REVAIN

Full
WHITEPAPER

New generation feedback platform
based on the blockchain technology

Contents

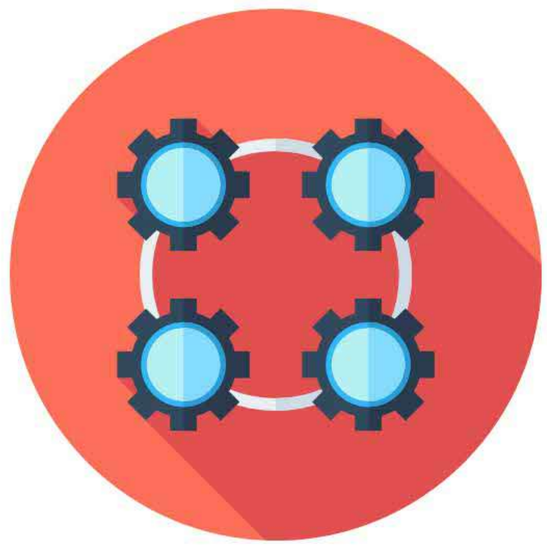
Abstract

This document describes the Revain platform, which allows users to discuss various projects that have successfully carried out an ICO. Our goal is to create an easy-to-use service that would enable companies to receive constructive feedback about their projects. Meanwhile, users will be able to share their experience and learn from the experience of others.

Revain is the first review platform that implements the blockchain technology in order to ensure feedback legitimacy and as a backbone for the economic model which ensures that all feedback is genuine and legitimate.

Fragments of reviews are saved in the blockchain, which guarantees that those comments can't be edited at a later date. The internal token of the system, called RVN, helps motivate participants to take their reviews and all related actions seriously.

In the beginning we plan to work with companies that have already completed their crowdfunding or ICO phase, as well as cryptocurrency exchanges. Later on, we plan to expand by accessing the Gaming, E-commerce, FMCG and Booking markets.



Introduction

A review site is a website on which reviews can be posted about people, businesses, products, or services.

Wikipedia "Review site"

The first review sites emerged as early as in the 1990s, the pioneer being **Epinions.com**[1], founded in 1999. The project had a broad focus, participants could write reviews for music, toys, computers etc. Over time, platforms focusing on a narrow range of goods or services began to emerge, the most prominent examples being Yelp.com[2] (restaurants), TripAdvisor[3] (hotels), Rotten Tomatoes[4] (movies) and Angie's List[5] (small and medium businesses).

Name	Segment	Company value	Alexa rank	Trading on stock
Yelp	Restraunts	2 200 000 000 $	201	NYSE
Rotten tomatoes	Films	658 000 000 $	441	No
TripAdvisor	Hotels	6 200 000 000 $	238	No
Angie's list	Local business	677 000 000 $	4984	NASDAQ

The goal of such platforms is to make it possible for the people to share their opinions on goods and services. In many cases these websites help businesses gather feedback from their customers.

However, even though this field has been present for over 20 years, a number of fundamental problems remain unsolved.

1 http://www.epinions.com/
2 https://www.yelp.com/
3 https://www.rottentomatoes.com/
4 https://www.tripadvisor.com/
5 https://www.angieslist.com

Introduction

These problems can be divided into two groups.

How can participants be sure that the reviews are not being edited or deleted?

When users post a review, they trust that the platform will not change, edit or delete it. The problem we are facing here is a problem of trusting a third party.

How can a company be sure that reviews are being written by genuine clients and not competitors?

Doubtlessly, reviews on the internet are important and can impact the image of a company. Besides the obvious function of feedback, reviews affect the popularity of the business among new and potential clients. This eventually attracts competitors who will try to tarnish the reputation of this rival. Meanwhile, companies have no way of knowing for sure who writes the reviews.

Second problem - Economical

User motivation

Writing a quality review is not a simple task. It requires time and effort, it involves detailed descriptions of the pros and cons of a product and a conclusion. In the light of this, the following question arises: "What does the author of the review receive as a reward for their efforts?" Of course, there are people who do not need to be motivated to write a review, and yet the majority of users would prefer to be compensated for their time.

Review credibility

If there is no incentive to write reviews, could it be that some parts of reviews are created by means of artificial intelligence? Nowadays it is not impossible to use artificial intelligence to generate several hundred of short texts that would look like they were written by a human, or simply just buy reviews.

Our platform implements several innovative technologies, most of which are based on the blockchain technology. Smart contracts let us publicly save thousands of reviews, thus making it impossible to delete or modify them. Our economic model involves the R and RVN tokens and helps motivate users to leave only genuine feedback. In addition, we use mathematical formulas for calculating bonuses that make submitting fake reviews economically unprofitable.

Economical aspects

This section explains the functioning of the Revain platform from an economic standpoint. A market analysis is provided along with reasons for using the two tokens and the mechanics for conversion between R and RVN. In the end we present schematics for user-to-platform and company-to-platform interaction.

Market analysis

During the first stage of development our clients will be mainly companies that have completed a successful ICO and their investors. According to Coinmarketcap, during the summer of 2017 there were already more than 970 different tokens and currencies. Around 15% of those were created using funds raised in the process of an ICO.

According to our analysis, there are roughly 8,000 investors per ICO, which means that even now our client base consists of around 150 projects and 30,000 users (given that at least 50% of the clients are participating in only one ICO at a time).

Name	Segment	ICO value ($, by the end of ICO)	Current market cap (BTC)	24h volume	Number of backers
SONM	Decentralized calculations	42 000 000 $	-	74 BTC	11 790
Brave	Browser	73 000 000 $	-	-	130
Status	Messaging	64 000 000 $	40 100	1600 BTC	20 462
Aragon	Prediction market	25 000 000 $	27 900	200 BTC	5 597
MobileGo	Gaming platform	50 000 000 $	27 400	130 BTC	-
Golem	Super computer	8 200 000 $	99 600	2500 BTC	41 289
Gnosis	Prediction market	12 500 000 $	92 100	645 BTC	2 694
Civic	Proof of identity	33 000 000 $	-	-	-

Economical aspects

The amounts raised can range from $1, 5 million to $100 million per ICO on average. We should also take into account the non-transparent legal status of many companies and the almost complete lack of control from most governments.

In this situation, our product is capable of providing proper means of communication between post-ICO companies and investors.

Two tokens (R and RVN)

Our project is different from most other blockchain projects since two tokens are required for the system to function properly. By using both tokens it is possible to create a less volatile token which can be used as an internal mechanism vital to the functioning of the platform.

Token R will be used to gather funds during the crowdfunding, as well as a currency for exchange trading later on. Judging from the experience of other blockchain projects, this token will be highly volatile due to the speculative nature of the market nowadays. (The data presented below is relevant as of July 2017).

Name	Segment	Avg. volume per June ‘17 (24h)	Max change per month (BTC)	Change for all time
Stellar	Instant payments	1 400 BTC	2 053% ↑	22% ↑
ZCash	Secure payments	7 300 BTC	99% ↓	98% ↓
Ripple	Settlement network	31 000 BTC	1 100% ↑	50% ↑
AntShares	Smart assets platform	5 400 BTC	1 368% ↑	806% ↑
BitShares	Exchange	13 700 BTC	671% ↑	157% ↑

Economical aspects

The RVN token will be used exclusively inside the Revain system. This approach allows for a stable exchange rate. All interactions between the platform, users and companies is based on this approach, specifically:

- Rewarding users for quality reviews;
- Debiting companies (in tokens) for written reviews;
- Penalizing companies for deliberate unconstructive moderation of reviews;
- Penalizing users for noncompliance with the Rules of the platform.

Tokens conversion

R tokens are created in a limited supply during the crowdfunding phase, while RVN ensures the functioning of the whole system. We understand, that as more and more people use our platform, the demand for the R token will become higher than the supply (since the number of R tokens is limited), and it's price on exchanges will start to grow. Since the reason for the creation of two tokens is ensuring the stability of the RVN exchange rate, the main requirement for the conversion is the possibility of leveling volatility. The currency rate of RVN should not be affected by the market and the rate of the R token in particular.

To accomplish this, we have decided to make 1 RVN equal to 1 USD. Exchange of tokens at any time will be executed based on the following formula:

$$1\ \text{RVN} = (1\ \text{USDT} + 1\ \text{USDC} + 1\ \text{TUSD})/3$$

Token exchange will happen within the platform, no fee shall be charged. RVN token will not be available on exchanges, but users will have the ability to withdraw their rewards using R token.

Economical aspects

Company usage

We focus on providing companies with quality feedback from customers. And since the user needs to be motivated to give quality feedback, the company's account is debited for each review received. This fee is called **Review Fee (RF)** and consists of two parts:

Review fee (RF) = User reward (UR) + Platform fee (PF)

Platform fee - a fee paid to the platform. It is our main way of monetization.

User reward - a (possible) reward for the user for writing a quality review.

The amounts of **PF** and **UR** are calculated every time when a review is submitted. Calculation mechanics and formulas are listed below (**UR** formula is above in the section "User usage").

Revain fee

While developing the RF formula we had to address two issues:

1. Develop a model that would make the purchase or artificial generation of big amounts of reviews economically unprofitable.
2. Develop a system that would allow small companies to afford to reward users for reviews.

We were able to find solutions thanks to the nonlinear dependency of **RF** on the total number of reviews written in the past two weeks. The overall trend is the following - the more reviews there are, the bigger the value of **RF**. Two weeks after the submission of the last review a rollback will occur, setting **RF** at its minimal value:

The maximum value of **RF** is limited to 10 RVN, otherwise the total value of **RF** would be bigger than the value of the whole emission after only 200 new reviews have been submitted.

$$RF\ (x=\text{review number per last 2 weeks} = \begin{cases} \lceil \left(\frac{e}{2,65}\right)^{-1+x} \rceil & \text{RVN, } x < 90 \\ 10\ \text{RVN, } x \geq 90 \end{cases}$$

Economical aspects

The total amount of RF depending on the number of reviews in the past two weeks can be calculated with this formula:

$$\text{Total amount of tokens per } k \text{ reviews} = \sum_{n=1}^{k} \text{RF(n) RVN}$$

Here are a few examples. (The RVN/BTC exchange rate is calculated as 1/0,0001). It is supposed that all reviews have been added in the past two weeks:

Amount of reviews	Total (RVN)	Total (BTC)
10	12	0, 0012
50	100	0, 01
100	444	0, 0444
500	4444	0, 4444

Our platform is also different from other similar projects since we allow companies to set up their own metrics for assessing review quality. For example, a restaurant might require their reviewers to attach a photo of a waiter standing next to a table. If no photo has been submitted, the review will be rejected during automatic filtration.

User usage

Users are motivated to write quality reviews by the possibility of token rewards taken from the company's account. This amount is taken from the Revain fee and is calculated with the following formula:

$$\text{User reward} = (0{,}9 * \text{Revain fee})$$

Currently a user is allowed to submit up to 5 reviews per day. In the future we plan to implement user ratings, which will allow some users to submit more reviews per day based on their posting history.

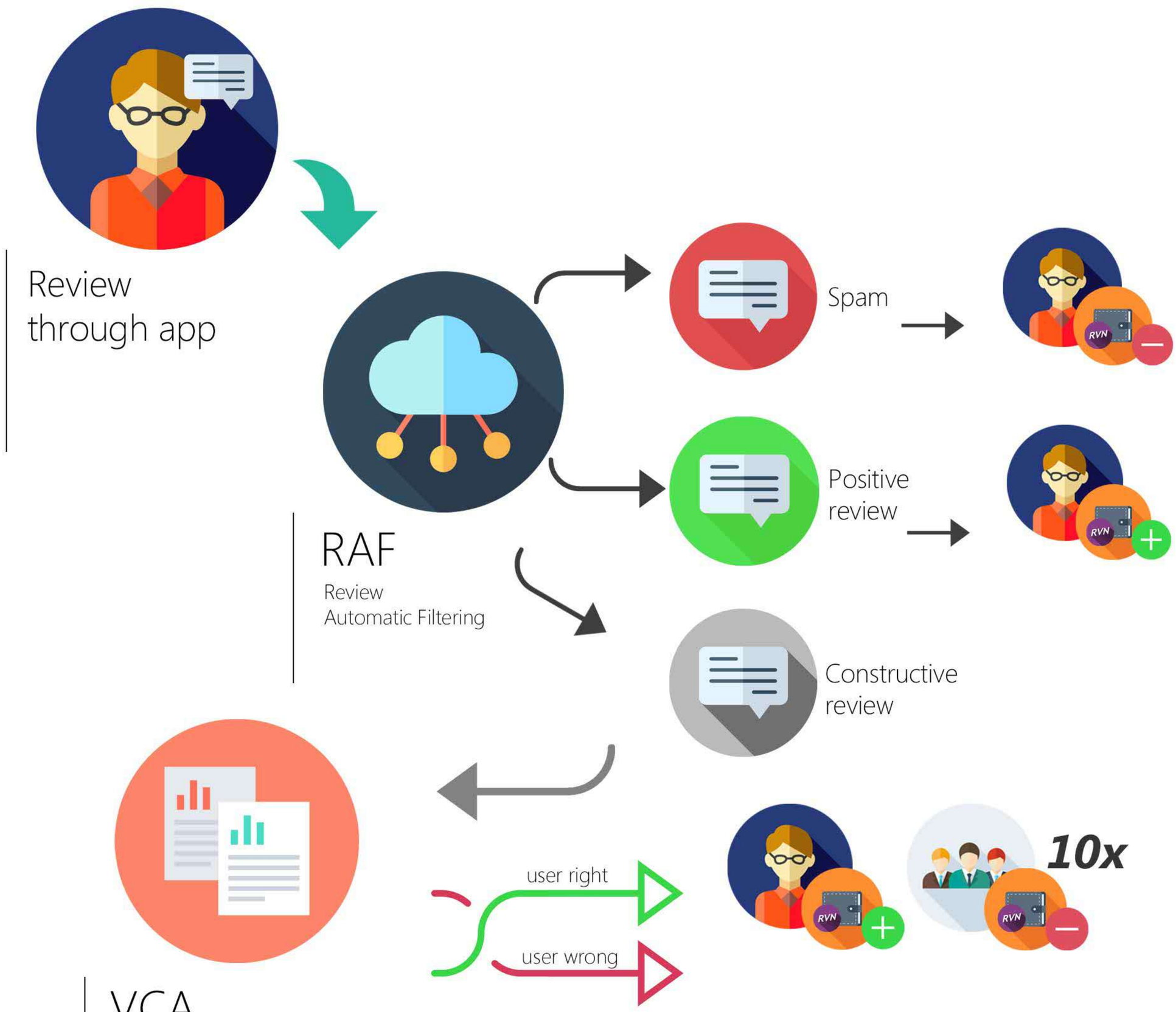
In the end, all users get equal rewards for writing reviews. Rewards are being sent out once every two weeks – the amount of reward tokens is being divided by the total number of users being rewarded.

The remaining 10% are called ***Platform fees*** and go to the platform. Users receive a reward only if a company approves their review.

Economical aspects

If a user believes the company should not have rejected their review, they can file a dispute. In this case, the dispute will be handled by a decentralized system of "oracles". Oracles are users with high reputations within the platform. In case the user was able to present proof, they receive a reward, and the company receives a warning is penalized for 10 x RF. A company may receive a total of three warnings, the fourth will lead to the company being blocked from using the platform.

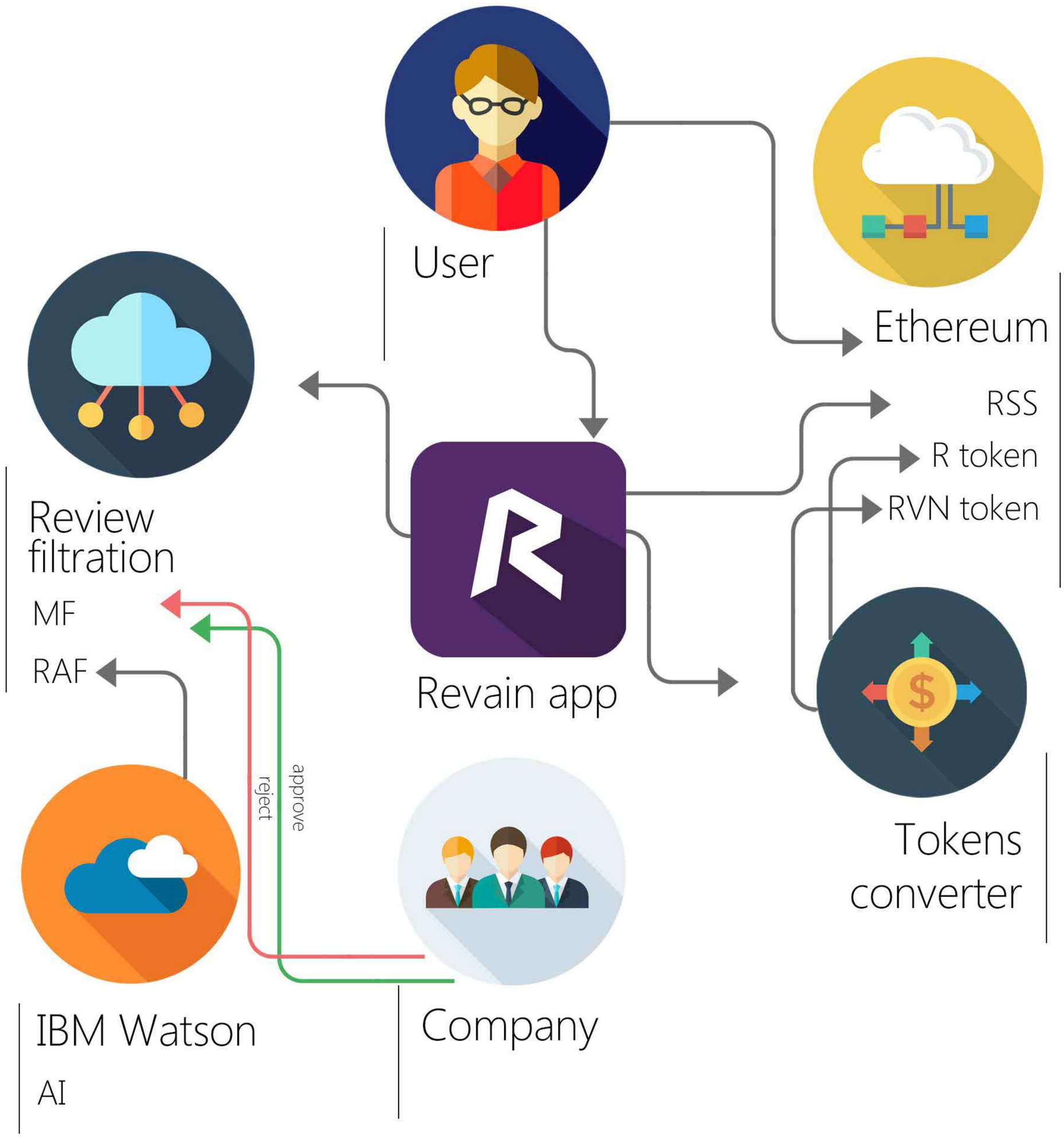
A user can also receive a warning. This can happen in two cases. The first case is if three of the user's reviews in a two-week period get rejected by the automatic filtration system. The second is if five of the user's reviews have been rejected by companies in a two-week period. The fourth warning leads to the user being blocked from using the platform without being able to withdraw their funds.



Technical side

This section explains the functioning of the Revain platform from a technical standpoint. The mechanism for double filtration of reviews is described in detail along with the tool for automatic filtration that uses the IBM Watson AI and the manual review filtration mechanism, as well as possible course of events.

In the last paragraph, we explain our method of storing reviews in the blockchain, which guarantees the impossibility of editing or deleting them and the overall transparency of the system.



Technical side

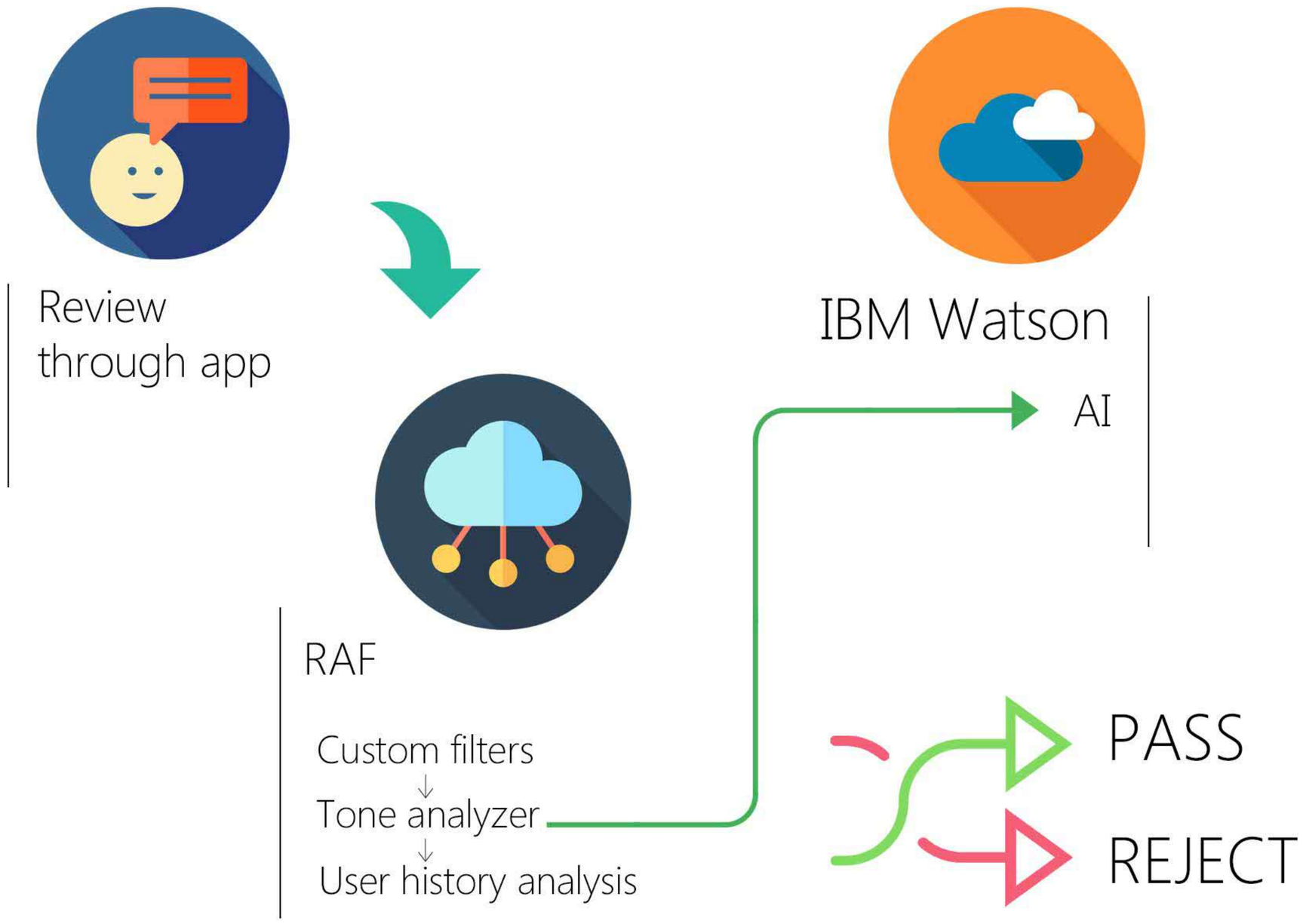
Review filtration

A review filtration mechanism was vital for our platform. The biggest difference between our filtration method from the methods implemented by other review sites is that the verification process does not require the involvement of a third party. It consists of two stages - machine moderation performed by the AI, and manual moderation done by the company. This method guarantees that Revain employees do not get involved in the moderation process.

Review Automatic Filtering (RAF)

After submission, each review first has to go through automatic moderation. This system is based on machine learning and neural networks. Similar systems are already implemented by several big companies, such as Instagram[6], Yandex.Market[7] and VK[8].

We cannot disclose the process in detail for security reasons. We only reveal it partially in order to prevent malicious users from bypassing our filters.



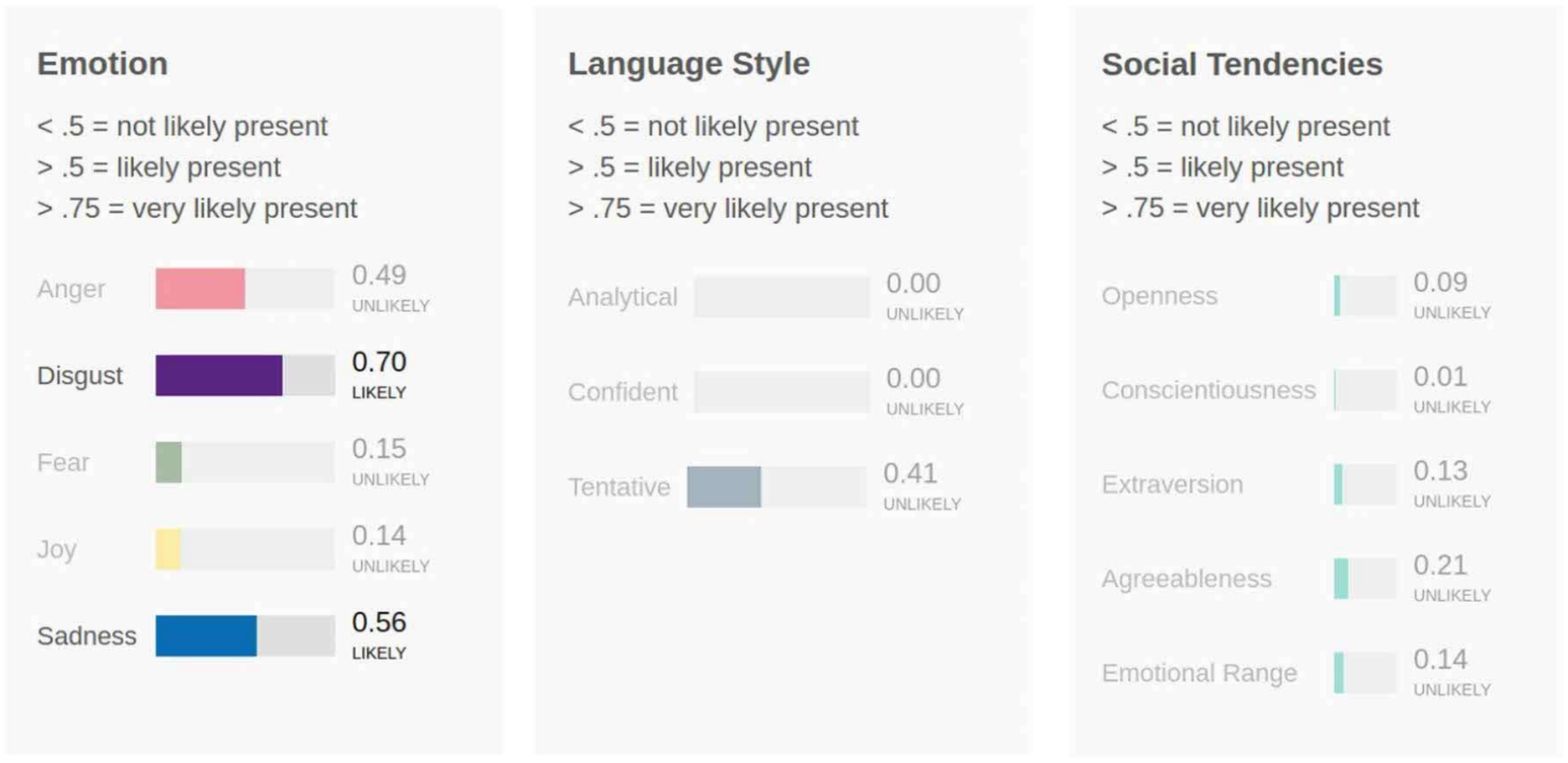
6 https://www.theverge.com/2017/6/29/15892802/instagram-ai-offensive-comment-filter-launches
7 https://yandex.ru/support/market/opinions/reviews-automatically.html
8 https://vk.com/page-19542789_51000215

Tone Analyzer & Natural Language Understanding

A key component of our system is the interaction with the IBM Watson platform. Thanks to the Tone Analyzer service, we are able to automatically determine the emotional component of reviews. For example, let's take an absolutely unconstructive comment:

> *WORST BLOCKCHAIN PROJECT EVER! Be careful and never invest in projects like this one! I've lost 70% of my investments because this company did not even tried to develop fine product!!!*
> *Such a bullsh*t!!!11 Guys, your product is totally useless and I don't believe that you've spent 5 million dollars on it! More likely you've bought cars and yachts instead of spending this money on R&D. You're liars!! BTW All interfaces are totally craptastic, I don't know how can anyone use it?!*

In this post Tone Analyzer will detect at least three factors indicating that this might not be a quality review. We are talking about factors such as high Anger, Disgust and Sadness levels. These parameters don't reach a similar level in constructive reviews, and this particular review would be marked as unconstructive before even reaching Manual moderation.

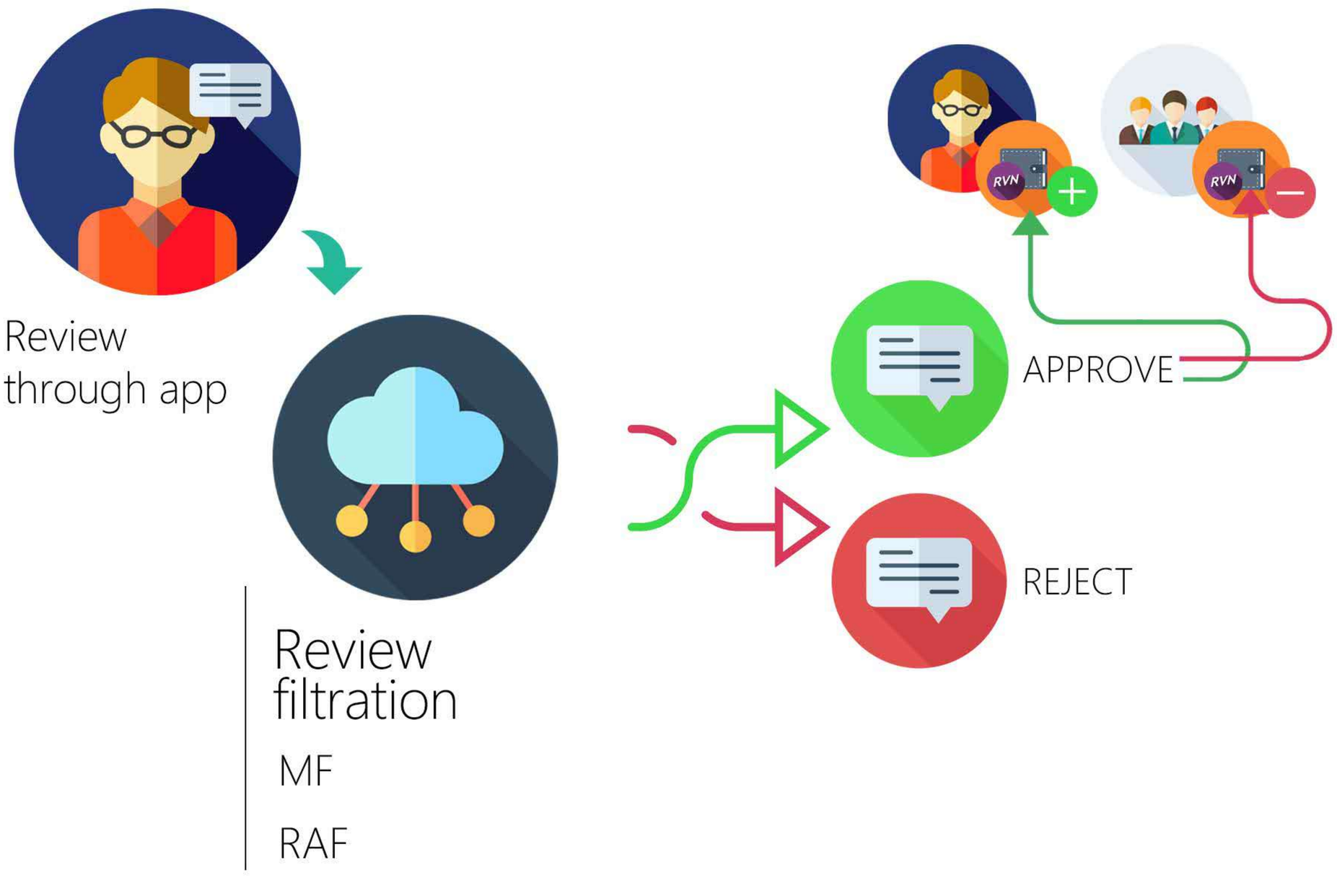


Technical side

In addition to the Tone Analyzer tool, we employ a variety of filters developed by us. They track the user's geolocation, past activity (posting frequency, automatic & manual filtration results for previous reviews), review characteristic and others. We also use the Natural Language Understanding[9] service. It is capable of deriving the essence of a review, detecting semantic blocks, key words and word collocations, and check for their compliance with the general essence of the text.

Manual filtration

Once the reviews have passed RAF successfully, it is reviewed by the company it is targeted at. The company's moderators can either approve or reject the review. Regardless of their decision, the review will still be visible to all users.

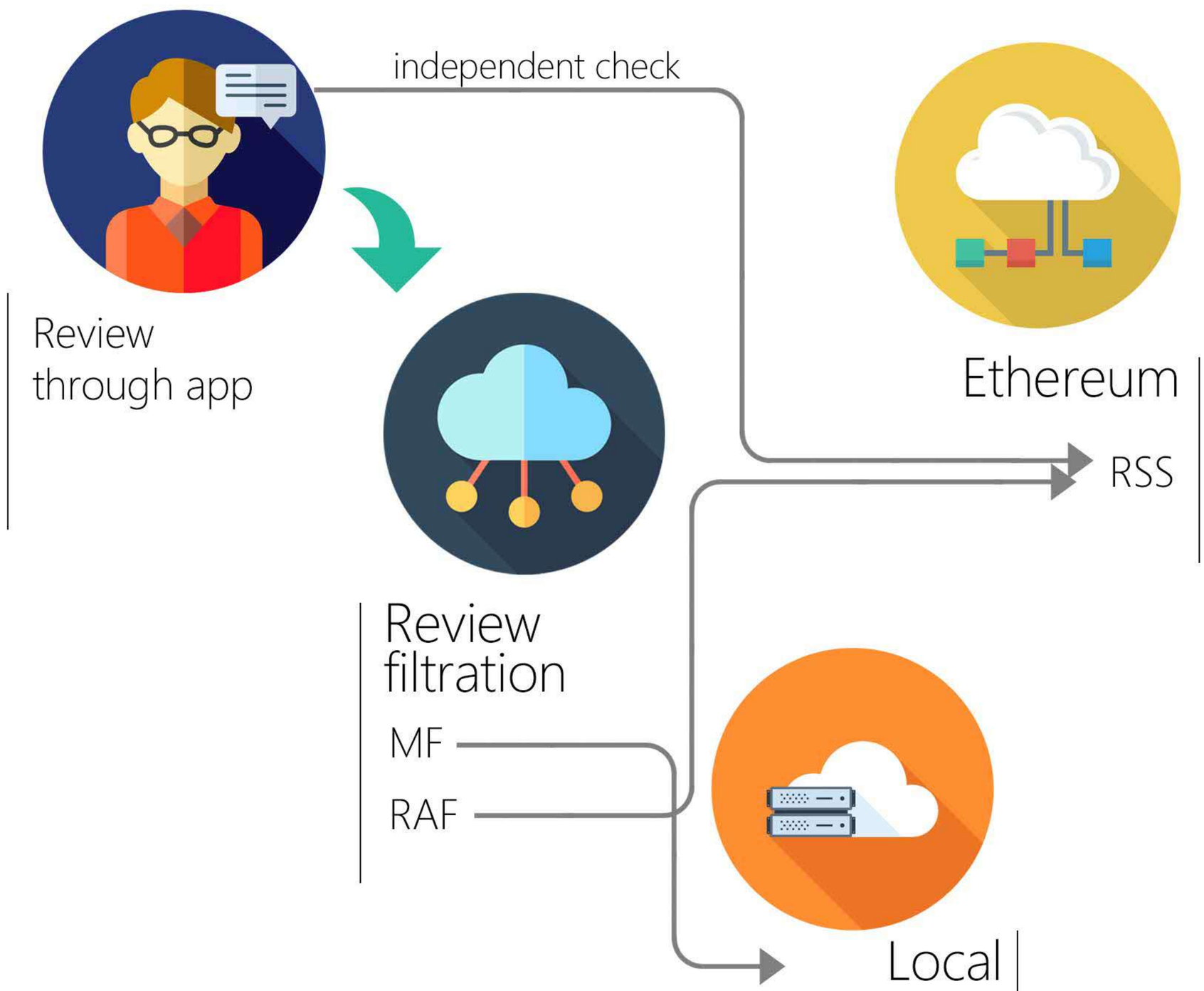


9 https://www.ibm.com/watson/developercloud/natural-language-understanding.html

In case a company does not agree with a review and rejects it, it must write a comment of their own in response to that review. This comment will be shown together with the review, thus solving the issue with unconstructive reviews.

Review snapshots storage (RSS)

After a review has passed manual filtration, a part of its structure is saved in the Ethereum blockchain. Thanks to this, users and the companies can be sure that the review has not been edited. This type of data is stored by a smart contract called RSS - Review Snapshots Storage. Its source code is given in the Appendix, Part C.



Technical side

As we have already mentioned, only a part of the review is stored in the Ethereum blockchain. The reason for this is that storing large amounts of data in the Ethereum blockchain is not economically feasible. We have tested more than ten different blockchain systems, including Bitcoin[10], Emercoin[11], Storj[12] and SiaCoin[13]. We have reached the conclusion that a decentralized platform for storing information, capable of holding the large amounts of data we intend to have, has not been developed to date.

Therefore, we have decided to sacrifice the integrity of the review's structure in favor of true decentralization. For this, we have created the "Review Snapshot" based on the below formula:

Review checksum = sha256(Review full text)[0:20]
Review snapshot = Rating + Company decision + Unix timestamp + Review checksum

Reviews then will be stored in the RSS, and the unique identifiers of the user and the company will be used as keywords for searching. Any user can check a contract to see if a review has been tampered with.

mapping(unit => mapping(unit => bytes32))Reviews
Reviews[company_id][user_id] = review snapshot

Possible issues

Companies purchasing reviews

This type of behavior is not economically feasible in our system, since the review fee will grow continuously.

Users attempting to earn rewards by posting made up reviews

Companies have the right to reject reviews that it deems untrue, so such users will only lose tokens. Since the reviews are made up, the user would not be able to provide any proof of the opposite.

10 https://bitcoin.org/en/
11 https://emercoin.com
12 https://storj.io
13 http://sia.tech/

No guarantee that reviews are not being edited

Reviews on our platform are saved in the Ethereum blockchain. Anyone can compare any review with what have been saved in the smart contract.

Companies rejecting all critical reviews

Since all reviews and the company's rejection or approval of them are visible to everyone on the system, companies with very high rejection rates will raise suspicion.

Lack of motivation for users

Users leaving quality reviews will be rewarded with RVN tokens that can then be converted to R tokens, which can be traded on exchanges.

Crowdfunding

The Revain crowdfunding and the corresponding process of token generation are handled by smart contracts which are based on Ethereum. Users, who wish to support the project's development can do this by sending cryptocurrencies or tokens from other projects to our wallets.

The funds must be sent after the beginning of the crowdfunding process. We plan to start around 21st August, and the whole process will last for approximately two weeks. We will accept the following cryptocurrencies:

The crowdfunding process

During the crowdfunding R tokens will be available for purchase for a fixed price. The total amount of R tokens issued will be 1,000,000,000 tokens, 70% of which will be available during crowdfunding. We plan to acquire 8,000 BTC. The cost of 1 token is calculated according to the formula:

$$\text{Token price} = \frac{8\ 000\ \text{BTC}}{700\ 000\ 000\ \text{R token}} = 0,\ 000011\ \text{BTC per R token}$$

Of the remaining 30%, 20% will be divided between the members of the Revain team and used to support the functioning of the platform. The remaining 10% will be given to advisors and the members of our big bounty program.

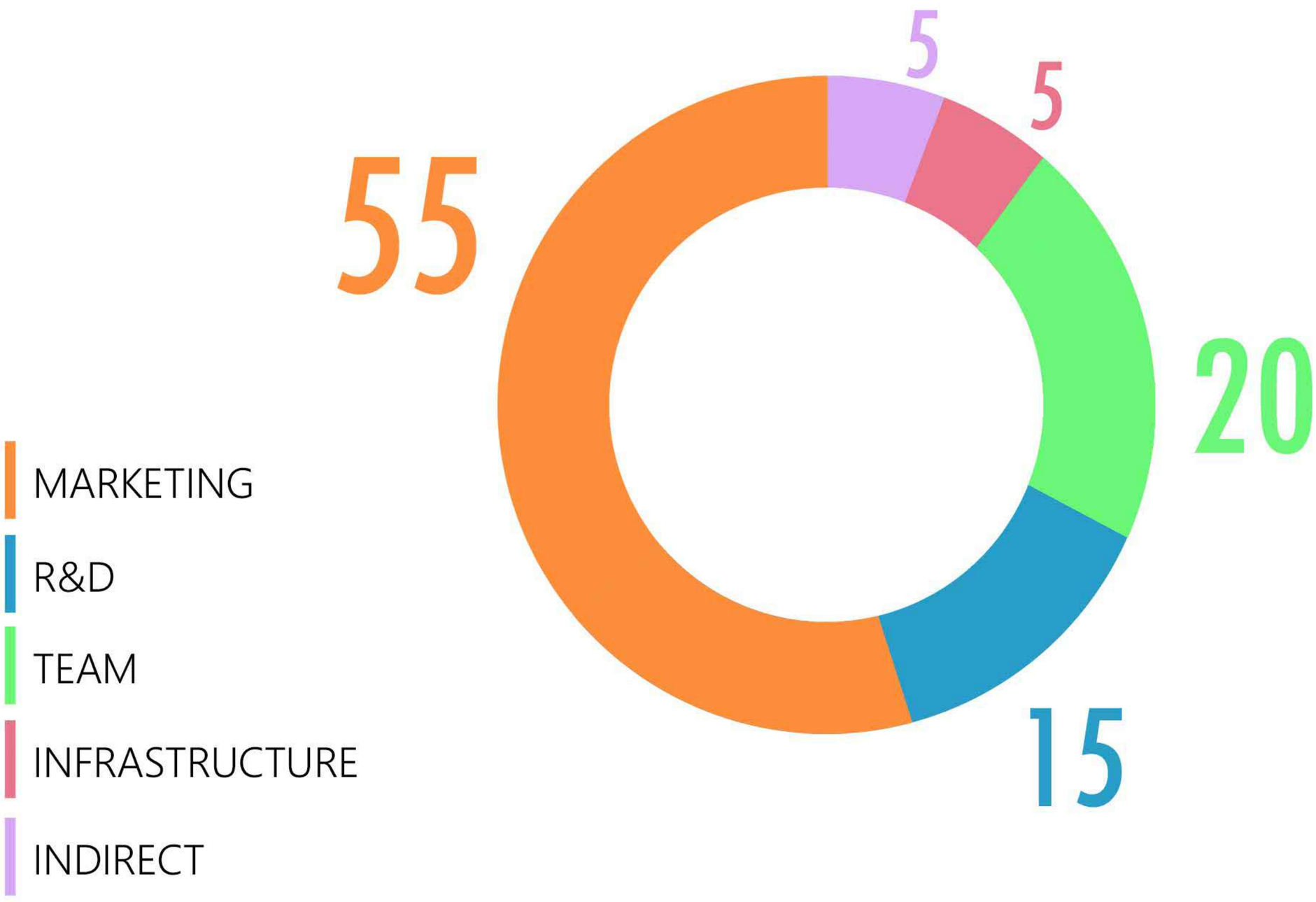
R tokens are based on the Ethereum platform and the standard token interface ERC20. The source code of the token can be found in Appendix A.

Despite the fact that we suggest using the token with our software, ERC20 lets any investor work with the token using any Ethereum client (for example - Mist or MyEtherWallet). This way our investors can minimize the risk of losing funds in the event that our software malfunctions.

Crowdfunding

Goals

As mentioned above, the goal of the crowdfunding is securing funds for R&D and covering platform-related costs. The following list shows how we plan to divide the funds.

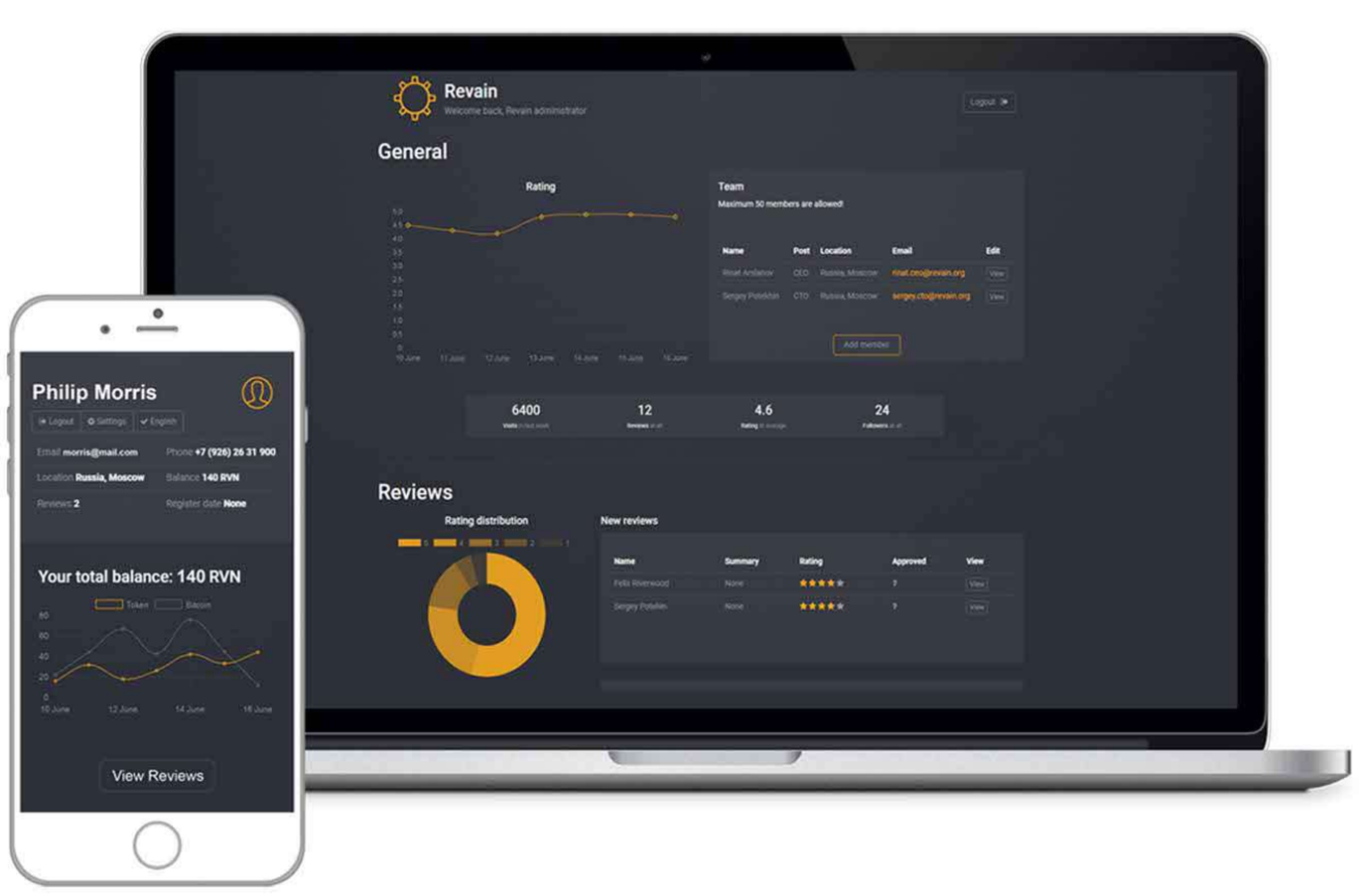


Future work

As per July 2017, Revain is undergoing alpha testing. The main mechanics for interaction between users and the platform are already in place, as well as the mechanism for platform-blockchain interaction on the level of RVN tokens. We are planning to announce public alpha in the beginning of September 2017.

In addition to the main user interface, we have developed an HTML widget that companies can install on their websites. Thanks to this widget visitors to the company's site will be able to see reviews from our platform.

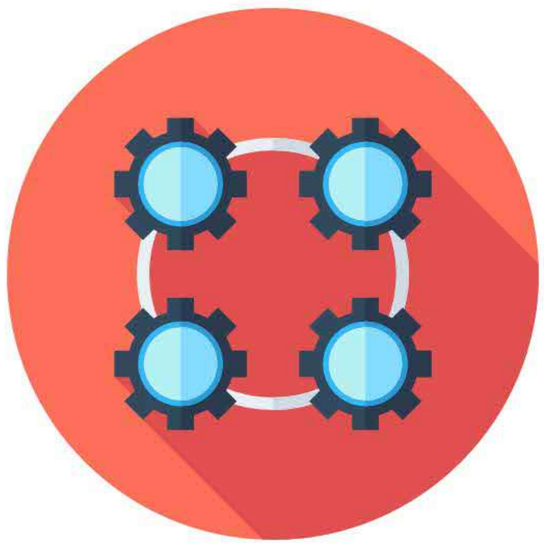
Later, after we have made sure the platform is operating smoothly, we plan to expand to new markets. Firstly, we are interested in gaming, e-commerce, booking, and FMCG. Our data suggests these four directions will be the most profitable for us.



Conclusion

This paper describes the realization of a review aggregation system for projects that have passed their ICO. We believe that our platform can meet two basic needs of our clients - the possibility to affect the development of a product, and sharing their experience with others.

Thanks to its module architecture and versatility, the system can be rebuilt to accommodate reviews from other fields. In light of all of the above, we believe that Revain has the chance to become a groundbreaking project on the review website market.



RVN

rvn token

Appendix
A (Token "R" source code)

```
pragma solidity ^0.4.8;

import "./Token.sol"; // ERC20 interface

contract RevainToken is Token {
  string public constant symbol = "R";
  string public constant name = "Revain";
  uint256 public totalSupply = 1000 * 1000 * 1000;
  uint8 public constant decimals = 5;
  address public owner;
  mapping(address => uint256) balances; // Balances for each account
  // Owner of account approves the transfer of an amount to another account
  mapping(address => mapping (address => uint256)) allowed;

  function RevainToken() {
    owner = msg.sender;
    balances[owner] = totalSupply;
  }

  // What is the balance of a particular account?
  function balanceOf(address _owner) constant returns (uint256 balance) {
    return balances[_owner];
  }

  // Transfer the balance from owner's account to another account
  function transfer(address _to, uint256 _amount) returns (bool success) {
    if (balances[msg.sender] >= _amount
        && _amount > 0
        && balances[_to] + _amount > balances[_to])
    {
      balances[msg.sender] -= _amount;
      balances[_to] += _amount;
      Transfer(msg.sender, _to, _amount);
      return true;
    } else {
      return false;
    }
```

Appendix
A (Token "R" source code)

```
}

// Send _value amount of tokens from address _from to address _to
  // The transferFrom method is used for a withdraw workflow, allowing contracts to
send
  // tokens on your behalf, for example to "deposit" to a contract address and/or to
charge
  // fees in sub-currencies; the command should fail unless the _from account has
  // deliberately authorized the sender of the message via some mechanism; we propose
  // these standardized APIs for approval:
  function transferFrom(address _from, address _to, uint256 _amount) returns (bool
success) {
    if (balances[_from] >= _amount
        && allowed[_from][msg.sender] >= _amount
        && _amount > 0

        && balances[_to] + _amount > balances[_to])
      {
        balances[_from] -= _amount;
        allowed[_from][msg.sender] -= _amount;
        balances[_to] += _amount;
        return true;
      } else {
        return false;
      }
  }

  // Allow _spender to withdraw from your account, multiple times, up to the _value
amount.
  // If this function is called again it overwrites the current allowance with _value.
  function approve(address _spender, uint256 _amount) returns (bool success) {
    allowed[msg.sender][_spender] = _amount;
    return true;
  }
}
```

B (Token "RVN" source code)
In development, coming soon

C (Token "RSS" source code)
In development, coming soon