 2017

Additional Information:
China; Alibaba; 2010 to 2017; Fiscal year ending March 31

statista

* https://www.statista.com/statistics/225614/net-revenue-of-alibaba/

The Ahoolee search engine is an alternative format of an open search engine where stores do not pay for their placement in the system and neither do they upload their data to the system as the search spider collects data from the Web automatically.

Ahoolee Monetization

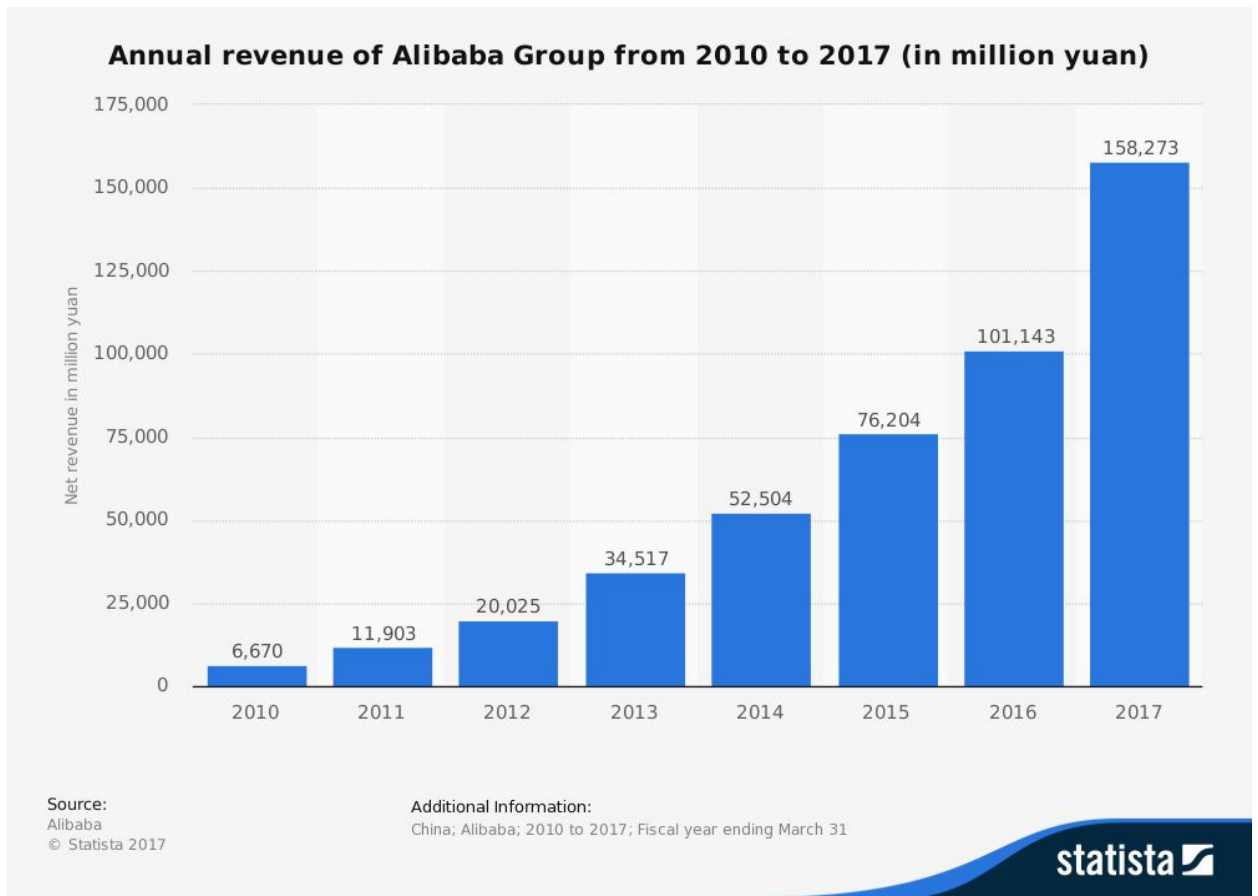The price for the Gold Supplier membership in Alibaba starts at $5000 per year. Using this price as a benchmark, the Ahoolee search system can receive more than $5 million per year from every thousand stores that have bought a premium account.

In addition, sales generated by contextual advertising will bring in additional profits based on the size of internal auction bids. If the cost of pay per click according to retail categories in Adwords is $0.10 and the estimated website traffic is 1,000,000 visitors per day, contextual advertising can generate an additional profit of $10,000 per day, which makes $3,650,000 per year.

Roadmap

Currently, the Ahoolee search engine is available at https://ahoolee.com, and the search engine database contains over 40 million SKUs.

July 2017:

- the Ahoolee pre-sale campaign;

July - August 2017:

- the preparation to public launch of the Ahoolee search engine;
- the marketing and preparation to Ahoolee ICO seed-round;

28th August 2017:

- the public launch of the Ahoolee search engine;
- ICO seed-round;

4th quarter 2017 - 1st quarter 2018:

- the development of the in-house blockchain as an Ethereum fork;
- the launch of mining on the in-house blockchain;
- the development of wallet;
- an increase in the number of SKUs in the system to 1 billion;
- an increase in the number of stores in the system to 50 000;
- the launch of the Assessor's area for training matching algorithms;
- the marketing of the Ahoolee product in a few countries;
- the launch of contextual advertising for stores using the platform;

April 2018:

- the ICO launch;
- Ahoolee will start accepting AHT as a means of payment in any stores available in the Ahoolee search engine;
- the launch of premium store accounts;
- the marketing of the Ahoolee search engine all over the world;

Ahoolee Tokens: Issuing

Fundraising and the issuing of Ahoolee tokens are aimed at financing the marketing and advertising of the Ahoolee search engine, as well as the development of Ahoolee's in-house blockchain, which is used for keeping prices in the system up-to-date. Ahoolee tokens will be used to pay for products in any stores included in the system.

A total of 100 million Ahoolee tokens will be issued.

20 million will be kept by the Reserve Fund to pay miners and assessors. These tokens will be kept in multi-signature wallets.
10 million will be kept by the Ahoolee Fund for the team and partners and in order to hire new staff and develop the project further over the next 5 years. These tokens will be kept in multi-signature wallets.

ICO would be launched in a few steps:

1. Pre-sale (July 2017).

On Pre-sale round would be sold 10 million AHT. Cap - $200,000. Price 1 AHT = $0.02

Cash will go to preparation of public launch of Ahoolee search engine and to marketing and preparation of ICO seed-round.

2. ICO seed-round (28th August - 11th September 2017).

On ICO seed-round would be sold 25 million AHT.

Soft Cap - $1,000,000

Cap - $3,750,000

Hard Cap - $10,000,000

Price 1 AHT = $0.15 - $0.4

Cash will go to development of in-house blockchain as a fork of Ethereum, to wallet development, to mining launch and to product marketing. In 6 months we'll increase the number of SKUs in the system to 1 billion and the number of stores in the system to 50 000. Also we'll develop and launch an assessor cabinet to teach machine learning matching algorithms. Not less than 20% of funds will go to product marketing in a few countries.

3. ICO (April 2018).

On ICO would be sold 30 million AHT. Cap - $50,000,000. Price 1 AHT = $1.66

Cash will go to global marketing, sales scale to sell premium-accounts and contextual advertising for stores. Ahoolee will start accepting AHT as a means of payment in any stores available in the Ahoolee search engine.

Our Team

The Ahoolee team has more than 10 years of experience in the field of e-commerce. Moreover, we have more than 5 years of experience in the field of working with Big Data and machine learning.

We have done a few successful pilot projects with Yandex.Market and Goods.ru aimed at introducing the product matching technology to these marketplaces.

There are twelve people in the project team.

Key members

Sergey Ryabov, CEO. Sergey has been engaged in online projects since 2001. He has developed and launched a number of online projects, among which are a contextual advertising system, a domain name registrar, a content recommendation startup, and a web studio. All these products were successfully sold to partners and other larger companies. After that, a few online stores (prestigewheels.ru and sportmanya.ru) were launched. This was when the founders faced the problem of monitoring stock on hand and solved it by creating the miiix.org service. After

selling the online stores, Sergey focused on the Miiix project. The project received the Startup Award of the Year 2013 in Russia and continues to be developed. In 2017, the project will be integrated with SAP Hybris with the aim of using product matching algorithms in major global marketplaces and retailers. In 2016, together with Dmitry Kostygin, a major shareholder in Ulmart, Sergey created Smallhorse.ru, a platform aimed at retailers for selling stock products.

Dmitry Bereznitsky, CTO. Dmitry is CTO and partner in the Miiix and Smallhorse projects. Since 2006, he has been developing a system of affiliated stores for attracting traffic to major marketplaces such as Amazon. Dmitry has more than 15 years of experience in commercial web development and more than 10 years of experience in e-commerce. He has been managing development teams for more than 7 years. He is an evangelist for the Agile methodology, Lean Startup and the Theory of Constraints.

Vitaly Mengeshev, COO. Vitaly is COO and partner in the Miiix and Smallhorse projects. He is one of the instructors of the accelerator program at such startup accelerators as IdealMachine and Skolkovo. From 2002 to 2012, he established and actively developed his own clothing brand. He joined the Miiix team in 2013 and took over operational management and business development.

Aleksandr Vasilev, Data Scientist, Mathematician, Statistical Analyst. Alexander has extensive experience in developing systems for predictive analytics and data analysis in such areas as insurance, banking and e-commerce. As a member of the team, Alexander successfully deals with solving the product matching problem, which arises from collecting data from various data sources, using the latest developments in the field of machine learning.

Sergey Morozov, Backend Developer. Sergey has more than 7 years of experience in developing. He is a systems architect and database administrator working with various types of databases. He has been engaged in building systems with high load. Also, he participated in developing an SaaS service for more than 800,000 users. He has taken part in the development of a large number of systems for data processing, from systems aimed at copywriters to financial accounting systems. He is a longtime fan of the blockchain technology.

Evgeny Prigornitsky, Backend Developer, Mobile Developer. Evgeny has 10 years of experience in commercial development. He has taken part in the development of payment systems, ERP, and mobile applications (iOS, Android, Windows Phone). He has been engaged in real-time operating systems with high load. He also has extensive experience in database design.

Roman Travnikov, React/Redux Front End Developer. Roman has more than 6 years of experience in commercial development. He has an extensive list of projects implemented, varying from corporate sites to websites of state-owned enterprises, ministries, and large banks. Over the last year and a half, he has been working on the Miiix and SmallHorse projects. He uses advanced technologies in development to ensure that the services perform at their best.

Sergey Mikheev, System Administrator and Architect. Sergey started working with cryptocurrencies and the blockchain technology in 2016. Prior to that, he worked as a technical expert on the implementation and support of ERP and databases at large production sites.

Terms and Conditions

This document is for informational purposes only and should not be considered as an offer to sell shares or securities using the Ahoolee platform or any other affiliated company.

Ahoolee tokens do not grant the right of control.

Owning Ahoolee tokens does not give their holder the right of ownership or the right to property in Ahoolee. While the community's opinion and feedback can be taken into account, Ahoolee tokens do not give their holders any right to participate in decision making concerning the development of the Ahoolee search system. Ahoolee tokens can be used to purchase items in stores included in the Ahoolee search system, as well as to pay for contextual advertising or premium accounts.

No guarantee of income or profit

All the examples of income and profits calculation used in this document are given for demonstrative purposes only or for showing industry averages and do not constitute a guarantee that these results will be obtained according to the marketing plan.

Regulatory uncertainty

Blockchain-related technologies are subject to supervision and control by different regulatory bodies around the world. Ahoolee tokens may fall under one or more inquiries or actions on their part, including but not limited to imposing restrictions on the use or possession of digital tokens such as Ahoolee tokens, which may slow or limit the functionality of the system or the process of purchasing Ahoolee tokens in the future.

Ahoolee tokens are not an investment

Ahoolee tokens are not an official or legally binding investment of any kind. Due to unforeseen circumstances, the objectives set forth in this document may be amended. Despite the fact that we intend to reach all the goals described in this document, all persons and parties involved in the purchase of Ahoolee tokens do so at their own risk.

Quantum computers

Technical innovations, such as the development of quantum computers, may pose a danger to cryptocurrencies, including Ahoolee tokens.

Insufficient use

Despite the fact that Ahoolee tokens should not be considered as an investment, they can gain in value in the course of time. They may also fall in value if they are not actively used in the Ahoolee system.

Risk of loss of funds

Funds collected during the ICO procedure are not insured. In the event of loss or loss of value,

there is no private or public insurance representative whom the buyer could address.

Risk of Failure

It is possible that for various reasons, including but not limited to the failure of business arrangements or marketing strategies, that the Ahoolee search system and all subsequent marketing activities related to the funds collected during the ICO procedure may be unsuccessful.

The risk of using new technologies

Crypto tokens, such as Ahoolee, are a fairly new and relatively untested technology. In addition to the risks mentioned in this document, there are additional risks that the Ahoolee team cannot predict. These risks may emerge in other forms rather than those indicated here.

Integration

This Agreement constitutes the entire agreement of the parties with respect to the subject matter hereof. All previous agreements, discussions, presentations, warranties, and conditions are combined in this document. There are no warranties, conditions or agreements, express or implied, between the parties, except as expressly provided in this Agreement. This Agreement may be amended only by a written document duly executed by the parties.

Disclaimer of Warranties

You agree that your use or inability to use Ahoolee tokens is solely at your own risk and you remove all responsibility from the Ahoolee Foundation. Since the date of issue, Ahoolee tokens will be sent to you without warranty of any kind, either express or implied, including all implied warranties of commercial value for a particular purpose without violating anyone's intellectual property rights. As some jurisdictions do not allow the exclusion of implied warranties, the above exclusion of implied warranties may not apply to you.

The Architecture of the Ahoolee Blockchain

How the Ahoolee system works:

1. When adding a new store to the system, the search spider collects all the necessary information about products from it. This information appears on https://ahoolee.com in real-time mode.

2. When the user accesses the product card, the time of price update is checked and if the information is considered out-of-date, a transaction is created to update the price and receives the In Process status. A transaction is a set of urls for updating the price plus a smart contract for parsing.

3. The first stage: miners search for a hash that gives the right to parse information and sign a smart contract.

4. The first miner who has found the hash parses the necessary data, generates public and private keys, and then attaches the public key and encrypted data to the smart contract. Encryption is done so that the executors of the smart contract do not know about the data received by the first miner and cannot forge the information without parsing. Thus, the executors of the smart contract (from the 2nd to the Nth miners who found the hash) also parse the data by the addresses present in the transaction, encrypt them with the first miner's public key, transfer the data to the smart contract and sign it.

5. After receiving N signatures, the data from the smart contract are decrypted and checked by the first miner and if all the data from the parsers are the same, the smart contract is closed and the transaction gets the Pending status.

6. The second stage: at the same time, the miners collect all the transactions that have the Pending status, make a block out of them and search for a hash in order to add the block to the blockchain.

7. After the block is added to the blockchain, the fee is paid, and the tokens are distributed among the miners who signed the smart contracts and the one who created the block and added it to the blockchain.

8. The updated product prices are displayed on https://ahoolee.com.

In order to prevent DDoS attacks on sites, the complexity of the first and second stages is adjusted depending on the frequency of requests.

In order for identical items from different stores to be collected in one product card, we use machine learning algorithms for product matching. Our team has extensive experience in this field as we have been providing this service to online stores in the form of the Miiix SaaS service from 2012.

We also want to provide assessors with an opportunity to earn our tokens. Their task will be to check if the data obtained from parsing match. Since there is a human factor involved, there is a possibility of error, so we will use several people's signatures with the aim of avoiding errors. That is, for the system to accept the link between products as correct, it will be necessary to have 4 out of 5 matches for this product from assessors. In order to avoid fraud on the part of unscrupulous workers, the system itself distributes assignments for matching among different accounts. The system pays a reward with our tokens for manual matching, depending on the amount of work done.